FUNDHOLDING IN AUSTRALIAN GENERAL PRACTICE

DR JUSTIN BEILBY
Department of General Practice
December 1998

ABSTRACT

This thesis examined the hypothesis that fundholding in Australian general practice could be more efficient, in both technical and allocative terms, than fee-for-service for consultations, pharmaceuticals, pathology and diagnostic ordering. The research indicates that there may be a place for fundholding in Australian general practice, if general practice fundholders were integral members of a regional managed care model. There is now a need for a larger trial where actual monies are managed within a "real" budget or a limited introduction within a carefully structured development and evaluation framework.

The study was completed in three urban general practices. A mixture of qualitative and quantitative methods were initially used to develop a framework for fundholding. The qualitative methods included the use of reflective participatory observation and interviews. A series of questionnaires complemented these techniques. The quantitative methods included the gathering of information on consultation, pharmaceutical, pathology and diagnostic ordering costs for the general practitioners (GPs) based within the practices. These costs were then used to develop budgets for the three practices. A method was created for the documentation and comparison of mean cost per ordered item across the GPs and practices. A final multiple regression model which included GP variables, conditions treated and the age and sex of the patients allowed a more focussed examination of the effect of the GP on mean cost.

Following the development of the framework a series of economic models were developed. A systematic review was completed to identify strategies that could be integrated into a fundholding practice to produce gains in efficiency within these models. The economic models examined the conditions where fundholding could be more efficient than fee-for-service general practice.

There are a number of conditions that would need to be satisfied within this model for gains in efficiency to occur. They include:

(a) at a general practice level:

Improvement in resource management would be required among GPs. In this thesis, a 14% variability in mean cost per ordered item for the GPs involved was identified in the multiple regression model. Secondly, there would need to be the adoption of strategies that have been proven to change behaviour to bring about gains in efficiencies. The systematic review identified a number of feasible strategies including academic detailing and computerised feedback of the costs of ordered tests and prescriptions. Thirdly, an appropriate budget of at least $5 million for a group of general practices with yearly group infrastructure costs of $417,145 and group capital costs of $215,000 would be required. The capital costs would mainly cover information technology needs. The group would need to have a minimum number of 34-36 full time GPs. The required budget would be reduced if the yearly infrastructure costs were lower. In the economic model created for the thesis, a group infrastructure cost of $330,199 would decrease the budget to approximately $4.5 million and the GP group size to 28-30 full time practitioners.

(b) At a regional health system level:

A method to link the fundholding practice to a regional funding pool that included Commonwealth and State Government monies, and the rapid development of capitation based budgets, with a decreased reliance on historical approximation would be important prerequisites. This study has developed a possible model based around conditions treated and the age and sex of the attendees. Models of risk sharing between the fundholding practices and the regional sponsors would be important.

The consequences of the adoption of fundholding would vary. For the health system overall, the adoption of this model within a region should create improved linkages in primary care, allowing GPs to be more easily integrated with all other providers. The current push to move patients to primary care would, theoretically be more easily managed, especially if gains in efficiencies

were used to fund new services. It is unrealistic to consider that GP fundholders might be able to control the costly tertiary sector which is the most expensive element in the health care system. Cost shifting would still be a significant problem, unless the regional managed care pool embraced all Commonwealth and State Government monies.

For general practice, fundholding would create new opportunities for innovation and re-skilling and allow more active linkage of quality care to financial rewards. GPs would be freed to pursue other roles, such as involvement in shared care and working in primary health care teams. Patient linkage would be a prerequisite and there is evidence that GPs are likely to find this a positive benefit.

The rapid implementation of the information technology required for budgetary management would be an important inducement for the profession. The data collection required by GPs, if they want to fundhold may be a substantial burden for them and methods need to be sought to manage this issue.

It is likely that the current growth in overall pharmaceutical expenditure would be slowed or even halted, if appropriate interventions were implemented within capped pharmaceutical budgets.

For consumers the actual consequences are unclear. It is likely that consumers would become active partners in a developing fundholding practice and this would be a welcome change. Consumer needs should be more appropriately met, particularly if fundholding practices were offering individualised packages of care. Theoretically, quality of care could improve, but the evidence is not convincing that this scenario would eventuate. Similarly, improved integration and service provision could flow from this model, providing important benefits for particular groups such as the elderly. Some form of patient linkage would be required, and the reaction of Australian consumers to this concept is unclear, even though it seems apparent that most GPs would welcome this change.

This work contains no material which has been accepted for the award of any other degree or diploma in any University or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

I consent to this copy of my thesis, when deposited in the University Library, being for loan and photocopying.

...
Dr Justin Beilby

.....1.12.98.....
Date

This study is an extension of a project initially funded by the Department of Human Services and Health to examine Fundholding in Australian General Practice in 1994.

I would like to acknowledge the help of my three supervisors, Professor John Marley, John Moss and Ian Steven. I am indebted to Professor Chris Silagy for his help with the systematic review. I am grateful for the help of the staff who were involved in the original project and the statistician, Kristyn Wilson. Finally I would like to thank the general practitioners (GPs) and their staff from the three practices. Without their patience and involvement this study could not have been completed.

ABBREVIATIONS

General Practitioner	GP
Health Insurance Commission	HIC
Pharmaceuticals Benefits Scheme	PBS
Repatriation Pharmaceuticals Benefits Scheme	RPBS
Australian Medical Association	AMA
Royal Australian College of General Practitioners	RACGP
Rural Doctors Association	RDA
Department of Veterans Affairs	DVA
Gross Domestic Product	GDP
National Health Service	NHS
Medical Benefits Scheme	MBS
Health Maintenance Organisation	HMO
Regional Health Authority	RHA
Crown Health Enterprises	CHE
Independent Practice Associations	IPA
International Classification of Primary Care	ICPC
Data Collection Tool	DCT

TABLE OF CONTENTS

Appendices

List of Figures

List of Tables

CHAPTER ONE
THE AUSTRALIAN HEALTH CARE SYSTEM WITH PARTICULAR REFERENCE TO GENERAL PRACTICE

INTRODUCTION

Fundholding as a model of micro-economic reform for general practice has been described as one of the most significant innovations in the delivery of health care. (1) The United Kingdom has spent the last 6 years examining the value of this idea (1) and similar experiments have occurred in New Zealand (2), Russia, Finland, and Sweden. (3) Calls have been made in Australia (4) to examine the potential of this model to increase efficiency within an overall reform based on a managed care structure. The underlying agenda in all these countries, including Australia is the need to increase efficiency, with the eventual aim of improving health outcomes within available resources. (4)

This thesis aimed to examine whether the establishment of fundholding for Australian general practice would provide incentives for gains in efficiency. The overall aim was to develop and analyse a fundholding framework for 3 general practices and then to consider the implications of this framework for Australian general practice overall. To guide this analysis a primary hypothesis was proposed.

Fundholding in Australian general practice would be more efficient than the usual common funding mechanism (ie fee-for-service) for consultations, pharmaceutical, pathology and diagnostic imaging ordering.

A framework refers to an organisational structure that would support the necessary elements for a fundholding general practice. The framework that was developed from this study encompassed the management

expertise, information technology infrastructure, systems for data collection and subsequent analysis, determination of practice budgets, policy structures, consumer and funding body input and the general practitioner's role.

Before beginning this analysis it is important to understand the structure of the Australian health care system, with particular reference to general practice and the current dilemmas facing it. The first chapter provides this background. Any model developed for fundholding must be tailored to the individual country's social priorities and structural and cultural perspectives. (5)

This chapter is divided into 3 sections. The first section presents a summary of the current funding arrangements in the Australian health care system and the second analyses the future dilemmas facing the health care system. The third looks critically at the place of general practice in Australia at this current time and attempts to anticipate what will occur in the future.

Reform of the Australian health care system is now definitely on the political agenda. (6,7) While health services expenditure has remained at 8.5% of gross domestic product (GDP) for the last three years (9), increasing pressure is being placed on this level of outlay. A number of factors are contributing, including an increase in services provided per person, in the number of doctors providing services, and in the pressure to utilise expensive technology. The ageing of the population (with their resultant increased use of health services) and the move to non-institutional, community based care coupled with the multiple funding sources present, within the system are other factors. These factors are discussed in more detail in section two. Before this discussion takes place, it is important to understand the Australian system. The following section

draws on a number sources of health expenditure information to provide this background.

SECTION ONE

THE CURRENT FUNDING STRUCTURE OF THE AUSTRALIAN HEALTH CARE SYSTEM

1.1.1 Introduction

Health care systems world-wide are implementing, or proposing to implement reforms aimed at increasing the system's efficiency, creating innovation and making the delivery of health care more responsive to consumer preferences, while preserving equity. (3) In Australia, similar considerations are being discussed, because of the difficulties of retaining the overall cost of health care, coupled with the decreased access to public services. (7) In 1995-6 the total health service expenditure was 8.5% of GDP. (8) This is the same level as the expenditure in 1993-94 and 1994-95. (8) In the period from 1982-83 to 1994-95 this expenditure had risen from 7.7% to 8.5%. Internationally Australia's health expenditure, in GDP terms ranks behind France, Canada and the USA and is more expensive than New Zealand, the United Kingdom and Japan. (9)

In 1995-96, the total Australian health care expenditure was $41,742 million. In constant 1989-90 prices, this represents a 25% increase from 1989-90, at an average growth of 3.8% per year. (8) While the total amount of health care expenditure overall is important, a second informative measure of the increase in the growth in outlays for health services is the real per person expenditure. (10) The real per person health expenditure increased (in 1989-90 dollars) from $1,705 to $1,986 from 1989-90 to 1995-96, an average rate of increase of 2.6% per year.(8)

What is unclear is whether these increases have led to improvements in the health of the Australian community. (10) The next section looks at the expenditure for each section on the health system.

1.1.2 Breakdown of Expenditure

This section will summarise how health care expenditure in Australia is distributed across government and non-government sectors and will argue that there has been an increase in non-institutional care, medical services and pharmaceuticals as a percentage of total expenditure.

Health care expenditure is complicated by the split between Commonwealth and State Governments and non-government sectors including health insurance funds, workers compensation and motor vehicle third party insurance providers. The health care expenditure for 1994-95 is summarised in Table 1. These figures are the latest, most detailed figures available and are taken from the Australian Institute of Health and Welfare's 1997 Health Bulletin. (8) In 1994-95, 44.5% of the total health expenditure was Commonwealth funded, 22.2% State and local government and 33.3% from the non-government sector. (8)

Total institutional care in 1994-95 totalled $16,928 million (43.8% of expenditure) and non-institutional $19,662 million (50.5% of expenditure) (see Table 1). Expenditure on public hospitals absorbed more than half of institutional costs. The non-institutional expenditure is mainly in two areas - medical services and pharmaceuticals. Medical services comprise general practitioner (GP) attendances, pathology investigations, specialist attendances, radiology, operations, optometry, anaesthetics, obstetrics and other items. (10) The three most expensive areas of care are publicly funded hospital care (27.5% of expenditure), followed by medical services (18.9%) and pharmaceuticals (10.9%).

Table 1 COMPARISON OF HEALTH CARE EXPENDITURE 1994-1995 (IN $ MILLION) BY AREA OF EXPENDITURE AND SOURCE OF FUNDS

	SOURCE OF FUNDS				
CATEGORY	**COMMONWEALTH GOVERNMENT**	**STATE/LOCAL GOVERNMENT**	**NON-GOVERNMENT[c]**	**TOTAL**	**PERCENTAGE OF RECURRENT EXPENDITURE**
Publicly funded hospital [a]	5109		975	10688	27.5
Private hospitals	240	-	2606	2846	7.3
Nursing homes	1860	243	641	2744	7.0
Other institutional services	171	238	241	650	1.7
TOTAL INSTITUTIONAL SERVICES	**7380**	**5085**	**4463**	**16928**	**43.8**
Medical services	6086	-	1285	7371	18.9
Dental & other professional services	276	141	2969	3386	8.7
Pharmaceuticals	2086	-	2159	4245	10.9
Community & public health	507	1312	4	1823	4.7
Other recurrent expenditure[b]	986	613	1242	2841	7.3

Table 1 cont.

TOTAL NON INSTITUTIONAL	**99941**	**2066**	**7655**	**19662**	**50.5**
TOTAL RECURRENT EXPENDITURE	**17321**	**7152**	**12118**	**36591**	**94.0**
CAPITAL EXPENDITURE & CONSUMPTION	**8**	**1486**	**813**	**2307**	**6.0**
TOTAL HEALTH EXPENDITURE	**17329**	**8638**	**12931**	**38898**	**100**
PERCENT OF TOTAL EXPENDITURE	**44.5%**	**22.2%**	**33.3%**		

Notes:

a) These figures refer to recognised public hospitals, repatriation hospitals and publicly funded psychiatric hospitals.
b) Other recurrent expenditure includes aids and appliances, administration and research and other non-institutional.
c) Non-government includes Health Insurance funds, worker compensation and compulsory third party insurance providers and expenditure by individuals.

Source: Australian Health Services Expenditure, to 1995-96. Australian Institute of Health and Welfare. Health Expenditure Bulletin, July 1997; No. 13: 1-16. (8)

The mixture of funding sources contribute to inefficiencies within the health care system because of the overlap and confusion with the respective roles of the different levels of government. (7) In the executive summary of the National Health Strategy Issues Paper No 1, the authors commented that the multiple Commonwealth and State programs that deliver primary health and community care are not well integrated, "lack cohesion and clear policy and service objectives". (11)

In the period from 1989-90 to 1994-95 there have been changes in the distribution of expenditure across these three groups. Commonwealth outlays have increased from 42.1% to 44.8%; State and local government have fallen from 26.0% to 22.2% and non-government have risen from 31.9% to 33.0%. (8) The increases in Commonwealth Government outlays are due in part to the introduction of Medicare. (12)

In Table 2 the growth of expenditure for each element from 1986-87 to 1994-95 are compared and summarised from the Australian Institute of Health and Welfare Bulletins, December 1996 (9) and July 1997. (8) There are a number of salient points that are worth noting. Over this period there has been a move away from institutional care to non-institutional care which is reflected in the fall of institutional care expenditure from 54.2% to 46.3%. There has been a corresponding rise in non-institutional care expenditure from 45.8% to 53.7%. It is worth noting that part of the increase in non-institutional care is in pharmaceuticals (8.7% in 1986-87 to 11.6% in 1994-95) and medical services, both of which are influenced by general practitioners. These changes have been actively fostered by Government policies, particularly in the areas of aged care, mental health and post acute care convalescence. (13)

Table 2

COMPARISON OF HEALTH CARE EXPENDITURE 1986-87, 1990-91, 1992-93 & 1994-95 PERCENTAGE OF RECURRENT EXPENDITURE *

CATEGORY	1986-87	1990-91	1992-93	1994-95
Publicly funded hospitals	37.7	33.9	31.4	29.2
Private hospitals	5.8	6.2	7.3	7.8
Nursing homes	9.0	8.6	8.1	7.5
Other institutional services	1.7	1.6	1.6	1.8
TOTAL INSTITUTIONAL SERVICES	**54.2**	**50.3**	**48.4**	**46.3**
Medical services	17.8	18.8	19.6	20.1
Dental and other professional services	8.5	9.4	9.5	9.2
Pharmaceuticals	8.7	9.5	10.5	11.6
Community and Public Health	3.7	4.5	5.0	5.0
Other recurrent expenditure	7.1	7.5	7.0	7.8
TOTAL NON INSTITUTIONAL	**45.8**	**49.7**	**51.6**	**53.7**
TOTAL RECURRENT EXPENDITURE	**100.0**	**100.0**	**100.0**	**100.0**

*In current prices. Source: Australia's Health Expenditure 1982-83 to 1994-95. Health Expenditure Bulletin 1996; 9:1-32 (9) and Australia's Health Expenditure to 1995-96. Health Expenditure Bulletin 1997; 13: 1-16. (8) (These references only include information up to 1994-95)

If the effect of general practice on overall health expenditure is examined, certain trends are noted. From the period 1986-87 to 1994-95 (using current prices) the expenditure on medical services has increased from 17.4% to 20.1%. Approximately one third of this expenditure is for non-specialist fee-for-service consultations. (14) When these figures are indexed for general price inflation (using constant 1989-90 prices), the changes are more striking. Expenditure on all medical services has increased in real terms at an average of 5.1% per annum and expenditure on non-specialist attendances at an average of 5.2%. (14) These increases represent a substantial rise in the real resource usage within this area. It is worth noting that these average rates conceal a slowing down since 1992-93. For non-specialist attendances the annual growth rate fell from 8.4 % in 1992-93 to 3.8% in 1993-94 and to only 0.1% in 1994-95. (14) This fall reflects the "freezing" in rebate increases for non-specialist attendances.

1.1.3 General Medical Services

In order to understand why micro-economic reform in the style of general practice fundholding should be considered, an understanding is required of the current mix of items funded under the heading of medical services, the growth of these items and changes in expenditure. This section examines current trends in the use of general medical services.

Medical services by doctors are items funded from a number of sources. Medicare provides benefits for private services outside of hospitals and in-hospital medical services for patients who are admitted to private hospitals. Medicare is the universal system of health insurance, funded by Commonwealth Government from taxation revenue. All Australians except for foreign diplomats and short-term visitors who live in this country are eligible for benefits. These benefits are determined by a schedule of fees,

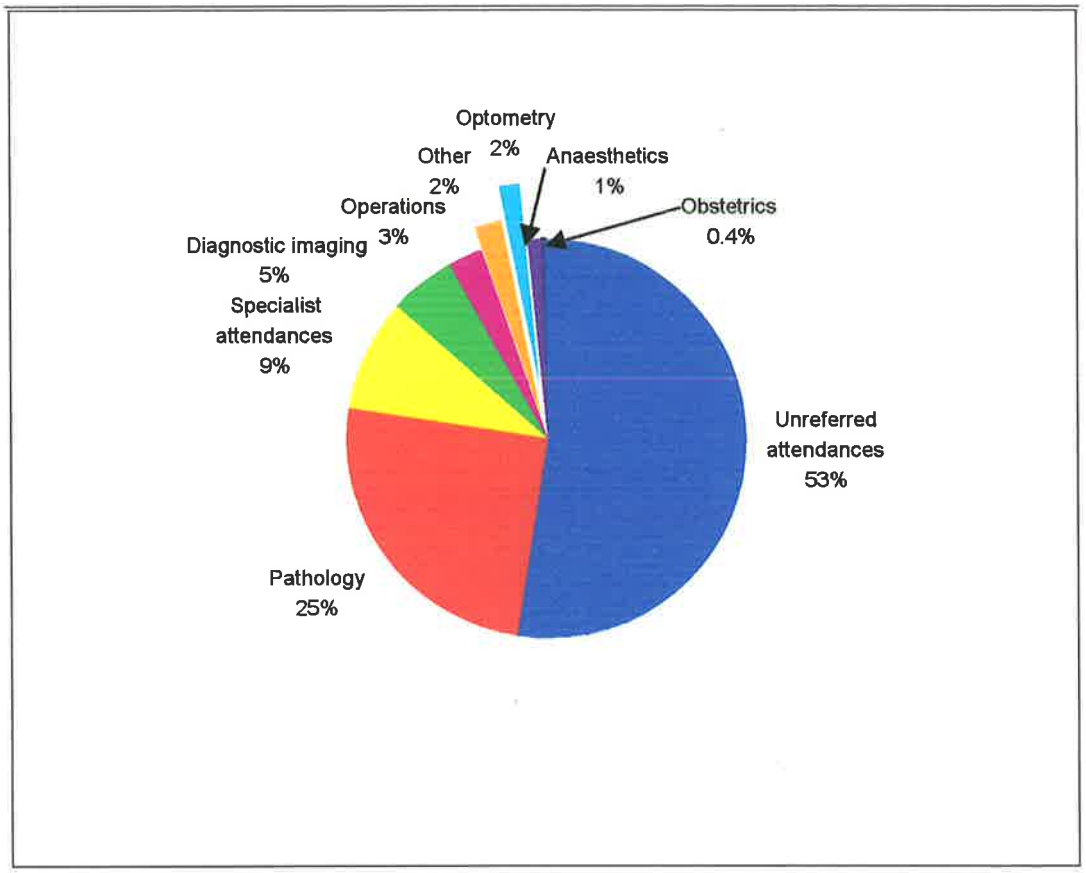
although doctors, including GPs do not need to adhere to this schedule. Each patient receives 85% of the schedule fee from the Commonwealth Government. If the doctor charges more than the schedule, then the patient must pay the gap. If the doctor directly bills Medicare, then he/she only receives 85% of the schedule fee. Comprehensive data is available on Medicare services from the Health Insurance Commission (HIC), a Commonwealth Government organisation. The most useful and detailed information of medical service usage is available from the HIC and the remainder of this analysis deals with what information is available from this source.

There are certain medical services that are not eligible for Medicare benefits including workers compensation claims, services covered by third party insurance schemes and those services provided for war veterans and their dependents. The latter group is covered by a Repatriation scheme managed by the Department of Veterans Affairs (DVA).

A breakdown of the types of medical services is presented in Figure 1. The information is taken from the Australian Institute of Health's most recent annual report and looks at the year of 1994-95. (15) The item that used most resources was unreferred attendances (52.4%) which include general practitioner consultations (the major element), emergency visits after hours, other prolonged attendances, group therapy and acupuncture. Pathology tests (25%) and specialist attendances (9.3%) were the next most common service provided. (15) In 1994-95 there were a total number of services of 188.1 million, which generated expenditure of $6634 million. While the number of services is substantial and important, it is the growth of the services that is the major concern.

FIGURE 1

MEDICAL SERVICES BY TYPE OF SERVICE 1994-95



Source: Australia's Health 1996. Australian Institute of Health and Welfare. The Fourth Biennial Health Report of the Australian Institute of Health and Welfare. Australian Government Publishing Service. Canberra 1996. (15)

Deeble has looked at this issue over the period from 1984-85 to 1989-90. (16) Increases have occurred in all these areas. GP consultations have increased by 20%; specialist consultations by 16.4%; pathology by 42.6%, radiology by 26.7%, and surgical operations by 20.0%. (16) Table 3 presents a summary of a more recent analysis and has been adapted from a General Practice Evaluation Program study by Doessel. (17) In all areas per capita services have increased. Overall in 1984-85 each person in Australia received 7.22 services, but in 1992-3 they received 9.81 services. GP attendances increased over the same period from 4.14 to 5.30; pathology services from 1.43 to 2.26 and diagnostic services from 0.33 to 0.52.

These figures would indicate a general rise in utilisation, but a number of caveats need to be kept in mind, including changes in the Medical Benefits Schedule Book and the substitution from public to private medical services. For example, Deeble had already noted the major changes that took place in 1990 around pathology testing which restructured and consolidated the whole pathology schedule and makes comparison across years difficult. (16)

Table 3

PER CAPITA UTILISATION OF MEDICAL SERVICES UNDER FEE-FOR-SERVICE BY SERVICE TYPE 1984-85 TO 1992-93

YEAR ENDED 30 JUNE	TOTAL GP SERVICES	SPECIALIST ATTENDANCES	PATHOLOGY SERVICES	DIAGNOSTIC SERVICES	TOTAL SERVICES
1985	4.14	0.71	1.43	0.33	7.22
1987	4.43	0.79	1.68	0.40	7.98
1991	4.95	0.87	1.52	0.49	8.55
1993	5.30	0.93	2.26	0.52	9.81

Source: Dossel D. General Practice in Perspective: A descriptive analysis of prices and other outcomes under Medicare. A final report on the project General Practice in perspective. General Practice Evaluation Program 1995. Commonwealth Department of Human Services and Health. (17)

These increases in services can also be examined from a resource utilisation perspective. Butler in the recently released *General Practice in Australia 1996* analysed changes in non-specialist related services over the period 1991-92 to 1994-5. (14) The HIC does not distinguish between GPs and other non-specialists medical practitioners, but it can be assumed that most of these services are performed by GPs. These changes are summarised in Table 4. Over the four years, outlays on attendances, pharmaceuticals and pathology and diagnostic imaging have increased. For example, the outlays in 1991-92 for non-specialist attendances was $1853 million compared with $2277 million in 1994-95, a 23% increase. Interestingly the percentage outlay for non-specialist ordered pathology and diagnostic imaging, when compared with the total output has remained stable at 69% and 61% respectively, despite the relative rise in expenditure in both areas. The figure that is worth noting is the ratio of non-specialist ordered services (ie. pathology and diagnostic imaging investigations and pharmaceuticals) to non-specialist attendances. This has risen from 0.97 in 1991-2 to 1.19 in 1994-5. For ordered services, expenditures have increased from $1803 million to $2710 million, a rise of 50%.

By far the greatest increase over the four year period is in pharmaceuticals, with an increase from $1020 million to $1694 million, a rise of 66%. The next section examines the pharmaceutical area in more detail. To summarise, GPs are ordering more tests and either prescribing more medications or those drugs that are more expensive, for the same number of consultations. The reasons for these increases are complex but include greater availability and access to technological advances, an ageing population, consumer pressure to be more thoroughly investigated (16) and the rising prices of the tests and pharmaceuticals.

Table 4

COMMONWEALTH GOVERNMENT EXPENDITURES AND FLOW ON COSTS* FROM NON-SPECIALIST ATTENDANCES PATHOLOGY, DIAGNOSTIC IMAGING & PHARMACEUTICALS 1991-92, 1992-1993 & 1994-1995 (CURRENT PRICES)

	NON-SPECIALIST ATTENDANCES ($M)	ORDERED NON- SPECIALIST PATHOLOGY		ORDERED NON-SPECIALIST DIAGNOSTIC IMAGING		NON-SPECIALIST ORDERED PHARMACEU-TICALS	TOTAL NON-SPECIALIST ORDERED SERVICES	
YEAR	MEDICARE BENEFITS ($M)	MEDICARE BENEFITS ($M)	% OF TOTAL PATHOLOGY	MEDICARE BENEFITS ($M)	% OF TOTAL IMAGING	PHARMACEU-TICAL BENEFITS ($M)	MEDICARE & PHARMACEU-TICAL BENEFITS ($M)	RATIO **
1991-92	1853	434	69	349	60	1020	1803	0.97
1993-94	2205	479	68	439	60	1516	2434	1.10
1994-95	2277	534	69	482	61	1694	2710	1.19

Notes:

* Flow on costs: describe the costs generated by management decisions made by a GP within a consultation.

** Ratio - Non-specialist ordered services expenditure divided into non-specialist attendances expenditure.

Source: Butler J. The Financing of General Practice. Chapter 5. General Practice in Australia: 1996. Australian Government Publishing Service Canberra. Department of Human Services and Health 1996. (14)

1.1.4 Pharmaceuticals

Prescribing is a second area, largely under the control of GPs where substantial changes are occurring. In Australia the pharmaceutical industry is mainly private in nature, although the Commonwealth Government has a substantial role in regulation and subsidy provision for certain groups. The Commonwealth, through the Pharmaceutical Benefits Scheme (PBS) and the Repatriation Pharmaceutical Benefits Scheme (RPBS) subsidises a substantial amount of the community's expenditure on medications. There is a fixed price for each drug subsidised through the PBS and consumers pay a moiety depending on their socio-economic status. If they are on a pensioner health benefits card or certain other card entitlements they pay $3.20 (August 1997). (18) If they do not possess such a card, they pay a maximum of $20.00 (August 1997). Consumers also pay a premium for some brand name medications. The Commonwealth Government then pays the remainder of drug cost to the pharmacist. The PBS employs a safety net arrangement where all Australian families are entitled to free or reduced priced medication, once they have outlaid a certain amount of money for medications. The safety net figure in August 1997 for a pensioner health benefit card holder was $166.40 and for other groups it was $612.60. (18)

Certain drugs are only available for specific reasons. They must be obtained through a special authority scheme which requires Commonwealth Government approval. For example to prescribe the drug omeprazole there needs to be one of a number of specific conditions. They include:

- Refractory duodenal ulcer or refractory gastric ulcer, with proven failure to heal despite eight weeks of continuous therapy with other 'ulcer healing drugs'.

- Severe refractory ulcerating oesophagitis proven by endoscopy
- Scleroderma oesophagus, proven by endoscopy and unresponsive to other measures
- Zollinger Ellison syndrome

The RPBS programs cover a specific group of people who are war veterans or their dependents. In 1996 these numbered 250,000. Medications can also be obtained outside the PBS and RPBS by the use a private script. A number of small Commonwealth programs and hospitals provide medications. (10) Patients can obtain private scripts for drugs that have not been listed for subsidy on the PBS or RPBS. They have to pay the full moiety unless their private medical insurance subsidises the drug.

In 1994-5 the total expenditure for pharmaceuticals was $4245 million. The Commonwealth Government contribution (ie. PBS expenditure plus RPBS) was $2086 million (49%) and non-government input was $2159 million (51%). The non-government input was made up of individual contributions of $2091 million, health insurance funds - $42 million and other programs (eg. workers compensation schemes) - $26 million. (8)

There is evidence that the Commonwealth Government contribution has increased, both overall and in specific areas. From 1988-89 to 1993-94, the overall expenditure for benefits paid for pharmaceuticals has risen, in constant (average 1989-90) prices an average of 7.4% per annum. (9) This is principally due to increases in benefits paid of 16.2% between 1991-92 to 1992-93 and 17.6% between 1992-93 and 1993-94. In 1989-90 the Commonwealth Government pharmaceutical expenditure was 5.4% of recurrent health services expenditure and in 1993-94 this outlay had increased to 6.7% (in current prices).

The cause of these increases includes a rise in the number of families who are eligible card holders (from 544,283 in 1990-91 to 730,505 in 1992-92 (10)), and an increase in the number of prescriptions subsidised by the PBS. From 1991-92 to 1992-93 the number of subsidised prescriptions increased from 93.5 million to 105.3 million - a rise of 12.6%. With RPBS and private prescriptions, over the period 1989-90 to 1992-93 there have decreases in all years. For example, the number of private prescriptions fell by 4.9% from 12.2 million to 11.6 million over 1991-92 to 1992-93. Overall, for all of the prescription groups discussed above, the prescriptions have increased from 151 million in 1991-92 to 157.5 million in 1992- 93. (10) This reverses a trend of falling prescriptions numbers over the two previous years. In fact in 1989-90, the total number of prescriptions was 162.5 million which is 4% higher than the number in 1992-93. (10)

While the growing number of prescriptions is cause for concern, the main contributor to the burgeoning pharmaceutical costs is the escalating average cost of prescriptions. For example from 1991-92 to 1992-3 there had been a 14.6% increase total expenditure - 10.3% due the average prescription costs and 4.3% increase in the use of prescriptions. (10) Commonwealth Government expenditure, when looked at specifically increased by 25% between 1991-92 and 1992-93, 19% between 1992-93 and 1993-94 and 12% between 1993-94 and 1994-95. (15) The expensive medications are now more easily available and more readily prescribed, in part due to Government policy changes (eg. removing hypolipidaemic drugs from Authority listing). In 1993 simvastatin (a hypolipidaemic agent) cost the Government $91 million, enalapril $79 million; ranitidine $72 million and captopril $62 million. (19) In the period from 1991 to 1993 the use of these expensive drugs has risen (in defined daily dosage (DDD) per 1000 of the population per day) 163% (simvastatin), 145% (enalapril), 199% (ranitidine), and 125% (captopril). (19)

To summarise, in both general medical services and pharmaceuticals, there is an increasing use of resources. GPs are the principal medical providers who are contributing to this rise in resource usage. The move to consider micro-economic reform in general practice is seen as an attempt to find a method to halt this increasing resource utilisation (particularly those costs borne by the Government) that is occurring because of the behaviour of general practitioners. General practitioner behaviour refers to actions taken as a consequence of management and diagnostic decisions made as part of a consultation with a patient. Deeble has argued that "reconciling the growth in service usage with the National capacity to pay, the more rational use of pathology, radiology and pharmaceuticals by service providers and the influence of the growth in the service provider workforce" (16) are important concerns that have to be confronted.

At the same time a number of other issues are challenging the Australian health system. The next section discuss these concerns. Consideration of micro-economic reform in general practice cannot be treated in isolation from other social, demographic and political trends developing in the community.

SECTION TWO

CURRENT AND FUTURE DILEMMAS FOR THE FINANCING OF THE AUSTRALIAN HEALTH CARE SYSTEM

1.2.1 The Ageing Population

In 1992 the proportion of people over 65 was 11.5%. Projections from the Australian Bureau of Statistics suggest this proportion will be 13.8% by the

year 2011 and 16% by 2021. (20) The over 80 age group will increase from 2.0% (1992) to 2.9% (2001) to 3.6% in 2021.

While accepting that being older does not necessarily create illness, health care costs increase rapidly with advancing age for a number of reasons. Consultation rates, prescriptions rates, pathology and diagnostic imaging ordering and referrals rise with increasing age. (21) In the following table (Table 5) a summary is presented from the analysis by Deeble. (16) Overall, in the over 60 group there were 15.15 services per person per year compared with 5.93 in the under 20 group and 8.70 in the 20-59 age group. In the period from 1984 to 1989 the over 60 age group increased their overall use of services by 24%. The largest increases were in the use of pathology (61%), radiology (42%) and specialist consultations (34%). Comparing this group with the 20-59 age group, the corresponding figures were, overall 20%, pathology 38%, radiology 22% and specialist consultations 11%. With the under 20 year age group the corresponding percentages were 22%, 12%, 24% and 12%. In other words, it is both the total number of services and the age-specific rates of change that are contributing to the increasing expenditure found with older people. It is worth noting that a substantial number of elderly also move out of Medicare into the public hospital system and Medicare data do not include this information. (10) The elderly move between these systems because they have no private insurance and have to use the public hospitals which are free to them. As a consequence it is likely that the overall ratio of service use was higher than that actually documented by Deeble.

Contributing to this use of services by older people is the increasing number of problems found in the elderly. In the Australian general practice morbidity survey, the number of problems managed per consultation per age group increases from 1 per head of population in the 45-54 age group to 1.5 in the 54-64 age group, 2.5 in the 65-74 age group and to over 3 for

the people over 75 years of age. (21) With increasing problems comes increasing cost for medications, pathology and diagnostic imaging tests and specialist and allied health referrals. Specific chronic diseases which are costly to manage will increase as a population ages. These include cardiovascular disease, cancer, musculoskeletal conditions, and mental disorders. As a result of the increased number of chronic diseases with their resultant disabilities, the use of health care resources will rise (22,23) and there will be a need for allied health and home support services to provide additional support. (24)

Table 5

AVERAGE USE PER PERSON OF MEDICAL SERVICES MEDICARE CLAIMS DATA (1989-90)

AGE GROUP	SERVICE	RATE	PERCENTAGE CHANGE FROM 1984-5 TO 1989-90
People under 20	GP visits	4.19	28.0
	Specialist consultations	0.47	12.0
	Pathology	0.77	12.0
	Radiology	0.21	24.0
	Operations	0.13	6.0
	Other	0.17	10.0
TOTAL		**5.93 services per person**	**22.0**
People 20-59	GP visits	4.50	21.0
	Specialist consultations	0.82	11.0
	Pathology	2.28	38.0
	Radiology	0.39	22.0
	Operations	0.25	19.0
	Other	0.47	-6%
TOTAL		**8.70 services per person**	**20.0**
People 60 & over	GP visits	8.02	11.0
	Specialist consultations	1.63	34.0
	Pathology	3.53	61.0
	Radiology	6.79	42.0
	Operations	0.45	26.0
	Other	0.72	18.0
TOTAL		**15.15 services per person**	**24.0**

Source: Department of Community Services and Health, Medicare Claim Data File (taken from Deeble J. Medical Services through Medicare National Health Strategy Background Paper No. 2 February 1991. Publisher: Treble Press). (16)

1.2.2 The growth in the use of health technologies

In this section a broad range of technological services including pathology, radiology, ultrasound, nuclear medicine, endoscopy and other diagnostic services, lasers, laparoscopic surgery, insertion of cardiac pacemakers, cataracts and a number of other groups will be discussed. In 1991-92 this group accounted for 32% of the total Medicare services which generated 44% of total Medicare benefits paid. (10) The growth of these services is quite substantial and in Table 6 a modified summary has been produced from information in the Australian Institute of Health Annual Report 1994. (10)

In the period from 1984-85 to 1991-92 general xray services have increased by 5.8% per annum, with a 2.4% increase in Medicare benefits paid (in constant 1984-85 prices). Ultrasound services have correspondingly increased by 15.5% per annum in the number of services and 9.5% in Medicare outlays (in constant 1984-85 prices). When all the services for xrays, computerised tomography (CT) scanning, magnetic resonance imaging (MRI) and ultrasound are combined and examined per 1000 population, there has been an annual rate of growth of 5.9% from 1984-85 to 1991-92. (10) Ultrasound and CT scanning have risen more sharply, perhaps reflecting their increased usefulness and availability. Other areas where increases have occurred include laparoscopic surgery eg. laparoscopic cholecystectomy and laparoscopically assisted hysterectomy. The impact of these techniques on the quality of health care is unclear at the moment, and careful monitoring of the effects on cost, complication rates, re-operation rates etc is required. Already there is some evidence that may suggest that laparoscopic cholecystectomies have led to a rise in cholecystectomies with a 26% increase, on a constant population basis noted between 1987-88 and 1991-92. (25)

Table 6

HEALTH TECHNOLOGY SERVICES 1984-85 TO 1991-92
COMPARISON OF NUMBER OF SERVICES AND GROWTH

SERVICE	YEAR	NUMBER OF SERVICES (THOUSANDS)	SERVICES AS PERCENTAGE OF MEDICARE SERVICES	AVERAGE ANNUAL GROWTH IN SERVICES (%) 1984-85 TO 1991-92	AVERAGE ANNUAL GROWTH IN MEDICARE BENEFITS PAID 1984-85 TO 1991-92 *
X-Rays	1987-88	5358	-	5.8	2.4
	1989-90	5983	-		
	1991-92	6437	-		
CT Scanning	1987-88	299	0.2	14.6	7.8
	1989-90	359	0.3		
	1991-92	448	0.3		
Ultrasound	1987-88	896	0.7	15.5	9.5
	1989-90	1176	0.8		
	1991-92	1496	1.0		
Nuclear Medicine	1987-88	124	0.1	11.8	-
	1989-90	151	0.1		
	1991-92	156	0.1		
Endoscopy	1987-88	527	0.4	10.8	-
	1989-90	645	0.5		
	1991-92	752	0.5		

Source: Health Insurance Commission unpublished data. Australian Institute of Health and Welfare. Australia's Health 1994.
Modified from Table S58, Table 4.21 and Figure 3.11. (10)
Note: * In constant 1984-85 prices

The reasons for the growth in these services are many and varied. Consumer demand, nourished by media interest creates pressure to continue to use expensive and poorly evaluated technologies. (26) The growing specialisation of medicine combined with physicians who are trained in the use of sophisticated techniques to diagnose and manage patients (27) has further fuelled this growth. The financial reward for the doctor in a fee-for-service payment system (28) will create incentives to order diagnostic investigations and arrange follow up and review. It is also worth noting that the use of these "technologies" such as coronary bypass grafting, implants and prothesis and diagnostic investigations will rise with aging of the population. It has been suggested that these trends in use and consequent associated costs will be difficult to reverse in the near future, unless there is substantial Government intervention. (28)

1.2.3 The shift to primary care

Over the last 10 years there has been an increasing blurring of the boundaries between hospital and primary care. Length of stay has decreased in both public and private hospitals. (29) A number of factors have contributed to this change, including the use of less invasive surgery, better anaesthetics and antibiotics, and fewer patients needing nursing home placement. (30) The number of bed-days used by patients in acute hospitals has fallen from 1,390 per 1000 population in 1985-86 to 1207 in 1991-92. (10) Same day surgery has increased. For example, in acute public hospitals the same day surgery rate has increased from 20% of all patients (1987-88) to 28% (1991-92). (10)

At the same time there is a trend towards ambulatory care as clinical opinion shifts to the view that patient outcomes are better, if people are allowed to remain in the community and there is increasing pressure for improved efficiency within the health care system. (11) People who suffer

chronic illnesses are needing multidisciplinary care based in the community and their numbers will increase as the population ages. (31) These concerns are reflected in the Council of the Australian Governments Working Group Information Paper released in 1995 which argues that patients with complex ongoing health problems will require the involvement of a range of service providers, found principally in the community. (32) This view is, at the present time driving a major experiment in health care organisation aimed at providing pooled funding for complex, chronically ill patients whose care will be managed using care coordinators and care plans. (32,33)

These trends may change the type of care provided by secondary and tertiary hospitals. These hospitals are likely to become centres where complex, acute care can be delivered and appropriate short term advice and support provided for the chronically ill. New models of integration are required that link hospitals and primary care (34) and provide better communication. (35) These problems will demand the development of new structures, protocols, improved understanding (36) and clear definitions of the roles of both community and hospital groups. (35)

Aside from the influence of changing social and epidemiological trends there are fiscal concerns with the public hospitals. Public hospitals are the largest consumers of health expenditure. In 1994-95 hospital expenditure absorbed 34.7% of health expenditure ie. $13,536 million. (8) These figures include recognised public hospitals, repatriation hospitals and public psychiatric hospitals and private hospitals. Increasing pressure is being placed on the public hospitals because of the decrease in private health insurance, creating an larger number of people who use these large institutions for acute and non-urgent care. At the same time casemix funding and budgetary cuts are creating substantial changes within the actual hospital environments. (37) The tertiary centres are facing a

number of substantial challenges that will need constructive solutions to be identified in the near future.

1.2.4 The change in consumer expectations

Community and consumer expectations are changing. There has been an increase in the number of self-help groups and consumer advocacy networks. More choices are being offered to consumers, such as alternative medical practitioners and ready access to medical services in the form of extended hours clinics. At the same time "the long ascendancy of medicine had fed a revolution of rising expectations among lay people, while the illness burden has moved towards chronic, degenerative conditions many of which are minimally relieved by modern medicine". (38)

In parallel, as society looks for a more efficient and effective health care system, consumers are asking to be involved. (39) Broom, a sociologist with a long standing interest in women's health, has outlined a series of principles that an optimal health care system should have from a consumer perspective. (38) She drew on information obtained from a workshop in 1991 involving both doctors and "consumer lobby" representatives. The principles, she concluded in her analysis that should be included were:

- a health (not sick-care) system,
- a system that promotes a health-care partnership between consumers and health care providers
- a system that is user friendly
- a system that provides access for all groups and
- a system that promotes effective communication.

Organisations such as the Consumers Health Forum, the Health Issues Centre and various local self help groups are fostering the consumer debate around these principles. Consumer views are often at odds with the other groups involved with the debate around the provision of health care. The Consumers Health Forum has produced a number of reports over the last four years examining the changes in primary care/general practice, including quality in general practice (39), the divisions of general practice (40) and more recently the coordinated care trials. (41) These and other groups are asking to be involved in the changing face of health care delivery in Australia. Any moves to redesign specific parts of health service delivery needs to include consumer groups.

A final point must be made about marginalised consumer groups in the Australian community. Marginalisation may occur because of geographic position, culture and language difficulties, and socio-economic isolation. Health services are conventionally developed from urban and hospital based centres and aimed at the mainstream groups. (42) If a change in health service delivery is contemplated, then due consideration will need to be given to the marginalised groups including Aboriginal people, recent migrants, non-English speaking groups, the elderly and the rural communities. The considerations of the different structural, epidemiological and social constraints found in these communities will be important. If they are not considered, then the innovation, no matter how good it is, may well run the risk of creating inequities. (43)

1.2.5 The plurality of funding sources

In Australia there is a plurality of funding organisations, in both Government and non-Government sectors, as illustrated in Sections 1.1.1. and 1.1.2. Government funding, both Commonwealth and States/Territories, is derived from taxation and other general revenue. The

non-government funding comes from health benefit organisations, workers compensation and compulsory motor vehicle third party insurers and individuals. The complexity of this system and its effect on the roles and responsibilities of providers is illustrated in Table 7 on page 30. This table is summarised from "The Australian Health Jigsaw". (11) If medical services are examined as an example, multiple sources of funding for different services can be identified. The Commonwealth Government funds the bulk of these services through Medicare. The States fund services based in community health centres. There is mixed funding for non-inpatient medical services in public hospitals, as part of the Medicare Hospital Grants. This includes outpatient attendances and accident and emergency visits. The agreement governing this funding stipulates no cost to the patient and no billing to Medicare.

The Commonwealth provides funds to the States in two broad ways - general purpose payments and specific purpose payments. These general purpose payments are not tied to specific service such as health and can be used according to State needs and priorities. Specific purpose payments are paid for specific services which may vary with changing priorities. In 1994-95 the major specific purpose grant paid to the States was for hospital services, and was provided under Commonwealth-State Medicare agreements. In 1994-95, $5,014 million or 29% of the $17,571 million outlaid by the Commonwealth was paid in specific purpose payments. (9)

Table 7

SUMMARY OF STATE AND COMMONWEALTH GOVERNMENT ROLES AND RESPONSIBILITIES

	COMMONWEALTH	STATES ONLY	MIXED COMMON-WEALTH/ STATE	PRIVATE
Acute Hospital Inpatients	Provision of medical benefits to private patients in public hospitals. Veterans. Partial funding of drug costs in private hospitals.			Private hospitals.
Medical Services	Funding of all or part of all fees charged to individuals.	Funding of medical services provided in community health centred based services.	Joint funding of non-inpatient medical services in public hospitals as part of conditions of Medicare Hospital Grant.	Certain procedures.
Pharmaceuticals	All community pharmacies.		Joint funding of public hospital pharmacies as part of Medicare Hospital Grant.	Some non PBS items.
Community Health, Allied Health and Home Care	Domiciliary care. Veterans. Doctors in community health centres.	Funding of Child and Family Health Service (CAFHS), community health services, community palliative care, drug and alcohol services.	Joint funding of HACC joint funding of outpatient allied health services via Medicare Hospital Grant.	Palliative care private nursing homes.
High Dependency Living Support	Private nursing homes. Home and Community Care (HACC) services Veterans	Some palliative care services psychiatric hospitals.	Joint funding of State funded nursing homes, joint funding of geriatric hospitals and some nursing type patients.	
Mental Health	Fees charged by psychiatrists. Psychiatric drugs via PBS Veterans services		Joint funding of HACC and acute psychiatric services.	Private hospitals.

Source: The Australian Health Jigsaw. Integration of Health Care. National Health Strategy Issues Paper no 1. 1991. (11)

The largest source of non-government funding is Registered Health Benefit Organisations. In 1994-5 $4201 million was outlaid by these organisations ie. 35% of the non-Government expenditure and 10.9 % of the total health expenditure. These organisations now principally cover patients admitted to private hospitals, medical practitioner services provided in private hospitals, private patients in public hospitals, and ancillary services such as dental, physiotherapy and dietetic. The significant trend with these services is the decrease in the proportion of the population holding private medical insurance. This has fallen from 68% in 1982 to 50.4% in 1984 and 38.4% in December 1994. (10) The projections are for a further fall in membership to a low of 31% in June 1997. (10) The reasons include the increase in premiums, the fall in incomes due to the 1990-91 recession, age, state of health and well being. Even with this fall in membership, the total health service expenditure has continued to increase at an annual rate of 11.2% (from 1984-5 to 1994-5). (9) This is due, in part to the fact that the sicker and, consequently more expensive patients are retaining their private health insurance.

This organisational structure has created a number of constraints on both reform and innovation. They include:

- the overlapping of Commonwealth and State/Territory powers creating poor coordination of planning and health service delivery, barriers to substitution between alternative sources of care and ample opportunity for cost shifting. (7) It is unlikely that rational use of resources will follow when the State is able to shift patients who need services from public hospitals to the community. Commonwealth funding will then pay for pharmaceuticals and general practitioner services. Allied health services are usually funded through Home and Community Services (HACC). HACC is Commonwealth funded. Conversely, the Commonwealth can reciprocate by shifting patients onto the outpatients in the public hospital. (44) Scotton has gone as far to argue that cost

shifting will not be eliminated until the National government has complete control of the budget and total costs for the provision of an individual's health care are taken from one budget. (7) Other commentators have lamented the preoccupation with preventing cost shifting at the expense of examining new methods to deliver services to patients (45), within the constraints of the current framework.

- the presence of a substantial private sector which is poorly linked to the public sector, creating further incentives for cost shifting and the growth of services. (7)
- the lack of incentives for increased productivity and efficiency. The largely historically based budgets provide little incentive for a shift of funding from hospital based funding to home and community care or referral to lower cost hospitals or day treatment and day surgery. (11)
- the lack of scope for flexibility and an inability to substitute more appropriate services for currently funded ones. A myriad of programs fund primary medical care, allied health services, community nursing, and home based services include the Home and Community Care Program (HACC), public hospitals outpatients, Medicare, community health services and Child and Family Services to name but a few. There are approximately 60 different funding methods (5) in the health care system. The separation of these services into discrete programs limits the opportunities for flexibility, innovation and integration. (11) At a time when medical practitioners are finding an increasing need for their patients to use such services as podiatry, psychologists, home help and physiotherapy, it is cheaper and sometimes easier, under the current funding arrangements for a patient to organise a specialist visit.(45)
- the lack of scope for change. Leeder has argued that because of the complexity of our health care system there is only "marginal power to change". (46) For example, a 3% productivity saving in a region could be more easily achieved under the current system than the closure of a

local hospital. (46) There is some evidence with the recent Council of Australian Governments' (COAG) reforms that the scope for change is being broadened, with serious consideration given to creating single pools of funding that cross State and Commonwealth Government boundaries. (32)

Attempts are being made to tackle this issue. Innovation is being tentatively pursued as there is a growing realisation that Commonwealth and State Governments need to work together to improve the efficiency of the health care system (47). The COAG reforms have been mentioned above. (32) Secondly, in the 1996-97 Commonwealth Budget measures were announced to combat cost shifting. The Commonwealth Government will reduce, over 4 years the public hospital cost sharing agreements with the States by $312 million and public hospital funding will increase by only 1.6% in 1996-97 instead of the 3.1% as originally promised. (48) Thirdly, measures were announced in the 1997 budget that require medical practitioners to identify services that would be regarded as outpatient services such as pre-admission and post discharge services (using specifically designed account forms). Once this information has been collected the additional cost to Medicare will be gathered from the States.

1.2.6 Efficiency in the Australian Health Care System.

At a time of economic recession, the growth of health care costs has prompted calls for increased efficiency in the Australian health care system. (46,49) As already discussed this has come about because of a number of factors including the growth of technology, consumer demand for optimum health care, and the increasing numbers of medical providers. These factors are likely to become more important as the population ages and more chronic complicated disease appears. Further, there is evidence of substantial variation in medical practice which has been implicated in

aggravating the inefficiencies in medical practice (50) and the health system, overall. As Governments want predictable health expenditure (51), competent medical care, equity of access (based on need, not willingness to pay) and overall cost containment, it is logical that they will want to continually examine ways to deliver health care more efficiently. This preoccupation is not peculiar to Australia alone, with all Western countries examining methods to increase efficiency within their own political and social climate. (52)

In health services research there are two separate definitions of efficiency - technical and allocative. Technical efficiency* refers to the most appropriate combination of inputs to produce a given or agreed output at the least cost. (53,54) Allocative efficiency is the production of the "best" or optimal combination of outputs by means of the most efficient combination of inputs. Optimal output is that output which would be chosen by individual consumers in a perfect market. (53) Leeder defines this concept more simply as "the mix of services best suited to meet the needs of the community". (46) Mooney has argued that this definition needs to include such items as information, reassurance, dignity, respect for autonomy and caring. (49)

It is important that technical and allocative efficiency are both reviewed when examining any new models of health care delivery. Technical efficiency seeks to ask what is the best way of achieving one desired outcome at least cost. Cochrane in his classic book on efficiency and effectiveness (55) argues that there are a number of ways to be technically inefficient. They include inappropriate therapies (eg. the use of expensive drugs as placebos), incorrect place of treatment (eg. treating an acute myocardial infarct at home instead of hospital) and incorrect length

* Often a further distinction is made between technical efficiency and operational efficiency, where the former is expressed in unit of resource and the latter in dollars, both per unit outcome.

of stay in hospital (eg. five days versus one for a hernia operation). (55) The classic technique used to measure technical efficiency is cost-effectiveness analysis. (54) The outcomes measured usually include the unit of effect eg. life-year gained (56) or number of patients with blood pressure stabilised or number who adhered to a medication regime. (57) For example, the cost per life-year gained from nicotine gum as an adjunct to counselling from GPs was compared with mere counselling. (56) In this study, the cost per life-year gained for counselling combined with nicotine gum for 35-39 year old men was $4,748.

Assessment of allocative efficiency requires choices be made about how to derive the "maximum total benefit from the resources at the community's disposal". (58) Allocative efficiency seeks to combine technical efficiency with consumer satisfaction and is reached when the allocation of resources is occurring, as if a perfectly functioning market was available for a service. This is equivalent to producing, with the minimum use of scarce resources, the amount and type of output most desired by consumers. The decision to build a new hospital, purchase dialysis machines or fund new cancer research requires information on the benefits gained from the costs of the implementation of these alternatives. (59) If a decision is made to build a new hospital, then the net benefit to people and society will be lower for the other two options.

In Australia, the coordinated care trials are attempting to improve the allocative efficiency of care provided to complicated, resource intensive patients. (32,33) The overall aim is to provide more consumer responsive health services that can be funded by decreased hospital admissions. A number of strategies have been implemented including pooling of State and Commonwealth Government funds within specific organisations, decreased opportunities for cost shifting and the use of such tools as care plans and service coordinators.

For clinicians, the two definitions of efficiency are important. While their clinical work may be technically efficient (46), developing the right mix of services within a community requires they consider allocative efficiency in resource allocation decisions. To meet the criterion of allocative efficiency, there will have to be a shift from a narrow consideration of resource costs to a more extensive review of how these impact on health outcomes and consumer satisfaction. (46) This approach will also demand that clinicians become involved in the debate around resources, particularly in their own communities. (51,60) After all, they are likely to be well placed to understand the more efficient options for the health needs within their communities. (61) Clinicians must to learn to work with communities in order to decide the most appropriate mix of services to meet a community's needs. (38)

Two further points need to be made in this section. The first concerns the known variation in medical practice. There is evidence of substantial variation in medical practice, including general practice in the area of prescribing (62), reported chronic disease management (63,64,65), preventive care (66) and surgical procedure rates. (67) While some of this variation will reflect diverse populations, differences in health care systems and natural medical practice variation, some will reflect inefficient and possibly inappropriate behaviour. Mooney argues that this variation is the major source of inefficiency in clinical practice, although this is difficult to prove. (50) While it could be accepted that management will vary when the evidence for a particular course of action is unclear, concern is warranted when behaviour is inefficient due to ignorance and lack of knowledge. As an example, the prescription of medication for peptic ulcers has been revolutionised by the identification of helicobacter pylori and its consequent treatment by triple antibiotic therapy. When H2 antagonists continue to be prescribed without consideration of the role of this agent, the variation will lead to inefficiencies and inappropriate behaviour.

The second point that needs to be emphasised is equity. The discussion so far has concentrated on the economic perspective. This is too narrow as "the allocation of health resources is not merely a matter of efficient cost-benefit rationing but above all a matter of human justice or equity where the interests of all concerned - patients, health care professionals and the community have to be given their due". (68) Le Grand and Robinson argue that in any economic analysis, the dual criteria of both equity and efficiency should be applied to a problem, as these are both key elements in our society. (59) It is possible to be highly efficient with resource allocation, but in doing so create inequities. Removing funds from the coronary artery bypass grafting to fund a public health campaign to prevent smoking would in some eyes be deemed inequitable. A vulnerable group (ie the people suffering coronary heart disease) is being treated in an unjust and unequal way. Appelby believes any system will have to balance the dual societal goals of equity and efficiency and, with some countries (eg the USA) this balancing act has been lost with escalating costs and decreasing equity. (69) While accepting this is an important concern in any reform process, this thesis will not examine this issue further, as the hypothesis guiding this study was focussed on efficiency.

This section has argued that there are a number of key issues that confront the Australian health care system. They include the aging of the population with their increased use of health services, the growth of medical technology and the shift to primary care. Complicating these trends is the increasing consumer pressure for optimum care. The plurality of funding sources available for health service delivery creates an environment where inefficiencies can easily occur. Coordination and integration are also difficult to establish under these circumstances. At the same time, society is wanting more efficient health care delivery.

General practice has an important role within the Australian health care system. Any consideration of reform of this area of care must grapple with the current problems confronting general practice. If fundholding cannot alter these problems, then GPs will be unlikely to embrace the idea. The next section explores these problems in detail.

SECTION THREE

GENERAL PRACTICE

1.3.1 Introduction

Over the last six years a number of changes have taken place in general practice. They include the recognition of general practice as a professional discipline in its own right. (70) There has also being a growing realisation that there is a need for formal training for general practice. (70) The formation of the divisions of general practice and the development of practice accreditation are two further developments. (70) These changes stem, in part from a reform strategy developed in 1991 by the Australian Medical Association (AMA), the Royal Australian College of General Practitioners (RACGP) and the Commonwealth Government. These discussions resulted in a joint report (71) which then became the basis for a second document entitled *The Future of General Practice*. (72) There were a number of key proposals that were outlined within both documents and they are summarised in the following box. They were generally aimed at enhancing the quality and status of general practice, improving the integration of general practice into the health care system, enhancing the cost-effectiveness of general practice and supporting the training of GPs. (73)

KEY PROPOSALS FOR CHANGE

- Address the maldistribution of general practitioners
- Provide support and recognition for appropriate postgraduate training for general practice
- Establish local "divisions of general practice" under the control of general practitioners
- Develop (by the profession) an independent, voluntary system of practice accreditation with links to regional divisions of general practice
- Introduce remuneration strategies designed to:
    - reward quality care in general practice more appropriately
    - enhance and encourage the role of general practitioners beyond the provision of individual patient care

NOTE : extracted from *The Future of General Practice*. (72)

Some of the initiatives that have flowed from the strategy have included the Division and Project Grants Program, the Rural Incentives Program, the Better Practice Program, the General Practice Evaluation Program and support for the development of standards for general practice. In all, the total amount available for the Strategy in 1995-96, including the amount available for the Royal Australian College of General Practitioners' Training Program was $238.7 million. (74)

At the time of completing this thesis, there has just been a review of the Strategy completed. (75) The report argued that the divisions of general practice had created important links for GPs with the health care system, the Rural Incentives Program had provided much needed support for country GPs and new funding models/arrangements had been established, with varying degrees of success. (75) While these

developments have been welcomed, there are still a number of important issues that are central to GPs' concerns. The following sections explore these in more detail.

1.3.2 Remuneration

General practitioners are becoming increasingly angry and frustrated at the "inroads" being made on their income and professional base, at the same time as their specialist colleagues are becoming more financially stable. (74) Actually estimating the average annual income of GPs in Australia is complicated by the multiple sources of GP income including Medicare funding, private/public hospital practice (which may be funded either fee-for-service or salaried payment) and salaried teaching and administration. Further complicating the estimation of this figure is the variation in hours worked and the lack of information on practice costs.

Accepting these substantial caveats, there is some information available. In 1996-97, the median Medicare gross fee charged income for a recognised GP was $155,417; for a psychiatrist $169,123; for a consultant physician $205,196 and for a surgeon $255,180. (75) These figures are taken from Medicare claims data. Further insights can be gained on the changes in GP income, using the same source. From 1984-85 to 1994-95 average gross fee income per full time non-specialist increased from $96,539 to $160,452. (14) These figures are in current price terms which does not allow for the effect of inflation. When they are expressed in constant 1989-90 prices, Butler found the 1984-85 gross incomes for full time practitioners would have been $142,388 which is slightly higher than that estimated for 1994-95 of $140,871. (ie 2.2% decrease). (14) Overall, the average annual gross income for full time practitioners fell in constant price terms at a rate of 0.09 % ie. remained virtually at a standstill. The

impact of the lack of increase in real income has been lessened by an increase in the receipt of other sources of Government funding.

This alternative funding has become available through the initiatives of the General Practice Reform Strategy. In 1994-95 the Divisions and Project Grants program provided $38.3 million to the divisions. The Rural Incentives Program provided funds for relocation grants, locums, and continuing medical education and the Better Practice Program (BPP). The BPP outlays started slowly, but have continued to increase, and in February to April 1996 1,804 practices received an average payment of $7,118 or a total of $12.8 million. Overall, this revenue from the BPP constituted 7.7% of that obtained from Medicare for those practices. (14)

It is worth noting that at the same time as GPs' gross incomes have remained static, in real terms, practice overheads have risen. (76) In the most recent study, examining the period from 1994-96, there has been a 8% rise in overheads. (76) On balance, GPs' are economically worse off, particularly if they do not access non fee-for-service income.

How do these changes compare with the specialists? Deeble found that over the period 1984-85 to 1989-90:

- gross GP income, in current price terms rose from $97,800 to $138,900 - a 42% increase
- surgeons income rose from $143,000 to $230,100 - a 60.9% increase
- dermatologist income rose from $167,700 to $279,300 - a 66.5% increase
- obstetrician/gynaecologist income from $165,400 to $259,900 - a 57.1% increase. (16)

At the same time, as GPs are experiencing no real increases in gross income, the difference between GP and specialist income is widening.

1.3.3 Workforce

There are supposed to be too many urban GPs and too few rural GPs. However urban GPs cannot find locums or young graduates to replace them and night locum services are undermanned. (70) What is definitely true is that there is a real rural GP shortage. (77) The recent report of the Australian Medical Workforce Advisory Committee has suggested that in the urban areas there is an oversupply of 4,400 GPs (2,900 full time equivalents) and a rural under supply of 500. (78) They recommend cutting the number of medical graduates to 1000 by the year 2002 and net migration of overseas doctors to 200 per year. They argue that the ratio of medical practitioners per 100,000 population should be 205 full time equivalents. (78). At the current time in Australia the doctor-to-population is 223 per 100,000 population. (79)

Douglas has argued that this notion of an ideal doctor-to-population ratio should be rejected because of the fluidity of a community's needs. (80) Dr Peter Joseph, the President of the Royal Australian College of General Practitioners from 1996-1998 believes there may be a shortage of GPs. He believes that if remuneration changes occur with consultation times, then GPs may opt to change their style of practice and see less patients overall. (81) If for example, greater financial payment is offered for the longer consultations (ie. > 20 minutes) which are often necessary to manage the patients that are part of routine general practice, then GPs may quickly change from the 5-19 minute consultations. This consultation is the current preferred length because of the increased economic benefit due to a more rapid turnover.

A different perspective on the actual number of GPs required is gained when allowance is made for the time GPs are, and may in the future spend on teaching, research, divisional work and coordinated care, and

the increasing feminisation of the workforce. (82) If these factors are added to the analysis, the supposed oversupply of urban GPs becomes even more difficult to sustain. (82) The problem of what constitutes an ideal number of practitioners is compounded by the lack of information. With general practice, information about the number of part time practitioners (ie. those who work less than 10 sessions a week), GPs who work within, both the community and hospitals and the mobility of this group has prevented a true picture being obtained to date. What information is available is summarised in the next section.

In 1994-95, the number of recognised GPs billing Medicare was 17,362 with 13,272 (77%) being classed as full time, 2,971 (17%) part time and 1,119 (6%) (73), according to the Health Insurance Commission. These categories were defined in 1994-95 as follows:

- full time - Medicare annual gross schedule fee income $68,834 or more and approximately 6,500 consultations per year
- part time - Medicare income $16,9330 to $68,833 and up to about 2,600 consultations
- casual - Medicare income $16,932 and up to 650 consultations per year. (73)

Since 1984-85 there has been a 33.5% increase in full time GPs with the largest increases being in capital cities (ie. 35.4%), other metropolitan areas (34.1%) and large rural centres. (33.1%) Small rural areas (29.4%), remote centres (23.7%) and other remote area (19.7%) have had smaller increases. Four further issues are complicating this workforce discussion - overcrowding in the cities, the increasing desire of male and female GPs to work part time, the feminisation of the workforce, and the maldistribution of the GPs.

Urban GPs have been left exposed to the effects of a restriction in specialist training, the growth of entrepreneurial medicine and free access

to provider numbers. This has led to overcrowding of GPs in some cities. Douglas and Saltman found that 30.1% of a self-selected sample of 1662 privately employed general practitioners agreed that there was an oversupply in their area, which was interfering with the quality of care they could provide. (83) While there seems to be a oversupply of GPs in the cities during the daylight hours, these same GPs are still complaining that they cannot obtain locums, replace retiring partners or recruit new graduates for expanding practices. (70)

Secondly the new graduates also not wanting to work full time, arguing that their quality of life is as important as their medical careers.

The feminisation of the general practice workforce has, and will create new priorities and work structures. Female graduates in 1994-95 made up 50.5% of recognised GPs under 35 and are more likely to practice casually and/or part time. (73). Overall 30.6% (ie. 5320 of 17362) recognised GPs are female. The number of female doctors is projected to increase by 12.2 percent by the year 2025. (78) A recent editorial has suggested that a two layer system may be evolving, with young and female GPs acting as gatekeepers to specialist services predominantly coordinated by male-dominated, high-technology (high prestige, high income) medical specialties. (84)

A fourth consideration is the shortage of rural practitioners. This crisis has prompted a number of initiatives including the Rural Health Support Education and Training (RHSET) Scheme and the Rural Incentives Program (RIP). This latter program was allocated 15.3 million in 1994/95. As a further policy response, in 1996-97 funds were allocated within the Commonwealth budget for the establishment of more centres of rural training throughout Australia. Even with these policies, there are problems attracting and retaining GPs in the country. A number of factors have been

suggested including the need to educate children, employment for spouses, lack of time off, lack of privacy and difficulties with colleagues. (85) In obtaining similar incomes to their urban colleagues, rural GPs handle more complicated cases, at more unsociable hours with less backup. On the positive side there is no overcrowding due to an excessive number of GPs in a community, continuity of care and teamwork may be enhanced, and the use of health care networks within a community is assumed. The constant workload does prevent these GPs from becoming effectively involved with initiatives such as the divisions of general practice.(86)

1.3.4 Deskilling and lack of integration

As a consequence of the increasing amount of medical information and sophisticated technology, there is a trend towards specialisation. New professions arise and, as a consequence the generalist role of a GP is put under pressure and their skills eroded. (72) Obvious examples include the growth of palliative care, geriatric care, counselling and family planning. The often quoted example is the decrease in GP obstetric care where, in the June 1995 quarter only 28.6% of recognised male GPs and 31.5% recognised female GPs claimed a medicare rebate for obstetric services. (73) Even fewer would have been actively involved in intrapartum care. This de-skilling has created a number of problems for general practice including a perceived fall in prestige and consequent income. Procedures are reimbursed at a higher rate than actual consulting. Referrals become the accepted method of coping, rather than using other GPs who have the skills and confidence to manage the procedural elements of primary care. Obviously GPs practicing in rural environments are still able to perform a substantial range of procedures and use a broad range of skills. (87)

There is a second significant area where GPs have been excluded and this is the hospitals, particularly public hospitals. This has created a number of problems including lack of coordination and integration (88) and difficulties in gaining access for non-urgent or semi urgent patients. (89) While there have been active moves to improve this interface, particularly with the help of the divisions (34,89) there is still a long way to go. Komesaroff has recently argued that significant changes are required to the relations between hospitals and community based health care providers. (90) He cites such changes as the hospital in the home, day care facilities, home nursing support, and the extension of rehabilitation services.

With the shift to more community based care, shorter hospital stays, same day surgery and more shared care, there is some urgency in developing good, robust systems of communication between the hospital and community sectors. The growth of information technology (IT) is beginning to provide the infrastructure. (90) However GPs are known to be wary of these innovations and are not readily embracing them. (72)

There are likely to be other influences on the GP/hospital interface. As health system reform takes shape (eg. the growth of managed care models of health delivery) and mature, sophisticated purchasers such as private health insurance organisations are established, demand for more comprehensive packages of services that cover both inpatient and community care (90) will rise. It is more than likely that GPs will be integral to these managed care models. The purchasers will demand good communication and coordination as they attempt to provide "seamless" care. The aging of the population will demand improved methods of management across the primary and tertiary interface, in order to provide community and home care for as long as possible. Care plans and use of guidelines may reform hospital management (90), but create pressure on

community services unless proper provision is made in these plans to incorporate GP and community views.

1.3.5 Quality of general practice and of health care

The quality of general practice and the care provided within this environment is becoming increasingly recognised as important. (72,91,92,93,94) The measurement, assessment and evaluation of quality of patient care will be an integral component to any innovation, such as the establishment of fundholding. It is worth briefly discussing quality using the classical Donabedian triad of structure, process and outcome. (95) Whatever indicators are chosen, they must provide enough information to satisfy all the participants - Governments, GPs and consumers. (92) It is important to note that there is a lack of available, robust data (72) from which quality of care measures can be obtained.

For the remainder of this thesis quality will be described as "how closely the result of a health service achieves its fundamental objectives of prolonging life, relieving distress, restoring function and preventing disability". (72)

Under the heading of structure, accreditation of general practice is now very much on the agenda (93) and will begin to shape how GPs are reimbursed. This process has generated a great deal of controversy and has been resisted at every turn. The accreditation process has two major elements - the setting of minimal standards and the development of an objective and defensible method to evaluate these practices against these standards. There are 15 Standards broken into 5 areas - practice services, rights and need of patients, quality assurance and education, practice administration and physical factors. (93) Two substantial studies have found basically that accreditation using these standards is possible,

although there are a number of concerns around some of the instruments to be used. (96,97) It is also important to note that while these two studies found overall, that the bulk of the general practices performed well when compared with these draft standards, a third consultancy commissioned at the same time found a number of discrepancies in after hours care, the provision of sufficient information about the treatment and the use of preventive care reminders. (98) A recent discussion around these conflicting studies has queried whether the differences are real or due to the different methodologies used. (73)

The second area of interest is the process of providing care. The doctor-patient relationship is crucial to quality general practice, but the correct measure is still largely unclear. Most of the studies examining quality in general practice have tended to assess this area using patient satisfaction instruments. (99) The authors of a recent review of patient satisfaction instruments have argued that quality is a complex, multidimensional concept and concentrating on satisfaction alone is illogical, particularly when the robustness and academic rigour is questionable. (100) The importance being placed on developing a robust measure of quality of care from a consumer perspective is evidenced by a recent consultancy to examine quality in general practice and to develop possible assessments from a consumer perspective. (99) The preliminary findings from this study reported that people use a range of attributes in defining what is important to them. Technical competence, interpersonal skills and the individual GP's qualities are considered some of the most important elements. (99) There is other evidence that accessibility, after hours services, skills with children and the attributes of the reception staff (101) are also important. The issue of quality from a consumer perspective will continue to be pursued and explored within Australian general practice.

The third area is outcome measurement. There is no doubt that this is becoming a significant driving force behind the reforming of the Australian health care system. The health outcomes approach primarily concentrates on the results of health service activities rather than the activities themselves. (73) A health outcome is defined as "a change in the health of an individual, a group of people or population that is attributable to an intervention or series of interventions". (102) General practice, in particular the divisions, is currently considering this perspective. (103) The linking of outcomes to general practice care will not be easy. The complexity of the conditions encountered in general practice and the undifferentiated nature of some of the problems encountered will demand careful debate about the appropriate outcome measures to be used. Compounding this consideration is the lack of available data sources and the impact of other services on general practice. A recent editorial has succinctly stated that for a successful re-orientation to health outcomes, epidemiological data and coordinated and integrated information systems will be needed, coupled with a reorientation of clinical behaviour and a shift away from purely fee-for-service payment. (104)

Complementing this shift in emphasis to outcomes is the growth and influence of evidence-based medicine. While there have been calls for GPs to embrace this model (105), some authors have called for more debate and research in defining where this "tool" can be applied in general practice. Sullivan and MacNaughton have argued that each consultation is uniquely different and what is needed are GPs who are able to absorb the evidence and then apply this information appropriately to each person they deal with. (106) Naylor argues that evidence-based medicine offers minimal help in the grey zone of clinical practice eg. a patient presenting with nausea, tiredness, nondescript joint pains and dizziness. (107) In those situations GPs must follow their intuition and wait and see and review.

This section has argued that pursuit of improved quality of care will continue. All areas - structure, process and outcome - will need to be measured in order to focus limited health care resources where the quality of the care can be most effectively improved. This thesis deals with fundholding and whatever reforms are proposed in this area will require the collection and analysis of accurate, logical and easily obtainable quality of care measures.

1.3.6 Consumers and general practice

General practitioners can not avoid the growing consumer influence. They are the gate-keepers of the health care system, the primary point of contact and are visited by over 80% of the population each year. (16) There is evidence that consumers have real concerns about access (101), communication (108) and the length of the consultation. (109) Some groups including the elderly (110) and people from non-English speaking backgrounds have reported that they are not receiving enough information to satisfy their needs. (111) In a recent study among 504 general practice attenders at 25 practices in the United Kingdom, it was found that the main need of this group was explanation and support, not just tests and diagnosis. (112) Overall the study found that patients with a higher number of expectations met reported higher satisfaction.

More and more consumers are wanting partnerships with GPs and shared ownership in solving their concerns. (72) It is commonplace for consumers to visit a number of GPs until they settle on one they like. A substantial number of people will use different doctors for different types of problems. (113) Patients have considerable freedom which they value and will choose other GPs to satisfy their needs, if their usual GP does not provide what they want. Using a series of interviews among 555 people, "multiple"

GP users were more likely to be younger people, females, those dissatisfied with the previous GP consult, more highly qualified and people experiencing poor communication. (114) The authors of this study made the point that for women and for people who have experienced poor communication, changing GPs may indeed actually benefit their care by finding someone who is more competent overall.

A study among a Canberra-based cohort found that people who were of a younger age, had good physical functioning and good self-rated health were significantly more likely to visit a different general practitioner from the one seen previously. (115) In the same study, people who were 50 years and over were the least likely to have multiple doctor visits, a finding echoed by Ward et al. (116) They found that among general practice attendees in three practices (both urban and rural) in Western Australia, whose attendances were compared across two 6 month periods in 1986 and 1987, the high attenders in both periods were the over 65 age group. This was particularly if they suffered from chronic diseases such as respiratory, circulatory and musculoskeletal conditions. The elderly are known to be more satisfied with their care (100), and more willing to stay with one practice.

Continuity of care is desirable for a number of reasons including the opportunity to tackle preventive care, and more rational treatment, investigation and referral. (117) The small amount of evidence presented above would indicate that for some groups, these concerns do not matter. Veale et al have argued that the espoused GP role as the care coordinator and only provider of all of a patient's health care requires further debate. (114)

What is unclear in Australian studies by Veale et al (114) and Pilotto et al (115) is whether this multiple GP usage reflects different GPs in different practices or different GPs in the same practice. If it is the latter, then the linking of people to a fundholding practice with a broad range of skills, rather than a single handed GP would be feasible. It is likely that fundholding, if established would require some form of linkage over a set period of time.

1.3.7 Other Issues

One of the key developments that grew out of the document *The Future of General Practice* was the creation of the divisions of general practice. The divisions have aimed to link regional groups of GPs into a functioning organisation.

They have had a number of objectives. They include:

- improving the integration and communication between GPs and other service providers; including hospitals and community health services
- improving quality of care
- fostering health promotion and preventive services
- ensuring appropriate access to primary health care services
- responding to local, defined needs
- assisting in the development of information management in general practice. (120)

The divisions have been reasonably successful, and have been able to create and absorb enthusiastic GPs in their development. (75,119,120) Currently (ie. May 1998), there are 120 divisions covering over 90% of Australian GPs. (75) They are however, quite diverse in their maturity, infrastructure and choice of projects. A recent analysis of 102 divisional projects completed during 1993-94 that had attempted to improve GP

integration, found considerable variation in the quality of the projects. (121) Most projects achieved their objectives but their real value cannot be ascertained because of the variability of the evaluation. Few projects had completed formal needs assessments. (121)

A second issue is the changing priorities of allied health personnel. These groups are wanting more responsibility (122) and, as a consequence the efficiency and effectiveness of general practice will need to be ascertained in order to provide evidence of the value of GPs. This will require more information and data, a commodity which is lacking in general practice.

Finally there is the changing shape of general practice, which may in the future involve more prevention (123), teamwork (124), and shared care. (35) The change in general practice is reflected in the change in the definition of general practice from 1992 to 1996 (see box below). The early definition describes the discipline as a single entity providing primary, continuing, comprehensive whole-patient care. (72) The more recent definition which has been adopted by the Royal Australian College of General Practitioners (RACGP) has added the words "component of the health care system", "coordinate" and "which integrates current biomedical, psychological and social understanding of health". (125)

DEFINITIONS OF GENERAL PRACTICE AND GENERAL PRACTITIONER

1992

General practice *is defined as the provision of primary, continuing comprehensive whole-patient care to individuals, families and their communities .*

Source : The Future of General Practice. National Health Strategy. Issues Paper no 3. March 1992. (72)

1996

General Practice *is that component of the health care system which provides initial, continuing, comprehensive and coordinated medical care for all individuals, families and communities and which integrates biomedical, psychological and social and environmental understandings of health.*

A ***General Practitioner*** *is a medical practitioner with recognised training, experience and skills, who provides and coordinates comprehensive medical care for individuals, families and communities.*

Source : Royal Australian Presidential Task Force on the Role, Function and Definition of General Practice 1996. (125)

1.3.8 General practice and fee-for-service

In contemplating fundholding as a alternative model for the financing of general practitioner services, it is useful to discuss why fee-for-service, the principal funding method for GPs is causing concern for the funding bodies. The bulk of general practitioner consultations are conducted under fee-for-service arrangements. GP consultations and the resulting services obtained from other providers such as pathologists, radiologists and specialists are paid directly for each patient attendance or service provision.

Fee-for-service, as a payment method has some advantages for Australian general practice. It allows GPs clinical autonomy and encourages them to be available and accessible. (75) It also suits consumers, allowing then freedom to choose the doctor of their choice and reasonably easy access to a GP is created for mobile groups. (75)

On the negative side, this system has created an open-ended, demand driven service in which patients can request what they would like and GPs can maximise their income with short, rapid throughput consultations. (72) There are incentives to organise investigations that may or not be warranted, in order to arrange follow-up and review. (28) This is illustrated with the following example.

> A 45 year male patient presents to a GP with a frontal headache. The history suggests a tension related cause, but the patient is quite insistent that he wants to be fully investigated, instead of being treated with expectant management. The examination is normal. Screening bloods and a CAT scan of the head is ordered and the patient is asked to return in a week. The patient is reviewed in one week, the tests are negative and the headache had disappeared two days after the first consultation. In this situation the GP is faced with two scenarios - either he/she refuses to organise the tests and the patient goes down the street and finds another GP to order the investigations, or he/she agrees with the patient, arranges the tests

and asks for the patient to come back for review. The latter scenario, under a fee-for-service structure is more acceptable and more financially rewarding.

In the recent report from the General Practice review, the mean number of consultations or a full-time GP was in the range of 5908 to 6245. (75) Ten percent of GPs, however are averaging over 10,000 consultations per year. This would suggest that there are over 1700-1800 GPs who are providing an excessive number short consultations, suggesting relatively rapid turnover.

This method of payment is contributing to the 50% increase in non-specialist ordered investigations from 1991-2 to 1994-5. (14) Under this incentive there is no pressure to practice efficiently and effectively. There is no robust way to reward quality general practice. Counselling and preventive care activities are positively discouraged. (72) These latter two activities take time and there is only a small additional reimbursement for completion of these extra tasks.

There is a second aspect that needs to be considered in this discussion. Fee-for-service does not allow for innovation in general practice to occur easily. (126) At a time when widespread changes are occurring in all health care systems in all western countries (49), Australian GPs are prevented from being involved because of their reliance on fee-for-service. Integration of general practice into the wider health care system is a priority for a number of groups (38,72,127,128) and is unlikely to occur while fee-for-service remains the principal GP payment method. Attending meetings and case conferences with other providers is not possible because it results in loss of income. Shared care models of providing chronic care (35) and the creation of primary care teams that GPs would be the ideal person to lead (124) are new options being explored. At the same time country GPs are overworked and undermanned and new

methods of delivering primary care in these settings are being explored such as the use of nurse practitioners (122) and pharmacists.

Other changes are occurring that will create increasing pressure to change the current total reliance on fee-for-service structure. Methods are being sought to decrease the divide between hospitals and GPs in an endeavour to create seamless, more efficient care. (88) Clinicians, including GPs are being asked to be involved in management roles, in order to protect and enhance patient care. (129) Computerisation has yet be widely employed in general practice, as there is no incentive and no funds to purchase this much needed tool. (130)

GPs themselves are beginning to realise that fee-for-service is unsustainable. In a survey of 819 members of the Royal Australian College of General Practitioners in 1995, 42.2% agreed or strongly agreed with the statement "GPs should be able to receive their remuneration in a range and combination of different ways including partial salary, partial capitation and partial fee-for-service". (131) The same question was asked in 1991 of a self-selected Australia-wide sample of 1904 GPs and 49.1% agreed or strongly agreed with this statement. (83)

To summarise, GPs are currently grappling with a number of issues. They include static remuneration, when compared with their specialist colleagues, a changing workforce and a decrease in status due, in part to a process of deskilling and isolation. At the same time, the quality of the care they provide is being more closely watched by consumers and Governments alike. GPs need to examine and trial new models of delivering their care, but the current well-accepted remuneration structure (fee-for-service) is preventing this process from occurring.

1.3.9 Changes in primary care world wide

Before finishing this section it is worth briefly reflecting on what is occurring in other countries in primary care. All western countries are experimenting with health service reform. In the United Kingdom, fundholding has shifted some of the control of health care from secondary to primary care. (132) In Europe, primary care has been touted as a "mechanism for containing technology-driven demand for medical care, for balancing the costs and consequences of care and for fostering self-reliance in individuals ". (132) In the United States, the growth of managed care organisations has led to an increased interest in careers in primary care. (133,134) The reason seems to be that a strong primary care base among western industrialised countries has been linked to lower costs, lower medication use, better health levels and higher population satisfaction. (135) In part, this relates to the role of primary care gatekeeping. (136)

Australia is no different. A substantial part of this reform is focussed on general practice. (70,75,119) What is a priority for general practice is that GPs themselves are part of this reform process and move to exert some control over their own future. (132) The political drive to reform health care to be more efficient, must not be at the expense of quality of care and equity, or lead to a further marginalisation of general practice. GPs are ideally placed to both participate in this debate over reform and monitor the effect of the reforms (within their communities) on their patients. (137)

Managed care which includes the fundholding model is being seriously considered as an option for microeconomic reform. (6,137) Before embarking on this direction in general practice, GPs and the Australian health care system need more information on whether this model would actually create a more efficient and effective general practice. Maynard

and Bloor argue that before health care reform increases its emphasis on primary care, there needs to be clearer articulated policies and improved methods to create efficient primary care (138) and general practice.

The variability in Australian general practice coupled with such caveats as consumer freedom, the plurality of funding sources, the lack of good information management services and the changing GP workforce may prevent wholesale redesigning of Australian general practice. Knowing what has a chance of working in the Australian context (138) requires in-depth information and analysis on which to base any firm recommendations of reform.

This thesis examined fundholding in general practice as one option for Australia. This chapter has provided a brief overview of the issues facing the health system overall and general practice in particular. Fundholding would need to provide a cost-effective solution to some of these problems. The next chapter will look critically at the evidence around fundholding in order to ascertain whether this model has the potential to provide appropriate solutions.

CHAPTER TWO

MANAGED CARE, MARKET REFORM AND THE ROLE OF FUNDHOLDING

This chapter will review the role fundholding may have in the health service reform being considered in Australia. In completing this review, two perspectives must be taken. The first perspective will explore the current move towards reform as an attempt to create a more efficient system, using market based principles. By necessity, this discussion will concentrate on managed care, the generic concept overarching fundholding.

The second perspective will focus on the published literature on fundholding, principally from the United Kingdom, with some comments on the New Zealand experience. Initially, this discussion will cover the experience of the United Kingdom fundholding practices in establishing a budget and the data collection systems required to manage this model. The role of the general practitioners within a fundholding practice will be documented. The discussion will then review the important concerns of quality of care, equity and consumer views to complete this analysis. There will be a final section dealing with the experience in New Zealand in establishing fundholding, as there are important lessons in the New Zealand developments that may be instructive for Australian general practice. This second perspective is partially based on an earlier paper on this subject co-written by the author. (137) In that paper a number of issues are canvassed. The full article can be found in Appendix 1. Where the author of this thesis has made use of his co-author's ideas, due acknowledgment is made in the text.

SECTION ONE

MANAGED CARE AND MARKET REFORM

2.1.1 Introduction

Fundholding general practices hold and manage third party funds for preselected services for a specific group of patients. Fundholding is based on Enthoven's concept of managed competition (139) and aims to transform general practices into purchasers of health care services (such as pathology and allied health services) for enrolled patients, within a regulatory framework. Enthoven formulated his ideas in the 1970s based on his experience of the American health system. His influence subsequently spread to the United Kingdom (140,141) and the Netherlands. (142) Other western countries have followed suit in considering this option. (3,143) In Australia there have been recent calls to examine whether this idea could be used to improve efficiency in our health care system. (7,11,144)

Managed care has grown out of employee-based health insurance established in the 1930s. (139) Over the last two decades the concept has been further defined and developed. In the United States, this resulted in the proclaiming of the HMO Act of 1973. (139) These Health Maintenance Organisations (HMO) were the first of the modern day managed care organisations. Today Kaiser Permanente, a major HMO, provides care for 6.5 million people, suggesting that the process of a well organised system of health care provision can be acceptable and attractive to people. There are 54 million people out of a total population of 265 million in the United States of America covered by 600 HMOs.

Enthoven defines managed care as:

A purchasing strategy to obtain maximum value for consumers and employers, using rules for competition derived from microeconomic principles. A sponsor (either an employer, a government entity or a purchasing cooperative)* acting on behalf of a large group of subscribers, structures and adjusts the market to overcome attempts by insurers to avoid price competition. The sponsor establishes rules of equity, selects participating plans, manages the enrolment process, creates price-elastic demand and manages risk selection. (145)

A number of terms in this definition need explanation. The first is the term *sponsors.* Sponsors are organisations which act for groups of consumers to purchase specific services for this group at competitive rates. They are crucial to the efficient functioning of a managed care system. As part of their role, the sponsors create an integrated framework to coordinate enrolment and prevent biased risk selection (ie. where providers of care avoid caring for patients who would absorb large amounts of resources). These sponsors aim to provide comprehensive care that is focussed on particular patient needs and uses resources efficiently. (1,140) They aim to separate providers in a region "into competing economic units and to use market forces to motivate them to develop efficient delivery systems". (139) In doing this, the sponsors are aiming to introduce "quasi markets" (146) into health care in the hope of producing changes in behaviour of providers, that will lead to gains in efficiency. For example, competitive tendering or contracting by providers forces these groups to offer more appropriate services for people enrolled in these managed care organisations. (147)

The sponsors aim to create *price-elastic demand.* The price-elasticity of demand is the ratio of the percentage change in the quantity demanded of

* in the case of fundholding, a general practice

a commodity to the percentage change in the price of a commodity to bring about the change in quantity demanded. (53) The greater the elasticity of demand for a commodity, the more the quantity demanded responds to price variations. In the case of the managed care organisation, the commodity is the annual fee for the comprehensive health care services provided for an individual. A health care provider or managed care organisation faces inelastic demand if the provider can increase revenue by raising price, and elastic demand if the provider can increase revenue by reducing price. (145) For this process to work effectively among managed care organisations, demand for health services must be so elastic as to force providers to cut their prices to gain more enrollees/subscribers. Enthoven describes five different methods used by sponsors to create price elasticity. They include standardised packages of care, providing information on the quality of care, providing packages of care that are tailored to individuals, allowing informed consumers to choose what suits them and appropriate sponsor contributions. (145)

It is important at this point to distinguish between managed care and managed competition, as there is some confusion around the terms. There appear to be two distinct categories of organisations within this model of health service delivery - "consensus" and "conflict". (148) In "consensus" models all groups concerned, including the patients, doctors, managers, providers and insurers have common goals such as improving the quality of patient care. Examples of the former include fundholding in the United Kingdom. They aim to improve efficiency by such methods as improved integration between secondary and primary care services, substituting nurse practitioners for GPs, and improving the skills of GPs. (149) The remainder of this thesis will concentrate on the "consensus" models and they will be classified as "managed care organisations".

In contrast, in the "conflict" organisations the players have divergent and sometimes incompatible goals eg. insurers who want to make a profit and doctors who want optimum care for their patients. This is the model principally found in the United States. Competition is created between the insurers who aim to provide consumers with packages of care and services that are cheaper than other groups (140) and more comprehensive. The overall driving force is the profit motive. (1,7) For the sake of clarity, these organisations will be referred to as "managed competition organisations" throughout this thesis.

The shift to managed care represents a move to market orientated health care reform. (3) This has occurred as health systems attempt to become more efficient and consumer responsive (3), at the same time as protecting quality of care and equity. Some discussion of why this is occurring and how managed care programs can in some way "re-establish" the internal market is important and informative. The next section looks at this area.

2.1.2 The failure of the best possible market in health care

There is a growing imperative to introduce micro-economic reforms into health service delivery in order to create a more efficient and consumer focussed system. (7) It is important to discuss why the health care system, if left to its own devices does not perform as an efficient market.

A market is created when "potential sellers of a good or service are brought into contact with potential buyers and a means of exchange is available". (150) Buyers freely contract with sellers to purchase the goods, and as a result of competition a structure is created that produces an economically efficient market. (53) Economic efficiency is achieved when the amount and type of output most desired by consumers is being

produced with the minimum use of resources. In a well functioning market, consumers are able to make rational and informed decisions about the choices offered to them.

In the best possible market five conditions are required for maximum efficiency. They are:

1. certainty ie. consumers know what products they want, when they need them and how and where to get them
2. no externalities. Externalities exists for a commodity "when a third party, who is no way involved in the decision to consume (or produce) is nonetheless affected by it, without compensation and payment" (59)
3. perfect knowledge ie. consumers have complete insight and understanding into the benefits of purchasing or not purchasing a product and can clearly decide that the benefits outweigh the costs
4. consumers are able to act free of the advice of the suppliers
5. numerous small providers are available who can compete on the basis of price and do not control the market. (151)

Taking the first condition, the health care market immediately encounters problems. Because the demand for health care is, for the most part, unpredictable and erratic (59,151,152,153) consumers cannot budget for these health care events and are required to insure against future occurrences. Arrow describes this as product uncertainty. (152) As a consequence consumers make payments to insurance companies, in order to create a guaranteed pool of funds that can be used for reimbursement for the costs of health that they consume when they are ill. Arrow also notes that an illness "is associated with an assault on personal integrity" which may have profound ramifications on earning ability. (152) When people are sick, they have very few incentives to curb their demands and currently have been conditioned to expect the use of the

best technological excellence in order to return to a healthy state. (38) They want to do this as soon as possible in order to return to work.

The third party payers provide health care insurance for possible future events that affect a person's health. Health care insurance creates it's own barriers to an efficient market. They include moral hazard, adverse selection (59), alternative insurance schemes, the need for administrative control over expenditure and the associated costs with managing these administrative personnel.

Moral hazard describes the situation where individuals have inducements to behave in ways that "incur costs that they do not have to bear". (150) Within health care, if an individual has comprehensive health insurance there are no incentives for that person and the doctor providing care to practice efficiently. (152) As all the costs are borne by an outside agency, in this case the insurer, information on the costs of a doctor's behaviour and patient demands are not transmitted to either party. There are no price signals to either consumer or doctor of the cost of services provided. The actual cost of medical care for a person who is ill, is determined by the doctor's decision. (152) The insurance companies have only moderate control over the behaviour of the doctor who can order the most expensive investigations, even if the evidence of their effectiveness is unclear.

Adverse selection is a significant problem in that the people likely to seek insurance are those who are at greater risk of being expensive users of the service. As a consequence premiums will rise. Unless there is accurate risk-rating, these rising premiums will discourage low users from joining these schemes. One method to overcome this problem would be to develop a method to correctly risk-rate these low risk groups and adjust their premiums accordingly. (151)

The second condition is absence of externality. In health care, externalities exist because the health of each individual may have an impact on other people. (59) The classic example is vaccination. If a person is vaccinated then they are protected and any one else who is in contact with this person is also protected. As a consequence, if a person decides not be vaccinated, because his/her private costs outweigh the perceived private benefits, then every one who comes into contact with that person is at increased risk of this vaccinated related disease. In this case it is more efficient, from society's perspective to agree that everyone will undergo vaccination as a collective responsibility. Under market conditions this would not have occurred. (59) In this case, governments fund this collective responsibility using public health insurance or taxation. (151)

The third condition is "perfect knowledge". In a well functioning market, consumers have a reasonable understanding of what constitutes good quality (59) and can adjust their purchases accordingly. As a consequence suppliers with poor quality products do not attract business. (154) With health care, consumers have very little or moderate understanding of the treatment offered and, most importantly its effectiveness. Information asymmetry exists. Information asymmetry refers to the fact that consumers often do not understand the complexity of medical management, particularly when they are ill. While there are many other common situations where information asymmetry exists eg. purchasing a car or writing a will, the difference with health care is that mistakes have more dire consequences and the availability of access and advice to other experts is more problematic. This issue is aggravated by the increasingly complex medical practice which they are exposed to and the known marked variation among doctors in assessment and management. (50)

This then prevents the fourth condition being satisfied, where consumers can act, free of the advice of suppliers. The diagnosis, assessment and management of a patient's condition is mostly dependent on the health care providers' knowledge. Consumers, for the most part cannot take part in this discussion, as equals.

The final condition is that no buyer or seller can influence the behaviour of other participants. This occurs when numerous providers compete on the basis of price. There are a number of reasons why this does not occur with doctors, the main health care providers. There is restriction on the entry into medical school and a long period of subsidised training which both rationalises and controls the number of practicing doctors. (152) This creates element of a labour monopoly and decreased numbers of health care providers, particularly for less popular destinations such as rural practice. (154) Finally, in each major urban centre there are one or two main providers of expensive tertiary services. These organisations become monopoly providers who can control the commodities offered by manipulation of the price, access to services and the volume offered. (147)

Donaldson and Gerard argue that there are not many markets that have all five conditions functioning perfectly, but with health care none of these pre-conditions are present. (151) Uncertainty and the associated problems with insurance schemes, externalities, and information asymmetry all contribute to market failure. An unregulated health care market, with no government intervention would not provide an adequate quality of care to all people, at an acceptable cost. In Australia, Governments provide a fall back, in the form of public insurance and subsidies in a number of ways. Public hospitals, where free health care can be obtained, a heavily rebated medical benefits scheme and subsidised pharmaceuticals are obvious examples.

2.1.3 Why consider managed care

The move to managed care is an attempt to use micro-economic reform to create a more responsive, market-like health service delivery. Le Grand describes the development of managed care models of health service delivery as the introduction of "quasi-markets" into health care. (146) The term "quasi" is used because these models differ from the traditional market in a number of ways. Consumers are not active purchasers (152,153), but utilise *sponsors* to purchase appropriate services. These services are purchased within capped budgets or "vouchers" from competing providers. Consumers do not usually contribute their own funds directly. Providers can be either public and private organisations who may or may not be interested in obtaining profits. The "market" innovations include changing the role of the government funded organisations from purchaser and provider to simply that of a purchaser. (7,146) They can purchase services from competing public and private providers, creating a climate where competitive tendering can take place. This allows scope to influence the behaviour of providers to create more appropriate, consumer-responsive services. They can establish provider review and the monitoring of quality assurance. These sponsor-led changes should produce a decrease in the "information asymmetry" that currently exists between consumer and health care providers.

The second element of this reform process is the allocation of budgets or "vouchers" as Le Grand calls them. (146) The budget is fixed but based on some measure of need per person. The sponsors need to purchase services for the enrollees, as efficiently as possible. The actual service mix can be determined by the sponsors and must satisfy the people enrolled with them. How they achieve maximum efficiency is up to the sponsors, but it needs to occur within this fixed amount. How to decide the level of

this fixed budget is a vexed question to be considered in this thesis. In Australia, if capped budgets were established, which combined the multiple funding sources available, then two incentives for efficiency would be created. The sponsors would utilise the principles described above to provide the correct mix of care within this budget and the options for cost shifting would disappear.

There is a third element to this move to managed care, as a means of improving efficiency. Aside from the role of sponsors and the need for fixed, capped budgets, there is a crucial need to create an integrated framework that combines financial and service delivery with detailed analysis of both provider and purchaser behaviour. (145) Improvements in efficiency will not flow with this market based reform without active management of the information obtained from all groups involved. (138) What this offers for Australia is a way to modify the current open ended, demand driven system where there is active personalised review process. Active refers to a detailed analysis of health care provider behaviour with the explicit aim to influence his/her management in order to practice more efficiently.

Fundholding is one example of a managed care model that has been implemented in a number of countries. GPs act as sponsors for a specific range of services for enrolled patients. Determining whether this model has a role within micro-economic reform in Australia requires a detailed analysis of the published literature. It is pertinent to review the evidence around fundholding in general practice in countries where it has been implemented. The two countries where there is information around fundholding are the United Kingdom and New Zealand. The first section deals with the United Kingdom.

SECTION TWO

FUNDHOLDING IN OTHER COUNTRIES

2.2.1 United Kingdom fundholding

2.2.1.1 Introduction

Fundholding as a concept first appeared in 1989 in a white paper entitled *Working for Patients.* (141) This document outlined a list of programs aimed at reforming the National Health Service (NHS). These reforms had two main objectives:

- to give patients, wherever they live in the UK, better health care and greater choice of the services available and
- greater satisfaction and rewards for those working in the NHS who successfully respond to local needs and preferences. (141)

There were seven key measures described. They included

- the establishment of hospitals and community health services as self-governing Trusts who were free to offer their services to any health authority and general practice fundholder
- the delegation of as much responsibility and control to local organisations
- approval for money to move across administrative organisations
- the creation of 100 new consultant positions
- reformation of local and regional management organisations along business lines
- detailed auditing of quality of service and the use of resources
- fundholding.

Fundholding was to be used, within this framework, to create a more consumer responsive and efficient health care system by giving the GPs

financial leverage over providers. (155) There was a secondary objective with the establishment of fundholding and that was to halt uncontrolled prescribing costs. (155) In creating the fundholding general practice organisations, the Thatcher Government had introduced "market principles into a centrally planned and publicly financed health service". (156)

The initial fundholding scheme was introduced in 1991 and had three key elements. These elements were:

- practices could apply to be fundholders if they had more than 9000 patients
- practices received a budget allocation determined on a historical basis. These budgets could only be spent on a defined set of services. For the most part, the original services included all outpatient attendances, hospital inpatient services for a small number of operations, pharmaceuticals, diagnostic tests completed as outpatients and practice staff. This budget was held by Family Health Service Authorities (FHSA) and was paid to Trusts for services completed for fundholding patients. For example, when the practice indicated that payment was due for a specified service such as an outpatient gynaecology appointment, the FHSA directly paid the Trust which had provided the service
- that the fundholders' budgets would pay for the hospital services for their patients and these costs would be deducted from the allocation that the FHSA would have previously received for managing these people when hospitalised. (157)

From 1991 to 1993 the principal components of the budget remained much as described above. (157) In addition, fundholding practices were paid a management allowance. Fundholding practices within these specified services could choose where to purchase care from any Trust. The actual Trusts that were to be used had to be incorporated into an

annual purchasing/business plan. (158) These plans needed to outline how the services purchased would address national priorities such as the goals in the Health of the Nation and the Patients Charter. (159) They also had to indicate how savings within the budgets would be used and outline the required practice training needs and what methods of quality of care review would be established in each practice. (158)

Between 1993 and 1996 the size of the practices eligible to fundhold had been steadily decreasing. In 1996 practices with 5000 patients could hold funds for specified hospital services, drugs, practice staff and community services (155) and practices, with at least 3000 patients could apply for "community fundholding" and hold a budget for community services and outpatient care. Finally the fundholding practices could amalgamate into multi-funds where management resources were pooled. (160) In 1996, total purchasing pilots where GP fundholders hold all the funds for all the patient services were instigated. (161)

English GPs, in the early years embraced the model wholeheartedly. From 1991 to 1995 the number of funds grew from 294 to 2007 and population coverage to 41%. In 1995 the number of practices involved was 2603 which was 28% of the total number of 9100. (155) Ten thousand, four hundred and ten GPs (39% of the total number) were fundholders in one way or another. (155) In 1994-95 total fundholding budgets were 2.8 billion pounds or "9% of all NHS expenditure". (155) Initially the fundholding schemes targeted areas such as non-emergency treatment, referrals, outpatients, and pharmaceutical budgets (159), but in the years 1996-97 diversity in the service coverage had become commonplace (see above). These figures would suggest that the bold step taken in 1991 to establish fundholding had been a success, if uptake is an appropriate measure. There are a number of commentators who have questioned this conclusion. (155,159,138,162,163) The remainder of this section

examines these issues in more detail and finishes with a summary of the other modifications that have taken place in 1997-98 with the change in government in the United Kingdom.

2.2.1.2 Establishing a budget

As has been previously outlined, the services offered within fundholding practices may cover a variety of areas. With the first wave of fundholders, these services included hospital and allied health services, employment of new practice staff and medications. (164) The scheme has been extended to include community fundholding for smaller practices (excluding the purchase of hospital treatment) and total purchasing structures for groups of general practices in a locality (embracing the purchase of all hospital and community-care services). (155,161) In order to establish a funding pool, there is a need to develop a budget for each practice for these specified services. Initially these budgets were estimated historically on the basis of practice expenditure in the previous year. (164) Patient enrolment is a basic requirement for the development of this type of budget.

Historical allocation of budgets has some difficulties. It rewards high costs irrespective of justification and gives an incentive for practices to increase costs to obtain a larger budget in the year prior to becoming fundholders. Efficient and conservative medical practices may be penalised. (164) The Audit Commission report, that examined fundholding in detail found there was substantial variability in average fundholding savings from £3000 to £150,000. They argued that this range suggested "that local flexibility introduces systematic errors into budget setting". (162) In other words the methods used to calculate the fundholders' budgets in a region were influenced by consistent, recurring inaccuracies introduced at a local level. In the NW Thames region, where the highest savings were made the Audit

Commission report concluded that their method of arriving at a budget for a fundholder produced a higher share of funding per capita. (162) The Region where there was the lowest savings adjusted their fundholder budgets by age/sex and compared these figures with all other GPs in the region (162) before arriving at a budget for each fundholder. Dixon et al found that fundholding practices had a higher per capita funding for outpatient and inpatient hospital care than non-fundholding practices. (165) They suggested that the reason for this inequitable distribution of funds was because the fundholding practices were funded on historical budgets, whereas the non-fundholding practices are "funded using a capitation formula". (165)

To overcome inequitable resource allocation by this method, the Department of Health (UK) was considering the implementation of a weighted capitation formula. (166) Such formulas have not so far yielded satisfactory predictions of patients' use of resources. A model using age, sex and temporary resident originated prescribing unit (ASTRO-PU) has been found to account for only 25% of prescribing variation across 90 practices. (167) A second study found that other factors needed to be included in this measure such as night visiting, payment exemption certificates (which are issued for patients who are exempt from paying for medications because they are, or are likely to be, users of expensive medications), the amount of generic prescribing, and whether the practices were fundholders and/or had practice formularies. (168) By using these variables, 42% of the variation in their study practices could be explained. (168) This is an encouraging development, but there is still the unexplained 58%. Sheldon et al found that age and sex could form the basis, in the short term of the development of a budget for acute hospital services, but more information is required in the long term to adjust for differences in local health needs. (164) They made the comment in their analysis, which looked at elective fundholding procedures, that no

"sensible model for the impact of health and socio-economic indicators" (164) could be identified.

These studies represent a move towards a funding formula that is based more around patient and community needs, rather than the behaviour of GP providers. To do this successfully, more information will be needed including practice based needs assessments (169), data obtained from individual cohorts (164) and the use of practice based chronic disease registers. (157) Some consideration will be required of the variation in referrals among GPs to hospital services, the largest component of the current budgets. These referrals are known to vary among GPs, depending on their experience, interests (157) and individual referral patterns. (158) Despite the problems in deriving equitable capitation based budgets, the Health Authorities are moving in this direction.

The development of capitation formulae will have the overall aims of reducing the variation between low and high spending practices and promoting equitable distribution of funds for both fundholding and non-fundholding practices. The Audit Commission report noted that age and gender explained only 20% of actual GP referral patterns, with a further 20% being explained by socio-economic status, patients' health status and availability of hospital services. This latter calculation was deemed too unreliable to be useful in deriving a capitation budget. (162) Currently, Health Authorities are using formulae for inpatient and day case services, and not for outpatient and community services. Interestingly the NHS is considering a change in pharmaceutical budgetary development from capitation funding to a method based on age, sex, chronic illness and cross boundary flows. (169)

There is another concern with the use of capitation formulae - the risk of cream skimming. This has been called the "Achilles heel of market

orientated strategies of health care". (166) It describes the process whereby people with the best health risks are selected for any form of insurance or managed care organisation and the most expensive patients are discouraged from joining.

Research in the Netherlands has found that the most promising risk adjusters for capitation payments for these more expensive patients include prior utilisation, disability, functional health status and indicators of chronic medical conditions. (170) Risk adjusters are used to combine capitation formulae with measures that calculate the costs likely to be generated by these complicated resource intensive patients. The more refined the calculation based on these risk adjusters, the less attractive is cream skimming. (170) In fact if the adjustment is accurate, it may provide incentives to enrol these complicated patients within a fundholding practice. It is possible that substantial savings could be made with these patients who absorb excessive resources. The accurate development of appropriate risk adjusters is a long term challenge, but is one of the key questions for the market orientated changes to health care delivery that are taking place in all Western countries. (169)

2.2.1.3 Data collection systems

The data collection required to develop the initial historical budgets for the first wave of fundholders was supposed to be very comprehensive and included all outpatient referrals, all inpatient and day cases, domiciliary visits, diagnostic services including xray and pathology services and community nursing. (159) GP prescribing information has been routinely analysed since the early days of the NHS and initially these budgets were calculated on the previous year's behaviour. The data collection was vital and as one guide to fundholding stated "responsibility is the key word in fundholding, and no aspect of the work needs it more than data

collection". (158) In the pre-fundholding year, information was required on all out-patient referrals, in-patient and day cases, domiciliary visits, diagnostic services, community allied health staff and child and family psychiatry. (158) Once the data was collected, storage, analysis and feedback was required. Ensuring the data was of good quality was a final important element of this process. (158). This data formed the basis of the practice budgets for a number of years and accuracy was vital.

The logical collection method should be the use of computers and associated information technology. In the Audit Commission report which surveyed 1223 fundholding practices in 1994/95, only 4% were completely computerised, although 22% were considering this option. This leaves 74% who were still to a large extent, reliant on paper data collection methods. (162)

2.2.1.4 The role of the general practitioner under fundholding

There is no doubt that fundholding created new roles for general practitioners. There have been some suggestions that the GPs involved in the first three waves (1991-1993) were the innovative GPs (171,172) who have found the shift to fundholding a natural progressive step in their development. Baines and Whynes (172) have suggested that fundholding practices in the first three waves, when compared with non-fundholders, were more likely to have higher minor surgery rates, higher rates of cervical cytology uptake, older senior partners, lower rates of emergency and elective hospital admissions, lower average age of partnerships, fewer branch surgeries and already some prescribing efficiency with pharmaceutical budgets. This suggests that there were certain groups of GPs who could more easily and quickly develop the skills required to satisfy the quality criteria required by the Government. (172) Even these GPs had to contend with substantial and ongoing challenges, as the

following sections will illustrate.

(a) Administration

There is a great deal of anecdotal evidence that the administration required within fundholding models was substantial. The Audit Commission report has stated that the lead GP spent more time than other practice GPs in meetings, involvement in choosing providers, specifying quality in the contracts, writing fundholding plans, and contract negotiation. (162) The GP often shared this role with the practice fund manager. This radical change was no better summarised than in the following extract taken from *Making Sense of Fundholding. The Business Side of General Practice* - a day to day guide to fundholding for English GPs:

"In this new strategic role, the GP finds himself faced with difficult and complex managerial and organisational issues which are often an uncomfortable 'fit' with clinical practice. There is often a problem of coping with the complexity of the commissioning process and deciding on what basis to make choices. This is not to imply that GPs are incapable of understanding the process, merely recognising that there is an enormous amount to grasp." (158)

Scottish GP's indicated that this increase in management duties reduced clinical activities for doctors who choose to be involved with these administrative tasks. (173,174) This had the potential to reduce list size and therefore, salary derived from clinical activities. (175) Bowie and Harris have argued that fundholding GPs had little training in health care evaluation, contracting and management or financing of secondary care and had, as a consequence spent far too much time in administration and not clinical care. (176)

A more recent study found, using semi-structured interviews among 260 English GPs (out of a possible sample of 323 (response rate = 80%)) and questionnaires (80 of a possible 142 (response rate = 56%)), that significant changes had occurred in workload of these GPs between 1987 and 1993. (177) In responding to the question "I can cope within my normal working hours in most weeks", 16% of these GPs who were in a group practice agreed, compared with 43% in 1987 (taken from a study among the same GPs completed in that year (177)). It is worth noting among this sample that 66% of the group practice GPs and 22% of the fundholding GPs were strongly opposed to fundholding. Interestingly, 38% of the group practice GPs and 28% of the single handed GPs believed that the quality of patient care had improved or considerably improved, suggesting that the fundholding influence had brought some changes to clinical care. (177) Forty three percent of all respondents believed there had been no change in the quality of the services provided.

(b) The GP-patient relationship

There is a second issue that fundholding introduces to a GP - the ethical clash between acting as a patient advocate and a controller of expenditure. Within a fundholding general practice, the GP would make decisions on resource utilisation. Acting as both an agent for a patient and the purchaser of the patient's health services, the GP may be confronted with a conflict of interest, especially if personal income is affected. Within the United Kingdom fundholding practices, any conflict of interest had been diluted because any savings made within a budget were to be put back into the practice (eg. upgrading premises) or into new services for patients. (157,158,162) It is worth noting that upgraded premises can indirectly benefit a GP. If the practice is enhanced, then as a capital asset, its value rises and it may obtain a higher price when sold. Secondly an

enhanced capital asset can be used as collateral to borrow against.

This issue of the clash of two roles for a GP has stimulated a substantial debate. Black (178) has argued that decisions about allocation of resources, within a health budget are best made by health professionals, because they are most aware of current options in health care and of how to choose between them. Toon states that these fears of a clash for the GP between these two roles "are misguided. Doctors cannot avoid taking account of the wider costs to a society of their actions". (179) In his essay he argues that GPs have a vague notion of cost of treatment and need to consider the costs of their action on scarce resources available to other patients and society. He believes that a great number of the consultations/contacts in general practice are in the grey area (107) ie. not well defined, with vague signs and symptoms. Management requires a GP to assess and interpret these vague symptoms and arrive at a judgement of how best to treat the patient. In these situations a GP who understands the debate about just allocation of resources and has clearly defined policies will be able to make more informed decisions about the correct options. He finishes with a caveat that GPs must cultivate the skills required to act fairly without bias in making these decisions. (179) A second caveat not mentioned by Toon is that this "acting fairly" must not interfere with patient autonomy. If the correct policy option for the GP is not to investigate a non-specific condition such as abdominal pain, but the patient feels this is warranted, then they should be able to seek, within reason a second opinion.

Other authors have agreed it is possible to act with these dual roles, as long as appropriate structures are created to prevent conflicts of interests. (180) The opposite view can be found. A primary care practitioner working in a Health Maintenance Organisation finishes his paper on this topic with the statement "I believe that the gatekeeping role has been expanded, for

fiscal and administrative reasons beyond what can be carried out ethically. The chronic awareness that one is overcommitted clinically and ethically is a constant source of uneasiness and worry". (181)

In the United Kingdom little work has been done on the effect of fundholding on the GP-patient relationship. (159) One lone study among Scottish fundholding practices found that patient satisfaction was maintained by the fundholding practices. (182) There has been minimal research in other managed care programs, (183) although there is some evidence that physicians who work in managed care models in the United States do restrict patient access to medical services in order to reap financial gain. (184) A systematic review of managed care organisations in the United States found that there was a decrease in patient satisfaction in services, but higher satisfaction with costs. (185) This area is in need of urgent research.

(c) General Practitioner clinical behaviour under fundholding

It was assumed that the creation of the fundholding scheme would lead to changes in GP behaviour that would eventually produce improvements in efficiency. There is minimal evidence that this occurred in the two areas where the most of the research has been published - prescribing and referrals.

Prescribing

There have been a substantial number of papers published on prescribing. One of the main objectives of the introduction of fundholding was to decrease the spiralling pharmaceutical costs. (142) In 1992-93, 9.7% of the NHS budget (3.6 billion pounds) was spent on prescribing and, in the period from 1983 to 1993 this expenditure had increased by 80%, after adjustment for inflation. (156) There is evidence that fundholding practices

did reduce their prescribing costs. (186,187,188,189,190,191,192,193) In the most complete analysis of the effect of fundholding on prescribing, Harris and Scrivener reviewed items and cost data for all general practices in England from 1990-1996. This review examined the first five waves of fundholding. In Table 8 the changes per wave of fundholding and non-fundholding are compared for annual net ingredient cost (£) per prescribing unit. As can be seen, the increase over the six years for non-fundholders was 66% and for fundholders was 56-59%. (192) What is fascinating is that for each wave of fundholders, there is a small reduction in the pre-fundholding and in the first year of the fundholding and then a decrease in the savings in the second and third year. (192)

There is further evidence that fundholders did prescribe more cheaply than non-fundholders (in 1993/94 the fundholders average expenditure per 1000 standardised prescribing units was approximately £46,200 compared with £48,700) but due to the variability in the practices the statistically significant differences were between wave 1 and the non-fundholders. (162) The main source of these savings was not in number of items prescribed, but the lowering of the average cost per item - by the use of more generics. (188,190,193) Similar findings were revealed in a study among Oxford fundholders. (186) The authors suggested that the reasons for these savings may include artificially inflated prices in the pre-fundholding year that led to inflated savings and the possibility that all possible savings were made in the first year of fundholding. (186) A more recent study has found similar results for 841 practices in the Trent region, with short term savings being obtained in the first year of fundholding. (192)

Table 8

ANNUAL PRESCRIBING COSTS FOR ALL GENERAL PRACTICES IN ENGLAND BY FUNDHOLDING STATUS COMPARISON OF NON-FUNDHOLDERS AND EACH WAVE OF FUNDHOLDERS

	ANNUAL NET INGREDIENT COST(£) PER PRESCRIBING UNIT* INCREASE OVER SIX YEARS (%)
Non-fundholder	65.9
Fundholder	
Wave 1 (from 1991-92)	55.5
Wave 2 (from 1992-93)	55.7
Wave 3 (from 1993-94)	58.0
Wave 4 (from 1994-95)	58.1
Wave 5 (from 1995-96)	59.0

* Prescribing unit: A denominator adjusted by age. Patients aged 65 and over count as three units and all others count as one.

Source: Harris C, Scrivener G. Fundholders Prescribing Costs: the first five years. British Medical Journal 1996; 313: 1253-4. (192)

To decrease the variability in GP prescribing behaviour in order to be more efficient, interventions are required to gather information, compare GPs across practices and evaluate any changes. There is a small amount of evidence that fundholding GPs established interventions to change their prescribing behaviour in order to improve their efficiency. In Table 9, adapted from the Audit Commission report (162), prescribing utilisation reviews, formularies, and guidelines were developed with decreasing enthusiasm across the five fundholding waves. For example, review of the GP prescribing in the first wave was reportedly completed by 83% compared with 58% in the fifth wave fundholders. Similar results are found with the use of formularies and guidelines. The most common method adopted was the use of utilisation review with 73% overall employing this method. What is unclear from these figures is the rigour and energy that went into these processes, although the first wave of fundholders were obviously more enthusiastic. (162) This may explain the better results obtained with the first wave of fundholders in decreasing prescribing costs.

A number of caveats are required with this analysis. Over this period, pharmaceutical costs actually rose for all fundholding practices (155,192), providing evidence that other pressures are exerting profound influences on prescribing in general practice eg. pharmaceutical companies. Secondly, non-fundholding practices (155), including a single handed practice in Lincolnshire (189) were able to make savings in their pharmaceutical budgets. Bateman et al found that among 459 non-fundholding practices, the use of an incentive scheme resulted in savings of 1.54 million pounds, with 102 of 442 practices (23%) achieving their target savings. (195) Thirdly, other interventions were also taking place at the time of the establishment of fundholding (155) including the development of educational interventions and the propagation of educational material to all GPs. In a recent published study the

development of a district-wide formulary created estimated savings of £3000 per doctor or £150,00 for the district. (196)

One of the major aims in the fundholding initiative was to halt the rising pharmaceutical costs by changing the prescribing behaviour of participating GPs. (155) The evidence that, as a direct consequence of fundholding this occurred, is unclear. Keeley in a recent editorial has argued that fundholding has not been able to contain the rise in prescribing costs. (197) Prescribing is a complex process and it was naive to assume that fundholding *per se* would suddenly create more efficient, cost conscious GP prescribers. The complexity of the process is evident when a questionnaire survey of non-fundholding GPs found that incentive schemes, guidelines and the influence of hospital specialists all combine, in a complex manner to influence general practice prescribing. (198)

Table 9

INTERVENTIONS USED TO CHANGE PRESCRIBING BEHAVIOUR IN THE FUNDHOLDING PRACTICES SEPARATED BY WAVE

Intervention	Fundholding					All Fundholders
	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Waves 1-5
Reviewed prescribing as a practice yes (%)	83	82	78	69	58	73
Monitored prescribing against a formulary yes (%)	47	42	40	36	29	38
Practice agreed guidelines with acute provider about hospital prescribing since becoming fundholders yes (%)	54	53	52	41	33	46

Source: Survey of fundholding practices 1995/96. Audit Commission Report. (162)

Referrals

A number of studies have examined GP referrals. Coulter and Bradlow compared GPs who were fundholders and those who were non-fundholders in the Oxford region from 1990 to 1992. They found that there were no significant differences in referral rates, both locally and across regional boundaries between both groups. (199) In fact, in the second phase of the data collection completed in 1992, the referral rates increased in both groups - for fundholders 107.3 per 1000 population per year to 111.4 and for non-fundholders 95.0 to 112.0. As a result of the study, the authors made a number of interesting points. The referral rates varied quite substantially in all practices across the data collection periods (indicating how difficult budget predictions can be in the area of referrals for secondary care) and in the first two years of fundholding there was no evidence that there had been a shift to primary care from tertiary services. (199) In a small uncontrolled study in Scotland, it was found that although there was a downward trend for outpatient, inpatient and day case admissions, there were substantial variations between, and within, practices across the study period. (200)

In the continuation study of GPs in Oxford (see above (199)), outpatient referrals (standardised per 1000 population a year) to specialist clinics for fundholders increased from 107.3 to 115.4 (over the period October 1990 to January 1994) and non-fundholders increased from 95.0 to 120.3. This represents an increase of 7.5% and 25.3 % respectively. (201) Referrals to private clinics (where it would be possible to make savings within a NHS budget) actually decreased in fundholding practices and increased in non-fundholding practices. They again found no evidence of a shift away from tertiary services. This is reassuring, in that patients who were enrolled with fundholding practices were not being deprived of specialist care. (201)

To summarise, there is a small amount of evidence that fundholding influenced GP prescribing and referral behaviour. This came about because of the lack of use of long term strategies among fundholders, to influence GP behaviour to produce savings. This would suggest that more directed interventions are needed to complement the fundholding budgetary management that was aiming to improve efficiency.

2.2.1.5 Quality of health care

With any innovation, it is important to monitor the quality of health care provided. Unfortunately, there has been minimal evaluation of fundholding in the United Kingdom, from a quality perspective. That information which is available is discussed in this next section under the classic Donabedian triad of structure, process and outcome. (202) Structure refers to the "attributes of the settings in which care occurs"; Process describes what occurs in "giving and receiving care" and Outcome refers to the effect of health care or an intervention on patients or a population.

There were structural changes as a result of fundholding. In 1994/95 fundholding practices spent on average 60% of their savings on items including office furnishings, equipment and building to improve their surgeries. (162) As the savings in this year amounted to 95 million pounds this is a substantial injection of funds into the "structure" of general practice.

Measures of the processes of care within the fundholders were developed (173,174,199) and included patient satisfaction and length of consultation. In one of the first reports on fundholding in Scotland where patient satisfaction was the measure evaluated, during the three year period of 1990-1992, it was found that high levels of satisfaction were sustained. However there was "a tendency to lower recorded responses in both "very

dissatisfied" (not significant) and "very satisfied" (significant)". (173) A more detailed study in these same practices examining patients with a number of marker conditions (eg. pain, skin problems, asthma, angina, diabetes etc) found that overall the consultation length did not change during the introduction of fundholding. (182) Unfortunately, these early studies in Scotland were uncontrolled and have been criticised for this methodological flaw. (155)

Waiting times for elective surgery decreased for patients from fundholding practices (162, 203), but actually attributing this improvement to fundholding *per se* was difficult. At the same time as fundholding was established, the Health Authorities had also been asked to decrease these waiting lists. (142) There is no doubt that fundholders had the potential to actively reduce the waiting times by threatening to withdraw funds, but the evidence that they adopted this approach is mixed. For example, with gynaecology outpatient attendances, the percentage who set a waiting time of 0-6 weeks was 12% across all five waves of fundholders and the percentage who set a 13-18 week waiting time was 43%. (163) This would indicate substantial variability in the use of the purchaser power available to the fundholders. It is important to note that non-fundholding practices have also reduced waiting lists. (204) However, there were anecdotal reports that fundholders did exert their fiscal power in a local region to bring about small changes in outpatient services. (161,204,205) Richardson argues that as a result of fundholding "radiology, ultrasonography, colposcopy and minor and day case surgery have been developed on site". (205)

A much touted example of the power of fundholding to bring about process improvements was the creation of more specialist clinics away from the hospitals and nearer to the patients. The Audit Commission found in a survey of 2,149 practices (both fund and non-fundholding

practices) that dietetics, physiotherapy, community psychiatric nursing and chiropody services were more common in fundholding than non-fundholding practices. (162) For example, dietetics services were provided in approximately 56% of fundholding practices compared with approximately 42% in non-fundholding practices. Specialist clinics were also more likely to be based at the practice, if it was a fundholder than a non-fundholder (approximately 52% - non-fundholding compared with 60% fundholding). Dermatology, orthopaedics, gynaecology, psychiatry and ear nose and throat (ENT) were the clinics where substantial differences were found. While these changes have improved patient access, a number of commentators have questioned whether this was a cost effective use of resources (35,207) and whether they provided real "clinical value". (163)

Other processes that improved included more responsive tertiary hospitals and consultants (208,209) and improved discharge letters/summaries. (209) There has been a reduction in outpatient follow up visits and improved access to tertiary services such as non-obstetric ultrasounds and computerised tomography scans. (210) A recent editorial has summarised these successful process changes as reflecting GP's day to day concerns. (211)

To summarise, there is no doubt that fundholding created substantial positive changes between the GPs and the providers and allowed isolated GPs to become more involved with the NHS at a wider level. As a consequence, patients benefited from improved processes of care.

The effect on outcomes is more problematic. In fact, as stated earlier there has been little attempt to measure outcomes. Howie et al reviewed patients in 6 Scottish fundholding practices who presented with pain during 1990, 1991 and 1992. Fundholding was introduced to these practices in 1990. (212) They examined a number of measures of process

(referrals, the number of investigations or medications prescribed) and only one outcome measure. This measure was called "patient enablement". The mean number of prescriptions of pain relieving medications remained stable over the 3 year period. There was a fall in hospital referrals from 31% to 13% and investigations from 31% to 24%. They calculated the savings with this decrease in referrals over the 3 years of £27 per patient presenting with pain. There was a general shift from "much better" to "better" in the enablement score from 1990 to 1992. This study has been criticised because it was uncontrolled and the actual effect of fundholding can not be separated from the other reforms being initiated at this time. (155)

There is minimal information on provider or hospital care (159), although a questionnaire survey of fundholders in 1993 found that they were more likely to select hospitals for their elective general surgery where consultants inspired more confidence, had easier telephone access and superior patient convenience. (213) A small study has documented a fundholder working with a local health authority to scale down a low quality service. (214)

The Audit Commission report had quite categorically stated that real improvements in outcomes will not come about until a number of changes within fundholding practices take place. (162) These practices needed to take a wider view of their purchasing role, to encompass national and local health priorities. There needed to be a maturing of the contracts between Trusts and the consultants employed within these Trusts to stipulate certain required standards. The employment of such "tools" as the use of audit and the incorporation of evidence based medicine into decisions regarding referrals and management (162) needed to be promoted. The latter would have required the development of guidelines (215) and

protocols developed with local specialist, allied health groups and local Health Authorities public health departments. (155)

There is evidence that these changes are occurring. Diverse primary care organisations are developing, based around managed care models. They range from locality commissioning (216,217,218), which establishes working "collaboration between practices covering geographically defined populations" without actual holding and managing funds, to total purchasing pilots. (161,219) Health authorities, key GPs, fundholders and non-fundholders are working together to create organisations and service provision that are focussed on the local environment. (218,219)

2.2.1.6 Equity

One of the main concerns with the development of fundholding is that, with the drive to be more efficient, equity would be compromised. Equity here refers to the equality of access to a comprehensive range of services for all patients no matter what their income, disease condition, place of residence and sex. (57) It has been noted that fundholding practices tend to be from more affluent areas and exclude inner cities. (162) There is evidence that per capita allocation to non-fundholding practices as a percentage of the per capita allocation to fundholders varied from 59% to 87% for inpatient and day case care, and for outpatient care, the corresponding values were 36% to 106%. (220) The authors of this study argued that the differences were due to the fact that fundholding practices were funded on a historical basis, whereas the non-fundholding practices were paid directly by the Health Authorities who were funded using a capitation formula basis. In other words, the historical funding model used to determine budgets for fundholding practices tended to provide an inflated estimate of the monies required for these practices. This analysis has been criticised because of incomplete data, particularly for the non-

fundholding practices, and the use of different assumptions in calculating the expenditures for fund and non-fundholding practices. (221)

There has been a great deal written about the possibility of a two tiered system, developing within an Area Health Authority where both fundholders and non-fundholders are found. "Two tiered" refers to the potential development that patients from fundholding practices may receive better care than non-fundholding practices due to Trusts wanting to attract more fundholders as active purchasers. The evidence is scanty (157,222) and anecdotal. (223,224) In the most detailed study, 10 fundholding practices with 108,300 patients were compared with 22 control practices with 159,900 patients. Outpatient referral rates and waiting times for orthopaedic services for the period between 1991 and March 1995 were used as comparative indicators. The study found that fundholders increased their referral rates by 13% and non-fundholders by 32%, when compared with the pre-fundholding year. Waiting times (ie. percentage seen within 3 months) were lower in fundholding practices overall, particular where hospitals had established special clinics for fundholders. (222) Patients of non-fundholding practices do not seem to have had less access to orthopaedic services, although where a hospital had established a special clinic for a fund holder's patients, they experienced greater delays. The caveat noted in the discussion of these results is that there was no information on the case mix characteristics of these attendees and actually deciding whether the differences are detrimental to the patient was impossible. (222)

The issue of cream skimming is a further concern in this area within a fundholding model (166) and has been discussed earlier.

The evidence is incomplete regarding the effect of fundholding on equity,

but there is a worrying trend. One commentator has suggested that active intervention will be required to continue to provide an equitable NHS, rather than allowing the fundholding process to drift along unchecked. (43)

2.2.1.7 Efficiency

Efficiency has been defined in an earlier section (Chapter 1 – section 1.2.6). A comprehensive understanding of the efficiency gains obtained from fundholding requires a comparison of costs incurred and benefits obtained. Unfortunately most of the debate has been around costs and little around benefits as the next section will illustrate.

The budgets for the initial first wave fundholders were mostly to cover hospital care and prescribing. For example, in 1994/95 the average budget per person for hospital and community was £77; for prescribing was £62; for community nursing was £15 and for practice staff was £9. (162) In fact, 47% of the budget was for hospital services and 38% for prescribing. The savings in the same year principally came from the hospital budgets (70%) and prescribing budgets (29%). Overall, the savings amounted to £95 million or 3.1% of the total fundholding pool. (162) The key question is whether these savings were large enough to balance the transaction and infrastructure costs associated with the establishment of fundholding in general practices throughout the United Kingdom.

Fundholding practices required extra administration. (158,203) An average fundholding budget is approximately £1.7 million with about 7% (or £120,000) earmarked for new administrative staff. (162) The average number of extra staff required for a fundholding practice was approximately 2 whole time equivalents. In total, for the years 1990-1995 the management costs for fundholding practices were £165 million. (155) The transaction costs for the Health Authorities and providers needs to be

considered. The transaction costs include the time for administration of the scheme, invoicing, auditing, accounting, management etc. The Audit Commission has estimated that the cost to a Health Authority was £6,000 per practice. (162) Petchey quotes a figure of £14,000 per practice for the transaction costs for providers ie. the Trusts. (155)

A third important consideration is the opportunity cost of the Health Authority, providers and most importantly the fundholding GPs. As has already been described above, the extra time required by these GPs is substantial, varying from 8 to 25 hours per week. (155) Finally, there is the computing infrastructure which is mandatory for fundholding practices. The Audit Commission found that the total establishment costs which includes all the items discussed above to the end of 1994/95 was £232 million. (162) The savings from the fundholding practices that could be calculated amounted to £206 million. The question remains whether this deficit can be outweighed by the improvements in the quality of care that occurred because of fundholding or by the costs offsets downstream.

Complicating this analysis of gains in efficiency is the fact that a number of other changes were taking place within the NHS at the same time. They included the Patients Charter (225), parallel reforms in community care, and changes in prescribing brought about by other influences eg. educational interventions. (195) Le Grand states that "there may be a Hawthorne effect from these reforms, with any improvement in efficiency resulting from the process of change itself rather than the specific form the changes have taken". (225) In other words, has patient care improved because of the increased funding and managerial reform to the NHS and not specifically because of fundholding?

The important question is whether the introduction of fundholding has created a means to an end ie. improvement in economic efficiency. Have

the purchasers used their bargaining power to improve the delivery of patient care? Is there any evidence that competition between providers has occurred? On the service or provider side, there is minimal evidence of these changes occurring. In most areas there are dominant Trusts with long-standing links with fundholder purchasers. (138) There is little evidence of these GPs consistently challenging these providers, using such tools as audit and monitoring of service quality. (162) The use of evidence based guidelines and protocols is marginal, (162) yet their use is important in any drive for improved and more efficient care. (215)

Provider bias still exists within the NHS, with large tertiary hospitals able to manipulate the purchasers to achieve their needs and funding priorities. (138) On the purchaser side, the Audit Commission has found that only a few fundholding practices are "turning the world upside down" ie. developing management capabilities, working with their communities, and developing methods to audit how providers work. (162) Most of the fundholding practices have opted to concentrate on their own patients and their needs. This would tend to support Ashton's view that simply separating purchasers and providers as in the UK has not created an efficient "quasi-market" system. (226) The actual development depends on the environment where the contracting is developed. She argues that the environment in the UK is not well enough organised to foster the development of a true market. (226) Whether this environment would have changed as the fundholders matured and possibly become active, discerning purchasers of care (158,162), is unclear.

Secondly, to successfully create efficient internal markets, sound regulatory frameworks (138) and stable information systems are required. The former has not been well established in the UK. (138) The latter is poorly developed, beyond the simple accounting required to manage a budget. The attempt to develop an internal market has emphasised, for

the NHS the necessity for improved information about the use of services, costs and outcomes. (138)

A final and important point is the energy required by the purchasers and providers to respond to the challenges inherent in creating the market and making it work for the patients and the system. The evidence is that many English GPs are disillusioned by the process (177) and wanting to concentrate on their patients, not the complex process of fundholding. There is some concern that general practice may not be up to this challenge (162, 227) and may require assistance from management (162), public health (156), and evaluators.

There is some evidence that fundholding created improvements in access to services, more local clinics, more focussed prescribing, decreased waiting times and more appropriate ordering of diagnostics tests. The technical efficiency of fundholders, when compared with non-fundholders in some areas, (eg. prescribing), has probably improved. Whether allocative efficiency has improved is more problematic. It is likely that a number of strategies will need to be adopted for gains to occur in this area. The required strategies are summarised in the following box and have been adapted from the recent Audit Commission report. (162) As both Ham (156) and Maynard and Bloom (138) argue, the reforms that began with the paper *Working for Patients* (141) were not well defined and will continue to evolve. This evolution is discussed in the next section.

SKILLS REQUIRED TO FACILITATE FUNDHOLDERS BECOMING EFFICIENT PURCHASERS

ACTIVITIES
Employing regional needs assessments
Purchasing based on specific outcomes
Challenging and auditing consultants care
Not purchasing inappropriate care
Making use of public health and other specialist knowledge
Reviewing variations in partners' referrals and prescribing decisions
Gathering and comparing information about providers
SKILLS NEEDED
High level management
Strategic vision
Negotiation
Audit/ research
Credibility and respect with specialists
Astute selection of partners suited for co-development of programs
Analytic skills

Source: Adapted from The Audit Commission Report 1996 (162).

2.2.1.8 Recent developments under the new Labour government

It is important to note that in the United Kingdom, following the Labour election victory in 1997, a number of variations around the original fundholding model have arisen. These new models are moving towards a collaborative relationship between purchasers and providers which would rely on the tools of evidence based medicine and population-centred and patient-focussed purchasing. (156) Ham argues that, if within a

fundholding model the intimate knowledge that GPs have of their communities could be combined with the deliberate, planned approach of health authorities, then there is a good chance of improved health outcomes. (228) A recent editorial has suggested that this is occurring with general practitioners, both fund- and non-fundholders, establishing long term relationships with providers and health authorities. (227)

The variations that have arisen include:

- community fundholding, where small practices can hold funds for allied health and nursing services
- total purchasing, where GPs in a region hold funds for all hospital and community services. (138,161) There are over 90 pilots being developed, of which 53 are being evaluated. (161) All involve some degree of collaboration between GPs and health authorities. This model has the potential to develop more efficient health care by integrating strategic health authority purchasing with GP local knowledge. Further, there is scope for innovation and alternative service delivery to prevent expensive hospitalisations. Already, GPs in these total purchasing models are using managed care techniques, such as review of specialist's behaviour and increased primary management for patients previously referred for specialist care. (227)
- locality commissioning which is a generic term to describe a collaboration of local GPs who work together to influence the regional health authority's purchasing. (216,217,218,229) This model had been developing outside of fundholding practices since 1993. (230) In one region of the United Kingdom, 200 non-fundholding practices have been able to establish a successful working relationship with the local purchasing health authority. They have linked over 200 GPs to improve access to quality secondary care and provide ongoing pressure to ensure provider quality of care is maintained. (231)

While these fundholding variations will continue to function, it has now been confirmed there will be a dismantling of fundholding and a move to Primary Care Groups. (232) These groups will be accountable to Health Authorities and will be used to link local GPs, community nursing and social services and be focussed on the specified needs of the region. (232) The Primary Care Groups will be a natural progression of some of the changes described above, particularly the locality commissioning models.

Shapiro has recently looked in detail at these developing locality commissioning models, using a series of case studies. (218) Diversity is the key, although the underlying agenda is to merge the planning and "strategic skills" of health authorities with local GP insights into community need. (156,218) In Belfast, 8 GPs have been appointed to an internal management board that advises the health authority on decisions around health services. The GPs have equal power to the health authority's executive directors. In Nottingham 200 non-fundholding GPs use an executive to advise the Nottingham Health Authority. In Wiltshire, GPs are working with social agencies to develop projects aimed at gaps in services. One successful idea is link workers. They are practice based and have two roles: that of care management and liaison. At the time of completing this study there were 26 link workers covering 55% of all Wiltshire GPs. (218)

These developments are providing increasing evidence that the new Government in the United Kingdom is keen on experimenting, to find which methods of GP-led purchasing will be the most efficient and allow a more focussed regional approach to providing what patients actually need. (161)

2.2.1.9 Conclusion

Fundholding in the United Kingdom began as an idea with little planning and/or piloting. The main stated aim was to allow the money to follow the patients. In an attempt to introduce market-orientated reforms, substantial transaction costs have occurred. There is some evidence that in the process, equity has been compromised, although not to a large enough extent to cause a major outcry. Some new improved services have been created for patients. There has been a slowing of rising pharmaceutical costs, but no decrease. There has been a devolution of power to primary care, particularly GPs, both within and without fundholding and a challenging of the management of the interface between primary and tertiary services. There is little evidence that quality of care has been either improved or compromised and there is minimal evidence that the behaviour of fundholding GPs has changed. The evidence for improvements in efficiency is unclear, particularly in the area of allocative efficiency.

Protection of equity of access would have been necessary or as Petchey has argued "fundholding could provide a further demonstration of the inverse-care law". (155) Cream skimming would need to be prevented.

What is definite is that fundholding has provoked a subtle shift in power within the NHS, generating new policy directions around a primary care led NHS. This change in policy direction is creating a different pattern of primary care organisations which are, and will be very dissimilar to those that were present before the reforms began. (219,227)

As stated above, fundholding will be progressively dismantled. (232). Primary Care Groups are to be established, arising in part from such groups as the locality commissioning groups. The actual end point of this

new direction is unclear, as is the effect of this type of model on efficiency, quality of care and equity in the NHS. (161,219)

2.2.2. Fundholding in New Zealand

In 1991, the New Zealand Government proposed a major restructuring of the health system. The proposals basically aimed to separate the purchasers and providers. Four Regional Health Authorities (RHA) were established who would purchase services for people within their region, using contracts with providers, both public and private. (233) There would be pooling of funds for primary and secondary health services within these regional health budgets. They would be given capped budgets, determined by a capitation formula. A number of competing providers would be developed and include Crown Health Enterprises (CHE), small community trusts who could opt to run their own hospital and other services, voluntary non-government organisations and private general practitioners. (233) It is in the latter group where fundholding models have developed. They were allowed to do so, as a key means to control pharmaceutical and laboratory costs. (234) These changes took two years to be instituted and actual "live" pilots began in July 1993. It is important to note that these regional health budgets combined primary and secondary resources allowing more opportunity for flexibility and gains in efficiency across the primary and secondary interface. (233)

In 1997, there was a change in Government and some of these reforms were abandoned. There has been a move towards focussing on the needs of local populations and improving health outcomes. (235) Consensus and collaboration between clinicians and management is now the appropriate model, not competition as first envisaged with the RHA development in 1993. A number of key elements are being pursued within these managed care models. They include:

- accountability for the quality of care provided for a registered population
- accountability for the cost of providing the care for a registered population
- integrated care at the primary care level
- the development of incentives to shift the emphasis of care from secondary to primary care. (235)

The 1993 initiatives have led to a number of pilot projects aimed at fundholding. (2,234,236) In Christchurch, a limited trial of fundholding was established in 1992-93 with the main aim of controlling costs. (2) The Health Reforms Directorate (HRD), the controlling body over this group, wanted to use financial risk as a means to create incentives for GPs to control cost. This direction was quite unacceptable to the GPs and eventually the HRD agreed to withdraw this practice. (2) They have mainly concentrated on pharmaceuticals and laboratory referrals. Simon, in a second detailed study, describes the progression through 1992-94 from a pilot phase to a fully formed joint venture called PRIME Health Ltd. (236) This represents a joint venture between 34 local GPs, Midland Health and a management company. Perhaps the most interesting development, for Australian general practice that arose from this initiative is the growth of what have been called Independent Practice Associations (IPA).

These organisations arose as a response to the reforms described above. They aim to link local GPs under one umbrella allowing them to negotiate as a group with the regional health authorities, pool information, and develop local purchasing strategies that will benefit their patients. (233,237) In 1996 over 60% of general practitioners were members of these organisations (237), and in 1998 70% of the 2000 New Zealand GPs were members. (238) It has been estimated that 70% of population is covered. (238) They have developed sophisticated management and

administrative structures and are implementing patient registers. These registers link patients using an unique identifier number. (235)

What is relevant to this discussion around fundholding is that most of these organisations are holding budgets for pharmaceutical and laboratory services in their regions. There is one example of pathology fundholding in one IPA that created savings of 22.7% within the budgets over a 13 month period. (234) This amounted to savings of approximately $NZ500,000. Some are also involved with some projects examining integrated models of primary and secondary care, based around specific diseases. (235) What has changed is that the four regional health authorities have been combined into a single authority. This Authority is working towards developing a consistent national contract for each IPA that will fund GPs using a mixture of methods - fee-for-service, capitated funding and a performance payment that will be conditional in reaching agreed quality of care standards. (238) Where pharmaceutical and pathology fundholding will fit is unclear at the moment. (238)

The artificial creation in the United Kingdom of a purchaser/provider split has brought innovation and substantial changes particularly to primary care. In New Zealand similar changes have occurred. Fundholding in both countries is changing, as a more collaborative regional approach is sought. What both countries seem to be moving towards is a more integrated health financing model which links primary and secondary services under one umbrella. By creating this one pool, it is hoped to increase efficiency by focussing on the health outcomes, local community needs and utilising micro-economic principles such as competition between providers, where possible. Fundholding GPs are adapting in both countries and creating innovative primary care models. Asthon argues that "the purchaser-provider split may best be viewed as a temporary structure which provides a pathway towards the desired end, that is, more managed

and coordinated patient care provided by vertically integrated organisations which were unlikely to emerge under the previous arrangements". (226)

CHAPTER THREE
THE STUDY METHODS including AN ANALYSIS OF PREVIOUS RESOURCE USAGE BY THE PARTICIPATING GENERAL PRACTITIONERS

This chapter is divided into three sections. The first section restates the overall aim and hypothesis and then describes the objectives of the study with an explanation for the evaluation framework chosen. The second section presents a summary of the medical practices involved in the study. This summary includes detailed information about the GPs involved and presents a historical analysis of the information obtainable from national data sources. This analysis was an important part of this study. The argument over the value of using historical outlays for a GP's services to predict future use of resources and therefore, a budget for a fundholding practice has been one of central concerns in the implementation of fundholding in the United Kingdom. (161,164,168) If Australian GPs have an unpredictable and variable use of resources, then methods other than historical analysis would be required to develop a budget for a general practice. The third section outlines the methods chosen to complete the analysis for this thesis. The methodologies chosen included both qualitative and quantitative techniques.

SECTION ONE

STUDY METHODS. THE OVERVIEW

3.1.1 Overall aim

As stated in Chapter 1, the overall aim of this thesis was to develop and analyse a fundholding framework for 3 general practices and then to

consider the implications of this framework for Australian general practice overall.

3.1.2 The primary hypothesis

Fundholding in Australian general practice would be more efficient than the usual common funding mechanism (ie fee-for-service) for consultations, pharmaceutical, pathology and diagnostic imaging ordering.

In order to test this hypothesis, a framework for fundholding in Australian general practice was developed. This framework is described in Chapter 6. A framework refers to an organisational structure that would support the necessary elements for a fundholding general practice. This framework encompassed the management expertise, information technology infrastructure, systems for data collection and subsequent analysis, determination of practice budgets, policy structures, consumer and funding body input and the general practitioner roles. The funding body input included Commonwealth and State Governments. Some mention will be made in the final framework of the role of the private pathology and diagnostic imaging organisations and the private insurance industry.

This framework was generated using a mixture of quantitative and qualitative methodologies from three urban general practices. Pharmaceutical, pathology and diagnostic ordering costs for the GPs based within the practices were examined in detail, as budgets for the three practices were developed. Consultation costs were also included in the development of budgets, but not in the detailed analysis of costs for specific conditions. Having completed this process of budget and framework development, an economic appraisal of fundholding in these three general practice was completed. The relative costs and consequences were documented as the framework was examined for

possible improvements in efficiency that may flow for these three practices. These findings were then used to extrapolate to the total Australian general practice environment. In completing this analysis the principle of economic efficiency was the principal criterion considered.

3.1.3 The Objectives of the thesis

The study had the following Objectives:

(1) To develop a framework for fundholding in three general practices based on the data (both qualitative and quantitative) collected from the three practices and their staff. Information included under this objective was:

- the reaction of the participating general practitioners to the concept of fundholding and how it might change their general practice and method of providing care
- the reaction of the general practitioners and the other staff to the establishment of the data collection systems
- the choice of coding systems
- the reactions of the general practitioners to the data collection systems, both computer and paper based
- the effect of the data collected, including information on the costs of their management decisions, on the GP
- the effect of the development of practice budget estimates
- documentation of the interrelationship between the practice based data collection systems and the management of the budgets.

(2) To document the structure and costs needed to implement this fundholding framework.

(3) To develop a method to document the GP resource allocation required to manage a number of specifically chosen conditions that substantially impact on practice budgets.

(4) To assess the efficiency of the resource allocation by these GPs for these chosen conditions (see Objective 3) by comparing their management with their peers.

(5) To develop a budget for these three practices for a specified period and then compare this budget with actual practice expenditure and Government expenditure.

(6) To clarify whether fundholding in general practice would improve technical and allocative efficiency when compared with the current principal funding model - ie. fee-for-service.

(7) To document the possible consequences from adopting a fundholding framework in Australian general practice, using these three practices as a template.

It is important to note that the consideration of efficiency alone is not adequate in examining new options for health care reform. Issues such as equity of access, quality of care, provider and consumer satisfaction and effectiveness cannot be ignored. These concerns must be actively discussed in any decision making process involved in health care change. Their importance in considering fundholding as an option is crucial. However they will not be considered further in the body of the thesis because that would have made the analyses too complicated and placed too much pressure on the participating GPs and their practices. This latter issue would have compromised the study, and more than likely led to a substantial loss of vital information.

As discussed earlier GP consultation costs were included in the development of budgets, but not in the analysis of more specific costs for the conditions examined in detail. Data collection methods were not able to easily capture this consultation cost information. Costs that arose from referrals to other health care providers including specialists and secondary and tertiary hospitals were not calculated. It is accepted that these elements are integral to GP care and the subsequent resources utilised, but to consider all these groups would have made this exploratory study too difficult to complete.

3.1.4 Background

At a time when innovation in health service delivery is being actively explored and critically examined, primarily as a means to contain health care costs, it is important to develop a structure that will allow a logical, robust and thorough analysis to be completed. In analysing the impact of fundholding, this study employed economic analytical techniques. Economics is about choice - ie. getting better value for scarce resources. (239) If it is decided to opt for fundholding in general practice, then the value obtained should be greater than what is gained from the current general practice system. If the costs of a fundholding program are greater than the benefits accrued, then society runs the risk of creating an inefficient alternative to the current fee-for-service model - the principal method of paying for Australian general practice services. If the aim of the establishment of fundholding is to begin to create a more responsive internal market for health care, then it is important to carefully assess whether the efficiency gains are worth the costs required.

There are two distinct components in any economic analysis - the costs and the consequences. In order to document the costs, a structure was developed to guide the discussion, adapted from an outline described in a paper written by Donaldson. (54) He makes the point that any intervention expends resources and "it is these resources used in health care which have opportunity costs". (54) These costs need to be enumerated, quantified and explicitly valued when alternatives in health service provision are examined.

The ability to bring about change in resource usage is likely to be only possible at the margins (46,58) and it is the marginal costs (and benefits) of the development of fundholding in general practice that are therefore

more important than the total costs. One of the issues that will be discussed later in this thesis is whether the marginal costs of "appending" fundholding onto other organisations are less than establishing fundholding within an Australian general practice, as a free agent. For example, attaching fundholding to a division of general practice or a Regional Health Authority may be a more efficient use of resources and may produce benefits which are more tangible than developing fundholding from a practice level.

Some estimation of the transaction costs, ie the costs associated with the actual process of buying and selling a commodity (150) will be made, as part of the development of the framework. These costs will include the costs of operating the policy and administrative system. The evidence from the United Kingdom is that these were substantial as fundholding was established. (162)

On the next page the questions about costs are summarised. Each of Donaldson's points in his outline (54) have been examined and their implications for this thesis articulated. In his list, 17 questions were outlined. Nine were used in the thesis. Questions 4 and 6 have been changed slightly. The remainder of the questions were taken directly from Donaldson's paper. (54)

Questions for comparing costs between fundholding and fee-for-service

(1) What are the alternatives being costed?

Fee-for-service compared with fundholding for Australian general practice for pharmaceuticals, pathology and diagnostic imaging ordering.

(2) From whose view point(s) are the costs being estimated?

Commonwealth and State Government, general practitioners and society overall.

(3) What costing questions are being asked?

What are the resources required to establish a fundholding framework in three general practices? These resources will include the transaction costs eg. data collecting at a national level, extra staff required to gather the HIC and PBS data and health service costs eg. the practice based staff, computer support etc.

(4) Which of the Commonwealth resources utilised in establishment of a fundholding framework incur true opportunity costs?

The operating, capital and transaction costs required to establish and operate a fundholding framework.

(5) Which groups in society bear the burden of the cost of these services?

Commonwealth taxpayers and/or general practitioners and/or consumers.

(6) Are the costs spread over a number of years, thus raising the importance of counting costs per year and discounting?

Two kinds of costs will need to be measured - capital and operating costs. All capital costs will be expressed at present value and with costs in subsequent years being discounted at rates of 0%, 3%, 5% and 10%. (240) An estimation will be made of the economically useful life of a fundholding practice.

(7) What is the decision context with respect to average and marginal costs?

In establishing a fundholding framework, the average cost per patient of the framework in comparison to possible cost savings appears to be a logical measure but the incremental or marginal cost is preferred because it reflects the cost of change. What is worth exploring is whether, once a fundholding framework has been established, the marginal costs of adding, for example practices or patients would be substantially less than the marginal benefit.

(8) Can patient based costing be carried out ?

Yes, and the measure is likely to be cost per patient per year of care. The most appropriate patient measure is whole patient equivalent (WPE). (241) This measure is defined in Appendix 10.

(9) Will sensitivity analyses be required?

Yes and they will need to look at different scenarios of practice size, cost savings, discount rates and capital and infrastructure costs.

Source : Donaldson C. The State of the Art of Costing Health Care For Economic Evaluation. Community Health Studies 1990; 14(4): 341- 356 (54).

The second component in the analysis is the likely consequences that may flow from this type of general practice health care delivery. To document these consequences, a structure was developed from a number of sources (58,239), including the insights gained from an analysis of the current specific Australian dilemmas facing general practice and the health care system overall (see Chapter 1). In this thesis, the term consequences has been interpreted as broadly as possible to encompass both practice specific and health care delivery perspectives.

A full cost-benefit analysis was not able to be completed because some of the possible benefits could not be meaningfully quantified in dollars. For example, the benefits of an elderly patient with multiple conditions whose care may be more appropriately handled within a fundholding model may be only improved quality of life and control over his/her environment - positive benefits that are not able to be measured in dollars. To that end, the study has used the term consequences to document possible improvements in practice-based and health service delivery. This approach will provide more pragmatic insights into whether efficiency, both allocative and technical will be improved under fundholding. For example while the technical efficiency found in the participating general practice may be adequate, the allocative efficiency may be found wanting under fee-for-service and could be enhanced under a fundholding framework. The elderly may find under a fundholding model that their health care is enhanced, by providing more home services at the expense of hospital admissions or specialist visits. However their actual medical management may be very efficient in a technical sense.

To document the possible consequences, the study examined the final fundholding study model from three perspectives - consumer, GP and health care system. General practice is that element within the health care system that provides "initial, continuing, comprehensive and coordinated

medical care for individuals, their families and the communities in which they live". (125) The examination of fundholding as a future option therefore needs to consider all relevant perspectives to adequately assess the value of this idea. In the discussion around allocative efficiency in Chapter 8, it was also important to consider a societal perspective. (239) Adopting this broader societal view, allowed a greater depth of insight to be gained into the value of fundholding in improving allocative efficiency.

The questions for each of these major perspectives are summarised in the following box. These questions are answered in the final chapter (Chapter 8).

Health Care System

(1) Would the overall health care costs be contained?

(2) Would general practice costs be contained?

(3) What role would the current State/Commonwealth Government split play in this framework?

(4) What role would the "third party payers " such as the insurance companies play in this framework?

(5) Could pharmaceuticals, diagnostic imaging and pathology costs be contained?

(6) Would the growth of technology and aging of the population be more successfully managed?

(7) Would the shift to primary care from tertiary centres be more successfully managed?

(8) Is there any scope within the health care system for marginal change in general practice to accommodate fundholding?

Consumers

(1) What role would consumers have in fundholding and would they be able to influence the providers and purchasers of care?

(2) Would certain groups of consumers be better off under fundholding than under fee-for- service eg. the elderly, particularly those close to the interface between hospital and community?

(3) What general incentives would be available to all consumers enrolled?

(4) Would fundholding create opportunities for changes in health service usage for consumers?

(5) Would fundholding create changes in the use of community resources?

(6) Would fundholding create improvements in the health of consumers enrolled?

(7) Would fundholding satisfy consumer needs and wants better than fee-for-service?

General Practitioners

(1) How would fundholding versus fee-for-service in the Australian context affect GP behaviour. What incentives and disincentives for behaviour change and resultant cost savings would be present within fundholding that are not present within fee-for- service?

(2) What would be the new roles within fundholding for GPs and would these roles be considered appropriate for GPs in the Australian context?

(3) How would fundholding affect the current lack of integration of general practice into the health care system?

(4) How would fundholding affect the deskilling of general practice that has been evident for the last 5 -10 years?

(5) How would fundholding "fit" within the current restructuring of general practice?

(6) Would the adoption of fundholding promote improvements in the quality of general practice?

3.1.5. Assessment of technical and allocative efficiency

The assessment of technical efficiency was examined in the following manner. Having completed the analysis of the likely costs required to establish a fundholding framework, a model was developed that included these costs. Fundholding was then compared with fee-for-service general practice in order to assess the improvements in technical efficiency that could be generated through the adoption of fundholding. As discussed in Chapter 1, technical efficiency refers to the most appropriate combination of inputs to produce a given or agreed output at the least cost. (53,54) For this analysis the inputs are the resources used in providing consultations, pharmaceuticals, pathology and diagnostic imaging services and the output is patient care. The model included the elements outlined in the box on page 113.

The underlying purpose of the development of the model was to establish what combinations of the above factors would generate a threshold where fundholding was more technically efficient than fee-for-service. Above the threshold, fundholding could provide similar care to a group of general practice patients at a lower input cost than fee-for-service. Below the threshold, the same patient care is more cheaply provided under fee-for-service.

In the second step of this final analysis, allocative efficiency was examined. In order to examine this element, the information obtained from an analysis of the consequences from the two major perspectives - health care system and consumer was completed, using the practice framework developed as a result of this study. The effect on the GP is then discussed. While it is accepted that the latter perspective is not, strictly speaking part of the discussion about allocative efficiency, the author of

the thesis felt that the GP view would be crucial to any fundholding model developed.

In the next section the study practices are described. This description includes a detailed summary of the available Health Insurance Commission (HIC) and Pharmaceutical Benefit Scheme (PBS) information. These data were important in providing baseline information on the possible budgets for fundholding for the three practices. As stated earlier, it was also crucial in understanding the predicability of historical costs in estimating possible GP resource usage.

SECTION TWO

THE STUDY PRACTICES

3.2.1 The general practitioners and their practices

The study involved three practices in Adelaide, the capital city of South Australia. All practices were urban and were recruited by personal approach by the author of this thesis. The aim in the recruitment was to identify and locate general practices which were spread across different socio-economic regions and included GPs and patients from widely varying age groups. It was felt that three practices would, both provide adequate variability to examine the effect of the fundholding model and allow comprehensive management of the study.

Practice 1 was a long established practice with two sites - one site about 5 kilometres from the centre of the city and the second about 20 kilometres. This practice had 5 full time practitioners, varying from 29 to 72 years (see Table 10). According to the Social Health Atlas of South Australia (242), Practice 1 was situated in a postcode with high socio-economic status and

medium health status. In that publication, socio-economic status is determined on a number of variables including percentage of: single families, low income earners, unemployed, Aboriginal and Torres Strait Islanders and dwellings with no vehicles. Health status is based on a calculation gathered from a number of indices. These include the Standardised Mortality Ratio (SMR) for a number of conditions (eg. cancer for persons aged 15-64 years), cancer standardised incidence ratios, pregnancy outcomes, and disability and handicap status (standardised ratios). (242)

The practice had a full time nurse at one site, and two to five reception staff (depending on the time of day and week). All patients received a private bill, except for pensioners who were bulk billed (ie. signed a Medicare form that was sent directly to the HIC for payment). A substantial number of house and nursing home calls were completed during the day, mainly because a great number of the patients who attended this practice were elderly. According to the HIC, the age breakdown of the people who attended this practice in 1994 (the year before the study began) was:

0 to 4 years	5% of attendees
5 to 14 years	9%
15 to 24 years	12%
25 to 34 years	14%
35 to 44 years	12%
45 to 54 years	13%
55 to 64 years	14%
65 to 74 years	11%
75 + years	10%

Practice 2 was based in a younger suburb of Adelaide and had 3 full time practitioners and 8 part time. The number of sessions completed by these part time practitioners varied. The age of the GPs varied from 27 to 37. (see Table 10) GP *9* left midway through 1995. This practice was based in a postcode of high socio-economic status and medium health status. (242) The practice had no nurse, did not provide after hours access,

except via a locum service and privately billed all the people who attended. It was a teaching practice, with two GP trainees based within the practice during 1995 and 1996, one per year. It was about 25 kilometres from the centre of the city. According to the HIC, the age breakdown of the people who attended this practice in 1994 (the year before the study began) was:

0 to 4 years	16% of attendees
5 to 14 years	19%
15 to 24 years	12%
25 to 34 years	16%
35 to 44 years	20%
45 to 54 years	8%
55 to 64 years	4%
65 to 74 years	3%
75 + years	2%

Practice 3 was a single GP practice and in Table 10 he is represented by GP *17*. Practice 3 was based in a postcode of medium socio-economic status and medium health status. (242) He was aged 61 and had been in practice for 36 years. He had one secretary and one consulting room. The practice was about 6 kilometres from the centre of the city. He provided limited after hours cover and had a large nursing home and geriatric population. This is more obvious when the age profile of people who attended, as revealed by the HIC in 1994, is summarised below. The profile was:

0 to 4 years	3% of attendees
5 to 14 years	10%
15 to 24 years	5%
25 to 34 years	11%
35 to 44 years	16%
45 to 54 years	9%
55 to 64 years	10%
65 to 74 years	14%
75 + years	22%

Overall, in the three practices in December 1995 (the mid point of the study), there were 8 full time and 8 part time practitioners. Five of the 8 part time practitioners were female. Ten were male and 6 female.

The age breakdown was:

26-30 years	-	6
31-35 years	-	3
36-40 years	-	3
and >55 years	-	4

The years spent in general practice varied from 1 to greater than 40, with the greatest concentration of the GPs having been in practice between 0 and 10 years. Ten out of the 16 (63%) were members of the Australian Medical Association (AMA) and 13 (81%) members of the Royal Australian College of General Practitioners (RACGP). In 1995 and 1996, two of the younger GPs were registrars. Registrars is the term used to describe medical graduates who are in the middle of their postgraduate GP training program. Table 10 summarises the back ground information on the study practices and participating GPs.

It is important to note that the three practices were selected and not randomly approached. The controversial nature of the fundholding concept in 1994 (when the study began) prevented a true random sample being obtained. It was more than likely that a large number of practices in this situation would have refused to participate, if they had been approached to be involved. Secondly, it was crucial that the researcher was allowed open access to the practice and all staff, in order to successfully develop the fundholding framework. To that end, the practices chosen agreed to allow this process to occur.

The study was conducted from the beginning of November 1994 to the end of June 1996. Funding was provided by the Commonwealth Government. Ethics approval was obtained from the Royal Australian College of General Practitioners Research and Ethics Committee. Written consent was obtained from all participating GPs to gather individual and personal details, practice based information and national information including Health Insurance Commission Information and Pharmaceutical Benefits Scheme data. Copies of the consent forms are included in Appendix 2.

Table 10

PARTICIPATING GENERAL PRACTITIONER PROFILES - 1995

GENERAL PRACTITIONER	SEX	AGE	YEARS IN PRACTICE	FULL TIME (F) PART TIME (P)	SESSIONS PER WEEK	QUALIFICATIONS	MEMBERSHIP ORGANISATIONS	TRAINEE
1. *	M	55	31	F	10	Yes - FRACGP	AMA, RACGP	No
2. *	M	40	10	F	10	No	AMA, Division	No
3. *	M	66	40	F	10	Yes - FRACGP	AMA, RACGP	No
4. *	M	72	39	F	10	No	AMA, RACGP	No
5. *	F	29	4	F	10	Yes - Diploma Obstetrics	RACGP	No
6. **	F	30	4	P	4	Yes - FRACGP	RACGP	No
7. **	M	30	5	F	10	Yes - FRACGP	RACGP, Division	No
8. **	M	34	10	P	3	Yes - PhD, FRACGP	AMA, RACGP	No
9. **	M	32	6	F	10	Yes - FRACGP	AMA, RACGP	No
10. **	M	27	1	P	8	No	RACGP	Yes - 1995
11. **	F	37	11	P	5	Yes - Diploma Obstetrics	AMA, RACGP	No
12. **	F	37	12	P	4	Yes - Diploma Obstetrics	AMA, RACGP	No
13. **	F	31	2	P	5	No		
14. **	M	28	3	F	9	No	RACGP	Yes - 1996
15. **	M	32	1	P	1	No	AMA	No
16. **	F	36	7	P	3	Yes - Diploma Obstetrics	RACOG	No
17. ***	M	61	36	F	10	Yes - FRACGP	AMA, RACGP	No

* General practitioner 1 - 5 were in practice 1. This was based in an older area and had two sites.

** General practitioner 6 - 16 were in a practice 2 which was in a younger area and compromised full and part time practitioners. GP 9 left the practice in mid 1995.

*** General practitioner 17 was in practice 3 which was based in an older area.

3.2.2 Historical analysis of available practice information on resource utilisation and people attending

In the following section, a historical cost analysis has been completed. This analysis used information obtained from the Health Insurance Commission (HIC) and the Pharmaceutical Benefit Scheme (PBS). In the United Kingdom fundholding practices, the budgets were originally calculated on historical information. (157,162,165,169) It was important to assess the value and accuracy of the available Australian national data for the study GPs and their practices.

It is likely that these data would be needed initially to arrive at budgets for Australian GP fundholders as there are no other methods available. Information was needed on how consistent and predictable the resources outlayed by these GPs for the consultations, pharmaceuticals, pathology, and diagnostic imaging were in the preceding pre-study years. It was important to know what the total resources used for each practice were and how many patients attended over this period, as this would be one method of validation for the budgets that were eventually developed from study data sources.

There were two other major reasons for completing this analysis. This historical review provided baseline information on the GPs and their practices which allowed important comparisons to be identified before data collection began in earnest. For example did the younger practice order fewer investigations and see patients less often? Was there more variability in yearly patient numbers across the three practices that could prevent an adequate estimation of future practice based budgets? This initial review also allowed the development of a methodology for further analysis of the actual data gathered, prospectively from the practices.

The historical analysis examined information from the two years preceding the study ie. 1993 and 1994. It included a number of steps. They were an assessment of:

- the number of patient contacts, pathology and diagnostic imaging services provided and medications prescribed. The latter information only includes medications that cost more than the $15.00 threshold for PBS reimbursement to pharmacists. This is the only information collected by the PBS
- the total costs for all participating GPs in consultation costs, pathology and diagnostic imaging services provided and medications prescribed
- the total costs for all three practices for 1993 and 1994
- the differences in costs across service items and age across the three practices.

Information is presented about the number of services, patient contacts and medications prescribed for 1993 and 1994 in Tables 11 and 12. Comparing GP *2* with GP *11* and GP *17,* from Practices 1, 2 and 3 respectively reveals insights into the type of patients attending these general practitioners (see Table 12). In 1994:

- GP *2* saw 1499 distinct Medicare patients in 5365 consultations - a ratio of 3.6 consultations per patient
- GP *11* from the younger practice in the same year saw 1448 distinct Medicare patients in 2584 consultations - a ratio of 1.8 consultations per patient
- GP *17* who is single handed and managed a great deal of elderly patients, many of whom are in a nursing home, saw 495 patients in 2840 consultations - a ratio of 5.7 consultations per patient.

In other words, GP *11* (who practices in a younger area) is visited by people less frequently. This is probably because of the paucity of chronic

ongoing problems in the younger age groups and in part due to the fact that they, as a practice, do not provide weekend or after hours care.

In the area of diagnostic imaging, GPs from Practice 1 (GP *1* to GP *5*) ordered more tests on the whole when compared with GPs from the other two practices. In 1994, GPs *1* to *4* ordered 329, 411, 487, and 406 radiology tests respectively compared with a range of 89 to 211 with the GPs *5* - *12* from Practice 2 (see Table 12).

Pathology tests were also more frequently ordered in Practice 1. For example GP *2* from Practice 1 ordered 2308 in 1993 and 2468 in 1994. GP *7* from Practice 2 ordered 1437 in 1993 and 1414 in 1994 (see Table 12).

The impact of age on pharmaceutical prescribing is quite dramatic when the GP script numbers are compared. GP *3* and *4* are the oldest full time GPs in the study group and in 1994 they wrote 9030 and 4889 respectively. They manage a large number of elderly patients. In 1994, GP *7* and *9* (both full time) wrote 2822 and 2914 scripts respectively. GP *7* and *9,* who are 30 and 32 years of age respectively (see Table 12) care for mostly younger patients.

Table 11
NUMBER OF SERVICES FOR EACH PARTICIPATING GENERAL PRACTITIONER FOR PATHOLOGY, DIAGNOSTIC IMAGING, PHARMACEUTICALS AND CONSULTATIONS, 1993 *

GENERAL PRACTITIONER	CONSULTATIONS		PATHOLOGY SERVICES RENDERED	DIAGNOSTIC IMAGING SERVICES RENDERED	PHARMACEUTICALS SCRIPTS
	DISTINCT MEDICARE PATIENTS	SERVICES RENDERED			
1.	1691	5292	1694	329	6916
2.	1588	5602	2308	411	6686
3.	1208	5847	3011	487	9770
4.	1004	4861	1929	406	5319
5.	NA	NA	NA	NA	NA
6.	1317	2256	1333	108	855
7.	2469	4464	1437	211	2060
8. **	-	-	-	-	90
9.	1437	2384	995	89	2659
10. **	-	-	-	-	46
11.	1239	2258	1080	138	1265
12.	899	1974	1263	94	2741
13.	NA	NA	NA	NA	NA
14.	NA	NA	NA	NA	NA
15.	NA	NA	NA	NA	NA
16.	NA	NA	NA	NA	NA
17.	534	3001	12	144	4728

* Data sources: Health Insurance Commission and Pharmaceutical Benefits Scheme information.

** GP 8 and 10 prescribed at another practice in 1993 and as a consequence a small number of scripts are recorded against them, but they did not consult at this practice.

NA = Not Applicable - these GPs were not working at this practice during 1993.

Table 12

NUMBER OF SERVICES FOR EACH PARTICIPATING GENERAL PRACTITIONER FOR PATHOLOGY, DIAGNOSTIC IMAGING, PHARMACEUTICALS AND CONSULTATIONS, 1994 *

GENERAL PRACTITIONER	CONSULTATIONS		PATHOLOGY SERVICES RENDERED	DIAGNOSTIC IMAGING SERVICES RENDERED	PHARMACEUTICALS SCRIPTS
	DISTINCT MEDICARE PATIENTS	SERVICES RENDERED			
1.	1690	5659	2231	363	6588
2.	1499	5365	2468	437	5485
3.	1094	5744	3520	447	9030
4.	861	4779	2153	422	4889
5.	NA	NA	NA	NA	NA
6.	1114	1844	1184	67	702
7.	2309	4332	1414	176	2822
8.	679	791	172	15	249
9.	1872	3533	1321	143	2914
10.	711	858	2	27	737
11.	1448	2584	1381	142	1424
12.	988	2132	1278	130	1714
13.	NA	NA	NA	NA	NA
14.	NA	NA	NA	NA	NA
15.	NA	NA	NA	NA	NA
16.	NA	NA	NA	NA	NA
17.	495	2840	18	136	3930

* Data sources: Health Insurance Scheme and Pharmaceutical Benefits Scheme Information

NA = Not Applicable - these GPs were not working at this practice during 1994.

The information that could be obtained on the total Commonwealth Government resource outlays for those GPs who were working in these practices during 1993 and 1994 are summarised in Table 13 and 14. This information includes Health Insurance and Pharmaceutical Benefit Scheme costs, but excludes WorkCover (WC) and Department of Veteran Affairs (DVA) data. These two areas form a small part of the workload for these GPs and contribute only a small amount the overall outlays (approximately 1-2%). The study was also concentrating only on Commonwealth Government funds, not DVA or WC. As a consequence both these latter sources were excluded from the analysis. It is important to note that patient co-payments were not included in these figures.

There is a great deal of variability among the participating GPs. GPs *1*, *7* and *17* were full time GPs, from Practice 1, 2 and 3 respectively. In 1994 their outlays varied markedly (see Table 14). They were:

- GP *1* total outlay was $301,777
- GP *7* total outlay was $181,886
- GP *17* total outlay was $141,556

It is worth noting that GP *17* refers all his pathology to the Institute of Medical and Veterinary Science (IMVS) which is State funded and, as a consequence the costs do not appear in the Commonwealth Government information. This actual figure for true annual pathology costs which included the IMVS figures was approximately $20,000, giving GP *17* a total outlay of $160,556. What is of interest for the project is the variability in costs for each item across two years for all GPs. For example:

- in the case of GP *1*, with pharmaceuticals there was an 3% difference; with pathology a 31% difference; with diagnostic imaging a 11% difference; with consultations a 12% difference and with the total amount a 7% difference. These differences were all increases in expenditure, except for pharmaceutical costs.

- with GP *7*, the corresponding variability, in percentage figures was 21%, 2%, 12%, 7% and overall 9%. These differences were both increases (pharmaceuticals, consultations and overall) and decreases (pathology and diagnostic imaging).
- with GP *17* the corresponding variability was 13%, 74%, 7%, 3% and overall 7%. The 74% refers to pathology ordering and is likely to be inaccurate because this GP used another non-HIC source (see above) for his testing. Excluding pathology, all of these differences were decreases in expenditure.

Within Australia, during the years of 1993 and 1994, there were no obvious external factors that could have created these differences.

The other important finding in these tables is that, overall the pharmaceutical costs with all the GPs are the principal "flow on costs".* For example GP *2* in 1993 used resources totalling $341,160, with pharmaceuticals contributing 36%, consultations 43%, pathology 11% and diagnostic imaging 10% (see Table 13). GP *9* in 1993 utilised resources totalling $133,220, with pharmaceuticals contributing 44% to these outlays, consultations 39%, pathology 12% and diagnostic imaging 5%. The same pattern was repeated in 1994 (see Table 14).

*"Flow on costs" - this term is used throughout the thesis and describes costs that result from decisions made by the general practitioners during the consultations eg. medications prescribed and pathology and diagnostic imaging ordered. The study did not examine any other flow on costs eg. referrals, surgical procedures etc. The data collection would have been too complicated and too difficult for the GPs to complete accurately.

Table 13

COSTS FOR PARTICIPATING GENERAL PRACTITIONERS - PATHOLOGY, DIAGNOSTIC IMAGING, PHARMACEUTICALS AND CONSULTATIONS 1993* (COMMONWEALTH GOVERNMENT OUTLAYS)

GP	PHARMACEUT-ICAL	PATHOLOGY	DIAGNOSTIC IMAGING	CONSULTATIONS	TOTAL
1	$108,360	$25,208	$24,592	$121,887	$280,047
2	$123,467	$38,534	$33,044	$146,115	$341,160
3	$182,468	$39,408	$36,944	$14,1204	$400,024
4	$72,332	$28,653	$24,742	$113,400	$239,127
5	NA	NA	NA	NA	NA
6	$16,010	$18,611	$6,653	$44,599	$85,873
7	$44,648	$22,262	$13,090	$86,003	$166,003
8**	$1,698	NA	NA	NA	$1,698
9	$59,566	$15,408	$6,178	$52,068	$133,220
10**	$666	NA	NA	NA	$666
11	$28,525	$14,536	$9,856	$48,994	$101,911
12	$53,795	$17,818	$6,360	$66,589	$144,562
13	NA	NA	NA	NA	NA
14	NA	NA	NA	NA	NA
15	NA	NA	NA	NA	NA
16	NA	NA	NA	NA	NA
17	$68,191	$207	$9,213	$74,538	$152,149

* Data sources: Health Insurance Commission and Pharmaceutical Benefits Scheme information.

** GP 8 and 10 prescribed at another practice in 1993 and as a consequence a small number of scripts are recorded against them, but they did not consult at this practice.

NA = Not applicable - these GPs were not practicing in this practice in 1993.

Table 14

COSTS FOR PARTICIPATING GENERAL PRACTITIONERS - PATHOLOGY, DIAGNOSTIC IMAGING, PHARMACEUTICALS AND CONSULTATIONS 1994* (COMMONWEALTH GOVERNMENT OUTLAYS)

GP	PHARMACEU-TICAL	PATHOLOGY	DIAGNOSTIC IMAGING	CONSULTATIONS	TOTAL
1	$104,921	$33,075	$27,303	$136,478	$301,777
2	$107,466	$42,620	$39,148	$141,651	$330,885
3	$169,146	$45,484	$32,060	$143,885	$390,575
4	$72,125	$30,461	$27,325	$114,119	$244,030
5	NA	NA	NA	NA	NA
6	$14,228	$16,836	$4,855	$41,359	$77,278
7	$55,923	$21,820	$11,550	$92,593	$181,886
8	$4,597	$2,536	$763	$17,457	$25,353
9	$66,751	$20,991	$13,261	$77,286	$178,289
10	$13,305	$24	$1,880	$18,611	$33,820
11	$33,709	$18,779	$9,760	$56,982	$119,230
12	$35,876	$17,319	$8,569	$72,672	$134,436
13	NA	NA	NA	NA	NA
14	NA	NA	NA	NA	NA
15	NA	NA	NA	NA	NA
16	NA	NA	NA	NA	NA
17	$60,386	$362	$8,553	$72,255	$141,556

* Data sources: Health Insurance Scheme and Pharmaceutical Benefits Scheme information.

NA = Not Applicable - these GPs were not practicing in this practice in 1994.

Comparison across the three practices reveals interesting differences. In 1994 (see Table 16) the rate per service rendered for consultation costs had small variability (range $24.88 to $25.44), but the difference in the rate per distinct Medicare patient was much more substantial. The rates were:

- Practice 1 - $104.23
- Practice 2 - $41.33
- Practice 3 - $145.97.

With pathology and diagnostic imaging, similar differences were noted, with the practice in the younger area having much lower costs per patient than the older practices. In 1994, the cost per patient was $10.78 for Practice 2, compared with the rate of $29.48 for Practice 1. It is worth emphasising that true pathology costs for Practice 3 were unobtainable due to lack of historical data from the local Institute of Medical and Veterinary Science (IMVS) (see above). The same pattern for the three practices was repeated in 1993 (see Table 15). These results probably reflect the older more stable clientele in Practices 2 and 3 who are regular attenders and require more investigations and review.

In Figure 2, the breakdown of percentage costs per service were compared for 1994. In all three practices, consultations and pharmaceuticals form the bulk of the generated costs. For Practice 1, the consultation costs were 42% of the total costs and the pharmaceuticals 36%. For Practice 2, the percentages were 50% and 30% and for Practice 3, 45% and 37% respectively.

Age and sex of the patient are known to influence general practitioner costs and in Table 17 and Figure 3, the costs for the three practices for the first nine months of 1995 across these groups are shown. These costs include all consultations, pathology and diagnostic imaging for all participating GPs. The year 1995 was chosen because all study GPs were working at that time and

these data were used to validate the age/sex results obtained from the main study. The most expensive age groups per practice, as illustrated in Table 17 were for:

- Practice 1(group older practice), 65-74 and 75+
- Practice 2 (younger practice), 25-34 and 35-44
- Practice 3 (the solo older practice), 65-74 and 75+.

Table 15

COMPARISON BETWEEN THE PRACTICES - CONSULTATIONS, PHARMACEUTICALS, PATHOLOGY AND DIAGNOSTIC IMAGING 1993

ITEMS	PRACTICE 1	PRACTICE 2	PRACTICE 3
Total Consultations Costs	$522,605	$298,252	$74,538
Total Distinct Medicare Patients*	5,491	7,361	534
Total Services Rendered	21,605	13,336	3,001
Rate per Patient	$95.17	$40.52	$139.58
Rate per Service Rendered	$24.19	$22.36	$24.84
Total Pathology Costs	$131,803	$88,636	$207**
Total Services Requested	8,947	6,108	12
Rate per Patient	$24.00	$12.04	$0.39
Rate per Service Requested	$14.73	$14.51	$17.25
Total Diagnostic Imaging Costs	$119,323	$42,137	$9,213
Total Services Requested	1,633	640	144
Rate per Patient	$21.73	$5.72	$17.25
Rate per Service Requested	$73.06	$65.84	$63.98
Total PharmaceuticalCosts	$486,618	$206,972	$68,192
Total Scripts	28,691	9,716	4,728
Rate per Script	$16.96	$21.30	$14.42
Rate per Patient	$88.62	$28.12	$127.70
Rate per Service Rendered	$22.52	$15.51	$22.72

* A Distinct Medicare patient signifies one person who has attended the practice on least one occasion.

** Total historical pathology information is unavailable due to the fact that this GP uses local State based services.

Table 16

COMPARISON BETWEEN THE PRACTICES - CONSULTATIONS, PHARMACEUTICALS, PATHOLOGY AND DIAGNOSTIC IMAGING 1994

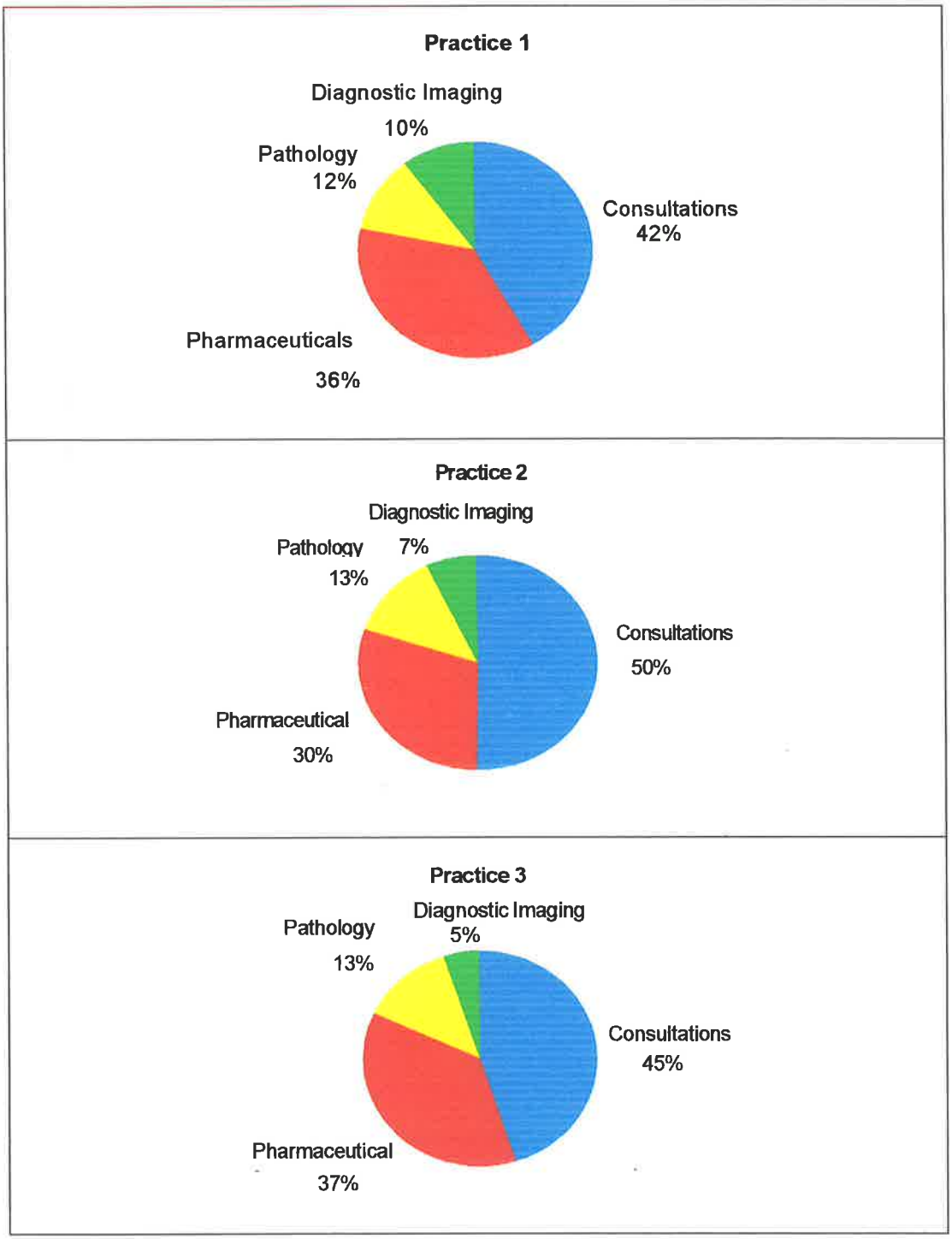
ITEMS	PRACTICE 1	PRACTICE 2	PRACTICE 3
Total Consultations Costs	$536,134	$376,960	$72,255
Total Distinct Medicare Patients*	5,144	9,121	495
Total Services Rendered	21,547	16,074	2,840
Rate per Patient	$104.23	$41.33	$145.97
Rate per Service Rendered	$24.88	$23.45	$25.44
Total Pathology Costs	$151,640	$98,305.00	$362**
Total Services Requested	10,397	6,775	21
Rate per Patient	$29.48	$10.78	$0.73
Rate per Service Rendered	$14.58	$14.50	$17.24
Total Diagnostic Imaging Costs	$125,835	$50,611	$8,553
Total Services Requested	1,669	704	136
Rate per Patient	$24.46	$5.55	$17.28
Rate per Service Rendered	$75.40	$71.89	$62.89
Total Pharmaceutical Costs	$453,660	$227,274	$60,387
Total Scripts	25,992	10,562	3,930
Rate per Scripts	$17.45	$21.52	$15.36
Rate per Patient	$88.12	$24.91	$121.99
Rate per Service Rendered	$21.05	$14.14	$21.26

* A Distinct Medicare patient signifies one person who has attended the practice on least one occasion.

** Total historical pathology information is unavailable due to the fact that this GP uses local State based services

FIGURE 2

BREAKDOWN OF COSTS PER PRACTICE PER SERVICE - CONSULTATIONS, PHARMACEUTICALS, PATHOLOGY AND DIAGNOSTIC IMAGING FOR 1994



Note: In calculating the pathology percentage for Practice 3, figures for 1995 were used. These were available from local State based pathology organisations and throughout the study were consistent. It was argued that they were unlikely to be substantially different in 1994.

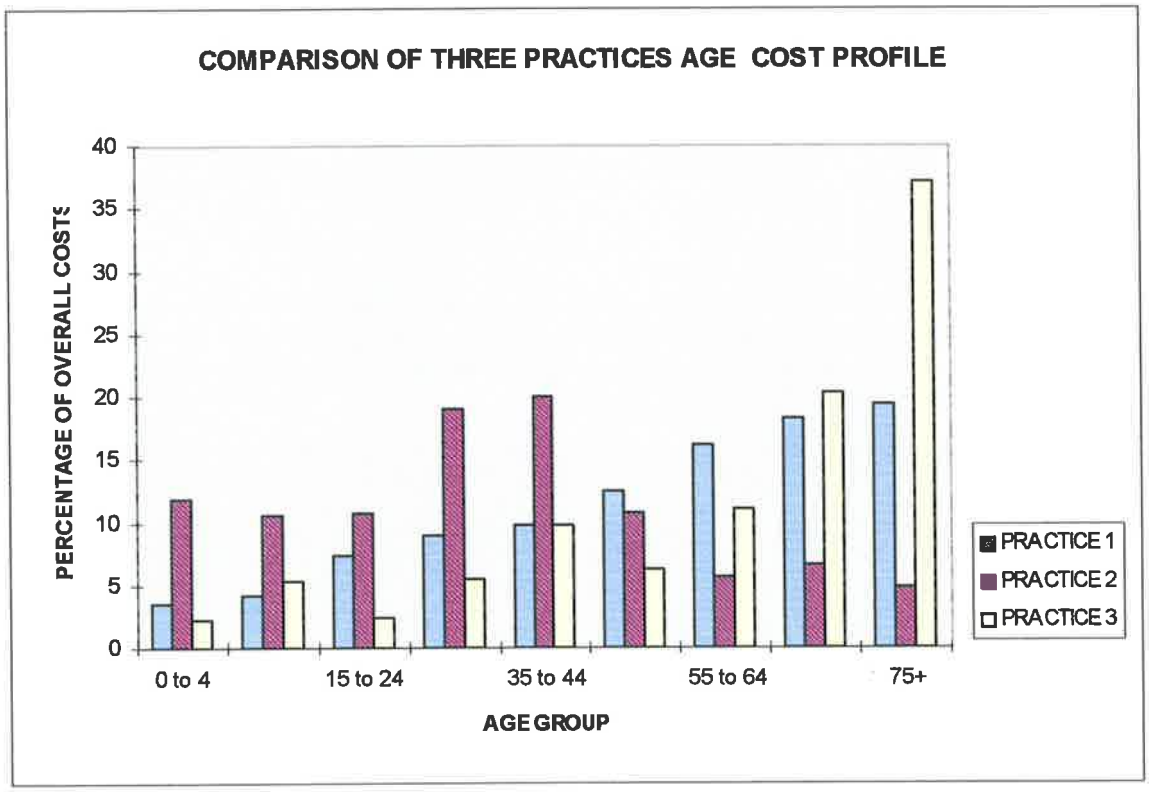
Table 17

COMPARISON BETWEEN THE THREE PRACTICES PERCENTAGE COSTS BY PATIENT AGE FIRST NINE MONTHS 1995

Patient Age Group	Practice 1 %	Practice 2 %	Practice 3 %
0-4	3.5	11.9	2.3
5-14	4.2	10.6	5.3
15-24	7.3	10.8	2.4
25-34	8.9	19.0	5.4
35-44	9.8	20.0	9.7
45-54	12.5	10.7	6.3
55-64	16.2	5.6	11.1
65-74	18.2	6.6	20.3
75+	19.4	4.8	37.2
TOTAL	**100**	**100**	**100**

FIGURE 3

COMPARISON BETWEEN THE THREE PRACTICES PERCENTAGE COSTS BY PATIENT AGE FIRST NINE MONTHS 1995



Note:

Practice 1 = GP *1* to *5*, in an older area with two sites.
Practice 2 = GP *6* to *16*, in a younger area with one site.

Practice 3 = GP *17*, in an older area with a large number of elderly and nursing home patients.

In Table 18, the total costs across all three practices are compared. While accepting that data from Practice 3 is incomplete (see note Table 15) and that in both Practice 1 and 2, historical information on outlays was not available for some GPs (see Table 13 and 14), these total figures were important in the analysis. They produced the approximate budgetary figures for all three practices. The data gathered at a practice level should approximate these figures. In 1993 the total outlays were:

- Practice 1: $1,260,349 from 21,605 services at a rate per service of $58.34
- Practice 2: $635,997 from 13,336 services at a rate per service of $47.69
- Practice 3: $152,150 from 3,001 services at a rate per service of $50.70.

In 1994 the corresponding totals were:

- Practice 1: $1,267,269 from 21,547 services at a rate per service of $58.81
- Practice 2: $753,997 from 16,074 services at a rate per service of $46.86
- Practice 3: $141,557 from 2,840 services at a rate per service of $49.84.

In 1994, Practice 2 had a lower rate of outlay per patient (ie. $82.57), compared with Practice 1 ($246.86) and Practice 3 ($285.97). This probably reflects the different clientele that attend Practice 2 ie. younger patients with minimal chronic illnesses that result in less investigations, consultations and medications. Practice 2, in both 1994 and 1993 was visited by more patients, but at a less frequent rate.

3.2.3 Summary

After the completion of this analysis, a profile of the participating GPs and their practices had been produced. Practices 1 and 3 have an older patient base that requires more prescriptions, pathology and diagnostic imaging

tests. Variability exists across the previous historical costing information for the GPs. This historical analysis is further complicated by the lack of information on some GPs. Pharmaceutical and consultation costs make up the bulk of the practice costs. For each practice the patient groups who generated the most costs varied. In Practices 1 and 3, the patient groups are the 65-74 and 75+ and for Practice 2 it was the 25-34 and 35-44 age groups.

It was important to note that 4 GPs in Practice 2 and one GP in Practice 1 had no available historical information on which to develop a historical profile. Accepting this caveat the total practice outlays were approximately $1.26 million, $750,000 and $150,000 for Practice1, 2 and 3 respectively, with Practices 1 and 3 being more consistent across the two years. These outlays would be useful estimations of a practice budget.

This analysis provided important budgetary and methodological insights as the study developed.

Table 18

COST PER PATIENT AND SERVICES RENDERED - OVERALL COMPARISON BETWEEN THREE PRACTICES

ITEM	PRACTICE 1	PRACTICE 2	PRACTICE 3
Total Costs 1993	$1260,349	$635,997	$152,150
Total Distinct Medicare Patients	5,491	7,361	534
Total Services Rendered	21,605	13,336	3001
Rate per Distinct Medicare Patient	$229.53	$86.40	$284.92
Rate per Service Rendered	$58.34	$47.69	$50.70
Total Costs 1994	$1267,269	$753,150	$141,557
Total Distinct Medicare Patients	5,144	9,121	495
Total Services Rendered	21,547	16,074	2,840
Rate per Distinct Medicare Patient	$246.86	$82.57	$285.97
Rate per Service Rendered	$58.81	$46.86	$49.84

Note: The data for all three practices are incomplete. Only information on participating general practitioners is available. In both Practice 1 and 2, in 1993 and 1994, there were other general practitioners working within these practices. They left before the project began in 1995 and consent could not be obtained for their Health Insurance Commission and Pharmaceutical Benefits Scheme information. In Practice 3, complete pathology information is unavailable because this general practitioner uses State based services.

SECTION THREE

THE PROSPECTIVE STUDY METHODS

This section deals with the methods used to complete the study. A mixture of qualitative and quantitative methods were utilised. Innui in a recent editorial has argued that the "perspectives, methodological approaches, and communities of scientists are different but interdependent and both apt to be instrumental in the progress of science at different points during the acquisition and use of knowledge". (243) These dual methods are particularly appropriate where the meaning or the understanding of a new process is required. (242) Fundholding in Australian general practice is just such a process.

3.3.1 Qualitative methods

Qualitative methods were used to examine Objectives 1 and 2. These Objectives specifically dealt with the development of the framework for a fundholding practice and the probable structure and costs required. The use of qualitative methods allows the richness and detail of the process to be documented. These methodologies also provide important information regarding the actual steps taken to develop a fundholding framework for Australian general practice.

Qualitative research uses multiple methods, involving an "interpretive, naturalistic approach to its subject matter". (244) A mixture of qualitative methods were chosen for this study to strengthen and further confirm that the results were reliable. (245) The methods included:

- reflective participatory observation
- interviews with the participating GPs
- questionnaires with both open and closed responses.

The questionnaires, while not truly qualitative complemented the reflective participatory observation and interviews and it was felt by the author of the thesis that they were best placed in this section.

The aim of these methods was to use multiple perspectives in an attempt to obtain comprehensive data. This concept has been described as triangulation. (246) Flick argues that triangulation or the use of multiple methods adds "rigour, breadth and depth to any investigation". (247) It also allows the personal biases of the researcher to be controlled, the meaning of the research ideas for those involved to be gathered and systematically documented, and provides a sound basis to compare these qualitative results with the quantitative information. (247) It can also be argued that the external validity of this study is strengthened and its relevance to day to day general practice enhanced.

Jones has argued that "much biomedical research is conducted independently of any socio-economic context and without concern for its application and implementation". (248) What qualitative methodology provides is a link with the positivistic or scientific approach as questions are answered about how a new model of general practice funding could be implemented in Australian general practice. (248) The important interactions, responses and learning processes that are part of introduced change need to be documented, as they can inform and aid the interaction of fundholding and general practice. (249) More importantly these methodologies can provide a "bottom up" focus rather than a top down perspective. (250)

This approach has been constantly reinforced by numerous papers from the United Kingdom describing the implementation of fundholding from a grass roots level. (203,205,206) At a time when there was no clear understanding of what a fundholding framework would look like in Australian general practice, the use of qualitative methods is important in providing insights. (246) Questions outlined for the first objective, demand the use of methods

that allow an understanding of the culture of general practice in Australia and how this culture would adapt to change in the traditional fee-for-service funding system that determines our current method of management. (251)

3.3.1.1 Reflective Participant Observation

The first method used was a reflective participant observation approach which involved repeated contact with the general practices and "an immersion" within these practices while the project was underway. (252,253) Borkam argues that detail from this methodology may vary from reflections on practice to more formal detailed observations (254), where the researcher becomes completely absorbed in the study group. This study used a reflective approach which consisted of regular contact with all the practice GPs, the staff, project and computer teams and personal observations (253), over the 2 years of the project. As the purpose of this study was to document the effect of the development of fundholding on three general practices, and as each general practice has its own unique culture (253), this reflective participant approach allowed insights to be gained on this process. A diary was kept throughout this period.

The author of this study is a practicing GP and allowed himself to become involved with the practices, the project team and the software companies, in order to utilise this methodology appropriately. The information collected was organised using the following framework :

(1) the effect of the project on the practices overall

(2) the effect of the project on the practice staff including the general practitioners

(3) the problems with the computer software including the concerns around coding

(4) the effect of the data collection on the staff and general practitioners.

The information was gleaned from one to two weekly visits to the practices during consultation periods, meetings with all practice staff both in hours and out of hours, and regular contact and support with the computer project staff. The findings are a compilation of these numerous contacts, combined with the reflections of the researcher.

3.3.1.2 Interviews

The second methodology chosen was a series of long interviews with all participating GPs. There were two interviews. These interviews focussed on two areas. The first concentrated on the concept of fundholding and the second explored the value of receiving economic information on the costs generated as a consequence of the GP's management decisions. Both areas are integral to the adoption of fundholding in Australian general practice and long interviews were chosen to allow an indepth insight to be gained. (255)

The first interview dealing with fundholding was accompanied by a questionnaire. This questionnaire was developed from a number of sources (82,256,257) and allowed cross checking of interview responses. A copy is included in Appendix 3. The questionnaires were administered pre and post intervention and were analysed using EPI INFO version 6. (258)

The first interview was conducted by a skilled qualitative researcher who was not part of the research team. She used a structured interview format (see Appendix 4) and audiotaped all interviews. The questions for the interview were developed by the author of the thesis after completing the literature review (Chapter 2). All but two of the GPs agreed to be interviewed. The interviewer used the following protocol to complete the task. Phone calls were made to each practice and reception staff were asked to leave a message for each doctor explaining that interviews would be conducted as part of the fundholding project and asking them to contact the interviewer to arrange a mutually convenient time and place. Follow-up phone calls were

made to those doctors who did not respond within one to two weeks. The number of follow up calls ranged from one to three. When doctors contacted the interviewer, the purpose of the interview was explained and an appointment was made at a mutually convenient time and place. Six interviews were conducted at the practice and six at the participant's home. One interview took place during consulting hours, one during the respondents lunch break and the remainder in the evening. At the interview the purpose was again explained and the respondent was asked to sign the consent form. The questionnaire was handed to the doctor by the interviewer and completed before the interview commenced. Interviews were audio taped and extensive notes were taken.

A summary was subsequently produced by the researcher which was then compared with the actual tape recordings by the author of this thesis. These steps follow accepted qualitative research analysis methods. (243)

A second interview was completed by the author of this thesis. This format used a semi-structured interview (see Appendix 5) and specifically explored the issue of the value of providing costing information to GPs. The questions for the interview were developed after completing a systematic review around the use and value of providing costing information to GPs (see below). Further questions were added from the insights gained in the first year of the project. All GPs involved in the study agreed to be involved with this interview. This was completed after specific GP data had been obtained and analysed. This allowed a personalised approach for each GP to be developed around the resources utilised by them, in their day to day management of patients. Comparison was also made with the other practices and GPs.

3.3.1.3 The systematic review

In order to further explore the issue of the value of GPs receiving costing information, a systematic review examining published articles from 1980-1996 was carried out in cooperation with the Cochrane Centre. The completed analysis and published paper (259) can be found in Appendix 6. The methodology used accepted practice for systematic reviews. (260) The aim of the review was to complement the GP interviews with a qualitative assessment of the available evidence for interventions in this area.

The author of the thesis completed all the review, except for searching of the computerised data bases. The objective was to determine if providing GPs with costing information could change their clinical behaviour and reduce costs. The databases search used keywords such as "family practice", "physicians family", "primary health care", "knowledge", "attitudes", "practice" and "comprehensive health care", combined with "cost" and/or "fees and charges". The databases searched were MEDLINE, CINAHL, Health Plan and EMBASE. Citations of review articles were also examined.

The search retrieved numerous citations with low precision and it was necessary for the author to review abstracts of articles for studies with the following characteristics:

- the study tested the effect of distributing costing information to GPs (as a stand-alone strategy or as a part of a multifaceted strategy) on changing their behaviour with the aim of decreasing costs.
- outcomes included an objective measure of health provider performance or clinical care, including test ordering, admissions, consultations, prescribing, hospitals costs or patient-specific criteria such as quality of life and consumer satisfaction.
- the design was either a controlled trial that randomised patients, physicians or groups to an intervention or controlled group or another

robust design, including quasi-randomised controlled trials (such as those using alternative allocation), crossover designs and controlled time series.

The results were synthesised qualitatively. Because of the lack of heterogeneity (in subjects, interventions and outcome measures) no attempt was made to combine their results quantitatively.

Seventeen studies were found, of which 6 met the selection criteria. Two were aimed at prescribing, three at pathology and diagnostic imaging ordering and one at hospital and specialist services. The results are discussed in Chapter 4.

3.3.2 Quantitative methods

3.3.2.1 Introduction

In order to answer Objectives 3, 4 and 5, a number of quantitative methods were used. This section describes the methods and is divided into the following sub-sections:

(1) a description of the data collected
(2) a description of the data collection instruments and the methods used to collect the data
(3) an outline of the periods when the data was collected
(4) an outline of the method used for data entry and the coding systems used
(5) an outline of the comparative costing models that were used within the study to compare GPs and practices
(6) a description of the techniques used for adjustment of the collected data to arrive at a value for GP outlays
(7) a summary of the methods used to validate the data collection
(8) a description of a secondary analysis of the effect of age and sex and conditions on costs for patient identified data

(9) a description of the methods used to develop a predictive model to examine the combined influence of GP behaviour, age and sex of the patient and conditions on resource usage

(10) an outline of the methods used to develop the practice based budget

(11) a final outline of how these practice based budget were compared with actual Government outlays

The study principally aimed to gather information from each GP on their prescribing, pathology and diagnostic imaging costs. In order to develop a more complete budget for each GP and the overall practice, consultation costs were added.

3.3.2.2 The Data Collected

The data collected throughout this study were consultations costs, pharmaceuticals, pathology and diagnostic imaging ordering. The latter three items were linked to diagnoses.

3.3.2.3 Data Collection Instruments

(a) Consultations

These data were taken from the front-of-house computerised accounting package developed. This information was directly taken from the monthly returns that were used for accounting purposes. The data were collected for each GP for each month and for the practice overall. The collection period was from July 1995-June 1996, with specific emphasis on three periods: July-September 1995, January-March 1996 and April-June 1996. To improve GP cooperation, three intensive periods were used, instead of continuous data collection. The period July-September 1995 was the first period used to gather data directly from the GPs. The periods January-March 1996 and April-June 1996 were used to gather intensively from each GP to allow

calculation of actual costs for these periods and comparison with previous information.

(b) Pharmaceuticals, Pathology and Diagnostic Imaging

These data were collected using a mixture of paper and computer methods. The paper data collection form used for each consultation was piloted and refined over 6 weeks early in 1995, with input from all participating GPs and the author of the thesis. Instructions were given to all participating GPs on how to complete the form. A copy of the consultation recording form is included in Appendix 7. The consultation recording form had a box format which allowed the GP to list conditions treated and then link them to the patient and tests and prescriptions ordered. Other items included on the form were age, pensioner status, and health care card status. The age of the patient was used in the costing model (see 3.3.2.9) and the pensioner and health care status is important in developing the pharmaceutical costs.

The computer data collection tool (DCT) used a "mouse" format and was developed specifically for the project. An instruction manual was written for use within the project, with clear instructions on the use of the software and the requirements for data collection. The DCT was linked to the age/sex register within the practice.

3.3.2.4 The Data Collection Periods

(a) First data collection period - July-September 1995

The first data set was gathered using paper collection methods for the period August to September 1995. All GPs in the practices collected information on diagnoses, prescriptions, pathology and diagnostics imaging and referrals. These latter four items were linked to the diagnoses.

(b) Second data collection period - January-March 1996

The same method of data collection was used for this period, although a large percentage of the data collection was gathered using the computers. By this time the DCT had been developed and installed in all the practices. All GPs had been given detailed training on how to use the DCT. The use of the computer allowed more accurate patient linked data to be gathered and a more rapid and detailed analysis. This was an important step in the evolution of the project, as it revealed how crucial computerisation would be to fundholding. This is further discussed in Chapter 4.

(c) Third data collection period - April-June 1996

A similar method was used for this period, with the bulk of the data being paper collected. The data collection had to revert to paper because the DCT became difficult for all the GPs to use and software problems occurred. Some GPs continued to use the DCT, at the same time as gathering the paper data.

3.3.2.5 Data entry and coding

The paper data were entered in an Access database by a trained data entry assistant. He used free text, copying the data directly from the data forms. The data entry was verified by the principal investigator during coding. Intra-data entry reliability was tested in May 1996 using 100 randomly chosen consultation recording forms. Percentage agreement was 95%. The cause for the 5% difference was due to the difficulty with some of the GPs' writing.

The data were coded using three sources

(1) common diagnoses which were linked to specific READ codes (261) (See Appendix 8)
(2) pathology and diagnostic imaging glossaries (see Appendix 8)
(3) the Schedule of the Pharmaceutical Benefits book. (262)

The diagnosis glossary was developed for the project by the author of this thesis after discussion with the participating GPs and after review of the Bridges-Webb study on morbidity and treatment in general practice in Australia. (20) The coding system used was the READ system. (261) The READ coding system was developed by a doctor (Dr James Read) in the United Kingdom for use by clinicians in day to day patient management. (261)

In analysing the costs associated with the diagnoses, the research team examined specific disease groups such as cardiovascular or respiratory and certain "chosen" conditions such as osteoporosis and hypertension for each practice and each GP. The conditions were chosen because they were commonly seen in general practice, were conditions that consumed substantial resources and were known to have significant variability in GP management. (62,64,65) This approach of examining, in detail costs associated with these particular types of condition allowed a more focused analysis of the expensive conditions in each practice, and provided comparative information across all three practices and across the GPs. The comparison then allowed an estimation of the variability in outlays among GPs, due to differences in management behaviour. In Table 19, the disease groups are presented with their READ chapters, and Table 20 lists the specific conditions with their glossary terms and READ codes that were examined in more detail. All GPs linked their ordered items to these chapters and specific conditions.

The pathology and diagnostic imaging glossaries were taken from the fundholding pilot project completed in Western Australia by Dr Doug Pritchard (263). The coding was carried out by the author of this thesis. The intra-coding reliability was checked using a 100 randomly chosen consultation recording forms in May 1996. Percentage agreement was 91%.

Table 19

DIAGNOSES GROUPS AND ASSOCIATED READ CHAPTERS

	Chapter
History Symptoms	1
Preventive Procedures	6
Surgical Procedures	7
Administration	9
Infectious/Parasitic Diseases	A
Neoplasms	B
Endocrine/Nutritional/Metabolic Disease	C
Blood Disorders	E
Nervous System/Sense Organ Diseases	F
Circulatory System Disease	G
Respiratory System Diseases	H
Digestive System Diseases	J
Genitourinary System Diseases	K
Pregnancy/childbirth/Puerperium	L
Skin/Subcutaneous Tissue Diseases	M
Musculoskeletal/Connective Tissue	N
Congenital Anomalies	P
Perinatal Conditions	Q
Symptoms/Signs/Ill-defined conditions	R
Injury and Poisoning	S

Note: These chapters are taken from the READ manual. (261) Costs were calculated across these chapters to allow comparison between practices and to define the expensive disease groups/READ chapters.

Table 20

SPECIFIC CONDITIONS MONITORED - GENERAL PRACTITIONER TERM AND READ CODES

Diagnosis	READ Code
Menopause	66U
Diabetes Mellitus	C109
Lipid Disorders	C32
Anxiety	E200
Depression	E204
Otitis Media	F5100
Hypertension	G20
Heart Failure	G58
Sinusitis	H01
COAD (Chronic Obstructive Airways Disease)	H3
Asthma	H33
Reflux Oesophagitis	J10y4
Osteo Arthritis	N05
Back Pain	N145
Lethargy/Weakness	R0073
Cough	R062
Abdominal Pain	R090

3.3.2.6 Development of the costing models

(a) Costing of the ordered items

After completion of coding, linkage was established with the costs by using the Schedule of Pharmaceutical Benefits book (262) and the Medical Benefits Schedule book. (264) The costs were taken from November 1995 - the mid point of the study. For example the drug Captopril 25mg which was coded as 1147J was costed at $29.14 (the dispensed price for maximum quantity). The dispensed price for maximum quantity was used throughout the study because this value was the actual cost to the Commonwealth Government. The Commonwealth Government costs were the focus of this study. The maximum cost for scripts for non-pensioners was $16.80 and for pensioners was $2.60. Costs for pathology and diagnostic imaging were obtained in a similar fashion eg. the pathology code full blood examination (FBE) was coded as 65007 - government cost $14.65; the diagnostic imaging code ABDO1 was coded as 56400 Abdomen CT scan - government cost $125.30.

The only costing information calculated was the cost to the Commonwealth Government. Non-government costs including pharmaceutical co-payment and the gap between Medicare payments and the schedule fee were not calculated, as they would vary for each patient and were only obtainable with very intensive patient based data collection. This would have been prohibitively expensive. Secondly this project was concentrating on Commonwealth Government outlays in developing the budgets for the practices.

In the area of prescribing, this thesis concentrated only on the opportunity costs of gains in efficiencies from a Commonwealth Government perspective. The opportunity costs for consumers and society as a whole are

equally important, but were not considered because of the extra amount of patient based data that would have had to be gathered.

(b) Total costings per specified groups

After the data were entered, a computer program was written by a programmer to collate the prescribing, pathology and diagnostic imaging costs. The programmer worked under the supervision of the author of this thesis. The pharmaceutical, pathology and diagnostic imaging costs were then analysed into specific groups.

The groups were:

- per GP overall
- per practice overall
- per diagnosis group (READ chapter) overall
- per "chosen" condition overall and per GP

3.3.2.7 Data Adjustment

Unfortunately, the GPs could not always be relied upon to remember to collect the required data. In order to adjust the collected data for the total number of consultations for each period, the "front-of-house" consultation numbers were used as the "accurate figures". This was because the billing systems were well established and the GPs had an obvious incentive to ensure the information collected was accurate. For pathology and diagnostic imaging the estimates were adjusted by a calculated factor based on the consultation numbers. The front of house software for each practice accurately recorded the number of consultations for each GP for the three month period (as validated by the Health Insurance Commission Data). The pathology and diagnostic imaging results were multiplied by a factor equal to the total number of consultations (as provided by the front of house software) divided by the number of consultations recorded by each GP.

It is possible that this method of adjustment may have introduced bias. If the GP was more likely to record data on the consultation recording form when he/she ordered a test, then this method would over-estimate the outlays for these services. Conversely, if the easier consultations that did not require any test ordering to be completed were those recorded on the consultation recording forms, then this method will under-estimate the outlays. Some appreciation and estimation of the possible effect of this information bias can be gained from the case note validation. This is discussed in section 3.3.2.8.

The pharmaceutical adjustment was determined in the following manner:

1. Adjustment for the data not collected by each GP by multiplying by the same factor of the total consults divided by the number of actual consults recorded in the data set (see above).

2. Adjustment for pensioner status for each GP in the following manner. A ratio for each GP was calculated from 1993, 1994 and the first nine months of 1995. It was equal to the total gross price of scripts divided by the pensioner gross price costs. These figures were obtained from the Health Insurance Commission. This ratio allowed the research team to estimate the pensioner effect on prescribing. For GP *17* the actual pensioner figure was used from the practice based computerised age/sex register. It was believed that this was the most accurate figure for this practice, because of the small number of patients. The pensioner adjustment figures for each GP are included in Table 21.

3. Adjustment for safety net for each of the non-pensioner scripts and the pensioner scripts for each GP by developing a modifying percentage based on national figures. This was developed by the author of the thesis. The safety net modifying percentage for non-pensioner scripts was 26% and for pensioner scripts was 17%. In

other words, with non-pensioner scripts, 26% were filled within the safety net and the total patient cost was $16.80. For pensioners 17% were filled within the safety net and total patient cost for pensioners was nil. This was based on the 1994/95 figures obtained from Peter McManus (Secretary Drug Utilisation Sub-Committee of the Pharmaceutical Benefits Advisory Committee). Further explanation and a worked example can be found in the Appendix 9.

4. Adjustment for the effect of the safety net for each quarter of a calendar year. If the data were collected in the first quarter ie. January to March 1996 no safety net adjustment took place; in the second quarter no safety net adjustment was used; the third quarter a 50% adjustment and the fourth quarter 50% adjustment for the effect of the safety net. It was assumed that people obtaining scripts would not have reached their safety net limit until at least the third quarter of the year and, to adjust for the variability in the time when this level was reached across the community, it was decided to factor in 50% of this influence over both the third and fourth quarters.

Table 21

PENSIONER ADJUSTMENT FOR PARTICIPATING GENERAL PRACTITIONERS

General Practitioner	Percentage adjustment for pensioner status
1	16.2
2	13.7
3	19.8
4	16.1
5	3.5
6	3.8
7	10.6
8	0.5
9	-
10	1.0
11	6.9
12	0.4
13	0.1
14	9.9
15	14.1
16	0.7
17	42.9

The percentage adjustment for pensioner status was calculated using Pharmaceutical Benefits Scheme data obtained from the Health Insurance Commission for 1993, 1994 and the first nine months of 1995. Where only 1995 data were available these are used. The percentage is equal to pensioner gross price costs divided by the total gross price of scripts. With GP *17* the actual pensioner status recorded on the computerised age/sex data base was used.

3.3.2.8 Data Validation

This involved two stages. In the first stage, case note audits were used for validation of the practice-collected data. A random sample of case notes was taken from a week in the three data collection periods for each practice. This audit was performed by a trained project officer, qualified as a registered nurse who compared case note records with information noted on paper or computer for diagnoses, pharmaceuticals, pathology, and diagnostic imaging.

The case note validation is presented here. In Table 22, the case note audits have been compared across the three periods. Practice 2 had the lowest percentage agreement in all areas. For example, the overall percentage agreement in Practice 2 was 57% compared with 81% for Practice 1 and 83% for Practice 3. This audit revealed a total agreement for pharmaceuticals of 77%, pathology 71% and diagnostic imaging 65%.

A substantial amount of time was spent on instructing the GPs on how to collect the data, both paper and computer. It is likely that the low percentages for some items, particularly Practice 2 were due to omissions, not errors of commission. Practice 2 had a higher number of part time practitioners who were not as committed to the practice and not as involved in the study. The higher percentage agreement with Practices 1 and 3 reflected their greater commitment to the project and the fact that most were full time GPs. While the percentage agreement was low for Practice 2, the adjustment for consulting numbers (see 3.2.7) compensated, in part for this loss of information.

The lower percentage agreement for pathology and diagnostic imaging, when compared with pharmaceuticals reflects omissions, due the less frequent use of these modalities. Again, the data adjustment for consulting numbers compensated, in part for this problem.

The second stage involved comparison between the Health Insurance Commission and Pharmaceutical Benefit Scheme outlays for the two years of the study - 1995 and 1996. The overall costs per GP and per practice developed from the practice based data were compared across consultations, pharmaceuticals, pathology and diagnostic imaging ordering. The validation using the HIC and PBS is summarised in the Chapter 5.

Table 22

CASE NOTE AUDITS FOR THE THREE PRACTICES - COMPARISON OF CASE NOTE DATA WITH "PAPER/COMPUTER" COLLECTED STUDY DATA FOR THE THREE DATA COLLECTION PERIODS AND OVERALL

*(in percentages)

	Overall*	Pharmaceuticals	Pathology	Diagnostic Imaging
Data collection period *July - September 1995*				
Practice 1	91	87	73	60
Practice 2	55	39	75	25
Practice 3	79	100	33	-
Data collection period *January - March 1996*				
Practice 1	75	79	77	83
Practice 2	48	68	79	55
Practice 3**	-	-	-	-
Data collection period *April – June 1996*				
Practice 1	76	82	69	75
Practice 2	66	65	62	89
Practice 3	83	87	73	60
Over the three data collection periods				
Practice 1	81	83	74	72
Practice 2	57	59	72	63
Practice 3	83	88	68	60

* Overall percentage - includes all diagnoses and all ordered pharmaceuticals, pathology and diagnostic imaging.

** No case note audit was completed for Practice 3 as the GP was absent and locums were present.

3.3.2.9 Analysis across the age and sex profile of the practices

The aim of this analysis was to ascertain whether adjustment for age and sex would reveal more or less variability in the costs per condition previously generated. In other words, were the rates per GP and per practice, generated in the early analysis (see 3.3.2.6) due to different age/sex profiles within the practices or due to real differences in management methods. Within each practice, a subset of the consultation information gathered that was linked to age and sex of the patient was examined.

The statistical technique used to analyse this subset was a regression method called Generalised Estimating Equations (GEE). This technique performs generalised linear models regression with robust variance estimation. (265,266) Consults were clustered together by age and sex for the purpose of robust variance estimation. This allowed the building of a predictive model. A statistician worked under the direction of the author of the thesis to complete this element of the analysis.

This analysis was completed in two stages. In the first stage the age/sex patient linked data were reviewed to identify those study GPs with adequate samples. All GPs in Practices 1 (ie. GPs *1,2,3,4,5)* and 3 (ie. GP *17)* were retained, but only 2 GPs were included from Practice 2 (ie. GPs *7 and 14*). The patient age/sex profiles of each of these 8 GPs were then compared with the complete HIC age/sex attendees profile for the January to June period. The two groups were compared using a logistic model to ascertain goodness of fit. (267) As it was not possible to know how many times a specific patient attended, two sensitivity analyses were originally completed. One assumed that there were 2 consultations per patient and the second 6 consultations per patient. If the results were similar across these sensitivity analyses, the author of the thesis believed that the conclusions would be more statistically robust.

In the second stage, the means of cost per item ordered, as calculated from the costing model described in section 3.2.6 for all age/sex groups were compared across practices for READ chapters and specific "chosen" conditions. Because the distribution of cost per item was skewed, cost was analysed using a "Poisson type" regression. The means of the groups were compared using generalised estimating equations with an $\alpha < 0.05$ being accepted as significant. SAS version 6.12 (268) was used to complete the analysis.

3.3.2.10 The development of a predictive costing model

As a final step in examining the effect of the GPs' management variability, a regression model was developed, using the mean cost per ordered item as the dependent variable. This model allowed for the examination of combination of factors such as the GP, the READ chapters, the "chosen" conditions, all conditions and the age and sex of the patient. A step-up regression process was used. Each variable was sequentially examined for the effect on the variance of mean cost. Following this step, the variable that explained the most variance was kept as the first variable. Multiple regressions were then completed with the other explanatory variables, until no further variance in mean cost could be explained. The modelling was conducted on the total age/sex linked data.

3.3.2.11 The development of practice budgets

One of the principal aims of this study was to develop a budget for the three practices for the first six months of 1996. There were a number of problems with the installation of the computer and information technology infrastructure into the practices and they are described in detail in Chapter 4. These problems included inappropriate software, lack of time and enthusiasm for training, inconsistent support, and hardware and network faults. The development and installation of the DCT took 3 months longer than

expected. Because of the delay in the development of the computer DCT it was decided to use the "best" source of local data to arrive at a practice budget. This budget could be compared with the outlays from Government sources ie. from the Health Insurance Commission and Pharmaceutical Benefits Scheme. The following sources were used:

1. Consultations - front of house data
2. Pharmaceutical - paper and/or computer collected data
3. Pathology - local pathology organisation information
4. Diagnostic imaging - paper and/or computer collected data

Using these data from the period July-September 1995, an approximate budget was developed for the first six months of 1996. At the same time this 1995 budget was compared with actual Government outlays for 1993, 1994 and 1995 in all practices.

3.3.2.12. Comparison with the approximate budget for the first half of 1996

The approximate budget for 1996 was monitored throughout the second and third data collection periods for each practice. Comparison was made with local "best" data sources and Health Insurance Commission and Pharmaceuticals Benefit Scheme information. The GPs and the practices were informed of their budgets for this period, but they did not have any means of monitoring their compliance.

CHAPTER FOUR
QUALITATIVE METHODS - RESULTS AND DISCUSSION

This chapter deals with the presentation and discussion of the qualitative results. In the first section the results are presented from the four elements chosen for the qualitative approach. The elements are:

- a summary of the information obtained from the reflective participatory observation
- the development of thematic concepts obtained from the first GP interviews (pre study) dealing mainly with the fundholding concept and the project overall
- a comparison and analysis of questionnaire responses pre and post study. The questionnaires were used to complement both the first and second interviews
- the development of further thematic concepts obtained from a second GP interview (mid study) which dealt with the value of providing information on costs to the GPs.

While accepting that the questionnaires are not truly qualitative, they were used to complement and strengthen the interviews. Consequently the author of the thesis felt that the questionnaire results were best presented in this Chapter.

In the second section the multiple perspectives obtained from the different methodologies are combined to provide extensive information on the possible framework for fundholding and detailed insights on what this would mean to the GPs and their practices. (247) For completeness, the discussion begins with the effect of the project on the practice overall and then moves to describe the probable roles Australian GPs would have in fundholding. The next two sub-sections discuss computers and the GP,

and data and the GP. Both are crucial elements in any developed fundholding framework. The issue of possible GP behaviour change within this framework is then analysed. The discussion finishes with a brief examination of the need to measure quality of care and establish new regulations. The concluding sub-section links these findings to Objectives 1 and 2.

SECTION ONE QUALITATIVE RESULTS

4.1.1 Reflective Participatory Observation

These results are discussed from a number of perspectives. They include the practices overall, the practice staff including reception personnel and the general practitioners, the software considerations and the data collection.

4.1.1.1 The Practices Overall

Before beginning this project early in 1994, all of the practices were visited by the author. In this meeting, the need for intensive data collection; the controversial nature of the project, the need to ensure that both the project objectives were met and the practices were left with functional computer systems were outlined. The discussion was open and frank. One practice, for example, wanted a new script-writing facility, an age-sex register and the ability to recall patients (eg. for cervical smears and chronic disease follow up). Another practice wanted a complete computer system. The third single man practice was genuinely interested in the fundholding concept and wanted to gain more insight into how his practice functioned.

Those early meetings were important in gaining commitment to the study, ownership of the process of practice computerisation and most importantly, establishing lines of communication between the project team and all the practice members, both general practitioners and reception/nursing staff. One important point stressed at the beginning of the project was that the hardware and software placed in the practices would be owned by the participating practices and would be retained by those practices when the project was completed. This created a shared ownership. This ownership issue was highlighted as a major stumbling block in the unsuccessful AUS READ study. (269) Conversely the CAPP report into a long term computer study in Australian general practice stressed how important it was for successful computerisation in general practice. (270)

4.1.1.2 Practice Staff

(a) Reception Staff

There is no doubt one of the key lessons learnt was the need to firmly establish the computers for the front-of-house/reception staff, before attempting to work with the general practitioners. The front-of-house staff deal with the interface between consumers/patients and the practices, and as such are very important as the first point of contact (which leaves such a lasting impression for consumers). If they become stressed and irritable when their appointment and billing systems do not work appropriately, then this frustration and anger is transferred onto the general practitioners. The general practitioners then transfer these feelings onto the project team.

In this project, the front-of-house staff had become comfortable with one type of software and then part way through 1995, their very workable appointment system had to be removed. It was part of the Healthcare Clinical Software used initially in the project. This clinical software would not satisfy the needs of the data collection for the fundholding project. As a consequence, they experienced two changes within 12 months and there was no doubt that this was extremely stressful. At a meeting in November 1995 their anger and frustration was obvious. They had found the Healthcare Clinical Appointment System exceptionally good at communicating with the general practitioners, their staff, and more importantly for one practice, the second surgery. The new software that was designed to meet their needs at the front of the house was "mouse" driven. This was found to be unworkable because of the time taken to make appointments over the phone and the lack of familiarity with the "mouse". The staff opted to return to the old keyboard driven appointment system and the project team facilitated the re-installation of this system in 1996.

There are important lessons for computerisation of general practice. They include the need to:

- maintain the happiness and stability in the reception staff for a well running practice
- plan the implementation of appointments and billing more carefully (Cooper's report dealing with the implementation in a Hobart practice is a useful beginning). (271)
- understand that general practice is like any other small business - stability and "politics" are crucial to a smooth running organisation. General practitioners are by nature very relaxed about their businesses and tend to avoid confrontation and instability. Placing undue stress on the reception staff will disrupt any integration of computer systems into general practice.

What is very important within the context of computerisation in general practice is the issue of communication. The front-of-house staff, and consequently, the general practitioners involved, now realise how useful IT can be in the management of their practices. As one practice manager stated "for the first time in 20 years we can communicate with our second surgery without living on the phone". This highlights a point that Cooper made in his report (271) about identifying the particular practice difficulties that need improved management. By spending time at the beginning of the computerisation process defining these difficulties, the stress and frustration that will inevitably surface, while the computerisation takes place will be more easily managed.

A final point is the need for ready support for the installation and ongoing maintenance of computer systems within a general practice. There was a difference of opinion between the computer company providing support for the project and the project team. This was eventually clarified with the fundholding project team arranging network and Data Collection Tool (DCT) support and the computer company providing support for billing and eventually appointments. Clear definition of these roles is crucial. Again the CAPP project report emphasises that the "availability of support and rapid resolution of problems are essential requirements for doctors relying on computerised medical records". (270)

(b) General Practitioners

One of the aims with this project was to create some general practitioner ownership. The general practitioners were approached early in 1994 and then met regularly throughout 1994/1995/1996, either within the practices or as members of a management committee. The author of this thesis who was the project leader regularly made contact with all participating

general practitioners and frequently visited all the practices. The contribution of the participating GPs to the development of the fundholding model and the data collection was excellent. They contributed data over three collection periods from June 1995 to June 1996, either by paper or on computer and were interviewed on two different occasions.

A final comment is worth making about the practices. At the time when they were approached to be involved in the study, the three practices were already looking to improve their organisational structure to enhance their clinical management. In a substantial report describing the current "state of play" of computerisation in the United Kingdom, the practices that were more likely to computerise offered a greater range of services and expressed a greater interest in participating in new services. (272)

4.1.1.3 Software considerations

At the beginning of the project a computer company was contracted to provide the hardware/software and support for the project. Meetings were held throughout 1994 with the staff of the company and the main meeting was organised for November 1994 to fully discuss the project. At the November meeting the issue of coding of the diagnoses within the consultations, and linking those diagnoses with flow on costs such as pharmaceutical, pathology and diagnostic imaging was discussed. The issue of coding and whether to use International Classification of Primary Care (ICPC) or READ was also discussed.

The Healthcare Clinical Software which was keyboard driven was initially used within the practices in May/June 1995 to gather the requisite clinical budgetary information. It soon became apparent that the general practitioners would find it difficult to link the diagnoses with scripts, and with ordered pathology and diagnostic imaging over a prolonged period of

time. This reached a "crunch" in July/September 1995 when it was decided to stop using the clinical system and develop the study's own data collection tool (DCT). The general practitioners agreed to this change after being shown the DCT. Advice was also sought from a GP (Dr Don Walker) has been involved in information technology for many years and he agreed that it was sensible to change. His advice was crucial at a time when important decisions needed to be made.

The DCT was developed and installed in the practices. This tool was aimed at the participating GPs only. Computerised data collection begun on 1 January 1996. The DCT was designed to be operated by a "mouse" and was particularly aimed at the fundholding project. For example, the need to collect flow on costs, linked to diagnoses requires a more GP friendly-software interface than that provided by the original software, at that time of the study. The project complemented this software with "easy to use" glossaries. Computer glossaries for both diagnosis, pathology, diagnostic imaging, and procedures were developed. The GPs used free text for referrals. A previous fundholding pilot project had developed codes for pathology and diagnostic imaging (263) and these were used as the basis. Comments from the participating GPs were made about these glossaries and they were adapted, to further satisfy the project needs.

Two other glossaries were created. One listed the common procedures completed in the treatment in a general practitioner's surgery (see Appendix 8) and the second was a GP-friendly glossary of common terms for diagnoses (see Appendix 8). These terms were then linked to READ codes (see later) at a distant site where the data analysis was completed. Terms were able to be added by the participating GPs throughout their consultations. This was a strategy that circumvented the issue of coding. The GPs found coding very difficult initially and were reluctant to complete this accurately. The issue of coding is further discussed in a later section.

The DCT was used by 10-12 GPs for varying periods throughout the project. Most completed approximately 2-3 months of data collection using the DCT (with one GP collecting for 6 months), but during the last data collection period (May-June 1996), the bulk of participating GPs reverted to paper collection. The need to link clinical behaviour eg. pharmaceutical, pathology and diagnostic imaging ordering with the diagnoses over a sustained period was found to be too difficult. Assessment of a GP's clinical behaviour and how it affects the resources used within a fundholding practice is crucial to identifying areas where variability in behaviour can be reduced. This reduction is crucial to producing gains in technical efficiency. The evidence from this study is that, the software available at the time was not suitable to achieve this task, without considerable stress for the participating GPs.

4.1.1.4. Data collection

The gathering of data for this project was crucial. The linking of flow on costs (pharmaceutical, pathology, diagnostic imaging, procedures and referrals) was important to the success of the study, as it allowed the identification of practice "cost drivers". Cost drivers refer to the items/conditions within a general practice that produce the greatest outlays for GPs.

The initial computer hardware/software was inappropriate for rapid data collection. The DCT (see above) was designed to allow rapid data collection. The complexity of the general practice consultation where four or five diagnoses and four or five different scripts, diagnostic imaging or pathology may be ordered, required some rethinking of the need to collect a full 12 month's data. It became apparent that a more intensive, shorter

period of data collection was all that was required and, that was feasible within the project.

The data collection for this project was difficult. It was naive to think that, with the development of medical record software for general practice in Australia in 1995-96, the project team could computerise three practices and gather this data accurately in 18 months. However, at least one third to one half of the participating GPs collected the computer data with the DCT for varying products throughout the project. In order to keep the project on track a paper data collection form was developed which provided complementary information.

4.1.2 General Practitioners - pre intervention interview

In this section the results from the first GP interviews are discussed. A summary of the common themes that emerged from each question is presented. Each question is presented first. If the reader would like to refer to the detailed comments from the tapes, they are summarised in Appendix 11.

Question 1. *What do you understand about fundholding?*

All interviewed GPs understood that a budget would be provided for services. The two following comments illustrate these views.

> allocation of a budget to a practice - all or part thereof eg. diagnostic imaging or in the wider context hospital and specialist: even deals with government as far as you can take it;

> government would suggest a certain amount of funds to be held to pay for ordering of pathology and radiology requests and if your request added up to more than that sum you may be liable to pay the excess yourself

Other key issues that emerged were

(a) loss of individuality

(b) need to rationalise services and these comments illustrate this point

rationalise services for the more widely based less expensive services

fundholding begins with the concept that health care must be rationed - a system where a doctor and patient can make the decisions rather than the government.

(c) increase in Government control

(d) the need for patients to link with a practice over a defined period.

Question 2. *Do you think that the model has a place in Australian general practice?*

YES. Five agreed that it may have a role. The reasons varied and are illustrated in the comments taken directly from the tapes and reproduced below.

yes, for containing costs and make the GP more efficient; improve coordination of care - fewer number of people involved in decisions for patients. It is also worth exploring alternatives for fee-for-service

yes, may have a role to provide more equitable distribution of resources that are more locally based. Not convinced that GPs are the right people to hold funds eg. HMO, Health Plus or independent 3rd party

yes, to improve patient care and improve continuity of care

NO. Four thought no and some of these comments are reflected in the following direct quotes:

no, it is too complicated to get accurate ongoing information like this

no, when people working for themselves this encourages good quality care. If you work harder then you obtain more income. I believe fundholding will encourage Drs to do less work and provide less quality because there are no incentives eg. write script without seeing patient - no extra reimbursement if the patient is seen. You will need to convince me that it is cheaper. Will the infrastructure cost more? - you will need to justify expenses in terms of benefits and money saved

no, from what I understand from UK, it has allowed people to play service providers off against each other. There is not much competition in Adelaide, due to small size and small number of service providers. It would depend on what sort

> of incentives are available at the end of the day. You would need to offer a strong enough financial incentive to fundhold (ie. the Government would). Also, what about employed doctors - if they make savings, then does the cash go to the practice or themselves

UNSURE. Three were unsure, but argued that you could not avoid looking at the model. These views are reflected in the following comments taken from the interviews:

> unsure, like to think it has a role in conjunction with some fee-for-service. The only incentive to be cost efficient is when the buck stops with you.

> linkage of patients is beneficial, but if patients are linked to practice where there is not quality of care, it may difficult for them to move

Question 3. *What are your concerns regarding the computers that will be established within your practice for this project?*

The issues were the time required to gather the data, confidentiality, effects on the doctor-patient relationship, key board skills, and data input and transfer concerns. One GP said he had no concerns. The following comments taken from the tapes reflect these views:

> major concern patient confidentiality. My other concerns include the ability to interpret data that is generated; who is going to get data; data input errors; issues re transfer along phone lines including encryption of data. Is everyone up to the required standard of the use of the computer? User variability is a concern; what happens when you lose data; what about patient rapport. Will this hardware interfere with patient rapport?

> concerns re the initial learning to use computer. I think I can manage that with sufficient tuition

> less space; may interfere with the doctor patient relationship with some people; patients may perceive it as an infringement in their lives and be unwilling to communicate; "feel big brother watching "

Question 4. *There will be a great deal of data collection. Do you have any concerns/interest in the data collection?*

Most interviewees thought that all the data collected would be useful. Some of the interesting comments included the need for other groups to understand what general practice is doing, the value as a learning

experience (particularly for younger GPs), and the importance of the information for each individual practice. A selected sample is presented below:

> young enough to still be learning and therefore useful; referral data possibly discriminatory to Drs. Some have interests in particular areas and are willing to involve others with earlier referrals.

> unsure whether I could be able and willing to change; if it was inappropriate I would; but who is going to tell me what is inappropriate. I am a GP with female patients who come for a second opinion and, as a consequence I order a lot of pathology - my figures may indicate inappropriate ordering but there may be good reasons

Question 5. *Would and could you change your behaviour if you needed to, to make savings*?

All the GPs indicated that they would, and could make changes to generate savings as long as the patient's quality of care was not compromised. There was some concern about who would inform the GPs about how to generate these savings. Some suggestions included the use of practice-based protocols and peer review. Where the savings would be used was very dependent on the location of the practice, although a practice nurse, community health nurse and social worker were mentioned most often.

Two interesting comments deserve special mention. They include the role of part-time GPs in a fundholding model, and whether they should be rewarded for making savings and whether changes made at an individual level would be less attractive than those made at a practice level. These sentiments are reflected in the statements presented below.

> willing to review what we do; make us realise what we do: I suspect I can make changes, but need to see. I would not like being told what to do by bureaucrats - but I am happy for my peers to "decide" what is good or bad practice.

> where would these savings go? I am prepared to make changes based on improving patient care but where I would use these savings would depend where I could make savings. If I can't access services then I would organise these.

> concerned about the lack of reality - if in a real world I had to make savings, I would modify my practice. I would be happy if we looked at the whole practice and attempted to make savings eg. developed formulary or protocols for management to make savings. I am unlikely to make savings, if just myself examining data.

The comment about the lack of reality reflects the fact that the GPs in this study did not actually hold monies, as in a real fundholding project.

Question 6. *Would you be willing to continue your role as advocate/ patient manager at the same time as managing a budget?*

This was an important concern and most of the GPs interviewed thought they could perform this task. However all agreed that in certain circumstances the role would be very difficult, particularly as GPs have had no training in this area. One respondent stated "if conflicting roles, I would err on the side of looking after my patients". A second respondent thought he/she already performed this task. It is worth also noting that, whereas gatekeeping and fund managing would be compatible, the real conflict would occur with advocacy and fund managing. In other words, whereas acting as a gatekeeper to services would not create problems, if the GP had to advocate for costly services that were too expensive for a fundholding budget, this would create dilemmas for the GP. There was a view from one GP that consumers/patients would need the right of appeal. This extract is taken from one of the interviews:

> arms length is hardest thing about budget holding. My skills are about making decisions about their health at the moment. If conflicting roles, I would hope to err on the side of looking after my patients. If the system forces me to make second rate choices for my patients then the system is undermining good patient care and creating perverse incentives to under-treat patients. Then the system is corrupt.

Question 7. *What incentives would be required to link consumers with a fundholding practice?*

The most frequently mentioned enticements were improved quality of care (with designated benefits - home services, after hours cover, more money spent on them), improved continuity of care, satisfaction with the

relationship with their GP and possibly financial incentives. Again, the following extracts illustrate the variation in opinion:

> I hope better medicine. The incentive should be a better system for patients. - provides access and doctors who have an interest in them.
>
> satisfaction with care should be more important than financial matters. Financial incentives don't necessarily achieve better care - the most important is the doctor-patient relationship.
>
> need to sell the idea that there will be other little perks (paramedical people at home). Convince them that they will have increased quality of care; because of better continuity of care, recall, better records, better managed. Might do deals with different radiology and pathology firms and hospitals; "go for the high ground":

Question 8. *What quality of care measures would and should be in place in a fundholding model?*

This was difficult to answer, although all GPs believed protection of quality of care was crucial within this model. There was a great variation in measures mentioned, from less waiting time and more time spent with the patient to audits of common conditions. A couple of comments are worth mentioning.

> things like asthma are not likely to improve in fundholding, as the asthma sufferers do not come back any way
>
> I don't see how consultations will be longer or more education provided in fundholding
>
> whatever medical outcomes are measured, the same improvements must be achieved for a lower cost

Question 9. *What management systems and regulations would need to be put in place?*

All the respondents agreed that GPs needed to have input. However it was felt that GPs may not have the required skills and other staff would be required eg. accountant, health economist. Other issues mentioned were the role of protocols developed by this management team in guiding my "practice behaviour", the cost of this infrastructure, the number of the

practices involved (30 would be better than 3), the important role of the information required to monitor this process and who would clarify the difficult conflict of medical versus financial need. Some of these views are reflected in the comments below:

> concern re big administration costs. Is that going to be cost effective? GPs have to have a majority of say in the management, with advice from economist and accountant. Millions of dollars need staff - three quarters of a million dollars needed. wouldn't want non-medical people involved. Doctors will decide what is medically appropriate

> definitely want a medical person with managerial interest or a manager with a medical interest. Need specialist knowledge in this area and I doubt any GPs would be able to do this. I would go for manager with a medical bent rather than other way around

> doctors should do the direct patient care and sort out issues re buying services. Accountants should add numbers up.

All interviewees agreed that new regulations were inevitable. The interesting point was the range of regulations suggested. They included bureaucratic interventions (eg. accounting, audits, review of patients notes, monitoring of cost shifting), the definition of what is adequate care for chronic diseases and good clinical practice guidelines. All respondents argued that GPs should have a major role in the development and implementation of these guidelines. Consumers should be involved as well.

> must be done in consultation with the profession. Good clinical practice guidelines are important. The doctor must be able to advocate for difficult situations. Also, need information on the day to day management and financial issues

> need to report in business-like manner and would need to demonstrate that significant savings were passed onto the patient. Areas of need being targeted with savings and then demonstrating that the quality of care is maintained. Crude tools - number of PAP smears, evaluate outcomes as one per month. We need proper financial reporting.

Arms length assessment by an external organisation with peer involvement would be a very useful model. Whatever regulations are established they should be able to embrace the variability within general practice. The following comment reflects the majority view of the GPs:

> accept have to be accountable; monitoring independent group consisting of some peers; Rules and criteria should be explicit and up front and then subject to audit

at the end. No problem with consumer input in consultation with provider at a policy level. Salary agreed at the beginning - GP should be able to determine what he/she wants to do

The interviews revealed substantial insights into the framework that would need to be established, for Australian GPs to integrate this idea into their practices. Some of the important insights included:

- the need to clarify whether the Australian GPs could both be a gatekeeper to, and purchaser of services
- the value and problems of gathering data for GPs using computers
- the ambivalence across the GP age groups of changing behaviour to make savings
- the inevitably of more regulations and GP opinions about this necessary element to fundholding
- whether fundholding would improve patient care and whether consumers would join such a scheme.

The questionnaires provided further information around some of these themes. The results are presented in the next section.

4.1.3 Questionnaire responses - pre and post intervention

Questionnaires were completed by 12 GPs before the study began and 13 following completion of the project, giving response rates of 75% and 81% respectively. The following tables (Tables 23 - 27) compare their responses. In Table 23 it is clear that, within a fundholding practice, these GPs would want a substantial say in the management. Using a scale of 1 to 5 where 1 equals strongly agree and 5 equals strongly disagree, there is agreement that "they would be willing to be involved" in management - mean 2.0 pre and 2.39 post intervention. Secondly, the GPs believed that they should be trained in "these management skills" that would be

required to manage a fundholding practice - mean 1.92 pre and 1.92 post intervention.

In the second section of the questionnaire, issues around computers and data collection were explored. The results are presented in Table 24. Two findings are worth noting. There is a trend with the statement "the computer system will help (has helped) make this practice run more smoothly" to disagreement, although this was not significant (mean pre 2.75 and post 3.6). This trend probably reflects the difficulties the project had in installing the computers within the practices (see Section 4.1.1). Secondly, even with these difficulties, there was agreement that the computers did not influence and annoy the patients when they presented to the GP. For example, with the statement "patients do not like computers in the consulting room", the mean response was 3.58 pre and 3.77 post intervention.

In all these responses from the GPs, pre and post intervention the most important overall finding was the lack of change. For example with the question "The Government should fund these new management structures" the mean response pre was 2.83 and post 2.85. (see Table 23) A response of 3 indicated not sure. In other words, having been intimately involved with the project for 2-3 years, the GPs were still not convinced that the Government should fund the management structures required to establish fundholding. In fact with a number of the mean responses there has been a change in the negative direction (see Table 23 for example with the questions - "Do you believe that you would be willing to be involved" and "Can general practitioners understand the issues involved with fundholding management").

In Table 25 the responses to a number of issues around the GP-patient interaction are summarised. The responses indicate that among these

GPs quality of care is perceived as good under the current fee-for-service model and they are unsure whether it would improve under fundholding. What is more relevant is that there is substantial agreement that enrolling or linking patients with a fundholding practice would improve continuity of care (mean pre 2.25 and post 1.92)*. However these GPs were unsure whether patients would link to a practice. This feeling is reflected in the responses to the question - "would patients be willing to enrol into a fundholding practice for a set period (say 12 months)" - mean response pre 2.92 and post 2.77. There was also moderate agreement that both within fee-for-service and a fundholding model, GPs are cognisant of the fact that ordering expensive inappropriate tests if requested by a patient may not be appropriate behaviour.

* In these responses, 1 equals strongly agree and 5 equals strongly disagree.

Table 23

COMPARISON OF QUESTIONNAIRE RESPONSES OF PARTICIPATING GENERAL PRACTITIONERS PRE AND POST STUDY STRUCTURAL ISSUES

		Pre Study N = 12 Mean	Post Study N = 13 Mean
(1)	Do you think management of a fundholding practice should be left to non-general practitioner staff only?	4.17 (sd* - 0.58)	4.08 (sd - 0.28)
(2)	Do you believe that you would be willing to be involved?	2.00 (sd - 0.85)	2.39 (sd - 0.87)
(3)	Can general practitioners understand the issues involved with fundholding management?	1.83 (sd - 0.58)	2.15 (sd - 0.69)
(4)	Should general practitioners be trained in these management skills?	1.92 (sd - 0.67)	1.92 (sd - 0.76)
(5)	Should deciding on economic issues be left to administrators?	4.08 (sd - 0.52)	4.07 (sd - 0.28)
(6)	The Government should fund these new management structures?	2.83 (sd - 1.03)	2.85 (sd - 1.14)

*sd - standard deviation.

Possible responses

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1	2	3	4	5

Table 24

COMPARISON OF QUESTIONNAIRE RESPONSES OF PARTICIPATING GENERAL PRACTITIONERS PRE AND POST STUDY

COMPUTERS AND DATA COLLECTION

		Pre Study N = 12 Mean	Post Study N = 13 Mean
(1)	* At the thought of computerisation I feel	3.2 (sd*** - 1.39)	2.90 (sd - 0.54)
(2)	** The introduction (extension) of a computer system to this practice will make my job harder	3.00 (sd - 0.78)	3.00 (sd - 0.78)
(3)	** The computer system will help (has helped) make this practice run more smoothly	2.75 (sd - 0.87)	3.6 (sd - 1.12)
(4)	** The collection of practice prescribing is an exciting prospect for me	2.5 (sd - 1.0)	2.54 (sd - 1.13)
(5)	** The collection of pathology data is an exciting prospect for me	2.17 (sd - 0.84)	2.54 (sd - 1.12)
(6)	** The collection of diagnostic procedure data is an exciting prospect for me	2.33 (sd - 0.99)	2.46 (sd - 0.97)
(7)	** The computers in my room will affect the doctor/patient relationship	3.25 (sd - 0.75)	3.61 (sd - 1.04)
(8)	** Patients do not like computers in the consulting room	3.58 (sd - 0.67)	3.77 (sd - 1.09)

*** sd - standard deviation.

***Possible responses**

Terrified	A Little Fearful	Comfortable	Happy	Really Excited
1	2	3	4	5

**** Possible responses**

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1	2	3	4	5

Table 25
COMPARISON OF QUESTIONNAIRE RESPONSES OF PARTICIPATING GENERAL PRACTITIONERS PATIENT CONCERNS

		Pre Study * N = 12 Mean	Post Study * N = 13 Mean
(1)	Do you think that the quality of care with patients under our current system is good?	2.17 (sd* - 0.72)	1.85 (sd - 0.56)
(2)	Do you think it would suffer under a fundholding model?	3.25 (sd - 0.62)	2.92 (sd - 0.95)
(3)	Would patients be willing to enrol into a fundholding practice for a set period (say 12 months)?	2.92 (sd - 0.67)	2.77 (sd - 0.60)
(4)	Do you think that the computer would affect/affects your doctor/patient relationship?	3.25 (sd - 0.87)	3.39 (sd - 1.12)
(5)	Do you think that if the patient was enrolled in a fundholding practice and they knew that you had to think twice about which test to order because of costs, it would affect your relationship with that patient?	2.75 (sd - 1.06)	2.23 (sd - 0.83)
(6)	At this time, if a patient asks for an expensive test, that you think is inappropriate, do you refuse to organise this test?	2.00 (sd - 0.74)	2.39 (sd - 0.65)
(7)	In a fundholding model, if a patient asks for an expensive test, that you think is inappropriate, would you refuse to organise this test?	2.17 (sd - 0.84)	2.23 (sd - 0.73)
(8)	Should patients have more say in how you run your practice?	3.5 (sd - 0.80)	3.31 (sd - 0.95)
(9)	Do you think that other marginalised groups would be discriminated against in a fundholding model?	3.33 (sd - 0.89)	2.58 (sd - 0.99)
(10)	Would continuity of care be improved if patients were required to link themselves with a practice within a fundholding model?	2.25 (sd - 1.22)	1.92 (sd - 0.76)
(11)	Within a fundholding practice should consumers/patients be allowed to set priorities for savings that would be made within such a practice?	3.5 (sd - 1.24)	3.46 (sd - 0.97)

*sd - standard deviation.

Possible responses

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1	2	3	4	5

In Tables 26 and 27, responses about a series of general issues are presented. There was agreement that alternative funding mechanisms for funding general practice should be developed (mean response pre 2.0 and post 2.0) and that the GP should be the coordinator of the primary health care team (mean response pre 1.58 and post 1.92)*. There was agreement that there was insufficient communication between hospitals and the GPs (mean pre 2.08 and post 1.92). There was also agreement that there is a need to look at a mechanism to link patients more closely with their GP (mean pre 2.08 and post 2.15) and that "quality of care suffers when patients move freely between different general practice providers" - mean response pre 2.33 and post 3.31. The reason for this increase is unclear.

The complexity of this process of linking is illustrated by the response to questions about how to reward consumers who do commit to one practice. The mean response of 2.92 (pre) and 3.00 (post) to the question "patients who receive care from their nominated GP/practice should receive higher rebates for referrals, pharmaceuticals and investigations than if these are ordered by another GP" indicates that the study GPs were not sure. Similar non-committal responses were found for other suggestion found in this table. eg. bulk billing for linked patients. In Table 27 the findings of note were that according to these GPs fundholding would decrease the effectiveness 1-1 treatment services (mean post fee-for-service 4.07 and post fundholding 2.92), would provide less cost-effective health care (mean post fee-for-service 3.23 and post fundholding 2.85) and provide a less supportive working environment (mean post fee-for-service 3.23 and post fundholding 2.31)**.

---

* The scale was 1 equals strongly agree and 5 strongly disagree.
** The scale was 1 equals very ineffective and 5 very effective.

Table 26

COMPARISON OF QUESTIONNAIRE RESPONSES OF PARTICIPATING GENERAL PRACTITIONERS PRE AND POST STUDY GENERAL ISSUES

		Pre Study N = 12 Mean	Post Study N = 13 Mean
(1)	Our current system of payment is too tightly tied to fee-for-service for each individual consultation.	2.42 (sd* - 1.08)	2.33 (sd - 0.78)
(2)	There should be the possibility of other mechanisms of payment of GPs.	2.17 (sd - 0.94)	1.92 (sd - 0.76)
(3)	The GP should be the coordinator of the primary health care team.	1.58 (sd - 0.99)	1.46 (sd - 0.52)
(4)	New mechanisms should be developed for linking patients more closely to their preferred general practice.	2.08 (sd - 1.38)	2.15 (sd - 0.80)
(5)	GPs should be able to receive their remuneration in a range and combination of different ways including partial salary, partial capitation and partial fee for service.	2.0 (sd - 0.95)	2.0 (sd - 0.71)
(6)	My specialist colleagues do not adequately value the care I provide for our shared patients.	2.58 (sd - 1.31)	2.85 (sd - 0.90)
(7)	There is insufficient communication and collaboration between hospitals which provide care for my patients and me.	2.08 (sd - 0.99)	1.92 (sd - 0.86)
(8)	Health care is a purely private matter between doctors and patients, and Governments should stay out of it.	3.83 (sd - 0.58)	3.85 (sd - 0.38)
(9)	Government involvement should be restricted to the provision of a safety net for the poor and underprivileged.	3.67 (sd - 0.65)	3.69 (sd - 95)
(10)	Health care is a public matter in which Governments are inevitably involved to ensure that the community gets value for the dollar spent on it.	2.08 (sd - 0.79)	1.85 (sd - 0.80)
(11)	Quality of care suffers when patients move freely between different general practice providers.	2.33 (sd - 0.89)	3.23 (sd - 1.24)
(12)	Patients should not be constrained by any financial incentives to stay with one practice/doctor.	2.42 (sd - 1.08)	3.31 (sd - 1.03)
(13)	We should explore new ways of using financial incentives to encourage a continuing link between patients and their doctors.	2.58 (sd - 0.90)	3.00 (sd - 1.08)
(14)	Patients who nominate a single practice as their main source of general practice care should receive higher rebates for their care when they are looked after by that practice than by other practices.	2.58 (sd - 1.08)	3.00 (sd - 1.0)
(15)	Patients who receive care from their nominated practice should be able to bulk bill, but bulk billing should not be available to other doctors.	3.92 (sd - 0.67)	2.62 (sd - 1.26)
(16)	Patients who receive care from their nominated GP/practice should receive higher rebates for referrals, pharmaceuticals and investigations than if these are ordered by another GP.	2.92 (sd - 0.99)	3.00 (sd - 1.0)
(17)	If GPs knew exactly which patients were their responsibility, they could encourage in more effective prevention and health promotion.	2.67 (sd - 1.30)	3.62 (sd - 1.04)
(18)	It would not improve the quality of the care I provide if patients were linked to me through special financial arrangements.	2.92 (sd - 1.17)	3.15 (sd - 1.04)

*sd - standard deviation.

Possible Responses

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
1	2	3	4	5

Table 27

COMPARISON OF QUESTIONNAIRE RESPONSES OF PARTICIPATING GENERAL PRACTITIONERS PRE AND POST STUDY

GP opinion of the effectiveness of primary medical care delivered in different models of care

	Model	
Characteristic	**Private Practice Fee-for-service**	**Private Practice Fundholding**
1-1 Treatment Services Pre * (mean) Post (mean)	4.33 (sd** - 0.49) 4.07 (sd - 0.28)	3.08 (sd - 1.88) 2.92 (sd - 1.75)
Health Education for patients Pre (mean) Post (mean)	3.36 (sd - 1.03) 3.62 (sd - 0.77)	3.08 (sd - 2.02) 3.31 (sd - 1.55)
Continuity of care Pre (mean) Post (mean)	3.67 (sd - 0.99) 3.54 (sd - 0.66)	3.92 (sd - 1.44) 3.77 (sd - 1.17)
Dealing with local public health problems Pre (mean) Post (mean)	2.83 (sd - 1.12) 2.39 (sd - 0.87)	2.83 (sd - 1.90) 2.92 (sd - 1.51)
Encouraging multi-disciplinary teamwork Pre (mean) Post (mean)	2.92 (sd - 1.24) 3.15 (sd - 0.90)	2.42 (sd - 2.19) 2.77 (sd - 1.96)
Providing cost effective health care Pre (mean) Post (mean)	3.58 (sd - 0.52) 3.23 (sd - 1.17)	2.83 (sd - 2.04) 2.85 (sd - 1.99)
Allowing doctors to participate in the promotion of the health of local community Pre (mean) Post (mean)	2.33 (sd - 0.99) 2.46 (sd - 0.88)	2.75.(sd - 1.55) 2.39 (sd - 2.02)
Provide a supportive working environment for Doctors Pre (mean) Post (mean)	3.92 (sd - 0.29) 3.23 (sd - 1.24)	3.00 (sd - 1.86) 2.31 (sd - 1.80)
Encourage participation of the community - planning & provision of primary medical services Pre (mean) Post (mean)	2.17 (sd - 0.72) 2.46 (sd - 0.83)	3.17 (sd - 1.19) 2.84 (sd - 1.73)

* Pre N = 12 Post N=13

** sd - standard deviation.

Possible responses

Not able to answer	Very ineffective	Ineffective	Neither ineffective nor Effective	Effective	Very Effective
0	1	2	3	4	5

The questionnaire responses provided further important insights into a possible structure for a fundholding framework and a number of issues were strongly highlighted. These issues include:

- the crucial role of a GP in the management of a fundholding practice
- the fact that economic issues within a fundholding practice should not be left totally to administrators
- the ambivalence towards the value of computerisation
- the importance placed on quality of care and the belief that it was good under the current system
- the belief that the GP should be the coordinator of the primary health care team
- general agreement that alternating methods of paying for general practice services should be explored
- agreement that participation in health promotion/community based activities is difficult under this method of payment
- that patient linkage may have some very positive benefits for patients.

4.1.4 General Practitioner Interviews - the value of information on the resulting costs of their management decisions.

In the following section the responses from the interviews are presented. They deal with the type of feedback and information about costs required within a fundholding practice to manage the model. For each practice a summary of the common themes is presented below. A more detailed explanation of the actual GP interview responses is presented in Appendix 12.

SUMMARY of THEMES PRACTICE 1 - OLDER PRACTICE, TWO SITES

◊ would need to create a cost consciousness environment where the income of the GPs would need to be included in the discussions
◊ use peer comparison for a number of specifically chosen conditions
◊ the chosen conditions should be the expensive conditions eg. lipids
◊ enlist the key practice 'power brokers'

◊ develop methods of data feedback that are "GP friendly" eg. rates of presentation of certain conditions per overall consultation numbers
◊ whether more efficient behaviour would result is unclear particularly when change has been so difficult to introduce before
◊ savings methods could include fewer visits, more counselling, less pathology, and possibly the use of cheaper personnel, less visits to specialists, and the use of a co-payment.

SUMMARY of THEMES PRACTICE 2 - YOUNGER PRACTICE

◊ while arriving at a budget is the most difficult for this practice, they are the most amenable to change - "the practice mentality" is accustomed to adapting to change
◊ multi-faceted models would need to be built around pharmaceuticals and the "cost drivers"
◊ academic detailing would have a real role in developing more efficient behaviour in this practice
◊ peer comparison with practice members and like practices would be a prerequisite
◊ there is a great deal of variability with some conditions eg. menopause - this is a "cost driver" within this practice and guidelines would have a role
◊ practice consensus would be a powerful influence
◊ cost consciousness within the practice would be useful for the younger GPs
◊ issue of part timers - they would have to receive some reimbursement for trying to make savings
◊ need specific GP information on their behaviour - these GPs would be happy to receive this information
◊ "cost drivers" absolutely crucial - eg. antenatal care, menopause, respiratory disease and some chronic conditions, particularly for the male GPs. Guidelines around these "cost driver" conditions would be important adjuncts
◊ the use of the expertise in the practice was emphasised and the idea of upskilling to create more efficient GPs was mentioned
◊ creating a link with local pathology, diagnostic imaging organisations and pharmacies was suggested - they would become advisers on cost efficient and appropriate ordering
◊ improved infrastructure management would create savings
◊ divisions of general practice should be involved
◊ counselling has a role to improve efficiency and compliance
◊ good data system needed
◊ savings should be split - 50% to practice/patients/Government and 50% to GPs .

SUMMARY of THEMES PRACTICE 3 - OLDER, SOLO PRACTICE.

- ◊ guaranteed minimum income for this solo practitioner
- ◊ protection against cost shifting between State and Commonwealth Governments (if a practice was only holding Commonwealth Government funds)
- ◊ data collection systems that outlined the "cost drivers" would be crucial
- ◊ a benefit for the practice eg. practice nurse would entice him to join
- ◊ some form of risk sharing with other solo practices would be an option
- ◊ difficult to outline methods to improve efficiency with these solo practices, particularly with older practitioners. Probably, the efficiency gains would come from improved management of the interface between GP/hospital/community. Employment of allied health personnel would be a prerequisite.

The interviews have produced a range of responses. Importantly, they have clarified what would be the critical elements in providing feedback to GPs employed within a fundholding practice.

Some of the specific GP responses are worth noting as they illustrate in more detail what would be important to these GPs, if they were operating within a fundholding practice and were required to make gains in efficiency.

In the area of guidelines/protocols:

> the use of protocols when we deal with day to day general practice. A lot of the time general practice does not follow the guideline scenario. However, the use of guidelines could create long term savings particularly if there were patient agreed targets within protocols. Empowering the patient would create savings.
>
> chronic disease savings - I am uncomfortable with changing as I believe I am using the correct approach. However, if we did make changes you would need a practice protocol and consensus throughout the practice so as not to confuse the patients.
>
> we are not clones and protocols may have a place for some conditions where the evidence is around eg otitis media, BP and possibly menopause (but for me counselling is so important and this may not easily be included into the protocols).

In the area of cost shifting:

> if my survival was to be affected by a budget then I would cost shift, definitely.

however there is no doubt that I could cost shift by referral to a lipidologist (I tend to do a lot of HDLs - more than the national average). If you do not take any new patients where do they go - basically cost shift to another fundholding practice.

with pathology and DI, I could make savings by cost shifting eg. antenatal patients but I like to investigate them fully. It is annoying when they repeat these tests again. Pelvic ultrasound is another where FMC (local tertiary hospital) does it cheaply and not on your budget..

the other concerns are cost shifting from public hospitals, specialist etc eg. performing CAT scans, early discharge. This would be a real worry with fundholding models that State governments would cost shift onto fundholders. This would require regulations to be put in place.

On the value of providing costing information related to management behaviour:

the provision of costing information - I would not to have to consider this information. I do not have the expertise to combine costs with clinical judgement. My training is in clinical management, not cost management. I would need very clear information about the value of responding to costing information. There would also need to comparison with my peers who I would trust.

if I was managing a budget I would continue to practice as I always have. I treat people as I believe they should be and need to see my patients frequently. For example I have patients with chronic leukaemia and multiple myeloma that need to be seen frequently for their ulcer dressings. I have known them for over 40 years and they trust me.

displaying the costing information in the budget form is reasonably useful and worth comparing the results with my peers. However, in the consultation there is limited time and displaying the costs would not be very productive - as I do not have time to look at it.

this is the first time I have seen my costs that I generate and it is surprising. We do not receive any costing information on our generated costs. There is no GP imperative to save costs.

in this practice, I would need to develop a model that considers the needs of part time practitioners. There is no incentive to save money unless these savings are returned to me.

if we had a fundholding model it would be logical within a region to concentrate on the 20 most expensive conditions and, after appropriate reimbursement develop protocols and costing studies and methods based around evidence of how to practice. You would still need practice specific data.

I do not know the cost of drugs and would want feed back.

the data needed to monitor this information would be the 10 most common conditions and those conditions that create the most costs - a possible disease register and management register would help. These disease register conditions would include diabetes, ischaemic heart disease, BP, hyperlipidaemia etc .

In the area of education and feedback :

> there is no doubt that academic detailing would be an ideal model for this practice. I would want information on my behaviour and a list of options and comparison with my peers.
>
> one good idea is the use of the providers eg pathology or diagnostic imaging to educate about appropriate behaviour - at the moment there is no contact with these providers and this would be useful feedback.
>
> peer review both within and without the practice is probably the key.
>
> counselling is where I would make savings - more explanation may decrease the use of medications, but raise the level of consultation remuneration.
>
> upskilling has a role in controlling costs - a practice with each GP with special skills would definitely save costs - Each would elect to cover 2/3 areas and after proper training manage this area - eg. endoscopy, stress testing etc.
>
> I have a hospital model which makes me continue to swab and do a great number of tests. In the hospital, you have to do a great number of tests because this is what is required. Some patients want these swabs eg. gynaecological investigation.
>
> I am just starting out and I need guidance on what to do. Information on over-prescribing and over-ordering would be useful. Comparison with my peers and practice partners would be useful. The use of a practice formulary would be important.
>
> you would need comparison with a similar practice in the areas of pathology, diagnostic imaging and prescribing.

This collection of comments from the participating GPs illustrate a number of themes. In the area of guidelines/protocols, the study GPs are not convinced that they have a role in guiding their management behaviour to be more efficient. This may reflect their lack of exposure to this method and the concern that a lot of what GPs deal with is undifferentiated illness (107), which is not manageable with guidelines.

Cost shifting was mentioned by all of the GPs and would be a major concern for a fundholding practice in Australia. This problem has been mentioned by other commentators. (7,11,32) The evidence from these GPs is that the establishment of fundholding and the budgetary management required, would be very difficult within the current Commonwealth/State funding models. Achieving gains in efficiency within a fundholding practice would always be under threat from State funded

services. Conversely, fundholding practices would create a great deal of animosity, if they constantly and consistently transferred patients to the public system (which is currently State funded) to make savings. With the increasing move to a more integrated delivery of health care in Australia (32,33), this is unlikely to be acceptable to GPs, funding bodies, other health care providers and consumers.

For these GPs, the perceived value of providing costing information is mixed. The underlying view is that they are not trained to absorb these data, while deciding on the management of a patient during a consultation. However there was some genuine interest in receiving specific information on the costs generated because of the decisions they made. This was particularly so for the younger GPs. Local feedback and comparison with other similar practices and GPs seems to be very important. One GP commented that he would need to be compared with a GP who he could trust, a model that has been to shown to change behaviour. (273)

What is interesting among these GPs is the range of ideas that were suggested to practice more efficiently (and make savings). These included:

- reducing pathology testing
- decreasing the number of consultations for the elderly
- academic detailing which included comparison with peers
- pathology and diagnostic imaging provider feedback
- more counselling and explanation
- upskilling GPs to do procedures more cheaply than specialist providers
- more focussed education within hospitals about ordering appropriate investigations
- more focussed education to graduates/GP training registrars by GP mentors in training practices

- practice formularies
- practice consensus around the management of common and expensive conditions.

The important conclusion from this range of ideas, generated from only 13 GPs is that by creating incentives to make savings with a fundholding practice, innovation would follow. More than likely multiple strategies would be used, some of which have been summarised above. It is worth noting the almost complete lack of information about costs provided to these GPs in the past. This is a reflection that in Australia the only available information on the costs of a GP management decisions is the Medicare profile provided to each GP once a year. (274) This information provides a summary of patients attending, consultation costs, pathology and diagnostic imaging ordering obtained from the Health Insurance Commission. There is no data provided, linking this information to the management of specific conditions or including hospital or State based services. Significantly, no information is provided on pharmaceutical costs generated by the GP. These costs contribute 30-40% of the flow on cost generated by a GP.

SECTION TWO

DISCUSSION REGARDING THE QUALITATIVE RESULTS

In discussing the qualitative results, the following framework was used. The effect of fundholding on the practices overall was discussed, followed by a similar analysis of the effect on the GPs. The next two sections deal with the issues of computerisation and value of data for the GPs. The importance of behaviour change for a GP within a fundholding practice is then examined. The final two sections discuss the measurement of quality of care and the importance and necessity of regulations.

For each section, the results provided by the different qualitative research methods are integrated to provide increased rigour and depth. (246) This process then allowed the multiple perspectives from all 16 GPs and the practice and computer support staff to be gathered and comprehensively documented. This triangulation process then provided the author of this thesis with a study, with much stronger internal validity. To finish this section, a more detailed analysis of Objectives 1 and 2 was completed, allowing a more confident extrapolation of the final framework for fundholding in Australian general practice.

4.2.1 The practices overall

The information obtained from the participatory observation illustrated the problems of introducing change into general practice. General practices are made up of small interconnected units that are reliant on each other to work efficiently. The front of house staff experienced substantial difficulties coping with the computer, the need for data collection and the presence of non-practice members within their environment. Establishing fundholding in Australian general practice is as much as about introducing change as the development of methods to monitor budgets. Any calculation of the opportunity costs would need to take the staff/time and skills required into account.

The extra skills required by fundholding practices in the United Kingdom include communications, needs assessments, budgeting, basic monitoring, negotiating, decision making and information technology. (158) These skills will require trained staff. In all three practices, this would require substantial reorganisation. Both Bain (175) and Newton (209) in reporting on the first year on fundholding describe substantial stress and

disharmony among practice staff. Outside expertise had been required to cope with the increased number of tasks in United Kingdom fundholding practices. These extra staff will have their own opportunity costs.

An important element of any fundholding practice will be the information technology, a prerequisite for successful fundholding in the United Kingdom. (158) This study identified a number of important lessons with the introduction of information technology into Australian general practice, which have direct relevance to the establishment of a fundholding framework for general practice. Practice based politics have a large influence on the success of IT projects in general practice. To cope with these issues, the project team established regular meetings with the front-of-house staff, general practitioners and software vendors. Communication was crucial and the creation of shared project ownership was important. This has been emphasised in a previous IT project in Australia. (270)

In the area of computer software, the project would have been helped by the use of consultancy advice before commencement and, on an ongoing basis. While the project achieved a great deal in eighteen months, some of the problems encountered could have been averted. There is also no doubt that a more detailed analysis should have been completed by the project team of the data requirements in 1994. This would have helped the choice of computer hardware/software, although this may not be such an issue in 1997 as the software available to GPs has improved. Some consideration of the work pressure on the software company should have been considered before project implementation.

It is worth noting that one of the main reasons the younger practice agreed to enrol in the study was to obtain a new computer system. It is likely that

to consider fundholding in Australia, computerisation would be an important incentive to become involved. In the United Kingdom in 1993/4 £18.6 million was spent on the development of practice computing. (155) It is likely that a similar outlay would be required in Australia. Bollen has argued that for general practitioners to adopt full scale computerisation they will need to be convinced that it is a benefit to them, cost-effective and would improve the quality of patient care. (130) In a fundholding Australian general practice, computer prescribing software would provide information on pharmaceutical costs within a budget and provide patient benefits in the form of drug information and warnings around drug interactions. While computerised prescribing software is available, the linking with the costs and budgetary management has not been attempted. This may be a logical way forward for computerisation, fundholding and GP acceptance of the model.

This project has provided insights into the probable impediments to this process. They include locating the appropriate software, hardware and networks, coping with the complexity of the consultation, and training and support. The different experiences and ages within the study GPs and in general practice overall, will need to be considered. In this project, approximately two thirds of the GPs used the computer Data Collection Tool (DCT) at some time. The older GPs decided to always use the paper data collection forms and two of the part time female GPs were not keen to try the software at all. As the CAPP project report indicates, there was a need to consider a range of local solutions which were appropriate to individual circumstances. (270) For each fundholding practice, the actual data collection required to manage the practice will need to find the appropriate tool for the specific GPs. This may include paper and/or computer gathered and other more distant methods eg. by the Health Insurance Commission.

Coding is important in general practice because it allows rapid linking of large amounts of GP consultation data. Once completed, coded data can be used to measure variability and assess the quality of care provided across GP groups. One of the problems that had to be overcome was the variability in diagnoses that would have been found across the 16 GPs involved. Australian GPs are not trained in coding or paid to gather coded diagnoses and to expect the participating GPs to begin coding, when the project was already asking them to do a great deal, was inappropriate. As a consequence, a number of glossaries were developed and permission was obtained for the use of the glossaries developed by a previous fundholding project in Perth. (263) These glossaries contained shortened lists of technical terms for common diagnoses and ordered pathology and diagnostic imaging tests. These glossaries were well accepted by the participating GPs, because of their brevity and ease of use. Coding was completed at the site where the analysis was completed. Two other issues regarding the coding in general practice need resolution - what to include in the glossaries and which coding systems to use.

For this project, a minimum data set was developed by the author of this thesis, after discussion with the practices and review of Bridges-Webb's general practice morbidity study. (20) A number of publications have called for the development of such a minimum data set for ambulatory care. (72,275) What has become obvious within this project is that there will be a need to gather "coded" information in any fundholding model. This information will be vital in monitoring efficiency, completing audits and assessing effectiveness and quality of care. Moidu argues that there is a "paradigm shift in health care management from monitoring the process of care to evaluating the outcomes of care" and a minimum primary care data set is crucial to successfully achieving this objective. (275) As managed care/fundholding is considered and possibly implemented, this

data set could form the basis of an evaluation framework that could provide local, regional and national comparison. (276)

A separate, but related problem was which coding system to use within this project. Collection of "standardised" diagnoses information was an important element in examining the variability of the practices and GPs involved, as was the provision of a structure to analyse the "flow on costs". Information is required on how the spread of chronic disease affects practice costs, particularly pharmaceuticals and how the demographic profile, with resulting disease burden influences the economic behaviour of GPs. For example, do pensioners with back pain cost more than non-pensioners? Collecting the flow on costs only, without linking to a diagnosis, will not allow a true picture to be gained of general practice care and resultant economic management. Simplistically, if two conditions are dealt with in one consultation then the cost for that condition may be half what it would have been if only one condition was chosen.

In this study, diagnoses were coded using the READ classification system (261), as it gave more flexibility and was more comprehensive. However the GPs initially found the actual task of coding too complex and too challenging. One GP indicated that he regularly did not know the diagnosis and had a great deal of uncertainty, that he found uncodeable. Undiagnosed conditions are part of the reality of general practice and this will always create an impediment to successful integration of coding into general practice. This coding difficulty may also reflect the unfriendliness of the user interface in software chosen and the lack of a good search engine, for linking terms with codes. As a consequence, a decision in this study was made to remove the coding problem from the GPs. The diagnoses were coded by a non-practice GP (the author of the thesis) at a distant site. This is unworkable with very large data bases and more research is required with coding in Australian general practice. (277)

The coding of pathology and diagnostic imaging has been facilitated by the glossaries from an earlier fundholding pilot. (263) The coding of drugs employed the Pharmaceutical Benefits Scheme (PBS) codes, as this allowed the project team to link prescribing to costs. (262) This was time consuming and the linkage between prescribing and costs, both for PBS and non-PBS items must be resolved as soon as possible. While the PBS codes can be used quite successfully to develop a pharmaceutical model for general practices, the non-PBS is more problematic. The non-PBS medications are part of the cost to a health care system and need to be accurately measured. However, these costs would not be part of a GP budget and theoretically within a fundholding general practice model would not need to be measured.

The coding issue needs resolution. Coded diagnoses would allow rapid analyses of costs per conditions and assessment of the quality of care for specific patients with identified problems across GPs and practices. The complexity of the general practice consultation and the inherent uncertainties in many of the conditions faced in general practice may demand that coding of diagnoses be completed outside the practice. Consistency of coding would be enhanced, but with a probable loss of validity (as the general practitioner would not be able to code exactly what he/she believes is the diagnosis or reason for encounter).

4.2.2 The role of the general practitioner in fundholding

The impact on the general practitioners would be substantial, if a practice decided to fundhold. Petchey quotes a report where in two pilot total fundholding sites, GPs are working an extra 8-25 hours a week. (155) All the early papers describing fundholding, documented new GP roles from administration and budgetary management to supervising change within

their own practices. (157,173174,203,209) In New Zealand Simon, a GP documented the process of developing an actual fundholding pilot. (236) The complex role of negotiating with GP peers, other health professionals, consumers, the primary/secondary/tertiary care interface plus resolving legal concerns and creating management structures required over $NZ300,000 dollars in unpaid time. This figure refers to all health professionals involved, including the GPs. (236) If Australian GPs are to become involved then there must be very obvious returns for the extra time that will inevitably be required.

Some of answers from the interviews provided important insights into the variability of opinions over what these enticements could possibly be. Similar variability is likely to be present among all Australian GPs. Those who were in favour thought fundholding could improve community services, contain costs and improve the efficiency of GPs, provide more equitable distribution of resources, enhance coordination and continuity of care and force GPs to focus more critically on what they were doing. Conversely, there are a number of very good reasons why GPs may boycott the idea. The reasons varied from the lack of evidence that it is has been successful, the opinion that the UK would abolish it in 3-5 years (as has happened) and the view that fee-for-service rewards good quality practice (ie. if you work harder you earn more income). There were concerns about the effect of fundholding on the doctor/patient relationship and the associated administrative costs.

Among this small group, there were GPs who were unsure of the value of fundholding. Some of these reasons included worries about quality of care, how different Australian general practice was and doctors skimming profits. Two respondents thought that fundholding would make GPs more cost-effective and accountable. Linkage may also be an issue if consumers were linked with a practice not following good "quality of care."

Overall there are four key themes that have surfaced from the qualitative methodologies that deserve more detailed discussion. They are the:

- value and role of patient linkage
- need to increase efficiency within the financial constraints of general practice
- management required within a fundholding practice
- the possible conflict for the GP fundholder between rationing of services and acting as a patient advocate.

In the next sub-section these four themes are discussed. They are likely to be crucial GP determinants of whether this idea would be embraced in Australia.

4.2.3. The key issues for a general practitioner to become a fundholder

One of the strong recurring themes is the linking of patients with a fundholding practice. Patients who visit multiple general practices has become an important issue with Australian GPs. (73,82) There is concern among the participating study GPs that quality of care suffers when patients move freely between different general practices. A more comprehensive Australia wide survey of a self selected sample of 1904 GPs found a mean response of 1.77 (82), suggesting that the feelings experienced by the study GPs are felt Australia wide. Similarly, in this sample of GPs there was agreement that continuity of care would be enhanced "if patients were required to link themselves with a practice within a fundholding model" - mean pre 2.25 and post 1.92 (a score of below 2.5 indicates more agreement than disagreement). The mean response to the question "new mechanisms should be developed for linking patients more closely to their preferred general practice" was

suggested as an option worth exploring among these GPs with a mean response pre 2.08 and post 2.15. In the national survey where the question was worded slightly differently (ie. "we should explore new ways of using financial incentives to encourage a continuing link between patients and their doctors") the mean response was 2.40.

While these study GPs agreed that this option of linking patients within a fundholding model may be one positive benefit in becoming fundholders, they were not sure patients would like to enrol (mean response to the question asking whether patients would enrol was pre 2.92 and 2.77 post). Secondly, if patients did enrol they were not sure that these patients should receive financial rewards, such as being bulk-billed or higher rebates for services (mean response pre 2.58 and 3.00 post). These sentiments were echoed in the national survey (mean response 2.97). (82) While patient linkage may seem a good idea to GPs, consumers are not convinced about the value of this idea.

The Australian health care system allows patients a free choice of medical practitioner. Current fundholding models of care require patients to enrol with a general practice. (278) Australian patients value their autonomy (38,279) and would have to be convinced that they would obtain tangible benefits from such a requirement. Enrolment with one practitioner has no support from either consumers or GPs. (39, 82) Broom argues that the acceptability of fundholding will depend on what services are involved, who sets the priority of services in the budget and whether the evaluation will include patient's views. (38) It is possible that patients would accept enrolment with large group practices or a network of practices offering a wide range of services and choice of practitioner.

Some form of voluntary linkage may be appropriate for the elderly (101, 115), people with chronic diseases and those patients who consider that

they have a regular GP. (72) Equity of access to services received by these groups would have to be carefully monitored. For example, if a practice budget was overspent, then the use of expensive antihypertensives (eg. ACE inhibitors) which may be appropriate, may be avoided in favour of cheaper medications that have more side effects. Indeed, it is hard to see how potential inequities might be monitored without invoking the need for intrusive surveillance of practice activities. In the current system if patients feel their access is being compromised they can change practices.

There are some suggestions that linking with one general practice may not improve quality of care. Using a series of interviews among 555 people, "multiple" GP users were more likely to be younger people, females, those dissatisfied with the previous GP consult, the more highly qualified and people experiencing poor communication. (114) The authors made the point that for women and people who have experienced poor communication, changing GPs may actually benefit their care (by improving education and health promotion). These findings suggest that fundholding may be difficult for one practice and more logical for a region or some groups of consumers. Continuity of care is not prevented by a patient seeing more than one doctor as long as good communication is developed by the participating GPs. (117) Within a fundholding model, this may require multiple practitioners with a range of skills who are linked by good communication networks. Computerisation, or at the very least good paper record keeping would seem a mandatory prerequisite.

The second theme that is echoed within these comments is that GPs need to become more efficient and conscious of the financial implications of their decisions. These following statements illustrate this point:

> this practice is quite conservative and will not move on. The problem is the two older partners are wanting to make money and will not invest in something new.

> There is minimal debate and communication among the partners. This then creates a problem of what to do to create efficiency and make savings when change is so difficult to introduce into this practice.

> as GPs we need to consider more and more the costs of our decisions and come to grips with the costs of our actions.

> with BP I always initiate with ACE or Calcium antagonist, as this is what I have been taught. We need more information and more cost-effective literature and more information on the expensive costs. The specialists need to provide cost information but they do not.

> there is no doubt that savings could be made on practice efficiency with staff, infrastructure, IT, good software etc.

> counselling is where I would make savings - more explanation may decrease the use of medications, but raise the level of consultation remuneration.

> savings could be made in thoughtful prescribing eg. antibiotics

> with me efficiency would come from continuity of care and experience and greater long term knowledge of the patient.

There is a growing realisation that GPs can not be immune from considering costs. Mooney argues that an efficient health system will require efficient doctors (in this case GPs). (49) Toon has argued that GPs are already making decisions based on economic considerations (179) and as a group they are most aware of the costs of their decisions for their patients. (60) These responses would indicate that this sensitivity is beginning to be felt, although mainly in the younger GPs. One comment below from an older study GP indicates that this process may be beyond their consideration.

> the provision of costing information - I would not to have to consider this information. I do not have the expertise to combine costs with clinical judgement. My training is in clinical management not cost management. I would need very clear information about the value of responding to costing information. There would also need to be comparison with my peers who I would trust.

The inducement of joining a fundholding practice to improve efficiency would for these GPs, be one consideration but this would vary across age groups and across practices.

The most attractive incentive to enrol GPs in fundholding is likely to be financial. If Australian GPs could be convinced that the extra work of creating and developing a fundholding practice would allow them to have a greater income to take home, then it is likely that the model would be seriously considered. The systematic review completed as part of this study (259) has revealed that there are methods to achieve savings that could be used within a capped fundholding budget for pharmaceuticals (191,280), pathology (281,282) and diagnostic imaging. (283) Linking this information to a fundholding model may induce GPs to consider this option.

The third theme is around management of a fundholding practice. The interviews reveal insights into how these GPs would function in this role. There was strong agreement that the managing of a fundholding practice should not be left to "non-general practitioner staff" (mean response pre 4.17 and post 4.08)* and that "deciding on economic issues should not be left to administrators" (mean response pre 4.08 and post 4.07). There was also the view that GPs should be trained in these management skills (mean pre 1.92 and post 1.92). These sentiments are reflected in the following excerpts from the interviews:

> I would definitely want a medical person with managerial interest or a manager with a medical interest. You would need specialist knowledge in this area and doubt any GPs would be able to do this. I would go for manager with a medical bent rather than other way around.

> GPs need to have input; if GPs get involved with administration, and lose touch with their patients, then they let down their patients. Managers have to be working in general practice; cannot be full time bureaucrats. You could lose touch with general practice if you spend full time in administration.

This management role will, of necessity decrease the time devoted to clinical work . Where this has relevance to Australia is that to introduce fundholding will require the energy and time of enthusiastic GPs. It is possible that these GPs are already heavily involved in the current reforms such as the divisions and, as such, do not have the time or energy to

* Where 5 = strongly disagree and 1 = strongly agree.

develop fundholding models (unless of course they were part of the divisional framework). This time would generate substantial opportunity costs and would need to be appropriately funded. In the UK, this has not generally affected a GP's personal income as it capped by list size, but in Australia income is dependent on the number of patient contacts and medical services provided. In addition, in the UK staffing costs are reimbursed by the Government to the tune of 70%, while in Australia they are paid for entirely from consultation fees. As a result, Australian GPs would have less time to spend away from consultations to address the management of fundholding.

It is important to note that the Audit Commission report on United Kingdom fundholding commented that the most successful practices had moved to employ experienced people with sound management skills. (162) They are needed to spend time (which the busy GP does not have) on auditing, contracting and reviewing provider quality. GPs are proprietors of small businesses that are, on the whole, self reliant. Fundholding would require a complete change in thinking. They would need to focus more on efficient economic management with budgets (of amounts in these practices of $1.2 million), accounting, auditing, report writing etc. The small business mentality would need to give way to a corporate mentality. This would be very challenging for some GPs. It is likely the entrepreneurial GPs would quickly rise to this challenge, but the bulk of Australian general practice may not be ready for this change. If fundholding was introduced, this change would need to be introduced over a 3-5 year period (with appropriate training). (162)

The final theme is the possibility of a clash with the traditional GP role of patient advocate and the new role of fund manager. There may be a conflict of interest, especially when a GP's personal income is affected. It could be argued that Australian GPs already manage such conflict in the

fee-for-service system, but in our open-ended system patient services remain freely available. Patients are able to move if they unhappy with the care provided by a GP. Fundholding would make the conflict more apparent to patients if GPs could improve their personal income by not providing services. Some insights to this concern are found in the interview responses to the question:

> yes - the questionnaire made me think how about difficult it could be. Always hard to make choices based on money – its put extra pressure on the Dr/patient relationship; Drs are not well trained in the money area. I would need to think about how to explain my decisions carefully to patients.
>
> unsure about advocate and management of budget but it depends on the practice. If you have people who do require a lot of expensive services eg elderly then it will be difficult. There will be a tension between Dr's wage and patient welfare - tension will be more personalised.
>
> yes I think I already do it. As long as the patient understands the reasons why. As long as there are choices for me to make. Access is the main reason I refer a lot to Noarlunga rather than FMC I am advocating for my patient more than considering costs of the xrays.
>
> yes I could balance both gate keeper and budget manager. Should be an option that if patient prepared to pay should be able; basic care. As the gatekeeper I should be aware of cost. There needs to be partnership between Dr and Economist. Difficult if patient wants something and cannot get it; consumer should be able to purchase a service if he/she wants it.
>
> yes, it is an inherent role of the GP- it is what they should be doing - do not see any tension on budget balance and gatekeeper role

A number of sections within the questionnaire explored the possible conflict of interests. Two questions asked "At this time, if a patient asks for an expensive test that you think is appropriate, do you refuse to organise this test" and "in a fundholding model, if a patient asks for an expensive test, that you think is inappropriate, would you refuse to organise the test". The mean response was pre intervention 2.0 and 2.17 respectively and post 2.39 and 2.23 respectively. The indications from the interviews and questionnaire responses is that this issue is not as significant as has been suggested.

Ellesbury argues that the task can be difficult but a number of provisions are required. (180) They include clear and open communication between doctor and patient and having intermediaries who can resolve differences of opinion about management. The option of more training for doctors in the area of cost-effective management and more involvement of physicians in these political decision making processes around resource allocation, efficiency and effectiveness (180) are other solutions.

Toon believes that fundholding GPs will, of necessity consider their own interest in obtaining value for the money found in their budgets. (179) After all this is the essence of the market which the move to fundholding is aiming to create. They will be focussed on their own practice patients. Where this system can falter is where other practice patients are treated inequitably (eg. decrease access to specialist services) because of the ability of one fundholding practice to "corner the access to the market. Prevention of this occurring will require regulations rather than the choices of individual doctors to prevent such actions". (180) These regulations will need to be strengthened by the monitoring of national data sources, much as occurs with the Health Insurance Commission today. If a GP is found to be over-servicing or charging for inappropriate services they can be investigated and prosecuted.

It is important to note that under the current GP funding model of fee-for-service there are incentives for behaviour that may not be in the best interest of the patients. Rapid throughput of patients will reward GPs financially, but may provide less appropriate care. Good quality care which often requires more time with patients is not rewarded under the current system.

There has been little research on the impact of managed care/fundholding on the doctor/patient relationship (185) although there is some evidence

that physicians who work in managed care models in the United States do restrict medical services, in order to reap financial gain. (184) The doctor-patient relationship is complex (284), being influenced by personal and cultural values. What fundholding, as a model in Australian general practice would do to this relationship is unclear and will not be clarified until firm, workable frameworks are developed.

On the evidence of this group of GPs, fundholding will be acceptable to certain GPs and not others. Introducing this model across the whole community is not likely to be successful. The adoption of this model will need to be driven by innovative and lateral thinking GPs who are willing to take a risk. Only when a few successes occur are the remainder of GPs likely to follow. Patient linkage and financial rewards may be two powerful marketing ploys to involve these innovative GPs. Due consideration will be need to be given in appropriate remuneration for the requisitory GP management needed within a fundholding practice. Appropriate debate will be required to resolve the possible clash between patient advocate and fiscal manager.

4.2.4 Computers and the general practitioner

Fundholding will require computerisation and in Australia the provision of these services, at no cost to the GPs may be one further inducement to consider adopting this model. One practice enrolled in this study to obtain a new computer system.

On another level the mix of general practitioners involved in this study provided a broad and rich insight to the role of computers for GPs. Some of the concerns that were found in the interviews included patient confidentiality, data ownership, the loss of computer information and the time required to use the computer within the consultation. Recurrent

concerns were how the computer would affect the doctor-patient relationship and the training required. The training would cause loss of income because of the need to see fewer patients while this computer education was being completed.

The questionnaire responses reflected these concerns and revealed some interesting and important lessons. In answer to the question "the introduction (extension) of a computer system to this practice will make my job harder" the mean was pre 3.0 and post 3.0 indicating that this study did not influence the GP perceptions of this issue to a great extent. However with the question "the introduction of the computer system had made the practice run less smoothly" produced a change in mean responses over the course of the study (mean pre 2.75 and post 3.6). This shift in value probably reflects the difficulty the project team had in stabilising the practice computer systems for the GPs. The computers had some small, but not significant effect on the GP-patient relationship. In response to the question "the computers in my room will affect the doctor/patient relationship" - the mean pre study response was 3.25 and post 3.61.

At the moment there is no imperative for Australian GPs to computerise. A 1997 phone survey of 1000 randomly selected general practices found that 31% had computers and almost three quarters (74%) used them for a mixture of clinical and administrative functions. (285) The main administrative tasks included patient registrations, billing and financial management. The clinical tasks included recall systems, with 47% of practices using this function. Only 15% of the GPs were clinical users, with script writing being the most common function used. (285) Twelve percent of the GPs sampled were using this function. Only 7% were gathering clinical notes. A similar percentage was found in South Australia (286) and there was a strong association with GPs in group practices and those who believed in a strong doctor-patient relationship.

If fundholding is to be successful, there will need to be good, sound data collection, rapid information transfer and appropriate analyses. There will be a need to gather regional information from participating fundholding practices to help the planning of local programs (287), particularly if fundholding is part of a wider regional managed care funding pool. Methods to gather information on general practitioner efficiency and effectiveness (288) will also be required. If fundholding was to entice GPs to computerise then "a funding system would be required that rewards GPs rather than costs GPs for improvements in health care that they can deliver to the Australian community when they use computer systems". (130) The incentives that could be put in place within a capped fundholding budget may provide these rewards.

4.2.5 Data and the general practitioner

The data required for fundholding is, of necessity complex and detailed. The Audit Commission report into fundholding in the United Kingdom argued that in order for fundholding practices to have achieved their full potential in achieving efficiency, quality and effectiveness, information needed to be gathered to manage budgets, review variations in GP behaviour, purchase appropriate care from providers and monitor the quality of care provided by the providers. (162)

This study faced a number of problems in data collection which are outlined above (see section 4.1.1 part d). Other reasons for the problems with the data collection and analysis are detailed in the box on page 217. Fundholding will be more easily established in Australia, if GPs are gathering a substantial amount of clinical and costing information, in a form that permits regular analysis, review and comparison. The data required to develop a practice budget in the model proposed in this thesis

included information on consultation costs, pathology and diagnostic ordering, drug prescribing and referrals. The accuracy of any collected local practice data is uncertain for a number of reasons.

They include the influence of specialist pathology and radiology organisations; the problem of a single prescriber number for one GP who may work at multiple sites; the common problem of non-filling of repeat scripts and the concern around the issue of the safety net - ie. some allowance will need to made for the influence of the safety net on Government and personal pharmaceutical costs. The safety net is a designated level of costs to the consumer for prescriptions. If a person purchases medications, that over one year is greater, in total than this figure, then these drugs become free at the point of sale. This varies for pensioners and non-pensioners and in November 1997 the levels were $166.40 and $612.60 respectively. (289) What needs clarification is which local data sources will provide the best methods to review and monitor costing information within a practice for each GP, while completing day to day care.

In this project the best data sources were found to be the front of house software for consultations, local pathology organisations for pathology and consultation based information for diagnostic imaging and pharmaceuticals. In an ideal fundholding practice it is likely that the diagnostic imaging cost information would be available from the chosen provider. Pharmaceutical costs could be obtained from computerised prescribing, for which there is beginning to be more "GP friendly" software available. Because of the reasons discussed above, not all GPs will be able to adapt to this method. Paper data will be required for some GPs and an important question is how much is required to provide a statistically valid summary of each GPs behaviour. This issue of sample size is further explored in Chapter 8.

Typical problems for the data collection for different categories of service provision

For diagnostic imaging

- A GP's ordering statistics may be artificially inflated when radiologists add examinations they believe necessary. Although these must be declared as "self-determined" by the radiologists, this may be overlooked and the new test and cost recorded against the referring GP.

- Additional problems arise for GPs in understanding the nature and availability of procedures by different radiologists. For example, Medical Benefits Schedule Items 55102 and 55112 are both M-mode and 2 dimensional real time echocardiographic, but Item 55112 includes colour flow mapping and costs $218.05, compared with $135.35 for Item 55102. GPs may not have ready access to information on the relative merits of the two techniques and, in any case, the test performed will depend on the radiologist's facilities.

For drug prescribing

- Changes in patient entitlement to a Health Care Card and to the Pharmaceutical Benefits Scheme safety net would be a major administrative problem in monitoring drug costs.

- Drug expenditure is likely to be overestimated because of unpresented prescriptions.

- Health Insurance Commission records cannot differentiate between scripts issued at different practice locations under a single prescriber number.

- Medical computer software systems do not provide the costs of drugs. Databases showing drug costs are sourced from different suppliers, leading to inconsistencies between databases.

For pathology services

- Pathology data collection is well adapted to fundholding because the information is already automated, the costing algorithms are perfected and no discretionary decisions may be made by the pathologist. However, the complexity of the costing algorithms means that they cannot be duplicated, without excessive computer resources, in general practice.

Source: Pritchard D, Beilby J. Issues for fundholding in Australian general practice. Medical Journal of Australia 1996;164:215-219:(137)

4.2.6 Behaviour change and the general practitioner

The overall aim of this model of remuneration is to create methods to improve efficiency within a capped budget. Of necessity, this will require feedback and audit. The reviewing of GP partners' prescribing and pathology and diagnostic ordering, so that variations in behaviour can be identified and subsequently reduced, to provide a more efficient service (162) will be integral to successfully completing this process. The questionnaires, pre and post study asked about the value of receiving information about their prescribing, pathology and diagnostic imaging behaviour. The mean responses from all GPs indicated moderate agreement with the statement that this information was "an exciting prospect for me". For example with the prescribing the pre mean response was 2.5 and the post was 2.54. The interviews provided more qualitative data to support this conclusion. The challenging question is how to successfully provide feedback and establish an educational model that is cost-effective and sensitive enough to assist GPs to address inefficiencies and introduce appropriate change.

As part of this study a systematic review was completed examining the effect of feedback of costing information to GPs on changing behaviour. The methodology for this review has been detailed in Chapter 3 but involved searching a number of sources including MEDLINE, EMBASE, CINAHL, Health Plan and citations in reviews for articles where GPs had been given information on the costs resulting from their management decisions. The article has been published (259) and a copy is included in Appendix 6. A summary is presented in the following paragraph.

There is evidence that GPs know little of the costs of the tests they perform and the drugs they prescribe. (290,291) This is reflected in the comments from the GPs involved in the fundholding study. The systematic

review located 6 studies, of appropriate quality where costing information was actually provided. (281,292,293,294,295,296) The studies were only selected if they were randomised controlled trials, or other robust designs such as quasi-randomised controlled trials (such as those using alternative allocation), crossover designs and controlled time series. Two are worth mentioning. Soumerai et al found that an academic detailing model resulted in a mean decrease of US $105 per physician for a nine month study period for three intervention drugs and a 13% decrease in prescribing of these three drugs. (292) The feedback on prescribing costs was given by face to face trained "detailers" with a pharmacology background. They visited the GPs twice over a nine month period. In the second study, Tierney at al (281) used immediate computerised feedback (ie as they ordered a test the cost appeared on the screen). They found that in the intervention group the GPs ordered 14.3% fewer tests and there was a US $6.68 lower patient charge.

Other models to change behaviour and produce costs savings that do not involve the feedback of information on costs have similarly been examined as part of this thesis. The Dutch have been actively involved in this area of feedback to GPs for a number of years. Since 1985, the Diagnostic Coordinating Centre in Mastricht has been giving feedback on pathology and diagnostic testing to GPs. They send biannual reports. (282,297,298) These reports include information on the appropriateness of tests ordered for the conditions stated on the report form. The request form needs to be completed with clinical information and as a consequence, relevant advice can be given about the appropriateness of the ordered tests. The advice is given by a respected expert (internal medicine specialist) and is validated by comparing with accepted regional guidelines and standards of the Dutch College of General Practitioners. Using a cohort study design with an uncontrolled group (297) and a study where GPs were randomised into control and intervention groups (280) significant differences in quality and

quantity of tests ordered among the intervention groups have been found, as a result of this feedback. A more recent analysis has found the process is cost-effective. (298)

All the strategies described are labour intensive and as such, may not be cost-effective. More efficient methods are those aimed at groups of GPs. The use of guidelines, particularly for pathology and diagnostic imaging ordering (283) that have been developed by respected peers and experts may be a more viable option. Alternatively, in the area of prescribing the use of formularies (196) or peer led standards (280) or incentive payments (195) may be a more logical use of resources. These models are worth a cursory look before leaving this section.

The use of guidelines resulted in a decrease in skull xrays by 27% (297), and a decrease in targeted radiological investigations by 28%. (283) The former used immediate feedback on the number of skull xrays ordered, combined with posters and lectures (299) and the latter used mail-outs to targeted doctors. (283) In the area of pathology, haematological requests fell by 20%, using guidelines linked to aggregated feedback and cancellation of inappropriate tests. (215) In a time series study, inappropriate cardiac enzymes tests were reduced to zero using immediate feedback with a seminar. (300) With prescribing, the creation of a district-wide formulary led to savings among 50 United Kingdom GPs of £150,000. (196) The process of development of the formulary took 2-3 years, with a series of monthly meetings. The savings resulted from an increased use of formulary drugs that were cheaper on the whole. The prescribing incentive scheme among 459 non-fundholding general practices created savings of £1.54 million with £463,000 being returned to the practices. (195) The methods included targeted savings, focussed on three different estimates (3%, 2% and 1%), depending on the practice

profile. Educational material was also provided. The authors noted that there was no obvious reduction in the quality of prescribing. (195)

To summarise, both this study and the literature reveal that there has been little work on providing information on flow on cost to GPs. However there is evidence that successful methods exist and that information on all areas is likely to be of interest to GPs. Feedback will be required and should be six monthly. However creating a method within a fundholding practice to improve efficiency would require more than the feedback of costing information. GP approval and input, identification of the expensive practice conditions, and peer comparison would be needed, probably within a multifaceted strategy. Within this study, the GPs in Practice 2 have identified just such a strategy built around practice consensus, formularies, academic detailing and guidelines that concentrated on the "cost drivers" within the practice.

The strategy would need to be GP friendly. Methods would need to be adapted to the differing ages and experiences of the GPs. The evidence from the review of the United Kingdom fundholding practices, is that this element would be crucial in the establishment of fundholding in Australia, if sustained changes in behaviour were required among GPs to create cost savings. (162) The United Kingdom fundholders did not, for the most part, set out to complete this task. (172)

4.2.7. Quality of care

If fundholding were adopted in Australia, the development of quality of care measures that would isolate the effect of the model, and be easily obtained from routine data sources are important. These data sources should also be used to gather budgetary information. The interviews indicate that the GPs would consider this area a priority. The

questionnaire responses indicate that overall "the quality of care with patients under our system is good" with mean response of 2.17 (pre) and 1.85 (post). This would indicate that for these GPs changing to a fundholding practice to improve the quality of care would not necessarily be accepted by them as a logical reason to change, unless glaring problems in the current arrangements were identified.

If fundholding was established, the GPs would want the quality of care monitored. Some of the possible suggested measures mentioned within the interviews included home visits, after hours access, management of common conditions eg. diabetes and asthma, cervical smears, immunisations, prevention of adverse drug outcomes and interactions, patient satisfaction, and appropriate ordering of investigations.

There is some mixed evidence about how the quality of care has been affected by managed care organisations. Starfield et al examined retrospectively outpatient records for a number of common conditions (asthma, diabetes, hypertension, well child care and otitis media) in three settings: hospital outpatient settings, community health centres, and the physician's office. (301) They found that the quality of care was not consistently related to the level of expenditure by these providers. Other studies comparing Health Maintenance Organisations (HMO) and fee-for-service practice have found significant differences in the care provided for marginalised groups. (302,303) The most thorough review in 1994 found that HMOs when compared with fee-for-service models of providing care had mixed results on quality of care, lower consumer satisfaction with care, but higher satisfaction with fiscal concerns. (185) They noted that only five studies of a possible 17 revealed some decrease in quality of care.

Fundholding in the United Kingdom has not been evaluated for measures of quality of care, except for a number of process measures.

(162,173,174) These measures included patient satisfaction, waiting time for elective surgery and consultation length. With the move to outcome based funding for the divisions of general practice (103) and the increasing influence of evidence based medicine (105) and guidelines (304), it is likely that if fundholding was adopted, the remuneration would be specifically linked with carefully chosen outcomes or quality of care measures. Eddy argues that the linkage of remuneration to quality is inevitable as the move to maximise the health of a general practice population (or a community) within diminishing resources continues. (305) The key, which is emphasised in the GP responses in this study is to find the measures that cover the whole community and general practice population and are easily obtainable.

4.2. 8. Regulations

For fundholding to work in Australia there would need to be a substantial number of new regulations created. These would need to cover budgetary management, reporting and audit requirements and quality assessment. There would need to be regulations to require practices to link funding to specific outcomes identified from local needs assessments, to establish peer review mechanisms, methods to review consumer complaints, and contracting requirements and purchasing rules. The GP interviews provide ample evidence of the complexity of this task. One GP's comment summarise the concerns succinctly:

> we would need to report in a business like manner and would need to demonstrate that significant savings were passed onto the patient. Areas of need would need to be targeted with savings. Proper financial reporting would be required.

These developments would generate substantial transaction costs which would need to carefully monitored and calculated.

SECTION THREE

SUMMARY AND CLARIFICATION OF THE OBJECTIVES

This element of the study aimed to examine the first two Objectives. A mixture of methodologies were used. In the table on page 226 the key themes which were found with the different methods are summarised and compared. A number of themes were consistently mentioned. They include the stress associated with computerisation in these general practices, the value of data for informing these GPs about their behaviour, and the need to look at ways to be more efficient in general practice. Specific fundholding concerns included the need for the GPs to manage a fundholding practice and the administration staff, the importance in monitoring quality of care and the possible clash between acting as a manager of a budget and a patient advocate. Finally patient linkage within a fundholding practice may have some benefits. These themes provided important insights into the first two Objectives.

The first Objective was:

To develop a framework for fundholding in three general practices based on the data (both qualitative and quantitative) collected from the three practices and their staff.

Included under this objective was the documentation of the reaction of the GPs and the general practices to the data collection, coding, and budgetary development and management. A number of elements have been documented that would need careful management for the introduction of fundholding to be successful. They include sensitive management of the staff to minimise the inevitable disturbance to their routine and improved computer systems. The coding for the GPs would need to be kept to a minimum and should only include common or important conditions and those that generated significant costs. Once

the data collection systems were established there is no doubt that GPs would be interested in the information gained, as long as appropriate analyses were completed and the method of presentation was GP friendly. Comparison with their peers would be essential. This type of feedback would be integral to budgetary management within fundholding practices. The systematic review completed as part of this thesis has located successful methods to integrate this information into strategy to improve efficiency. The challenge is to structure the feedback to reward appropriate and desired practiced styles. (3) Finally, the protection and monitoring of quality of care will need to be integral to any fundholding practice and this will, by necessity require some amount of coding.

The second Objective was:

To document the structure and costs needed to implement this fundholding framework

A number of important comments can be made regarding this objective, Resources will be needed for GP time to coordinate the budgets, contract setting with providers, GP review and advice re behaviour, policy directions for the practice, and meetings with other primary and secondary care health personnel etc. New staff would be needed to manage the funds and monitor and supervise the necessary IT side of the practice. Staff would be required for data analysis and to provide educational feedback to the GPs. A substantial amount of regulations for all funding bodies would be a necessary prerequisite and GPs will be need to be involved with their development. These funding bodies would include both Commonwealth and State Governments.

Table 28

COMPARISON OF THEMES IDENTIFIED FROM EACH OF THE QUALITATIVE METHODS

Reflective participant observation	1st Interview	Questionnaires	2nd Interview
Careful management of change with the need a great deal of support	need for change within fee-for-service	need to look at other funding for general practice other than fee-for-service	
The introduction of the computers was stressful	ambivalence towards computers and concerns around the effect on the GP/patient relation-ship	not sure of value of computers	
Data collection was difficult	data collection interesting	GPs were excited by the thought of looking at data	data important but needs to be compared with "like" peers
	need to look for methods to be more efficient	need to look at methods to be more efficient	need to look for methods to be more efficient – with multiple strategies suggested
	possible clash with financial management and patient care	unsure of the effect of fundholding on doctor/patient relationship	
			Concern about cost shifting between State and fund holding practices
	possible value of patient linkage	possible value of patient linkage	
	management must involve GP	management must involve GP, not be left to an administrator	
	there is a need to protect and monitor the quality of care provided within a fundholing practice	the quality of care in fee-for-service is adequate	
		fee-for-service prevents involvement in community, but they believe that GP should be the leader of primary care team	

What the interviews do offer are ideas about possible enticements that would be acceptable to GPs for them to become involved with fundholding. They include patient linkage, financial incentives, reskilling and the attraction of obtaining computers. Issues around the change in GP role required to be part of fundholding needs more debate.

CHAPTER FIVE
QUANTITATIVE DATA COLLECTION - RESULTS AND DISCUSSION

This chapter is divided into four sections. This first section presents the results of the practice based data collection and is separated into two subsections:

- overall data set including a comparison with other budgetary information (Section 5.1.1)
- specific analysis of the age/sex breakdown with comparison across the practices (Section 5.1.2)

These results allowed an examination of Objective 3 and 4 i.e. to develop a method to document and compare the resource allocation per condition by the GPs and practices overall. In order to complete this task, the overall data set was first individually examined for each data collection period. Further analysis was then completed using mean cost per ordered item per GP and per practice across a smaller data set that includes the patients' age and sex. The second analysis allowed the initial findings in the overall data set to be validated.

In section two, the results of the first two analyses are discussed. The section begins with a detailed examination of the accuracy of the data collection and then looks at the resource allocation by practice, by GP, by diagnoses groups which are grouped by READ chapters and chosen condition and by age and sex groups.

The third section discusses the development of a model where age and sex of the patients, the conditions treated and GP and practice variables were combined in a series multiple regression analyses. This modelling provided more detailed insights into the variability in resource allocation

across the GPs and practices, after correcting for age and sex of the patients and the conditions managed.

The final section summarises the quantitative data findings and the information these analyses provided to answer Objectives 3 and 4.

SECTION ONE

QUANTITATIVE RESULTS

Section 5.1.1 Overall data set

The overall data collection took place over two periods - July-September 1995 and January-June 1996. The first was continuous for each GP and the second included data from two collection times. These latter two were combined to allow for more complete analysis across the whole 6 month interval from January to June 1996. From each period, individual GP's results are compared with the Health Insurance Commission and Pharmaceutical Benefit Scheme information. These latter data were gathered directly from both organisations, after obtaining appropriate GP consent. Having examined each individual GP's data, the information is presented by READ Chapter and finally by "chosen" diagnoses. These "chosen" diagnoses were conditions commonly seen in general practice and known to have variability in management.

5.1.1.1 First Collection Period - July-September 1995

Overall in Practice 1

- the number of consultations where information was collected was 4,622 (68% of the total identified by the Health Insurance Commission – 6,797)
- the number of diagnoses raised was 6,616 at a rate of 140 per 100 consultations
- the number of items prescribed was 3,233 at a rate of 49 per 100 diagnoses
- the number of pathology tests ordered was 818 at a rate of 12 per 100 diagnoses
- the number of diagnostic imaging investigations ordered was 217 at a rate of 3 per 100 diagnoses.

Overall in Practice 2

- the number of consultations where information was collected was 2,554 (54% of the total number for this period – 4,744)
- the number of diagnoses raised was 3,505 at a rate of 140 per 100 consultation
- the number of items prescribed was 1,297 at a rate of 37 per 100 diagnoses
- the number of pathology tests reported ordered was 437 at a rate of 12 per 100 diagnoses
- the number of diagnostic imaging investigations ordered was 82 at a rate of 2 per 100 diagnoses.

Overall in Practice 3

- the number of consultations where information was collected was 578 (75% of total number - 774)
- the number of diagnoses noted was 1,574 at a rate of 270 per 100 consultations
- the number of drugs prescribed was 471 at a rate of 30 per 100 diagnoses
- the number of pathology tests ordered was 199 at a rate of 13 per 100 diagnoses
- the number of diagnostic tests ordered was 22 at a rate of 1 per 100 diagnoses.

Two comments are worth making on these figures. The response rates for consultations where information was gathered varied from 75% in Practice 3 to 68% in Practice 1 and 54% in Practice 2. While the variability was of concern and raises the possibility of recording bias, the total number of consultations was felt to be adequate to complete the analyses. Secondly with Practice 3, the pathology figures included information from the local pathology provider. This information was obtained after the study began.

In Table 29, the data collected for each of the four areas for each GP are presented and compared with the most appropriate national standard ie. the Health Insurance Commission data and Pharmaceutical Benefits Scheme information. The variation in total expenditure for the individual GPs was substantial. They varied from:

- $38,267 to $3,448 for consultations
- $34,134 to $939 for pharmaceuticals
- $4,250 to $1,323 for pathology ordering and
- $5,554 to $176 for diagnostic imaging.

As can be seen the agreement with the Health Insurance Commission and Pharmaceutical Benefits Scheme data varied from

- 78 to 100 for consultations (mean - 96)
- 42 to 173 for pharmaceutical prescribing (mean - 95)
- 21 to 71 for pathology (mean - 46)
- 10 to 117 for diagnostic imaging (mean - 59).

An agreement of 100 indicates perfect cost estimation of the practice based data compared with the national sources, with a lower than 100 result indicating an under-estimation of costs and an over 100 indicating an over-estimation.

A number of comments are required on this data. The variation in agreement reflected differences in the amount of data collected by each GP. The completed case note validation (see Section 3.2.8) has illustrated the variability in amount of data collection. The overall agreement in Practice 1 (which includes GP *1* to *5*) was 81 compared with 57 for Practice 2 (includes GP *6* to *16*) and 83 for Practice 3 (GP *17*). Overall agreement refers to the total agreement across all four items – consultations, pharmaceuticals, pathology and diagnostic imaging.

Some part of the differences in overall agreement was due to the calculation of the pathology costs. Pathology test costs are modified as the number of tests increases. In the model developed for the calculation of the pathology costs based on the practice based data collection, each pathology test was costed individually. It was not possible to correct for multiple tests because of the lack of appropriate software.

Table 29

COMPARISON OF PRACTICE BASED DATA* WITH HEALTH INSURANCE COMMISSION AND PHARMACEUTICAL BENEFIT SCHEME DATA - JULY-SEPTEMBER 1995

General	Consultations		Pharmaceuticals		Pathology		Diagnostic Imaging	
Practitioner	Total Costs	Agreement **	Total Costs	Agreement**	Total Costs	Agreement**	Total Costs	Agreement**
1	$38,267	98	$34,134	90	$4161	44	$4,820	72
2	$35,443	94	$18,656	54	$2036	21	$4,192	47
3	$37,140	97	$28,766	60	$3,240	22	$4,855	56
4	$29,295	99	$25,585	134	$4,250	65	$5,554	78
5	$28,645	100	$13,387	100	$3,667	42	$2,446	74
6***	-	-	-	-	$0	-	-	-
7	$28,738	98	$25,306	82	$3,754	56	$3,116	66
8	$5,851	97	$1,987	89	$361	36	$498	117
9***	-	-	-	-	$0	-	-	-
10	$11,625	93	$7,882	173	$570	68	$176	10
11	$12,944	99	$13,131	100	$1,802	41	$1,818	45
12	$13,123	78	$5,237	42	$1,323	26	$627	27
13	$20,013	96	$7,700	138	$3,862	47	$1,367	64
14	$13,385	96	$6,233	51	$1,357	43	$1,836	68
15	$3,448	99	$939	99	$161	45	$0	0
16	$6,427	99	$2,622	100	$882	71	$309	59
17	$19,906	100	$22,877	113	$3,315	60	$1,537	95

* The practice based data have been adjusted for the number of consultations and pharmaceutical costs. The pharmaceutical costs include adjustment for safety net and pensioner status. Both pensioner status and safety net are known to influence pharmaceutical costs. This is discussed in Appendix 9

** Agreement - compares practice based total costs (as estimated by the gathered paper collected data) and Pharmaceutical Benefit Scheme and Health Insurance Commission information. With these figures 100 indicates perfect agreement in total costs between both sources. Less than 100 indicates a weaker agreement, with the lower the figure the poorer the agreement. Greater than 100 indicates an over-calculation of total costs for that GP in that item.

*** GP 6 was on maternity leave during this period and GP 9 had left the practice.

In Tables 30, 31 and 32 the costs for each diagnoses groups are presented. The diagnoses groups that have generated the most costs are compared in Figure 4 for each practice. These groups vary for each practice, in part reflecting the different age structures. In Practice 1, the groups included circulatory diseases (22.3%), respiratory diseases (15.7%) and digestive conditions (12.8 %). In Practice 2 the expensive groups included respiratory diseases (24.2%), circulatory diseases (15.8%) and digestive conditions (9.8%). It is worth noting that nervous system/sense organ diseases account for 10.7% of the conditions but only 4.5% of the costs. In the third practice the expensive groups were the circulatory system (34.4%) with endocrine/metabolic (13.3%), respiratory diseases (8.9%) and musculoskeletal (8.7%).

From this data set, information on the chosen conditions was identified to allow comparison across the practices. In Table 33, the three practices are compared for these specifically chosen conditions. This table does not include consultation costs and only summarises pharmaceuticals, pathology and diagnostic imaging costs for the Commonwealth Government only.

Examining the chronic illness costs, some interesting results are found. The mean cost per presentation for a number of conditions are compared below. For diabetes mellitus there was minimal variation, but with hyperlipidaemia and particularly with heart failure, the differences between the practices were greater.

Practice	**diabetes mellitus**	**hyperlipidaemia**	**heart failure**
Practice 1	$8.71	$38.06	$8.66
Practice 2	$8.88	$36.54	$16.56
Practice 3	$8.89	$30.88	$14.54

If the mean costs for acute conditions are examined there was less variation, but there were still differences. Three conditions are compared below.

Practice	otitis media	sinusitis	abdominal pain
Practice 1	$5.20	$6.31	$36.31
Practice 2	$5.55	$5.75	$23.80
Practice 3	$6.00	$7.93	$16.67

For otitis media the cost varied from $5.20 to $6.00 and for sinusitis $5.75 to $7.93, for abdominal pain the costs varied from $16.67 to $36.31.

Table 30

PRACTICE 1 DIAGNOSES*
TOTAL NUMBER AND COSTS
(JULY-SEPTEMBER 1995)

			Costs	
Class	*N*	*%*	*Total cost $*	*%*
History Symptoms	21	0.2	227	0.1
Preventive Procedures	439	3.4	3,805	2.3
Other Procedures	0	0.0	0	0.0
Surgical Procedures	57	0.4	1,145	0.7
Administration	0	0.0	0	0.0
Infectious/Parasitic	285	2.2	3,317	2.1
Neoplasms	24	0.2	475	0.3
Endocrine/Metabolic	708	5.4	15,367	9.6
Blood Disorders	115	0.9	1,084	0.7
Mental Disorders	359	2.8	4,620	2.9
Nervous System/Sense Organ Diseases	777	5.9	5,211	3.3
Circulatory Diseases	2,420	18.5	35,557	22.3
Respiratory Diseases	3,265	25.	25,051	15.7
Digestive Diseases	682	5.2	20,519	12.8
Genitourinary System	357	2.7	6,217	3.9
Pregnancy/Child Birth	8	0.1	62	0.0
Skin	523	4.0	3828	2.4
Musculoskeletal	1,130	8.6	11,826	7.4
Congenital Anomalies	4	0.0	12	0.0
Perinatal Conditions	0	0.0	0	0.0
Symptoms/Ill Defined conditions	660	5.0	8,060	5.0
Injury	72	0.6	943	0.6
Other	95	0.7	1,331	0.8
Uncoded	1,078	8.2	11,057	6.9
TOTAL	**13,078**	**100**	**159,768**	**100**

* Diagnoses groups are coded by READ Chapters. (261)

Table 31

PRACTICE 2 DIAGNOSES* TOTAL NUMBER AND COSTS (JULY-SEPTEMBER 1995)

			Costs	
Class	*N*	*%*	*Total costs $*	*%*
History Symptoms	46	0.6	183	0.2
Preventive Procedures	555	7.3	5,174	5.5
Other Procedures	6	0.1	16	0.0
Surgical Procedures	172	2.3	2,590	2.7
Administration	4	0.1	39	0.0
Infectious/Parasitic Diseases	132	1.7	1,299	1.4
Neoplasms	6	0.1	419	0.4
Endocrine/Metabolic	195	2.6	4,377	4.6
Blood Disorders	16	0.2	323	0.3
Mental Disorders	239	3.1	5,541	5.8
Nervous System/Sense Organ Diseases	820	10.7	4,231	4.5
Circulatory Diseases	895	11.7	15,023	15.8
Respiratory Diseases	2,459	32.2	22,972	24.2
Digestive Diseases	325	4.3	9,335	9.8
Genitourinary System	399	5.2	5,468	5.8
Pregnancy/Child Birth	21	0.3	98	0.1
Skin	305	4.0	1,540	1.6
Musculoskeletal	334	4.4	5,705	6.0
Congenital Anomalies	8	0.1	49	0.1
Perinatal Conditions	23	0.3	162	0.2
Symptoms/Ill Defined conditions	445	5.8	6,975	7.4
Injury	58	0.8	871	0.9
Other	47	0.6	656	0.7
Uncoded	129	1.7	1,811	1.9
TOTAL	**7,639**	**100**	**94,857**	**100**

* Diagnoses groups are coded by READ Chapters. (261)

Table 32

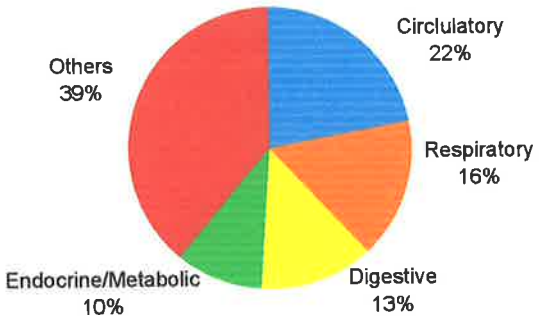
PRACTICE 3 DIAGNOSES*
TOTAL NUMBER AND COSTS
(JULY-SEPTEMBER 1995)

			Costs	
Class	*N*	*%*	*Total costs $*	*%*
History Symptoms	28	1.3	410	1.5
Preventive Procedures	34	1.5	246	0.9
Other Procedures	0	0.0	0	0.0
Surgical Procedures	5	0.2	81	0.3
Administration	0	0.0	0	0.0
Infectious/Parasitic	12	0.5	248	0.9
Neoplasms	1	0.1	20	0.1
Endocrine/Metabolic	199	9.0	3,675	13.3
Blood Disorders	35	1.6	216	0.8
Mental Disorders	64	2.9	914	3.3
Nervous System/Sense Organ Diseases	141	6.4	1,373	5.0
Circulatory Diseases	655	29.5	9,528	34.4
Respiratory Diseases	247	11.1	2,474	8.9
Digestive Diseases	146	6.6	1,918	6.9
Genitourinary System	73	3.3	813	2.9
Pregnancy/Child Birth	0	0.0	0	0.0
Skin	137	6.2	802	2.9
Musculoskeletal	210	9.5	2,416	8.7
Congenital Anomalies	0	0.0	0	0.0
Perinatal Conditions	0	0.0	0	0.0
Symptoms/Ill Defined conditions	140	6.3	762	2.7
Injury	31	1.4	352	1.3
Other	1	0.1	24	0.1
Uncoded	60	2.7	1,457	5.3
TOTAL	**2,219**	**100**	**27,729**	**100**

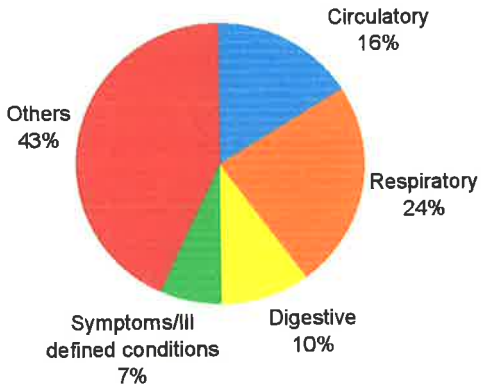
* Diagnoses groups are coded by READ Chapters. (261)

FIGURE 4
COMPARISON OF TOTAL COSTS BY PERCENTAGES BY DIAGNOSES GROUPS FOR THE THREE PRACTICES (JULY-SEPTEMBER 1995)

Practice 1. Percentage of Total Cost by Diagnoses Groups



Practice 2. Percentage of Total Costs by Diagnoses Groups



Practice 3. Percentage of Total Costs by Diagnoses Groups

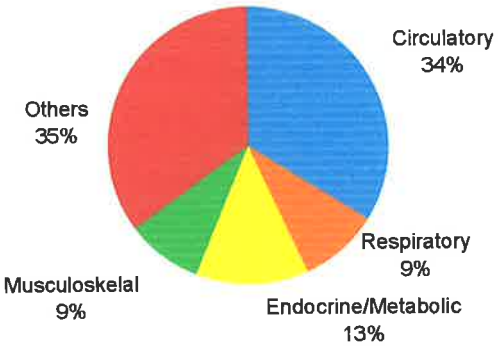


Table 33

SPECIFIC COSTS FOR CHOSEN CONDITIONS*
COMPARISON BETWEEN THE THREE PRACTICES (JULY-SEPTEMBER 1995)

Condition	Practice 1			Practice 2			Practice 3		
	N	Costs	Rate $**	N	Costs	Rate $	N	Costs	Rate $
Menopause	285	$2,014	7.07	211	$2,345	11.11	17	$120	7.06
Diabetes Mellitus	262	$2,282	8.71	8	$71	8.88	70	$622	8.89
Lipid Abnormalities	258	$9,820	38.06	101	$3,691	36.54	90	$2,779	30.88
Anxiety	124	$434	3.50	6	$11	1.84	5	$18	3.60
Depression	154	$3,558	23.10	198	$4,877	24.63	44	$784	17.81
Otitis Media	230	$1,196	5.20	497	$2,757	5.55	19	$114	6.00
Hypertension	1723	$28,499	16.54	674	$11,678	17.32	377	$5,941	15.76
Heart Failure	117	$1,013	8.66	41	$679	16.56	44	$640	14.54
Sinusitis	200	$1,262	6.31	237	$1,362	5.75	30	$238	7.93
COAD	55	$851	15.47	49	$389	7.94	78	$682	8.74
Asthma	582	$6,938	11.92	1182	$14,648	12.39	73	$1,045	14.32
Reflux Oesophagitis	255	$9,175	35.98	158	$4,531	28.68	66	$959	14.53
Peptic Ulcer	55	$1,297	23.58	22	$530	24.09	4	$108	27.00
Osteoarthritis	446	$3,420	7.67	97	$667	6.88	64	$328	5.12
Back Pain	91	$1,220	13.40	45	$776	17.24			
Lethargy	27	$371	13.74	48	$706	14.71			
Cough	51	$408	8.00	128	$2,689	21.00			
Abdominal Pain	52	$1,888	36.31	35	$833	23.80	4	$67	16.67

Note: Where gaps appear in this table no information was recorded on these conditions in the practice.

* These conditions were chosen for specified coding using the READ coding system. These costs presented here include pharmaceutical, pathology and diagnostic imaging for the Government only. They represent cost per presentation for each condition for the period July-September 1995.

** Rate = rate per case.

5.1.1.2 Second Data Collection Period - January-June 1996

Overall in Practice 1

- the number of consultations where information was collected was 2,117 (17% of the total identified by the Health Insurance Commission – 12,283)
- the number of diagnoses raised was 3,080 at a rate of 145 per 100 consultations
- the number of items prescribed was 1,875 at a rate of 61 per 100 diagnoses
- the number of pathology tests ordered was 532 at a rate of 17 per 100 diagnoses
- the number of diagnostic imaging investigations ordered was 102 at a rate of 3 per 100 diagnoses.

Overall in Practice 2

- the number of consultations where information was collected was 3,724 (40% of the total number for this period – 9,366)
- the number of diagnoses raised was 5,181 at a rate of 139 per 100 consultation
- the number of items prescribed was 1,982 at a rate of 38 per 100 diagnoses
- the number of pathology tests reported ordered was 1,062 at a rate of 20 per 100 diagnoses
- the number of diagnostic imaging investigations ordered was 187 at a rate of 4 per 100 diagnoses.

Overall in Practice 3

- the number of consultations where information could be collected was 1,261. The percentage of total consultations could not be determined because of the lack of data on the locums employed early in the data collection period.
- the number of diagnoses noted was 3,538 at a rate of 280 per 100 consultations
- the number of drugs prescribed was 1,129 at a rate of 32 per 100 diagnoses
- the number of pathology tests ordered was 336 at a rate of 9 per 100 diagnoses
- the number of diagnostic tests ordered was 61 at a rate of 2 per 100 diagnoses.

The percentage of consultations gathered from each practice were smaller in this second period. In this period for Practice 1 and Practice 2, 17% and 40% respectively were gathered. The participating GPs were asked to gather less information, but in more detail. The sample size was found to be adequate to complete the analyses. The issue of the required sample size is further discussed in Chapter 6, but to gain an accurate picture of the cost of a GPs' management behaviour you need approximately one/two months information from his/her consultation information. In all three practices, greater than two months information was obtained.

In Table 34, data collected for this period for each GP, for each service are presented and compared with the "gold" standard Health Insurance Commission and Pharmaceutical Benefits Scheme data. The range is again substantial varying from

- $67,827 to $10,443 for consultation costs

- $47,888 to $1,272 for pharmaceuticals
- $13,315 to $263 for pathology
- $17,282 to $0 for diagnostic imaging.

Agreement with the Health Insurance Commission and Pharmaceutical Branch varied from

- 96 to 100 for consultations (mean - 99)
- 46 to 152 for pharmaceutical costs (mean - 79)
- 19 to 103 for pathology (mean - 54)
- 0 to 96 for diagnostic imaging (mean - 64).

In Tables 35, 36 and 37 the diagnoses groups are presented again. A similar profile to the first data collection period was found for each practice with a few notable exceptions. In Practice 1, the most expensive disease groups were circulatory diseases (22.2% of total costs), endocrine/metabolic (17.1%), digestive (11.7%), and musculoskeletal (9.0%). The digestive group is significant as it provided 5.4% of the diagnoses but 11.7% of the total costs. In Practice 2, the most expensive diagnosis groups were respiratory (14.6%), circulatory (13.7%), genitourinary (7.4%) and digestive (7.0%). It is worth noting that neoplasms contributed only 0.4% of diagnoses but 5.8% of costs. In Practice 3, the major cost generating groups were circulatory (37.4%), endocrine/metabolic (11.0%) and musculoskeletal (8.3%).

In all three practices the costs for respiratory conditions fell, reflecting the fact that this data collection took place during summer and autumn and not in winter (as with the first data collection period). For example the percentage of total costs for respiratory conditions for the first data collection period for Practice 2 was 24.2% compared with 14.6% for the second period i.e. January to June. Contrastingly, the costs associated

with circulatory conditions remained very similar across both data collection periods. These two diagnoses groups are compared below.

Practice	**Respiratory conditions – % overall costs**		**Circulatory conditions – % overall costs**	
	July-September. 1995	January-June 1996	July-September. 1995	January-June 1996
Practice 1	15.7	7.5	22.3	22.2
Practice 2	24.2	14.6	15.8	13.7
Practice 3	8.9	7.9	13.7	37.4

Table 34
COMPARISON OF PRACTICE BASED DATA* WITH HEALTH INSURANCE COMMISSION AND PHARMACEUTICAL BENEFIT SCHEME - JANUARY-JUNE 1996

General Practitioner	Consultations		Pharmaceuticals		Pathology		Diagnostic Imaging	
	Total Costs	Agreement **	Total Costs	Agreement **	Total Costs	Agreement**	Total Costs	Agreement**
1	$67,827	98	$47,888	84	$10,287	63	$9,241	96
2	$62,687	96	$35,912	71	$3,709	19	$4,330	23
3***	$62,600	99	$31,940	46	$9,422	37	$5,550	42
4	$56,049	99	$47,342	152	$8,413	63	$17,282	125
5	$58,919	98	$24,000	99	$13,315	62	$8,031	76
6	$16,738	97	$4,821	68	$4,251	44	$1,867	58
7	$46,514	97	$30,145	60	7,968	51	$4,405	57
8	$5,441	101	$1,272	46	$263	47	$0	0
9***	-		-		-		-	
10	$21,879	97	$11,103	93	$2,787	49	$2,357	54
11	$29,924	100	$15,856	101	$5,312	52	$5,091	66
12	$10,443	109	$4,944	51	$1,936	41	$2,357	77
13	$12,044	97	$3,267	66	$3,907	52	$2,070	74
14	$39,148	98	$13,984	136	$8,109	56	$8,003	62
15	$17,888	98	$3,097	61	$4,256	103	$3,047	80
16	$14,973	99	$4,302	56	$3,359	75	$2,577	68
17***	$37,016	-	$45,193	-	$5,204	-	$3,831	-

* The practice based data have been adjusted for the number of consultations and pharmaceutical costs. The pharmaceutical costs include adjustment for safety net and pensioner status.

** Agreement - compares practice based total costs (as estimated by the gathered paper collected data) and Pharmaceutical Benefit Scheme (PBS) and Health Insurance Commission information (HIC). With these figures 100 indicates perfect agreement in total costs between both sources. Less than 100 indicates a weaker agreement, with the lower the figure the poorer the agreement. Greater than 100 indicates an over-calculation of total costs for that GP in that item.

*** GP *9* had left the practice in 1995 and GP *17* was away on sick leave for 2 months of this period. The costs recorded for GP *17* include locums as well. It was not possible to compare these total costs with the HIC and PBS as the locums did not provide information from these sources.

Table 35

PRACTICE 1 DIAGNOSES*
TOTAL NUMBER AND COSTS
(JANUARY - JUNE 1996)

			Costs	
Class	*N*	*%*	*N-$*	*%*
History Symptoms	65	0.2	,811	0.3
Preventive Procedures	1,205	4.5	4,880	1.8
Other Procedures	6	0.0	2	0.0
Surgical Procedures	190	0.7	3,860	1.4
Administration	29	0.1	343	0.1
Infectious/Parasitic	612	2.3	5,252	1.9
Neoplasms	179	0.7	13,727	5.0
Endocrine/Metabolic	2,339	8.8	47,333	17.1
Blood Disorders	247	0.9	2,986	1.1
Mental Disorders	1,065	4.0	11,627	4.2
Nervous System/Sense Organ Diseases	1,235	4.6	3,858	1.4
Circulatory Diseases	6,423	24.1	61,490	22.2
Respiratory Diseases	4,263	16.0	20,623	7.5
Digestive Diseases	1,437	5.4	32,244	11.7
Genitourinary System	861	3.2	12,049	4.4
Pregnancy/Child Birth	6	0.0	101	0.0
Skin	1,009	3.8	3342	1.2
Musculoskeletal	3,076	11.5	24,776	9.0
Congenital Anomalies	0	0.0	0	0.0
Perinatal Conditions	1	0.0	1	0.0
Symptoms/Ill Defined conditions	1,737	6.5	18,257	6.6
Injury	289	1.1	2,532	0.9
Other	250	0.9	4,735	1.7
Uncoded	181	0.7	1,827	0.7
TOTAL	**26,702**	**100**	**276,664**	**100**

* Diagnoses are coded by READ Chapter. (261)

Table 36

PRACTICE 2 DIAGNOSES*
TOTAL NUMBER AND COSTS
(JANUARY - JUNE 1996)

			Costs	
Class	*N*	*%*	*N-$*	*%*
History Symptoms	84	0.5	1,293	0.8
Preventive Procedures	1,897	11.6	8,864	5.3
Other Procedures	4	0.0	119	0.0
Surgical Procedures	334	2.0	5,166	3.1
Administration	13	0.1	184	0.1
Infectious/Parasitic	474	2.9	5,977	3.6
Neoplasms	58	0.4	9745	5.8
Endocrine/Metabolic	561	3.4	10,911	6.5
Blood Disorders	53	0.3	812	0.5
Mental Disorders	662	4.1	9,446	5.7
Nervous System/Sense Organ Diseases	1,158	7.1	3,429	2.1
Circulatory Diseases	2,151	13.2	22,843	13.7
Respiratory Diseases	3,802	23.3	24,377	14.6
Digestive Diseases	682	4.2	11,687	7.0
Genitourinary System	969	5.9	12,280	7.4
Pregnancy/Child Birth	54	0.3	4,114	2.5
Skin	760	4.7	2,152	1.3
Musculoskeletal	1,116	6.8	12,164	7.3
Congenital Anomalies	7	0.0	774	0.0
Perinatal Conditions	0	0.0	0	0.0
Symptoms/Ill Defined conditions	1,194	7.3	15,580	9.3
Injury	105	0.6	2,366	1.4
Other	152	0.9	2,000	1.2
Uncoded	36	0.2	462	0.3
TOTAL	**16,328**	**100**	**166,748**	**100**

* Diagnoses are coded by READ Chapter. (261)

Table 37

PRACTICE 3 DIAGNOSES*
TOTAL NUMBER AND COSTS
(JANUARY - JUNE 1996)

			Costs	
Class	*N*	*%*	*N-$*	*%*
History Symptoms	120	2.4	1,006	1.9
Preventive Procedures	307	6.2	1,988	3.7
Other Procedures	0	0.0	0	0.0
Surgical Procedures	7	0.1	101	0.1
Administration	8	0.2	16	0.0
Infectious/Parasitic	56	1.1	921	1.7
Neoplasms	3	0.1	41	0.1
Endocrine/Metabolic	338	6.8	5,953	11.0
Blood Disorders	59	1.2	280	0.5
Mental Disorders	247	5.0	2,782	5.1
Nervous System/Sense Organ Diseases	307	6.2	1,947	3.6
Circulatory Diseases	1,775	36.7	20,260	37.4
Respiratory Diseases	448	9.1	4,300	7.9
Digestive Diseases	221	4.5	4,089	7.5
Genitourinary System	205	4.2	3,552	6.5
Pregnancy/Child Birth	0	0.0	0	0.0
Skin	134	2.7	408	0.8
Musculoskeletal	412	8.3	4,488	8.3
Congenital Anomalies	0	0.0	0	0.0
Perinatal Conditions	0	0.0	0	0.0
Symptoms/Ill Defined conditions	236	4.8	1,654	3.0
Injury	24	0.5	162	0.3
Other	9	0.2	102	0.2
Uncoded	19	0.4	180	0.3
TOTAL	**4,934**	**100**	**54,228**	**100**

* Diagnoses are coded by READ Chapter.(261)

In Table 38, the chosen conditions are presented and variability compared across the three practices. Across all three practices the expensive conditions were lipid abnormalities, depression, peptic ulcer, reflux oesophagitis, and abdominal pain. Differences exist in the costs of some conditions between practices. For abdominal pain - the cost per presentation in:

- Practice 1 was $22.64
- Practice 2 was $27.84
- Practice 3 was $36.33

For asthma the cost per presentation in

- Practice 1 was $6.77
- Practice 2 was $8.37
- Practice 3 was $19.37.

Comparison between the 1st and 2nd data collection periods reveals changes in the costs per presentation for conditions across the practices. If costs generated by the GPs in Practice 1 are examined in detail there is a trend towards lower costs in the second period.

Condition	1st data collection period (July-Sept. 1995)	2nd data collection period (Jan.-June 1996)
lipid abnormalities	$38.06	$29.00
depression	$23.10	$19.18
reflux oesophagitis	$35.98	$16.05
abdominal pain	$36.31	$22.64

With Practice 2 similar changes have occurred with depression ($24.63 and $16.39 respectively) and reflux oesophagitis ($28.68 and $19.36 respectively for the 1st and 2nd data collection periods). For Practice 3 this trend has been reversed for some conditions. For reflux oesophagitis the cost per presentation was $14.53 and $28.68 respectively and for asthma was $14.32 in the first period and $19.37 in the second period.

The second data collection for practice 3 was based on the information obtained from locums and it is possible the difference is due to different management styles.

These differences in Practice 2 and 3 are likely to have been due, in part to the effect of the safety net combined with different management. The PBS employs a safety net arrangement where all Australian families are entitled to free or reduced price medication, once they have outlaid a certain amount of money for medications. The safety net figure in August 1997 for pensioner health benefit cardholders was $166.40 and for other groups it was $612.60. (17) In the model developed for the data analysis the safety net factor was calculated to have influenced the costs to the Government during the two latter quarters of the calendar year. Fifty percent was factored in for the period July-September and the 50% for October-December. The July-September period corresponds to the 1st data collection period in 1995.

Table 38

SPECIFIC COSTS FOR CHOSEN CONDITIONS*
COMPARISON BETWEEN THREE PRACTICES (JANUARY - JUNE 1996)

Condition	Practice 1			Practice 2			Practice 3		
	N	Costs	Rate $	N	Costs	Rate $	N	Costs	Rate $
Menopause	594	$1,979	3.33	689	$2,700	3.92	47	$250	5.32
Diabetes Mellitus	697	$5,048	7.24	58	$849	14.63	118	$707	5.99
Lipid Abnormalities	1093	$31,687	29.00	252	$6,911	27.42	133	$3,810	28.64
Anxiety	330	$1,316	3.99	74	$100	1.35	5	$33	6.60
Depression	320	$6,138	19.18	388	$6,358	16.39	61	$593	9.72
Otitis Media	233	$956	4.10	443	$377	0.85	32	$114	3.56
Hypertension	3480	$35,105	10.09	1246	$13,914	11.17	1217	$14,825	12.18
Heart Failure	325	$2,636	8.11	210	$3,400	16.19	253	$3,213	12.70
Sinusitis	289	$3,160	10.93	234	$273	1.17	8	$22	2.75
COAD	194	$2,060	10.61	49	$162	3.31	136	$1,225	9.00
Asthma	951	$6,441	6.77	2030	$16,985	8.37	108	$2,092	19.37
Reflux Oesophagitis	388	$6,229	16.05	306	$5,923	19.36	91	$2,610	28.68
Peptic Ulcer	34	$654	19.23	11	$190	17.27	35	$463	13.22
Osteoarthritis	1039	$4,454	4.29	236	$466	1.97	160	$1,285	8.03
Back Pain	353	$2,559	7.25	218	$3,047	13.98	33	$598	18.12
Lethargy	148	$2,415	16.32	217	$3,287	15.14			
Cough	63	$509	8.07	181	$1,368	7.56			
Abdominal Pain	144	$3,261	22.64	130	$3,619	27.84	21	$763	36.33

* These conditions were chosen for specified coding using the READ coding system. These costs presented here include pharmaceutical, pathology and diagnostic imaging for Commonwealth Government costs only. They represent cost per condition for the period January - June 1996.

** In Practice 1, GP 3 did not collect data for this period and in Practice 3 locums were working as the GP from that practice was on sick leave.

Note: Where gaps appear in this table no information was recorded on these conditions in the practice.

5.1.2 Analysis of the effect of age and sex on costs

The aim of the next step in the analysis was to ascertain whether a more robust examination of the costs by diagnoses groups and by conditions, adjusted for age and sex would reveal more or less variability in the costs generated by each practice. Were the mean costs reported in Section 5.1.1 due to different age/sex profiles within the practices or due to real differences in management methods? In order to complete this task, further analyses were completed on the data gathered for the period of January to June 1996. This period was chosen because there was a greater proportion of the computer gathered data that was linked to actual patients' age and sex. These sub-analyses were conducted in two stages.

5.1.2.1 Stage 1

In Stage 1 three steps were completed. They were as follows.

(1) All consultations where age and sex had been noted and linked to a GP were identified.

(2) The age and sex distribution of these samples were then compared with the overall HIC sample to assess the representativeness of the selected sample.

(3) The final step involved reviewing and clarifying any inaccuracies with the data. This principally involved confusion in gender identification i.e. substitution of male coding for situations where the patient was a female.

Table 39 summarises the available identified data from the GPs and presents the chi squared goodness of fit test for this sample when compared with the overall consultations for each included GP, as recorded by the HIC. As mentioned in the methods chapter (Chapter 3 section 3.3.2.9) only data from certain GPs were used. All 5 GPs from Practice 1

were included in the analysis and there were 2,415 (19.7%) recorded consultations out of a possible 12,283 where age and sex were known. In Practice 2, 2 GPs contributed the bulk of the consultations i.e. GP *7* and *14.* They contributed 572 consultations. A small number were contributed by the other GPs i.e. 110. In all 682 (11.7%) out of 5,834 were identified. With Practice 3 most of the information from GP *17* could be included because he was diligent in completing the data collection forms. Eight hundred and sixty five (84%) consultations that were age and sex patient linked, out of a possible 1,026 could be included. In completing the goodness of fit tests, it was not possible within the data set to know how often a particular patient had attended. Two sensitivity analyses were performed. The first assumed 2 visits per attendee and the second 6 (see Table 39).

GPs *1,3,4,5,14* and *17* samples were not significantly different from the HIC sample in both visits per attendee scenarios. GPs *2* and *7* samples were significantly different from the overall HIC consultation profile. As a consequence of the latter two GPs, the total sample for Practices 1 and 2 was also significantly different to the overall HIC profile for these practices. While the remainder of the discussion for convenience refers to "practices", it is important to note the samples were not totally representative of the all the GPs in the practices.

The final step involved the reviewing and cleaning of this smaller data set. As stated earlier this principally involved changing a small number of consultations where male and female codes had been inappropriately interchanged. The author of the thesis and the statistician worked collaboratively to complete this task. Following this process a series of analyses were performed and are outlined in Stage 2. While the statistician processed the data analyses using SAS (264), all steps taken in this series of analyses were overseen by the author of this thesis.

The flow on costs were modelled using the same pensioner adjustment fraction across all age and gender groups that was employed in the earlier analysis. No adjustment was made for safety net or consultation numbers in this analysis. The mean Government cost per item ordered was used as the comparison.

Table 39

COMPARISON OF AGE/SEX LINKED CONSULTATIONS WITH OVERALL HEALTH INSURANCE COMMISSION (HIC) FIGURES FROM PERIOD JANUARY TO JUNE 1996.

GP	NUMBER OF CONSULTS	TOTAL HIC CONSULTS	2 CONSULTS *		6 CONSULTS *	
			CHI SQUARE	P VALUE	CHI SQUARE	P VALUE
1	1687 (59%)	2,848	21.22	0.21	7.94	0.97
2	158 (7%)	2,404	58.16	0.00	37.82	0.0001
3	210 (9%)	2,367	7.76	0.74	5.15	0.92
4	170 (8%)	2,224	13.14	0.16	9.3	0.41
5	190 (8%)	2,440	23.57	0.07	19.94	0.17
7	331 (15%)	2,148	36.70	0.004	22.00	0.18
14	241 (14%)	1,719	22.35	0.05	11.34	0.58
17	865 (84%)	1,026	17.17	0.31	7.28	0.95
Practice 1	415 (20%)	12,283	47.52	0.0001	16.80	0.46
Practice 2	682 (12%)	5,834	66.42	0.000	27.79	0.04
Practice 3	865 (84%)	1,026	17.17	0.31	7.28	0.95

* Sensitivity analyses was performed within the statistical tests on the possibility of 2 consultations or 6 consultations per attendee. This was performed with the overall age and sex data, as it was not possible to know how many consultations each attendee had over the period of data collection. In fact, the historical analyses (see Chapter 3) indicates that for Practice 1 the attendance rate was approximately 4 consultations per attendee, for Practice 2 the rate was 2 and for Practice 3 the rate was 6.

5.1.2.2 Stage 2

Having completed Stage 1, a series of analyses were performed. They were as follows:

(1) an examination of mean cost per item by age and sex group for each practice.

(2) an examination of mean cost per item by age and sex group by diagnoses groups (again separated into READ chapters)

(3) an examination of mean cost per item by age and sex group by chosen condition.

These steps followed the framework used in Section 5.1.1 where no allowance was made for the age/sex distribution of the practice attendees. In essence, the aim of this analyses was to examine the efficiencies of the resource allocation among the practices, progressing from a practice level to more detail with the diagnoses groups and finally the chosen conditions.

In Table 40 the mean cost per item by age and sex group for each practice are presented. In all three practices the cost per item increases with age, but tends to peak in the 45-64 age groups. If Practices 1 and 3 are compared, the costs in Practice 1 are higher in most male age groups than Practice 3. For example in the 45-54 male age group, the cost per item for Practice 1 is $11.37 whereas the cost in practice 3 is $10.93. With female patients this reversed e.g. with the female 55-64 age group the corresponding rates are $7.12 (Practice 1) and $10.28 (Practice 3). The higher costs for females with Practice 3 are more than likely due to a greater number of pensioners. With the higher number of pensioners found in Practice 3 (i.e. 42.9% - see Table 21), the Commonwealth Government costs rise because of the increase in subsidised medication. The findings outlined in Table 40 refer to Commonwealth Government costs only.

Table 40

GOVERNMENT COSTS PER AGE/GENDER GROUP - COMPARISON BETWEEN PRACTICES JANUARY-JUNE 1996 - PHARMACEUTICALS, PATHOLOGY AND DIAGNOSTIC IMAGING. RATE PER ITEM ($)

Age/gender Group	Practice 1 Mean* ($)	Practice 2 Mean* ($)	Practice 3 Mean* ($)
0-4 male	0.86	10.47	11.80
0-4 female	2.06	1.52	7.57
5-14 male	2.45	5.08	1.34
5-14 female	2.85	4.60	2.01
15-24 male	9.33	9.05	7.34
15-24 female	6.17	4.67	2.76
25-34 male	4.16	4.02	3.33
25-34 female	7.15	7.79	5.17
35-44 male	7.24	9.92	4.75
35-44 female	6.12	8.84	6.26
45-54 male	11.37	11.32	10.93
45-54 female	6.72	11.13	7.61
55-64 male	9.36	8.58	6.79
55-64 female	7.12	9.38	10.28
65-74 male	12.17	10.21	5.90
65-74 female	6.26	5.28	9.20
75+ male	7.31	21.10	4.37
75+ female	5.97	6.40	5.95

Notes:

* mean cost per ordered item.
These figures are Commonwealth Government costs only and include adjustment for pensioner status. There is no adjustment for safety net and consultation numbers.

In the second step of this analysis, the effect of the age and sex distribution across the practices was examined by diagnoses groups and then for the chosen conditions. Tables 41, 42 and 43 compare chosen diagnoses groups in the three practices. The diagnoses groups were circulatory, respiratory, digestive and endocrine and metabolic. They were chosen because they are groups that have contributed most to the costs generated by the practices and because they encompass many of the clinical conditions treated in every day clinical care. Significant differences among these groups were considered likely to be important in the examination of the resource allocation across the three practices. These figures refer to the costs to the Commonwealth Government only.

There are some important differences across the practices. In Table 41 the four groups are compared overall. The following significant findings were found and illustrate substantial differences in outlays between practices.

- In the circulatory group the mean cost per item for Practice 1 is $7.51 which was significantly different from the mean cost for Practice 2 (i.e. $9.76 (chi square 4.1, p = 0.043)).
- In the circulatory group the mean cost per item for Practice 2 (i.e. $9.76) was significantly different from Practice 3 (i.e. $7.17 (chi square 4.7, p = 0.03)).
- In the respiratory group only, the mean cost per item for Practice 1 (i.e. $4.26) was significantly different from Practice 2 (i.e. $8.00 (chi square 9.32, p = 0.03))
- In the digestive group all three practices are similar and there is no significant differences in the cost per item.
- In the endocrine/metabolic groups, the mean cost for Practice 1 (i.e. $16.69) was significantly different from Practice 3 (i.e. $7.78 (chi square 9.95, p = 0.0016))

- In the endocrine/metabolic groups the mean cost for Practice 2 (i.e. $17.58) was significantly different from Practice 3 (i.e. $7.78 (chi square 8.25, p = 0.0041)).

When these diagnoses groups were broken into age and sex categories, the effect becomes more complicated. In Table 43 mean cost per age and sex group are presented for the endocrine/metabolic groups. To allow for adequate numbers in the comparative groups, the age categories were collapsed into 0-54 and 55+ age groups. The significant findings were:

- in Practice 1, the 0-54 males had a higher mean cost than the equivalent Practice 3 males ($26.55 compared with $8.40 (chi square 6.10, p = 0.014).
- in Practice 1 the mean cost for the 0-54 age males was significantly higher than in the 55+ males ($26.55 compared with $14.86 (chi square 4.05, p = 0.044).

In Table 43 the mean costs for the three practices are presented for the circulatory groups. The main statistically significant findings were:

- across all age groups there were no significant differences between the three practices and no clear pattern across the age groups
- with Practice 3, the mean cost per item for the 0–44 females (i.e. $0.70) and 0 – 44 males (i.e. $1.53) was significantly different than the mean cost in all other age groups in this practice.

Table 41

COMPARISON OF MEAN COST PER ORDERED ITEM BY SELECTED DIAGNOSES GROUPS BY PRACTICE *

READ CHAPTER	PRACTICE 1	PRACTICE 2	PRACTICE 3
Circulatory Mean	N = 1824 7.51	N = 480 9.76	N = 1266 7.17
Respiratory Mean	N = 1073 4.26	N = 460 8.00	N = 347 5.89
Digestive Mean	N = 450 13.41	N = 81 16.04	N = 163 16.16
Endocrine/Metabolic Mean	N = 744 16.69	N = 130 17.58	N = 308 7.78

Notes:

* Practice 1 is the combined information from GP *1* to *5*. Practice 2 is the combined information from GP *7* and *14* and Practice 3 is the information from GP *17*.

Diagnoses groups were coded by READ Chapters. (261)

Table 42

COMPARISON OF MEAN COST PER ITEM PER AGE AND SEX GROUP FOR DIAGNOSIS GROUP - ENDOCRINE AND METABOLIC BY PRACTICE*

AGE/SEX GROUP **	PRACTICE 1		PRACTICE 2		PRACTICE 3	
	N	MEAN COST ($)	N	MEAN COST ($)	N	MEAN COST ($)
0 – 54 years						
male	127	26.55	55	16.78	38	8.40
female	123	12.36	22	27.30	20	3.96
55 + years						
male	222	14.86	14	29.76	106	8.20
female	272	15.53	39	8.87	144	7.83

Notes:

* Practice 1 is the combined information from GP *1* to *5*. Practice 2 is the combined information from GP *7* and *14* and Practice 3 is the information from GP *17*.

** These groups have been collapsed into 0–54 and 55 + age and sex groups due to the small numbers in some of the groups. However there was still only a small number of items in Practice 2 which prevented any statistical analysis being completed for this Practice.

Diagnoses groups were coded by READ Chapters. (261)

Table 43

COMPARISON OF MEAN COST PER ITEM PER AGE AND SEX GROUP FOR CIRCULATORY DIAGNOSIS GROUP BY PRACTICE*

AGE/SEX GROUP **	PRACTICE 1		PRACTICE 2		PRACTICE 3	
	N	MEAN COST ($)	N	MEAN COST ($)	N	MEAN COST ($)
0 – 44 years						
male	28	3.43	47	10.68	13	1.53
female	37	10.38	15	7.63	49	0.70
45 – 54 years						
male	91	10.33	63	12.02	36	9.71
female	143	7.36	12	6.23	10	13.43
55 – 64 years						
male	228	9.66	13	7.00	27	6.69
female	149	6.29	28	16.85	28	21.84
65 – 74 years						
male	228	7.99	56	10.32	110	6.15
female	260	6.78	40	4.49	199	9.62
75 + years						
male	196	6.72	98	8.71	164	5.84
female	462	6.86	108	9.84	630	6.66

Notes:

* Practice 1 is the combined information from GP *1* to *5*. Practice 2 is the combined information from GP *7* and *14* and Practice 3 is the information from GP *17*.

** These groups have been collapsed into smaller age and sex groups to allow more meaning statistical comparison. The small number in some groups prevent any statistical comparison being completed.

Diagnoses groups were coded by READ Chapters. (261)

The third step involved examining the chosen conditions across practices. As discussed in Chapter 3, these conditions were chosen because they are commonly seen in general practice, consume substantial resources and are known to have significant variability in GP management. (62,64,65) Table 44 presents a summary of information from 5 specific conditions - diabetes mellitus, hyperlipidaemia, depression, asthma, hypertension and reflux oesophagitis. Of these five, hyperlipidaemia and reflux oesophagitis are the most expensive and the only statistically difference of note between the practices is between the mean cost in Practice 3 and Practice 2 for hyperlipidaemia ($20.42 compared with $29.98 (chi square 4.12, p = 0.0425).

For the other four conditions significant differences existed across the three practices. They were as follows:

- with diabetes mellitus the mean cost of Practice 3 (i.e. $2.65) was significantly lower than Practice 1 (i.e. $5.11 (chi square 4.92, p = 0.02)) and Practice 2 (i.e. $11.84 (chi square 7.70, p = 0.005))
- with depression the mean cost in Practice 3 was significantly lower (i.e $5.33) than Practice 1 ($15.41(chi square 6.1, p = 0.014))
- with asthma the mean cost for Practice 1 (i.e. $6.12) was significantly lower than Practice 2 (i.e. $9.71 (chi square 3.91, p = 0.048)) and Practice 3 (i.e. $12.80 (chi square 9.04, p = 0.0026))
- with hypertension the mean cost for Practice 1 was significantly lower than Practice 2 ($7.40 compared with $10.15 (chi square 4.54, p = 0.033)) and Practice 3 ($9.53 chi square 3.88, p = 0.049). However Practice 3 and 2 mean costs were not significantly different.

When these chosen conditions are examined across age and sex groups other important points can be noted. In Table 45, the mean cost per item ordered for people with hypertension is presented in detail. The important findings were:

- overall there are no significant differences across the practices for all age groups, except for the 55-64 female age groups. In this age group Practice 1 has a significantly lower mean cost than Practice 2 ($16.85 compared with $4.96 (chi square 7.11, p = 0.008) and Practice 3 ($22.65 compared with $4.96 (chi square 7.54, p = 0.006).
- in Practice 1 there are no statistical differences across age and sex groups.
- in Practice 2 the mean cost for 0-54 males is significantly higher than the mean cost in the 75+ males ($12.07 compared with $7.86 (chi square 11.54, p = 0.0007).
- in Practice 3 the mean cost for the 55-64 female age group (i.e. $22.65) was significantly higher than the 65-74 female (i.e.$10.24 (chi square 4.17, p = 0.041)); than the 65-74 male (i.e. $8.97 (chi square 4.12, p = 0.042)) and the 75+ female (i.e. $8.53 (chi square 6.60, p = 0.01)).

Table 44

COMPARISON BETWEEN PRACTICES OF MEAN COST PER ORDERED ITEM PER CHOSEN CONDITION ($)
(Costs to the Commonwealth Government)

CONDITION AND AGE GROUP		PRACTICE 1	PRACTICE 2	PRACTICE 3
Diabetes Mellitus	mean	n = 211 5.47	n = 26 11.84	n = 87 2.65
Hyperlipidaemia	mean	n = 320 27.34	n = 54 29.98	n = 87 20.42
Depression	mean	n = 120 15.41	-	n = 109 5.33
Asthma	mean	n = 285 6.12	n = 261 9.71	n = 60 12.80
Hypertension	mean	n = 1120 7.40	n = 235 10.15	n = 731 9.53
Reflux Oesophagitis	mean	n = 194 15.32	n = 43 20.46	n = 62 26.79

Note:

Practice 1 is the combined information from GP *1* to *5*. Practice 2 is the combined information from GP *7* and *14* and Practice 3 is the information from GP *17*.
Where gaps are present, there was inadequate data for calculation of a mean cost per ordered item.

Table 45

COMPARISON BETWEEN PRACTICES* FOR HYPERTENSION ACROSS SPECIFIED AGE AND SEX GROUPS - MEAN COST PER ORDERED ITEM ($)

(Costs to the Commonwealth Government)

AGE/SEX GROUP	PRACTICE 1	PRACTICE 2	PRACTICE 3
0 – 54 male mean	N = 62 11.26	N = 97 12.07	N = 37 9.40
0 – 54 female mean	N = 143 8.73	N = 18 8.09	N = 21 6.39
55 – 64 male mean	N = 141 9.76	N = 7 0.70	N = 23 7.30
55 – 64 female mean	N = 92 4.96	N = 28 16.85	N = 27 22.65
65 – 74 male mean	N = 105 6.58	-	N = 73 8.97
65 – 74 female mean	N = 229 6.38	N = 14 9.02	N = 160 10.24
75 + male mean	N = 37 7.41	N = 31 7.86	N = 54 10.03
75 + female mean	N = 311 6.72	N = 40 5.54	N = 336 8.53

Notes:

* Practice 1 is the combined information from GP *1* to *5*. Practice 2 is the combined information from GP *7* and *14* and Practice 3 is the information from GP *17*.

These secondary analyses sought to validate the earlier differences found between practices and GPs by examining the mean cost per item across specific age and sex groups. This process required a number of steps including examining the costs by age and sex groups, by READ chapter and by chosen conditions. Differences were again found providing further evidence that variability in GP behaviour in the area of pharmaceutical, pathology and diagnostic imaging ordering exists among the study GPs.

The findings of note were that the most expensive age and sex categories, as measured by mean cost per ordered item were the 45-54, 55-64 and 65-74 groups. Differences in mean cost of items ordered by READ chapters and per conditions across practices were noted. These differences are more marked with certain READ chapters where management can be more variable (e.g. circulatory disease) and with the conditions with lower mean cost per item e.g. hypertension, asthma and diabetes mellitus. These findings agree with the earlier findings in Section 5.1.1 (see Table 33 and 38) where age and sex was not included.

In Section Three of this chapter, the interaction between GP, age and sex of the patient, diagnoses groups and conditions across all three practices is examined in a series of multiple regression models. Before this final analysis is completed, it is important to discuss these first results. Understanding the strengths and weaknesses with the overall data and the smaller sub-set of age/sex linked information provides important insights into the robustness of the final multiple regression model.

SECTION TWO

DISCUSSION OF QUANTITATIVE RESULTS

5.2.1 Accuracy of data collection

The accuracy and completeness of the overall data set was variable. The case note audit, used in each practice as a validation process found that the agreement between the collected data and the case notes was 72% for pharmaceuticals, 65% for the diagnostic imaging and 71% for pathology. Further validation using the Health Insurance Commission and Pharmaceutical Benefits Scheme information revealed an overall agreement for consultations costs of approximately 98, for pharmaceuticals of 87; for pathology of 48 and diagnostic imaging of 62.

This validation process has revealed some mediocre results. The reason for the low pathology agreement values is probably due to the complex cost algorithmns used to calculate outlays and some oversights with the recording of ordered tests on the paper forms and on the computer. The diagnostic imaging values are also of some concern and were probably caused by the GPs forgetting to note these items on the data collection methods. The pharmaceutical and consultation agreement values were reassuring and provided an adequate base for the analyses.

To appropriately answer Objectives 3 and 4, a model was developed that allowed the calculation of each individual practice's and GP's resource use across conditions, age and sex. The model developed was based on a number of assumptions. The modification of the pharmaceutical costs to cope with the impact of the safety net used national figures to arrive at an adjustment percentage. This percentage may have overcorrected for some GPs and understated the costs for others. For example if a GP has

a larger number of pensioners in his/her practice than the national average, then this method of safety net adjustment would under-estimate the Government contribution to his/her overall pharmaceutiucal budget. Conversely if a second GP had very few pensioners, then the calculation would over-estimate the Government contribution to his overall budget. No other method was able to be identified and, as such this caveat is acknowledged in the analyses.

It is accepted that this method does not correct for the opportunity cost of the pharmaceutical resources, but rather for the value of the pensioner subsidy. This is in fact a transfer payment. (150) However, as the aim of the budgetary analysis was to look at the Commonwealth Government outlays for the practices (if they were fundholding), it was important to include a method for adjusting for pensioner status. Only then could a realistic budgetary estimation be made for all practices, based on gathered data that could be compared with actual Commonwealth expenditures.

The impact of pensioner status was included in the pharmaceutical costing model, using data from historical prescribing from each GP obtained from the Pharmaceutical Benefits Scheme, except for GP *17.* The pensioner status for each GP has been calculated from 1993, 1994 and the first nine months of 1995 Pharmaceutical Benefits Scheme data. Where only 1995 data was available, with GPs who had only just begun practising, then this was used. The percentage figure was equal to the total gross price of scripts divided by the pensioner gross price costs (see Appendix 9). With GP *17*, the actual recorded pensioner status noted on the complete computerised data base was used.

It is possible to gain some insight into the robustness of these assumptions by examining the pharmaceutical data collected from GPs *4,*

11 and *17*. These GPs, one from each practice, were the most thorough in their data collection as assessed by the comparison with the PBS information. GP *1* had agreement for pharmaceutical costs of 90 and 84 respectively for the three periods; GP *11,* 100 and 101 and GP *17,* 113 for the first period. Overall the pharmaceutical budgets for each practice developed using this model were 81% predictive for Practice 1 when compared with actual PBS outlay, 79% for Practice 2 and overestimated for Practice 3 by 23%.

These figures would seem to provide evidence that the assumptions within the pharmaceutical model were realistic, but it is possible there are some inaccuracies in the calculation of pharmaceutical costs. What is impossible to account for is the non-filling of scripts. In this model all ordered repeats were included in the total pharmaceutical costs. If the repeats were not filled then the practice based costs would overcorrect when compared with the PBS outlays. The 13% over-estimation for GP *17* who has a greater number of elderly patients may have been caused by this behaviour.

The low accuracy of the pathology and diagnostic imaging, as assessed by the HIC information is of concern and has been discussed earlier. In developing practice budgets, the impact of these inaccuracies is lessened because pathology and diagnostic imaging cost make up only 11-19% and 4-8% respectively of the overall budgetary costs. These percentages are based on historical information from the HIC (see earlier discussion in Chapter 3, Section 3.2.2 and Figure 2).

With the analysis and documentation of the GP and practice resource allocation, some caution must be exercised with the accuracy of the figures for conditions that are mainly diagnostic dependent i.e. conditions that require the ordering of pathology and radiology investigations to clarify

the cause. Lethargy and abdominal pain are two such conditions. Overall, the case note audit validation for the recorded pathology and diagnostic imaging information was 71% and 65% respectively, which is higher than the HIC validation agreement of 48 (pathology) and 62 (diagnostic imaging). It is likely that the difference in the case note audit percentage and validation with the HIC for pathology is due to the complex algorithms used for costing this service, as discussed earlier. If, for example an erythrocyte count or a C-reactive protein or a erythrocyte sedimentation rate is ordered then the costs for one or two of these is $7.70. If all three tests are ordered, the cost becomes $10.25. (261)

It is likely there was some recording bias with pathology and diagnostic imaging ordering among these GPs. As discussed above, this would have had a substantial effect on the calculation of mean cost per presentation for conditions that required these two items to be managed appropriately. It is likely that any comparison across practices for these types of conditions would be susceptible to inaccurate conclusions. For example the differences noted in Table 33 for mean cost per presentation for abdominal pain ($36.31 for Practice 1, $23.80 for Practice 2 and $16.67 for Practice 3) may be due, in part to recording bias. It is pertinent to note that when examining the age/sex linked information, these types of conditions were not chosen for further analyses.

In the age /sex analysis the GPs who had not gathered adequate data where age and sex were included were excluded from the analysis. This left GPs *1, 2, 3, 4, 5, 6, 7, 14* and *17* for further analysis of overall age and sex practice data.

To ascertain how representative these practices are, it is worth comparing the data from these three practices with the Australia-wide morbidity study (20) completed in 1990-91 The three practices and the national data set

are compared in Table 47. In the first data set, gathered from July to September 1995, for Practice 1 the two commonest diagnostic groups were respiratory (25.0%) and circulatory (18.5%); for Practice 2, they were respiratory (32.2%) and circulatory (11.7%) and for Practice 3 the corresponding figures were circulatory (29.5%) and respiratory (11.1%). In the Australia-wide study the two commonest groups were respiratory (18.1%) and cardiovascular (10.4%) with skin (13.0%) and musculoskeletal (12.2%) as the next most common. (20) The substantial differences across the three practices and the Australia-wide data probably reflect the different age structures, with Practice 2 having a younger clientele with more respiratory and sense organ conditions.

Further comparison with the number of problems managed per 100 consultations for the three practices and the Australia-wide study (20) reveals some other differences. These are again summarised in Table 46. In the Australia-wide study the number of problems managed was 148 problems per 100 encounters. For Practice 1 the rate was 140 per 100 encounters; for Practice 2 it was 140 and for Practice 3 the rate was 270 per 100 encounters. The prescribing rates were 68 per 100 problems (Australia wide study); 49 per 100 problems (Practice 1); 37 per 100 problems (Practice 2) and 30 per 100 problems (Practice 3). The lower prescribing rates per 100 diagnoses may reflect a different style of practice or the fact that the Australia-wide study data form only had space for four problems. In this study an unlimited number of diagnoses could be recorded. It is also worth noting that the Australia-wide study was completed in 1990-91. Unfortunately this is the only available comparable information.

For pathology and diagnostic imaging ordering the rates per 100 problems are very similar.

In summary, both the validation of the data collection by case note audits and the comparison with the HIC and PBS would indicate under-recording of information regarding the pathology and diagnostic imaging ordering for all practices. The pharmaceutical model that was developed seems valid. The analysis across the GPs and practices comparing resource allocation may have some inaccuracies within the results, but formed a useful and informative comparison. Some effort has been made within the age/sex analysis to exclude the data from the most inaccurate GP collectors and adjust the model for significant differences in the sample. The practices were somewhat different in their profile to the Australia-wide study (20), particularly in their prescribing rates, probably reflecting selection bias.

Table 46

COMPARISON BETWEEN THE THREE PRACTICES AND THE AUSTRALIA-WIDE STUDY *

ITEM	AUSTRALIA-WIDE STUDY	PRACTICE 1	PRACTICE 2	PRACTICE 3
Commonest diagnostic groups	Respiratory (18.1%) Cardiovascular (10.4%) Skin (13.0%) Musculo-skeletal (12.2%)	Respiratory (25.0%) Circulatory (18.5%) Musculo-skeletal (8.6%)	Respiratory (32.2%) Circulatory (11.7%) Nervous system/ Sense organ disease (10.7%)	Circulatory (29.5%) Respiratory (11.1%) Musculo- skeletal (9.5%)
Problems managed Per 100 encounters	148	140	140	270
Prescribing rates Per 100 problems	68	49	37	30
Pathology ordering Per 100 problems	15	12	12	3
Diagnostic imaging ordering Per 100 problems	4	3	2	1

Notes:

* The data from the three practices were collected from July–September 1995. The Australia-wide study information was taken from reference 21.

5.2.2 Resource allocation by practice and by general practitioner

This discussion is developed around the following structure:

- an overall summary for each practice
- a review by practice and GP by diagnoses groups
- a review by practice and GP by chosen condition
- a review by practice and GP by age and sex

Where possible comparison is made with the earlier historical analyses completed in Chapter 3 (Section 3.2.2).

The profile of the overall resource allocation for each practice in the areas of consultations, pharmaceuticals, pathology and diagnostic imaging in each data collection period mirrored the information found in the earlier historical analyses (see Chapter 3 Section 3.2.2). In the period January to June 1996, for Practice 1, consultations and pharmaceuticals amounted to 79% (consultations 49% and pharmaceuticals 30%) of the calculated practice expenditure. The most expensive diagnoses groups in terms of outlays over this period were circulatory disease, endocrine and metabolic, digestive and musculoskeletal. It is worth noting that the endocrine and metabolic conditions contributed only 8.8% of diagnoses, but 17.1% of expenditure. Conversely the respiratory disease contributed 16% of diagnoses, but only 7.5% of the costs. More specific analysis for this practice revealed that the most expensive conditions per presentation were lipid abnormalities, abdominal pain, peptic ulcer, depression and reflux oesophagitis.

A similar analysis can be performed for each of the three practices. For Practice 2 the most expensive services were consultations and pharmaceuticals which amounted to 74% of the expenditure (52% and 22% respectively). The most expensive diagnoses groups were respiratory disease, circulatory disease, ill-defined conditions, genitourinary and

musculoskeletal. The most expensive conditions were abdominal pain, lipid abnormalities, peptic ulcer, reflux oesophagitis and depression. In Practice 3 the most expensive services were consultations (38%) and pharmaceuticals (47%). The most expensive diagnoses groups were circulatory conditions (37.3%), endocrine and metabolic (11.0%), musculoskeletal (8.3%) and digestive 7.5%. The most expensive conditions per presentation were abdominal pain, lipid abnormalities, reflux oesophagitis, asthma and back pain.

If the three practices are compared across diagnoses groups, some interesting differences are noted. In both the data periods, the percentage of total costs for endocrine and metabolic for Practice 1 were almost double the percentage of presentations. In Table 47 the comparisons between the three practices across both data collection periods are summarised. In the first data collection period from July to September 1995, the endocrine and metabolic diagnoses group costs are 1.8 times higher than the frequency of presentation for Practice 1; 1.8 times for Practice 2, and 1.5 times for Practice 3. For digestive conditions the corresponding figures are 2.5 (Practice 1), 2.3 (Practice 2) and 1.05 (Practice 3). In contrast the rates for circulatory disease are 1.2, 1.4, and 1.2 for each of the three practices respectively.

If the effect of age and sex is included in this practice and GP comparison, some inconsistent differences exist in resource allocation, as measured by mean government cost per item per diagnoses groups. For example Practice 3 has a lower mean cost for the endocrine and metabolic diagnosis group, which persists across age and sex groups than Practice 1 (see Table 41). With the circulatory group Practice 3 has a lower mean cost than Practice 1 (see Table 40). However when the circulatory group is examined across age and sex groups, no significant differences exist across specific age groups (see Table 42).

Table 47

COMPARISON OF COSTS PER PRESENTATION FOR THE SPECIFIC DIAGNOSES GROUPS ENDOCRINE AND METABOLIC, DIGESTIVE AND CIRCULATORY FOR JULY-SEPTEMBER 1995 AND JANUARY-JUNE 1996

	PRACTICE 1		PRACTICE 2		PRACTICE 3	
READ CHAPTER	FREQUENCY OF PRESENTATION	PERCENTAGE COSTS	FREQUENCY OF PRESENTATION	PERCENTAGE COSTS	FREQUENCY OF PRESENTATION	PERCENTAGE COSTS
Endocrine/metabolic July-September 1995	5.4	9.6	2.6	4.6	9.0	13.3
January-June 1996	8.8	17.1	3.4	6.5	6.8	11.0
Digestive July-September 1995	5.2	12.8	4.3	9.8	6.6	6.9
January-June 1996	5.4	11.7	4.2	7.0	4.5	7.5
Circulatory July-September 1995	18.5	22.3	11.7	15.8	29.5	34.4
January-June 1996	24.1	22.2	13.2	13.7	36.7	37.4

If further examination is made of costs per specific chosen conditions, some understanding of the differences between the practices becomes more evident. In Table 48 the costs are compared for lipid abnormalities, diabetes mellitus, reflux oesophagitis and hypertension. These figures have been taken from the two tables (Table 37 and 32) which presented the detailed costs from the two data collection periods - July to September 1995 and January to June 1996. The overall differences between the two periods reflect the influence of the safety net. In the first period (July-September 1995) there was a 50% adjustment for the effect of safety net, whereas in the second period (January-June 1996) there was no adjustment. In these analyses, the safety net was assumed to become important in the last 6 months of each calendar year. For example, with lipid abnormalities the rate per presentation for Practice 1 for the first data collection period was $38.06 and for the second period was $29.00.

Across practices, differences in mean cost exist. For diabetes mellitus, Practice 3 is overall cheaper than Practices 1 and 2. All three practices were similar for lipid abnormalities. With reflux oesophagitis, Practice 1 is more expensive than the other two practices.

When the specific age/sex linked data are examined alone (see Table 43), significant differences are found between practices for some conditions and not others. For example, significant differences exist for hypertension between Practice 2 and the two other practices for mean cost of items ordered, with Practice 2 having a higher cost. When hypertension costs are examined across specific age/sex groups, the only group where there were significant differences between practices was the 55-64 females (see Table 44). However for two of the most expensive items, hyperlipidaemia and reflux oesophagitis and lipid abnormalities there were no differences.

The differences described above probably reflect differences in management. Whether these differences reflect inappropriate and inefficient management is open to question. Some insight into the different methods of management can be gained by comparing the practice management profiles for medications used for hypertension.

The practice profiles for the main 5 items prescribed or ordered for hypertension is summarised in the box below.

Practice 1	Practice 2	Practice 3
enalapril 10 mg	perindopril 4 mg	atenolol 50 mg
atenolol 50 mg	enalapril 10 mg	felodipine 10 mg
enalapril 5 mg	enalapril 20 mg	felodipine 5 mg
metoprolol 50 mg	atenolol 50 mg	captopril 12.5 mg
verapamil 240 mg	fisinopril 20 mg	enalapril 10 mg

In all three practices the main drug groups used are ACE inhibitors. In Practice 2 which has the highest cost for hypertension (i.e. $17.32 - Table 49) four out of the five main medications for this condition are from this class compared with Practice 1 which has 2 out of the top 5 as ACE inhibitors. In Practice 2, perindopril 4mg costs $30.82 (Dispensed maximum price (261)) compared with metoprolol 50 mg - $10.32 and verapamil 240 mg - $17.22. With pathology and diagnostic imaging testing, Practice 1 ordered 1.6 tests per 100 presentations for hypertension compared with Practice 2 of 1.4 tests per 100 presentation for hypertension. While these figures do not indicate inappropriate management, they do indicate different behaviours among these GPs.

Table 48

COMPARISON OF COSTS PER PRESENTATION PER SELECTED CHOSEN CONDITIONS FOR JULY-SEPTEMBER 1995* AND JANUARY-JUNE 1996**

	PRACTICE 1	PRACTICE 2	PRACTICE 3
CONDITION	$ RATE PER PRESENTATION	RATE PER PRESENTATION	$ RATE PER PRESENTATION
Diabetes mellitus 1st period * 2nd period **	 8.71 7.24	 8.88 14.63	 8.89 5.99
Lipid abnormalities 1st period * 2nd Period **	 38.06 29.0	 36.54 27.42	 30.88 28.64
Reflux oesophagitis 1st period * 2nd period **	 35.98 16.05	 28.68 19.36	 14.53 28.68
Hypertension 1st period * 2nd period **	 16.54 10.09	 17.32 11.17	 15.76 12.18

Notes:

* First period - July-September 1995
** Second period - January-June 1996

To summarise, the analyses of both the overall data set and the more specific age/sex subset revealed differences in resource usage across the practices. These differences are apparent across diagnoses groups and specific chosen conditions, and persist when age/sex linked data was used. More expensive conditions with predictable methods of management e.g. reflux oesophagitis have limited variation in mean cost. More variation in cost per presentation for the conditions such as diabetes mellitus and hypertension probably reflect differences in management.

The next section examines in more detail the interaction between all these factors in resource utilisation in order to define the actual contribution of the variation of GP clinical behaviour.

SECTION THREE

RESULTS AND DISCUSSION OF THE REGRESSION MODELS

5.3.1. Examination of the interaction of all variables on mean cost per item ordered

In the final step to examine the influence of the GP on the variability around mean cost per ordered item, the GP, age and sex of the patients, the diagnoses groups and chosen conditions were entered into a multiple regression model. The dependent variable was mean Commonwealth Government cost per ordered item. All age- and sex-linked data were used and 14,438 observations were available. Two consultations per patient were assumed to have taken place.

The process involved a step-up regression beginning with an examination of the effect of each explanatory variable - age of patient, sex of patient,

practice, GP, diagnoses groups, the chosen conditions and finally all conditions. The interactions of age and sex together, and age, sex and practice combined were also examined. Table 49 presents the results of the model and includes the scaled deviances, degrees of freedom and a percentage contribution to the variance of the mean cost. The scaled deviance result has been used as a measure of variance - the smaller the result the greater the explanatory power of the regression model. The percentage contribution has been calculated by dividing the scaled deviance of each group by the overall scaled deviance for mean cost where no effect of the groups has been examined. The largest contribution to the variance was found to be the diagnoses groups (12%) and specific chosen conditions (7%). Only 3% was explained by age and sex together and 5% by practice, age and sex combined.

As the diagnoses groups had explained the most variance, it was decided to group the diagnoses groups by similar cost in order to find a more parsimonious model. For example, the diagnoses groups circulatory, genitourinary and musculoskeletal had a mean Government cost per ordered item of $7.69, $7.64 and $6.91 respectively and as such were grouped together in this model. This grouping still only explained 12% of the variance.

In the next step, the diagnoses groups were separated into all contributory conditions. The chosen conditions were included in this analysis. These conditions were again grouped, according to similar cost. For example, the conditions of asthma, hypertension and heart failure had mean costs of $8.32, $8.46 and $9.67 and were accordingly grouped together. A number of further multiple regressions were completed, as age of the patient, GP and sex of the patient were progressively added to the conditions treated. All conditions and age of patient explained 50% of the variance. All conditions, age of patient and GP explained 64%. All conditions, age of

patient, GP and sex of patient explained 68% of the variance. A further 1% was explained by adding a grouping of GP, and age and sex of the patient together.

The addition of the GP explained 14% of the variance. Sixty nine percent of the variability around mean cost per item could be explained by a model that involved the GP, the age and sex of the patient and the conditions treated. Fifty percent could be explained by the conditions and age of the patient.

Table 49

CONTRIBUTION OF DIFFERENT VARIABLES TO MEAN GOVERNMENT COST PER ITEM (RESULTS OF MULTIPLE REGRESSION MODEL)

PARAMETER	SCALED DEVIANCE	DEGREES OF FREEDOM	PERCENTAGE CONTRIBUTION TO VARIANCE OF MEAN COST PER ITEM*
Practice	266091.6	18.4	0
General Practitioner	264161.9	18.3	1
Sex of patient	265273.4	18.4	1
Age of patient	263067.4	18.2	2
Diagnoses Groups (in READ chapters)	232772.8	16.1	12
Specific chosen conditions	240673.4	16.7	9
Age and sex of the patient	259982.9	18.0	3
Practice and age and sex of the patient	253457.7	17.6	5
Diagnoses groups grouped according to cost	234497.2	16.2	12
All conditions	188147.5	13.0	29
All conditions and age of the patient	132661.8	9.2	50
All conditions and age of the patient and GP	95890.2	6.7	64
All conditions and age and sex of the patient and GP	84250.4	5.8	68
All conditions and age and sex of the patient and GP PLUS GP and age and sex of the patient	84140.7	5.8	69

Notes:

* The percentage contribution to variance of mean cost per item has been calculated by dividing the scaled deviance for each independent factor/s into the scaled deviance calculated for the total data, without any examination of the specific effect of the independent factors. This figure was 267271.3.

5.3.2. Discussion of the results from the modelling.

In this final model, the two main predictors of the variation around the mean cost per ordered item were the age of the patient and the conditions treated. The addition of the GP added a further 14% to the variability, suggesting that there is a small but significant margin for an improvement in efficiency among these study GPs. Whether similar variation exists among other general practices and GPs deserves to be explored using the same methodology. The study GPs are likely to be innovators and somewhat atypical, as they were comfortable with being part of this controversial project. Importantly, only 69% of the total variation around cost could be explained, leaving 31% as unexplained.

Intuitively, it seems reasonable to assume that some of the variation around mean cost should be determined by a combination of the conditions treated, the age and to a lesser extent gender of the patients and the behaviour of the GP. This will be due, in part to the influence of Medicare and substantial subsidisation of pharmaceuticals by the Commonwealth Government, particularly for pensioners. The elderly suffer an increasing number of chronic conditions that require expensive medications and investigations to manage. (21) With pharmaceuticals, the Commonwealth Government pays for all medications over $3.20 for pensioners and $20.00 for non-pensioners. (18)

Within this data set, gathered from 8 GPs in three practices the key determinant of costs were the conditions treated. They contribute up to 26% of the variability within the model. Simply relying on the age and sex profile of a practice and using mean cost per age and sex standardised patient would not be adequate to produce a fair and equitable budget. Age and gender describe only 3% of the variation with cost. Theoretically, if budgets were developed along these lines,

fundholding practices could discriminate against older patients with expensive conditions, leaving less organised and less astute practices to carry these more resource-intensive patients. (164, 166)

SECTION FOUR

SUMMARY

This chapter has dealt with two objectives of the thesis. Objective 3 sought:

To develop a method to document the GP resource allocation required to manage a number of specifically chosen conditions that substantially impact on practice budgets.

This has been achieved. The model developed has documented the resource allocation by practice, by GP, by diagnoses groups, by chosen conditions, and by age and sex of the patients. It is important to note there were gaps in the recording of pathology and diagnostic imaging ordering which casts some doubt on the findings for certain conditions. In documenting the resource allocation, the mean Commonwealth Government cost per item ordered was used. The method was found to provide reasonably consistent results across the overall data set and a smaller sub-set involving age- and sex-linked consultations.

The second objective (Objective 4) aimed:

To assess the efficiency of the resource allocation by these GPs for the chosen conditions (see Objective 3) by comparing their management with their peers.

There were differences found in the resource allocation across practices and GPs. The main relevant differences were in the circulatory and endocrine/metabolic diagnoses groups and certain specific conditions e.g.

diabetes mellitus, hypertension and depression. In the multiple regression model, 29% of the variability of mean cost per ordered item was explained by the conditions treated, 50% by the interaction of the condition treated and age of the patient and further 14% by GP behaviour. This latter figure would seem to imply that improvements in efficiency of GP management would be possible within a fundholding framework.

CHAPTER SIX
THE DEVELOPMENT OF THE PRACTICE BUDGETS AND THE FUNDHOLDING FRAMEWORK

This chapter is divided into two sections. The first section describes the development of the practice budgets, comparing this estimated figure with the actual practice expenditure over a six month period. In the second section, a fundholding framework is suggested for Australian general practice, based on the findings of this study. This framework includes information on the role of the GPs, other practice staff, budgetary development, the input required from Commonwealth, State and private sectors and finally the role of consumers.

SECTION ONE

DEVELOPMENT OF PRACTICE BUDGETS

This section will deal specifically with Objective 5. This objective examined the process of budgetary development for each of the three practices and then compared these developed budgets with actual outlays. This was an important element in assessing the viability of fundholding. If a funding body or a general practice could not reliably predict budgetary expenditure, then the actual financial management of a capped pool of resources would be difficult.

6.1.1 Budget Approximation

In the context of this study, the budget refers to the income gained by the practices from Commonwealth Government outlays from the HIC and PBS

only. In order to assess how accurate the practice-based data collection was in estimating these outlays for the three practices, the information collected in the practices during the period August to September 1995 was used to extrapolate Commonwealth resource usage to the complete 1995 calender year and thence to project the probable budget for the first 6 months of 1996 for each practice. This probable budget was based on no growth in Commonwealth outlays for each of the practices. Each practice and the participating GPs were informed of the budgetary amount for the first 6 months of 1996, but there was no attempt on their part to try and adhere to this projection.

The practice budgets were developed from three sources - consultation costs from front-of-house, practice based data collection (for pharmaceuticals and diagnostic imaging) and information from the local pathology organisations. It can be argued that if a practice was fundholding, then the most easily obtainable costing information would be previous outlays. This method was used in the United Kingdom fundholding practices to develop their first budgets. (157,158) The usefulness of this method for Australian general practice requires investigation.

In Table 50, the estimation of outlays has been compared with the last three known years actual outlays from the HIC and PBS for the four areas of care. With Practice 1, the practice-based data collection for the three month period (July-September 1995), for 1995 estimated an outlay of $1,353,088 - 87% agreement when compared with the actual HIC and PBS information for 1995 (ie. $1,561,274). With Practice 2, the practice-based budget estimated outlay was $856,368 and the actual HIC and PBS outlay was $963,324 (89% agreement). However with Practice 3, the estimate was $187,322 with an actual HIC and PBS outlay of $176,270 (106% agreement ie. 6% overestimation).

In order to further explore the issue of predicability of practice budgets, Table 51 has been added, which compares HIC and PBS oultays for three years (1993, 1994, and 1995) for the three practices. These figures have been adjusted to exclude GPs who began working in the practices in 1995. This includes one GP for Practice 1 and four GPs for Practice 2. The variation between the years is substantial ranging from 8% for Practice 1, 16% for Practice 2 and 8% for Practice 3.

Table 50

SELECTED PRACTICE OUTLAYS* 1993-1995 IN CURRENT YEAR DOLLARS COMPARISON BETWEEN HEALTH INSURANCE COMMISSION AND PHARMACEUTICAL BENEFIT SCHEME AND PRACTICE DATA SOURCES*

PRACTICE	HEALTH INSURANCE COMMISSION			PRACTICE DATA SOURCES**
	1993	1994	1995	1995
Practice 1	$1,260,349	$1,267,269	$1,561,274	$1,353,088
Practice 2	$635,997	$753,150	$963,324	$856,368
Practice 3	$153,936	$143,189	$176,270	$187,322

* Includes consultations, pharmaceuticals, pathology and diagnostic imaging only

** Practice data sources:
- front-of-house accounting software
- paper data - pharmaceuticals
- local pathology organisation information
- paper data - diagnostic imaging

Table 51

ADJUSTMENT OF SELECTED PRACTICE OUTLAYS* 1993-1995 IN CURRENT YEAR DOLLARS HEALTH INSURANCE COMMISSION AND PHARMACEUTICAL BENEFIT SCHEME INFORMATION (AFTER EXCLUSION OF NEW GENERAL PRACTITIONERS AND OTHER PATHOLOGY SOURCES**)

PRACTICE	1993	1994	1995
Practice 1	$1,260,349	$1,267,269	$1,371,564
Practice 2	$635,997	$753,150	$677,926
Practice 3	$153,936	$143,189	$156,020

* Includes consultations, pharmaceuticals, pathology and diagnostic imaging only

** Where general practitioners have joined the practice in 1995, their figures have been removed from the 1995 projections. This includes GP *5* from Practice 1 and GP *13,14,15,16* from Practice 2. In Practice 3 pathology services are excluded as consistent data collection over the three years was not able to be obtained.

Having refined a model for the measurement of practice based outlays based on the July-September 1995 information, this was used to project a budget for the first six months of 1996. In Table 52, the budget projections for each of the three practices are presented for all areas of care. The budget projections for Practice 1 were $628,685, for Practice 2 - $396,486 and for Practice 3 - $87,684. In Table 53, the actual outlays as measured by the practice based data sources and Commonwealth Government sources (ie. HIC and PBS) for the complete 6 month period are presented and compared with the budget projection. The practice-based outlays were gathered from a compilation of information collected by computer and paper from two periods - January-February 1996 and May-June 1996. These latter data were adjusted for each GP to provide a full six months estimate (see chapter 3 section 3.3.2.7).

For Practice 1, the budget projection was within 1% of the practice data sources actual outlay and 18% of the HIC and PBS amount. The actual figures were:

budget projection:	$628,685
actual outlays estimated from practice-based data collection:	$629,238
actual outlays estimated from Government sources:	$706,594

For Practice 2, the budget projection was within 5% of the practice data sources outlay and 15% of the HIC and PBS amount. The actual figures were:

budget projection:	$396,486
actual outlays estimated from practice-based data collection:	$416,856
actual outlays estimated from Government sources:	$467,956

For Practice 3, the budget projection was within 11% of the practice based outlay and 6% of the HIC and PBS amount. As discussed earlier, these figures from Practice 3 need to be viewed cautiously because of the effect of the locums. The figures were:

budget projections:	$87,684
actual outlays estimated from practice-based data collection:	$96,853
actual outlays estimated from Government sources:	$81,994

Table 52

SELECTED BUDGET PROJECTIONS* FOR THE THREE PRACTICES BASED ON LOCAL PRACTICE BASED DATA** FOR THE PERIOD JANUARY-JUNE 1996 (INCLUSIVE)

Practice	Consultations	Pharmaceuticals	Pathology	Diagnostic Imaging	Total
Practice 1	$337,578	$145,336	$101,974	$43,770	$628,685
Practice 2	$231,106	$78,628	$67,206	$38,898	$396,486
Practice 3	$39,812	$33,800	$10,998	$3,074	$87,684

Notes:

* Includes consultations, pharmaceuticals, pathology and diagnostic imaging only

** Local practice based data includes:
- front-of-house accounting software
- paper data - pharmaceuticals
- local pathology organisation information
- paper data - diagnostic imaging

Table 53

SELECTED TOTAL ACTUAL OUTLAYS FOR EACH PRACTICE FOR PERIOD JANUARY-JUNE 1996

(INCLUDES CONSULTATIONS, PHARMACEUTICALS, PATHOLOGY AND DIAGNOSTIC IMAGING ONLY)

Practice	Practice Based* Sources	Government** Sources	Budget*** Projection
Practice 1	$629,238	$706,594	$628,685
Practice 2	$416,856	$467,956	$396,486
Practice 3	$96,853	$81,994 ****	$87,684

* Practice Based Sources - front-of-house, GP collected data for pharmaceuticals and diagnostic imaging and local pathology organisation.

** Government Sources - Health Insurance Commission and Pharmaceutical Benefits Scheme.

*** Budgetary Projection for each practice (based on 1995 data collection).

**** The Government sources costs for Practice 3 are based on figures from the period April-June 1996. To arrive an estimate over this period, the government costs for GP *17* figures for this 3 month period were doubled. It was not possible to use the figures from the period January-March 1996 because of the locums employed. No information on HIC and PBS resource usage was available from these locums.

6.1.2 BUDGETARY PREDICTIONS

Objective 5 of this study was specifically aimed at the development of data collection methods to arrive at, and then monitor, a budget for HIC and PBS resource usage for the three practices. A model for the calculation of practice outlays was developed, based around a number of sources ie. front-of-house information, local pathology data and information on pharmaceuticals and diagnostic imaging retrieved from the practice based data collection. These sources were found to be the best available for this task. The model predicted the actual HIC and PBS outlays within 87% for Practice 1, 89% for Practice 2 and 106% for Practice 3 for 1995. These percentages provide some evidence that the method used to develop these practice based outlays was logical. This model was used to produce a budget for each practice for the first six months of 1996, the second half of the study.

The budget projections for this period for each of the three practices varied in their accuracy, reflecting in part, the completeness of the data collected. In Practices 1 and 3, where data collection was most complete, as assessed by the case note validation and the comparison with the Government sources, the projection was within 1% of the actual practice based data collection for the period January-June 1996 and 11% of the combined Health Insurance Commission and Pharmaceutical Benefits Scheme total outlays. With Practice 2, where the data collection was not as complete, the projection was within 5% of the actual data collection costs and 15% of the actual Government outlays. If a fundholding practice was actually holding 'monies' for a real budget, the sources used in this study would form a useful monitoring role for the practices.

From the study, the agreement of the diagnostic imaging information of 57 (when compared with Government sources) and 65 (when compared with

the case note audit), would indicate that other sources of costing information may be more useful. The local radiology organisations are likely to be more accurate. The author of this thesis did try to obtain this information but was refused access. The refusal was due, in part to the controversial nature of the fundholding concept.

In this study, information was used from July-September 1995 to develop a budget projection for each practice for the first half of 1996. This compared favourably with previous historical information from the GPs who had been in the practices for at least 2-3 years. It is possible that historical information could be used to develop a budget for these GPs for the first years of fundholding. This method may however reward inefficient GPs. If a GP prescribes expensive medications where cheaper alternatives exist, then the historical pharmaceutical budgets will be over-inflated. Similarly, if a GP uses expensive pathology and diagnostic imaging tests to investigate patients with certain ill-defined conditions where a period of expectant waiting may be more appropriate, then these budgetary elements will also be historically inflated.

One of the key issues in the development of fundholding is the creation of a budget projection that accurately predicts future resource allocation. It will be difficult for organisations, in this case general practices, to use previous past expenditures (as gathered by outside agencies) to plan future resource needs. With these practices, there was a 8-16% variability in outlays for the years 1993 to 1995 (see Table 50). This is unacceptable in the budgetary control of an organisation and would lead to financial problems.

It is likely that similar variability in use of resources would exist across Australian general practices. Scotton argues that fundholders would need to be funded on a capitation basis. (7) This would increase the flexibility of

the funders. (7) The funders (in most case the Government) would be able to increase the revenue offered to fundholding practices who were based in socio-economically disadvantaged areas, had more elderly who suffered from multiple chronic conditions and greater Aboriginal populations. (7) In the United Kingdom, the fundholding practices were moving to capitation-based formulae in order to reduce the variability known to exist between practices. (162) Some Health Authorities were using age, sex, cross boundary flows and chronic illness as predictors of pharmaceutical costs. (169)

A capitation formula may be more efficient and promote equity, but would probably at this time, be unacceptable to Australian GPs. The data gathered in this study (and other similar studies) could eventually form the basis of a more equitable formula based on age and sex (164), local practice factors (155), some measurement of need (170) and overall patient numbers. If fundholding was developed, then it is probable that historical information could be used initially, with further fine tuning of a practice-based budget occurring after more information is gathered on general practice behaviour and resulting costs. The modelling of mean costs per ordered item, as described in section 5.1.3. provides a beginning to this process. This study has found that amongst these GPs, three factors would need to be considered - the conditions being managed within a practice and the age and sex of the attendees. External validation of these findings is required among other practices from a wide range of communities, before these factors could be the basis of a capitation based practice budget.

A final word is required on the number of consultations required from each GP to estimate an annual GP budget. Given that it is not feasible for all GPs to regularly collect information on pharmaceuticals, pathology and diagnostic imaging ordering, while linking this information to diagnoses

some appraisal is required on the minimum amount of data that would be required from a GP to define the cost drivers in a practice. As part of this thesis, the author liaised with a statistician. Using the annual Medicare Statistical Feedback Sheets for the period July 1994 to June 1995 (306) and data on prescribing variability for full time GPs who were in practice in 1993 obtained from Dr Dianne O'Connell (University of Newcastle), (307) an estimation of the minimum number of consultations required from each GP to complete this task was developed.

The statistical technique selected, assumed a normal distribution of mean cost per consultation. After estimating the mean and standard deviation values for prescribing, consultations, pathology and diagnostic imaging and calculating the probable number of consultations in a 12 month period (based on the Medicare statistics feedback sheet (306)), the required sample size was computed for four different standard errors.

If the standard error was 5% and the number of consultations were fixed for a year, information from 200 consecutive consultations would be needed to produce a statistically valid profile of the costs generated by pharmaceuticals for each GP. For pathology ordering the required number of consultations would be 149 and for diagnostic imaging 152. These numbers will increase slightly if there is a variation in the expected total annual number of consultations. In fact these results were used in the last data collection period (ie. April-June 1996) to restrict the data collection to one month only for each GP. The data collected from this period are remarkably similar to each of the other two periods, where a great deal more consultation information was collected.

It is worth noting that these sample size calculations are based on the assumption that there is no clustering effect. However within each practice, peer influence is likely to be substantial and some adjustment is

required for clustering. It is arguable that the sample size should be doubled or even tripled. This would still only require one-two months consultation information from a GP. What would need to be prevented is strategic behaviour, where GPs would change their routine (eg. by ordering more expensive investigations, pharmaceuticals) to artificially inflate their budgets.

6.1.3 Summary

The fifth Objective of the study aimed:

To develop a budget for these three practices for a specified period and then compare this budget with actual practice expenditure and Government expenditure.

A model was developed to estimate a projected budget for the three practices over a 6 month time period. The model embraced consultation costs, pharmaceuticals, diagnostic imaging and pathology services. This budget projection was also compared with previous years actual outlays. In completing this comparison, substantial variation was found in previous years outlays for all three practices. This suggests that historical budgets may not be a good method to develop annual budgets, unless methods could be developed to eliminate these sources of variations. Capitation formulae are needed and some of the variables have been identified within this data set. This may be the only way in the long run to improve efficiency and promote equity across fundholding practices.

The final section in this chapter combines the qualitative and quantitative results into a fundholding framework. This framework, by necessity needs to include agencies outside general practice. It is impossible to adequately discuss the cost and consequences of this framework to assess the possible gains in efficiency (both technical and

allocative) that may occur without including all outside organisations. This latter analysis will be completed in the final two chapters of this thesis.

SECTION TWO

THE DEVELOPMENT OF THE FUNDHOLDING FRAMEWORK

6.2.1 Introduction

In order to develop a plausible fundholding framework, the three practices were combined into one. The evidence from the original fundholding practices in the United Kingdom, is that they needed a patient base of at least 11,000 patients. (157) This was lowered to 7,000 in 1992. If this thesis was to realistically analyse whether the consequences outweigh the costs of establishing fundholding, then it was more feasible to examine the three practices combined as one practice. The three practices would then have a combined patient pool of 13288 (figures taken from the HIC from the first half of 1996). Individually the practices would have 5,884 (Practice 1), 6,956 (Practice 2) and 448 (Practice 3) patients.

This does not take into account people who visit other practices and a better measure may be whole patient equivalents (WPE). WPE refers to the fraction of care provided by a general practice to each patient and is explained in detail in Appendix 10. In the three practices for the period 1995/96 (ie. July 1995 to June 1996) the WPE were 3,359, 4,250 and 389 for Practices 1, 2 and 3 respectively. This gives a combined WPE patient pool for a fundholding project of 7,998. This figure is substantially smaller than the 13,288 people who attended the practice (see above) and indicates quite clearly the larger number of attendees

who are using other general practices, outside the three involved in the study. The combined outlays for consultations, pharmaceuticals, pathology and diagnostic imaging for 1996 would have been $2,513 million, based on the doubling of the half yearly value obtained from the HIC of $1,256,544. For the remainder of this discussion the practice denominator used was the WPE.

There would be a number of required elements in this fundholding practice. They include:

1) general practitioners
2) other practice staff
3) methods required to develop a practice budget
4) appropriate input by the Commonwealth, State and Private sectors
5) consumers.

Each of these elements will be discussed in turn.

6.2.2 The role of the general practitioners

All participating general practitioners would need to agree to join. They would have to agree to joint protocols on pathology and diagnostic imaging referrals and employment of staff. (158) They would have needed to agree on methods to monitor and review all partners' prescribing and diagnostic imaging and pathology patterns, and if these were found to be inappropriate (162) to develop techniques to change behaviour. The model developed around the costs resulting from the behaviour of a GP, presented in this thesis, may be one option. The qualitative information would suggest that this consensus among the older GPs within Practice 1 would be problematic, whereas in the younger practice ie. Practice 2 this would be less of a problem. It is

likely that the ultimate inducement would be the effect on income if the GPs within a practice could not arrive at a consensus.

One of the most important issues for GPs who would become involved with fundholding, is what amount of risk taking they would be willing to consider. A fundholding general practice manages a specific anticipated outlay for their patients and is at risk of all costs incurred. Risk taking refers to the possibility of a "blow-out" of anticipated outlays due to new expensive patients. (7) The information obtained from the study would indicate that patients, newly diagnosed with cancer, are one such group. GPs would be concerned if their income could be affected by this "blow-out". In the framework developed for this study, consultation costs were included. As such, the participating GPs would need to agree to an appropriate level of risk taking. In the United Kingdom, the Government provided extra monies for patients who unexpectedly use expensive resources. (157,162)

Two other comments are required around risk taking. This study has revealed that gathering accurate data on actual practice outlays is difficult and would be open to both random and systematic error. For example, the calculation of the effect of pensioner status, within the budget projection model was based on national prescribing figures. If they were inaccurate and under-estimated the number of pensioners in a practice, then a 'blow-out" in outlays would also occur as these extra pensioners absorbed more resources. The concern about risk taking for fundholding GPs would be diminished if the Commonwealth Government was willing to bear the risk of these errors in calculating budgets.

Certain key GPs (162,203), one from each practice, would have to be designated as the person to establish the framework. This GP must be

able to establish the direction of the practice as it moves from being only concerned with patient care to an adoption of a new role - fiscal management. He/she will need significant time to manage and monitor the budget. Some time will be required to negotiate contracts with local pathology and diagnostic imaging organisations for required services. Assessment of the quality of the care and the service would be integral to this analysis. In the United Kingdom, fundholders in well organised sophisticated practices have been able to achieve substantial savings and changes for their practices. (172)

These GPs would need training and support if fundholding in Australian general practice were to be sustainable. The Audit Commission in its report into UK fundholding stated quite clearly:

"But even though fundholding offers a comparatively simple experience of purchasing, because the hospital treatments it covers are not difficult to cost and demand for them is predictable and can be contained, yet only a minority of fundholders have made the most of it. They make changes at the margin, but continue purchasing the same services, in the same quantity, from the same providers as the health authority purchased on their behalf before they became fundholders". (162)

To fully realise the potential of this fundholding practice, resources would need to be committed to these training and support needs. The interviews revealed that this type of management is a long way from the average GP's thinking and training. This will incur opportunity costs that would be quite substantial in the early phases.

It is likely that local, respected GP peers will need to review and analyse the behaviour of their colleagues in these practices. (273) This element is important in creating improvements in technical efficiency within the fundholders and reducing the substantial variation known to exist among Australian GPs. (62,63,64,65,66) Comparison with other peers would be required. This was clearly illustrated by the study GPs when they were interviewed regarding the value of providing information on the costs of

their ordered items. Data management and analysis skills will be a prerequisite. It is likely that tracer conditions could be used as a means to monitor and review behaviour. (162) Some of the conditions that have been chosen for this present analyses were hypertension, diabetes mellitus, depression, lethargy, lipid abnormalities and appropriateness of diagnostic imaging investigations for such conditions as abdominal pain.

The key GPs would need to manage the current practice staff, as they would require careful and sensitive administration during the period of change. To successfully bring about this new direction, ownership of the change by the other practice staff would be an important element. However there would be other new staff required, as the next section illustrates.

6.2.3 The role of the other practice staff

For a successful fundholding practice, a fund manager will need to be appointed. It is possible that this could the practice manager, but the evidence from the United Kingdom is that this person needs to be multiskilled. Fund managers in the United Kingdom general practice fundholders indicated that they need financial management skills (28% agreed with the statement), organisational skills (24%), knowledge of general practice (20%) and business planning (15%). (162) In Australia further skills would be required which would include knowledge and understanding of the Australian health care system, the Pharmaceutical Benefits and Medicare schemes. Other skills are outlined in the following box.

SKILLS REQUIRED FOR FUNDHOLDING PRACTICE MANAGERS

- Choosing pathology and diagnostic imaging providers (with the key GP)
- Reviewing the quality of service provided by providers
- Contract negotiation
- Writing contracts
- Monitoring the budgets
- Day to day running of the fund
- Inputting data
- Writing reports
- Developing purchasing and savings plans
- Managing the fundholding staff
- Creating a supportive relationship with the key GPs

A second tier of staff will be required. In fundholding practices in the United Kingdom, 2 full time equivalent staff (162) are required to aid in the day to day management of the practice. Within this fundholding practice similar staff would be required. Their tasks would include input of data, actuarial skills, day to day cost analysis and most importantly gathering and comparing data from providers and the participating GPs. It is likely one of these people would need to have a pharmacy background and would use this skill in providing advice to the practice GPs about how they could become more efficient in the area of pharmaceutical prescribing. In this fundholding practice budget, pharmaceuticals would contribute 31% of the budget and as such would be an obvious area for efficiency gains. There is clear evidence of substantial variability in GP pharmaceutical costs (62), which more than likely reflects variation in behaviour.

A third person would also be required. The study has illustrated, that when a practice is implementing and establishing computers and information systems within a practice, there is a need for a full time staff person to support this process of change. The problems encountered by this project, as the three practices were computerised would have been better managed if a dedicated computer trained resource person was involved to move freely between the practices.

6.2.4 The methods required to develop a practice budget

In the first years of the establishment of fundholding, it is likely that practice budgets would be based on historical information (as calculated from the HIC and PBS). Some analysis would be required of the variability of the budgets over the preceding years to arrive at the best approximation of this budget. In the three study practices there was some variability. For example, in Practice 1 the total budgets over 1993, 1994 and 1995 varied by 9% for those GPs who had been stable over the whole period. If new GPs are included, the predicability of the budget becomes more difficult. For example, the total outlay in 1995 was $1,561,274 which was 23% higher than the outlay in 1994 of $1,267,269 (in current year dollars). In the year before beginning to hold real budgets, practice data collection would be required to correlate with the expenditure recorded by national data sources. This project has developed one further local method to compare practice costs with the national data sources using local providers (e.g. pathology and diagnostic imaging providers). Some important links could usefully be created with local pharmacies and those providing medications for nursing home and hospital inpatients. These sources would ultimately form useful validation methods for the pharmaceutical data collection.

Important consideration would rapidly need to be given to the development of "risk-related capitation payments". (170) This would create a more equitable payment system and go part way to prevent cream skimming. It may create positive incentives to offer complicated patients with multiple conditions and needs, incentives to remain within this practice. If the risk-adjusted formula was suitably weighted to provide adequate income from these complicated, and as a result, expensive patients, and if the practice could manage their care more efficiently, then savings might be readily obtained. Scotton argues that while this adjustment initially would be quite basic, the input of greater detail would flow from fundholding practices in the first two or three years, allowing this formulae to be refined. (7) Van de Ven argues that it is possible to develop a suitable formula which will predict a "substantial amount of predictable variance". (170) His work has combined age and sex with community rating and diagnostic cost groups. (170) New Zealand has successfully used a capitation formula in some of their budget holding projects. (308)

If fundholding budgets are left to be determined by historical analysis they will be open to abuse. Inefficient GPs will be rewarded with larger budgets and certain GPs could inflate their budgets in the year before beginning to fundhold. With the current freedom of movement of people in Australia, fundholding practices could theoretically reverse "cream-skim". Once a practice has established a budget for a set period, they could shed expensive patients by removing them from their practices to the private sector or other practitioners. This would create savings, by not having to provide care and use budgeted resources. Fundholding budgets will need more analysis to move towards a fair and equitable model that would be based on patient needs, not GP behaviour.

6.2.5 Responsibilities of the Commonwealth and State Governments and the private sector

For fundholding to be successful, there will need to be pooling of State and Commonwealth monies into one fund. This is crucial to prevent the problem of cost shifting. With the services envisaged within this study, only Commonwealth funds for consultations, pharmaceuticals, pathology and diagnostic imaging would be required. However there will still be State government roles.

6.2.5.1 Commonwealth Government responsibilities

The Commonwealth Government would be required to complete a number of tasks. They would include:

- the development of a regulatory framework for the fundholders which would be aimed at preventing cream skimming, cost shifting, and promote competition between both purchasers and providers. (7) This framework will be crucial to the successful development of internal markets within health care provision. (138)
- the determination of price such as the Medical Benefit Scheme, the Pharmaceutical Benefits Scheme, etc. These would be ceiling prices, but fundholders could still use market principles to negotiate with providers eg. pathology providers to produce services at a cheaper cost. (7)
- providing payments, via the Health Insurance Commission, to providers upon requisition/invoice by fundholding practices.
- determining consumer co-payments and deductibles eg pensioner pharmaceutical costs and safety net levels. (6,139)
- determining what quality of care and equity measures would need to be monitored within fundholding practices. This would need linkage of national data sources, such as the HIC and PBS, with local practice

based sources. For example, a cohort of people with chronic conditions could be identified within a disease register and informed consent sought to gather their Medicare and PBS data. Once people with specific conditions can be linked to these national data sources, then quality of care can be monitored eg. diabetes mellitus with glycated haemoglobin A1c, use of preventers and relievers with asthma. Equity could also be measured eg. access to specialist services for people with arthritic conditions.

6.2.5.2 State Government responsibilities

These responsibilities would include:

- the prevention and monitoring of cost shifting by State based local public services within this model would be an important role for this sector. As identified with GP *17*, a newly diagnosed patient with cancer needing expensive oncology medications, could create a larger cost burden on the pharmaceutical element of this budget. Similarly cost shifting expensive tests such as CT scans and MRIs to a fundholder would again put pressure on a practice budget. A complicated, chronically ill person who needs weekly visiting (eg. under a palliative care situation) may also place an undue burden on a fundholding practice. A number of methods would be required to cope with these scenarios. They might include "top up" money from State based resources or a caveat in the Commonwealth Government contract that covers new expensive patients who suddenly have very significant costs.
- a very important role in providing public health, epidemiology and needs analysis skills. These skills would be needed in focussing the fundholding practices on using their savings on areas of patient needs. (162) This will be important as more health care delivery is devolved to regional organisations. The regional organisations should

be able to successfully focus on needs of the local community, as well as the patients. (156,309)

- possibly being competitive providers of pathology and diagnostic imaging.

6.2.5.3 Private sector responsibilities

These responsibilities would include:

- private providers competing for provision of diagnostic and pathology services.
- pharmacies and pharmaceutical companies could similarly compete for provision of medications, aids, consumer educational materials etc. Certain elements would be integral to their involvement - sophisticated quality reviews (163), GP education linked to conditions (280) and contracts based on price and quality. (310)

6.2.6 The role of the consumers

A number of issues would need to be debated with consumers within a fundholding practice. It is unlikely that consumers would like to enrol with one fundholding practice indefinitely because of their changing needs and the accepted Australian consumer view of freedom of choice for services. It is feasible that certain set periods, for example one year would be acceptable. This would be a powerful method to introduce competitive packages of care with these services that would attract consumers. (4) These packages would need to be responsive to consumer preferences and may create styles of care (4) that are more responsive to all groups.

A recent report of consumers' views on coordinated care has indicated a number of other concerns that would need protection within a

fundholding practice. They include the fear of the loss of autonomy and the capping of health care costs for enrolled people. (38) Complaint procedures, appeal mechanisms and independent advocates would be important. A standby mechanism where consumers can opt out of a fundholding practice would need to be created. (38) These concerns should be part of a fundholding structure within Australia. Correll has argued that information on price and service is one of the keys to the successful development of managed care in Australia. (311)

Consumers on low income would continue to receive subsidies that would limit their outlays (4) and the fundholders would be required to notify the national funders of those appropriate people. Within a fundholding practice, these groups could be subsidy-adjusted within budgetary constraints to local needs eg. Aboriginal people who were enrolled would achieve higher subsidies.

SECTION THREE

SUMMARY

The overall aim of this project has been to develop a framework for fundholding in Australian general practice. As summarised above, the framework developed would require substantial practice staff - GP, fund manager and support staff. Personnel from Commonwealth and State Governments, private sectors and consumers would be integral to this framework. The costs would be substantial and the question remains whether these costs could be outweighed by gains in efficiency. The next two chapters will look at the efficiency gains possible within this framework.

CHAPTER SEVEN
APPRAISAL OF THE FUNDHOLDING FRAMEWORK AND AN ASSESSMENT OF THE TECHNICAL EFFICIENCY OF A FUNDHOLDING GENERAL PRACTICE

This chapter contains an appraisal of the fundholding framework developed throughout this project. This appraisal is divided into two sections. The first documents the anticipated costs associated with managing fundholding within an Australian general practice. In order to approximate a practice of a size comparable with the United Kingdom first wave fundholders, it has been assumed that the three study practices would act as one fundholding general practice, allowing a budget to be developed from the total patient pool from the three practices. For the remainder of the discussion in this chapter and Chapter 8, where the term practice is used it refers to the combined fundholding practice. The second section uses these estimated costs to develop a model to quantify the possible gains in technical efficiency that would flow from the establishment of fundholding. Fundholding is compared with fee-for-service reimbursement in this model.

Completing this analysis will help to clarify Objectives 6 and 7 of this study. Objective 6 deals with the gains in technical efficiency possible within a fundholding practice and Objective 7 looks at the consequences of adopting a this model for Australian general practice. Chapter 8 completes this examination of these two final study objectives with an analysis of the improvements of allocative efficiency that could be created by the adoption of fundholding.

SECTION ONE

APPRAISAL OF THE FUNDHOLDING FRAMEWORK

7.1.1 Analysis of costs

The establishment of fundholding in general practice would impact on a number of groups, including Commonwealth and State Governments, the private sector, general practitioners and the consumers. In the framework developed in the following section, the distribution of these costs across different elements of the health system has been calculated and then integrated into the economic model. It is important that these foregone benefits ie. the opportunity costs, are outweighed by the benefits gained. (312)

The analysis adopts two perspectives: that of the health care system and of a fundholding practice. The total opportunity costs to society could not be calculated because other categories of cost and benefits were not available. These include indirect costs and benefits to patients and other allied health providers eg. physiotherapists, diabetes educators, podiatrists and out-pocket-expenses.

In Table 54 and 55 the costs are summarised for first full year of operation of the establishment of a fundholding framework that would manage the practice. The administration would require one day a week from the key GP. This is an estimation and is based on the evidence from the United Kingdom. (203) In the establishment of the first fundholding general practices in the United Kingdom, it was found that this amount of time was required to negotiate with Health Authorities, consultants and Family Health Services. (203) In Australia, similar time would be required to negotiate with Commonwealth, State and private sectors. The role of the

lead GP has been discussed in detail in Chapter 6. In summary, he/she would negotiate contracts, establish policies for the practice, monitor the budgets, supervise staff (158,203) and interact and link with outside groups and agencies. (236) These groups would include other local GPs.

A fund manager and two full time staff (one with accounting/data entry experience and one with information technology experience) would be integral to the team. (158,162) The rationale for the employment of these three full time staff has also been discussed in Chapter 6. To summarise, the fund manager is crucial to the success of the fundholding practice (160,162) and he/she would have multiple roles. These roles would include contract negotiation, day to day fund management, business planning, GP liaison and budgetary management. The two other staff would complement each other. The duties of the accounting/data entry staff member would include inputting data, day to day cost analysis and most importantly gathering and comparing data from providers and the participating GPs. The staff member with information technology experience would train and support the GPs and the other practice staff in the use of the computers and provide back up for everyday maintenance.

An evaluator/educator would be required to work with the GPs with the aim of decreasing the variability in patient management and as a result, possibly creating savings. This evaluator would monitor quality of care outcomes, establish methods of audit and feedback and help refine and implement guidelines for expensive and common conditions. This educational/evaluation input would be crucial for achieving substantial and sustainable gains in technical efficiency. (162) The total annual salary cost (including on costs) for these personnel would be approximately $237,886 in the first year, based on the division of general practice rates (313) and Australian Public Sector Award rates (315) (See Table 54).

The development of a team, such as that outlined above within this fundholding practice would be vital to achieving the full potential of the practice. The Audit Commission report into the United Kingdom fundholders has found that the progressive groups have invested in high level managers, good information technology support and regular feedback of comparative GP information. (162) These administration staff would then supported by the GPs, who demand quality from providers and focus savings on developing services that are needed for their patients. (162) If this practice was established as a fundholder without the full complement of staff, the complete potential of the model may not be reached.

The additional administration costs would be substantial and have been estimated at $17,000. These costs include phone, fax, photocopying, travel, insurance, postage, paper etc. In arriving at this estimate, the 1996 annual financial report of a local division with a comparable number of GPs to this fundholding practice has been used. (315) The capital costs would principally include computer equipment and associated furniture. This amount has been estimated at $200,000 in the first year. This has been calculated on the approximate cost for the computer installed within this project. It is possible that the computerisation could be initially delayed and these capital costs may not be incurred until later. Inevitably it would be necessary to use an information technology infrastructure to cope with the large amount of data needed for budgetary management, utilisation reviews and monitoring of quality and outcomes.

It is worth noting that these figures do not cost the volunteer time contributed by staff. It is likely that the key GPs and the fund managers would spend substantial unpaid time in establishing the model. Jonathan Simon calculated the unpaid time for health professionals in their initial fundholding pilot as NZ $300,000 per practice over three years. (236) It is

likely that similar volunteer costs would be incurred in an Australian program. While it might be acceptable for an enthusiastic GP to commit this amount of unpaid time for 12 months, or even a further 6 months, it is extremely unlikely that this undertaking would continue after this period, without a claim for remuneration emerging.

In the following years after the first year of operation, the annual incremental costs would obviously include only staff and administration costs not capital. From table 54, in 1998 prices this would include general practitioner, fund manager, support staff, educator and administration costs. This would total $254,886.

Table 54

SUMMARY OF THE COSTS* IN THE FIRST FULL YEAR OF OPERATION FOR THE FUNDHOLDING PRACTICE IN 1998**

COSTS INCURRED BY THE GENERAL PRACTICE

ELEMENT	DESCRIPTION	ANNUAL COSTS
Staff General Practitioner	1 day/week @ $96.92 per hour plus on costs (15%)	$46,367
Fund Manager	Full time — MAS3 $58,754 plus 15% on costs	$67,567
Support Staff	2 Technical Officers Grade 2 $35,025 plus 15% on costs	$80,558
Educator/Evaluator (nurse)	1 Level 2 Registered Nurse $37,734 plus 15% on costs	$43,394
Administration costs	Includes power, phone, fax, insurance, travel, photocopying etc (estimate).	$17,000
Capital	Computers (estimated) Office equipment	$200,000

Notes:

* Increased costs additional to those incurred under existing fee-for-service arrangements.

** Staff costs have been calculated from two sources.

a) Divisional GP hourly rate of $96.92. (313)

b) South Australian Public Sector Awards for Nurses, Administrative Services and Professional Services. (314)

c) Consumables/overheads have been taken from the 1996 Annual Report of the Yorke Peninsula Division of General Practice. (315). This Division has a comparable number of GPs to this fundholding practice.

The Commonwealth Government outlays would be substantial. Project staff would be required to develop budgets, raise and pay appropriate monies for services provided, establish and monitor quality, develop the regulations, protect against "cream skimming " and importantly train the GPs in this model of management. This latter task has been identified by the Audit Commission as crucial to the ongoing success of fundholding. (162) This time would approximate to a half time person for a year. This cost has been estimated at $23,764 in the first year (see Table 55). If fundholding were to cover more practices, then economies of scale might prevail. The figure quoted for the mean staff costs per general practice related to fundholding activities for the Health Authorities in the United Kingdom is £5,900 with a range of £2,000 to £16,000. (162) The smaller the number of fundholders within a Health Authority, the higher the average cost. With this pilot project, input was required regularly from Health Insurance Commission staff, Pharmaceutical Benefits Scheme staff and administrators. The figures quoted from the United Kingdom are comparable and provide a good estimate of the Commonwealth Government costs.

Administration and capital costs would arise and these have been estimated to be $10,000 for administration and in year 1, capital costs of $10,000 (see Table 55).

A further Commonwealth cost that needs consideration is the pre-fundholding year transaction costs. For this market-orientated reform to be successful in creating an environment that will induce more efficient behaviour then sound, logical and detailed regulations would be required. (138) Rules to prevent cost shifting between State and Commonwealth will be required. Quality of care will need monitoring and rules established to foster competition between providers eg. diagnostic and pathology organisations and pharmaceutical organisations. The costs have been

assumed to be $33,764 in the model developed in the second section of this chapter. This is same as the costs for the Commonwealth for the first full year of operation of the fundholding practice. In the Audit Commission report into the United Kingdom fundholding scheme, the Health Authorities had to develop local policies, develop new management structures to interact with the fundholders, develop budgets and methods to monitor these budgets, collate the purchasing intents of the fundholders and then train the GPs in the skills to be active purchasers. (162) In the pre-fundholding year the Commonwealth Government staff would have similar tasks. While the assessment of technical efficiency concentrated on this one fundholding practice, these costs would obviously rise if more practices were involved.

Table 55

SUMMARY OF THE COSTS* IN THE FIRST FULL YEAR OF OPERATION FOR THE FUNDHOLDING PRACTICE IN 1998**

COSTS INCURRED BY THE COMMONWEALTH GOVERNMENT

ELEMENTS	DESCRIPTION	ANNUAL COSTS
Staff		
Project Officer	Technical Officer Grade 4 $41,324 Plus oncosts 15% (1/2 time)	$23,764
Administration costs	Phone, fax, photocopying, car travel etc.	$10,000
Capital	Computers, accounting models, software & modems	$10,000

Notes:

* Increased costs additional to those incurred under existing fee-for-service arrangement

** Staff costs have been calculated from two sources.
a) Divisional GP hourly rate of $96.92. (313)
b) South Australian Public Sector Awards for Nurses, Administrative Services and Professional Services. (314)

State Governments will need to be active participants in this fundholding practice. Table 56 outlines the anticipated costs for the State Government for the first year. While accepting that, in this thesis, the main focus has been on Commonwealth costs, there will still be a crucial role for the States. If savings are generated within this fundholder, it is important that these are used for identified regional priorities. While it is possible that fundholding general practices would aim to use savings on what the GPs think are the patient's needs, it is important that consideration is given to linking these patient needs to defined regional priorities. For example, the development of transplant services for a small number of patients within a fundholding practice may not be an ideal way to spend savings. A targeted immunisation program or an injury prevention campaign based in general practice may be a more appropriate use of savings.

Adopting this regional perspective should be one of the aims of this fundholding practice. If this model is followed, then State Government departments of public health including epidemiology and the regional health services will need to provide expertise and advice. This cooperative approach will require some infrastructure cost eg. project staff. This cost plus the administration costs would be the annual incremental costs for the following years. A small amount ($5,000) has been included for capital to cover computer support, email and software in the first year.

A second option available for this fundholder is to tender to be public providers for uninsured patients. They would hold funds for these services. The pensioners and those who are not privately insured would still be able to obtain services as outpatients, but this fundholder would be liable to be billed, for example for diagnostic imaging services. The costs associated with this option have not been included in this analysis.

Private providers have a number of opportunities, within this framework (see Table 57). They would be able to tender to provide pathology and diagnostic imaging services for the patients linked to this practice. Part of their tenders would require feedback to the local GPs using proven educational strategies, for example commentary on diagnostic tests linked to reason for presentation. This method has been used successfully in the Netherlands to create savings of around $200,000 per annum across 85 GPs. (298) Local pharmacies and pharmaceutical companies could tender to provide medications for chosen formularies (196) and advice and expertise for medication reviews and educational intervention, for example academic detailing. (292) Pharmaceutical companies could supply management expertise that will be required for the complex process of contracting, provision of infrastructure support and information technology advice. GPs are unlikely to have this expertise, as has been found in the United Kingdom (162) and New Zealand. (308)

The private insurance industry could also have a role. In certain situations, fundholding general practitioners could hold hospital budgets for privately insured patients. Admission to private hospitals would have be determined by these fundholding GPs. This would allow some efficiency gains, with patients admitted directly via private hospital accident and emergency departments. Only patients who could be appropriately handled by GPs would be included in this model. It is worth noting that a private insurance organisation could perform a fundholder role and use the general practices as preferred providers. (7) However, for the sake of this discussion it has been assumed that the sponsor for this group of patients is the general practice.

Table 56

SUMMARY OF THE COSTS* IN THE FIRST FULL YEAR OF OPERATION FOR THE FUNDHOLDING PRACTICE IN 1998**

COSTS INCURRED BY STATE GOVERNMENT

ELEMENT	DESCRIPTION	ANNUAL COSTS
Staff Project Officer	Epidemiologist/Project Officer Professional officer Level 2 plus on costs 15% (1/2 time)	$23,616
Administration costs	Phone, fax, photocopying Car travel etc.	$5,000
Capital	Computers, software, modems	$5000

Table 57

SUMMARY OF THE COSTS* IN THE FIRST FULL YEAR OF OPERATION FOR THE FUNDHOLDING PRACTICE IN 1998**

COSTS INCURRED BY PRIVATE INDUSTRY

ELEMENT	DESCRIPTION	ANNUAL COSTS
Private pharmacies	Medication review/academic detailing one staff (1/2 time)	$30,000
Private pathology and diagnostic imaging providers	Project staff for contracts/tender and billing — Technical Officer Grade 2 $35,025 plus oncosts 15%	$40,279
Pharmaceutical companies	Advice re contracting, infrastructure Information technology	$20,000

Notes:

* Incremental costs additional to those incurred under existing fee-for-service arrangements

** Staff costs have been calculated from the South Australian Public Sector Awards for Nurses, Administrative Services & Professional Services . (314)

Consumers would incur costs. The most important point is the need to pay for consumer input into this fundholding framework, as it is likely that this model would need to actively integrate consumer views into planning (38,137,316), management, quality control and GP review. Their input would be useful, as a method to improve efficiency. There is evidence with pathology services that providing consumers with information resulted in a decrease in the costs of tests. (294) Consumers are increasingly wanting more information about prescribing (317), and within this fundholding practice, concentrating on consumer pharmaceutical education could improve both technical efficiency and quality of care.

Integrating consumers' views into management may create problems and the need for methods of conflict resolution. It is likely that consumer needs will vary by practice, by region and by age and sex. They are likely to be different to the GPs. A needs analysis would be a vital part in focussing the fundholder on areas, where changes in resource allocation are required for improved patient care. Hopton and Dlugolecka have used a survey among 3,478 people registered with five general practices to document the needs of the practices. (318) They compared one single person practice with the remainder of the practices and found a higher reported prevalence of chronic mental problems, with a greater use of anti-depressants, tranquillisers or sleeping tablets. (318) A similar approach would be needed within this fundholding practice. (158) Due consideration would need to be given to weighting for some groups to promote equity. (319)

The direct costs would include payment for a consumer needs analysis (estimated to be $10,000 in the first year) and consumer time to attend meetings, arrange and fund travel, pay for childcare, phone calls, photocopying etc. This has been estimated at $400 per meeting per consumer. If there are monthly meetings and two consumers are paid to attend, then the total yearly cost is $9,600.

Consumers would not be immune from other costs. Initially the co-payments for prescribing eg. pensioner adjustment and safety net would remain and Medicare would reimburse them at current rebates for consultations and pathology and diagnostic imaging. If distant pathology and diagnostic imaging providers are chosen to provide services for a fundholding practice, then the cost of travel and time lost from work for consumers would need to be taken into consideration.

Some further consideration is warranted on the capital costs required to establish fundholding, which have been included in the total costs. The main capital cost will be within the practices, with the need to integrate computers and the appropriate support into the practice. This has been costed at $200,000 based on the budget adopted for this project. Other capital costs will occur within Commonwealth ($10,000) and State ($5,000). These costs will be a one off and will be assumed to occur within the first fundholding year.

SECTION TWO

ASSESSMENT OF TECHNICAL EFFICIENCY

7.2.1 Base case model and sensitivity analyses

In order to assess the possible gains in technical efficiency that may flow from fundholding, a model was developed based on the estimated costs described in the first section of this chapter. Technical efficiency refers to the most appropriate combination of inputs to produce a given or agreed output at the least cost. (53,54) In this case the inputs are the resources used in providing consultations, pharmaceuticals, pathology and diagnostic imaging services and the output is patient care. The elements of the model included:

1) the initial "life" of the fundholding practice in years
2) the savings in resources possible within a fundholding practice
3) an estimation of the infrastructure and capital costs required to establish a fundholding practice
4) a method to compare fundholding with the current principal funding model in general practice i.e. fee-for-service
5) a method to adjust for the different valuations placed on present and future costs.

The "life" of the fundholding practice can visualised as consisting of three distinct elements. The first element covers the period when the practice would go through the efficiency learning curve to become fully operational, in the sense of reaching the desired level of cost savings. The second element is the number of years over which this new set of organisational arrangements could be assumed to run in order to accumulate cost savings and use these savings to improve patient care. The third element is the estimated life of the capital equipment, for example the computers and information management support systems. In this model the first element is assumed to be two years, the second three years and the third five years. Therefore the total "life" of an initial fundholding practice has been assumed to be five years.

These estimations for each of the above elements are based on the United Kingdom (162) and New Zealand (308) experience where fundholding practices have taken this time period to move towards fully functioning organisations. Further support for this period of development is found when comparison is made with the divisions of general practice. The divisions were initially funded in 1992 with ten demonstration sites. Full funding did not start until 1993. In a report dealing with the period 1994-95 based on a survey of 113 divisions, 75% reported that they had a sound operational base, but only 15% were satisfied they had identified local health needs. (320) It seems with the GP divisions, there have been two years of development, a third year to stabilise and two further years to

operate at a maximum level. This time line for a new development in general practice would correlate with the impression gained with this research. The process of development of the fundholding framework took two years of negotiation and implementation of data collection systems and a third year to complete the analysis. This would be similar for any "live" fundholding general practice with the addition of two further years for actual budgetary management.

In completing the development of the model for this thesis, a base case is first described and costed. The costs associated with the base case model are summarised in Table 59. Then a number of other scenarios were developed, using different estimations of infrastructure and capital costs, possible savings, and practice sizes. In all of the models, adjustment for the differential timing of future costs was made using four discount rates of 0%, 3%, 5% and 10%. (239) The aim of the modelling was to establish which combinations of the above factors or inputs would generate a threshold where fundholding was more technically efficient than fee-for-service. For this stage of the analysis, patient care has been assumed to be the same in both fundholding and fee-for-service. Above the threshold, fundholding could provide similar care to a group of general practice patients at a lower input cost than fee-for-service. Below the threshold, the patient care is more cheaply provided under fee-for-service.

In order to integrate the possible savings within a fundholding practice into these scenarios, two estimations were used. The first estimation was based on the available published evidence and is taken directly from the systematic review completed as part of this project. (259) The references and range of possible savings are summarised in Table 58, where the individual costs for this practice are separated into each service item. As can be seen, the range of possible savings are from 3% to 13% for pharmaceuticals, 13% to 20% for pathology and 20% to 28% for diagnostic imaging. The saving from changes in consultation patterns has been estimated as 5%. A recent paper by McCallum et al has estimated

that home nursing costs about half the rate a GP would charge. (321) Based on these figures, substituting a GP consult with a service provided by nursing or allied health personnel in a fundholding practice could easily achieve these 5% savings. It may be substantially higher, but in the model this percentage has been used as a conservative estimate.

The systematic review savings were calculated in the following manner. It has been assumed that in the first two years the savings are at the upper limit for each area of care and for each of the following three years they are at the lower limit. For example, with pharmaceuticals 13% savings would occur in each of the first two years of a fundholding practice and 3% in each of the last three years (see Table 58). It is likely that in the first two years, the enthusiasm of the fundholding GPs would create savings at the highest end of the spectrum. In the third year the easy areas where savings could be made would have disappeared and the energy of the GPs diminished. Consequently, it is likely that savings at the lower end would be more appropriate targets. This eventuality would occur throughout the second element of the life of a fundholding practice (see above). For consultations a consistent 5% saving has been assumed for each year.

The second estimation of savings is 10% each year for all four areas of care - consultations, pharmaceuticals, pathology and diagnostic imaging.

Table 58

TOTAL BUDGET FOR THE FUNDHOLDING PRACTICE SEPARATED BY SERVICE ITEM AND COMPARED WITH POSSIBLE RANGE OF COMPOUND ANNUAL RATE OF SAVINGS*

ITEM	AMOUNT	RANGE OF COMPOUND ANNUAL RATE OF PERCENTAGE SAVINGS (WITH REFERENCES)
Consultations	$1,140,692	5%
Pharmaceuticals	$764,170	3% [195,196] – 13% [292]
Pathology	$368,778	13% [281] – 20% [216]
Diagnostic Imaging	$239,448	20% [322] – 28% [283]
TOTAL	**$2,513,088**	

Note:

* These figures are taken from the information obtained from the Health Insurance Commission for three practices who were involved in the study. They relate to 1996 expenditures.

In the development of the model, the fundholding general practice was used as the base case. The base case practice had eight variables:

1. practice size
2. total yearly budget
3. annual infrastructure costs
4. an estimation of anticipated savings
5. a value for Commonwealth Government transaction costs pre-fundholding year
6. consumer needs analysis costs in year 1
7. capital costs of $215,00 in year 1
8. varying discount rates

The base case is detailed below and in Table 59 the incremental cash flows are presented. Throughout this modelling, the life of the fundholding practice is assumed to be five years. After the discussion of this scenario, different estimates for each of the variables, outlined above are entered into a series of sensitivity analyses. In completing these sensitivity analyses the above variables were changed in the following order:

- practice size and total yearly budget
- infrastructure costs
- anticipated savings
- Commonwealth Government transaction costs pre-fundholding year
- discount rates

7.2.1.1 Base Case

The variables were:

1) a practice size of 7,889 whole patient equivalents (WPE)
2) a total budget in year 1 of $2,513,088. This is the combined total outlays for 1996, obtained from the Health Insurance Commission for the three practices involved with this study

3) infrastructure costs - $417,145
4) anticipated savings - based on the systematic review findings (see above)
5) Commonwealth Government transaction costs in the pre-fundholding year - $0
6) consumer needs analysis costs in year 1 - $10,000
7) capital cost costs in year 1 - $215,000
8) discount rate of 0%.

In Table 59 the base case incremental cash flows for the fundholding practice are presented. Comparison is with a fee-for-service model. As discussed earlier the time period is five years. Over this time, the total additional infrastructure costs would be $1,896,321. The extra capital costs incurred in the first year would be $215,000. The total possible savings would be $1,024,415 and total anticipated fundholding budget available to these GPs minus the savings would be $10,399,959. Over the five years, the total outlays for this fundholding practice which include infrastructure, capital and the fundholding budget would be $12,511,280.

If this practice was to remain fee-for-service and experience no increase or decrease in revenue, the total outlay would be $11,424,374. The difference in outlays for this fundholding practice when compared with traditional fee-for-service would be $1,086,906. In other words, establishing fundholding in this practice would cost about an extra million dollars over 5 years.

Table 59

COMPARISON OF FUNDHOLDING GENERAL PRACTICE* AND FEE-FOR-SERVICE GENERAL PRACTICE - BASE CASE MODEL (0% DISCOUNT RATE)

ITEM	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Expected budget for fundholding practice **	2,513,088	2,513,088	2,513,088	2,513,088	2,513,088
Possible systematic review savings	291,177	291,177	175,791	175,791	175,791
Additional Infrastructure Costs#	417,145	417,145	417,145	417,145	417,145
Capital costs ***	215,000				
Total outlays	2,854,056	2,639,056	2,754,442	2,754,442	2,754,442
Cost advantage over fee-for-service	-340,968	-125,968	-241,354	-241,354	-241,354

Notes:

* Practice size 7,998 whole patient equivalents and total budget in year 1 of $2,513,088

** Fundholding budget equals the total estimated outlay under the traditional model of fee-for-service for this practice.

*** Capital costs - include costs from general practice, Commonwealth and State Governments, private organisations and consumers.

\# Infrastructure costs include costs from general practice, Commonwealth and State Governments, private organisations and consumers.

7.2.1.2. Variation of practice size and total budget

In this scenario the practice size and resultant budgets are varied. The practice size is initially doubled to a total patient attendance pool of 15,996 whole patient equivalents (WPE) and then increased to 2.5 times the base case practice size (i.e. 19,995 WPE). As a consequence the budgets also increased.

The changed variables were:

1) practice sizes 15,996 and 19,995 whole patient equivalents (WPE)
2) total budget in year 1 $5,026,176 (for 15,996 WPE) and $6,282,720 (for 19,995 WPE).

The remainder of the variables were unchanged from the base case scenario.

For the first practice with a patient base of 15,996 and a budget of $5,026,176, the cost advantage over fee-for-service would be a deficit of $189,000. For the second practice, the difference would be positive to the amount of $494,000 ie. this size fundholding practice would produce a cost advantage over fee-for-service to the value of $494,000.

7.2.1.3. Variation of practice infrastructure costs

In this scenario the infrastructure costs were varied. Initially an administrator and half-time educator have been withdrawn from the fundholding practice and the $20,000 removed from the pharmaceutical companies (see Table 56). The infrastructure costs then become $330,199. The second infrastructure variation has been calculated by adding full time project officers to the Commonwealth and State Government incremental costs, where previously they were only half time.

The changed variable was:

3) infrastructure costs - two scenarios $330,199 and $464,525

The remainder of the variables were unchanged from the base case scenario with a practice size of 7998 WPE and a total budget in year 1 of $2,513,088.

With the first infrastructure scenario, the cost advantage over fee-for-service would be a deficit of $766,000 and with the second the cost advantage would again be negative with a deficit of $1.44 million.

7.2.1.4. Variation of anticipated savings

In this scenario the anticipated savings were varied. The first variation used the systematic review savings, as already integrated into the base case (see Table 59). The second assumed a 10% savings for each year for each area of care i.e. consultations, pharmaceuticals, pathology and diagnostic imaging.

The changed variables was:

3) anticipated savings are based on two scenarios - the systematic review findings and 10% each year for each area of care

The remainder of the variables were unchanged from the base case scenario with a practice size of 7998 WPE and a total budget in year 1 of $2,513,088.

For the first savings scenario based around the systematic review findings, the cost advantage over fee-for-service would be a deficit of $1.20 million

and with the second it would still be negative, with a deficit of $1.05 million.

7.2.1.5. Variation of Commonwealth Government transaction costs in the pre-fundholding year

With this scenario, the Commonwealth Government transaction costs in the pre-fundholding year were initially assumed to be $0, as in the base case. In the second variation, these costs are estimated to be the same as the first year of Commonwealth Government costs in the real fundholding model i.e. $33,764. This latter figure was chosen because the author felt that in the pre-fundholding year, a project officer would be required to spend half their time preparing for the "real" fundholding period.

The changed variable was:

5) Commonwealth Government transaction costs in the pre-fundholding year - two scenarios $0 and $33,764

The remainder of the variables were unchanged from the base case scenario with a practice size of 7998 WPE and a total budget in year 1 of $2,513,088.

For the first Commonwealth Government transaction costs in the pre-fundholding year of $0 the cost advantage over fee-for-service practice would be a deficit of $1.2 million and with the second, there would be a deficit of $1.23 million.

7.2.1.6. Variation of discount rates

In the final sensitivity analysis, four discount rates were compared – 0%, 3%, 5% and 10%.

The changed variable was:

8) discount rates - 0%, 3%, 5% and 10%

The remainder of the variables were unchanged from the base case scenario with a practice size of 7998 WPE and a total budget in year 1 of $2,513,088.

For 0% the difference in outlays for a fundholding practice and a fee-for-service practice would be a deficit of $1.2 million; for 3% the amount would be $1.14 million; for 5% $1.097 million and for 10% $1.011 million.

7.2.2 Graphical comparison of the sensitivity analyses

From the above sensitivity analyses the two variables with the largest effect on the cost advantage of fundholding over fee-for-service were practice size and infrastructure costs. In Figure 5 a comparison has been made between fee-for-service and fundholding where the practice size and possible savings have been varied. In this figure a line of best fit has been formulated, for each savings scenario by linking the overall savings results with changing practice size. The infrastructure and capital costs have been kept constant at $417,145 and $215,000 respectively. The Commonwealth pre-fundholding transaction costs are $0.

In the figure, a practice size of 1 would be equivalent to the practice included in the base case scenario. In order to define the actual number of full time (FT) GPs that a practice size of 1 would compromise, the

definition of a full time GP, as measured by gross Medicare income was taken from the explanation used by the Health Insurance Commission. (73) In 1994-95 the cut off point for a full time GP was a gross Medicare income of $68,834. (73) The total consultation outlays (and hence GP income) for the base case practice was $1,140,692. This would be equal 17 FT GPs. A practice size of 2 would be equivalent to 34 FT GPs, and a size of 2.5 to 42 FT GPs. The respective WPE for these practices would be 7,988, 15,996 and 19,995.

As illustrated by Figure 5, fundholding would be a viable option, in technically efficient terms, when the practice size and savings were found in the area above the zero line. The threshold is where savings are greater or equal to $0. If the savings were based around the systematic review percentages, then this would be when the "practice" size was slightly greater than 2. This would require approximately 16,000 WPE as a patient base or 34-36 FT GPs. If the savings were based around the 10% level, then this threshold would be below the 2 practice point. A patient base of approximately 14,000 WPE or a practice consisting 30-32 FT GPs would be the approximate size.

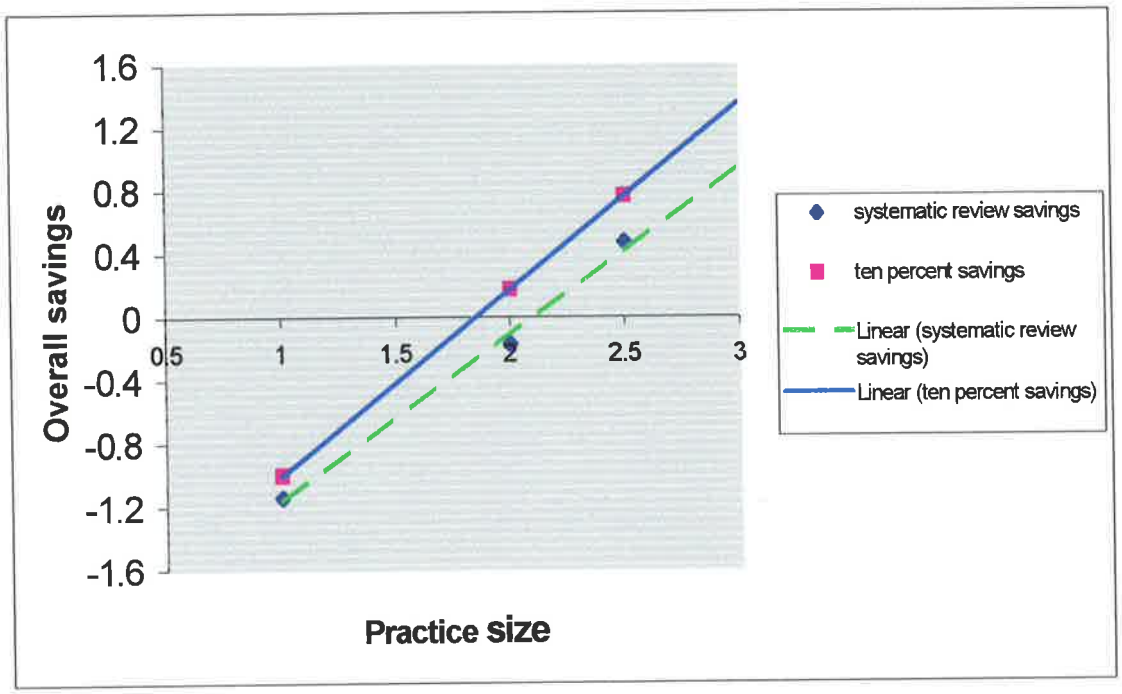
In Figure 6 a comparison has been made between fee-for-service and fundholding where the infrastructure and practice size have been varied. In this figure, a line of best fit has been formulated for each infrastructure scenario by linking the overall savings results with changing practice size. The savings scenario chosen was the systematic review annual rate percentages (see Table 58). These were kept constant throughout the comparison. Capital costs have also been kept constant at $215,000. The Commonwealth pre-fundholding transaction costs are $0. As illustrated in the figure, fundholding would be a viable option, in technically efficient terms when the practice size and infrastructure costs were found in the area above the zero line. For infrastructure costs of $330,199 the

threshold is smaller than a practice size of 2 which would be equivalent to 28-30 FT GPs. The respective WPE for this practice would be between 13,000 -14,000. For infrastructure costs of $417,145, the threshold would be slightly greater than 2 practices i.e a WPE of 16,000 or a 34-36 FT GPs. For the last scenario of infrastructure costs of $464,525 the practice threshold size would be approximately 17,500 or 38 FT GPs.

FIGURE 5

COMPARISON OF FEE-FOR-SERVICE AND FUNDHOLDING SAVINGS (in $millions) OVER FIVE YEARS (0% DISCOUNT)

(Practice size and savings varied)



Notes:

Throughout this modelling, the infrastructure and capital costs have been kept constant. At year one they are $417,415 and $215,000 respectively. The practice size and possible savings have been varied. In the figure, a practice size of 1 is equivalent to the sum of the three practices that were part of this study ie. 17 full time (FT) GPs. A practice size of 2 is equivalent to 34 FT GPs and 2.5 is 42 FT GPs. The respective WPE for these practices would be 7,988, 15,996 and 19,995.

In arriving at these graphs, lines of best fit (designated by the term Linear) have been formulated for each savings scenario.

The savings are as follows:

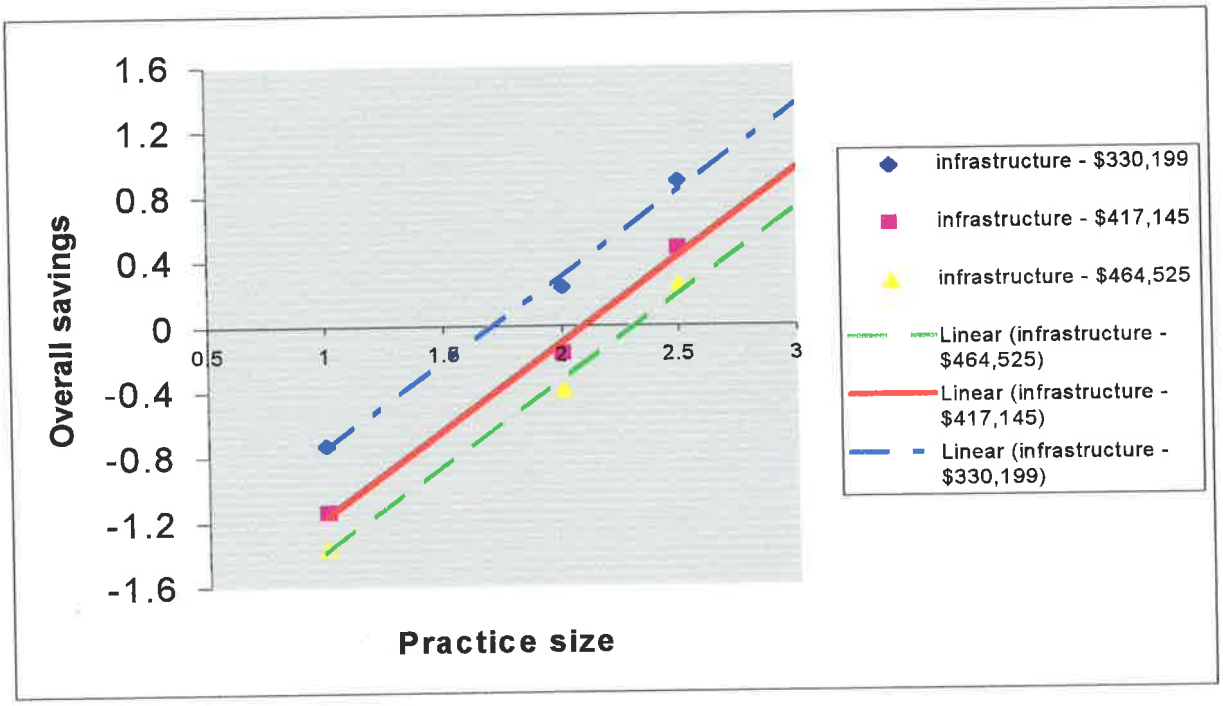
The systematic review savings are based on Table 58 and are calculated in the following manner. It is assumed that in the first two years the savings are at the higher limit for each service and that for each of the following three years they are at the lower limit.

The ten percent: Each year of fundholding a 10 percent savings in outlays is made.

FIGURE 6

COMPARISON OF FEE-FOR-SERVICE AND FUNDHOLDING SAVINGS (in $ millions) OVER FIVE YEARS (0% DISCOUNT)

(Practice size and infrastructure costs varied)



Notes:

Throughout this modelling, the savings percentage and capital costs have been kept constant. At year one the capital costs were $215,000 and savings were calculated using the systematic review savings percentages. The practice size and infrastructure costs have been varied. In the figure a practice size of 1 is equivalent to the sum of the three practices who were part of this study ie. 17 full time (FT) GPs. A practice size of 2 is equivalent to 34 FT GPs and 2.5 is 42 FT GPs. The respective WPE for these practices would be 7,988, 15,996 and 19,995.

In arriving at these graphs, lines of best fit (designated by the term Linear) have been formulated for the three infrastructure costs of $330,199, $417,145 and $464,525.

The savings are as follows:

The systematic review savings are based on Table 58 and is calculated in the following manner. It is assumed that in the first two years the savings are at the higher limit for each service and that for each of the following three years they are at the lower limit.

7.2.3 Which scenario is likely?

This modelling has illustrated that the key variables in determining the size of a fundholding Australian general practice where gains in efficiency would be possible, when compared with traditional fee-for-service would be the anticipated savings and infrastructure costs.

It is important to ask which savings scenario is the most likely for Australian GPs. The savings estimated from the table are based on the studies reported in the literature and may underestimate the actual value. These studies were in most circumstances, completed in situations where there was no contractual arrangement with the GPs. In a fundholding situation, the influence of the contract and the need to protect a GP's income would encourage more incentives to find ways to create more savings. The second scenario where 10% savings were obtained may be more appropriate. The 14% GP variability in mean cost per ordered item found in the costing model discussed in section 5.3.1 provides more evidence that 10% may be a better option.

The infrastructure costs were varied depending on the staff requirements. The cheapest scenario had removed 1.5 staff from a fundholding practice and may be a viable option for efficient practices. The most expensive scenario included a full time Commonwealth and State Government project staff member, which for the size of these practices used in the model may be excessive.

There are two caveats to this analysis. The first deals with the production of savings. Initially, GP fundholding in the United Kingdom created savings by using techniques, such as shifting to generic prescribing, which did not actively use provider (in this case GP) review to change behaviour. The United Kingdom fundholders did not regularly employ such methods as

utilisation reviews, guidelines, audit and peer review to influence GP behaviour to decrease variability, create savings and improve technical efficiency. (162) The managed care models in the United States have used such methods as utilisation reviews (323), risk sharing (324) and guidelines (185) to decrease costs and improve efficiency.

What will be needed in Australia, for fundholding to be more efficient than fee-for-service as envisaged above, is for general practices to actively gather data on GP behaviour. Once these data are analysed, proven methods to change behaviour will need to be employed and evaluated. Efficiency will improve if variations in management between GPs are decreased, with a resulting decrease in the mean costs per condition or per patient. Within these practices, the data analysis for the individual conditions revealed marked variation. For abdominal pain the cost per presentation in July-September 1995 varied from $32.64 to $15.75 between these practices. This variation may be reduced by the use of guidelines (215) or peer comparison and feedback. (325) The variation in cost per presentation for the three more costly conditions: lipid abnormalities, depression and reflux oesophagitis (see Table 32, Chapter 5) may be reduced by an academic detailing models (292), aimed at prescribing behaviour.

The second caveat with this analysis is that the savings that have been calculated within the model have been returned to society and not shared with the participating GPs. The GPs would not gain any personal benefits from changing their behaviour to be more efficient. The energy and change required by GPs to achieve these savings may not occur unless they are able to share in the financial savings. If this consideration is entered into the model, the thresholds are likely to need adjusting. For example with the 10% savings and if the GPs share half the savings, it is

likely that the budget of approximately $5 million will need to be doubled. The total fundholding group would need to increase to 60-64 FT GPs.

The analysis has indicated that there is a threshold where fundholding would be more technically efficient than fee-for-service. However deciding whether fundholding general practices could successfully fit into the overall heath care system requires that a second broader analysis be completed. The final chapter considers this broader analysis.

CHAPTER EIGHT
ASSESSMENT OF ALLOCATIVE EFFICIENCY

8.1 Introduction

The discussion and analysis completed in Chapter 7 indicates that there is a threshold where fundholding would be more technically efficient than fee-for-service. However the actual location of a fundholding general practice within the overall heath care system requires a second analysis be completed. The broader approach must consider whether fundholding could also contribute to improvements in allocative efficiency. Allocative efficiency aims to combine technical efficiency with consumer satisfaction and is reached when the allocation of resources is occurring as if a perfectly functioning market was available for a service. This is equivalent to producing, with the minimum use of scarce resources, the amount and type of output most desired by consumers.

This chapter will argue that improvements in allocative efficiency would only flow if these fundholding practices were part of a regional managed care pool. This pool would need to cover all available funds from Commonwealth, State and if possible the private sector. Precedence for the creation of this type of pooled funding has been established with the co-ordinated cared trails currently underway in Australia at the moment. (32,33). In these trials Commonwealth and State Government funds, identified for certain groups of people who suffer chronic conditions have been combined into one funding pool. All required services for these patients are to be paid for from this pool over a 18 month period through 1998-99.

The prerequisites for this model to succeed include the creation of organisational structures that could integrate information management and analysis with finance and heath care delivery. (139) Complementing these management priorities would be methods to measure and monitor local needs and quality of care and influence provider behaviour. (161,326) As part of this regional managed model, GPs would be freed from the pressure of needing to regularly consult to make a living and could be allowed to assume a stronger leadership/partnership role in primary care teams. (124) These skills will be important for the GP of the future. Innovative models of delivering general practice could be developed, a scenario that is very difficult under the current fee-for-service funding system.

8.2 Assessment of allocative efficiency

General practice does not occur in isolation from the other Commonwealth and State funded organisations. GPs are the gatekeepers (136) and coordinators of care for most of the population and any changes in their funding will have a substantial impact on the rest of the health care system. Would a new mix of services arise from the establishment of general practice fundholding that society would prefer above the current structure of health care delivery? If a community is looking for a new mix of services that better suits their region (46), then general practice fundholding would need to create changes that would be more acceptable. There is evidence in the United Kingdom that fundholding has altered the local health service delivery structure. The power relationships between primary and secondary and tertiary care have changed (156), with primary care becoming more influential and demanding changes from the tertiary sector. Some of these changes have included decreased hospital waiting times for surgery (203), changes in outpatient services (205,206), more

community based allied health clinics (163) and improved access to diagnostic tests. (210)

Producing the best outputs ie. optimum quality of care, where general practice fundholding has been established, may require other changes to occur. Consumers will want the fundholders to help provide the services that best meet their specified needs (46) and the important human elements such as caring, information and reassurance. (47) Policy makers and funding organisations will want fundholding to contribute to improved health outcomes for the community, at a lower or similar cost. The analysis in chapter 7 indicates that a fundholding practice with a budget of $5 million, an operating cost of $0.4 million and a method to create 10% savings each year for 5 years would be efficient at a practice level. Could this improvement in technical efficiency be translated into gains in allocative efficiency and improvement in the health of a community?

In order to assess the possible gains in allocative efficiency likely from adopting fundholding, the consequences of fundholding are examined from health system and consumer perspectives. The first perspective considers how fundholding would impact on the important groups who make up the system. The second perspective complements this analysis by discussing how consumers would be affected and whether they would gain any benefits if general practice fundholding was established. A final important step is discussing how fundholding would effect the Australian general practitioner. While GP concerns are not essential to a discussion about allocative efficiency, it is important to understand that, for fundholding to be sustainable, this latter group must find the model acceptable.

In Chapter 3 a number of questions were posed to direct the analysis of the consequences. They have been reproduced on the following box. After discussing each of these questions in turn, this section finishes with a model where a fundholding framework could benefit all stakeholders.

THE HEALTH SYSTEM OVERALL

1. Would the overall health care costs be contained?
2. Would general practice costs be contained?
3. What role would the current State/Commonwealth Government split play in this framework?
4. What role would the "third party payers "such as the insurance companies play in this framework?
5. Could pharmaceuticals, diagnostic imaging and pathology costs be contained?
6. Would the growth of technology and ageing of the population be more successfully handled?
7. Would the shift to primary care from tertiary centres be more successfully handled?
8. Is there any scope within the health care system for marginal change in general practice to accommodate fundholding?

CONSUMERS

1. What role would consumers have in fundholding and would they be able to influence the providers and purchasers of care?
2. Would certain groups of consumers be better off under fundholding than fee-for-service eg. the elderly, particularly those close to the interface between hospital and community?
3. What general incentives would be available to all consumers enrolled?
4. Would fundholding create opportunities for changes in health service usage for consumers?
5. Would fundholding create changes in the use of community resources?
6. Would fundholding create improvements in the health of consumers enrolled?
7. Would fundholding satisfy consumer needs and wants better then fee for service?

GENERAL PRACTITIONER

1. How would fundholding versus fee-for-service in the Australian context affect GP behaviour - what incentives and disincentives for behaviour change and resultant cost savings would be present within fundholding that are not present within fee-for-service?
2. What would be the new roles within fundholding for GPs and would these roles be considered appropriate for GPs in the Australian context?
3. How would fundholding affect the current lack of integration of general practice into the health care system?
4. How would fundholding affect the deskilling of general practice that has been present for the last 5 -10 years?
5. How would fundholding "fit" within the current restructuring of general practice?
6. Would the adoption of fundholding promote improvements in the quality of general practice?

8.3 The effect of the proposed fundholding framework on the health system overall

Health care expenditure in Australia has been increasing at a rate of 4.2% per year in the period 1982-83 to 1994-95. (9) Would fundholding in Australian general practice create an environment where the overall health care costs could be contained?

Miller and Luft have stated that managed care/managed competition could lead to a substantially lower health expenditure growth rate. (327) They base their opinions on the successful development of a number of elements

- the right legislative framework
- purchaser power concentration
- delivery system capitation and risk bearing
- delivery system consolidation and integration
- the increased use of information technology.

They argue that information rich purchasers would be able to manage and monitor the use of expensive technology and control the growth of technology driven specialists. (327) Concentrating providers within integrated and comprehensive health care delivery organisations which actively use primary care physicians as gatekeepers should create incentives to be more technically efficient. (327) They add a major caveat to their analysis. The lack of scientific evidence of the impact of managed care/managed competition requires the use of qualitative models which must embrace the multiple relationships within a health care system. (327) These models can only create possible scenarios which must cope with the changing nature of managed care development (327) and the problems of changing political imperatives. (326)

Wynand and van de Ven provide some evidence that managed care in the Netherlands and Sweden has brought some decrease in costs. (3) In the

Netherlands the introduction of "selected contracting" in the early 1990s reduced the cost for medical devices by a third and in Sweden competition between physicians resulted in an increase in productivity. (3) Specifically with fundholding, there is evidence that within fundholding practices in the United Kingdom (162,192) and Independent Practice Associations in New Zealand (234) costs can be contained. There is some evidence that among the HMOs in the United States there have been cost savings.(185) Australian general practice fundholders could theoretically contribute in a similar way, using such tools as provider review, increased community services and aggressive purchasing power. While this is possible, there are a number of reasons why this may not occur, unless other changes take place.

By far the most expensive item in health expenditure is institutional care. It contributed 43.6% of the health care costs, with publicly funded hospitals providing the bulk of these costs - ie. 28.4%. (10) This amounted to $15 billion in 1993-94. For there to be a slowing of the growth of health expenditure using this intervention, fundholders would need to create a method to influence these institutions. Theoretical options do exist. Keeping patients at home by improved community services, paid for with fundholding savings is one possible way forward. (32) Using the fundholding purchasing power to demand more efficient and appropriate care (162,310) from the secondary and tertiary sectors is a second option.

What is of concern for fundholding GPs is the monopoly providers ie the tertiary hospitals currently positioned within some urban environments in Australia. (3) These will tend to dictate the services and payments that would be available, much as has occurred in the United Kingdom. (162) In New Zealand similar problems have occurred with general practice fundholding being abandoned, in part because it could not influence the interface between the primary and tertiary sector. (329) The evidence from

the qualitative information of the participating study GPs is that this use of purchasing power by Australian fundholding GPs would not be easily developed. The evidence from the United Kingdom is that this role has taken over 5 years to mature into an effective tool to change hospital behaviour. (162) It is questionable whether fundholders could influence these substantial institutional costs alone. More success is likely with the costs of medical services and pharmaceuticals.

In Australia in 1993-94, medical services and pharmaceuticals were responsible for 18.9% and 11.0% of total expenditure, respectively. These costs are largely determined by general practitioners, although they also reflect, in part patient need. Over the last 10 years there has been a substantial rise in general practice attendances, the ordering of pathology and diagnostic imaging investigations (16) and increases in both the prescription of expensive medications and the amount used. (10) The analysis in the previous chapter indicates that if fundholding was established around the country and operating optimally, savings could be generated and these medical and pharmaceutical costs curtailed.

In the United Kingdom, English fundholding GPs have made £206 million in savings (162) and the increase in pharmaceutical costs has been slowed. (192) However pharmaceutical costs still continue to rise in the United Kingdom (197) and Northern Ireland (193) among both fundholding and non-fundholding GPs. Models exist to decrease pathology (282,283) and diagnostic imaging costs (283,299) in general practice managed care settings. New Zealand GPs, working with a budget within IPAs have produced substantial savings. (234) Fundholding, if managed efficiently could theoretically curtail the cost of pharmaceuticals and medical services. This curtailment could only influence a maximum of 30% of the total health service costs. However a 20% gain in efficiency in these areas

would create a 6% decrease in the overall health expenditure ie. in 1993-94 dollars a decrease of $2,190 million.

There is another option where fundholding could lead to a decrease in the overall costs. This option would use a fundholding general practice framework to establish a more coordinated and integrated system of care (6), using savings created within a fundholding budget to support the system. This model will be increasingly important as more people are returned to the community for care. (32,33) This topic would be discussed further in the final section of this chapter.

The discussion so far has concentrated on areas on cost savings that would be possible with the establishment of fundholding. The final part of this section looks more closely at the possible changes in the processes of care. The role of the State and Commonwealth Governments has been described in the second section in Chapter 6. Briefly, the Commonwealth would be required to develop structures and regulations to monitor budgetary management, quality of care, risk skimming and cost shifting. (137) The States would be required to provide advice on regional needs, local preferences for use of savings and epidemiological and public health advice. (155) While these roles are important, the largest impediment to improved efficiency in the Australian health care system is the plurality of funding sources. (5,7,11) This plurality creates ample opportunities for cost shifting (7) and lack of incentives for increased productivity and innovative approaches to health care. (11) Scotton has argued that the problem of cost shifting will not disappear until there is one organisation which has a substantial control over the total budget for a region. (7) For fundholders to be this one organisation at a regional level, holding both State and Commonwealth funds for their patients would require changes across numerous Government departments.

Some insights into the possible transaction costs can be obtained from the current coordinated care trial in South Australia. This trial, one of many across Australia, is attempting to merge State and Commonwealth monies into one funding pool for people with chronic complicated conditions. (33) To do this successfully requires the involvement of multiple departments across both organisations. There has been a need for 80-100 staff, extensive information technology support, capital costs, training, new regulations around financial management and new privacy laws.

The role of the third party payers in this fundholding framework is unclear. There are a number of possibilities. Australia has opted for a mix of public and private funding, which has resulted in a lack of coordination between these services. While theoretically, the access to private hospitals and the specialist services based within these institutions is controlled by general practitioner referrals, this gate keeping role has been substantially weakened by the growth of private accident and emergency services. There is now open access via resident medical officers to expensive services. While this thesis did not look specifically at referrals, it is possible that once the fundholding framework was established, these practices could hold private insurance funds for a specific group of patients. The services provided by private hospitals and specialists located within would be determined by guidelines and agreed criteria. Where GPs could manage certain conditions, they would be re-skilled to do so. Rigorous quality assurance would be put in place for all providers.

A further option with private insurance companies is to create private fundholding companies/practices that would compete for patients. (4) This is one of the basic tenets of the managed care framework which aims to create competition between both purchasers and providers. (139) At the moment legislation prevents private insurance companies from working within the primary care environment. This innovation would require

substantial policy change and close regulation to prevent quality of care being compromised in order to create profits. (185,284)

The containment of pharmaceuticals, pathology and diagnostic imaging costs would be possible under fundholding. This has been discussed in the previous chapter on technical efficiency.

Fundholding could provide a method to influence the growth of technology. The use of the purchasing power of a fundholder to prevent the implementation of new technologies, unless the providers had proven that the technology is cost-effective (162) and based on the appropriate evidence, is one option. (162) This task will require improved training in the area of health economics and evaluation for general practitioners and more access to hospital and specialist based information. This latter information can be very difficult to retrieve.

The issue of the management of the increasing number of the elderly groups under fundholding is discussed in the section on consumers.

Fundholding may have a very important role in successfully handling the increasing shift to primary care. (11) For this process to occur smoothly, new methods to coordinate care, manage the access to information across the primary, secondary and tertiary sectors and new models of service delivery will be required. These new elements will require resources. Fundholders could use savings located within their budgets to fund these innovations. Sound information systems will be a prerequisite for good management of a fundholding practice, and these would form the basis for the communication methods required to manage more patients in primary care.

The final question under the health system is whether there is any scope for marginal change in general practice to accommodate fundholding. The thesis has illustrated that fundholding would create such a profound change in general practice, that marginal change would not be possible.

To summarise, fundholding at a system level will need to be able to influence the hospitals, where the greatest resource utilisation occurs. At the same time fundholding would need to actively control the rising outlays that have occurred as a consequence of the behaviour of general practitioners. Fundholding would need to create methods to coordinate and integrate care across all interfaces and work with the public and private health care systems, particularly with the increasing shift to primary care. Finally fundholders would need to influence the growth of technology. The major stumbling block to improvements in efficiency would be that, they would be an inability to provide structures to hold both Commonwealth and State funds.

8.4 The effect of the proposed fundholding framework on consumers

Would the fundholding reforms in Australian general practice provide benefits for consumers/patients? The Audit Commission report in the United Kingdom has suggested that benefits have been created. (162) These include shorter waiting times for outpatients and surgical operations (203), improved outpatient services (205,206), improved communication between hospital personnel and GPs (208,209) and improved access to diagnostic services. (210) Theoretically, with fundholding GPs acting as sponsors (139), patient outcomes should be improved. Fundholders will have "incentives to act as enlightened agents for consumers". (4) They would be in a position to act as informed advocates who would protect the quality of patient care and demand appropriate services. (317) While

these claims are plausible, under a managed care structure, there are likely to be some important preconditions for this to occur.

The actual process of facilitating the consumer influence on fundholding practices is likely to be difficult. The evidence from the United Kingdom is that this process has not been widely accepted. Less than 50% of fundholders have formal approaches to needs assessments and only 4% of the practices had produced a formal profile of what the patients thought about their local services and how to improve them. (162) Street argues that as patients are linked to the practices in the United Kingdom, they find it difficult to change practices unless they move districts. (147) Consequently there are no effective ways for consumers to influence these fundholders. Australian consumers are better placed because there is no patient linkage.

In Australia, consumers will need to be active participants in the development of a framework for a general practice fundholder. Consumers are increasingly being asked to be involved with health system reform (317) and organisations such as the Consumers Health Forum have already begun the process of commenting on the current reforms such as the divisions of general practice (39) and the coordinated care trials. (40) The benefits of involving consumers within a fundholding practice in the decision making process are empowerment of consumers and increased service responsiveness to their concerns and possibly more appropriate allocation of resources. (317) While the involvement of consumers should occur in an ideal world, it is worth noting that the GPs involved in this study were not keen on involving consumers in the management of their practices.

Consumer needs are likely to vary from those of GPs (318) and between consumers themselves. (319) A detailed process for resolution of these

conflicts will be required within a fundholding practice to clarify which needs to focus on. This new approach will be a challenge to Australian GPs and initially there is likely to be hostility and a lack of trust. (99) The divisions are providing some experience of how to successfully achieve consumer involvement. They have already created a "culture" of consumer involvement in their planning. In 1994/95, 80% of 100 divisions (whose annual reports were analysed) had consulted meaningfully with consumer representatives/organisations in identifying local area health needs. (320)

Aside from the active involvement of consumers in fundholding practices, there is a second method where they could, as a group, influence GP provider behaviour. Under the appropriate policy framework, general practice fundholders could be forced to compete for patients, offering care packages that consumers want. (4) This competition will require fundholders to be responsive to local consumer needs and be cognisant of providing a quality service. Within urban environments, GPs are experiencing similar pressure, but fundholding will force these practices to be even more focussed, as the loss of patients would eventually effect their income. However this type of incentive would fail in the country, where there may be only one fundholder/purchaser. With a capped budget in these settings, within a fundholding model there may be fewer incentives for quality and comprehensive care. GPs could opt to decrease service provision in order to make savings, knowing that local communities have no other options. Under fee-for-service, currently the less they work, the less income they obtain.

One of the consumers' stated concerns around fundholding is the possibility of discriminating against low income earners, high users or expensive patients and marginalised groups such as the elderly. (39) The low income earners would probably continue to receive services which are

free at the point of delivery, much as they currently do. (4) Any other model for this group is likely to be politically unacceptable and provoke significant community outrage. The disincentives to enrol high users of services (166) will be very visible to GPs. The problem of the high users would be countered by the development of a risk-adjusted capitation payment which would positively discriminate in their favour or at the very least be revenue neutral. The analysis from these data indicates that the three determinants of cost for these services (ie. pathology, diagnostic imaging and pharmaceuticals) are age and sex of the patient and condition treated. Once, more information was collected from these fundholding practices, a more detailed analysis could be completed and the formulae refined. The third group is the elderly and they present a more challenging concern.

A number of dilemmas will be faced for the elderly within a fundholding practice in Australia. As has been stated in an earlier section of this thesis, the number of elderly, with their greater amount of morbidity and associated increased service usage will rise over the next twenty years. Fundholding GPs would increasingly be caring for these groups. It is possible that under this type health care delivery framework, in the push to create savings within a budgetary setting, that the quality of care of this group may suffer.

There is some evidence that among the elderly who are cared for in HMOs in the United States, quality of care has been compromised. A 4 year observational study of 2,235 patients (18 to 97 years) with hypertension, non-insulin-dependent diabetes mellitus (NIDDM), recent acute myocardial infarct, congestive heart failure and depressive disorders found differences between the outcomes of the elderly, depending on which organisation they were using. (303) The study occurred in three urban cities and information was collected over a period from 1986 to

1990. For the elderly enrolled in the Health Maintenance Organisations (HMOs), their physical health were almost twice as likely to decline when compared with those enrolled in the fee-for-service (FFS) groups (54% vs 28%). (303)

A second study, using a nationwide phone survey among elderly patients with chest or joint pain, enrolled in HMOs in 1990 found that, when compared with FFS Medicare beneficiaries, they had less specialist review and less organised follow-up. (302) Other outcomes were similar in both groups, although the HMO-enrolled patients with joint pain were more likely to be symptomatic. Interestingly the use of xrays was similar in both groups and more prescriptions were written for HMO enrollees. (302) This would suggest that the efficiency gains were in the decreased use of specialist and physician visits. The elderly are vulnerable and reliant on their GPs to organise their care. What these studies indicate is that there will be a need to carefully monitor the quality of care provided to this group within a fundholding practice.

Conversely, there is real potential to use this type of micro-economic reform in primary care to provide more coordinated and integrated care for the elderly. The savings created in a fundholder could be used to provide more home supports. The elderly are likely to be more prepared to "link" long term with a fundholding practice (101), and with their multiple conditions, medications and investigations provide ideal opportunities for efficiency gains within this framework. Among a group of elderly patients discharged from an acute care hospital in Dubbo, 78% saw a GP and 24% received a service from Home and Community Care (HACC) within the first twelve weeks. (321) The authors argued that it is likely that immediately post discharge the services that are more useful are likely to be HACC based. However the GP visit is reimbursed. In order for there to

be more efficiency within a fundholding practice, it is likely that GP visits will need to be substituted for much cheaper allied health services. (321)

There is evidence that incentives can be created within a fundholding framework to attract patients to enrol. In the United Kingdom, new community based services have been created. (162) In the HMOs in the United States enrolled patients are satisfied with the financial incentives offered to them. (185)

The three final questions deal with the issue of whether fundholding would create incentives for changes in health service usage, use of community resources and improved health of consumers. These changes are unlikely to occur without the linking of fundholding GPs to other regional organisations. Health service delivery in primary care is largely funded by State based organisations and they are unlikely to relinquish control of their budgets to GP fundholders. Without control of these community based budgets, GP fundholders would be powerless to introduce changes in community services, without substantial new funds.

There is no evidence that, in the fundholding practices in the United Kingdom, the quality of care for the patient has improved. (155,330) Fundholding in Australian general practice could improve patient care, but would require the use of such tools as evidence based medicine, guidelines, and audit. (162) These could be integrated into methods used to create savings as described in the earlier discussion on technical efficiency. Currently there are positive disincentives under the fee-for-service payment system to integrate or use these tools in every day practice, in order to improve the quality of the care provided. In a fundholding model, it is likely that these tools would be integral to creating gains in efficiency. The systematic review used for underpinning the models developed in Chapter 7 illustrates the value of this approach for a

fundholder. There is published evidence in all areas of care that gains in efficiency are possible with appropriate strategies within a capped budget. (259) To use these tools requires energy and commitment which a fee-for-service payment system does not reward.

Consumers will be integral to any fundholding model, as discussed and modelled in the first section. Their input would allow an approach more focussed on providing the services that are most needed for the local region. Careful consideration would be needed on protecting the marginalised groups and balancing consumer concerns with GP and health system goals. To create changes in health service usage that would manage community resources more efficiently and, long term improve the health of consumers, would require a collaborative relationship to be established with other State based organisations.

8.5 The effect of the proposed fundholding framework on general practitioners

The issue of GP behaviour change has been addressed in detail in the section on technical efficiency (see Chapter 7). It is worth emphasising that the success of fundholding would be strongly linked to this behaviour change process. Gains in efficiency will not occur unless the variability in GP behaviour is reduced.

There would be a substantial number of new roles in fundholding created for the Australian GP. The question is whether there are GPs who have the time and energy to complete these tasks. Simon in the pilot fundholding models in New Zealand (234), has documented the roles that participating GPs would be required to perform. They include:

- the management of the interface between all health professionals
- providing contact for all interested parties

- providing personnel for the management boards
- coordinating professional input to the fundholding practices
- acting as patient advocates
- developing linkages with community organisations
- protecting the quality of patient care
- protecting consumer access to appropriate services.

It is likely that the Australian GPs who would initially adopt fundholding would be those who are innovative (172,173) and find the shift to fundholding a natural progressive step. Petchey questions whether this selection bias could further create another example of the inverse care law (155) for the delivery of GP services. If one of the consequences of the establishment of fundholding is to create further gaps in our health care delivery, then due consideration should be given to not embracing this idea.

The lack of integration of general practice has been noted by a number of recent reports (11,72) and there have been calls for the development of models to improve this problem. (127,128) The evidence from the United Kingdom is that fundholding has firmly placed GPs back within the power base of the health care system (162), resulting in improved integration and communication. Within the framework developed from this study, the budgets would only hold monies for GP related services. This funding pool would do little to force other non-GP organisations to actively listen to and act on GP concerns. It is unlikely that integration would be improved.

GP opinion would be more powerful if the fundholding general practices were able to hold budgets for specialists services and secondary and tertiary care. (158) While this has occurred in the United Kingdom with the total purchasing pilots (161), New Zealand has decided that this development is not an option. (329) It is likely that in Australia the

specialists and hospital services, particularly as they are State based would not allow this to occur. Consequently, it is unclear whether fundholding on its own would bring GPs more actively into determining the priorities for the health care system. Improved integration would not plausibly follow, if fundholders were developed in isolation. However there is one possible model where fundholding could be a powerful catalyst to improve integration. This will be discussed in the final section in this chapter.

Deskilling of general practitioners is a major concern for the profession. (70) Fundholders could spend some of their savings re-training GPs in skills that they have lost or never been given the chance to learn. For example one fundholding practice in the United Kingdom has developed a project to train one of their GPs to do echocardiography. (331) It is likely that re-skilling GPs could create savings eg. improved skills with endoscopies for assessment of epigastric pain and performing minor plastic surgery procedures. It is worth emphasising that this process is likely to be very acceptable to GPs and a possible enticement for the adoption of this model.

Currently, general practice as a discipline is in the midst of a reform process. The reform strategy had a number of goals, including improved GP integration, addressing the maldistribution of the general practice workforce, enhancing the quality of general practice care and supporting training for GPs. (72) In completing this discussion of the effect of fundholding on GPs, it is important to assess whether this fundholding framework would aid any of these goals. The issue of integration has been already been discussed. Fundholding is unlikely to provide any help in coping with the maldistribution of the workforce and may decrease the GP pool available by absorbing more GPs into administrative positions. If fundholding was established in the country, rural GPs would have less

time for clinical work. This would further stretch the available rural medical workforce. (332)

Improving the quality of care provided in general practice could be linked to fundholding. Three significant initiatives are under way in Australian general practice in the quality area. They include General Practice Accreditation Standards (93), the Better Practice Program (240) and Outcomes Based Funding for divisions. (103) They are all aimed at establishing methods to reward GPs for quality care, a stated priority of the Commonwealth Government. (333) While this is an important direction, the actual measurement of quality is limited by a definition of what quality of care in general practice is (334) and the fact that the data collection methods are not available. (335)

Fundholding could provide an important model to improve quality of care. Firstly, the practice based data collection methods required to coordinate and monitor a fundholding practice would, of necessity require computerisation. These data could be used as a means to gather practice specific measures of quality of care. Secondly, the savings generated within a fundholding framework, as envisaged in the model discussed earlier could be used to fund this information technology infrastructure. Thirdly, fundholding would create financial incentives to change GP behaviour to improve quality of care in order to create gains in efficiency. These changes would be aimed at a practice or specific GP level - a method known to be acceptable to GPs and likely to produce changes in behaviour. (259,281,282,292) These methods have been discussed in the section on technical efficiency.

To summarise, for fundholding to be acceptable to GPs, they would need to see benefits for themselves and their patients. The new roles required would create opportunity costs, including less time for patient contact and

clinical work. Improved integration would not follow if fundholding was established without other health system changes. It is possible, that under a fundholding framework, data collection for the measurement of quality could be established and incentives created to improve the care provided by GPs.

It is important to finish this section with a comment about innovation. The core skills required by a GP are changing. The development of shared care models of providing chronic care (35), primary care teams that GPs would be the ideal people to lead (124) and the drive for sound methods to practice preventive care (123) are some of these new skills that will be required in the future. At the same time rural GPs are overworked and undermanned and new models of delivering primary care in these settings are being explored such as nurse practitioners (122) and pharmacists. Methods are being sought to decrease the divide between hospitals and GPs in an endeavour to create seamless, more efficient care. (87) Increasingly clinicians, including GPs are being asked to be involved in management roles in order to protect and enhance patient care. (129) Computerisation has yet be successfully employed in general practice. (130) There is no incentive and no funds to purchase these much needed tools. Fee-for-service as a principle payment system creates minimal incentives to become involved in these changes. In fact, GPs are positively discouraged to embrace change, as this will affect the time required to earn a living.

Fundholding would be important in contributing to these changes because the pressure to consult would be removed. Attendance at primary care team meetings could be funded from savings. Nurses and other allied health staff who would be cheaper (321) could be used for less demanding tasks. Hospital visits would be paid for from the budget. Computerisation would be purchased as an integral part of any

fundholding model. Fundholding is a model where innovation would be fostered and GPs could be appropriately reimbursed for these new tasks.

8.6 GP fundholders as part of a regional managed care model.

The discussion so far has individually concentrated on the three major stakeholders. In this section a model is presented that could satisfy all three stakeholders and, at the same time provide a new pattern of service delivery mix that would be more acceptable to a community. The model that may offer something to everyone is, if GP fundholders were sub-budget holders. (4) The GP fundholding practices would hold budgets as outlined in this study, but within a larger regional capped funding pool. This capped funding pool would act as a managed care sponsor organisation. GP fundholders would work with the regional sponsor organisation in a collaborative model, aiming to improve the mix of local services. The savings created within fundholding practice would be used for the development of identified services that would be focussed on specified regional needs.

Some models along these lines are already being established in the United Kingdom. They are grouped under the term Locality Commissioning. Locality Commissioning in the United Kingdom is a overarching term for a multitude of different models. (218) The main differences between this model and fundholding is that general practices do not hold funds. They work collaboratively with other local practices in a geographical region and with local Health Authorities and/or local providers. (217) In the Avon Health Authority there are 13 Localities, varying from 5 to 22 practices. (216) Twenty initiatives had been created by these locality commissioning groups, varying from improved mental health services to the development of guidelines for clinical practice and referrals. (215) In Nottingham since 1992, 200 non-fundholding GPs have

worked together unofficially, with their local purchasing health authority to influence the behaviour of local providers and outpatient and tertiary services. (231) This Nottingham model has recently been developed into a total Commissioning Project. (336) The strategies employed within this commissioning framework include shared responsibility between the Health Authority and a group of elected GPs, the use of indicative, not practice based budgets, GP feedback on referral and prescribing behaviour, evaluation at a regional not a practice level and the ability to move funds form hospitals to primary care. (218,336)

There are a number of important reasons why basing general practice fundholding within this type of health service organisational structure may satisfy all the stakeholders. At an overall system level, fundholding in a regional capped managed care budget would allow pooling of Commonwealth and State funds, preventing opportunities for cost shifting. The increasing pressure being placed on primary care would be more readily managed by moving funds to areas of identified need. These funds could be obtained from hospital budgets where savings have been created by decreased admissions and shorter stays. Proactive review and audit of tertiary providers would facilitate the control of expensive technology, particularly if the purchasing power of the regional sponsor were utilised. Consumers would be actively involved in the policy decisions that would direct the use of resources. They would have a real impetus to be involved because of the regional nature of the organisation. Quality of care would be more easily monitored at this local level and due consideration could be given to the concerns of the marginalised groups.

For general practitioners incentives for improved integration of general practice would be created. As discussed earlier this is a pressing priority for a number of groups (11,72,127,128) and is unlikely to occur for a number of reasons. They include:

- the reliance on GP fee-for-service
- the competition between GPs and, other health care providers created because of the need to protect GP incomes
- the fact that general practice is funded principally by the Commonwealth Government and local health services are funded by the States or local government (126)
- the lack of unity of general practice
- the increasing specialisation among doctors
- the rise of allied health groups. (126)

The pooled regional funds that would provide capped funding for GPs within a fundholding budget would decrease the reliance of general practice on fee-for-service and allow more linking with other State based organisations. Regional GP unity would be created because of the need to work in unison with local health authorities. (2,231) The divisions of general practice could be powerful and constructive participants in this area. Re-skilling of GPs could be organised at a regional level, as a means of increasing efficiency. The quality of general practice care could be more easily monitored at this level and rewarded with appropriate incentives.

Options for innovation and variation would be created for general practice within this model, as it is likely that the actual fundholding framework in each community would vary with the region. Multiple fundholders could be managed within this model and diversity among GP groups could be fostered. (149) For example, GPs who work with Aboriginal populations may want to hold funds for their community. Conversely, more traditional general practice may just want to hold funds for the items considered in this study. As Shapiro argues, for this model to deliver what he calls a "primary-care-led integrated health system" that in the long run will be more efficient, each region must adapt the funding models to their environment. (218)

These last two sections have discussed in detail the possible effect of fundholding on general practitioners. This has allowed a more complete understanding of whether the new mix of services arising from the establishment of general practice fundholding would be preferable to the current structure of health care delivery. The regional model discussed above has the potential to create a coordinated and integrated approach to health care delivery within a managed care model which is population-centred, but patient-focussed. (157) Theoretically this could create an improved mix of services that would be preferred by all the stakeholders.

8.7 Conclusion

The final two chapters of this thesis have critically examined Objectives 6 and 7.
Objective 6 aimed:

To clarify whether fundholding in general practice would improve technical and allocative efficiency when compared with the current principle funding model - ie. fee for service.

The evidence presented in this thesis indicates that under certain conditions this would be possible. These conditions include an appropriate budget of at least $5 million, active review and modification of GP behaviour, experienced staff and a linking to a regional funding pool that included Commonwealth and State monies. Other necessary elements that this study has identified would include:

- more easily obtainable information on resource usage to allow detailed management of the budgets
- the rapid development of capitation based budgets, with a decreased reliance on historical approximation

- complete agreement between all GPs and staff within a practice that they want to be fundholders, with a slow introduction of change
- sound information technology systems which allow rapid electronic data exchange and analysis
- risk sharing between the fundholding practices and the regional sponsors
- quality control, including the development of guidelines and standards of care based on the best available evidence
- improved coordination and integration for the fundholding practices across the multiple regional organisations
- methods to pool and share savings created within general practice fundholders
- methods where the gains in efficiencies created within a fundholding practice would provide incentives for local organisations to work with these GPs to use these savings for specified local needs
- methods where multiple fundholders could be managed within this model
- creation of models to actively link consumers with these regional models
- detailed regulations to prevent cream skimming, cost shifting and to monitor quality of care.

Objective 7 aimed:

To document the possible consequences from adopting a fundholding framework in Australian general practice, using these three practices as a template.

The consequences vary, depending on what perspective is taken. For the health system overall, the adoption of this model within a region would create improved linkages in primary care, allowing GPs to be more easily

integrated with all other providers. The current push to move patients to primary care would theoretically, be more easily managed, especially if gains in efficiencies were used to fund new services. As a consequence of these two changes, the increasing number of elderly would be better managed. GP fundholders would not, however be able to control the costly tertiary sector which is the most expensive element in the health care system. Finally, cost shifting would still be a significant problem, unless the regional managed care pool embraced all Government and State monies.

For general practice, fundholding would create new opportunities for innovation and re-skilling and allow more active linkage of quality care to financial rewards. It is likely that pharmaceutical cost would be slowed or even halted, if appropriate interventions were implemented within a capped pharmaceutical budget. As discussed above, GPs would be freed to pursue other roles, such as involvement in shared care and working in primary health care teams. Patient linkage would be a prerequisite and GPs are likely to find this a real benefit. The rapid implementation of information technology, required for budgetary management would be a bonus for the profession. The data collection required by the GPs if they wanted to fundhold may be a burden for them and, as a consequence may be of variable quality.

For consumers the actual consequences are unclear. It is likely that consumers would become active partners in a developing fundholding practice and this would be a welcome change. Consumer needs should be more appropriately met, particularly if fundholding practices were offering individualised packages of care. Theoretically, quality of care could improve, but the evidence is not convincing that this would eventuate. (155,185,326,330) Similarly, improved integration and service provision could flow from this model, providing important benefits for such groups as

the elderly. Some form of patient linkage would be required and how Australian consumers would accept this is unclear.

This thesis aimed to create a framework for fundholding in three general practices in Adelaide. This was achieved. This framework was then used to test whether fundholding could be more efficient than the current general practice funding mechanism - fee-for-service. Under certain circumstances, this hypothesis was found to be correct.

REFERENCES

REFERENCES

(1) Light D. Managed Care: false and real solutions. Lancet 1994; 344: 1197 - 1199.

(2) Carson S. Fundholding in the UK: can it work in New Zealand. The New Zealand Family Physician 1994: 110 - 112.

(3) Wynand P, Van De Ven W. Market-orientated Health Care Reforms: Trend and Future Options Social Science Medicine 1996; 43(5): 655 - 666.

(4) Scotton R. Managed Competition: The Scotton Model. Conference Procedings Managing Health Care and Competition Conference March 1997.

(5) Anonymous. Let's Think Seriously about Managed Care. Soc Sci Med. 1994; 38(2): v - vii.

(6) Cunningham F. Harbour Healthcare Consulting Pty Ltd. Medicare reform: via Managed care or Managed Competition. Conference Procedings Managing Health Care and Competition Conference March 1997.

(7) Scotton R. Managed competition: issues for Australia. Aust Health Rev 1995; 1: 82 -104.

(8) Australian Institute of Health and Welfare. Australia's health service expenditure to 1995-96. Health Expenditure Bulletin 1997; July; 13: 1 -16.

(9) Australian Institute of Health and Welfare. Australia's health service expenditure - 1982-83 to 1994-95. Health Expenditure Bulletin 1996 December; 12: 1 - 32.

(10) Australia's Health 1994. Fourth Biennial Health Report of the Australian Institute of Health and Welfare June 1994.

(11) The Australian Health Jigsaw. Integration of Health Care. National Health Strategy Issues Paper no 1 1991.

(12) Palmer G and Short S Health. Care and Public Policy An Australian Analysis. MacMillan Education Australia Pty Ltd. 1994 Page 74.

(13) Australian Institute of Health and Welfare. Australia's health service expenditure to 1982-83 to 1993-94. Health Expenditure: 1995 October; 11: 1 - 27.

(14) Butler J. The financing of general practice. In General Practice in Australia: 1996 Commonwealth Department of Health and Family Services. Better Printing Services. Canberra. 1996. Chapter 5 135 – 168.

(15) Australia's Health 1996. Fifth Biennial Health Report of the Australian Institute of Health and Welfare June 1996. Australian Government Publishing Service Canberra.

(16) Deeble J. Medical Services Through Medicare. Background Paper No.2 February 1991. National Health Strategy.

(17) Doessel D. General Practice in Perspective: A descriptive analysis of prices and other outcomes under Medicare. A final report on the project "General Practice" in perspective. General Practice Evaluation Program 1995. Commonwealth Department of Health and Family Services.

(18) Department of Health and Family Services. Schedule of Pharmaceutical Benefits. August 1997. Commonwealth Department of Health and Family Services. Australian Government Publishing Service.

(19) 1993 Australian Statistics on Medicine. Commonwealth Department of Human Services and Health. Australian Government Publishing Service.

(20) Australian Bureau of Statistics. Projections of the Populations of Australia, States and Territories, 1989-2031. Cat No 3222.0. Australian Bureau of Statistics, Canberra.

(21) Bridges-Webb C, Britt H, Miles D et al. Morbidity and Treatment in General Practice in Australia 1990-91. Medical Journal of Australia 1992; 157: Suppl: S1 - S56.

(22) Van Weel C. Chronic disease in general practice: the longitudinal dimension. European Journal of General Practice 1996; 2: 17 - 20.

(23) Verbrugge L, Lepkowski J, Imanaka Y. Comorbidity and its Impact on Disability. Milbank Quarterly 1989; 67(3-4): 450 - 485.

(24) Keller G. The health of Veterens: meeting the challenge. Medical Journal of Australia 1996:165: 413 - 414.

(25) Marshall D, Clark E, Hailey D. The impact of laparoscopic cholecystectomy in Canada and Australia. Health Policy 1994; 26: 221 - 230.

(26) McKinlay J. From promising report to standard procedure: seven stages in the career of medical innovation. Milbank Memorial Fund Quarterly, Health and Society 1981; 59: 374 - 411.

(27) Mechanic D. The growth of medical technology and bureaucracy. Implications for medical care. Milbank Memorial Fund Quarterly, Health and Society 1977; 55: 61 - 78.

(28) Palmer and Short. Health Care and Public Policy. An Australian Analysis. Second Edition. Macmillan Education. 1994. page 330.

(29) Cooper-Stanbury M, Solon R, Cook M. Discussion paper. Hospital utilisation and costs 1991-92. Australian Institute of Health and Welfare. 1994.

(30) Hirsch R, Hailey D. Minimal access surgery. Discussion paper. Canberra Australian Institute of Health and Welfare 1994.

(31) Commonwealth Office for the Aging. Healthy Aging and Well Being. Developing a Strategy for Action. Discussion paper. Canberra November 1995.

(32) Reform of Health and Community Services. Information Paper on Work in Progress. Prepared by the COAG Working Group on Health and Community Services 1995.

(33) Health Plus Discussion Document 1997. South Australian Health Commission.

(34) Pirkis J, Martyres R, Wymank et al. Integrating general practice and hospital services. Australia Family Physician 1996; 25(4): 537 - 543.

(35) Orton P. Shared Care. Lancet 1994; 344: 1413 - 1415.

(36) Baume P, Wolk J. Difficulties in admitting patients to metropolitan public hospitals: the view of medical practitioners. Medical Journal of Australia 1995; 163: 401 - 405.

(37) Duckett S. Hospital and departmental management in the era of accountability: addressing the new management challenges. Australian Health Review 1994; 17(3) 116 - 131.

(38) Broom D. Speaking for themselves: consumer issues in the restructured of general practice. Canberra: National Centre for Epidemiology and Population Health, 1991. (Discussion Paper No. 4).

(39) Consumers Health Forum of Australia Inc. Working with Consumers. The key to quality general practice. Report to the Department of Health, Housing and Community Services. Canberra: AGPS, 1993.

(40) Consumers Health Forum. of Australia Inc. Working with Consumers - a guide for divisions of general practice 1996.

(41) Consumers Health Forum of Australia Inc. Consumers Views on Coordinated Care 1996.

(42) Fitzpatrick J, Manderson L. Health at the margins: providing services in remote areas and for marginal populations. Australian Journal of Public Health 1995; 19(6): 547 - 548

(43) Whitehead M. Is It fair? evaluating the equity implications of the NHS reforms. In Robinson R, Le Grande J, eds. Evaluating the NHS reforms. London Kings Fund Institute, 1994. Chapter 9.

(44) Harris A, Mcguire A. Whose Budget is it anyway? Medical Journal of Australia 1992; 156: 445 - 447

(45) Duckett S. Medicare: Where to now? Australian Health Review 1995; 18(1): 117 - 124.

(46) Leeder S, Shiell A. Marginal reallocation in pursuit of more efficient health care. Medical Journal of Australia 1994; 160: 472 - 475.

(47) Sturgess G. Politics and Health care: beyond the Federal- State wrangle. Medical Journal of Australia 1995; 163: 370 - 372.

(48) Kilham R. Australian Medicine 1996, 16 September: page 10.

(49) Mooney G. Efficiency in health care: just health gains? Australian Journal of Public Health 1995 19(4): 330 - 335.

(50) Mooney G. 8. Medical Practice Variations. Key Issues in Health Economics. Harvester Wheatsheaf 1994. Chapter 8.

(51) Harris L, Richardson J. Pressure for health care reform. The international context. Medical Journal of Australia 1994; 160: 463 - 465

(52) Abel Smith B. Cost Containment and New Priorities in the European Community. Milbank Quarterly 1992; 70(3): 393 - 415.

(53) Eatwell J, Milgate M, Newmwn P. editors. The new Palgrave: a dictionary of economics. Vol 2. London Macmillan 1978.

(54) Donaldson C. The State of the Art of Costing Health Care For Economic Evaluation. Community Health Studies 1990; 14(4): 341 - 356.

(55) Cochrane A. Effectiveness and Efficiency. Random Reflections on Health Services. British Medical Journal. The Nuffield Provincial Hospitals Trust. 1971.

(56) Oster G, Huse D, Dela T, Colditz G. Cost-effectiveness of nicotine gum as an adjunct to physician's advice against cigarette smoking. JAMA 1986; 256: 1315 - 18.

(57) Cantor J, Morisky D, Green L et al. Cost-effectiveness of educational interventions to improve patient outcomes in blood pressure control. Preventive Medicine 1985; 14: 782 - 800.

(58) Drummond M. Principles of economic appraisal in health care, Oxford University Press 1980.

(59) Le Grande, Robinson R. The Economics of Social Problems. Harcourt Brace Jovanich Inc 1980. Chapter 1.

(60) Pennington D. Government and the profession. Medical Journal of Australia 1990; 153: 242 - 245.

(61) Black D. Paying for Health. Journal of Medical Ethics 1991; 17: 117 -123.

(62) Henry D, O'Connell. Variability on Prescribing of pharmaceuticals by General Practitioners and Factors related to the variability.

Report. January 1996. Department of Human Services and Health.

(63) Coates J, Steven I, Beilby J et al. Knowledge and reported asthma management among South Australian general practitioners. British Journal of General Practice 1994, 44: 123 - 126.

(64). Steven I, Wilson D, Wakefield M, Beilby J, at al. South Australian hypertension survey. General Practitioner knowledge and reported management practices - a cause for concern. Medical Journal of Australia 1992; 156: 423 - 428.

(65) Beilby J, Steven I et al. Reported diabetes mellitus management in South Australian general practitioners. Australian Family Physician 1994; 23: 611-613.

(66) Beilby J, Wakefield M, Maddox A. General Practitioner Attitudes to Recall Systems for Cervical Screening. Medical Journal of Australia 1995; 163: 245 - 248.

(67) Renwick M, Sax S. Variations in practice patterns. Medical Journal of Australia 1991; 155; 359 - 360.

(68) Charlesworth M. Distributing health care resources: ethical assumptions. Australian Health Ethic Committee. Canberra NHMRC 1992.

(69) Appleby J. Financing Health Care in the 1990s. Open University Press 1992. Chapter 9 page 162.

(70) Bollen M. Recent changes in general practice. Medical Journal of Australia 1996; 164: 212 - 215.

(71) Department of Human Services and Health/Australian Medical Association/ Royal Australian College of General Practitioners. General Practice Consultative Committee The future of general practice: a strategy for the nineties and beyond. Canberra. Department of Human Services and Health, July 1992.

(72) The Future of General Practice: a strategy for the nineties and beyond. Canberra. National Health Strategy. Issue paper no 3, March 1992.

(73) General Practice in Australia: 1996. Commonwealth Department of Health and Family Services. Australian Government Publishing Service Canberra 1996.

(74) Douglas R. Proceedings of the General Practice Think Tank. National Centre for Epidemiology and Population Health Discussion Paper Number 11. National Centre for Epidemiology and Population Health. The Australian National University. 1995

(75) General Practice. Changing the Future Through Partnerships. Report of the General Practice Strategy Review Group. Commonwealth of Australia 1998. Pirie Printers Canberra.

(76) Royal Australian College of General Practitioners Interpractice Comparison Report. October 1996. Inter Company Comparison Centre Malvern Victoria.

(77) Commonwealth Department of Human Services and Health. Rural doctors. Reforming undergraduate medical education for rural practice. Final report of the Rural Undergraduate Steering Committee. Canberra. AGPS, May 1994: 38.

(78) Australian Medical Workforce Benchmarks. Australian Medical Workforce Advisory Committee. Australian Institute of Health and Welfare. January 1996.

(79) Douglas R, Dickinson J, Roseman S, Milne H. Too many or too few? Medical workforce and general practice in Australia. Canberra: National Centre for Epidemiology and Public Health discussion paper number 5, 1991.

(80) Douglas R. Doctors in health care: can we determine the right numbers? Medical Journal of Australia 1995; 163: 322 - 323.

(81) Joseph P. President Royal Australian College of General Practitioners. Australian Medicine November 17th. 1997. Australian Medical Association.

(82) Pegram R. Medical Adviser. General Practice Branch. Department Human Services and Health. Personal Communication. May 1997.

(83) Douglas R, Saltman D. W(h)ither Australia General Practice. National Centre of Epidemiology and Population Health. Discussion paper number 1. Canberra 1991.

(84) Quadrio C. Women and men and the medical workforce in Australia. Medical Journal of Australia 1997; 166: 7 - 8.

(85) Kamien M, Buttfield I. Some solutions to the shortage of general practitioners in rural Australia part 1: Medical School Selection; Part 2: Undergraduate Education. Medical Journal of Australia 1990; 153: 105 - 12.

(86) Rosenthal D. General Practice - a rural perspective. Tabled Document. General Practice Think Tank. National Centre of Epidemiology and Population Health. Discussion Paper Number 11. Canberra 1995.

(87) Britt H, Miles D, Bridges-Webb C et al. A comparison of country and metropolitan general practice. Medical Journal of Australia 1993; 159 Supplement: S9-S64 .

(88) Harris M, Fisher R, Knowlden S. Improving general practitioner involvement in urban hospitals: Departments or divisions of general practice. Medical Journal of Australia 1993; 158: 304 - 307.

(89) Isaac D, Gijsbers A, Wyman K et al. The GP-hospital interface; attitudes of general practitioners to tertiary teaching hospitals. Medical Journal of Australia 1997; 166:9 - 12.

(90) Komesaroff P, Clunie G, Duckett S. What is the future of the hospital system. Medical Journal of Australia 1997; 166: 17 - 22.

(91) Douglas R, Saltman D. Everyone's Watching: Accreditation of General Practice. National Centre for Epidemiology and Population Health. Discussion Paper Number 7 1992.

(92) Martin C, Douglas R. Getting value for money. Measuring the quality and outcome of general practice care. Medical Journal of Australia 1993; 159: 253 - 256.

(93) Royal Australian College of General Practitioners 1996 Entry Standards for General Practice. The Royal Australian College of General Practitioners, Sydney Australia.

(94) Chassin M. The missing ingredient in health reform. Quality of Care. JAMA 1993; 270(3): 377 - 378.

(95) Donabedian A. The Quality of Care How can it be assessed? JAMA 1988; 260(12): 1743 - 1748.

(96) Mara P, Vining R, Braithwaite J. Local Demonstration Trials of Standards and Accreditation for General Practice, Commonwealth Department of Human Services and Health, Canberra 1995.

(97) Miller G, Stirton J Smith D et al. Field Test of Entry Standards for General Practice, Condensed Report, Royal Australian College of General Practitioners, Sydney 1995.

(98) Frank Small and Associates. Patient perspectives of GP Standards. Consultancy report to the Commonwealth Department of Human Services and Health. Canberra 1995.

(99) Integrating Consumer Views about Quality in General Practice. Report commissioned by Consumers Health Forum and the Commonwealth Department of Human Services and Health. March 1996.

(100) Campen C, Sixma H, Friele R et al. Quality of care and Patient satisfaction: a review of measuring instruments. Medical Care Research and Review 1995; 52(1): 109 - 133.

(101) Steven I, Douglas R. Dissatisfaction in general practice: what do patients really want? Medical Journal of Australia 1988; 148: 280 - 2.

(102) Report. National Health Ministers Benchmarking Working Group to the Australian Health Ministers conference 1996: 72.

(103) Weller D, Crotty M, Ward J, Beilby J et al. Consultancy Report. Outcomes Based Funding for the Divisions of General Practice. February 1997. Department of Health and Family Services.

(104) Lazarus L, Braithwaite J, Westbrook J. Health outcomes: of means and ends. Medical Journal of Australia 1995; 162: 4 - 5.

(105) Dawes M. On the need for evidence - based general and family practice. Evidence Based Medicine March/April 1996; 68 - 69.

(106) Sullivan F, MacNaughton R. Evidence in consultations: interpreted and individualised. Lancet 1995; 348: 941 - 943.

(107) Naylor C. Grey Zones of clinical practice: some limits to evidence-based medicine. Lancet 1995; 345: 840 - 842.

(108) Thompson S, Nanni C, Schwankovsky L. Patient-orientated interventions to improve communication in a medical office visit. Health Psychology 1990; 83: 205 - 208.

(109) Howie J, Porter A, Heaney D, Hopton J. Long to short consultation ratio: a proxy measure of quality of care for general practice. British Journal of General Practice 1991; 41: 48 - 54.

(110) Beisecker A. Aging and the desire for information and input in medical encounters: Patient consumerism in medical encounters. Gerontologist 1988; 28: 330.

(111) Buetow S. What do general practitioners and their patients want from general practice and are they receiving it? A Frame work. Social Science and Medicine 1995; 40(2): 213 - 221.

(112) Williams S, Weinman J, Dale J et al. patient expectations: what do primary care patients want from their GP and how far does meeting expectations affect patient satisfaction. Family Practice 1995; 12: 193 - 201.

(113) Anonymous. Choice August 1995 page 6 - 9.

(114) Veale B, McCallum J, Saltman D, et al. Consumer use of multiple general practitioners: an Australian epidemiological study. Family Practice 1995; 12: 303 - 308.

(115) Pilotto L, McCallum J, Raymond C, et al. Sequential continuity of care by general practitioners: which patients change doctor? Medical Journal of Australia 1996; 164(8): 463 - 467.

(116) Ward A, Underwood P, Fatovich B, Wood A. Stability of Attendance in General Practice. Family Practice 1994; 11: 431 - 437.

(117) Harris M, Frith J. Continuity of care: in search of the Holy Grail of general practice. Medical Journal of Australia 1996; 164(8): 456 - 458.

(118) Divisions Discussion Proforma. Department of Human Sevices and Health. 1996.

(119) Webster J. General practice - a rising phoenix. Medical Journal of Australia 1996; 164(12): 709 - 711.

(120) Pegram R, Sprogis A, Buckpitt J. Divisions of general practice: a status review. Australian Health Review 1995; 18(4): 78 - 94.

(121) Integration Projects 1993-94. Report. Centre for General Practice Integration Studies. School of Community Medicine, University of New South Wales. August 1996.

(122) Percival E, Hamilton H. Nurses in Australia: their role today and tomorrow. Medical Journal of Australia 1996; 164: 520 - 521.

(123) Mant D. Prevention. Lancet 1994; 344: 1343 -1346.

(124) Van Weel C. Teamwork. Lancet 1994; 344: 1276 -1279.

(125) Royal Australian Presidential Task Force on the Role, Function and Definition of General Practice 1996.

(126) South Australian Community Health Research Unit. Links between general practitioners, hospitals and community-based health services. Adelaide SACRU 1994.

(127) Fry D. Strengthening primary health care in Australia. Issues paper no. 10. Sydney: Australian Community Health Association, 1994.

(128) Royal Australian College of General Practitioners/Australian Medical Association Council of General Practice. Joint RACGP/AMACGP Strategic Plan for general practice 1996-1999, Sydney RACGP 1996.

(129) Van Der Weyden M. Clinicians and Management. Medical Journal of Australia 1995; 163: 320 - 321.

(130) Bollen M. General Practice and computerisation. Australian Family Physician 1996; 25(8): 1203 - 1204.

(131) Survey of Members of Royal Australian College of General Practitioners. Royal Australian College of General Practitioners 1995. Rozelle Sydney.

(132) Van Weel C. Primary Care: political favourite or scientific discipline? Lancet 1996; 348: 1431 - 32.

(133) Anonymous. Turning to Primary care. Lancet 1995; 346: 1111.

(134) Alper P. Primary Care in Transition. JAMA 1994; 272: 1523 -1527.

(135) Starr B. Is primary care essential? Lancet 1994; 344: 1129 - 1133.

(136) Strasser R. The gatekeeper role of general practice. Medical Journal of Australia 1992; 156: 108 - 110.

(137) Pritchard D, Beilby J. Issues for fundholding in Australian general practice. Medical Journal of Australia 1996; 164(4): 215 - 219.

(138) Maynard A, Bloor K. Introducing a market to the United Kingdom's National Health Service. New England Journal of Medicine 1996; 334(9): 604 - 608.

(139) Enthoven AC. Consumer-choice health plan. N Engl J Med 1978; 28: 650-658, 709 - 720.

(140) Newman P. Interview with Allan Enthoven: is there convergence between Britain and the United States in the organisation of health services. British Medical Journal 1995; 310: 1652 - 5.

(141) The Health Service. Caring for the 1990s. Working for patients. London 1989. Her Majesty's Stationary Office.

(142) van De Ven W, Rutten F. Managed competition in the Netherlands: lessons from five years of health care reform. Australian Health Review 1995; 18(1): 9 - 26.

(143) Malcolm L. Managed Care in New Zealand: managed competition or managed care. New Zealand Health and Hospital 1995; November/December; 4 - 7.

(144) Foley M. Is managed care an option for Australian health care? Health Cover 1992.

(145) Enthoven A. The History and Principles of Managed Competition. Health Affairs 1993; Supplement 24 - 48.

(146) Le Grande J. Quasi-markets and social policy. The Economic Journal 1991; 101: 1256 - 1267.

(147) Street A. Purchaser/provider separation and managed competition: reforms options for Australia's health system. Aust J Public Health 1994; 18: 369 - 379.

(148) Rodwin M. Conflicts in Managed Care New England Journal of Medicine 1995; 332(9): 601 - 606.

(149) Ham C. A primary care market? British Medical Journal 1996; 313: 127 - 128.

(150) Bannock G, Baxter R, Davis E. Dictionary of Economics. Penguin Books. Fifth Edition. 1992.

(151) Donaldson C, Gerard K. Economics of Health Care Financing: A Visible Hand. McMillan Press London 1994.

(152) Arrow K. Uncertainty and welfare economics of medical care. American Economic Review 1963; Dec: 941 - 973.

(153) Blomqvist A. The doctor as double agent: Information asymmetry, health insurance, and medical care. Journal of Health Economics 1991; 10: 411 - 432.

(154) Borren P. Maynard A. The market reform of the New Zealand health care system searching for the Holy Grail in the Antipodes. Health Policy 1994; 27: 233 - 252.

(155) Petchey R. General practitioner fundholding: weighing the evidence. Lancet 1995; 346: 1139 - 42.

(156) Ham C. Population - Centred and patient - focussed purchasing: the UK experience. Milbank Quarterly 1996: 47(2): 191 - 213.

(157) Glennerster H, Matsagarus M, Owens P, Hancock S. Implementing GP fundholding. Wild card or winning hand? Buckingham: Open University Press 1994.

(158) Making Sense of Fundholding. Henry S et Pickersill D Editors. Radcliff Medical Press. 1995.

(159) Dixon J, Glennester H. What do we know about fundholding in general practice. British Medical Journal 1995; 311: 727 - 30.

(160) Kingston and Richmond Multifund. Purchasing Strategy 1996/1997. August 1995.

(161) Mays N, Goodwin N, Bevan G et al. What is total purchasing?. British Medical Journal 1997; 315: 652 - 655.

(162) Audit Commission. What the Doctor Ordered. A Study of GP Fundholders in England and Wales. 1996. Colourcraft, Cardif.

(163) Coulter A. General practice fundholding: time for a cool appraisal. British Journal of General Practice 1995; March: 119 - 120.

(164) Sheldon T, Smith P, Borowitz M, et al. Attempt at deriving a formula for setting general practitioner fundholding budgets. British Medical Journal 1994; 309: 1059 - 64.

(165) Dixon J, Dinwoodie M, Hodson D et al. Distribution of NHS funds between fundholding and non-fundholding practices. British Medical Journal 1994; 309: 30 - 4.

(166) Matsaganis M, Glennester H. The threat of 'cream skimming' in the post reform NHS. Journal of Health Economics 1994; 13: 31 - 60.

(167) Roberts S, Harris C. Age, sex and temporary resident originated prescribing units (ASTRO-PUs): New weightings for analysing prescribing general practices in England. British Medical Journal 1993; 307: 485 - 8.

(168) Whynes D, Baines D, Tolley K. Explaining variations in general practice prescribing costs per ASTRO-PU (age, sex and temporary resident originated prescribing unit). British Medical Journal 1996; 312: 488 - 9.

(169) Majeed A. Allocating budgets for fundholding and prescribing. British Medical Journal 1996; 313: 1274 - 1275.

(170) Van de Ven V, Vliet R, Barneveld E et al. Risk - Adjusted Capitation: Recent Experiences in the Netherlands. Health Affairs 1994 Winter: 120 - 136.

(171) Stewart-Brown S, Gillam S, Jewell T. The problems of fundholding. Some benefits to patients but no effect on how doctors practice. British Medical Journal 1996: 312: 1311 - 1312.

(172) Baines P, Whynes D. Selection Bias in GP Fundholding. Health Economics 1996; 5: 129 - 140.

(173) Howie JGR, Heaney DJ, Maxwell M. Evaluation of the Scottish shadow fundholding project: first results. Health Bull (Edinb) 1993; 51: 94 - 105.

(174) Howie JGR. General practice fundholding: Shadow Project, an evaluation. A report to the Management Executive of the NHS in Scotland and the Chief Scientist, Office of the Scottish Office Home and Health Department. Edinburgh: Department of General Practice, University of Edinburgh, 1994.

(175) Bain J. Budget holding: a step into the unknown. British Medical Journal 1991; 302: 771 - 3.

(176) Bowie C et Harris T. The fundholding fandango. British Journal of General Practice 1994; 44: 38 - 40.

(177) Leese B, Bosanquet N. Changes in general practice organisation: survey of general practitioners' views on the 1990 contract and fundholding. British Journal of General Practice 1996; 46: 95 - 99.

(178) Black D. Paying for health. J Med Ethics 1991; 17: 117 - 123.

(179) Toon P. Justice for Gatekeepers Lancet 1994; 343: 585 - 87.

(180) Ellesbury K. Can the Family Physician Avoid Conflict of Interest in the Gatekeeper role? An Affirmative View. The Journal of Family Practice 1989; 28(6) : 698 - 704.

(181) Stephens G. An Opposing View. The Journal of Family Practice 1989; 28(6): 701 - 704.

(182) Howie J, Heaney D, Maxwell M. Care of patients with selected health problems in fundholding practices in Scotland in 1990 and 1992: needs, process and outcomes. British Journal of General Practice 1995; 45: 121 - 126.

(183) Ethical Issues in Managed Care. Council on Ethical and Judicial Affairs, American Medical Association. JAMA 1995; 273(4): 330 - 335.

(184) Kerr E, Mittman B, Hays R, et al. Managed care and capitation in California: how do physicians at financial risk control their own utilisation. Ann Intern Med 1995; 123: 500 - 4.

(185) Miller R, Luft H. Managed Care Plan Performance Since 1980. A Literature Analysis. JAMA 1994; 271(19): 1512 - 1519.

(186) Stewart-Brown S, Surrender R, Bradlow J, et al. The effects of fundholding in general practice on prescribing habits three years after the introduction of the scheme. British Medical Journal 1995; 311: 1543 - 7.

(187) Maxwell M, Heaney D, Howie J, Noble S. General practice fundholding: observations on prescribing patterns and costs using the defined daily dose method. British Medical Journal 1993; 307: 1190 - 4.

(188) Bradlow J, Coulter A. Effect of fundholding and indicative prescribing schemes on general practitioners prescribing costs. British Medical Journal 1993; 307: 1186 - 9.

(189) Whynes D, Baines D, Tolley K. GP fundholding and the costs of prescribing. Journal of Public Health Medicine 1995: 17(3): 323 - 329.

(190) Wilson R, Buchan I, Walley T. Alterations in prescribing by general fund holders: an observational study. British Medical Journal 1995; 311: 347 - 50.

(191) Dowell J, Snadden D, Dunbar J. Changing to generic formulary: how one fundholding practice reduced prescribing costs. British Medical Journal 1995; 310: 505 - 8.

(192) Harris C, Scrivener G. Fundholders' prescribing costs: the first five years. British Medical Journal 1996; 313: 1531 - 4.

(193) Rafferty T, Wilson-Davis K, Mc Gavock H. How has fundholding in Northern Ireland affected prescribing patterns? A longitudinal study. British Medical Journal 1997; 315: 166 - 170.

(194) Whynes D, Heron T, Avery A. Prescribing cost savings by GP fundholders: long term or short term? Health Economics 1997; 6: 209 - 211.

(195) Bateman D, Campbell M, Donaldson L, Roberts S, Smith J. A prescribing incentive scheme for non-fundholding general practices: an observational study. British Medical Journal 1996; 313: 535 - 8.

(196) Hill-Smith I. et al. Sharing resources to create a district wide drug formulary: a country wide controlled trial. British Journal of General Practice 1996; 46: 271 - 275.

(197) Keeley D. General practice fundholding and health care costs. British Medical Journal 1997;315:139.

(198) Eccles M, Souter J, Bateman D et al. Influences on prescribing in non-fundholding general practices. British Journal of General Practice 1996; 46: 287 - 290.

(199) Coulter A, Bradlow J. Effect of NHS reforms on GP referral patterns. BMJ 1993; 306: 433 - 437.

(200) Heaney D, Howie J, Maxwell M. The referral component of fundholding: Can both quantity and quality be assessed on routine data? Health Bulletin 1994; 52(4): 285 - 296.

(201) Surrender R, Bradlow J, Coulter A, et al. Prospective study of trends in referral patterns in fundholding and non-fundholding practices in the Oxford region, 1990-4. British Medical Journal 1995; 311: 1205 - 8.

(202) Donabedian A. The quality of care. How can it be assessed? JAMA 1988; 260: 1743 - 1748.

(203) Bain J. Budget holding: here to stay. British Medical Journal 1993; 306: 1185 - 1188.

(204) Black D, Birchall A, Trimble I. Non-Fundholding in Nottingham: a vision for the future. British Medical Journal 1994; 309: 930 - 2.

(205) Richardson T. General practice fundholding. Delivers what the patients want. British Medical Journal 1994; 308: 475

(206) Tod E. Fundholding brings services closer to patients. British Medical Journal 1994; 308: 476.

(207) Bailey J, Black M, Wilkin D. Specialist outreach clinics in general practice. British Medical Journal 1994; 308: 1083 - 86.

(208) Bain J. Fundholding: a two tier system?. British Medical Journal 1994; 309: 396 - 9.

(209) Newton J, Fraser M, Robinson J, Wainwright D. Fundholding in Northern Region: the first year. British Medical Journal 1993; 306: 375 - 8.

(210) Corney R. Experiences of first wave general practice fund holders in South East Thames Regional Health Authority. British Journal of General Practice 1994; 44: 34 - 37.

(211) Stewart- Brown S, Gillam S, Jewell T. The problems of fundholding. Some benefits to patients but no effect on how doctors practice. British Medical Journal 1996; 312: 1311 - 12.

(212) Howie J, Heaney D, Maxwell M. Evaluating care of patients reporting in fundholding practices. British Medical Journal 1994; 309: 705 - 10.

(213) Whynes D, Reed G. Fund Holders' referral patterns and perceptions of service quality in hospital provision of elective general surgery. British Journal of General Practice 1994; 44: 557 - 560.

(214) Moore I, Dalziel M. Managing the internal market: a case for managed change. British Medical Journal 1993; 307: 1270 - 2.

(215) Grimshaw J, Russell I. Effect of clinical guidelines on medical practice: a systematic review of rigorous evaluations. Lancet 1993; 342: 1317 - 22.

(216) Hine C, Bachmann M. What does locality commissioning in Avon offer? Retrospective descriptive evaluation. British Medical Journal 1997; 314: 1246 - 50.

(217) Mays N. The future of locality commissioning. British Medical Journal 1997; 314: 1212 - 1213.

(218) Shapiro J, Smith J, Walsh N. Approaches to Commissioning: the dynamics of diversity. 1996. Research Paper 22: 1 - 32. National Association of Health Authorities and Trusts.

(219) Smith J. What lies beyond fundholding? Health Services Management Centre Newsletter 1997; May 3(2): 1 - 2.

(220) Dixon J, Dinwoodie M, Hodson D et al. Distribution of NHS funds between fundholding and non-fundholding practices. British Medical Journal 1994; 309: 30 - 4.

(221) Bowie C, Spurgeon R. Better data needed for analysis. British Medical Journal 1994; 309: 34.

(222) Kammerling R, Kinnear A. The extent of the two tier service for fundholders. British Medical Journal 1996; 312: 1399 - 401.

(223) McCullough C. Fundholding practices get preferences. British Medical Journal 1993; 306: 141

(224) Samual O. Fundholding practices get preferences. British Medical Journal 1992; 305: 1497.

(225) Le Grande J Evaluating the NHS reforms. Chapter 10. In Robinson R, Le Grande J, eds. Evaluating the NHS reforms. London Kings Fund Institute, 1994. Chapter 10.

(226) Ashton T. The purchaser - provider split in New Zealand: the story so far. Australian Health Review 1995; 18(1): 43 - 61.

(227) Ham C. Primary managed care in Europe. British Medical Journal 1997; 314: 457.

(228) Ham C. The future of purchasing. British Medical Journal 1994; 309: 1032 - 1033.

(229) Shapiro J. Global commissioning by general practitioners. British Medical Journal 1996; 312: 652 - 653.

(230) Graffy J, Williams J. Purchasing for all: an alternative to fundholding, British Medical Journal 1994; 308: 391 - 4.

(231) Black D, Birchall A, Trimble I. Non-fundholding in Nottingham: a vision of the future. British Medical Journal 1994; 309: 930 - 2.

(232) Primary Care Groups. National Health Service. White Paper No 5.http://www.officialdocuments.co.uk/document/doh/newhs /wpaper 5 1998: 2 -14.

(233) Malcolm L. Radical reforms for primary care in New Zealand World Health Forum 1995; 16: 283 - 286.

(234) Kerr D, Malcolm L, Schousboe J et al. Successful implementation of laboratory budget holding by Pegasus Medical Group. New Zealand Medical Journal 1996; 109: 334 - 7.

(235) Malcolm L. Progress towards managed/integrated care in New Zealand. Jan 1997.

(236) Simon J. The Anatomy of a Primary Care Network. - Part one, The Pilot Phase. 1992-3. Draft paper. 1996.

(237) Malcolm L, Powell M. The development of independent practice associations and related groups in New Zealand. New Zealand Medical Journal 1996; 109: 184 - 7.

(238) Personal Communication. Tony Mansfield. Manager. South Med. Limited. Independent Practice Association.

(239) Drummond M, Mooney G. Essentials of Health Economics. Modern Health Economics. Aberdeen. Northern Health Economics. 1983

(240) Drummond M, Stoddart G, Torrance G. Methods for Economic Evaluation of Health Care Programs Oxford Medical Publications New York 1996.

(241) Better Practice Program Payment Formula. Information Brochure. August 1996. Department of Health and Family Services.

(242) Glover J, Shand M, Forster C, Woollacott T. A Social Health Atlas of South Australia. Second Edition. Policy and Budget Division. South Australian Health Commission. 1997

(243) Innui T. The virtue of Qualitative and Quantitative Research Annals of Internal Medicine 1996; 125(9): 770 - 771.

(244) Denzin N, Lincoln Y. Handbook of Qualitative Research. Sage 1994.

(245) Zyzanski Z, McWhinney I, Blake R, Crabtree W, Miller W. Qualitative Research: Perspective's on the Future. In Crabtree B, Miller W. (eds). Doing qualitative research in primary care. Newbury Park, CA: Sage 1991: 231 – 248.

(246) Griffiths F. Qualitative research: the research questions it can help answer, the methods it uses, the assumptions behind the research questions and what it influences the direction of the research. A summary of the panel discussion at the conference "Exploring qualitative research in general practice". Family Practice 1996; 13(1): S27 - S30.

(247) Flick U. Tri-angulation revisited: Strategy of validation or alternative? Journal for the Theory of Social Behaviour 1992; 22: 175 - 198.

(248) Jones R. Qualitative Research: challenges for integration support and dissemination. Family Practice 1996; 13(1): S22 - S26.

(249) Jenkins J. Chapter 7. Theoretical considerations of Qualitative Methods: Behavioural Science Research of Relevance to primary care interventions. In Assessing interventions. Traditional and Innovative methods. Eds: Tudiver F, Bass M, Dunn E, Norton P, Stewart M. Newbury Park. Sage 1992.

(250) Delvecchio Good M. Qualitative designs for assessing interventions in primary care: A discussion. Assessing interventions. Traditional and Innovative methods. Eds: Tudiver F, Bass M, Dunn E, Norton P, Stewart M. Newbury Park. Sage 1992. Chapter 10.

(251) Griffiths F. Marinker M. Exploring qualitative research in general practive. Introduction. Family Practice 1996; 13(1): S5.

(252) Colquhoun D, Kelleher A. Participatory Action Research. Health Research in Practice: political, ethical and methodological Issues. Chapman and Hill 1993.

(253) Bogdewic S. Participant observation. In Crabtree B, Miller W. (eds). Doing qualitative research in primary care. Newbury Park, CA: Sage 1991: 45 – 69.

(254) Borken J. Conducting Qualitative Research in the Practice setting. In Conducting Research in the Practice setting. Eds: Bass M, Dunn E, Norton P, Stewart M, Tudiver F. Newbury Park. Sage 1993: Chapter 6.

(255) Crabtree B, Miller W. A qualitative approach to primary care research: the long interview. Family Medicine 1991; 23(2): 145 - 151.

(256) Ballie R, Douglas R. The Future Role and Operation of Australian General Practice. Questionnaire Survey. National Centre of Epidemiology and Population Health. 1996.

(257) Royal Australian College of General Practitioners Survey of Members 1996.

(258) EPI INFO Version 6.

(259) Beilby J, Silagy C. Providing costing information to general practitioners: a systematic review. Medical Journal of Australia 1997; 167: 89 - 92.

(260) Cochrane Collaboration. The Cochrane Collaboration handbook. Oxford, United Kindgom. Cochrane Collaboration 1997.

(261) Read J. The READ Clinical Classification System. Information Paper.

(262) Schedule of Pharmaceutical Benefits. November 1995. Commonwealth Department of Health and Family Services. McMillan Printing Group. Canberra 1995.

(263) Pritchard D, Munro M. Budget Holding in General Practice: General Practitioner Ordering of Pharmaceuticals, Pathology and Diagnostic Imaging. August 1995. Report to the Commonwealth Department of Human Services and Health.

(264) Schedule of Medical Benefits Scheme. November 1995. Commonwealth Department of Health and Family Services.

(265) Liang K, Zeger S. Longitudinal data analysis using generalised linear models. Biometrika 1986;73: 13 - 22

(266) White H, Domowitz I. Nonlinear regression with dependent observations. Econometrica 1984; 52 (1); 143 - 161.

(267) Kirkwood B. Essentials of Medical Statistics. Blackwell Scientific Publications. London 1988.

(268) SAS Institute Inc. Cory North Carolina.

(269) Cesnick B, Kidd M, Mcphee N. Report. Evaluation of the Aus - READ Trial. Monash University. Department of Health and Family Services 1994.

(270) MacIsaac P, Crampton M. Report. Royal Australian College of General Practitioners. Computer Assisted Practice Project. 1986 - 1993. Report. Department of Health and Family Services 1994.

(271) Cooper T. Guidelines for Installing Computer Systems into Medical Clinics. Report. 1994.

(272) Pringle M, Dixon P, Carr-Hill R, Ashworth A. Influences on Computer Use in General Practice. Report of a one year study on behalf of the Royal College of General Practitioners. The Royal College of General Practitioners. February 1995. Occasional paper 68: 1 - 65.

(273) Oxman A, Thomson M, Davis D, Haynes B. No magic bulletts: a systematic review of 102 trials of interventions to improve professional practice. Can Med Assoc J. 1995; 153(10): 1423 - 1431.

(274) Health Insurance Commision. Medical Provider Feedback Sheet. Canberra 1998.

(275) Moidu K, Falsone I, Nair S. Computer-Based Patient Record: The Essential Data Set Approach. JAMIA Symposium Supplement 1994; 462 - 466.

(276) Desharnais S, Marshall B, Dulski J. Information Management in the Age of Managed Competition. Journal of Quality Improvement 1994; 20(11): 631 - 638.

(277) Britt H, Miller G. Data Collection and Changing Health Care Systems 2. New Zealand. Medical Journal of Australia 1993; 159: 476 - 479.

(278) Veale B, Douglas R. Money matters in general practice financing option and restructuring. Canberra: National Centre for Epidemiology and Population Health, Discussion paper No 6 1992.

(279) Woodward A, Wilson S. Managed competition in the British NHS. More that the health service sending bills to itself? Medical Journal of Australia 1994; 160: 465 - 467.

(280) Bateman D, Soutter T, Eccles M et al. Setting standards of prescribing performance in primary care: use of a consensus group of general practitioners and application of standards to practices in the North of England. British Journal of General Practice 1996; 46: 20 - 25.

(281) Tierney W, Miller M. McDonald C. The Effect of Test Ordering on informing physicians of the charges for outpatient diagnostic tests. New England Journal Medicine 1990; 322: 1499 - 1504.

(282) Winkers R, Pop P, Bugter-Maersen A et Al. Randomised controlled trial of routine individual feedback to improve rationality and reduce numbers of tests' requests. Lancet 1995; 345: 498 - 502.

(283) De Vos Meiring P, Wells.I. The Effect of Radiology Guidelines for General Practitioners in Plymouth. Clinical Radiology 1990; 42: 327 - 329.

(284) La Puma J. Anticipated change in the Doctor-patient relationship in the Managed Care and Managed Competition of the Health Security Act of 1993. Arch Fam Med 1994; 3: 665 - 671.

(285) A Study into levels of, attitudes towards information technology in general practice. AC Nielsen Research Pty Ltd. Report or the Department of Health and Family Services. General Practice Branch February 1998.

(286) Liaw T. Information Management in Primary Medical Care in South Australia. Family Practice 1994; 11: 44 - 50.

(287) Williams R, Floebe S, Zyzamkis et al. A Practical Tool for Community-Orientated Primary Care Community Diagnosis Using a Personal Computer. Family Medicine 1995; 27: 39 - 43.

(288) Franks P, Nulting P, Clancy C. Health Care Reform, Primary Care and the Need for Research. JAMA 1993; 270: 1449 - 1453.

(289) Schedule of Pharmaceutical Benefits. November 1997. Commonwealth Department of Health and Family Services. McMillan Printing Group. Canberra 1997

(290) Miller L, Blum A. Physician awareness of prescription drug costs: a Missing Element of Drug Advertising and Promotion. Journal of Family Practice 1993; 36: 33 - 36.

(291) Fowles F. Doctor knowledge of the cost of medical care. Medical Education 1985; 19: 113 - 117.

(292) Soumerai S, Avorn T. Economic and Policy Analysis of University-based drug "detailing". Medical Care 1986; 24(4): 313 - 331.

(293) Gehlback S, Wilkinson W, Hammond W et al. Improved drug prescribing in a primary care practice. Medical Care 1984; 22(3): 193 - 201.

(294) Senf J, Jogerst G. Cost containment: the Effect of Educating Family Practice Residents and their patients. Family Practice Research Journal 1987; 7(1): 29 - 41.

(295) Cummings M, Frisoff K, Long M et al. The Effects of Price Information on Physician's Test Ordering Behaviour. Medical Care 1982; 10(3): 293 - 301.

(296) Martin D, Diehr P, Price K, et al. Effect of a gatekeeper plan on health Service use and charges: A Randomised Trial. American Journal of Public Health 1989; 79: 1628 - 1632.

(297) Winkers R, Pop P, Grol R, et al. Effect of feedback on test ordering behaviour of general practitioners. British Medical Journal 1992; 304: 1093 - 6.

(298) Winken R, Ament A, Pop P, et al. Routine Individual feedback on Requests for diagnostic tests: an economic evaluation. Medical Decision Making 1996; 16(4): 309 - 314.

(299) Clarke J, Adams J. The application of clinical guidelines for skull radiology in the Accident and Emergency Department: Theory and Practice. Clinical Radiology 1990; 41: 152 - 155.

(300) Gama R, Nightingale P, Ratcliffe J. Effect of educational feedback on clinicians' requesting of cardiac enzmes. Ann Clin Biochem 1992; 29: 224 - 225.

(301) Starfield B, Powe N, Weiner J et al. Costs vs Quality in Different types of Primary Care settings. JAMA 1994; 272(24): 1903 - 1908

(302) Clement D, Retchin S, Brown R et al. Access and Outcomes of Elderly Patients enrolled in Managed Care. JAMA 1994; 271(19): 1487 - 1492.

(303) Ware J, Bayliss M, Rogers W et al. Differences in 4-Year Health Outcomes for Elderly and Poor, Chronically ill Patients treated in HMO and Fee for service systems. Results from the Medical Outcomes Study. JAMA 1996; 276(13): 1039 - 1046.

(304) Gupta L, Ward J, Hayward R. Clinical practice guidelines in general practice: a national survey of recall, impact and outcomes. Medical Journal of Australia 1997; 166: 69 - 72.

(305) Eddy D. Rationing Resources While Improving Quality. How to get more for less. JAMA 1994; 272(10): 817 - 824.

(306) Health Insurance Commission. Medical Statistical Feedback Sheet 1st July 1994 - 30th June 1995

(307) Dr Di O'Connell. Statistician. University of Newcastle. 1997. Personal Communication.

(308) Simon J. The Anatomy of a Primary Case Network - Part 2. A Joint Venture and a capitation contract - Draft paper. 1996.

(309) Giles C. NSW Health Outcomes and Resource Distribution. Conference Procedings Managing Health Care and Competition Conference March 1997.

(310) Gross P. Meeting the challenges of managed care and competition Scrip magazine November 1994: 18 - 23.

(311) Correll D. What about the Customer? How could managed competition reduce or strengthen choice? The consumer perspective. Conference Proceedings Managing Health Care and Competition Conference March 1997.

(312) Williams. A. Health Economics: the end of clinical freedom. British Medical Journal 1988; 297:1183 - 1186.

(313) Division and Projects Grant Program Reference Manual. Circular November 1996. Department of Human Services and Health 1996.

(314) Wage Bulletin. South Australian Employers Chamber of Commerce and Industry Inc. December 1996.

(315) Yorke Peninsula Division of General Practice. Annual Report 1996.

(316) Healthy participation. Achieving greater public accountability in the Australian health care system. National Health Strategy. Background Paper No 12 1993. Treble Press.

(317) Consumers Health Forum. Pharmaceuticals Project Final Report. August 1995.

(318) Hopton J, Dlugolecka M. Need and demand for primary health care: a comparative survey approach. British Medical Journal 1995; 310: 1369 - 73.

(319) Hopton J, Dlugolecka M. Patient's perceptions of need for primary health care services: useful for priority setting? British Medical Journal 1995; 310: 1237 - 40.

(320) Tod R, Sibthorpe B. What Divisions did next. Selected divisional infrastructure activities 1994-95. National Centre for Epidemiology and Population Health. The Australian National University February 1997.

(321) McCallum J, Simons L, Simons J et al. Patterns and costs of post-acute care: a longitudinal study of people aged 60 and over in Dubbo. Australian and New Zealand Journal of Public Health 1996; 20(1): 19 - 26.

(322) Pugh J, Frazier L, DeLong E et al. Effect of Daily Charge Feedback on Inpatient Charges and Physician Knowledge and Behaviour, Arch Intern Med 1989; 149 : 426 - 429.

(323) Relman A. Controlling costs by managed competition - would it work. New England Journal of Medicine 1993: 328(2) 133 - 135.

(324) Hillman A. Financial Incentives for Physicians in HMO's. Is there a conflict of interest. New England Journal of Medicine 1987; 317 (27): 1743 - 1748.

(325) Manheim L. Feinglass T, Hughes R. et al. Training House Officers to be cost conscious. Effects of an education intervention on charges and lengths of stay. Medical Care 1990; 28(1): 29 - 42.

(326) Fairfeld G, Hunter D, Mechanic D, Rosleff F. Managed Care: Origins, principles and evolution. British Medical Journal 1997; 314: 1823 - 6.

(327) Miller R, Luft H. Estimating Health Expenditure Growth Under Managed Competition. JAMA 1995; 273(8): 656 - 662.

(328) Ellwod P, Lind berg G. Managed Care. A Work in Progress. JAMA 1996; 276(13): 1083 - 1086.

(329) Sales L. New Zealand Health reforms - what we have learnt after four years. Presentation to the Australian College of Health Executives. National Congress. 1997.

(330) Gosden T, Torgeson D, Maynard A. What is to be done about fundholding? British Medical Journal 1997; 315: 170 - 1.

(331) David Milne. General Practitioner United Kingdom. Fundholding practice. Personal communication. 1997.

(332) Rosenthal D. Fundholding: a rural perspective. Medical Journal of Australia 1996; 164(4): 219 - 221.

(333) Commonwealth Department of Health and Family Services. Targeting quality in general practice. A discussion paper. 19 December 1996. (cited June 2 1997).

(334) Toon P. Quality in general practice. Journal of Royal Society of Medicine 1997; 90(5): 241 - 242.

(335) Tomlins R. Barriers to quality in general practice. Medical Journal of Australia 1997; 167: 64.

(336) Nottingham Total Commissioning Project pack. Nottingham Commissioning Group. United Kingdom. June 1997.

(304) Peter Mcmanus. Pharmaceutical Branch Department of Health and Family Services. Personal Communication. 1996.

APPENDICES

APPENDIX 1

ISSUES FOR FUNDHOLDING IN AUSTRALIAN GENERAL PRACTICE

Published in Medical Journal of Australia

Pritchard, D. A. & Beilby, J. J. (1996). Issues for fundholding in Australian general practice. *Medical Journal of Australia, 164*(4), 215-219.

APPENDIX 2

GENERAL PRACTITIONER CONSENT FORMS

(Date):

(Name & Address):

I _____ of
_____
_____
_____

1. Consent to be involved in the Fundholding Project that is to be coordinated by the Research and Health Promotion Unit of the Royal Australian College of General Practitioners. I reserve the right to withdraw from the project at any time, if I desire.

2. I have read the "Royal Australian College of General Practitioners Interim Code of Practice for Computerised Medical Records in General Practice" and agree to abide to these guidelines while being involved in the project.

Signature: _____

Witness: _____

Date: _____

(Date):

(Name & Address):

I _____ of
_____
_____
_____

PROVIDER NO:
_____
_____

PRESCRIBER NO:
_____
_____

1. Direct the Health Insurance Commission to release information as regards my Medicare figures for the financial years of 1990/91, 1991/92, 1992/93 and 1993/94 in the format provided in the attached document. I would also like Pharmaceutical Benefits Scheme data for the year 1993 and 1994 forwarded. I would like this information sent directly to me at the above address. At obtaining these figures, I will release them to Dr Justin Beilby, Research and Health Promotion Unit, Royal Australian College of General Practitioners. I understand these figures will only be used in the research project named "Fundholding Project" and will be returned to me on the completion of the project. The Medicare information held by the Research and Health Promotion Unit will be destroyed at the completion of this project. If these figures are used in a way that I believe compromises me or my practice, I reserve the right to withdraw from the study and withdraw my consent for access to these figures.

2. I understand that these Medicare figures, when aggregated from all participating general practitioners, will be the basis for the development of a working budget I work in. I also understand that these figures may be aggregated across the three practices involved in the project. However, in no way will my specific Medicare figures be identified during this aggregation.

Signature: _____

Witness: _____

Date: _____

APPENDIX 3

GENERAL PRACTITIONER QUESTIONNAIRE

Questionnaire

We would like you to complete the second questionnaire. Some minor changes have been made after your comments from the first interviews. Could you please complete the questionnaire and hand it to _____ when interviewed.

1. Computers and Data Collection

The first questions relate to computerisation. In order to obtain the information required to estimate a budget for your practice, we need to gather consultation events, eg, writing a prescription or ordering a pathology or diagnostic procedure with computers that will be based on your desk. Obviously you will have some concerns and we would like to record and compare these with

Please circle one response for each question:

At the thought of computerisation I feel:	Terrified	A little fearful	Comfortable	Happy	Really Excited

	Strongly agree	*Agree*	*Not sure*	*Disagree*	*Strongly disagree*
The introduction (extension) of a computer system to this practice will (has made) make my job harder.	1	2	3	4	5
The computer system will help (has helped) make this practice run more smoothly.	1	2	3	4	5
The collection of practice prescribing is an exciting prospect for me.	1	2	3	4	5
The collection of pathology data is an exciting prospect for me.	1	2	3	4	5
The collection of diagnostic procedure data is an exciting prospect for me.	1	2	3	4	5
The computers in my room will (have affected) affect the doctor/patient relationship.	1	2	3	4	5
Patients do not like computers in the consulting room.	1	2	3	4	5

2. *Management*

Within a fundholding practice, there would be a great deal of management. Coordinating and supervising a fundholding practice will probably require the development of new management skills.

We would like to ask you some questions about these management issues.

	Strongly agree	*Agree*	*Neither Disagree nor agree*	*Disagree*	*Strongly disagree*
Do you think management should be left to non-general practitioner staff only?	1	2	3	4	5
Would you be willing to be involved in this management?	1	2	3	4	5
Can general practitioners understand the issues involved with fundholding management?	1	2	3	4	5
Should general practitioners be trained in these management skills?	1	2	3	4	5
Should deciding on economic issues be left to administrators?	1	2	3	4	5
The Government should fund these new management structures?	1	2	3	4	5

3. *Patient Concerns*

	Strongly agree	*Agree*	*Neither Disagree nor agree*	*Disagree*	*Strongly disagree*
Do you think that the quality of care with patients under our current system is good?	1	2	3	4	5
Do you think it would suffer under a fundholding model?	1	2	3	4	5
Would patients be willing to enrol into a fundholding practice for a set period (say, 12 months)?	1	2	3	4	5
Do you think that the computer would effect/ effects your doctor/patient relationship?	1	2	3	4	5
Do you think that if the patient was enrolled in a fundholding practice and they knew that you had to think twice about which test to order because of cost, it would affect your relationship with that patient?	1	2	3	4	5
At this time, if a patient asks for an expensive test, that you think is inappropriate, do you refuse to organise this test?	1	2	3	4	5
In a fundholding mode, if a patient asks for an expensive test, that you think is inappropriate, would you refuse to organise this test?	1	2	3	4	5
Should patients have more say in how you run your practice?	1	2	3	4	5

	Strongly agree	*Agree*	*Neither Disagreen or agree*	*Disagree*	*Strongly disagree*
Do you think that other marginalised groups would be discriminated against in a fundholding model?	1	2	3	4	5
Would continuity of care be improved if patients were required to link themselves with a practice within a fundholding model	1	2	3	4	5
Within a fundholding practice should consumers/patients be allowed to set priorities for savings that would be made within such a practice	1	2	3	4	5

4. Would you be willing to approve regular surveys of:

	Yes	*No*	*Unsure*
Consumer satisfaction	☐	☐	☐
Consumer knowledge	☐	☐	☐
Consumer perceptions of Improvements	☐	☐	☐
Consumer physical well being	☐	☐	☐
Consumer mental well being	☐	☐	☐

5. *Organisation of Medical Practice*

This question explores your opinion of the effectiveness of primary medical care delivered in the different models of care, in relation to the following features.

Please us this scale to indicate your response and circle the appropriate number against each feature. While we understand you have no experience of fundholding , your opinion is still important, particularly as you become more involved in the study.

Not able to answer	*Very effective*	*Ineffective*	*Neither ineffective Nor Effective*	*Effective*	*Very effective*
0	1	2	3	4	5

Eg, if you believe that in a) 1-1 treatment service – Private Practice Fee for Service is effective then circle "4" in the box

a)	1-1 Treatment services				
	Private Practice Fee for Service				
	1	2	3	4	5
	Private Practice FundHolding				
	1	2	3	4	5
b)	Health education for patients				
	Private Practice Fee for Service				
	1	2	3	4	5
	Private Practice FundHolding				
	1	2	3	4	5
c)	Continuity of care for individuals				
	Private Practice Fee for Service				
	1	2	3	4	5
	Private Practice FundHolding				
	1	2	3	4	5
d)	Dealing with local public health problems				
	Private Practice Fee for Service				
	1	2	3	4	5
	Private Practice FundHolding				
	1	2	3	4	5
e)	Encouraging multi-disciplinary team work				
	Private Practice Fee for Service				
	1	2	3	4	5
	Private Practice FundHolding				
	1	2	3	4	5
f)	Providing cost effective health care				
	1	2	3	4	5
	Private Practice FundHolding				
	1	2	3	4	5
g)	Allowing doctors to participate in the promotion of the health of the local community				
	Private Practice Fee for Service				
	1	2	3	4	5
	Private Practice FundHolding				
	1	2	3	4	5
h)	Provide a supportive working environment for doctors				
	Private Practice Fee for Service				
	1	2	3	4	5
	Private Practice FundHolding				
	1	2	3	4	5
i)	Encourage participation of the community in the Planning and provision of primary medical services				
	Private Practice Fee for Service				
	1	2	3	4	5
	Private Practice FundHolding				
	1	2	3	4	5

6. *General Issues*

Please indicate your level of agreement with the following statements. *(Please circle one response for each statement)*

	Strongly agree	*Agree*	*Not sure*	*Disagree*	*Strongly disagree*
Our current system ofpayment is too tightly tied to fee for service for each individual consultation.	1	2	3	4	5
There should be the possibility of other mechanisms of payment GPs.	1	2	3	4	5
The GP should be the Coordinator of the primary health care team.	1	2	3	4	5
New mechanisms should be developed for linking patients more closely to their preferred general practice.	1	2	3	4	5
GPs should be able to receive their remuneration in a range and combination of different ways including partial salary, partial capitation and partial fee for service.	1	2	3	4	5
My specialist colleagues do not adequately value the care I provide for our shared patients.	1	2	3	4	5
There is insufficient communication and collaboration between hospitals which provide care for may patients & me.	1	2	3	4	5
Health care is a purely private matter between doctors & patients, and Governments should stay out of it.	1	2	3	4	5

	Strongly agree	*Agree*	*Not sure*	*Disagree*	*Strongly disagree*
Health care is a public matter in which Governments are inevitably involved to ensure that the community gets value for the dollar spent on it.	1	2	3	4	5
Quality of care suffers when patients move freely between different general practice providers.	1	2	3	4	5
Patients should not be constrained by any financial incentives to stay with one practice/doctor.	1	2	3	4	5
We should explore new ways of using financial incentives to encourage a continuing link between patients and their doctors.	1	2	3	4	5
Patients who nominate a single practice as their main source of general practice care should receive higher rebates for their care when they are looked after by that practice than by other practices.	1	2	3	4	5
Patients who receive care from their nominated practice should be able to be bulk billed, but bulk billing should not be available to other doctors.	1	2	3	4	5
Patients who receive care from their nominated GP/ practice should receive higher rebates for referrals, pharmaceutical's and investigations than if these are ordered by another GP.	1	2	3	4	5
If GPs knew exactly which patients were their responsibility, they could engage in more effective prevention and health promotion.	1	2	3	4	5
It would not improve the quality of the care I provide if patients were linked to me through special financial arrangements	1	2	3	4	5

APPENDIX 4

GENERAL PRACTITIONER FIRST INTERVIEW FORMAT

General Practice Interview

As part of this fundholding project we would like to interview all participating GPs. This type of information ie, that gained from these interviews will be invaluable in arriving at practical and logical answers to concerns about fundholding. The interview will last one hour and will be audio-taped. The audio-taping will allow us the option of checking the information obtained during the interview. Your participation is entirely voluntary and you may withdraw your participation at any stage. No identifying information (eg, patient examples) will be used in the final report. If you are happy to, please sign the consent form attached.

We would like to repeat these interviews three times over the course of the project. This will allow us to assess changes in your attitudes and opinions etc.

This study has been reviewed by the Ethics Committee of the Royal Australian College of General Practitioners. If you have concerns about these interviews, please do not hesitate to contact Justin Beilby at the Research and Health Promotion Unit.

(Name & Address)

I, _____

Am happy to be interviewed for the fundholding project. I understand my responses will remain confidential and my participation is entirely voluntary. I also understand that I can withdraw at any stage of the interview.

I agree to allow the interview to be taped.

Signature:

_____

Witness:

_____

Date:

_____

Interview Protocol:

- Explain reason for interview

- Obtain signature on consent form

- Emphasise that all interviews will remain strictly confidential

- Explain that there will be three interviews over the course of the project

- If the GPs require any further information, then ask them to contact Dr Justin Beilby at the Research and Health Promotion Unit – telephone 8362 9954

- HOW LONG DID THE INTERVIEW TAKE ..... minutes?

A. General Background Information

1. Is your practice?

Solo	❒
2 person	❒
3-5 person	❒
5-8 person	❒
Over 8 person group	❒

Other, please explain: .....
.....

2. Are you in general practice?

Full-time ❒

Part-time ❒

3. How old are you? .....years

4. How many years have you spent in general practice since graduating? years

5. Are you?

Male ❒

Female ❒

6. Postcode of main practice location .....

7. a) Do you hold any additional qualifications?

No ❒

Yes ❒

b) What additional qualifications do you hold?

FRACGP ❒

Dip Obst RACOG ❒

Family Planning Certificate ❒

Other, please specify.....

8. What societies do you belong to?

AMA ❒

RACGP ❒

Doctor's Reform ❒

Other, please specify

9. Are/were you an FMP Trainee? .....

Yes ❒

No ❒

10. Are you vocationally registered?

Yes ❒

No ❒

B. FundHolding - General

11. What do you understand by fundholding?

.....
.....
.....
.....
.....
.....

(please probe for as much information as possible)

12. Do you think this model may have a role in Australian General Practice?

Yes ❒ ***(go to a)***

No ❒ ***(go to b)***

Unsure ❒ ***(go to c)***

a) If *yes,* what do you think this role may be (please ✔ the appropriate responses - more than one possible)?

.....
.....
.....
.....
.....
.....

If these issues are mentioned specifically, please ✔

Return the GP to the pivotal role ❒

Improve patient care ❒

Provide more patient services at a local level ❒

Make GP care more cost efficient ❒

Improve continuity of care ❒

Move more resources to general practice ❒

Improve GP control over specialists ❒

Other, please specify.....
.....
.....
.....
.....

(Please probe for as much information as possible)

b) If *no,* why do you think this model does not have a role (please tick the appropriate responses – more than one possible)

.....
.....
.....
.....
.....
.....
.....

If these issues are mentioned specifically, please ✔

Our health care system is fine ❒
I like for-for-service ❒
Patients would not like it ❒
Difficult for GPs to mange their patients, if they are also concerned about management of a budget for their practice ❒
Worried that fundholding would allow Government control over my income ❒
Would bring about more Government interference ❒

c) If *unsure,* why?

.....
.....
.....
.....

B. Computers and Data Collection

14. *(Please probe for as much information as possible)*
In order to obtain the required information we need to gather commutation events and contacts via computers based on your desk. Obviously you will have some concerns and we would like to record these.

Please feel free to comment
(Any suggestions/comments/problems to resolve)

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

13. Now, we would like to ask you about the information we are collecting for the estimation of the practice budgets:

Would you find the Pathology data useful?	❒
Diagnostic procedural information useful?	❒
Pharmaceutical information useful?	❒
Referral data (if collected) useful?	❒

(we are not recording this information in this study)

One of the reasons we are collecting this type of information is to allow information to be returned to participating GPs in order to help them practice efficiently, ie, shift savings from one area (say, pathology) to another (say, community services).

14. Would you willing to change your behaviour to make savings that could be used to fund other patient services? _____

15. Could you change your behaviour to make savings that may be used to fund other patient services? _____

(please probe further if possible)

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

16. If you were involved with a fundholding practice and made savings, what services would you provide?

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

(please rank in order of preference – priority 1-9)

Practice nurse	❒
Community health nurse	❒
Social worker	❒
Upgrade our practice reception area	❒
Podiatrist	❒
Audiologist	❒
Employ a needed specialist for my patients	❒

D. Gatekeeper

17. One of the issues that will confront GPs who would be involved with fundholding is having to continue their gatekeeper and advocate role for their patients, at the same time as deciding which services are affordable within a practice budget.

Would you be prepared to do this?

Yes	❒
No	❒
Unsure	❒

a) If *yes,* why (please expand and clarify):

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

b) If *no,* why (please expand and clarify):

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

c) If *unsure,* why (please expand and clarify)

.....
.....
.....
.....
.....
.....
.....

d) If *no* ***or*** *unsure*, what systems should be put in place to help resolve this dilemma for you?

.....
.....
.....
.....
.....
.....

E. Patient Concerns

19. a) What benefits do you believe patients would require to enrol in a fundholding practice?

(Please probe as much as possible)

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

b) What are the other likely consumer concerns that this model of funding general practice would create?

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

F. Quality of Care

18. Quality of care is important for GPs. Consumers and Governments. The possible effect of fundholding on quality of care is a major concern for all groups. It will be important for all groups involved in fundholding to be able to assess quality of care within a practice who elected to be involved in this type of care. We would like to know what quality of care measures you would like to see within a fundholding practice.

Quality of care satisfies a number of criteria:

1) Relevance to needs (for the whole community)

2) Effectiveness (for individual patients)

3) Equity and fairness

4) Social acceptability

5) Efficiency and economy

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

Suggestions have included:

Structure:

- ➢ Improve physical access
- ➢ Improve waiting room facilities
- ➢ Improved after hours facilities
- ➢ Improved display of information eg, Newsletters

Process:

- ➢ Improve consumer satisfaction
- ➢ Longer consultation times
- ➢ Improved communication
- ➢ Appropriate referrals to specialists
- ➢ More referrals to self help groups

Outcome:

- ➢ Decrease morbidity for conditions such as Asthma and diabetes mellitus
- ➢ Appropriate after hours care for palliative patients
- ➢ Less inappropriate prescriptions of Benzodiazepines and opiates

19. What quality of care measures do you believe patients/consumers like to be put in place within a fundholding model?

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

G. Structural Issue

20. Within a fundholding practice, there would be a great deal of management by general practitioners required. They would be involved in financial management, budgeting, developing savings plans, tendering, contractual arrangements and deciding on where to allocate fund, etc.

We would like to ask your opinion about these management issues

(please probe as much as possible):

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

H. Regulations

23. It is more than likely that regulations, criteria, restrictions, etc will be required for practices to fundhold. The Government as the funding body would of necessity require mechanism establish to audit, evaluate whether savings were being used for service provision that was in accordance with National goals and targets, prevent cost shifting and assess the effect of fundholding on consumers.

We would like your opinion on this issue:

.....
.....
.....
.....
.....
.....
.....
.....
.....

(please probe as much as possible)

What regulations would be appropriate?

.....
.....
.....
.....
.....
.....

(please probe about issues of peer group review, Government and consumer regulation)

APPENDIX 5

SEMI-STRUCTURED INTERVIEW FOR THE GENERAL PRACTITIONERS REGARDING THE VALUE OF PROVIDING INFORMATION OF THE COSTS OF THEIR ORDERED ITEMS

1)a WHAT DO YOU THINK ABOUT THE COSTING DATA PRESENTED TO YOU. AS YOU KNOW THIS INCLUDES

a) THE OVERALL PRACTICE FIGURES .....

b) YOUR PERSONAL FIGURES .....

c) THE DISEASE SPECIFIC FIGURES .....

1)b DO THEY SURPRISE YOU? WHAT DO THEY MEAN? .....
.....
.....

2) IF YOU WERE MANAGING THESE FIGURES AS A BUDGET DO YOU THINK THAT YOU COULD MAKE SAVINGS.....
.....
.....

AND IF SO WHAT WOULD YOU DO WITH THE SAVINGS.....
.....
.....

3) DO YOU THINK THAT THESE COSTING FIGURES IF REGULARLY "FED BACK" TO YOU WOULD CHANGE YOUR CLINICAL BEHAVIOUR - PARTICULARLY IF CHANGE HAD NO EFFECT ON YOUR INCOME?
.....
.....

4) DO YOU THINK THAT THESE COSTING FIGURES IF REGULARLY "FED BACK" TO YOU WOULD CHANGE YOUR CLINICAL BEHAVIOUR - PARTICULARLY IF CHANGE WOULD EFFECT ON YOUR INCOME? .....
.....
.....

5) DO YOU THINK GPs ARE SUFFICIENTLY AWARE OF THE BROADER COSTS AND BENEFITS OF THEIR CLINICAL DECISIONS? (e.g. Is the prescribing of a more expensive antihypertensive medication justified in terms of quality of life).....
.....
.....

6) IF YOU DID ATTEMPT TO MAKE SAVINGS IN A FUNDHOLDING MODEL, WOULD YOU BE CONCERN THAT OTHER COSTS WOULD BE GENERATED ELSEWHERE (e.g. hospital admission for CVA for a poorly treated hypertensive).....
.....
.....

7) WHAT DO CONSIDER WITH YOUR CLINICAL BEHAVIOUR - THE COSTS OR THE BENEFITS TO THE PATIENT?

FOR SHORT TERM OUTCOMES

COSTS 1 2 3 4 5 BENEFITS

FOR LONG TERM OUTCOMES

COSTS 1 2 3 4 5 BENEFITS

OVERALL CONDITION COSTS PER PRACTICE ($)

ACUTE OTITIS MEDIA

PRACTICE 1 (BEULAH PARK)	32.79
PRACTICE 2 (CHANDLERS HILL)	33.33
PRACTICE 3 (PROSPECT)	31.27

MENOPAUSE

PRACTICE 1 (BEULAH PARK)	33.99
PRACTICE 2 (CHANDLERS HILL)	38.82
PRACTICE 3 (PROSPECT)	32.39

HYPERTENSION

PRACTICE 1 (BEULAH PARK)	47.82
PRACTICE 2 (CHANDLERS HILL)	50.67
PRACTICE 3 (PROSPECT)	46.87

LIPIDS

PRACTICE 1 (BEULAH PARK)	66.14
PRACTICE 2 (CHANDLERS HILL)	62.47
PRACTICE 3 (PROSPECT)	56.60

APPENDIX 6

TRIALS OF PROVIDING COSTING INFORMATION TO GENERAL PRACTITIONERS: A SYSTEMATIC REVIEW

Published in the Medical Journal of Australia

Beilby, J. J. & Silagy, C. A. (1997). Trials of providing costing information to general practitioners: a systematic review. *Medical Journal of Australia, 167,* 89-92.

APPENDIX 7

DATA COLLECTION FORM

Patient:	Date:	Location: Pension [ ] Health Card [ ]	Time:	Dr:
History:		Examination:		

RFE/Diagnosis	Scripts	Dose	Rpts	RFE No.
1) 2) 3) 4)				
5)	Pathology			
6)	Imaging			
Other)	Procedures			
	Referrals			

APPENDIX 8

THE STUDY GLOSSARIES

Glossary Of Coding Terms For Common Conditions Encountered In General Practice

CONDITION	READ CODES	CONDITION	READ CODES
RESPIRATORY		***GENERAL***	
URTI	H05z	VACCINATIONS OTHER	65
ASTHMA	H33	VACCINATION INFLUENZA	65E
ACUTE BRONCHITIS	H06	CHECK UP/SCREENING	ZV700
TRACHEITIS	Hz	SMOKING ADVICE	6791
TONSILLITIS	H03	TRAVEL ADVICE	67E
SINUSITIS ACUTE	H01	LICENCE REVIEW	ZV70J
PHARYNGITIS ACUTE	H02	TEST RESULT FOLLOW UP	9N75
RHINITIS INFECTIVE	H00	REPEATED PRESCRIPTION - MUST BE LINKED WITH A DIAGNOSIS	
HAY FEVER	H17	GENERAL REFERRAL - MUST BE LINKED WITH A DIAGNOSIS	
RHINITIS ALLERGIC	H17	VERTIGO NON SPECIFIC	R0043
RESPIRATORY INFECTION	H0	DIZZINESS	R0040
EMPHYSEMA	H32	LETHARGY/WEAKNESS FATIGUE/TIREDNESS	R0073
CHRONIC OBSTRUCTIVE AIRWAYS DISEASE (COAD)	H3	FEVER OF UNKNOWN ORIGIN	R006
VIRAL ILLNESS	A5	CHEST PAIN NON SPECIFIC	R0650
COMMON COLD	H00	OTHER PROBLEMS NOS	R
BRONCHIOLITIS	H061	***NEUROLOGICAL***	
INFLUENZA (FLU)	H27	EPILEPSY	F25
NASAL CONGESTION	H12	DEMENTIA/ALZHEIMERS	E00
SHORT OF BREATH	R0608	HEADACHE NON SPECIFIC	R040
THROAT SYMPTOMS NON SPECIFIC	1CB	MIGRAINE	F26
COUGH	R062	NEUROLOGICAL NOS	Fz
RESPIRATORY NOS	Hz	PARKINSONS DISEASE	F12
CIRCULATORY DISEASE		CEREBROVASCULAR DISEASE (CVA)	G66
HYPERTENSION	G20	TRANSIENT ISCHAEMIC DISEASE (TIA)	G65
CON HEART FAILURE/CCF	G58	***PSYCHOLOGICAL***	
ISCHAEMIC HEART DISEASE	G3	ANXIETY STATE	E200
ANGINA	G33	DEPRESSION ENDOGENOUS	E112
CIRCULATORY NOS	Gz	DEPRESSION REACTIVE	E204
LEFT VENTRICULAR FAILURE	G581	SLEEP PROBLEMS	R005
HEART BLOCK	G56	COUNSELLING	67
TEMPORAL ARTERITIS	G7551	FAMILY PROBLEMS - INCLUDE. NEW BABY PROBLEMS	13W
ISCHAEMIC HEART DISEASE SCREEN	68B2	SOCIAL PROBLEMS	674
PERIPHERAL VASCULAR DISEASE	G2	PSYCHOLOGICAL NOS	Ez
ATRIAL FIBRILLATION	G5730	GRIEF COUNSELLING	675

CONDITION	READ CODES	CONDITION	READ CODES
SKIN		***ENDOCRINE/METABOLIC***	
HERPES ZOSTER	A53	DIABETES MELLITUS NIDDM	C109
CHICKEN POX	A52	DIABETES MELLITUS IDDM	C108
DERMATITIS ATOPIC	M11	LIPID DISORDERS	C32
DERMATITIS CONTACT	M12	OBESITY INCLUDE OVERWEIGHT	C380
SOLAR KERATOSIS	M226	GOUT	C34
LACERATION	S8	THYROID PROBLEMS	C0
MELANOMA OF SKIN	B32	HYPOKALAEMIA	C368
BCC	B33	ENDOCRINE NOS	Cz
SCC	B33		
BRUISE OR CONTUSION	SE		
SKIN ULCER CHRONIC	M27		
ACNE	M2610	***UROLOGICAL***	
FUNGAL SKIN INFECTIONS	AB0	UTI	K190
BOIL	M00	CHRONIC RENAL FAILURE	K05
NAEVUS OF SKIN BENIGN	B76	HAEMATURIA	K197
WARTS	A7810	PROTEINURIA	R110
WARTS PLANTAR	A7811	UROLOGICAL NOS	K1z
RASH NON SPECIFIC	R021	BLADDER PROBLEM OTHER	K16
SWELLING NON SPECIFIC	R0220	***MALE GENITAL***	
SKIN NOS INCLUDE SKIN CHECK	Mz	BENIGN PROSTATIC HYPERTROPHY	K20
WOUND INFECTION	SP255	MALE GENITALNOS	K2z
WOUND DRESSING	81H	***FEMALE GENITAL***	
BURN	SH	PAP SMEAR	7E2A0
CELLULITIS	M03	MENOPAUSE PROBLEM	66U
MUSULOSKELETAL		FEMALE CHECK UP	7E2A0
SHOULDER TENDONITIS	N212	VAGINAL CANDIDA	AB21
CRAMPS NOCTURNAL	N2471	MENORRHAGIA	K59yX
FRACTURE GENERAL	S	PREMENSSTRUAL TENSION	K584
NECK PAIN INCLUDE - CERVICAL DISC PROB	N131	VAGINAL DISCHARGE NOT SPECIFIED	K565
OSTEOARTHRITIS	N05	STRESS INCONTINENCE	K586
SPRAIN AND STRAIN	S5	FEMALE GENITAL NOS	K5z
BACK PAIN DISC CAUSE	N12		
BACK PAIN UNSPECIFIED CAUSE	N145		
ARTHROPATHY NOS	N06		
MYALGIA UNSPECIFIED	N240		
MUSCULOSKELETAL NOS	Nz		

CONDITION	READ CODES	CONDITION	READ CODES
DIGESTIVE		***PREGNANCY/FAMILY PLANNING***	
INTESTINAL INFECTION DISEASE	A0	PREGNANCY TESTING	621
GASTROENTERITIS	A0	PREGNANCY PROBLEM	62
IRRITABLE BOWEL PROBLEM	J521	ANTE NATAL CARE	62N
PEPTIC ULCER	J13	POST NATAL CHECK MOTHER	62R
DIARRHOEA INFECTIOUS	A083	POST NATAL CHECK INFANT	64D
DIARRHOEA NON INFECTIOUS	J4	POST NATAL DEPRESSION	E204
NAUSEA	R0700	ORAL CONTRACEPTION	614
ABDOMINAL PAIN	R090	CONTRACEPTION OTHER	61
VOMITING	R0701	STERILISATION MALE	61G
OESOPHAGEAL REFLUX	J10y4	STERILISATION FEMALE	61H
OESOPHAGITIS	J101	PREGNANCY/FAMILY PLANNING NOS & INFERTILITY	61z
BOWEL CANCER	B7	***BREAST PROBLEMS***	
MELENA	J681	BREAST FEEDING PROBLEMS	Q4837
RECTAL BLEEDING	J573	BREAST ENGORGEMENT	L462
FOOD ALLERGY	14M1	BREAST MASTITIS & ABCESS	L452
CONSTIPATION	19C	BREAST LUMP	K3171
HAEMORRHOIDS	G84	BREAST CRACKED NIPPLES	L461
DIGESTIVE PROBLEMS NOS	Jz	BREAST NOS & SCREENING	K32
EAR		***BLOOD/BLOOD FORMING PROBLEMS***	
OTITIS MEDIA ACUTE	F5100	ANAEMIA	D0
OTITIS EXTERNA	F501	BLOOD NOS	Dz
WAX IN EAR	F504	***MOUTH SALIVARY GLAND PROBLEMS***	J0
EAR NOS	F5z		
EYE			
CONJUNCTIVITIS ALLERGIC	F4C14		
CONJUNCTIVITIS INFECTIVE	F4C0		
EYE DISORDERS NOS	F4z		

OTHER TERMS ADDED

CONDITION	READ CODES	CONDITION	READ CODES
OSTEOPOROSIS	N330	DRUG REACTIONS	R
CROUP	H044	BLOOD - ANTI-COAGULATION	R
GLANDULAR FEVER	A75	CHRONIC FATIGUE SYNDROME	R
INDIGESTION NOS/DYSPEPSIA	J16y4	LIVER NOS	J63
CHOLECYSTITIS/CHOLETHIASIS	J650	CORN	M200
ALLERGIC DISORDERS MONITORING	66G	CANCER OF PROSTATE	B46
VARICOSE VEINS	G83	POLYMYALGIA RHEUMATICA	N241
FEEDING PROBLEMS NEWBORN	Q483	EPISTAXIS	R
ACUTE LYMPHADENITIS	M04	INSECT BITE/BEE STING	SP04
NAIL PROBLEM	P45	FLUID RETENTION	C3661
THROMBOPHLEBITIS	G80	URTICARIA	M28
PNEUMONIA	Hz	CHRONIC SINUSITIS	H33
AORTIC VALVE LESION	G13	BREAST CANCER	B34
MITRAL VALVE LESION	G11	PLANTAR FASCITIS	N2179
RHEUMATOID ARTHRITIS	N040	PROSTATISM	K202
SEBORRHEIC DERMATITIS	M101	PSORIASIS	M16
SEBORRHEIC KERATOSIS	M223	PALPITATIONS	R051
DEEP VEIN THROMBOSIS	G801	CROHNS DISEASE	J401z
PARONYCHIA	M0212	HEPATITIS C	J631

CODES: PATHOLOGY

CODE	DESCRIPTION	MBS ITEM NO.
	RPR + TPHA	69231
AAFP	Alpha Fetoprotein (Non-pregnancy)	66353
ABS	Red Cell Antibody Screen	65025
ACP	Prostatic Acid Phosphatase	66357
ADD	Androstenedione	66377
AFB	Acid Fast Bacilli	69213
AFP	Alpha Fetoprotein (Maternal Serum)	66353
ALB	Albumin	66201
ALP	Alkaline Phosphatase	66201
ALT	Alanine Amino Transferase	66201
AMS	Amylase	66201
ANA	Antinuclear Antibody	71099
ANDPF	Androgen Profile	
ANSC	Antenatal Screen	
APT	APPT	
APTT	Activated Partial Thromboplastin Time	
ASOT	Antistreptolysin Titre	69229
AST	Aspartate Aminotransaminase	66201
BC	Blood Culture	69215
BC x 2	Blood Culture x 2	69215
BC x 3	Blood Culture x 3	69215
BF	Blood Film	65001
BFCY	Cytology (from body fluids, sputum (1 spec), urine, washings or brushings	73045
BFCY x 3	Cytology (from 3 Sputum or Urine Specimens)	73047
BFOL	B12 & Folate	66265
BG	Blood Group	65017
BGAB	Blood Group Antibodies	
BILI	Bilirubin	66201
BILN	Bilirubin (Baby)	66365
BMEA	Bone Marrow Aspirate	65015
BMET	Bone Marrow Trephine	65013
BMIC	B2 Microglobulin	66361
BRU	Brucella/Leptospira Titre	69229
BT	Bleeding Time	65029
C	Creatinine	66201
C125	CA125	66261
C3	Complement Components	71083
C4	Complement Components	71083
CA	Calcium	66201
CALC	Renal Calculus Analysis	66229
CAM	Hclicobacter Serology	69229
CAP	Calcium Profile	66205
CARB	Carbamazepine	66235
CE	Cardiac Enzymes	66205
CEA	Carcinoembryonic Ag	66235
CHLY	Chlamydia Eliza	69221
CHOL	Cholesterol	66331

CODE	DESCRIPTION	MBS ITEM NO.
CHSE	Cholinesterase	66367
CK	Creatinine Kinase	66201
CL	Chloride	66201
CLOB	Clobazam	66235
CLON	Clonazepam	66235
CMBS	Direct Coombs Test	65027
CMV	Cytomegalovirus	69229
COAG	Coagulation Profile	65035
CORT	Cortisol	66391
CPEP	C-Peptide	66391
CRP	C-Reactive Protein	65001
CU	Copper	66277
DATP	Drugs of Abuse Screen	66343
DEXA	Dexamethasone Suppression Test	66295
DIG	Digoxin	66235
DOXE	Doxepin	66235
E	Electrolytes	66207
E2	Oestradiol	66377
E3	Oestradial (Part of NTDD)	66373
EBV	Epstein Barr Virus	69229
EPP1	Serum Electrophoresis	66245
ESR	Erthrocytes Sedimentation Rate	65001
ETOH	Blood Alcohol	66367
F	Faeces Microcopy & Culture	69203
F x 3	Faeces Microscopy & Cult x 3	69203
FATS	Lipid Studies	66331
FBE	Full Blood Examination	65007
FBESR	FBE + ESR	65007
FCS	Faeces Culture Examination	69211
FCS x 3	Faeces Culture x 3	69211
FE	Iron Serum	66263
FERR	Ferritin	66355
FIB	Fibrinogen	65029
FNCP	Cytology (Fine Needle with Pathologist Attendance)	73051
FNCY	Cytology (Fine Needle)	73049
FSH	Follicle Stimulating Hormone	66377
FT4	Thyroxine - Free T4	66291
GGT	Gamma Glutamyl Transferase	66201
GHB	Glycated Haemoglobin	66319
GLU50	Glucose Challenge 50g	66201
GLU75	Glucose Challenge 75g	66201
GLUCF	Glucose (Fasting)	66201
GLUCR	Glucose (Random)	66201
GLUT	Glutamine	66367
GTT	Glucose Tolerance Test	66205
HB	Haemoglobin	65001
HBSA	Hep B Surface Antigen	69243
HBSAB	Hep b Surface Antibody	69245
HBSAN	Hep B Antenatal Screen	69253
HCG	B HCG	73527

CODE	DESCRIPTION	MBS ITEM NO.
HCGD	Quantitative HCG	73529
HCO3	Bicarbonate	66201
HCT	Haematocrit	65001
HCV	Hepatitis C	69265
HDL	HDL Cholesterol	66317
HEPABC	Hep Acute Screen	69247
HEPAG	Hep A IgG Ab	69229
HEPAM	Hep A IgM Ab	69229
HEPBCM	Hep B Core IgM	
HEPC	Hepatitis C	69265
HIST	Histopathology	72801
HIV	HIV	
HMGP	Haemoglobin Electrophoresis	65011
HSV	Herpes Simplex Screen	69223
IgE	IgE	71075
IM	Infectious Mono Screen	69229
INR	Prothrombin Time	65029
IS	Iron Studies	66263
K	Potassium	66201
LDH	Lactate Dehydrogenase	66201
LFT	Liver Function Test	66211
LH	Luteinizing Hormone	66377
LI	Lithium Level	66201
M	Microscopy Only	69201
MCS1	Micro MC & S (Eye, Nose, Ear & Throat)	69205
MCS1 x 2	Micro MC & S (Eye, Nose, Ear & Throat)	69205
MCS1 x 3	Micro MC & S (Eye, Nose, Ear & Throat)	69205
MCS2	Micro MC & S (Sputa, Skin, Gynae, Rectum)	69207
MCS2 x 2	Micro MC & S (Sputa, Skin, Gynae, Rectum)	69207
MCS2 x 3	Micro MC & S (Sputa, Skin, Gynae, Rectum)	69207
MCS3	Micro MC & S (Post Op Wounds, Aspirates, SF or Biopsy Specimens)	69209
MCS3 x 2	Micro MC & S (Post Op Wounds, Aspirates, SF or Biopsy Specimens)	69209
MCS3 x 3	Micro MC & S (Post Op Wounds, Aspirates, SF or Biopsy Specimens)	69209
MG	Magnesium	66201
MP	Malarial Parasites	65005
MRSA	MRSA	69207
MY	Mycology	69207
MY x 2	Mycology x 2	69207
MY x 3	Mycology x 3	69207
NA	Sodium	66201
NTDD	Downs Screen	66321
NTDD	Triple Test	
OB	Occult Blood Analysis	66217
OB x 2	Occult Blood x 2	66217
OB x 3	Occult Blood x 3	66217
OCP	Faeces Microscopy	69203
OCP x 3	Faeces Microscopy x 3	69203

CODE	DESCRIPTION	MBS ITEM NO.
PAP	Cytology (from Cervix)	73053
PAPV	Cytology (from Vagina)	73057
PARVO	Parvovirus Serology	69229
PB	Lead	66279
PER	Pertussis Serology	69229
PERC	Pertussis Culture	
PHBA	Phenobarbitone	66235
PHEY	Phenytoin (Serum Dilantin)	66235
PHOS	Phosphate	66201
PLTC	Platelets	65001
PROG	Progesterone	66377
PROL	Prolactin	66377
PROT	Total Protein	6201
PSA	Prostate Specific Ag	66357
PT	Prothrombin Time	65029
RAST	RAST	71079
RCC	Red Cell Count	
RCF	Red Cell Folate	66267
RETC	Reticulocyte Count	65001
RF	Rheumatoid Factor	71105
ROTA	Rotavirus	69229
RPR + TPHA	RPR + TPHA	69231
RRV	Ross River Virus	69229
RUBAN	Rubella Antenatal screen	69253
RUBG	Rubella IgG	69229
RUBM	Rubella IgM	69229
SEE	Semen Analysis-Infertility	73523
SES	Semen Analysis-Post Vasectomy	73521
SHBG	Sex Hormone Binding Globulin	66377
SMCY	Cytology (from Skin, Mouth, Lip, Nose, Anus, Nipple Discharge)	73043
STD	STD Screen	
T3	FREE T3	66291
TES	Testosterone	
TFT	Thyroid Function Test	66291
THEO	Theophylline	66235
TOX	Toxoplasma Serology	69231
TPHA	TPHA	69229
TPHAAN	TPHA Antenatal Screen	69253
TRAK	Tracking Studies	66381
TRANS	Transferrin	66263
TRIG	Triglycerides	66331
TSH	Thyroid Stimulating Hormone	
U	Urea	66201
UEC	Urea/Electrolytes/Creatinine	66211
UMCS	Urine MC & S	69217
UPROT	Urinary Protein	66201
URAT	Uric Acid	66201
VALP	Valproic Acid (Serum Epilim)	66235
WCC	White Cell Count	65001

CODES: DIAGNOSTIC IMAGING

CODE	DESCRIPTION	MBS ITEM NO.
ABDO1	Abdomen: CT scan	56400
ABDO3A	Abdomen: U/S scan	55036
ABDO3B	Abdomen: U/S inc urinary tract	55036
ABDO3C	Abdomen: U/S scan upper abdomen	55036
ANKLE	Joint: Xray of ankle per history	57521
ARM	Arm: Xray	57509
ARM +	Arm & Elbow: Xray	57515
ARTHROG	Joint: Arthrography of joint per history (Exc facet joints)	60936
AXR	Abdomen: plain Xray	58903
BEMENA	Barium Enema with Air Contrast	58921
BMEAL1	Barium meal of oesophagus, stomach & duodenum	58909
BMEAL2	Barium meal: oesophagus, stomach, duodenum f/through to colon	58912
BRAIN	Brain: CT scan (without contrast medium)	56000
BRAIN2	Brain: CT scan (with contrast medium)	56003
BREAST1	Breast: U/S scan of one breast per history	55034
BREAST2	Breast: U/S scan of both breasts	55034
CALCULUS	Salivary calculus: Xray of gland per history	57918
CERVICAL	Spine: Xray of cervical spine	58100
CHEST	Chest: CT scan	56300
COLLAR	Clavicle: Xray	57709
CXR	Chest: Xray	58503
CYSTOG	Kidney: Retrograde Cystography	58718
DIGITS	Phalanges: Xray of digits of 1 extremity per history	57503
DUPLEX1A	Arteries: Duplex scan carotid & vertebral arteries	55201
DUPLEX1B	Arteries: Duplex scan non-cardiac intra-thoracic arteries	55201
DUPLEX1C	Arteries: Duplex scan intra-abdominal arteries per history	55201
DUPLEX1D	Arteries: Duplex scan of carotid arteries	55201
DUPLEX1E	Arteries: Duplex scan of 1 area per history	55201
DUPLEX1F	Arteries: Duplex scan of femoral arteries & lower aorta	55201
DUPLEX2	Arteries: Duplex scan of two areas as per history	55204
DUPLEX3	Arteries: Dup. scan peripheral vessels with non-duplex studies	55234
DUPLEX4	Arteries: Dup. scan peripheral vessels. with treadmill or bicycle ergometer	55237
ECHO	Heart: Echocardiographic exam with real time colour flow mapping	55112
ELBOW	Joint: Xray of elbow her history	57509
ELBOW +	Forearm Upper & Elbow: Xray of side per history	57515
EYE1	Eye: Xray of eye per history	57924
EYE2	Eye: Foreign Body Xray of eye per history	59100
FACE	Facial bones: Xray	57912
FEMUR	Femur: Xray of side per history	57521
FOETAL	Pelvis: U/S scan for a FEMALE (pregnancy related)	55040
FOOT	Foot: Xray of foot per history	57521
FOREARM	Forearm: Xray of side per history	57509
FOREARM +	Forearm (Lower), Wrist & Hand: Xray of side per history	57515
HAND	Hand: Xray of side per history	57509
HEART	Heart: Cardiac Xray, exam with barium swallow	58518

CODE	DESCRIPTION	MBS ITEM NO.
HIP	Joint: Xray of Hip per history	57712
HOLTER	Heart: 24 Hr continuous ECG (holter monitor)	11709
IVP1	Kidney: IVP	58706
IVP2	Kidney: IVP with delay for the Cysto-Ureteric reflex	58712
JAW	Mandible: Xray	57915
JOINT	Joint: U/S scan of one or more joints per history	55052
KIDNEY1	Kidney: Plain Xray	58700
KIDNEY2	Urinary tract: U/S scan of urinary tract	55038
KNEE	Joint: Xray of knee per history	57521
KNEE +	Knee & Upper Leg: Xray of side per history	57527
LARYNX	Larynx: Xray	57945
LIMBS	Limbs: CT scan of extremity per history	56600
LUMBO-SAC	Spine: Xray of Lumbo-sacral spine	58106
MAMMOG1	Breast: Mammography of one breast per history	59303
MAMMOG2	Breast: Mammography of both breasts	59300
MASTOID	Mastoids: Xray	57906
MCU	Kidney: Retrograde Micturating Cysto-Urethrography	58721
MIDEAR	Middle ear & temporal bone: CT scan of side per history	56015
MSS	Musculoskeletal: U/S scan of region(s) per history	55050
NECK	Neck: CT scan of soft tissues of neck	56100
NECK1	Neck: Soft tissue Xray	57945
NONDUPE	Arteries: NON-DUP exam peripheral vessels before & after exercise per history	11612
NONDUPR	Arteries: NON-DUP scan peripheral vessels at rest per history	11603
NOSE	Nose: Xray	57921
NUCLEAR1	Bone: Nuclear scan of whole body	61419
NUCLEAR2	Bone: Nuclear scan of localised area per history	61447
NUCLEAR3	Joint: Nuclear scan of one joint per history	61447
NUCLEAR4	Nuclear scan: seek local inflammation, infection, tumour	61451
NUCLEAR5	Thyroid: Nuclear scan of thyroid gland	61471
NUCLEAR6	Lung: Ventilation Perfusion Study	61342
OESOPH1	Oesophagus: Xray	58906
OESOPH2	Barium swallow	58906
ORBIT	Eye: U/S scan of orbital contents, side per history	55030
PALATE1	Palate/Pharynx: Xray without fluoroscopic screening	57942
PALATE2	Palate/Pharynx: with fluoroscopic screening	57939
PELVIS1	Pelvis: CT scan	56400
PELVIS2	Pelvic girdle: Xray	57715
PELVISF	Pelvis: U/S scan for FEMALE (non pregnancy related)	55042
PELVISM	Pelvis: U/S scan for a MALE	55044
PHALANGES	Phalanges: all or any of one extremity	57503
PITFOSSA	Pituitary Fossa: CT scan	56009
PYELOG1	Kidney: Antitrade Pyelogram	58715
PHELOG2	Kidney: Retrograde Pyelogram	58715
RIBS1	Sternum: Xray	58521
RIBS2	Ribs (unilateral): Xray of side per history	58521
RIBS3	Ribs (unilateral) & Sternum: Xray of side per history	58524
RIBS4	Ribs (bilateral): Xray	58524
RIBS5	Ribs (bilateral) & Sternum: Xray	58527
SACROCOCC	Spine: Xray of sacro-coccygeal spine	58109

CODE	DESCRIPTION	MBS ITEM NO.
SACROILIAC	Joint: Xray of Sacro-iliac joints	57718
SCAPULA	Scapula: Xray of side per history	57703
SCROTUM	Scrotum: U/S scan	55048
SHOULDER	Joint: Xray of shoulder per history	57703
SINUS	Sinuses: Xray	57903
SINUS1	Sinuses: CT scan	56021
SKULL	Skull: Xray	57900
SMALLBOWEL	Barium: small bowel series	58912
SPINE1	Spine: CT scan of one or more regions per history, < 26 slices	56200
SPINE2	Spine: CT scan of one or more regions per history, > 25 slices	56209
SPINE3	Spine: Xray functional view of one area of spine per history	58118
SPINE4A	Spine: Xray of cervical and lumbo-sacral spine	58112
SPINE4B	Spine: Xray of cervical and thoracic spine	58112
SPINE4C	Spine: Xray of lumbar and sacro-coccygeal spine	58112
SPINE4D	Spine: Xray of thoracic and lumbo-sacral spine	58112
SPINE5	Spine: Xray three or more regions of spine per history	58115
STRESSECG	Heart: ECG during exercise (stress ECG)	11712
TEETH1	Teeth: Xray of single area per history	57930
TEETH2	Teeth: Xray of full mouth	57933
TEETH3	Teeth: Orthopantomography	57936
TEMPORAL	Petrous temporal bones: Xray of side per history	57909
THORACIC	Spine: Xray of thoracic spine	58103
THORAX	Thoracic inlet: Xray	58509
TIBIA/L	Leg (lower): Xray of side per history	57521
TIBIA/L +	Leg (lower), ankle & foot: Xray of side per history	57527
TIBIA/U	Leg (upper): Xray of side per history	57521
TMJ	Joint: Xray of Temporomandibular joint	57927
TOMOGRAPH	Tomography: any region per history	60100
TRACHEA	Trachea: Xray	58509
URETHRA	Kidney: Retrograde Urethrogram	59718
VEINS	Veins: Phlebography of one side per history	59718
VEINS1A	Veins: Duplex scan of one area per history	55201
VEINS1B	Veins: Duplex scan of two areas per history	55204
WRIST	Joint: Xray of wrist per history	57509

PROCEDURES

1) GENERAL SURGICAL:

30000	^	Operative procedure on tissue, organ or region - not covered by anything else.
30003	^	Dressing of localised burns include consultation.
30026	^	Suture of recent wound: non face/ superficial < 7cms.
30029	^	Suture of recent wound: non face/deep < 7cms.
30032	^	Suture of recent wound: face/superficial < 7cms.
30035	^	Suture of recent wound: face/deep <7cms.
30038	^	Suture of recent wound: non face/superficial > 7cms.
30041	^	Suture of recent wound: non face/deep >7cms.
30045	^	Suture of recent wound: face/superficial >7cms.
30048	^	Suture of recent wound: face/deep >7cms.
30052	^	Suture/full thickness wound: ear/eyelid/nose.
30061	^	Superficial FB, include cornea & sclera.
30064	^	Subcutaneous FB requires incision & suture.
30067	^	FB: muscle/tendon/deep tissue.
30071	^	Biopsy: skin or mm.
300117	^	Tumour/cyst/ulcer/scar < 3cms. Excision & suture.
30121	^	Tumour/cyst/ulcer/scar < 3cms. More than 3 lesions. Less than 10 lesions. Excision & suture.
30125	^	Tumour/cyst/ulcer/scar <3cms. 10 - 20 lesions. Excision & suture.
30135	^	Rumour/cyst/ulcer/scar >3cms. Excision and suture.
30139	^	Tumour/cyst/ulcer/scar - not covered above - involving deep tissue, eg. muscle, bone. Excision and suture.

30143	^	Tumour or deep cyst: wide excision - not covered.
30147	^	Malignant tumour: skin requiring wide/deep excision not BCC.
30162	^	Malignant tumour: limited operation not BCC. Not covered by other items.
30186	^	Plant Wart: removal of.
30192	^	Pre-malignant skin lesion. Electro desiccation/No2 > 10 lesions.
30195	^	Neoplastic skin lesions: electro surgical destruction & simple curettage.
30207	^	Skin lesions: multiple injection with H/C.
30216	^	Haematoma: aspiration.
30219	^	Haematoma/furuncle/small abscess, etc. Drained under local anaesthetic.
30628	^	Hydrocele: Drainage.
32072	^	Sigmoidoscopic examination (rigid).
32147	^	Peri anal thrombosis: incision.
35503	^	IUCD insertion.
35512	^	Bartholins' cyst: excision.
35661	^	Cervix: polyp removal.
37622	^	Vasectomy.
41500	^	Ear: FB - not syringed.
41659	^	Nose: FB - other than simple probing.
41677	^	Epistaxis: cauterisation ± packing.
42644	^	Cornea or sclera - embedded FB.
47915	^	Ingrowing toenail: wedge resection.
47918	^	Ingrowing toenail: radical excision of nail bed.
50124	^	Joint/synovial cavity inject or aspiration.

2) DIAGNOSTIC:

11506	^	Spirometry with record.
11700	^	ECG trace & report.
73806	^	Pregnancy test .

3) DISLOCATION:

See specific item No - see MBS book.

4) FRACTURES:

See specific item No - see MBS book.

5) OTHER TASKS:

Application of plaster]
]
Removal of plaster]
]
Removal of sutures]
]
Wound dressings] No specific item number for these.
]
Baby weigh]
]
Patient review]
]
Miscellaneous]

APPENDIX 9

EXPLANATION OF THE ADJUSTMENT FOR PHARMACEUTICAL COSTS - A WORKED EXAMPLE

The pharmaceutical element in the practice costing model is complicated by the effect of:

- pensioner status
- safety net
- having only one prescriber number when some of the GPs may be working at different general practices outside the study sites
- the lack of control on patient filling repeat scripts

In order to cope with these concerns an adjustment was made to the pharmaceutical costs in the following manner. Firstly the pensioner status for each GP has been calculated from 1993, 1994 and the first nine months of 1995 Pharmaceutical Benefits Scheme data. Obviously where only 1995 data was available, then this was used. It was equal to the total gross price of scripts divided by the pensioner gross price costs. Secondly a safety net adjustment for each of the non-pensioner pensioner scripts has been calculated using national figures for safety net for both concessional and general scripts. These figures are detailed in the box on the next page. The safety net factor was graded from 0% (first quarter - calendar year), 0% (second quarter), 50% third quarter and 50% fourth quarter.

Example:

For GP 4 the pensioner adjustment factor was 16.1% ie. over 1993, 1994 and the nine months of 1995 16.1% of his scripts were given to pensioners. Therefore pharmaceutical costs of 16.1% will be for pensioners - 17% being within the safety net (ie. 17% of these pensioner scripts will cost the patient nothing and all costs will be borne by the Government _ see box next page). Non pensioner status was assumed with the other 83.9% of the scripts and costs calculated accordingly. Of this 83.9%, 26% were assumed to be within the safety net and cost to the patient therefore be only $2.60.

In order to arrive at a cost per GP for each quarter an adjustment factor was used. The front-of-house accounting software in all three practices accurately collated the number of consultations that each GP completed for a three month period. This was confirmed by comparison with Health Insurance Information and accuracy was over 98% with all participating GPs. These front-of-house consultation numbers were used as the gold standard and data gathered by each GP per quarter (either by paper or computer) was adjusted to equal the front-of-house data.

Example:

In the third quarter in 1995 calender year, GP4 collected data on 361 consultations. Overall he completed 1176 consultations. Therefore his pharmaceutical data has been scaled up by a factor of 3.25 (i.e. 1176/361).

ADJUSTMENT OF PHARMACEUTICAL COSTS DUE TO THE SAFETY NET.

In adjusting for the effect of the safety net a number of assumptions were required. It is not possible to know exactly the contribution for each GP of the effect of the safety net for general and pensioner scripts. Therefore the author of this thesis had to make adjustments based on national figures. In 1994/95 the following scripts written:

Concessional scripts	81.9 million
Concessional safety net	17.2 million
General scripts (i.e. non payment)	13.6 million
General safety net	4.7 million

Therefore in concessional (pensioner) scripts 17.2 million out of 81.9 + 17.2 million (98.9 million) were purchased under safety net. The pensioner pharmaceutical cost should therefore be adjusted by the percentage. In this case this was 17%. With the general scripts the same logic applies with the adjustment being 4.7 million divided into 13.6 + 4.7 million(i.e. 18.3 million) which equals 26%.

This ignores the contribution of co-payment which would not be included in the HIC cost and hence data base. However these costs would count towards the safety net threshold. It is possible that the study underestimated the Government contribution. The number of scripts filled under the co-payment scheme in 1994/5 was 33.7 million.

APPENDIX 10

CALCULATION OF THE WHOLE PATIENT EQUIVALENT (WPE) AND STANDARDISED WHOLE PATIENT EQUIVALENT (SWPE)

Taken from the Better Practice Program information brochure (14b)

The whole patient equivalent (WPE) is calculated on the basis of the schedule of fee value of unreferred consultations received by the patient, within the twelve month reference period used to calculate a Better Practice Payment (BPP) payment for each practice. The value of these consultations is then divided by the total schedule fee value of all unreferred consultations received by the patient within this period. Using the schedule fee value in the calculation, rather than just the number of consultations, allows greater weight to be given to longer consultations, out of surgery visits and the like.

Secondly this fraction is weighted by multiplying it by a weighting factor that varies according to the patient's age and sex. This adjustment recognises that, on average people require different amounts of general practice care at different stages in their life and this amount of care also differs between males and females. The following table summarises the weighting whole patient equivalents for age and sex. These values are based on consultations ONLY received by age and sex group, using Medicare and DVA data.

TABLE

Weighting factors for age and sex of patients

SEX AGE (YEARS)

	<1	1-4	5-14	15-24	25-44	45-64	65-74	75+
Male	0.867	1.109	0.646	0.583	0.703	0.932	1.483	2.086
Female	0.806	1.035	0.625	0.913	0.909	1.162	1.596	2.342

Thirdly these weighted fractions of patient care are then added together, giving the SWPE value of the practice.

APPENDIX 11
SUMMARY OF INTERVIEW RESPONSES WITH ALL PARTICIPATING GENERAL PRACTITIONERS

FIRST INTERVIEW

The responses are grouped under the questions and the lower case letters refer to specific GPs.

Question 1. What do you understand about fundholding ?

(a) Rationalise services for the more widely based less expensive services:

(b) Fundholding begins with the concept that health care must be rationed; a system where a doctor and patient can make the decisions rather than the government; at the moment the Government restricts what we can do or establishes expert committees to establish guidelines. If we divert from these guidelines, then the patient will have pay for it themselves

(c) Allocation of a budget to a practice - all or part therof e.g. diagnostic imaging or in the wider context hospital and specialist: even deals with government as far as you can take it;

(d) Government would suggest a certain amount of funds to be held to pay for ordering of path and radiology requests and if you request added up to more than that sum you may be liable to pay the excess yourself

(e) You will have to have less individuality in way of practice

(f) Hold a budget and if you prescribe expensive medications then you will reduce budget for others; patients linked to budget

(g) Various shades of fundholding - could have fundholding that covers every bit of money; more cost control more cost efficient and potential for improvement in quality of care

(h) A method for patients to stay with a practice - budget for 12 months; GPs more power to negotiate hospital and pathology

(i) Individual or group has control of health funds for a population of patients. Can be government, regional health board, HMO or GP responsible for management of those health funds. Range from partial to full allied health or hospital and etc

(j) Budget can be at several levels - Medicare big fundholding; Can be local incentives for providing quality of care by reaching certain standards in certain areas; extension to hospital; can be what you want it to be.

(k) Very limited - liken it to British system - patient more closely linked with GP and there are financial gains with that

(l) Budget buy services from other services providers at the lowest price they can get it and at the end of year some of their budget left and provide some incentive to keep medical costs down

Question 2 Do you think this model has a place in Australian general practice ?

Yes

(b) Yes it may improve services for a local community; the community will draw guidelines that are appropriate for the guideline; what extent should savings be a reward for health service providers or use to improve services? hard to test whether health outcomes will improve - need 10 -20 years; additional staff such as community nurse would be a bonus and could improve health outcomes

(c) Yes - not complete role for all practice items but for the most expensive items such as pharmaceutical's, pathology , diagnostic imaging - even for specialist referrals ; Fundholding would make me focus more critically on what I'm generating; on the other side of the coin there would be pressure on the patient to counteract this

(f) Yes for containing costs and make the GP more efficient; improve coordination of care - fewer number of people involved in decisions for patients; worth exploring alternatives for fee-for-service

(i) Yes may have a role to provide more equitable distribution of resources; more locally based. Not convinced that GPs are the right people to hold funds e.g. HMO, Health Plus or independent 3rd party - totally separate GPs if providers then if expected to purchase services then run the risk of bias .

(k) Yes - improve patient care and improve continuity of care?

No

(a) Not sure it has been shown to be any benefit - e.g. UK. Why UK get rid off in five years time. Not sure of what size is appropriate; what benefits available from this model; In theory some benefits would flow; distance from the budget is important; accountability of fee for service; concern re effect on doctor/patient relationship.

(d) No it is too complicated to get accurate ongoing information like this
(h) No when people working for themselves then encourages good quality care harder work more income; Believe fundholding will encourage Drs to less work and provide less quality because there is no incentives e.g. write script without seeing patient - no extra re-imbursement if the patient is seen. You will need to convince me that it is cheaper. Will the infrastructure cost more - need to justify expenses in terms of benefits and money saved
(l) No what I understand from UK it has allowed people to play service providers off against each other; not much competition in Adelaide due to small size and small number of service providers; Depend what sought of incentive at the end of the day need to offer strong enough financial incentive to fundhold (i.e. Government) also what about employee doctors - if I make savings then does the cash go to the practice the cash

Unsure

(j) Can not turn a blind eye to it; worry about quality of care Dr cream off profits and improve their income; feel cheated if interfere with quality of care; Linkage of patients is beneficial, but if linked to practice where is not quality of care, it may difficult for them to move.
(e) Possibly but Australian general practice is so different. But may hold some doctors more accountable for the way they practice medicine
(g) Unsure - like to think it has a role in conjunction with some fee-for-service; only incentive to be cost efficient is when the buck stops with you

Question 3 What are your concerns re the computers ?

(a) None
(b) Security - upgrade my rooms; time spent learning; Home visiting; data confidentiality; time burden with explaining to patients.
(c) Major concern patient confidentiality other concerns ability to interpret data that is generated; whose is going to get data; data input errors; issues re transfer along phone lines - encryption of data ; Is everyone up to the required standard of the use of the computer - user variability; what happens when you loose data; what about patient rapport will this hardware interfere with patient rapport;
(d) Concerns re the initial learning to use computer. I think I can manage that with sufficient tuition.
(e) Less space; may interfere with the doctor patient relationship with some people; patients may perceive it as an infringement in their lives and be unwilling to communicate; feel big brother watching.
(f) Some concerns how this affects the doctor patient relationship; concerns re inefficiency on computer anxious re running behind; confidentiality issues but not major; feeling accountable re prescribing etc but open to more criticism; six months off with baby - issues re management
(g) Time problems Will I be too slow; no other concerns;
(h) No key board skills; time consuming? Under-booked to cope; people come with lots of problems and will have to work out a diagnosis (female doctors see lots of different things and more complicated to males) - more pressure to write intelligent things; initially thought patients would be upset - but positive
(i) Concern re time but no real in principle objection to using computers - confidentiality worry re coding force into making diagnosis can get away with on paper system
(j) Amount of time; running late; patients seem quite excited
(k) Worry effect of computer would have on desk on patient communication especially if busy day and do not have enough time to key in data and talk to the patient should be able to get into patient file
(l) Bit slow - too menu driven

Question 4 There will be great deal of data collected. Do you have any concerns/interest in this data collection?

(a) Useful for other groups to understand what general practice does; useful for us to review what we do
(b) Pathology useful (IMVS); solo practice can not do everything e.g. skin removals
(c) Data useful already being collected - help answer unanswered questions for each practice

(e) Young enough to still be learning and therefore useful; Referral data possibly discriminatory to Drs - some have interests in particular areas and willing to involve others with earlier referrals. He has concerns re specialising GP when to difficult to keep in touch.
(f) Unsure whether I could be able and willing to change; If I was inappropriate I would; but who is going to tell me what is inappropriate. I am a GP with female patients who comes for a second opinion and as a consequence I order a lot of pathology - my figures may indicate inappropriate ordering but there may be good reasons
(f) Could change behaviour e.g generic but my prescribing may be very different than husbands (Male)
(g) All data useful
(h) Order test because I want to, not because some one wants me too - costs do not matter;
(i) Some interest in the data but a younger practice so I believe that I know what is happening
(j) Data useful but no real affect because now experience but would influence a younger GP
(k) Data useful except referral data which I already know.
(l) All useful

Question 5 Would and could you change your behaviour if you needed too, to make savings ?

(a) Willing to review what we do; make us realise what we do: I suspect I can make changes, but need to see; I would not like being told what to do by bureaucrats - but I happy for my peers to decide what is good or bad practice.
(a) Where would these savings go - I am prepared to make changes based on improving patient care but where I would use these savings would depend where I could make savings, If I can't access services then I would organise these.
(b) Yes I would (and could) be prepared to make changes to make savings eg do skin lesions instead of referring away but would need time to improve my skills not sure of efficacy of what is being done if GP does this missing of other skin lesions by GP but found by the dermatologist (probably) better health outcome).
(b) In order to make savings the key person would be community health nurse, practice nurse and social worker. But some services fairly well provided
(b) Depends on the other funding provided by the GPs -- if need a holiday then perhaps this should be used with the savings. Rent a empty shop on Prospect Road for other health workers.
(c) Big question is would you make changes to make savings - need to look globally not individually - could divert funds globally to other areas ; yes could change behaviour if we could get away from high tech stuff, and concentrate on social determinants or 16 year kids who are smoking
(c) Other difficult social/ domestic problems that doctor does not have time to contend with social worker and community health nurse main priorities; Specialist Psychiatrist and mental Health under-resourced. Also look at the issues of social determinants of health e.g. unemployment
(d) Would and could if it did not prejudice the investigation and outcome of the patient. Tend to do a range of investigations early rather than do test after test if first is negative
(e) Would and could change behaviour if not detrimental to patient: more cost effective with maintaining quality of care - still young enough to change behaviour one of the lucky ones.
(e) Savings to practice nurse and diabetic service and asthma service.
(f) Savings to practice nurse (improve efficiency in practice) and community health nurse and social worker (see so many patients that need counselling) and needed specialist (e.g. obstetrician who coordinate care for antenatal patients rather refer and never see again) and psychologist
(g) Would and could change behaviour as long as is could be explained to patient that they were having cheaper treatment hopefully just as effective; would mind if savings increased Drs remuneration
(g) Practice nurse and community health nurse and new services eg. lactation consultant; fund 24 hour care - home visits or surgery consultations or advice over the phone.
(h) Would change behaviour if it did not make any difference to what I am doing and did interfere with my other thoughts (e.g. generic prescribing); could if I found out that I was doing something that medically was not necessary - Interesting that they were concentrating on GPs not physicians and hospitals.

(h) Savings to lactation consultant /midwife practice se and physios for HCC and dietitian for HCC (different for young area when compared with older area latter need Community health nurse, social worker, podiatry)

(I) Concerned about the lack of reality - if real world I had to make savings I would modify my practice I would have see huge differences. I would be happy if we looked at the whole practice and attempted to make savings e.g. developed formulary or protocols for management to make savings. I am unlikely to make savings if just myself examining data.

(i) Use savings for unsure as not clear on the type of practice My small number of patients - many part timers in this practice.

(j) Would change if it was shown that there was inappropriate ordering - hard to do without case note review and accepted standards.

(j) Could not change behaviour - unless it was shown that what we did routinely was inappropriate - hospital vs primary care e.g. send you down to FMC antenatal clinic and save on antenatal costs; protective over patients - would want that to change under a fundholding model; Antenatal area is good area for fundholding issue in a younger urban practice..

(j) Lactation consultant early child health nurse (patients like that the consultant is attached to us - identify PND earlier etc), education room for patients and office for doctors; psychologist

(k) Would and could change behaviour as relatively young - open to suggestions if in patient benefit with the proviso that savings go to other patient services - not cost cutting for the sake of cost cutting savings go to provide new services (e.g. colposcopy clinic), practice nurse and community nurse and podiatrist

(l) I would like to think my practice is relatively low cost - if could save money with out compromising patient care - no hesitation in doing it (l) savings to me first (I think if I'm the one sweating should get some return) and then practice nurse.

Question 6. Would you be willing to continue your role of advocate/patient manager at the same time as managing a budget?

(a) Arms length is hardest thing about budget holding - my skills are about making decisions about their health' at the moment; If conflicting roles, I would hope to err on the side of looking after my patients; If the system forces me to make second rate choices for my patients then the system is undermining good patient care - perverse incentives to under-treat patients then the system is corrupt.

(b) Has to maintain the advocacy role even knowing that rationing is in place; patient would need right of appeal; difficult decisions that can not be discussed with committee.

(c) Happy to both be an advocate and manage a budget - uninformed way patients asking for expensive tests that are not appropriate e.g. PSA test no evidence available that it helps - at the moment you are backed into a corner.

(d) Would be willing to manage both gatekeeper and financial management.

(e) Unsure about advocate and management of budget but if depends on the practice, if have people who do require a lot of expensive services e.g elderly vs paediatrics - will be difficult. Tension between Dr's wage and patient welfare - Tension will be more personalised. Patient/practice budget vs Dr's salary need to be kept separate. If Dr happy with pay will be positive to patients and patient case.

(f) Yes - questionnaire made me think how about difficult it could be; patients might think making choices for there reasons at heart - always hang to make choices based on money - put extra pressure on relationship; Dr not trained in the money area well; would need to think how to explain my decisions carefully to patients;

(g) Yes I think I already do it i.e. gatekeeping; As long as patient understands reasons why. As long as there are choices for me to make. Access is the main reason I refer a lot to Noarlunga rather than FMC - in being an advocate more than cost in terms of xray (?) need consistency with.

(h) Yes both gatekeeper role and manager of budget; lot more cost effective to see GP for referral: will find the budgeting role very difficult - if someone needs operation and not enough money then will be very angry how will it work? take money from somewhere else.

(i) If I had to I would but basically no - becomes difficult i.e. where fundholding becomes difficult for GP Can not be a patient advocate as well as control funds. Can be a gatekeeper and control funds though.

(j) Yes balance both gate keeper and budget manager; should be an option that if patient prepared to pay should be able; basic care - standard levy every Australian should be entitled

to a good standard of health care; As gatekeeper should be aware of cost; needs to be partnership between Dr and Economist: difficult if patient wants something and cannot get it; consumer should be able to purchase a service if she wants it; depends on the restrictions and how tight the budget is going to be wants access to services that the patient requires.

(k) Yes it is an inherent role of the GP- it is what they should be doing.- do not see any tension on budget balance and gatekeeper role.

(l) Yes I do it know - two sorts of GPs - those who are referral centres and those who actively take care of their patients and I would like to think I was in the latter group.

Question 7. What incentives would be required to link consumers with a fundholding practice?

(a) I hope better medicine; The incentive should be a better system for patients. - provides access and doctors who have an interest in them.

(b) Satisfaction with care should be more important than financial matters; financial incentives don't necessarily achieve better care - the most important is the doctor - patient relationship.

(c) Need to sell the idea that there will other little perks (home paramedical people at home) - convince them that they will have increased quality of care; because of better continuity of care, recall, better records, better managed might do deals with diff. radiology and pathology firms and hospitals; go for the high ground:

(d) Only encouragement by Dr concerned and explanation about the what is involved - presumably lesson the cost of Medicine and reduce the burden on taxpayers. don't think any sort of reward particularly monetary should be offered- might negate what patient believes about the practice.

(e) This is the whole issue; patients have a right to choose; wouldn't be ethical to offer entitlements - same sort of guise as 24 hour clinics.

(f) Knowing extra money will be spent on them - extra services and education; offer better care and possibly financial incentives but I have reservations with this.

(g) Financial - higher rebate if they go to doctor who is enrolled with better access to after hours; increase in services that are potentially there; explanation of the benefits of having all your care at one surgery with mechanism for a second opinion.

(h) Have to see it as cheaper; better service in some way; younger people think it is their right to move between practices depending on whether they have the car or don't; some patients want continuity and they want home visits and after hours – can't see that ever happening here never had that here.

(i) Perceive that quality of care is as good or better as elsewhere - better pathways to hospital, better support services

(j) After hours and in hours access; offering services that they wanted – pseudoCAFHS; you and your baby link yourselves to our practice, then we will provide these services; don't think it will be us determining that service, it will be patients in the community; provide institutional care in the community; other paramedical services.

(k) Cheaper - appeal to their pocket they will do most things; some sort of reassurance that there will continuity of care; people will pay for a service if good enough.

(l) Financial and perception that not getting cheap medicine.

Question 8. What quality of care measures would and should be in place in a fundholding model?

(a) Medical peer review the key for him; has to be multiple measures; patient satisfaction - but paradoxes (e.g. benzo scripts); measurers need to understand the system; context is the problem; the use of the measure is crucial; doctors achieved a certain standard consumers fair and equitable access; consumers can be allowed to have input.

(b) Structure - Home visits; Process - unmet needs; Outcome - Preventable activities patient outcome - simple solutions to complex problems; Structure - friendly receptionist.

(c) GP structure in this practice; open Sundays. after hours; Process - routine patient satisfaction questionnaires , more audits with computer e.g. hypertension ,diabetes, referral letters, pap smears , regular questionnaires; Outcomes - look for adverse outcomes e.g. drug reactions, drug interactions wound infection inappropriate drugs ;

(c) Patient: Structure - waiting times; Process - patient satisfaction - patients have no idea sometimes if a doctor is good or bad.

(d) Structure - have to have opportunity to order the diagnostic test most likely to lead to early diagnosis. Shouldn't be an attempt to deny a patient an expensive investigation in case it

proves to be negative; measure by clinical judgement on signs and symptoms - get through experience

(d) Patient structure - Dr to spend as much time as possible; and to have as many investigations as possible to make accurate diagnosis.

(e) GPs process - consultation time is always an issue; after hours an issue - locum service should be able to be used Outcome - good screening %, immunisation % ; happy clientele given the financial system we are placed in - government very good at passing on the buck - shortfalls of government pass on the health care system.

(e) Patients - process skilled GPs and Drs who are willing to listen - (subjectively - patient surveys ask them if they are happy objectively -do patients keep coming back to see you).

(f) GPs - process - being able to spend time with patients and relatives (e.g. remuneration for talking to relatives over the phone) Outcome - patient satisfaction and general statistics.

(f) Patients - Structure - accessibility for contact and advice Process - better after hours service communication, confidentiality getting test results Outcome satisfaction.

(g) Dr Process better coordination - one practice giving all the care; fewer repeated tests; patient satisfaction; more home visits; Outcome look at common conditions - diabetes, asthma; Pap smear, immunisations screening activities; Hospital admissions and number of referrals.

(g) Patient Structure less waiting time Would the really care as long as they received the same care.

(h) Patient structure -physical sorts of things (but many practices can not do much about were they are : how do measure quality of care - people get better anyway ; things like asthma are not necessarily going to improve in fundholding anyway as the asthma sufferers do not come back anyway when well; Diabetic patients taken over by the hospital Outcomes - breasts feeding rates; immunisation rates and Pap smears.

(h) Patients - they have never thought about it; listen to and believed, enough time Structure improve surgery

(i) Dr - physical facilities, Process - consumer satisfaction Outcomes - that matter to the consumers e.g. hassle free services for consumers.

(i) Hard medical outcomes important but may not show any real differences. Same medical outcomes at lower cost.

(j) Dr structure - longer consultation times (don't want compromise consultation time) process - clinical indicators for chronic diseases; outcome - well baby checks, well women checks; well women checks; immunisation rates; I get frightened when I read things in lay press from the UK that care has been compromised - doctor taking short cuts.

(j) Patient - structure - after hours access; Process - health checks, immunisation; access to health promotion and education; holistic approach; practice institutes illness prevention and detection; only appropriate to do things that have been shown to be effective; Outcomes smears, immunisation, health checks.

(k) Dr process lengthen consultation Outcome - can't see how fundholding will change prescribing habits unless some sort of hidden clause. Hope it wouldn't change mine.

(k) Patient - personalised recall system - significant strength.

(l) Dr Outcome bottom line morbidity process don't see how consultations will be longer or more education better in fundholding; Structure better waiting rooms.

(l) Patient know that are not dying or getting sicker faster than patients going to non-fundholding

Question 9. What management and regulation systems would need to put in place?
Management Issues

(a) GPs need to have input; if GPs get involved with administration, and loose touch with their patients, then they let down there patients; Managers have to be working in general practice; can not be full time bureaucrats. Loose touch with general practice if spend full time in administration. 5 man/person practice too small -- better with 30 or bigger.

(b) If other medicos make decisions about my income - then tension will result; Would have to be a time commitment on my part to budget time for management; If it is a trained Health Administrator then it could affect income as well as outcome for patients; difficult to speed up as I am basically a slow worker, slow consults.

(c) Non medical practice manager would have a much greater role tertiary qualifications (more expensive); doctors some additional training; difficult role with conflict with medical need versus financial need - more meetings and more discussions; I ordered a CT scan of the head

this week - you did not, you are already over your quota; Some really hard decisions would need to made; some of my older colleagues would say we getting away from medicine.

(d) Would have to have a very good practice manager and office staff. GPs need to supply very accurate information to manager and staff and then let it be handled by them.

(e) Need someone skilled and trained with management and some one with medical background - relate the management to a satisfactory level of health care; Some one who knows the public system and knows how it works.

(f) Big management issue is coordinating the approach across all different types of practices; explain to patient; GP should be involved in the management .

(g) I thought before it could be with a GP now need health economist; Principals should have overall responsibility; hate to see get top heavy .

(h) Need more time for practice partners to liaise with manager; precarious how people get on - not difficult to tip over the balance; 2 partners and employees who will decide what happens with the budget? How Drs paid for their time spent in management;

(i) Issue for part time members of practice if told to do something e.g. protocols then I would follow but as long as it did not affect my clinical freedom; Management issues - cost of services seeking out, tenders, track budget, provide information to inform decision making to respond to issues - Drs should be involved, but to be in full time clinical practice you need to fund manager.

(j) Concern re big administration costs. Is that going to be cost effective?; GPs have to have a majority of say in the management with advice from economist and accountant - millions of dollars need staff - three quarters of a million dollars needed; wouldn't want no medical people involved Drs will decide what is medically appropriate.

(k) Definitely want a medical person with managerial interest or a manager with a medical interest. need specialist knowledge in this area and doubt any GPs would be able to do this ; would go for manager with a medical bent rather than other way around.

(l) Drs should do the direct patient care issues re buying services; accountants should add numbers up.

Regulation Issues

(a) Need reasoned input into regulations; Doctors have to be accountable for where they spend the money; return trust with responders; honest control and honest checks;

(b) Must be done in consultation with the profession; Good clinical practice guidelines Dr must be able to advocate for difficult situations; Also need information on the day to day management and financial issues.

(c) Need to report in business like manner; would need to demonstrate that significant savings were passed onto the patient; Area of need being targeted with savings; demonstrate quality of care is maintained crude tools -x number of PAP smears, evaluate outcomes as one per month proper financial reporting .

(c) Not the Government but ourselves with some consumer involvement; if we don't regulate ourselves we are in trouble.

(d) Depends on ordering regulations; should be medical committees with Drs from different areas with big representation from general practice; consumer input - never thought of that; observation of path and diagnostic image by committee would be difficult due to the variations with practices e.g. young verses old; criteria tailored to type of practice.

(e) Input at all levels including the clientele - government level should be at least; has to be done at grass levels; regulations should be facilitatory; careful thinking about; need input from those with experience at grass roots; watch those psychosocial issues - can not be priced

(f) Implies a lot of bureaucratic intervention - reviews of patient records reviews of outcomes; Government should be involved with a lot of Dr involvement and consumers; lack of control government telling us how to practice;

(f) Issue re cost shifting - auditing private hosp and public hospital interaction.

(g) Self assessment, guidelines, accreditation access to data to cope for blips; patient surveys,
Cost shifting would disappear if Commonwealth funded everything .
Monitoring should be at arms length (not person down road) - Government funded monitoring but out to tender e.g. Consumer Health Forum.

(h) Has to be a GP involved and a consumer advocate person; they obviously not going to let spend the savings on going to a conference in America; must come a time when everything is

done and not much more you can do; We will be more in control than we are now; there will need to be some independent way of looking at Pap smear rates, immunisation rates etc

(i) Accept have to be accountable; monitoring independent group consist of some peers; Rules and criteria should be explicit and up front (What sought of accountability the government wants and what will audited and where savings will go Gov must define this) - then subject to audit at the end; No problem with consumer input in consultation with provider at a policy level; Salary agreed at the beginning - GP should be able to determine what he/she wants to do.

(j) Need to establish parameters of care - re National goals and targets - e.g. immunisation, smear rates; somehow we are going to have to work out what is adequate care of chronic disease and preventive care; consumers can have input but profession should have final say. Consumers have slanted view; have to have some control on what consumers want.

(k) Fairly apprehensive about control of care being taken away from GP and being influenced by the budget and your profile at the end of 12 months; can see a role for Government and consumers, but I am not sure whether I particularly like it.

(l) Drs should be involved in regulations at arms length from Government (like the committee that approves drugs to go on PBS); pass on regulations need to see the model in action before commenting

Other issues

(i) Paper chase how realistic it will be. Difficult as an employee; don't feel a sense of ownership.

(j) Make sure it does not become too difficult for Drs or compromise quality of care; good for GPs to be involved in economics of providing health care.

(e) Wary about what the Government will do with the results - will they listen

APPENDIX 12

SUMMARY OF DETAILED RESPONSES FROM PARTICIPATING GENERAL PRACTITIONERS REGARDING THE VALUE AND ROLE OF PROVIDING COSTING INFORMATION WITHIN A FUNDHOLDING MODEL

This information is a mixture of direct GP comments (in parenthesis) and summaries of the views expressed by each GP.

PRACTICE 1

The GPs are numbered by code and are different to the letters used in the first interviews. The numbers refer to the numbers in table 1 chapter 3.

GP 1

"If I was managing this budget I would want a 15% - 20% margin (i.e a margin of 15 - 20 patients). This would be needed to cope with the blips in practice that would appear in my practice. For example the person with melanoma who I saw last year regularly at home or the seriously depressed person I looked after in hospital for one month in February. I would also want a yearly budget not a three month instalments as this project has organised."

There is no doubt that the two older GPs in the practice would not need a margin as they tend to practice the same way month in and month out.

There is the question of how to make savings:
"What would I do if I was overbudget or close to overbudget. Do as the public hospitals do close wards or in general practice terms see less patients (except emergencies). The real issue is how to do this - Not see new patients? remove slots and cross off your extra slots. If I my income is already guaranteed why work any harder? I would not cost shift because I like to manage my care. However there is no doubt that I could cost shift by referral to a lipidologist (I tend to do a lot of HDLs - more than the national average). If you do not take any new patients where do they go - basically cost shift to another fundholding practice."

"The country would require a different model encompassing A and E and emergencies. You could also not cost shift to another practitioner."

He would need regular feedback of consultation numbers as a means of monitoring his output and consequent budget.

GP 2

"I have personal philosophy that more time spent talking will result in less tests and a decrease in prescriptions etc. The increased use of counselling would decrease the use of scripts e.g. viral infection with antibiotics."

"The use of protocols when we deal with day to day general practice - and a lot of the time general practice does not follow the guideline scenario. However the use of guidelines could create long term savings PARTICULARLY if there were patient agreed targets within protocols. Empowering the patient would create savings."

The remainder of the discussion dealt mainly with savings from the interface between primary and secondary/tertiary care.

Some of his ideas for general practice savings included local dispensaries, ?practice formularies, more negotiation between the GP and the patient and ?guidelines or best treatment BUT he would need a neutral person (e.g. an academic) to provide this data. Other options would include decrease in pathology tests, cheaper drug alternatives and decrease in consultations.

"If my survival was to affected by a budget then I would cost shift definitely."

"My relationship with my patients is very important and managing that relationship is crucial to my satisfaction."

"Could someone do my job more efficiently - Yes possibly but I would want control."

"The provision of costing information - I would not to have to consider this information. I do not have the expertise to combine costs with clinical judgement. My training is in clinical management not cost management. I would need very clear information about the value of responding to costing information. There would also need to comparison with my peers who I would trust."

"The difficulty of direct financial incentive is that this may compromise the care."

"The budgets need to be constructed in an ethical way."

GP 3

His first comment was that he could make savings by reducing his pathology tests. He likes to cast broadly because he regularly identifies people with undiagnosed conditions e.g. asymptomatic diabetes mellitus. Other options include decreasing the visits requested by some of the elderly - they want to be seen more often for reassurance.

"It is possible you could decrease this cost by adding a co-payment and decrease the cost by using someone cheaper. However if they are not seen more often then it is possible that you will misdiagnose more and in the long run produce worse outcomes. What is a reasonable interval?"

He was not sure whether guidelines would allow this to be defines as there is no substitute for practical experience. Even if you had guidelines it may be difficult to change 40 years of behaviour.

He did go on to add that you could definitely create savings by asking specialists to return patients to you when they have completed their consultation.

"There is another issue in ordering less expensive tests. For some people ordering more expensive tests will result in earlier definition of the cause and earlier return to work. More saving for the economy etc."

Receiving costing information might change behaviour. However you need peer comparison and information on cheaper alternatives.

"However you still need to consider the clinical situation, the risk factors, degree of illness etc".

The biggest cost for this doctor was prescribing and even he is switching to ACE inhibitors now - improved control quicker.

"If a patient keeps on complaining then I would do a CT scan. - rectifies the problem."

GP 4

"If I was managing a budget I would continue to practice as I have always have. I treat people as I believe they should be and need to see my patients frequently. For example I have patients with chronic leukaemia and multiple myeloma that need to be seen frequently for their ulcer dressings. I have known them for over 40 years and they trust me. The dressings probably cost the practice $25 to $30 per dressing. When asked whether someone cheaper could do these dressings, he reluctantly agreed that District nurse could possibly do these dressings if the Government subsidised them."

He believes that he practices as efficiently as possible and he has a lot of old patients. They require a great deal of scripts and the issue of repeats is annoying especially when you ring the authority line and the person has already received the require medication within the time period. He would not like a practice formulary as " I am a bloody individual".

Displaying the costing information in the budget form is reasonably useful and he immediately compared the results with his peers. However in the consultation there is limited time and displaying the costs would not be very productive - as he does not have time to look at it.

He believed that he could "prune pathology".

The disease specific figures were useful and he believed that he has a large number of people on "strict diets" - " they do not want to take medication as they will rattle".

He also added that he does not over investigate people but his patients are elderly.

GP 5

"There is no doubt I would change my practice if I knew where I was overspending and in all services. Peer comparison would be useful and guidelines may be useful. However better should not equate with cheaper."

"If this practice there is a lot of lipid work and some cost drivers are the lipid costs. Consensus within the practice would be useful in this area but would the older guys change? When you are developing your career you would respond to costing information. Savings could be made with cheaper medication, but otherwise I practice quite frugally. However with some conditions there is a blunderbuss approach with a multiple of tests performed when one well chosen test may find the diagnosis first time. An example is the investigation of abdominal pain."

"Protocols are useful for a percentage of people not for all where the art of Medicine is the key."

"I would not take too kindly to be told what is wrong with my management, but are happy to be compared with my peers. What would I do with the savings - reward myself and then I am not sure. I guess it would be taken out of my hand as I am not a partner. They would want the savings for their own benefit. It took four months to agree to buy baby scales. This practice is quite conservative and will not move on. The problem is the two older partners who are wanting to make money and will not invest in something new. There is minimal debate and communication among the partners and one is the key one. This then creates a problem of what to do to create efficiency and make savings when change is so difficult to introduce into this practice."

"The guidelines information was useful, but would have been more useful, if your data was presented and suggestions made about where to create savings."

"As GPs we need consider more and more the costs of our decisions and come to grips with the costs of our actions."

PRACTICE 2

GP 6

She believes that as I pointed out the area where savings can be made is in pharmaceuticals. She mentioned generics but savings on generics have been transferred to the patients. She would then need to prescribe cheaper alternatives or change the medication. The reason that she prescribes more expensive BP medications is that she has been taught by her hospital teachers to do this and it is smart to use new CA antagonists and/or ACE inhibitors.

There is no doubt that academic detailing would be an ideal model for this practice. This female GP would want information on her behaviour and a list of options and comparison with her peers. There is no doubt that the marketing /image/trendy medication issue is an influence. We discussed oestrogen patches and their cost - Often women come to this practice for a second opinion and what do we do but try a new medication. This raises two issues providing information on the cost drivers and the issue of what do you tell the patients.

Cost drivers - where it is worth targeting the efficiency.

"There is potentially a conflict of interest when you have to tell the patients that you are changing their medication in order to make savings. The question remains where these savings go --- to the practice or to the GP. Whatever model is developed there will need to be some training on how to explain the cost issue to patients, particularly the well established patients."

"What ever fundholding model is developed some form of patient reward will need to be established e.g. education for patients and drug savings e.g. change to generics."

This lady would be happy with a budget as long as patient outcomes were protected and people were not worse off.

"It is not fair for me to ration when this places me in a difficult position."

"This is the first time I have seen my costs that I generate and it is surprising. We do not receive any costing information on our generated costs. There is no GP imperative to save costs."

GP 7

He was surprised about the cost of his pathology and DI information. He may change his practice if he was above the practice average but he needs specific information about his behaviour e.g. the number of TFT or histo/path that are all normal.

Their practice is in the higher range because of younger patients, newer drugs, fully investigate e.g. echocardiograph and renal captopril scan etc.

But with the specific figures per condition you need to look at the referral data as well.

"You could make savings by longer gaps between consults".

"Chronic disease savings I am uncomfortable with changing as I am I believe using the correct approach. However if we did make changes you would need a practice protocol and consensus throughout the practice so as not to confuse the patients."

"I would not tell the patients about the need to make savings."

Need good data collection systems to monitor the costing information.

One good idea is the use of the providers eg pathology or diagnostic imaging to educate about appropriate behaviour - at the moment there is no contact with these providers and this would be useful feedback required.

"If we had to manage a budget then we would make savings - use the savings within the practice and for him (50:50)."

Would definitely use cheaper drugs first to save but would be uncomfortable with second rate drugs.

"Consultations are the drivers e.g. tiredness if given feedback would you order all the tests that you do."

Cost shifting is an option.

GP 8

"In this practice I would need to develop a model that considers the needs of part time practitioners. There is no incentive to save money unless these savings are returned to me."

"I believe I practice good quality medicine and as a consequence I would need information on where to make savings."

He mentioned the issue of generics as well to make savings

The next area is pathology and imaging.
"I would think twice about what I am doing if I was attempting to make savings and information is the key."

Peer review both within and without the practice is probably the key.

The issue for the part timers is a different model

GP 10

"The figures make sense. If I had to make savings then I would need information on doctor instigated changes that would not disadvantage the patient. The person providing the feedback would need to be a medical person."

"We are not clones and protocols may have a place for some conditions where the evidence is around e.g otitis media, BP and ?menopause (but for him counselling is so important and this may not easily be included into the protocols)."

Comparative profile would need to be practice specific and individualised to the particular patient profile.

"There is more to life than medicine and with all the tasks being required from GPs it is becoming all too much. The extra tasks would require payment."

"There is no doubt that savings could be made on practice efficiency with staff, infrastructure, IT, good software etc."

"Counselling is where I would make savings - more explanation may decrease the use of medications, but raise the level of consultation remuneration. Savings could be made in thoughtful prescribing e.g. antibiotics."

Upskilling (need to be paid) has a role in creating costs - a practice with each GP with special skills would definitely save costs - Each would elect to cover 2/3 areas and after proper training manage this area - e.g. endoscopy, stress testing etc

"We are not taught to be logical with our test ordering - all we do in hospital is a battery of tests."

"If we had a fundholding model it would be logical within a region to concentrate on the 20 most expensive conditions and after appropriate reimbursement develop protocols and costing studies and methods based around evidence of how to practice. You would still need practice specific data."

"The division could easily drive this and be very proactive about the process."

GP 11

"I am skilled in one area as a consequence. It is important to concentrate on this area to produce cost savings i.e. antenatal and menopause. With your menopause guidelines I would not do LFT, Scans, Chol. but I do prescribe patches. People come to me for a second opinion and I find that patches are useful for some women. I also have my own way of doing the titration with balancing of oestrogen first and then move to the progesterone I think this helps the compliance and this factor needs to factored in. You would need a 2nd opinion factor. "

"I worry about my patients not about the cost. But I strongly prescribe Australian and companies that have completed a great deal of research and generic pill scripts."

"There is another factor of the 24 hour clinics who may use Amoxyl but the child is no better and hence you prescribe Ceclor."

"I would still prescribe Calcium antagonist /ACE inhibitors instead diuretics because I believe that the evidence is better for the former."

"Cost shift is an issue with say antenatal care."

"I have too many long consults and as a consequence I have a decreased income. If I trained some one to take these people then I may be more efficient. But they would need to well trained to detect the depressions etc."

"You could be more efficient with good training in practice management etc."

GP 12

"I could make savings in the pharmaceutical area by changing medications. I go through phases with BP medications - when you receive information on diuretics you tend to use them, but the first complication and you return to the less side effects medication. With younger people you tend to use less side effect medications because you want to keep at work and keep them compliant. I do not use patches for oestrogen replacement but one of the other female partners does. "

"Guidelines probably have a place.""

"With pathology and DI I could make savings by cost shifting e.g. antenatal patients but I like to investigate them fully. It is annoying when they repeat these tests again. Pelvic ultrasound is another where FMC does it cheaply and not on your budget."

She would not tell the patient about using cheaper medication as
"I would not compromise my care. I practice medicine for joy not to make a huge living. My mode of practice is different to other GPs."

"Information about efficiency is what I require to change but patient care must not compromised"

"I would need information on efficiency and scientific data to change my behaviour. This would need to be presented simply and balanced data."

"I would like to know if my profile is very different from the others."

GP 13

"There is a pressure to prescribe antibiotics and the pharmaceuticals is where I could make savings."

"I have a hospital model which makes me continue to swab and do a great number of tests. In the hospital you have to do a great number of tests because this is what is required. Some patients want these swabs e.g. gynaecological area."

"There is a real pressure within a practice to follow a pattern and when you are trainees and newly into the system you are very vulnerable to pressure."

"Comparison with your peers would be helpful both intra and inter practice. But the practices would need to be similar"

"The raw data is useful"

The practice mentality - important in the creation of the model.

"Some patient costs could be changed by not bulk billing."

"BP - I always initiate with ACE or Calcium antagonist as this is what I have been taught. We need more information and more cost effective literature and more information on the expensive costs. The specialists need to provide cost information but they do not."

"A respected GP peer would also be useful."

"If I made savings I would pragmatically want some of the money but philosophically it is not a big deal."

GP 14

Again his savings would centre around pharmaceutical prescribing - the ongoing debate on more expensive CVS medications vs cheaper drugs " whip out the ACE inhibitor"

"Need information about my behaviour and comparison with my peers and information on alternatives e.g. antibiotics - Amoxyl and Ceclor."

Data would need to based on the latest information and analysis

"Hardly speak to a radiologist /pathology - useful to receive information on appropriate behaviour."

"Savings would be good for all and reasonable for you to receive 50% of the savings."

"Whether I would tell the patients would depend on the circumstances - if the treatment is as good then I would probably not tell them."

"Again you would need a consensus within the practice."

GP 15

"I am just starting out and I need guidance on what to do. Information on overprescribing and over ordering would useful. Comparison with my peers and practice partners would be useful. The use of a practice formulary would be important. He mentioned the issue of generic prescribing again."

If he made savings he would not be fussed by being reimbursed and he has a real lack of knowledge about the options of cheaper drugs etc.

Very vulnerable and would be willing to change and adapt.

Interesting idea about linking with a local pharmacy .

He made the comment that the data I presented was interesting to them and they would want to change.

Savings for him would be in the consults for repeats scripts - again difficult for him to change.

GP 16

Immediately the cost shifting with antenatal care came up. In fact she was quite blatant about this.

"I am the newest GP here and I see children and pregnancies."

"I would be happy to compared and would find peer comparison useful. Need to see what other people do."

"I do not know the cost of drugs and would want feed back."

"You would need comparison with a similar practice in the areas of pathology, diagnostic imaging and prescribing."

"Savings with Diagnostic imaging not possible as I do minimal."

PRACTICE 3

GP 17

"The budget you have established is a reasonable approximation but I would need the 10% margin. One abnormal patient with diabetes, paraplegia etc would probably push my budget above the expected level."

The other concerns are cost shifting from the public hospital, specialists etc e.g. performing cat scans, early discharge. This would be a real worry with fundholding models that State governments would cost shift onto fundholders. This would require regulations to put in place.

"If I wanted to increase my income I would cost shift to the IMVS for blood taking etc and all immunisation to the councils. Dressings to the IMVS but is the district nurse more expensive."

"My income should be independent of the budget or a guaranteed minimum income and if you make savings then you would gain some of this income. GPs need a secure income and a career structure - they have none of this."

"With me efficiency would come from continuity of care and experience and greater long term knowledge of the patient."

Nice analogy of the petrol station - if you just want petrol you go to a fast clinic but if the engine is seriously in trouble then you go to someone you trust.

"If I wanted to use the savings I would use employ a nurse - do BP, dressings, etc"

"My BP figures are lower because of elderly patients who are stable on beta blockers etc"

"My imperative is to prescribe the most appropriate drug not to save the government costs."

"I may decrease my radiology (example when decreased my xrays and missed a cervical neck x-ray)- if I believe an xray should be ordered then I would order it."

The data needed to monitor this information would be the 10 most common conditions and the again those conditions that create the costs - a possible disease register and management register These disease register conditions include diabetes, Ischaemic Heart Disease, BP, hyperlipidaemia etc