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**Primary Care in Accident and Emergency Departments:
the cost effectiveness and applicability of a new model of care**

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of the University of London for
the degree of Doctor of Philosophy**

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ABSTRACT

The thesis describes the development, research and evaluation of the applicability of a new model of care that involves GPs being employed on a sessional basis in A&E departments to treat patients attending with primary care needs. The main aim of the study was to research its cost and clinical effectiveness.

A multi-faceted approach was taken to include consideration of patients' needs and preferences, professional concerns, organisational and structural issues within the health service, and planning and policy issues. Clinical, sociological, epidemiological, and economic perspectives are drawn upon, reflecting the context of the service development and to provide a firm base for discussion about the generalisability and applicability of the findings.

The first two chapters provide a detailed review of the epidemiological, sociological, clinical, and organisational literature relating to the primary care/A&E interface. The incentives and disincentives that may act to increase or reduce demand and supply are explored, in addition to issues relating to the 'appropriateness' of demand, the organisational culture of A&E departments, and strategies used to curtail or cope with demand. The demand for primary care at A&E departments appears to cross national boundaries and hence, literature from other countries (particularly the USA) is included and its applicability to the UK considered. Relevant literature relating to the quality of A&E care, patient satisfaction, and the costing of care is also discussed.

The main study was a prospective controlled trial that was conducted at King's College Hospital. This compared process variables, clinical outcome and costs of 'primary care' consultations performed by senior house officers (SHOs), registrars, and general practitioners working three-hour sessions in A&E. A new system of nurse triage was implemented to allow the prospective identification of patients presenting with primary care needs. A total of 27 SHOs, three registrars and one senior registrar were included, and the patient sample comprised 1702 patients seen by GPs, 2382 by SHOs, and 557 by registrars or the senior registrar. GPs were found to practice considerably less interventionist care than A&E medical staff, and the resource implications were substantial.

The findings are discussed critically, and their applicability is considered drawing on empirical data from recent evaluations of A&E Primary Care Service developments in other parts of London. The policy and service implications of the study are considered and further research needs identified.

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LIST OF ABBREVIATIONS

A&E	Accident and Emergency
BAEM	British Association for A&E Medicine
BMA	British Medical Association
BMJ	British Medical Journal
DHSS	Department of Health and Social Security
DoH	Department of Health
ECG	Electrocardiograms
ED	Emergency Department (used in the thesis to denote departments that are outside the UK)
GP	General Practitioner
HMO	Health Maintenance Organisation
KCH	King's College Hospital
NAO	National Audit Office
NHS	National Health Service
PCCR	Primary Care Consulting Room
PCP	Primary Care Physician
REG/SR	Registrar/senior registrar
SHO	Senior House Officer

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CHAPTER 1: INTRODUCTION

1.0 Introduction

The debate about the appropriate division of activity between primary care and accident and emergency (A&E) departments is long-standing. Although general practice is the predominant gate-keeper to secondary care services in the NHS, members of the public often by-pass this system by directly attending A&E. This pattern of help-seeking has persisted from the earliest days of the NHS, and its roots go back to the early nineteenth century when hospital outpatient and casualty departments were first established to meet the needs of the poor.

A&E departments often have a special place in the concerns of the public. In most communities, the local A&E department has a high profile as an important amenity, epitomising much of what the NHS is seen as standing for: free and immediate health care for all. It provides reassurance that a 'safety net' will be there at times when sudden help is needed, and emergency services are rarely out of the news and the political limelight. The 24-hour availability of the service, the lack of formal appointment systems, the on-site access to the technological facilities and expertise of the hospital, and the direct links with outpatient clinics and admissions all contribute to the allure of the A&E department.

A&E and general practice share many features. Both services deal with the complete spectrum of ages and diagnoses. Both are demand-led and provide open access services twenty-four hours a day, 365 days a year. Both involve large numbers of patients, with demand and workload persistently increasing over several decades. Despite this, A&E services and general practice have developed in very different ways. They are organisationally, structurally and philosophically dissimilar. A&E medicine focuses predominantly on responding to unanticipated emergencies. Its particular expertise lies in the management of life-threatening presentations or those that might result in permanent harm without urgent intervention, and its main relationships are with hospital-based services. Although definitions of 'primary care' vary according to organisational and professional perspectives, general practice emphasises a more comprehensive, continuing, personal relationship with the patient and their family, with a greater emphasis on pro-active care, long-term health needs (see Appendix I).

The A&E/primary care interface has been the subject of dispute between hospitals and general practitioners for over 150 years, but has been re-defined in recent years within the context of the NHS reforms and the shift towards a primary care-led NHS. Appendix II gives the historical

context through which casualty wards evolved to A&E departments, eventually leading to the establishment of A&E medicine as a distinct specialty. Blame and conflict have characterised much of this history, generally leaving all parties (patients, providers and funders/purchasers) feeling dissatisfied.

It is against this background that the development of A&E primary care services needs to be considered. Although the main priority in A&E medicine is the treatment of the critically ill, the injured and others in need of urgent hospital attention, the majority of patients present with conditions which allow them to be subsequently discharged. A large proportion of these problems could have been managed within general practice. This use of A&E has been seen as contributing to long waiting times, over-crowded departments, and staff stress, while potentially depriving more seriously ill or injured patients from receiving timely care. It has often been interpreted as reflecting a failure of general practitioners (GPs) to provide adequate services for their patients, together with the public's lack of understanding about how to make 'appropriate' use of services. While policy makers, purchasers and providers have frequently complained about this pattern of use, as discussed in later sections of the thesis, there is little agreement about what is appropriate use of A&E, and prior to the study described here little was known about the quality and costs of the care provided to patients attending A&E with primary care needs.

Rates of attendance at A&E departments have continued to increase, and most A&E departments report increasing demand from patients who have not attempted to contact their GP (Crinson & Francome, 1995). This pattern appears to apply to both inner city and suburban/provincial units, and factors contributing to this are discussed below. With 15 million people attending A&E departments in England and Wales each year, and new attendances rising at an average rate of 2 per cent per annum, the necessity to look for alternative ways of responding to patients who present with self-limiting injuries and illnesses or other primary care needs has been highlighted (Audit Commission, 1996a).

There is evidence that attitudes to public services in general are changing, and that expectations are increasing within what is an increasingly consumerist society. Services appear to be increasingly seen as a "right", there are greater expectations about what services should provide, and the desire for more than one professional opinion is growing (Calman, 1996b). The public appears to be becoming better informed and often increasingly hospital oriented, attracted by the glamour and technology of hospital care. Rising expectations are occurring in the context of more general trends in society towards the 24-hour availability of

services. Attitudes to health may also be changing, and there may be less willingness to take personal responsibility for health.

The aim of this study is to identify the context in which new models of care are developing at the A&E/primary care interface in terms of factors influencing the demand and supply of services, and to evaluate the cost effectiveness and applicability of a new intervention aimed at managing the primary care demand at A&E more appropriately. The intervention considered involves the employment of local GPs to work sessions in A&E as primary care physicians (PCPs). In the next section of this chapter, key health service issues that relate to the study will be discussed. The second part of the chapter gives an outline of the thesis and the specific questions that will be addressed.

1.1 Issues affecting the development of A&E services

Issues within the health service that are relevant to this thesis include: the demarcation between A&E and general practice services, the distribution of A&E services, the training and skill mix of A&E staff, the organisation and commissioning of health services, rising numbers of emergency admissions, and the condition of London's primary health care services. The impact of the NHS reforms on general practice is discussed in Appendix III.

1.1.1 Demarcation between A&E and general practice

The boundary between A&E/casualty services and general practice has always been blurred. From the mid-nineteenth century until 1948, casualty departments (which were often indistinguishable from other parts of the outpatient department) were the main provider of care for the poor. As discussed in Appendix II, this care was provided on a charitable basis, and led to a strong tradition, particularly in inner city areas, of self-referral to casualty departments. Demand for casualty services grew rapidly during the second half of the nineteenth century, and overcrowding in departments became a major problem. The number of casualty attenders at St Bartholomew's Hospital, London, for example, grew from 21,674 in 1828 to 150,942 in 1898 (Loudon, 1978). In 1910 the total number of new attendances at outpatient and casualty departments of the voluntary hospitals in London was about 1.75 million, representing a new attendance rate of about 280 per 1000 population; about 50% of these were casualties (Loudon, 1978). In the provinces the new attendance rate was very much lower; in Oxford, for example, around 45 per 1000 population.

Throughout this history concerns about the public's use of outpatient departments have been a major preoccupation. Views were repeatedly expressed, often in vehement terms, about the 'trivial' nature of many of the complaints presented, and that those who could afford to pay were 'misusing' the casualty service (Appendix II). It was argued that over-crowding and hasty care led to poor quality and mistakes. GPs complained that their livelihoods were threatened, and there was bitter antagonism between doctors who held hospital appointments and those who did not (Abel-Smith, 1964). It was said that GPs in the vicinity of hospitals were forced out of practice or had to reduce their fees (Loudon, 1978)

The demand for casualty care continued to grow during the first half of the twentieth century despite the National Health Insurance Act (1911). This required all employed workers below an agreed age to enrol with an approved society and so register with a GP and receive free care, sickness benefit and pharmaceutical benefits. The effect of the NHI Act on outpatient attendance figures was brief, and confounded by the effect of the first world war (Loudon, 1978).

It was anticipated that the establishment in 1948 of the NHS, which gave universal access to general practice, would lead to a diminution in the demands being made on casualty departments. This did not occur; attendance rates continued to rapidly increase in the post-war years, and concerns about the 'inappropriate' and 'trivial' nature of much of the casualty workload continued to be voiced (see Appendix II).

The Platt Report endorsed the view that "by far the most important function of an Accident and Emergency department is to deal with injured patients in urgent need of skilled hospital treatment at any time of the day or night" (Ministry of Health, 1962). It was hoped that re-naming the service as 'accident and emergency' would clarify its true purpose, but again this had little effect on demand.

During the 1960s and early 1970s a contrasting, more accepting view of the public's use of A&E began to emerge, reflecting more libertarian attitudes in society as a whole. This perspective reflected greater understanding of the complexity of patients' decision making processes in relation to attending A&E which had been elucidated by seminal sociological work (see Appendix IV, e.g. Calnan, 1982, Lewis & Bradbury, 1981; Gunawardena & Lee, 1977; Holohan *et al.*, 1975), and argued that greater attention should be given to the appropriateness of the care provided in A&E.

In 1973 the Casualty Surgeons' Association in their evidence to the House of Commons Expenditure Committee proposed that A&E should be seen as a community medical

emergency service, complementary to the services provided by GPs. It sought to define the nature of A&E work in social rather than purely clinical terms, while still advocating that when possible the patient should first contact their own GP. As one casualty physician said, “anyone can put in some stitches or stop bleeding, but the A&E department should be uniquely placed to look at a patient in his whole social context”, and argued for greater emphasis to be given to a personal focus of care (Anon, 1979d). This change in attitudes coincided with the emergence of A&E medicine as a clinical specialty distinct from orthopaedic surgery. Not all A&E consultants supported this change in emphasis, and some felt that nursing staff and social workers rather than doctors should be responding to psychosocial needs (Anon, 1979d).

A change in policy was signalled by the House of Commons Expenditure Committee in 1974 which suggested that consideration should be given to making available, particularly in large city A&E departments, an emergency general practice service staffed by GPs on a rota basis. In addition, they advocated educating the public about the appropriate use of A&E by methods based on explanatory leaflets and television fillers. This was reflected in the report of the Royal Commission on the National Health Service (1978) which stated that “where the tradition of using [A&E as a walk-in general practitioner surgery] is strong, it may be preferable for the hospital to accept this role and make specific arrangements for fulfilling it, rather than to try and resist established local preferences”. A few years later, the Acheson Report on London’s primary care services recognised that A&E departments should recognise their primary care role ‘so that they are better able to provide the care that is demanded of them’ (London Health Planning Consortium, 1981). However, the lack of health authority and hospital support for such developments meant that no A&E department in London had tried implementing this recommendation until 1988 when the King’s College Hospital (KCH) service described in this thesis was first piloted.

1.1.2 Distribution of A&E services

As is discussed in more detail in Chapter 2, the accessibility and availability of A&E services appear to be key determinants of demand. For several decades, the number and types of A&E facilities that are required has been a highly contentious issue. The overall trend towards centralising secondary care services in the face of technological advance and limited health service resources resulted in the closure of many A&E departments. This usually occurred against opposition from the public and primary care professionals who feared losing the

accessibility and availability of not only the A&E service but also related acute hospital outpatient and inpatient services (Lancet 1995). GPs often feared the knock on effects this might have on their own workloads.

However, pressure from within the A&E and orthopaedic professions often supported the closure of services as a means of centralising care into a smaller number of highly resourced units. In the 1980s, the Irving report (Royal College of Surgeons, 1988) found serious deficiencies in the management of patients with major injuries and recommended that services be reorganised to provide a nation-wide network of trauma systems, each with a catchment area of around 2 million people and a designated trauma centre. The inadequacy of major trauma care in many departments was identified by Yates *et al* (1992), and the case for establishing major trauma centres was argued by some. For example, Skinner (1990) suggested that four departments rather than the existing 21 would be sufficient to cover the major trauma needs of North West Thames region. However, the cost effectiveness of major trauma centres has not been demonstrated (Medical Care Research Unit, 1995).

The trend towards the closure of smaller A&E departments is continuing. In 1996, there were 227 A&E departments in England and Wales which together cost about £600 million per annum to run (Audit Commission, 1996a). The Audit Commission (1996a) suggested that small A&E departments (with less than 50,000 new attendances per year) should be considered for 'amalgamation' when the public have good access to alternative facilities (such as, within ten miles). The implications of this recommendation for access and the potential impact on other forms of hospital provision are unclear (Newman, 1996). A consequence of having fewer, larger A&E departments is that the workload generated by patients with primary care needs may be quantitatively of a scale where specific interventions for their needs can be implemented that would not have been feasible when the workload was spread more thinly over a greater number of units.

1.1.3 The training and skill mix of A&E staff

A further strand in debates about the A&E/primary care interface relates to the skill mix of staff. This has been a key issue for over 40 years (Lowden, 1956a). Lamont (1961) argued that "casualty departments make utterly unreasonable demands on the young doctors who are put in charge of them", and argued that full-time consultants should be put in charge of them. He foresaw that "ultimately a race of casualty surgeons would emerge who practised their chosen profession without fearing the consequences". Garden (1965) commented on the

reluctance of hospital authorities to “discard the deep-rooted and outmoded traditions of the so-called casualty departments..... Not surprisingly the casualty department has come to be regarded with some disdain”. He argued the need for improved facilities and staffing of departments. Junior posts were increasingly difficult to fill because of the lack of career structure, and lack of training and consultant supervision in most departments (Bainbridge, 1972) The lack of consultant involvement in A&E departments meant that they remained in most hospitals largely neglected areas. A DHSS survey in 1970 found that only 50% of major departments had a consultant who worked at least one session regularly in the department; 20% had no consultant in charge (Bainbridge, 1972).

As discussed in Appendix II, during the late 1970s and 1980s, A&E medicine evolved considerably and started to become a specialty in its own right with its own professional bodies, career structure, and academic base, and likewise A&E nursing established itself as a distinct branch of nursing. However recruitment and skill mix problems have remained. Continuity of care in A&E is limited by the rapid turnover of staff and the need for staff to work shifts. The medical staffing of A&E departments includes large numbers of junior doctors in training grades, the majority of whom are intent on developing their trauma and life-saving skills while in A&E (Dale *et al*, 1997b). As Redmond (1985) stated, “emergency medicine has for too long been the province of junior and inexperienced doctors working short-term contracts without adequate senior supervision”. In many departments this pattern still persists (Dale *et al*, 1997b).

In February 1996 around 20% of A&E senior house officer (SHO) posts were reported as unfilled (Audit Commission, 1996a). This reflected increasing competition from other specialties as a result of the reduction in junior doctor hours and increase in the numbers of SHO posts (despite no growth in the number of doctors graduating), in addition to A&E experience no longer being compulsory for fellowship of the Royal College of Surgeons. There were also 58 A&E consultant vacancies in the UK, and only one quarter of departments had the number of consultants recommended by the BAEM; a situation unlikely to improve as too few middle grades are currently being trained (Stewart, 1996). There is increasing pressure on middle grades and senior staff within departments, as the recommendations of the Calman Report are implemented (Calman, 1993). A survey of 119 clinical directors of A&E departments in 1994 found that 81% felt that they lacked the appropriate mix of medical, nursing and support staff to meet the requirements of their workload (Crimson & Francome, 1995). The difficulties faced in recruiting medical staff and nurses reflect not only a shortage

of adequately trained and experienced personnel, but also a lack of financial resources (NHS Support Federation, 1997).

Recruiting GPs as clinical assistants and expanding the roles of nurses have been means of coping with the recruitment difficulties. In the early 1950s the General Medical Services Committee of the BMA recommended that help for the casualty department from local GPs should be encouraged because of the shortage of junior hospital doctors (Anon, 1953), and this strategy is still used today. However, until the project described in this thesis was initiated at KCH in 1988, GPs had not been recruited to work in A&E departments specifically for their primary care expertise

Nurse practitioner schemes in the UK until recently were relatively rare with only 6% of 465 departments reported as having them in 1991 (Read *et al*, 1992). By 1994, 30% of major A&E departments had nurses working as nurse practitioners, of which 82% were officially recognised as such, and based on A&E departments' plans it was estimated that by 1996 63% of major departments would have nurse practitioners (Meek *et al*, 1995). Many departments combined the roles of triage nurse and nurse practitioner (Read *et al*, 1992). There is still no recognised training or nationally agreed standards in the UK for the training or accreditation of A&E nurse practitioners which complicates comparison between nurse practitioner activity in different departments (NAO, 1992; Read *et al*, 1992).

1.1.4 Changes in the organisation of health services

Despite enormous change and transformation within the health service over the last 50 years, including the development of GP services, the demand for primary care at A&E has persisted. In the 1960s and 1970s, it was anticipated that health centre expansion and the development of group practices with treatment room facilities would help reduce A&E departments' "inappropriate work" (DHSS, 1975b; DHSS, 1971), but this did not occur. The role of the GP as the sole provider of primary care appears never to have been fully accepted by the public, particularly in inner city areas where the tradition of using A&E services has always been strongest.

Contrary to health service planners' expectations, the trend in general practice towards the development of larger practices providing broader ranges of services from purpose-built premises, with an expansion of the scope and size of the primary care team, may have been counter-productive in its effect on A&E demand. Indeed, it appears that the transformation that has occurred in practice size and organisation over recent decades, together with much of

the characterisation of good practice promoted through the NHS reforms, runs contrary to the public's preferences (Haigh-Smith & Armstrong, 1989) The extent to which this has had repercussions on A&E demand is unknown. Patients appear to prefer smaller, non-training practices and personal lists (Baker, 1996; Campbell, 1996; Baker & Streatfield, 1995, Thomas *et al*, 1995; Curtis, 1987), and larger group practices seem to be seen as detrimental to the personal, continuous care and flexible access which has traditionally been the cornerstone of general practice. Increasing total list size is associated with decreased satisfaction with accessibility, availability, continuity of care, medical care and premises (Baker, 1996; Campbell, 1996; Baker & Streatfield, 1995; Hjortdahl & Laerum, 1992; Haigh-Smith & Armstrong, 1989, Pascoe, 1983).

From the earliest days of the NHS communication between hospital practitioners and general practice has been recognised as being inadequate (DHSS, 1971). There has been long standing recognition of the need to improve communication and co-operation across the A&E/primary care interface (Accident Services Review Committee, 1970) to enable improved referral, more seamless care, and greater continuity, but there have been few attempts to improve it. There has been dissatisfaction expressed about the content and timeliness of referral and discharge communication from both sides of the interface (Wass & Illingworth, 1996; Choyce & Maitra, 1996; Jenkins *et al*, 1994, Hadfield *et al*, 1994; NAO, 1992; Bedford *et al*, 1992; Morrison & Pennycook, 1991; Morrison *et al*, 1990; Jones & McGowan, 1989; Thurston *et al*, 1982; Blackwell, 1962). Many departments still give patients the discharge letter to deliver to their own GP, despite this method being notoriously unreliable (Sherry, *et al*, 1985). Communication across the A&E/primary care interface is affected by the attitudes and knowledge hospital-based staff have about local general practice, and vice versa. The importance of these organisational and cultural factors, and the impact that they have on perceptions about A&E primary care, are discussed more fully in Chapter 2 (see *section 2.4*).

1.1.5 Impact of the NHS reforms on perceptions about the A&E/primary care interface

Since 1990 the pace of change in the NHS has been intense, and primary care services in particular have undergone dramatic changes in the ways that they are purchased and provided. These changes and the impact that they have had on general practice in particular are discussed in Appendix III. The development of primary care services and a primary care-led NHS have become top priorities in the NHS, reflecting the belief that this will lead to more cost effective, better quality health care (NHSE, 1996a; NHSE, 1995b; NHSE, 1994; DoH, 1993).

GPs and their teams are being given greater scope to influence the purchasing and provision of health care. This has created a context in which there may be greater interest in new models of A&E care being tested and evaluated.

The notion that patients make ‘inappropriate demands’ on A&E has become less acceptable within a health service that purports to place the consumer as the central figure of accountability, and during the 1990s the debate about the use of A&E services gradually shifted away from a focus on ‘inappropriate’ demand to greater acceptance that patients have a legitimate right to attend. This shift was led in the main by policy makers and purchasers.

The attention given to improving the quality of care across the primary/secondary care interface meant that policy makers across the political divide and purchasers became increasingly interested in identifying new ways of responding to the demand for primary care at A&E, and in setting standards for such services (Audit Commission, 1996a; SETRHA, 1993; National Audit Office, 1992; Tomlinson Inquiry, 1992). Not all purchasers, however, shared this view, and in particular there is anecdotal evidence that some GP fundholders have been reluctant to purchase A&E care for their patients who present with primary care needs.

The change in health service climate is also reflected in the statements of professional bodies. For example, in a recent statement by the British Association for Accident and Emergency Medicine (BAEM), it was stated that (Cutting, 1995)

“the term ‘inappropriate attendance’ is often used for patients with minor ailments who attend A&E departments. The BAEM does not support the use of the term.”

However, the BAEM also expressed concern that A&E departments “have been used to cover or provide a safety net for perceived or actual deficiencies in other services for which they are neither staffed or funded”, and stated that they “would resist any attempt to increase the number of primary care patients within the A&E department service since this prejudices the care for those patients who have need of A&E treatment” (Cutting, 1995).

1.1.6 London’s primary health care services

The provision of primary care in inner London has been a cause of concern for many years, and has been stated as being poorer than elsewhere in the UK (Curtis, 1987). The Acheson report identified the high levels of social and health problems that primary care services in inner London have to deal with and the generally inferior structure and availability of services (London Health Planning Consortium, 1981). It made 115 recommendations, of which most

of the key ones were implemented by 1990 (Jarman & Bosanquet, 1992) During this time an overall improvement in primary care, as judged by the criteria of the report, occurred in line with improvements that were occurring across the country. However, none of the recommendations that specifically related to London were implemented.

In the early 1990s, there was again recognition of the difficulties faced by primary care in London, with health care workers contending with high levels of medical and social need, and often working in poor conditions (Jarman & Bosanquet, 1992; Tomlinson, 1992; King's Fund Commission, 1992). While some studies support the theory that expanding primary care services would lead to reduction in the workloads of hospitals, others (e.g. Jankowski & Mandalia, 1993) considered that the problems affecting the pattern of workload at London A&E departments had more to do with the sociodemographic characteristics of the populations served rather than the pattern of services provided by GPs.

In 1992, the King's Fund Commission and the Tomlinson report recommended the transfer of resources from acute hospital services towards the development of an enhanced range of primary and community health services in inner London. Tomlinson acknowledged that inner London A&E departments face particular difficulties because a larger proportion of their workload comes from commuters, tourists, the homeless, and a highly mobile population. The report made a number of comments in relation to A&E services, which included:

- many groups of patients use A&E for conditions that could be treated by a general practice team
- London has a high usage of A&E (405 per 1000 population for inner London) compared to the national average (234 per 1000)
- London has a higher rate of in-patient admission via A&E than the rest of England

Encouraged by the early results of the KCH A&E Primary Care Service (Dale et al, 1991), Tomlinson (1992) made specific recommendations about the use of A&E for primary care. These included improving the accessibility of primary care services; adapting the way A&E provides primary care services; and exploring alternative methods of primary care provision. Tomlinson recommended consideration of a range of proposals, such as the provision of GP services within A&E, the introduction of nurse practitioners, minor injuries clinics, polyclinics and targeted primary care services. However, only limited research and evaluation of alternative models of care had been undertaken on which to base planning and purchasing decision-making.

In the government's response to Tomlinson, set out in *Making London Better* (DoH, 1993), the London Initiative Zone (LIZ) was established to promote improvements in primary care. This included making services more accessible for the population who currently use A&E for primary care. As a result of the Tomlinson Report, considerable investment took place across London in establishing schemes similar to the KCH A&E Primary Care Service. By 1995, around £900,000 per annum out of primary care development funds (1% of the London Initiative Zone budget) was being spent on such services (Mays *et al*, 1997)

1.1.7 Emergency admissions

Emergency admissions have been significantly and steadily rising over many years (Kendrick, 1996; West & Rosen, 1996; NAHAT, 1994). Between 1988/89 and 1993/94 they rose by 16% (Audit Commission, 1996a). The increase appears to apply particularly to medical emergencies, including ill-defined chest pains and respiratory problems, and the pattern is consistent across all districts (Hobbs, 1995; NHS Trust Federation, 1995).

Factors that have been linked to the rise in emergency admissions include distance from the hospital, social deprivation and the proportion of elderly, as well as the prevalence of disease and increased detection of illness (Christy & Packer, 1995). With the exception of childhood asthma and acute poisoning there is little evidence of any increase in disease incidence contributing significantly (National Association of Health Authorities and Trusts, 1994). Other factors that they may be important include fundholding (such as, the perverse financial incentives whereby emergency admission can be used to avoid payment for elective episodes), circumventing waiting lists, the availability and quality of community health services and social care, decreasing support for the elderly (Kendrick, 1996), increased patient expectations (London Health Economics Consortium, 1995), increased GP expectations, greater availability of high technology care (Capewell, 1996), changes in out of hours arrangements, over-stretched primary care services, greater concern among GPs about litigation, premature discharge and decreased availability of hospital beds for elective care (Court, 1994). Evidence for the impact that these factors are having is scarce. Decreasing lengths of hospital stay increases the risk of premature discharge, and this may lead to "revolving door" multiple re-admissions (National Association of Health Authorities and Trusts, 1994).

It has been reported that 10-20% of medical admissions could have been avoided had alternative arrangements, such as GP beds and urgent outpatient appointments, been available in the community (Coast *et al*, 1996). However, estimates about levels of 'inappropriateness'

appear to reflect who is making them and against what criteria. Victor and Khakoo (1994), for example, reported that less than 1% of emergency admissions at one inner London NHS trust were 'inappropriate' based on the perceptions of medical and nursing staff using criteria related to the interventions that patients received while in hospital.

The problem of avoidable emergency admissions appears to be international, and in France, for instance, it has been shown that many 'inappropriate' admissions from A&E result from medical staff lacking knowledge about or direct access to community health care services (Davido *et al*, 1991), reflecting a lack of continuity between the hospital emergency room and other parts of the health service (Lang *et al*, 1989). It seems similar factors may also apply in the UK. This emphasises the need for A&E departments to institute effective gate-keeping structures, including personnel who have knowledge about the availability of primary care services in the community and how to refer to them.

There is evidence of the difficulty involved in discharging elderly patients from A&E even when there are no clinical grounds for admission, because of limited knowledge about the patient's social circumstances and the limited range of therapeutic alternatives available (Wood, 1992; Freeman & Burke, 1985). Admitting officers have little incentive to risk complaint through sending patients home who may require urgent admission shortly afterwards, and so instead are likely to choose what may appear to be the safer option of admitting when in doubt (Edwards, 1997).

For A&E, the effect of increasing numbers of emergency admissions is severe strain, particularly at times when there are no beds available in the hospital. An effect of the NHS reforms and the pressure to reduce waiting times for elective admission has been that bed occupancy rates tend to be at or close to 100% saturation so making patients in need of emergency admission difficult to accommodate (Wardrope, 1997). Such patients may wait in A&E for several hours, and even sometimes days until beds become available elsewhere in the hospital (RCN, 1996). This is leading to overcrowding of the A&E department, a pattern that is occurring in many health care systems (Kellermann, 1991; Gallagher & Lynn, 1990), and has resulted in accidents within departments (such as patients falling off trolleys) and the possibility of litigation.

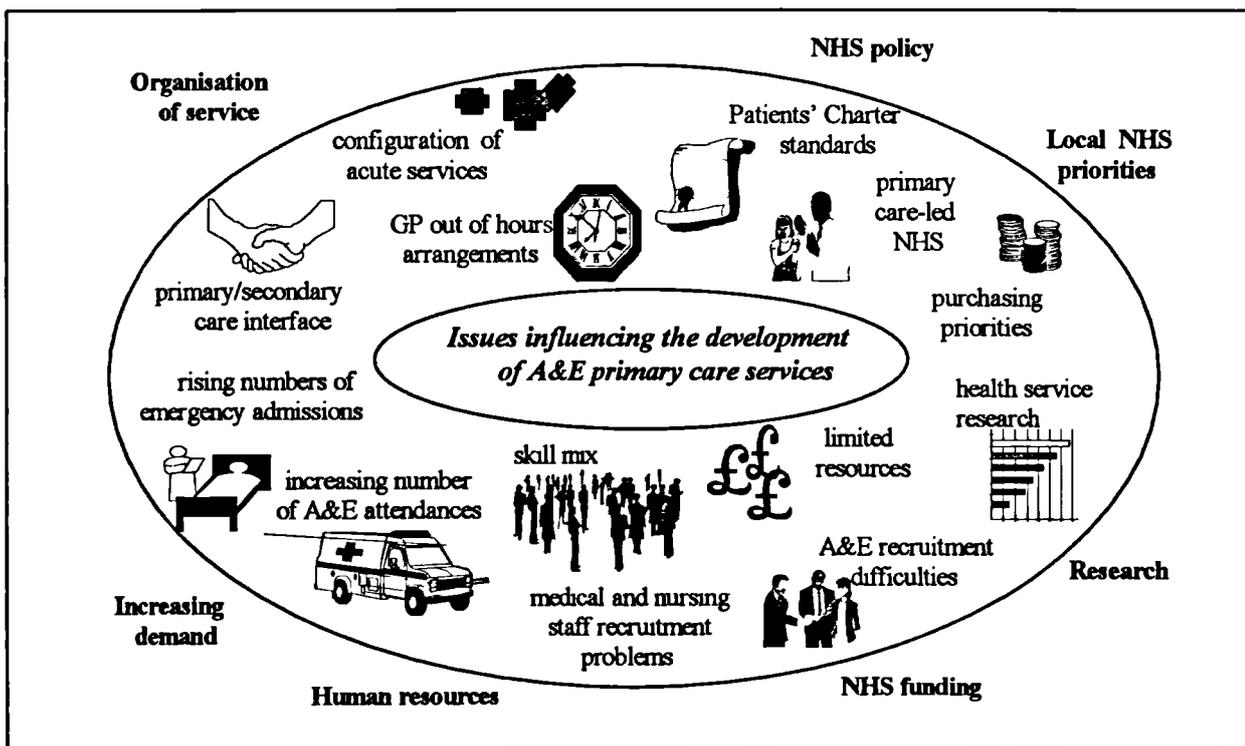
1.1.8 Summary

In summary, A&E services have been subject to considerable controversy, particularly in relation to their primary care role, throughout their history. There are a broad range of

persistent, contextual issues, many of them inter-related, which have influenced their development. Throughout, there have been underlying concerns about the appropriateness of providing primary care within A&E departments. Dating back to Victorian times, attempts have been made to discourage the ‘inappropriate’ use of A&E, such as by creating obstacles to attendance, improving access to GP services or by providing public education. Few of these interventions have been formally evaluated, but given the persistence of the demand for A&E care it appears that their impact was at best slight.

Figure 1.1 summarises the key contextual factors that are influencing the development of services at the A&E/primary care interface. The figure is not intended to be exhaustive, but helps illustrate the array of national and local factors that may have relevance.

Fig 1.1: Contextual factors influencing the development of A&E Primary Care Services



1.2 Study aims

The purpose of this study is to consider the effectiveness and applicability of a new approach to managing the demand for primary care in A&E. It describes the development, research and

evaluation of employing local GPs on a sessional basis as A&E primary care physicians and considers the applicability of this model of care within the NHS. The model was developed at KCH through partnership between the A&E Department and the Academic Department of General Practice, King's College School of Medicine and Dentistry. It was intended to provide a responsive, primary care-oriented approach within A&E, along the lines recommended by Acheson (London Health Planning Consortium, 1981).

The study is designed to provide evidence to inform the planning, purchasing and provision of A&E services within London and nationally, to identify issues relating to resource utilisation in A&E and medical decision-making, and to consider implications for the NHS.

The key questions addressed in this thesis are:

1. What differences occur in the process and outcome of care when patients attending A&E with primary care needs are treated by general practitioners rather than the usual A&E medical staff?
2. What is the relationship between patient outcome and the average variable cost per primary care patient to the hospital sector?

Subsidiary questions are:

3. What factors influence the demand for primary care at A&E?
4. In what ways have departments responded to this demand, and how effective have these interventions been?
5. What factors influence the applicability of the KCH model of A&E Primary Care?

There were three broad phases in which data collection took place. The first phase (1989-91), funded by the Lambeth Inner City Partnership, King's Fund, South East Thames Regional Health Authority, and Lambeth, Southwark and Lewisham Family Practitioner Committee involved the development and implementation of the new model of care and the collection of consultation process data within a prospective controlled trial. This data is used to answer the first key question of the study.

The second phase (1991/2), funded by an MRC grant awarded jointly with the London School of Hygiene and Tropical Medicine, involved collection and analysis of costing information relating to the Phase 1 study data set. This occurred following the preliminary reporting of findings from the first phase (Dale *et al*, 1991), and provides the data for answering the second key question.

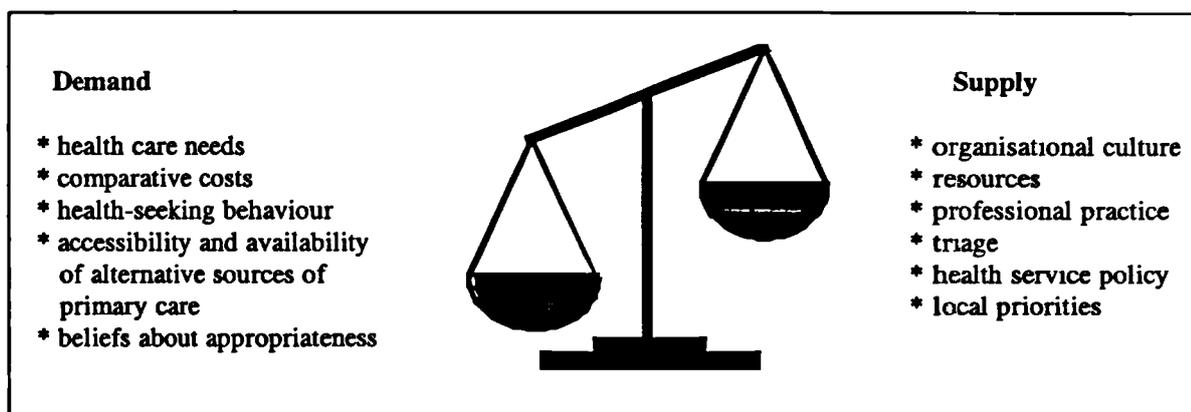
The third phase (1995/6), funded by Lambeth, Southwark and Lewisham Health Authority and Ealing, Hammersmith and Hounslow Health Authority, related to empirical evaluation of A&E primary care services at sites outside KCH. This data is used to consider the applicability of the model of care, and identify critical factors associated with its successful implementation.

1.3 Overview of the thesis

A multi-faceted approach has been taken in this study, and throughout consideration is given to patients' needs and preferences, professional concerns, organisational and structural issues within the health service, and planning and policy issues. The thesis involves clinical, sociological, epidemiological, and economic perspectives. Together, these are intended to reflect the context of the study and so provide a firm base for discussion about the generalisability and applicability of the findings.

Figure 1.2 depicts some of the key forces that are influencing the demand for primary care at A&E departments and the supply of services to meet this demand. These are considered further within Chapter 2 which presents a detailed review of the epidemiological, sociological, clinical, and organisational literature that relates to the primary care/A&E interface. Incentives and disincentives that may act to increase or reduce demand and supply, illustrated in figure 1.2, are explored.

Fig 1.2: Key forces affecting the development of A&E services



A&E demand reflects a complex interplay of factors which influence decision-making processes. The chapter reviews factors that influence A&E attendance, and the characteristics

of patients who attend A&E, and also considers issues relating to the 'appropriateness' of demand, the organisational culture of A&E departments, and strategies used to curtail or cope with demand. The review will be used to help define the health-related purposes of A&E primary care developments and the gaps in the literature that this study aims to fill. The demand for primary care at A&E departments appears to cross national boundaries and exists in all health care systems. Hence, literature from other countries (particularly the USA) is included and its applicability to the UK considered. In addition, relevant literature relating to the quality of A&E care, patient satisfaction, and the costing of care is discussed.

The design of the study is discussed in Chapter 3. This includes the processes involved in implementing the model of care (the employment of GPs in A&E), and the data collection methods developed and used in the study

Chapter 4 presents the results of the cost effectiveness study conducted at KCH. This includes secondary analysis of data that has been previously published in the *BMJ* (Dale *et al*, 1995a; Dale *et al*, 1995b; Dale *et al*, 1996a), in addition to analysis of previously unpublished data. These findings are discussed critically in Chapter 5 and their implications considered.

Chapter 6 considers the applicability of the model of care in relation to its relevance and implementability. It draws on data from recent evaluations of A&E Primary Care Service developments in London, which are interpreted within the context of management literature. The implications for purchasers and providers are discussed in terms of service development, management and organisational elements that support the establishment of A&E Primary Care Services.

Chapter 7 summarises the findings of the thesis, their policy and service implications and identifies further research needs.

There are several appendices. These relate to the character of primary care; the historical development of A&E departments; the NHS reforms and their impact on general practice; the demand for A&E care; triage in A&E departments; the characteristics and expectations of patients in the study sample; evaluations of A&E primary care initiatives in London; and data collection tools used. These are referred to in the text of the main body of the thesis.

Copies of published papers are included as a supplement

CHAPTER 2: REVIEW OF THE LITERATURE

2.0 Introduction

The decision to seek health care advice is complex and may be influenced by a wide range of factors. Social circumstances play a key role (Calnan, 1984; Calnan, 1982), and almost all types of physical or emotional problem can in some circumstances result in a person feeling immediately in need of attention (Abson, 1979). As a consequence, minor injuries and illnesses may present to a wide range of different primary care providers, including community pharmacists, occupational health services, school nurses, sports clinics and complementary practitioners, as well as to GPs and A&E departments (Williams *et al*, 1996).

This chapter reviews the epidemiological, sociological, and clinical literature that relates to the use of A&E for minor injuries and illness. It considers literature relating to the history of A&E services, demand, help-seeking behaviour and decision-making, concepts of 'appropriateness', and health service responses. Examining why patients use A&E (see Appendix IV) reveals much about the way the public understands and uses primary care services. The range of organisational and health service responses to the demand for primary care at A&E departments is reviewed, and gaps in the literature highlighted. The final sections of the chapter review relevant literature relating to the quality and cost of A&E services.

The debate about the use of A&E services is international. Although health care systems vary in structure and organisation, all seem to face common difficulties in managing the demand for primary care at A&E departments. Hence, literature from outside the NHS has been included to broaden the context of the study and help identify findings and issues that have relevance to the development of services in the UK. However, only papers (or those with abstracts) written in English are included. The abbreviation ED (emergency department) is used to help identify research findings from hospital departments outside the UK.

The sources of evidence that have been used include the following databases to enable inclusion of both 'grey' and published literature:

- NLM Medline from 1966
- DHSS database Department of Health from 1983 (on-line via Data Star)
- Excerpta Medica (EmBase) via Bath Information and Data Service (on-line via JANET)

Searches have been made using the following terms:

emergency ward - emergency medicine - emergency health service - primary medical care - health care access - health service - patient selection - patient referral - patient care - hospital care - patient behaviour - injury - hospital utilisation - health care utilisation - family practice - general practitioner - general practice - primary medical care - clinical practice - health care need - health care availability - health care access - physician attitude - patient satisfaction - consumer satisfaction - health care quality - follow up - medical decision making - cost benefit analysis - cost effectiveness - resource management - psychosocial disorder - quality of care

In addition, A&E and primary care-related journals have been manually searched. Relevant papers, books and reports from the reference lists of literature so identified have been included.

2.1 Patterns of demand for A&E care

Between 1979 and 1995 A&E attendances in England increased by approximately 25% from 9.2 million to 12 million attendances per annum (Williams *et al*, 1996). A&E attendance rates show considerable regional variation: from 188 per 1000 population per annum in the Oxford region to 295 per 1000 in Mersey and North Western regions (Williams *et al*, 1996). Urban and industrial areas appear to have experienced the greatest increases in attendance rates (Audit Commission, 1996a; Milner *et al*, 1988), and London has had higher rates of A&E usage and faster rates of growth than elsewhere. These differences are reflected in new attendance rates at a district level which have been reported as varying by as much as 18-fold (Milner *et al* 1988).

The lack of representative local, regional or national data on the incidence of minor injuries or agreed definitions on how to classify A&E case mix in terms of the severity of patients treated complicates the interpretation of attendance rates (Williams *et al* 1996). In some hospitals, all emergency admissions are counted into A&E attendance figures, while in others direct admission occurs to hospital wards. In addition, the organisation of emergency clinics within the area will affect attendance rates. For example, in some areas there are open access services separate from A&E for emergencies relating to certain needs, such as paediatric, eye, dental, or mental health problems. The use of resident district population as the denominator for calculating attendance rates rather than the estimated A&E department catchment population further complicates comparisons; the latter would take account of commuters,

tourists and other transient changes that occur in the population served by the department (Milner *et al* 1988).

The increase in demand for A&E care has paralleled the increase in demands that have occurred for out of hours GP services as well as for emergency admissions. It appears that greater expectations and increasing social isolation may be common determinants of demand (Williams, 1993). Sociodemographic changes that may be important include the increase in numbers and proportion of the elderly and the very young, and the increasing proportion of households containing one person living alone (increased from 22% to 26% between 1981 and 1991) or one adult living with at least one child (increased from 2% to 4% between 1981 and 1991) (Office of Population Censuses and Surveys, 1992a).

The majority of A&E attenders (approximately 70-80%) attend A&E between 09.00 and 21.00 (Williams & Pottle, 1989; Cliff & Wood, 1986; Farmer & Chambers, 1982; Reilly 1981; Dixon & Morris, 1971; Fairley & Hewett, 1969; Griffiths *et al*, 1967), and most attend without referral from a health care professional. Most studies report that the peak times are during the morning and evening, overlapping with the times that GP surgeries are open (Farmer & Chambers, 1982; Dixon & Morris, 1971; Fairley & Hewett, 1969). Mondays tend to be the busiest day of the week, with a gradual decline through the rest of the week (Fairley & Hewett, 1969; Farmer & Chambers, 1982). Hobday (1988) studied A&E attendances from one general practice and found that 46% occurred during weekday working hours (8.30am-6pm).

The increase in workloads cannot be accounted for by a major increase in the incidence of clinical emergencies as those with serious injuries or conditions that require immediate care or emergency admission comprise only a minority (approximately 15-20%) of attenders (Audit Commission, 1996a). Less than 0.1% of attenders present with severe multi-system injuries (Burdett-Smith, 1992). Instead, the increase in workload appears to reflect increasing demand predominantly from those who have less urgent clinical needs.

The gradual trend towards higher rates of self-referral accounts for most of the overall increase in demand for A&E care. However, the reported proportion of new attenders who are self-referred varies widely, from 52% to 92%. Wilkinson *et al* (1977) reported a rate of 52%, Cliff and Wood (1986) found 57%, Patel (1971) 61%, Owens *et al* (1993) 61%, Fry (1960) 62%, Davison *et al* (1983) 67%, Jankowski and Mandelha (1993) 67%, Morgan *et al* (1974) 78%, Williams (1984) 88%, and Hobday (1988) 92%. This variation reflects

differences in the categories used to define the source of referral, as well as differences in time and place.

The pattern of rising demand appears to be occurring in all health care systems. In the USA, for example, attendance rates at EDs appear to have been increasing rapidly for at least the last 50 years (Petrich & House, 1973; Shortliffe *et al*, 1958). Although the rate of increase appears to have slowed in recent years, it is still dramatic: attendances rose by 19% between 1985 and 1990 from 84 million to 99.6 million per annum (Nadel, 1993). The first attendance rate is currently estimated to be around 357 per 1000 per year (McCaig, 1994).

In the USA, the proportion of attenders presenting with non-urgent needs has been estimated at between 5% (Stratmann & Ullman, 1975) and 82% (Haddy *et al*, 1987), while recent federal reports have estimated it to be between 40% and 55% of all ED visits (McCaig, 1994, Nadel, 1993). As table 2.1 shows, a considerable proportion of ED attenders are classified both in the USA and other countries as presenting with non-urgent needs (see also table 2.2 for UK studies reporting rates of appropriateness). The variation between countries reflects differences in health care systems, populations served, size and characteristics of the ED, and criteria used for classifying appropriateness and need for ED care.

Similar patterns of increasing demand have been described in many settings: Australia (Andersen & Gaudry, 1984; Christie, 1980; Catchlove, 1974); Canada (Elliott & Vayda, 1978; Lees *et al*, 1976; Bain & Johnson, 1971); Denmark (Bentzen *et al*, 1987); Ireland (Kaliszer & McCormick, 1975); France (Jacques, 1987; Murat *et al*, 1980); Hong Kong (Kljakovic *et al*, 1981; Wong & Lam, 1994); Netherlands (Sixma & de Bakker, 1996); New Zealand (Richards & White, 1977); Norway (Hjortdahl & Otterstad, 1985); Saudi Arabia (Beaven, 1986; Al-Shehri *et al*, 1992); Sweden (Edhag *et al*, 1986; Magnusson, 1980a); Taiwan (Hu, 1991).

“Lack of primary care provider” is the most common reason given for patients attending EDs with non-urgent problems. Grumbach *et al* (1993), for example, found that 45% of 700 patients attending an ED in San Francisco with problems classified at triage as being non-urgent cited barriers to accessing alternative sources of health care as why they had chosen to attend.

In the USA the growth in ED visits has been particularly pronounced among Medicaid and Medicare recipients and uninsured patients (Nadel, 1993). Medicaid and Medicare are the joint Federal-State health care programs that were set up in the USA in the 1960s to finance health care for certain groups of the poor and the elderly respectively. EDs continue to be the main source of primary care for around 40 million people who are uninsured and a further 45 million who are underinsured or on Medicaid (Young & Sklar 1995; Baker *et al*, 1994,

Table 2.1: Non-UK studies that have surveyed the proportion of workload that is appropriate to Emergency Departments

Author	Year of study	Setting	No. patients	Criteria applied	% workload appropriate to ED	Comments
Nelson et al	1977	Iowa, USA	400	duration of symptoms, diagnosis	74.2%	Inappropriate workload included a disproportionate number of Medical Assistance patients
Bohland	1978	Oklahoma 4 EDs included	91,599	retrospective, based on diagnosis	58.4%	41.8% classified as primary care at triage
Haddy et al	1983	Michigan, USA	1003	retrospective, based on diagnosis	17.8%	Non-emergency diagnosis defined as any problem that can be treated adequately and safely in an office setting
Buesching et al	1983	Illinois, USA	3130	ACEP guidelines	89.2%	Considerable variation observed between the 3 EDs studied
Lowenstein et al	1984	Boston, Massachusetts	234 aged >65y 246 aged <65y	'potentially serious, care required <12 hours'	31% 44%	Assessed retrospectively by a doctor
Kooiman et al	1986	Rotterdam, Netherlands	508	outcome of A&E attendance	49%	Retrospective assessment, 68% of self-referred considered to have non-urgent needs
Vayda <i>et al</i>	1971 1973	Hamilton, Canada	1147 1360	Urgency and trauma	66% 56%	Determined by researchers and casualty officers
Afilalo	1990	Montreal, Canada	920	retrospective, based on diagnosis	69%	15% of patients were classified as 'misusers'
Richards & White	1972 1975	Auckland, New Zealand	591 1147	retrospective, based on diagnosis	55% 64%	Need for A&E care judged by senior A&E staff
Al-Shehri et al	1990	Riyadh, Saudi Arabia	4752	retrospective, based on diagnosis	9.7%	76.4% classified as non-urgent where a delay of 6 hours or more would make no difference to outcome, and 14.3% classified as trivial where delay of 24hr or more would make no difference of attenders non-urgent
Hansagi et al	1984	Stockholm, Sweden	1690	'require the resources of the ED'	73%	Criteria applied prospectively by 'assistant nurses'

Grumbach *et al* 1993; Allison & DeHart, 1991; Lowe *et al*, 1991; Pane *et al*, 1991; Shesser *et al*, 1991; Haddy *et al*, 1987; Buesching *et al*, 1985; Schneider & Dove, 1983; Hilditch, 1980; Davidson, 1978; Ullman *et al*, 1975; Roth, 1972; Weinerman *et al*, 1965)

However, while there is evidence to suggest that the demand for ED care in the USA is associated with a large proportion of the population having little access to alternative provision of primary care, a country like Canada, for example, has a comprehensive primary care system with a high ratio of primary care physicians to specialists, yet Canadians in 1990 made 83.8% more ED visits per capita than Americans (640.3 compared to 348.9 per 1000 population) (Barish *et al*, 1995; Redelmeier & Fuchs, 1993).

2.2 Characteristics of A&E attenders and reasons why they attend

A considerable literature spanning more than 40 years has sought to describe and understand why patients attend A&E departments in the NHS with non-urgent needs. Studies range from small scale audits to more in-depth qualitative and quantitative research that draws on sociological, psychological and economic perspectives. Most have been undertaken at single A&E departments, raising issues about generalisability. The sites studied have rarely been sampled systematically, but instead have been chosen for local reasons. Few studies have attempted to define a catchment population against which to compare A&E attenders, or asked patients what they would have done as an alternative to attending A&E. There is little data about how A&E users compare to non-users, for example in terms of socio-demographic characteristics, beliefs about health and illness, and experiences related to health and illness, and there have been only a few attempts to compare A&E patients with primary care needs with the wider population of users of primary care services in the community (Bradley *et al*, 1995; Green & Dale, 1992). Most studies have used questionnaires and interviews with patients who are attending A&E, and their perspectives have tended to reflect providers' concepts about how services ought to be used. This has led to undue attention being given to more negative aspects of help-seeking behaviour (such as why patients did not go to their GP, barriers to gaining access to GP services etc). In consequence, A&E demand has often been reported outside its broader health service context.

Research into a phenomenon as complex as help-seeking is inevitably fragmented. A variety of models have been proposed to describe the processes involved. However, while the models provide a useful explanatory framework, none has been evaluated in terms of its predictive strength, reflecting the complexity of the inter-relationships between factors that influence decision making. Padgett and Brodsky (1992) proposed a three-stage model of determinants

of A&E use, based mainly on US literature, which provides a useful framework for considering the literature. The three stages were problem recognition, decision to seek help, and decision to use A&E, each of which is influenced by predisposing factors, enabling factors and need factors. This framework is used to discuss the literature pertaining to patients' use of A&E in Appendix IV.

The factors that have been shown to be most important determinants of A&E use appear to be the person's situation when the need arises; the perceived availability and accessibility of A&E and GP services; the patient or an adviser's view of urgency and the care that may be required; and perceptions of the costs and benefits involved in attending A&E or general practice. As discussed in Appendix IV, the decision to seek care often reflects a social process, influenced by lay people and the advice they give. Socio-demographic characteristics, individual health beliefs, experiences and expectations, and health service organisational barriers and arrangements may all influence the decision making process. Furthermore, there are likely to be multiple interactions between these factors. Previous experiences of health services influence expectations and perceptions of need. The importance of these factors in the NHS and other health care systems have been confirmed by numerous studies.

2.3 What is 'appropriate' attendance?

There has been on-going debate about the 'appropriate' use of casualty/A&E departments for many years, and much of this debate has been international. Estimates of the proportion of attenders who are appropriate to A&E varies from 18% to 97% (table 2.2). As discussed already (*section 1.1.1*) and in Appendix II, a range of issues to do with professional demarcation and competition between hospital doctors and GPs, the emergence of A&E medicine and general practice as distinct specialties, and the organisation and funding mechanisms within the health service have all been important. The notion that a large proportion of A&E users have 'inappropriate' needs has persisted throughout. 'Inappropriate' attenders have generally been portrayed as problematic, contributing to unnecessary utilisation of hospital resources and expertise, and thereby competing against those who are in greater need of acute hospital care (Bindman, 1995). They have been blamed for over-crowded departments, prolonged waiting times and causing stress to staff and other patients. The need to limit patients' rights and expectations for A&E care has been argued (Boyd & Watson, 1994). In this section, the literature relating to views about

'appropriateness' is reviewed, and in particular the extent to which such views are embedded within the culture of A&E departments.

Views about appropriateness have tended to hinder discussion about the development of A&E services, and have more often reflected prejudice than evidence. For example, although waiting times are often blamed on 'inappropriate' attenders, these patients usually have problems that are relatively quick to manage, and their needs are given lower priority than those of patients who are less well. They are rarely the cause of over-crowding, which has more to do with the numbers of seriously ill patients in the department, including those who are having to wait in A&E for admission until a bed becomes available on a ward (Afilalo, 1995; Lynn & Kellermann, 1991; Hu, 1991).

There are a number of perspectives on what constitutes 'appropriate' attendance at A&E: that of the provider, the purchaser, the patient, and society at large (Gill, 1994; Mitchell, 1994; Grumbach *et al*, 1993; Farrow *et al*, 1988; Driscoll *et al*, 1987; Gifford *et al*, 1980; Wolcott, 1979; Wingert *et al*, 1968). Beliefs about 'appropriateness' vary within and between A&E departments (Green & Dale 1990). In general, little or no consideration is given to the patient or the carer's perspectives about why care was sought. From a provider perspective, problems perceived as having clinically urgent needs have generally been considered to be appropriate to A&E, and the patient's judgement has been seen as subordinate to that of the clinician. 'Inappropriate attender' has been the term used, usually retrospectively, to describe patients who attend A&E with injuries or ailments that are clinically judged not to require hospital treatment.

There is, though, surprisingly little agreement about what is 'appropriate' (Bindman 1995; Foldes *et al*, 1994; Gill, 1994; Green & Dale, 1992; Driscoll *et al*, 1987), and a variety of different criteria have been used. These include patients requiring treatment within 6 hours (Wilson, 1980), conditions other than minor injuries (O'Flanagan, 1976; Hardy, 1974), those requiring specialist skills and facilities (Dixon & Morris, 1971), or those considered appropriate by medical staff (Foroughi & Chadwick, 1989). The most common criteria relate to urgency and perceived need for hospital-based intervention, so reflecting a medical model of illness (Lowe *et al*, 1994; Grumbach *et al*, 1993; Parboosingh & Larsen, 1987; DeAngelis *et al*, 1985; Gifford *et al*, 1980; Kahn *et al*, 1973). However, as Fitzgerald *et al* (1986) found, when staff are asked to rate the urgency of patients' clinical needs, only a small minority are scored highly. They found that 90% of attenders at the Edinburgh Royal Infirmary A&E scored less than 5 on a linear analogue scale of 0-10 for urgency ("10" = greatest urgency)

The disparity in methods used to define 'appropriateness' is reflected in the proportions reported by different studies (see table 2.2). The variation reflects not only differences in study design, time and the populations being studied, but also differences in concepts and definitions about workload. UK studies have differed in how they define episodes, use diagnostic classifications, assess appropriateness, and in their sampling methods and data sets. Assessments of appropriateness are almost always based on judgement about patients' needs either by the clinician in A&E or by the investigator based on the content and outcome of the consultation (usually judged retrospectively from the case records). Criteria used range from those described by the Nuffield Provincial Hospital Trust (1960) or a modification of them, to subjective opinion. Even when similar criteria have been used, the assessment of need for hospital care has shown broad variation. For example, the studies in Table 2.2 that used the Nuffield criteria found between 24% and 70% (median 36%) of attenders in need of A&E care.

Studies based on assessments of the need for A&E care from a hospital perspective give much greater proportions of the workload as appropriate to A&E than those made from GP perspectives. Many studies do not define their terminology ('non-urgent', 'inappropriate', 'mis-user' etc) or the criteria by which attendances are judged, making comparison between studies difficult. In many studies the criteria used for classifying patients' attendance are ambiguous (such as, 'being an accident' or 'a medical or surgical emergency', or the health care professional using 'their fair professional judgement'), and lacking explicit criteria, replication is impossible. Assessments based on the patient's presenting symptoms are likely to differ from those based on the final diagnosis and care that the patient received in A&E (Gifford *et al*, 1980). Retrospective classification may be as much a reflection of the quality and outcome of the clinical assessment and its documentation rather than of the patient's needs.

Lowy *et al* (1994) proposed a system for judging whether or not A&E attendances were necessary according to the process of care. Patients were classified as 'unnecessary' if they were registered with a GP; not investigated in A&E; not treated in A&E (except for a prescription, bandage, sling, dressing or steristrip); did not come from a road traffic accident or an accident at work, school, a public place or a sporting event; and were discharged completely from care in A&E or referred to their GP. Applying these criteria to attendances at eight departments they found that 23.9% of attenders were unnecessary (range 15-33%). If patients who only received an x-ray, but no other intervention, were included in the 'unnecessary' group, the mean rate of 'unnecessary' attenders was 38.6%. However, there is

Table 2.2: Review of UK studies (1958-2993) that have surveyed the proportion of workload 'appropriate' to A&E

Author	Year data collected	Setting	Sample size	Criteria applied	% appropriate to A&E	Comments
Crombie	1958	Birmingham	410	Explicit criteria linked to diagnosis	18% males; 25% females	Retrospective by researcher
Fry	1958	London	5000	Retrospective by author	60%	40% GP referrals a 'misuse'
Lamont	N/g	Grimsby	3458	Author's assessment	<42%	
Blackwell	1961	London	200	Author's assessment	65%	Researcher was employed as casualty officer
Parry <i>et al</i>	1960	Portsmouth	11,230	Author's assessment	<75%	Assessment based on investigations and outcome
Griffiths	1966/7	London	c3000	Accidents, medical and surgical emerg	72%	
Rutherford	1970	Belfast	1007	Assessment made by treating doctor	77% ambulance area; 63% walking area	
Pease	1971/2	London	2267	Author - duration >2/7 or 'trivial'	60%	
Dixon & Morris	1970	Bristol	1288	Referred by GP, 999, investigated/admitted	35%	Based on attendances from 1 HC
Hardy	1971/2	Hereford	16,000	Severity of injuries	37%	Analysis of one year's workload
O'Flanagan,	1973/4	Derby	2379	GP assessment of need for hosp care	32%	Assessed by GP trainee working in A&E
Morris & Hird	1978	Arbroath	332	Suitable for care at a GP or health centre	42%	Examining doctor's opinion
Inwald	1978	London & Somerset	350	Accidents, surg/medical emergency	88% Somerset 55% London	84% Somerset attenders had accidents vs 49% London attenders
Davison <i>et al</i>	1978	London	587	Accidents, surg/medical emergencies	61%	Assessed by casualty officers treating patients
Reilly	N g	Belfast	784	GP assessment of A&E records	54%	Patients from 1 practice
Myers	N/g	N/g	1000	GP assessment of A&E records	46%	
Hall	1980/1	Stockton-on-Tees	393	GP assessment of A&E records	33%	Patients from 1 practice
Calnan (1983b)	N/g	DGH in SE England	628	NPHT guidelines*	36%	Researchers' assessment
Chambers & Johnson	1981	6 London depts	3824	Modified NPHT guidelines*	34% inner London 44% outer London	Researchers' assessment
Wong & Brazier	1983	London Eye Hosp	417	Diagnosis, duration	66%	Researchers' assessment
Davies	1984/5	London	92	Disposal to hospital teams	37%	Attenders from single practice. Assessor GP trainee and trainer
Stewart <i>et al</i>	1984	Belfast Paed	862	Presenting complaint 'accident or emergency'	66%	Researchers' assessment
Wood & Cliff	1985	Southampton	218	Modification of NPHT*	24%	Only included non-stretcher bound patients
Driscoll <i>et al</i>	N/g	London	835	Need for hospital care	60%	Casualty officers' perceptions
Hobday	1986	Maldstone	606	GP assessment of A&E records	48%	Patients attending A&E from one general practice
Horder	N/g	London	100	N/g	50%	Researcher's assessment
Foroughi & Chadwick	N/g	London	6115	All, except those labelled as 'abusers'	93%	A&E doctors' assessment, using their 'fair professional opinion'
Worth & Hurst	N/g	Provincial A&E	2031	Judged by duration of problem and type of accident or complaint	86%	Conditions 'normally requiring GP or GP/nurse facility'
Walsh	1988	Bristol	2000	Duration, diagnosis	72.5%	Researchers' assessment
Prince & Worth	1989	Nottingham paed	A&E 285	Modification NPHT criteria*	70%	Only included adult, non-admitted patients. Researcher's assessment.
Dale	1989/90	London	5658	Explicit criteria	59%	Assessed by doctor treating patient; 50% aged <2 yr 'appropriate'
Morrison	1990/1	Glasgow	808	Judged by GP and A&E consultant	66%	Prospective triage classification made by nurses
Bryce & Houghton	1991	Northampton	529 living outside A&E catchment area	All, except those 'not needing medical advice'	76%	Patients from one GP practice Judged by 2 A&E doctors
Burke & Rashid	1993	Wolverhampton	13453	All, except "conditions best managed by a GP"	97%	Assessed prospectively by A&E medical staff

*NPHT guidelines define levels of severity according to the level of medical skill needed to treat the complaint diagnosed and the facilities that are required
N/g = 'not given'

evidence that clinical indications alone do not support the frequency with which patients receive investigations and referrals, and that many other factors play a part, including reassurance and concerns about complaints and litigation (Gleadhill *et al*, 1987, Warwick & Salkovskis, 1985; Sandler, 1984; Reilly, 1981). Assessing levels of appropriateness from the care provided may undervalue the importance of history-taking, examination and advice-giving within an A&E consultation.

There is some evidence about the changes which occur in perceptions of urgency and appropriateness as a result of more thorough assessment and diagnosis. Gifford *et al* (1980) analysed 10,253 visits to an ED and found that physicians' initial prospective assessment of needs was that 39.0% required treatment within 2 hours, but their retrospective assessment was that this was only true for 32.8%. With the benefit of hindsight, the need for care often appears to be less urgent than at the time when the patient first presented.

There have been a number of attempts in the USA to develop explicit criteria for appropriateness. The American College of Emergency Physicians (ACEP) endorsed guidelines for determining what constitutes an 'appropriate' visit to an emergency department in October 1992. These included the introductory statement:

“...a patient has made an appropriate visit to an emergency department when: an unforeseen condition of a patho-physiological or psychological nature which a prudent lay person, possessing an average knowledge of health and medicine, would judge to require urgent and unscheduled medical attention most likely available, after consideration of possible alternatives, in a hospital emergency department.”

These guidelines stress the patient's perceptions about the need for emergency care and the availability of appropriate alternative sources of care. Buesching *et al* (1985) found that applying the ACEP guidelines produced much lower estimates of inappropriate use (10.8%) than found in studies using more provider-centred criteria, although the terms “prudent lay person” and “average knowledge of health” and “consideration of possible alternatives” all seem open to multiple interpretations.

DeAngelis (1985) attempted to define explicit criteria for judging the appropriateness of visits relating to the symptoms/complaints, diagnoses and parental concerns of children attending an ED. This resulted in 67.4% of visits being judged appropriate. However, parental concern accounted for only 4.7% of those visits judged to be appropriate, reflecting a bias towards the physician's views.

Lowe *et al* (1993) compared seven different published systems of classifying ER attendances and found that they resulted in between 10% (based on patients' own assessment of need) to 90% (based on whether hospitalisation occurred from the emergency department) of a cross sectional sample of 598 visits being classified as 'inappropriate', with the other five indicators ranging from 21% to 37% as inappropriate. However, there was little agreement between indicators about which specific visits which should be classified as inappropriate.

Foldes *et al* (1994) compared judgements made by an internist and an emergency physician about the appropriate treatment location of 219 patients at two urban emergency departments and found little agreement. They concluded that "professional consensus on what to call an emergency and where to treat it may be more a matter of physician training, specialty and beliefs than of scientific certainty". It is also likely to reflect the availability of alternative sources of health care, and awareness about these services.

Differences between clinicians' view of needs and those of patients have been demonstrated in several studies. Wingert *et al* (1968) found that clinicians judged 30% to 40% of visits made by children to an ED as urgent, while the parents involved believed that 70% were for urgent reasons. Driscoll *et al* (1987) found that 21% of patients who considered their condition to be urgent were classified by A&E staff as requiring GP services, and conversely 14% of patients who considered their condition to be non-urgent were classified as needing A&E services. Calnan (1984) found that while 59% of patients felt that emergency treatment was required, only 6% were defined as clinically urgent by an A&E consultant on the basis of retrospective assessment of case notes.

In summary, wide variation has been reported in the proportions of A&E attenders who are classified as presenting with 'appropriate' needs. Most studies have assumed that consultation process data provides a reliable standard against which to judge clinical need, but ignore the range of contextual factors that influence the decision to attend A&E. Few have placed weight on the concerns and expectations that caused the patient to attend A&E, or the patients' appreciation of the benefits of attending A&E compared to the risks and costs of not doing so. They tend to hold the patient solely responsible for their attendance, an assumption that reflects the beliefs and values held by A&E staff. This forms the subject of the next section.

2.4 A&E organisational culture: perceptions about primary care

A number of studies have focused on the processes by which the patient becomes labelled as 'inappropriate'. Within each department, there tend to be strong, shared views on what types of patient presentations are or are not within the concern of A&E, and staff attitudes may be overtly or covertly hostile to patients who are perceived as 'misusing' or 'abusing' the service (Crouch & Dale, 1994; Green & Dale, 1990; Jeffrey, 1979; Mannon, 1976). Although A&E is a setting where minimum information is available about each patient, judgements about 'moral fitness', the 'legitimacy' of demands, and whether or not the patient is 'deserving' of care are continually being made. Roth (1972) suggested that these evaluations of moral worth were taken from the norms of wider society and based on initial impressions of the patient's appearance, manner, speech and the presenting problem. Legitimate problems are those associated with "real" emergencies, while illegitimate cases those that are ill-defined or long-term, particularly the department's "regulars" who attend frequently (Mannon, 1976). Such views may lead to insensitive, unresponsive care together with clinical errors, patient complaints and organisational difficulties. They may act as an impediment to the training of A&E staff (Wolcott, 1979).

Calnan (1982) considered how issues of professional status, demarcation and autonomy relate to views about appropriateness. He argued that the lack of formal control (such as waiting lists or appointment systems) over the case-mix and pace of whom is seen and treated made A&E unattractive for hospital doctors intent on becoming a specialist. Identifying a proportion of their workload as having no legitimate claim on resources provides a means of attempting to impose order on what implicitly is an unpredictable setting. Defining 'true' A&E work in terms that emphasise the importance of major trauma and life-threatening conditions reinforces the status of A&E medicine as a hospital specialty and the disinterest in patients presenting with primary care needs.

Crouch and Dale (1994) used visual analogue scales to assess triage nurses' attitudes to different patient presentations. More negative feelings were demonstrated towards patients who were triaged as presenting with 'primary care' needs. Nurses felt less sympathy, more irritation and were less motivated to help such patients. Their needs were perceived as being less urgent than those triaged as having 'A&E' type problems

A&E departments experience a rapid turnover of junior medical staff. SHOs are usually only on six month attachments and may lack knowledge or experience of the rest of the hospital or its locality. Nursing staff are numerically the dominant group in A&E departments, and they are the

group that provides continuity and preserves and sustains the 'organisational paradigm', the shared experience, values, beliefs and assumptions within the department passed from one generation of members to the next (Johnson & Scholes, 1993). On a day to day basis, it is nursing staff who are most influential on the junior medical staff, not only in terms of providing clinical guidance but also in orientating and socialising new staff into the department and its organisational culture (Hughes, 1986).

Each A&E department evolves shared stories and jargon to legitimise the behaviour and attitudes of staff and reinforce acceptance of the dominant culture. Jeffrey (1979) described how patients are divided into 'good patients' (such as acutely ill patients, or those with interesting clinical signs and symptoms which challenge the expertise of the department) and 'normal rubbish' (patients seen as being responsible in some way for their predicament and who attend the department inappropriately). He found that patients labelled by staff as "rubbish" included "trivia" (those attending with minor, self-limiting problems), "drunks" (who were characterised as being abusive and threatening), "overdoses" (seen as being responsible for their state), "tramps" (seen as being untrustworthy and dirty). "Rubbish" could be "punished" for attending A&E in various ways, but principally through increasing the time that they had to wait for treatment. It appears that nurses may cope with uncertainty and lack of knowledge about patients by placing them in stereotypical groups. However, this may result in a failure to recognise patients' individual needs.

Negative views of general practice appear to pervade many A&E departments (Gibney *et al*, 1995; Dale & Green, 1991), and there are widely held views about the extent to which the use of A&E reflects a 'failure' of general practice. This is despite evidence that dissatisfaction with GP services is a minimal factor in the decision to attend A&E (Ward *et al*, 1996; Green & Dale, 1992), and the high levels of satisfaction expressed by the public about GP services (Baker, 1996; Baker & Streatfield, 1995; Wilkin *et al*, 1987; Cartwright & Anderson, 1981; Morgan *et al*, 1974). General practice gets blamed not only for failing to provide sufficiently comprehensive and accessible services, but also for the quality of their referrals to A&E (Wass & Zoltie, 1996; Harborne & Worrell, 1993; Foroughi & Chadwick, 1989; Davison *et al*, 1983). This view was encapsulated by Fry (1960) who (writing about KCH) stated, that 'casualty runs as a general practice: it is misused by both the public and their doctors'; he felt that 40% of GP referrals could have been managed outside A&E. Davison *et al* (1983) reported that 12% of the cases considered to be inappropriate at a survey at the London Hospital had been referred to A&E by a GP.

Inevitably, the perceptions staff have of local GP services are skewed by their understanding of patients' decisions to attend A&E. A&E staff often lack direct experience or knowledge about health care services being provided outside hospital (Dale, 1992a), and the amount of acute care that takes place in the community tends to be overlooked (Watson *et al*, 1979). Studies undertaken from a GP perspective demonstrate how few contacts with patients take place within A&E compared to the number occurring in general practice. For example, Hobday (1988) analysed attendances from one GP practice and found that over a six-month period around 1 in 25 new consultations took place in A&E rather than the surgery; he felt that more than 50% of these patients should have attended the GP surgery which would have increased GP activity by around 2%. While there are currently 15 million attendances per annum at A&E departments in England and Wales (Audit Commission, 1996), there are in the order of 150 million consultations within general practice (approximately four per head of population per year). Nationally, the impact on general practice of a 50% drop in A&E workload might be a 5% increase in the numbers of patients seen, which is equivalent to each GP seeing about one extra patient per surgery.

2.5 Concerns about the appropriateness of A&E care

From a primary care perspective, there are concerns about A&E departments being an inappropriate place for providing primary care. The quality of care provided for patients with primary care type problems has been questioned because of the nature of the setting, the lack of appropriate clinical skills and access to GP records, its costs and because continuity of care may be harmed (Dale, 1992a; Cohen, 1987; Bliss, 1982; Geyman, 1980; O'Flanagan, 1976; Ullman *et al*, 1975). As a result important clinical matters may be overlooked, and there may be unnecessary duplication of activities and procedures (Bentzen *et al*, 1987). Reilly (1981) found that 41% of self-referred patients from his practice were recalled to A&E, and estimated that at least half of them could have been referred to his practice for follow-up. Around 10% of patients may be referred to outpatient clinics (Wilkinson *et al* 1977, O'Flanagan, 1976), and Magnusson (1980b) showed that the attendance rate at A&E predicts subsequent use of outpatient clinics. There is some evidence from the USA and Scandinavia that follow-up tends to be poorer for patients who attend EDs rather than primary care services (Magnusson *et al*, 1993; Brook *et al*, 1973), substantially impairing its effectiveness (Brook & Stevenson, 1970).

Caplan (1975) went as far as to state that EDs “cannot give satisfactory care for those with non-urgent needs since its management is fragmented and episodic, the antithesis of family practice”. Morrison *et al* (1990) found that most (89%) GPs preferred non-urgent patients to be discharged back to their practices. However, it is unclear how much consensus there is among GPs about what is appropriate use of A&E (Peppiatt, 1980).

Negative views about general practice are not only damaging to the professional standing of GPs, but may also encourage a tendency for interventionist care in A&E and referral of patients to hospital out-patient services rather than back to their own GP for follow-up. Interventionist care may not only be costly, but may also be inappropriate in other ways. It may confirm in the patient’s mind the validity of their fears, encourage somatic fixation, and so increase their anxiety and perception of threat (Warwick & Salkovkis, 1985). Anxious patients are more likely than others to interpret ambiguous information as threatening (Butler & Mathews, 1983). It may contribute to raising public expectations for high technology medicine, and so encourage future dependency on hospital services (Bliss, 1982). Significant psycho-social problems may be overlooked (Kooiman *et al*; 1989; Reilly, 1981; Caplan, 1975; Heagerty *et al*, 1970).

There is evidence that A&E patients are rarely asked about emotional worries or problems unless they are displaying overt psychological symptoms, although many patients who present at A&E with physical symptoms would like such issues to be raised (Bell *et al*, 1991). Even when psychosocial problems are recognised, therapeutic options and follow-up are seldom discussed with the patient (Hansagi *et al*, 1990).

Although a Royal College of Radiologists Working Party found no evidence of the overuse of radiography of extremities in A&E, they recommended the development and implementation of guidelines to reduce variability and improve the quality of A&E clinical practice (Royal College of Radiologists, 1985). Gleadhill *et al* (1987) found that clinical guidelines and an education programme can reduce unnecessary referrals for radiography without adversely affecting the quality of care for patients, but there is also evidence that it is difficult to sustain any such reduction (Clarke & Adams, 1990).

In addition to the avoidable costs to the health service and to individuals (e.g. through time off work), there may be important longer term health and cost implications resulting from the consequences of unnecessary exposure to radiation. False positive x-rays may result in potentially harmful patient management, such as immobilising in plaster a normal limb, as well as unnecessary referral to out patient clinics.

It has been shown that patient expectations for lower back x-rays, for example, can be lowered considerably through education (a brief intervention which required less than five minutes to complete) without adversely affecting satisfaction and without missing any serious diagnoses (Deyo *et al*, 1987) Effective reassurance may help to reduce patient expectations regarding the use of the investigation (Sox *et al*, 1981).

2.6 Responses to the demand at A&E for primary care

Previous sections of this chapter have discussed the literature relating to demand for A&E services, decision-making and appropriateness. The reasons why patients attend A&E rather than general practice have been shown to be multi-factorial, but relate mainly to issues of availability, accessibility, convenience, cost, and the perceived competence and capability of different providers. The pattern of increasing demand for A&E care is international, and the difficulties that A&E departments have in responding to this demand also appear to cross national boundaries and systems of health care. In this section, interventions are considered that have been reported in the international literature as reducing demand and/or meet it more effectively through modifying the services provided.

2.6.1 Reducing the demand

Over many years, strategies to discourage the use of A&E have been repeatedly suggested (see Table 2.3) reflecting factors that have been found to influence decision making to attend. To date, most of these have lacked formal evaluation in the UK, but given the range of variables that influence demand uni-dimensional interventions appear unlikely to have a significant effect. There is increasing evidence emerging from the USA, where experience of managed health care is growing, of interventions aimed at discouraging the use of EDs either directly or through developing alternative forms of primary care provision. Consideration of these studies is included below, although not all have direct applicability to the NHS.

2.6.1.1 Discouraging the use of A&E

Interventions that produce a general reduction in A&E accessibility raise ethical, clinical and legal problems (Iserson, 1992). They are unlikely to be sufficiently discriminating, and may deter some patients with urgent clinical needs from seeking care. While in the USA, for

example, ED use has been shown to respond to cost-sharing between the patient and their health care insurance company, the decrease in use was greatest for conditions of lesser severity. The effects of co-payments are likely to be greatest on those who are financially less well off.

Table 2.3 Ten strategies that have been suggested for reducing the demand for A&E care

1. Changing the name of the service from casualty to A&E 1
2. Introducing financial disincentives 2,3,23
3. Turning 'inappropriate' patients away from A&E 4,7
4. Implementing national/local educational initiatives 5,6,8,18,19
5. Information leaflets 9,10,11,18
6. Encouraging patients to telephone before attending A&E 12,13,14,15,16,17
7. Improving the accessibility and availability of alternative primary care services 22
8. Increasing patients' awareness of the provision of minor injury care in general practice 2, 20,21
9. Providing financial incentives for GPs to do minor surgery 22,21
10. Improving GP access to outpatient facilities 18

References

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|----------------------------------|----------------------------------|---------------------------------|
| 1. Ministry of Health, 1962 | 2. Davies, 1986 | 3. Selby <i>et al</i> , 1996 |
| 4. Foroughi & Chadwick, 1989 | 5. Lamont, 1961 | 6. O'Shea <i>et al</i> 1984 |
| 7. Jones & McGowan, 1989 | 8. Worth & Hurst, 1989 | 9. Singh, 1988 |
| 10. Bolton & Storrie, 1991 | 11. Walsh, 1990b | 12. Darnell <i>et al</i> , 1985 |
| 13. Srinivas <i>et al</i> , 1996 | 14. Buckles & Carew-McColl, 1991 | 15. Yeatman 1981 |
| 16. Crouch <i>et al</i> , 1996a | 17. Crouch <i>et al</i> , 1996b | 18. Blackwell, 1962 |
| 19. Dixon & Morris, 1971 | 20. Peppiatt, 1980 | 21. Wood & Cliff, 1986 |
| 22. Myers, 1982. | 23. O'Grady <i>et al</i> , 1985 | |

Selby *et al* (1996) looked at the impact of introducing a \$25 to \$35 co-payment for using the emergency department by an health maintenance organization (HMO) which already provided alternative urgent primary care services. They found that ED use fell by 15% compared to use by two control groups who were not subject to co-payments. O'Grady *et al* (1985) found that those with total insurance cover used about 40% more ED services than those whose co-insurance covered 95%, and about 160% more than those with lower levels of cost sharing. However, as Steinbrook (1996) pointed out, the decline in ED use included such conditions as head trauma, sickle cell crisis, pancreatitis, asthma, and chest pain, a substantial proportion of which "by any standard.... should be evaluated in the emergency department".

Limiting the accessibility of emergency care appears to have a varied impact on overall demand. While Bindman *et al* (1991) found that patients with less urgent problems who are faced with long waiting times for care are more likely to leave than those who are more seriously ill, Baker *et al* (1991) found in a similar ED that this was not the case. There is evidence to suggest that patients who leave the department without waiting to be seen may experience deterioration in their clinical condition (Bindman *et al*, 1991; Dershewitz & Paichel, 1986), again indicating the risks involved in limiting access (see *section 2.6.2.1*).

On the other hand, Badgett (1986) reported on a 12-month pilot during which patients entitled to medical assistance had to seek authorisation from their primary care physician before they could attend a paediatric ED. Participating primary care physicians were required to provide 24-hour availability and were paid capitation fees. ED attendances dropped in this group by 46%, but rapidly started to increase again towards the end of the pilot. However, there were no differences in admission rates during this period, suggesting that seriously ill patients gained access through their primary care physician.

2.6.1.2 Improving the accessibility and availability of alternative sources of primary care

Improving access to alternative primary care services has often been suggested as a means of reducing pressure on A&E (Harborne & Worrell, 1993; Moore *et al*, 1972), for example through increasing the availability of open access surgeries and extending the hours of GP surgeries (Bolton & Storrie, 1991). As discussed earlier in this chapter (*section 2.4*), the inaccessibility or unavailability of GP services has been frequently blamed for the 'inappropriate' use of A&E and their over-crowding.

However, there has been little research in the UK into the impact that improving access to different sources of primary care has on demand for A&E care. As identified in *section 2.2.2*, studies that have looked at different organisational arrangements in general practice have failed to demonstrate an association between attributes such as appointment systems, out of hours arrangements, practice size and use of A&E. The impact that new out of hours arrangements in general practice, including the dramatic expansion in the numbers of GP co-operatives and the expansion in the number of out of hours primary care emergency centres offering base consultations (Jessopp *et al*, 1997), have on A&E demand has yet to be evaluated. However, the rapid expansion of free-standing emergency centres in the USA in the 1980s did not appear to have a significant effect on urban ER use (Ferber & Becker, 1983),

although this may be because they were often located away from inner city areas and relied on patients' ability to pay.

There is, though, evidence from other health care systems that primary care problems present more commonly to EDs where community-based primary care services are lacking. Hilditch (1980), for example, studied the use made of the ED by a population served in 1972 by a physician to population ratio of 1:10,000 which by 1975 had fallen to a ratio of 1:1,800 together with extended hours of availability. In 1972 they found 22.1% of respondents had visited the ED at least once during the preceding year, but by 1975 this proportion had fallen to 13.8%.

Hochheiser *et al* (1971) found a 38% decrease in a neighbourhood's use of a paediatric ED following the opening of a community health centre. Bonham and Barber (1987) found a 40% reduction by Medicaid recipients in their use of EDs in Jefferson County, Kentucky following the introduction of a scheme which registered them all with primary care physicians. Likewise, Gill and Diamond (1996) found that the effect of a voluntary program that offered Medicaid patients referral to a primary care physician as a regular source of care resulted in a 24% decrease in the use of EDs and a 50% increase in the number of visits to primary care physicians.

Westman *et al* (1987) reported the effects of improving access to primary care at a health centre in Stockholm through introducing a new appointment system, increasing the number of telephone lines and introducing new work schedules for nurses and administrative staff. They identified that compared to the populations using three health centres chosen as controls, age-adjusted attendance rates to the ED fell over the subsequent five year period. Sjonell (1986) studied the utilisation of emergency care services in the 18 months before and after the establishment of a new health centre in Stockholm and compared this to the utilisation of populations in nearby control districts. He found that ED utilisation declined by 40% ($p < 0.001$) in the intervention population.

However, other initiatives aimed at increasing the availability of primary care services in the community have failed to demonstrate significant decreases in ED attendance rates (Douglass & Torres, 1994; Straus *et al*, 1983; Maynard & Dodge, 1983; Merrill *et al*, 1980), although patients with a regular source of primary care appear to use the ED less frequently for non-urgent problems (Shesser *et al*, 1991; Haddy *et al*, 1987; Hilditch, 1980). A dramatic expansion in the availability of primary health care centres in the vicinity of the Huddinge Hospital in Stockholm which resulted in the annual number of GP visits increasing from

58,885 to 188,827 between 1976 and 1988 had little impact on A&E attendances (Hansagi *et al*, 1991). In Quebec, the ED visit rate increased by 14% per year for the 3 years following the introduction of universal health insurance in 1970 compared to a 7% annual increase for the preceding 5 years (Stemmetz & Hoey, 1978). This was interpreted as reflecting an overall substantial increase in demand from the public for medical care.

In summary, it appears that the effect of improving access to primary care where access was previously poor is complex, and may or may not support reduced utilisation of A&E services. The effect size seems to vary greatly, reflecting the pre-existing availability and pattern of use of primary care services. The studies reviewed have generally lacked control groups and so observed changes in the demand for A&E services may have reflected the presence of confounding factors. Those that have demonstrated a reduction in A&E demand following an expansion in the availability of primary care generally describe populations who previously had poor access to primary care, particularly low income households in the USA. These studies have only looked at one factor that affects demand (namely access to alternative sources of primary care) whereas, as demonstrated already in this thesis, a multi-factorial model needs to be considered. Their methodological limitations and contextual differences leave the precise nature of this relationship and its applicability to the UK in doubt. The demand for A&E care is clearly not just a function of lack of alternative primary care provision.

The scope for influencing patient behaviour through further primary care based interventions may be limited in countries like the UK where primary care coverage is already well developed. Furthermore, there is likely to be a considerable time lag involved in changing the knowledge and attitudes of patients, so making it a complex and long-term task to measure the impact of any one intervention.

2.6.2 Supply-side interventions

There are broadly two categories of intervention within the A&E department that have been suggested or piloted as means of responding to the demand for non-urgent or primary care. These are discussed below. The first category of interventions relate to those aimed at limiting access to such patients (*section 2.6.2.1*), while the second are more focused on promoting appropriate, primary care-oriented responses to patients' needs (*section 2.6.2.2*). Many of these approaches have been evaluated to a limited extent, but to date few have been rigorously researched.

2.6.2.1 Re-directing patients away from A&E

A number of authors in the UK have suggested that triage nurses should be allowed to re-direct “inappropriate attenders” to other sources of primary care, such as general practitioners, without being treated in the emergency department (Williams, 1992; Rock & Pledge, 1991; Bellavia & Brown, 1991; Carew-McColl & Buckles, 1990). For example, Jones and McGowan (1989) in a study of self-referral suggested that “intervention should be offered only if the problem is a genuine emergency”. They argued for extreme stringency in the criteria for providing treatment in A&E to avoid departments from becoming an “alternative source, if not first choice” for primary care. Others have argued that urgent medical problems may not be apparent without full assessment, and so such peremptory action may be unwise and unsafe (Crouch 1992; Dale, 1992a; Walsh, 1990a). The aims and methods of triage are discussed more fully in Appendix V.

Many A&E departments in the UK have an informal policy of advising patients to seek alternative care, particularly at times when the workload is heavy and waiting times long, but the effectiveness of this policy has never been formally evaluated. Although nurses are consistently found to err on the side of caution and give patients’ higher priority at triage than do doctors, the lack of agreement found between triage nurse and physician’s assessment of patients’ needs indicates the limitations of triage decision making, as well as the potential risks of refusing patients care after triage assessment alone (Brillman *et al*, 1996; Dale *et al*, 1995a; George *et al*, 1993b; Rivara *et al*, 1986; Zwicke *et al*, 1982; Albin *et al*, 1975; Russo *et al*, 1975). In the USA, DiPasquale *et al* (1994) found that triage nurses could not accurately predict which patients could be seen in a fast-track centre. Brillman *et al* (1996) found considerable variability in triage decisions between physicians, nurses and a computer program that used branching algorithms based on the presenting complaint (Berman *et al*, 1989), and none predicted accurately which patients required admission. The computer system resulted in only a sensitivity of 68% for predicting which patients required care in an ED rather than an urgent care centre.

Others have advocated that until triage methods are standardised and validated they should not be used to prospectively determine the timeliness or appropriateness of emergency care (Williams, 1996a). Schmidt *et al* (1995) reported the position statement of the Society of Academic Emergency Medicine in relation to the ethics of ED triage. They argued that patient welfare had to be the “over-riding determinant of access to emergency care”. As no



existing system of triage is capable of differentiating all patients with serious emergencies from those with lesser problems, “triage policies that refuse care to individuals meeting specific criteria put some of these patients at risk for further harm”.

Despite this, in the USA in recent years there has been an increasing trend towards managed care as a means of cost containment. Many EDs now have to seek pre-authorisation from the patients’ insurer or HMO before they can be treated. Several reports, though, indicate the hazards that may be involved in denying patients care (Osborn, 1996; Wrenn & Slovis, 1996; Knopp, 1996; Abbuhl *et al*, 1995; Derlet *et al*, 1995b; Lowe & Young, 1995; Shaw *et al*, 1990). For example, Shaw *et al* (1990) reported on a new primary care case management system for 100,000 indigent patients whereby permission to treat had to be sought from patients’ primary care physicians if they were triaged as attending an ED with a condition that did not require immediate care. In addition to causing much dissatisfaction, 2 (0.4%) out of 477 children who were refused ED care and for whom follow-up information was identified had required subsequent admitting to hospital. Based on the results of this research, the practice of refusing care was stopped.

In the USA, granting triage nurses the authority to refuse care to patients with needs perceived as being non-urgent, despite the considerable medico-legal and ethical issues that this raises, has been strongly advocated by Derlet and Nishio. In 1990, they reported findings from their use of triage nurses who had been trained to take a brief history of the presenting complaint, review vital signs, examine the patient focusing on the presenting complaint, and then refuse further care to the patient (*without* making alternative arrangements) if their complaint falls within a range of 50 that have been classified as “non-emergency”. As a result, 19% of all adults presenting to the ambulatory care area were refused care; patients under the age of 15 years, patients in severe pain, and those who arrived by ambulance were excluded from the sample. Only 1% of patients refused to leave the department. A further 1% returned to the department within 48 hours, but none of these were reported as having deteriorated because of the delay in receiving care. A non-random sample of 18% of those refused care were followed up by telephone interview 24 to 48 hours later (Derlet *et al*, 1992), and no adverse outcomes were reported. However no attempt was made to follow up those who could not be contacted and these may have included patients who lacked phones, were too ill to answer the phone, had been admitted to hospital elsewhere, or died (Lowe & Bindman, 1994). No longer term follow-up of patients was undertaken, and the extent to which patients may have sought ED care elsewhere was unknown.

In 1995, Derlet *et al* (1995a) reported five year results based on the triage assessment of 176,074 patients, of whom 18% had been refused care. During this time their original triage guidelines were modified as part of a continuous quality improvement programme, and this corresponded with a slight decline in the numbers of patients triaged out of the department. Follow-up, which included letters and telephone calls to all local ambulatory care clinics, eight neighbouring EDs and the coroner's office, identified no instances of "gross mis-triage", and only a very small number of "insignificant" adverse outcomes.

Derlet *et al*'s work, however, has received considerable criticism. Iserson (1990) described their original paper as "the most blatant corruption of the emergency medical care system that has ever seen the printed page". Concerns were raised about the limitations in the assessment of patient outcome and lack of longer term follow-up (Afilalo, 1995). Clinical, moral, ethical, economic and legal problems associated with denying patients care were highlighted (Schmidt *et al* 1995; Henry, 1990; Henze, 1990; Iserson, 1990, Lieberman, 1990). Furthermore, it was pointed out that for the types of patients who were refused care once a brief history had been taken and vital signs checked, completing the assessment and treatment would not have taken much more time (Henry, 1990).

Derlet's approach has not been taken up in the USA, although the guidelines used have been tested at other sites. Lowe *et al* (1994) found in their ED that 33% (CI 25 to 43) of those who would have been turned away had made what the authors classified as an appropriate visit (received therapeutic or diagnostic interventions), although it is probable that not all of these patients required prompt intervention. They also found that the published guidelines were difficult to apply and that experienced nurses disagreed about the resulting classification of patients' appropriateness in 12% of cases.

Birnbaum *et al* (1994) found that 1% of patients in a New York ED who met Derlet and Nishio's criteria for being "non-emergencies" required hospitalisation, although it was unclear whether initially refusing them care would have led to an adverse clinical outcome.

Young *et al* (1996) studied 6187 ambulatory patients who presented to 56 EDs in the US over a 24-hour period. Of the 3045 (49%) patients triaged as nonurgent, 55% were admitted to hospital directly from the ED. On the other hand, Gadomski *et al* (1995) studied 216 children for whom authorisation for emergency care was denied by physician telephone triage and reported that no adverse outcomes occurred because of the delay. However, there was some evidence that children who were denied care were subsequently admitted to hospital more frequently than age- and complaint-matched controls who had been seen at the ED.

Sixma and de Bakker (1996) reported an attempt to introduce to a new A&E department in the Netherlands a policy of sending self-referred patients back to their GP. This led to many complaints from patients and the public in general, and as a result the policy was revoked within a few months.

2.6.2.2 Developing the responsiveness of A&E services

An alternative approach to managing the demand for primary care at A&E is for the service to become more responsive and appropriate to such patients' needs. Whereas the interventions discussed above tend to assume that patients with non-urgent needs are 'inappropriate' to A&E, those considered in this sub-section re-define the 'problem' into one that is organisational and structural, which in turn requires organisational, structural and financial solutions.

As discussed in Appendix IV, people seek care because of a need for advice, treatment or reassurance, and so are likely to continue doing so until a satisfactory solution has been achieved; meeting patients' needs effectively, therefore, is an efficient means of managing demand (Redelmeier *et al*, 1993; Ross & Nisbett, 1991; Berwick, 1989). A number of interventions have been described that are based on the availability of primary care trained staff who understand and respect the reasons why patients attend A&E. These aim to respond to the patient's immediate health care needs with the minimum of intervention, if appropriate re-directing the patient back to community-based primary care services for follow-up.

For many years proposals have been made that GPs be employed in A&E departments to treat patients presenting with primary care needs (Farmer & Chambers, 1982; Houghton, 1988; Hobday, 1988; Driscoll *et al*, 1987; Leaman, 1987; Cohen, 1987; Wilkinson *et al*, 1977; Conway, 1976; Holohan *et al*, 1975; Kaliszer & McCormick, 1975, O'Connor, 1972; Nuffield Provincial Hospitals Trust, 1960), and this idea has been welcomed by consumer organisations (Rigge, 1993), pressure groups (Shelter, 1996) and in official reports (NAO, 1992; Tomlinson, 1992; London Health Planning Consortium, 1981; Royal Commission on the NHS, 1978). McGuinness (1977) went further in suggesting that the A&E work which GPs could take over includes the management of most trauma cases. As he pointed out, GPs have a long tradition of staffing A&E departments and minor injury units in smaller peripheral hospitals, and although research has been limited, these services appear to be highly popular with patients and effective (Blair *et al*, 1986; Kyle, 1971). Kyle (1971) reported that 98% of patients attending the GP-run A&E in Brecon were treated without referral to the nearest A&E, and more

recently Dale and Dolan (1996) reported a similar figure for a GP-run Minor Injury Unit in Folkestone.

One GP (described in Holohan *et al*, 1975) encapsulated the case for employing GPs: “GPs are well suited by reason of their wide experience to act as ‘sorters’ in A&E departments. They have more awareness of the sequelae of injury and its effect on work and the family, and their hospital contact would provide an interchange of ideas between casualty and general practice”.

Farmer and Chambers (1982) in their report to the Acheson Committee recommended that the “basic requirements for inner urban A&E departments..... [should include] a consultative service provided during daytime hours by medical staff interested and experienced in primary care,occasional weekly sessions provided specifically for conditions common among young adults, a pharmacy equipped for easy dispensing of routine prescriptions, and the redesigning of these departments in order to accommodate the above functions”.

Until the project described in this thesis commenced at KCH in 1988, this idea had not been tested in the UK (Dale *et al*, 1991). This in part reflected the extent of the cultural, professional and organisational barriers encountered when developing services at the primary secondary care interface (Evans, 1996), together with a lack of financial resources to support such developments. These factors have been discussed in early sections of the thesis (see particularly *section 2.4*).

In Australia similar approaches have been tried in some areas, but do not appear to have been formally evaluated. Catchlove (1974) described the appointment of an experienced GP to the Casualty Department of the Royal North Shore Hospital in Sydney to manage the non-urgent part of the department’s workload and to provide resident training. Andersen and Gaudry (1984) described one such service which consisted of a primary care unit with a waiting room and eight consulting rooms. Staff included a director, a registrar, a senior medical officer, an intern, two full-time nurses and a clerical assistant.

It has been suggested in the UK and elsewhere that nurse practitioners could assess primary care patients and re-direct them to community-based services for further care (Morris *et al* 1989). Many A&E departments are employing nurse practitioners (see *section 1.1.3*), although most appear to be fulfilling a more trauma/emergency care-oriented role. To date, formal evaluations of A&E nurse practitioner roles are lacking.

In the USA, nurse practitioners are being used in increasing numbers of EDs to provide ‘fast track’ care to patients with non-urgent problems. For example, Wright *et al* (1992) reported

on one year's experience in an ED where 28% of attenders were triaged to a Fast Track staffed by primary care trained nurse practitioners, 4% of patients were referred to on-call teams, and a further 1.4% were referred back to the ED for further assessment. Fewer than 1% required admission. Patients and staff reported high levels of satisfaction. However, they only treated 1.6 patients per hour (although they did perform all nursing duties on these patients), creating doubts about their cost effectiveness.

Hansagi *et al* (1991; 1987) have described a system in Stockholm where specially trained 'nurse-advisers' assess patients who have been triaged as non-urgent, offer them advice and, if necessary, assist them in making an appointment for an alternative source of health care. The referrals were made through agreement with the patient and the patient's wishes were respected. Of those attending the department, 27% were classified as non-urgent, and of these 55% (192/347) were referred to services outside the hospital or given self care advice; the remainder (45%) were seen at the ED because the nurse-adviser reclassified their needs as requiring ED intervention. Those referred to primary care were shown over the following year to make more subsequent visits to community-based services and fewer to the ED than controls (Hansagi *et al* 1989). The referred patients were at least as satisfied as controls (Hansagi, 1990), and there were no reported adverse outcomes. This work indicates that advice and referral by a suitably trained health professional is a feasible way of referring patients to primary care from an ED, and that nurses can provide an important link between the ED and community-based health professionals.

Grumbach *et al* (1993) have argued for implementing similar referral systems in the USA, and suggested that triage nurses should offer patients whose clinical conditions do not require ED care appointments at primary care clinics in the patient's neighbourhood. They found that many (38%) ED patients with non-urgent needs would willingly accept such a referral if an appointment was available within 1-3 days. This initiative requires a high level of communication and co-operation between EDs and community health services, and also requires spare capacity in primary care clinics.

Kelly (1994) described the implementation of such a partnership which resulted in around 10% of ED patients being referred to primary care providers in the surrounding area. This involved a systematic approach to triage involving specially trained nurses who could undertake a thorough assessment of all ambulatory patients and agreed guidelines about the criteria against which patients could be labelled as nonurgent. Their training included developing communication skills to convey concern and reassurance. Patient education

opportunities were maximised to encourage future first aid and use of over-the-counter medication, as well as advice about when to return to the department

Chan *et al* (1985) conducted a controlled before-and-after study of a programme in Los Angeles county which involved patients who attended the ED with primary care problems being screened by community workers and a physician, and if appropriate an appointment was made at a local primary care clinic. While the study found little change in the use of the ED in the following year, there was a dramatic increase in the use of the neighbourhood clinic for those who had received the intervention in the ED.

Edhag *et al* (1986) piloted the impact of using an internal medicine specialist for triage. The results of this study indicated that 36% of patients could be sent home after triage and there was a significant reduction in the numbers of laboratory tests and ECGs performed. Patients' average treatment times were reduced by over an hour.

Wrenn and Rice (1994) described the introduction of a social work service that was provided to 5% of ED attenders. They considered that this reduced the demands on emergency physicians and nurses, and suggested that it resulted in cost-savings through avoiding admissions to hospital for largely social reasons. They also felt the educational benefits provided to staff in the ED were beneficial to all patients and the hospital.

A randomised trial of providing 'compassionate contact' from trained volunteers to improve patient satisfaction for frequent homeless ED attenders found that this led to increased satisfaction and decreased subsequent use of the ED both in terms of total number of return visits and the average frequency of visits per month (Redelmeier *et al* 1995). Individuals who received compassionate care were twice as likely as those receiving conventional care to rate their overall quality of care as excellent or very good. Andren and Rosenqvist (1987a) also found that persons whose social network improved made fewer return visits to the ED than those for whom it remained static.

Similarly, Storer *et al* (1987) found that referral from A&E to a community psychiatric nurse of patients thought likely to benefit from psychiatric intervention was accompanied by a substantial drop in the use of GP and A&E services over the subsequent year. The authors felt this was a highly cost effective way of helping this distressed group of patients while also enabling more efficient use of existing services.

In summary, the interventions described in this section indicate there are a variety of ways in which A&E care can be made more responsive and appropriate to patients' needs. Although

few of these interventions have been evaluated robustly, they indicate that primary care trained health professionals can usefully play a role in meeting the needs of A&E attenders and suggest that such care may lead to improvements in quality and continuity.

2.7 The quality of A&E care

Appropriateness is an attribute of quality. However, as earlier sections have illustrated consensus is lacking about what constitutes appropriate care within an A&E setting. This section explores issues that are relevant to assessing the quality of A&E primary care as a background to the development of the methodology for this study.

Rhee *et al* (1987) suggested several attributes for evaluating the quality of an emergency unit (Table 2.4). Consensus, though, is lacking about what constitutes acceptable standards of care for most of these attributes, and several lack validated means of measurement. They appear to be more suited for use within audit or quality improvement programmes rather than research, and more suited to appraising care provided for those with urgent or life-threatening problems where there is greater evidence about what are the appropriate therapeutic interventions for given presentations.

Table 2.4 Attributes for evaluating the quality of an emergency unit

1. expeditiousness, timeliness and duration of care
2. appropriateness of diagnostic and therapeutic interventions as judged by the greatest net benefit at lowest cost
3. the validity of diagnostic decisions
4. skill in the execution of diagnostic and therapeutic interventions
5. reliability and validity of diagnostic information and monitoring data
6. appropriateness of referral
7. maintenance of continuity of care through successful linkage with, and transfer of adequate information to a more stable source of care
8. appropriate recording and management of information
9. patient education and motivation with a view to prevention
10. discharge of legitimate organisational and social obligations with due regard to responsibilities towards individual patients

Primary care problems are implicitly less differentiated and require less investigation or referral; guidelines or protocols against which care could be objectively judged are generally lacking. In addition, a broader psycho-social focus is likely to be needed within a primary care consultation, and preventive care and health promotion activities may all be relevant attributes of the quality of a consultation within A&E (Goldman *et al*, 1990; Polis *et al*, 1988). For example, there is evidence that many A&E attenders are smokers who would like to be helped to stop (Lowenstein *et al*, 1995), and there is much evidence to show that brief counselling by a doctor, or even just providing a leaflet, during a normal consultation increases the likelihood that patients will stop smoking (Kottke *et al*, 1988). However, most emergency physicians are poorly prepared to provide smoking cessation counselling (Prochazka *et al*, 1995). Alcohol problems can also be detected in the A&E department (Yates *et al*, 1987).

Maxwell (1984) suggested six dimensions of health care quality: access to services; relevance to need (for the whole community); effectiveness (for individual patients); equity (fairness); social acceptability; efficiency and economy. He suggested, as an example, that in relation to A&E services, access could be assessed in terms of waiting times in the department; relevance to need would require analysis of the roles played by the department (including, as a primary care provider); effectiveness might relate to the adequacy of equipment and staff and the incidence of complications; social acceptability could include the conditions in the department, privacy, and standards of communication with the patient and their GP; efficiency and economy could involve comparison of workload and unit cost comparisons with other hospital departments.

Almost no follow-up studies have been undertaken from A&E to assess clinical outcome and subsequent care for patients with non-urgent needs. Brook and Stevenson (1970) followed up 131 patients who had attended an ED with a non-emergency gastro-intestinal problem. From a telephone interview around 3 months after the visit, they concluded that the care was 'inefficient and inadequate', and that patients appeared to have been inadequately examined, investigated and followed-up. Only a quarter of the patients were considered to have received an effective delivery of care.

Surprisingly, Rhee *et al*'s quality indicators do not include patient satisfaction. The importance of including patients' views as part of a comprehensive assessment of quality of care is NHS policy (DoH, 1991; DoH, 1989a; DoH, 1989c), and is supported by professional bodies (RCGP, 1985), and by proponents of quality assurance (Donabedian, 1988; Vuori,

1987). Patients' views are not only an outcome measure in their own right, but also serve as a measure of social acceptability. Satisfaction with care may influence illness behaviour, adherence with treatment and appointments, understanding and retention of medical information, and clinical outcome (Fitzpatrick, 1991). Satisfaction is likely to be a major determinant of choice of subsequent care provider (Hansagi *et al*, 1992; Roghmann *et al*, 1979).

Satisfaction represents complex inter-relationships between the patient's perception of needs, expectations, and experience of care (Williams, 1994). While to some extent it results from meeting or exceeding the patient's expectations, often the patient lacks specific expectations against which to evaluate care. Expectations may also be modified through the process of care, so influencing subsequent evaluations (Williams, 1994). Perceptions may be confounded by the patient's psychological state (Sensky & Catalan, 1992), and many other factors that are outside the system of health care being studied. Study methods are frequently inadequate to elicit views on the range of factors that are features of professional practice, professional behaviour, and organisation of care (Wensing *et al*, 1994). The expression of satisfaction is highly dependent on how patients perceive themselves in relation to the health care system (Williams, 1994)

Measuring and interpreting patients' satisfaction with health services is notoriously difficult given the tendency not to report dissatisfaction (Carr-Hill, 1992; Fitzpatrick, 1991). Typically, at least 80% of respondents express satisfaction for any given question, and many patients in the NHS appear reluctant to express critical comments (Fitzpatrick & Hopkins, 1983).

Hansagi *et al* (1992) found that satisfaction was significantly lower for ED patients triaged as non-urgent compared to those who were triaged as having higher priority. This was especially true for younger patients. Likewise, McMillan *et al* (1986) also found that urgent and non-urgent patients were less satisfied with the ED than those triaged for immediate care. Waiting times were found to be a major cause of dissatisfaction, reflecting the anxiety and discomfort that the patient and those accompanying them feel, and the lower levels of satisfaction for non-urgent patients may reflect differences in waiting times.

There have been a number of small scale studies undertaken in the UK to assess patients' satisfaction with A&E services, each based on self-designed questionnaires (Walsh, 1993a; Maitra & Chikhani, 1992; Booth *et al*, 1992; Buckles, 1990). They consistently reveal high levels of overall satisfaction, with the main sources of dissatisfaction relating to waiting times

and poor communication from nursing and medical staff. These views are reflected in GPs' satisfaction with and perceptions of A&E services (Choyce & Maitra, 1996).

However, the relation between actual waiting times (rather than patients' perception or recollection) and satisfaction is unclear. Booth *et al* (1992), for example, found that longer waiting times produced less satisfaction, but did not assess overall satisfaction with the visit to A&E, nor analyse other determinants of patient satisfaction. Increased waiting times are likely to be confounded by factors relating to the intensity of the department's workload and staffing levels, both of which may directly affect satisfaction. The extent to which patient satisfaction suffers because patients perceive staff to be rushed and the department overcrowded is unclear. Suggestions have been made to increase staffing levels in order to reduce waiting times and improve patient satisfaction (Hunt & Glucksman, 1991).

In an American study, Thompson *et al* (1996) found that neither true waiting time, nor the patient's perception of their waiting time was predictive of satisfaction. They found that patients who had a perceived waiting time that was shorter than anticipated expressed greater levels of satisfaction than those who perceived that they had waited longer. However, there was no association between actual waiting time and satisfaction. They concluded that effective management of patients' waiting time expectations and perceptions might improve satisfaction. The provision of information about waiting times appears fundamental to achieving patient satisfaction.

Likewise, Bursch *et al* (1993) concluded that the total time spent in the ED is not as important to patient satisfaction as receiving a prompt and caring service. They identified 14 variables that were found to be correlated with overall ED satisfaction. Multiple regression analysis revealed that the five most important variables were the waiting time before the patient felt cared for in the ED, how the nurses' care was rated, how organised the ED staff appeared, how caring the physicians were felt to be, and satisfaction with the amount of information nurses gave about what was happening to the patient.

These findings are supported by other literature. Krishel and Baraff (1993) and Bopp (1990) also found that the information given to patients is an important determinant on patients' perceptions about the quality of care received and their satisfaction. Lack of information appears to increase patients' sense of uncertainty and their psychological distress (Bopp, 1990). Patients who perceived that they received most information at the time when they arrived in the department expressed greatest levels of satisfaction (Bjorvell & Stiegg, 1991). Patients who perceived being well informed by staff at the time of their arrival about what was

going to happen during their visit to the ED were more satisfied with the general treatment, respect and attitude later shown by staff, as well as the information given later than were the patients who perceived receiving no information on arrival. Thompson *et al* (1996) found patients who perceived that procedures and tests were clearly explained had greater satisfaction.

2.8 The costs of A&E care

The cost effectiveness of alternative ways of delivering services depends on the consequences for costs as well as for health (Drummond, 1987). An option is cost effective if it is the cheapest way of achieving a given objective. Economic studies asking questions about the costs of A&E services and the costs of alternative service responses are scarce (Leydon *et al*, 1996). Some studies have been undertaken in the USA (Williams, 1996b; Baraff *et al*, 1991; Grannemann *et al*, 1986). Geyman (1980) suggested that the costs of ED care for minor illnesses may be three or four times the costs of care provided by a family physician for such problems. Some studies have compared resource use by physicians at hospital and non-hospital sites (Noren *et al*, 1980) and resource use between GPs in clinics and doctors in hospital sites (Moscovice, 1977), but their findings are not directly applicable to the UK.

Williams (1996b) reported on the average and marginal costs of visits to six EDs according to the urgency of the visit; 32% of the visits were classified as non-urgent. He showed that the average cost of a non-urgent visit is relatively low, and the potential savings to the health system from diverting non-urgent visits to private physicians' offices may be much less than anticipated. The average total cost calculated for non-urgent cases was \$62 (compared to \$350 for urgent cases and \$159 for semi-urgent cases) and the marginal cost was \$24.40 (compared to \$147.88 and \$66.94 for urgent and semi-urgent cases respectively)

Because of the high fixed costs of staffing and equipping an ED, the marginal cost of an additional visit is much less than the average cost of all visits (Steinbrook, 1996). The fixed costs of running an A&E department (supplies, equipment, staff, etc) tend to be high, while the marginal costs of treating each additional patient tend to be relatively low (Lowe *et al*, 1994). Hence, the average costs of treating each patient tends to decrease as the volume of activity increases. The revenue generated by treating non-urgent problems may help to subsidise the high fixed costs of the A&E department that have to be covered to allow a continuing state of readiness to treat emergencies (Gill, 1994). While it has been argued that a means of increasing the overall cost effectiveness of health care in a community might be

through reducing self-referrals to A&E (Sixma & de Bakker, 1996), the exact gain is difficult to estimate: not only are the savings to hospital costs difficult to predict because of high fixed costs, but the costs for alternative providers (such as resulting from an increase in general practice out of hours workload) might be considerable.

Some studies in the USA have looked at the fees and prices paid by the purchaser of care, and shown that hospital services are more expensive than the same service being provided in general practice (Baker & Baker, 1994; de Alteriis & Fanning, 1991; Warren *et al*, 1991; Kasper 1984; Fleming & Jones, 1983). The price of a non-urgent visit to an ED is said to be three times the cost of a visit to physician's office (Williams, 1996b), but the extent of this difference is likely to reflect the system by which fees and service costs are calculated (Steele *et al*, 1975).

On the other hand, O'Grady *et al* (1985) found that the amount paid by the patient is often less when they attend an ED than a physician's office, especially for non-urgent problems. O'Grady *et al* (1985) demonstrated that patients who had access to free care at an ED made much greater use than those who had to make a payment, reflecting as discussed in earlier sections of this chapter the impact that economic incentives and disincentives has on the use of EDs.

No studies to date have attempted to make a broad analysis of the supply and demand factors involved in A&E care. Such a study would include from a societal perspective the costs of care as well as the non-clinical costs (such as costs of transportation, time off work, child care and other social costs incurred). However, it is particularly problematic to consider resource use in primary care environments as clinical care is often spread between several different providers and over a considerable period of time. Studies that look at resource use in the context of the volume and processes of care provided by a single primary care service can be misleading unless seen within the context of the types of problems being treated or the other services being utilised by the population (Moscovice, 1977).

Ideally, the cost of A&E care should be considered in terms of all the resources utilised in an episode of care (including whatever follow-up visits or referrals were involved) in relation to a particular medical problem or situation (Solon *et al*, 1967). However, by its very nature, care provided in A&E tends to be fragmented from care provided in other settings, and determining the amount and content of care that occurs subsequent to attending A&E is likely to be very difficult. The starting and end point for an episode of care may be difficult to determine, and subsequent care may be provided by a range of different primary care or secondary care

services. Analysis of resource utilisation during episodes of care may become more feasible as health care computer systems in the NHS become more highly integrated with each other, although it is likely to remain methodologically complex to study.

2.9 Summary

The main issues identified in this chapter are summarised below. The lack of consensus either between health care professionals or between health care professionals and lay people about what is 'appropriate' use of A&E services has been defined, together with the complex array of factors that influence decisions about when to use A&E. Workload surveys have persistently found that between one- and two-thirds of patients attend A&E with problems that could have been managed in general practice, but most have applied ad hoc or post hoc methods of classifying patients' attendance at A&E departments, reinforcing professionally-defined views on how services ought to be used.

In relation to demand for care, the issues that emerged from this literature review were:

- the demand for A&E services is complex and multifactorial, with a variable proportion of patients presenting with problems of a primary care type
- the trend of increasing demand at A&E departments is persistent and international
- patients present to A&E for a wide variety of reasons
- there is no evidence that epidemiological factors account for more than a small proportion of the growth in the demand for A&E care
- access to primary care is an important influence on demand for A&E care, but the organisation of primary care in the NHS (such as appointment systems, practice size, range of services offered) appears to have little impact on demand
- demand is largely driven by lay perceptions about the need for care
- efforts to educate patients or to direct them away from A&E have been largely ineffectual
- knowledge, expectations, attitudes and health beliefs change very slowly, but are likely to be influenced by experience of health care
- much of the literature reflects a narrow clinical focus applied to analysing patterns of attendance in terms of the process of care provided. Little or no consideration is given to the reasons why the patient chose to attend A&E in judging the appropriateness of attendance.

In relation to the supply of services, the main issues to emerge are:

- a large proportion of the workload seen at A&E has been labelled as ‘inappropriate’
- there is disagreement about how best to respond to it
- the A&E culture tends to support negative views of patients attending with primary care needs and beliefs that general practice provides an inadequate level of service
- for over 150 years attempts have been made to reduce demand in the UK, with little impact
- interventions that have been developed in other health care systems may lack applicability because the UK already has well developed GP services in the community
- there is increasing interest in developing more primary care-oriented responses at A&E
- few interventions have been rigorously researched, and there is a lack of evidence against which to plan services
- there is a paucity of research that relates to the costs and quality of A&E care, particularly in relation to patients with primary care needs.

A broad range of interventions intended to alter the demand for and/or supply of A&E services have been discussed in this chapter, together with the lack of rigorous evaluation that hitherto has been undertaken. Those aimed at limiting access face a variety of ethical, legal and clinical objections. Schemes aimed at providing more appropriate, responsive patient care appear more likely to be relevant, particularly to the needs of socially deprived populations who may have more limited access to other sources of care. Chapter 3 describes the implementation and evaluation of the intervention developed at KCH which included the employment of local GPs on a sessional basis as primary care physicians, a model of care which had been advocated for many years but until now was untested in the UK.

CHAPTER 3: METHODS

3.0 Introduction

Earlier sections of this thesis have described the context of this study in terms of health service, organisational and socio-political issues. The long-standing tension between the demand for and supply of A&E services has been highlighted, particularly in relation to patients presenting with primary care needs. Alternative approaches to managing this problem have been reviewed, and implementing primary care-oriented responses in A&E has been suggested as a means of achieving appropriate, cost effective care. Consideration was given to the measurement of quality and costs of care in A&E and, in particular, literature relevant to the subject of this thesis.

There are several reasons for supposing that A&E care may be less effective for patients with primary care or non-urgent problems than care provided by GPs (Gill, 1994). Within A&E, where most patients are unfamiliar to the consulting doctor and attending with new problems, the success of a consultation is likely to reflect the extent to which the doctor has the skills to rapidly establish rapport and elicit the patient's concerns (Rosenzweig, 1991). A&E staff are highly trained in diagnostic and technical skills, but often lack interest and skills appropriate to primary needs. The environment within A&E lends itself to life-saving and acute trauma care rather than person-centred care. Although for many years, suggestions had been voiced about employing GPs in A&E departments to treat patients presenting with primary care needs (see *section 2.6.2.2*), until the current study this model of care had not been rigorously researched.

In this chapter, the methodology of the study is described. As discussed in *section 2.4*, the separation that lies between A&E departments and general practice (including differing organisational cultures and philosophies of practice) militates against the development of services within A&E of more primary care-oriented services. This chapter, therefore not only includes description of the methods used for data collection and analysis, but also the activities that were involved in managing change at an organisational level to create a receptive environment for the study.

3.1 Study setting

KCH is a teaching hospital in Camberwell, an inner city area in south-east London. The district is characterised by high levels of social deprivation, with some parts of the district suffering from extreme poverty. Compared to England and Wales, the district had double the national unemployment rate, double the proportion of rented accommodation, double the overcrowding,

double the proportion with no access to a car, double the proportion of children with a lone parent, and double the proportion of children living in non-earning households (OPCS, 1992). A quarter of the population belonged to black and ethnic minority groups compared to 5.9% of the national population. There were high rates of psychiatric illness, alcohol- and drug-related illness, and teenage pregnancy. There was a greater than national percentage of pensioners living alone. All these factors are likely to contribute to high rates of physical and psychological morbidity, and place considerable demands on health services.

Like many inner city areas, the district had a higher than average number of GPs working in single handed (22%) and two-doctor (23% practices), while only 23% of doctors worked in practices of five partners or more.

At the time of the study, KCH had approximately 450 beds and served a catchment population of approximately 200,000. The A&E department was built in 1912 for an anticipated maximum annual workload of 30,000. In 1990, the department saw about 80,000 attendances, of which 70,000 presented with new problems. The A&E department managed all types of cases, but the adjacent Dental Hospital and the Maudsley Hospital both had open access clinics for dental and psychiatric emergencies throughout office hours.

The medical staffing in the department at the time of data collection comprised of nine SHOs, two registrars, a senior registrar and a consultant. The SHOs were each on 6-month attachment to A&E. The registrars were all undertaking higher specialist training in A&E medicine.

The conditions in the department were notorious and attracted much attention from politicians and the media. They were amply described in various contemporary accounts. Harriet Harman MP (1987), in her response to Camberwell Health Authority's draft A&E strategy stated that the "A&E Department at KCH must be improved as a matter of urgency". She complained that the "premises are depressing and tatty", the "waiting areas are overcrowded", "that staff appear rushed and under pressure", that people are sent home from A&E who "in the past would have been admitted".

These impressions were echoed by Delamothe (1987), a *BMJ* editor, who described a 24 hour period spent in the department. He vividly described the cramped conditions, lack of privacy, leaking roof and plaster crumbling off the ceilings and walls, together with the multi-cultural, socially-deprived population who use the department: "I cannot justify why my local accident and emergency department should be better equipped than ones I have seen in the Third World, but I am surprised that its facilities are worse". John Pilger (1992), a renowned journalist and campaigner, drew a similar picture of the "grainy, almost Gothic atmosphere in the casualty department of KCH, south London. The people sitting, waiting, lying, waiting,

occasionally screaming and dying without dignity, are from an album of working-class life that was meant to have closed.....the word 'Dickensian' still applied"

3.2 The King's A&E Primary Care Project

The King's A&E Primary Care Project was initiated in 1988 through a collaboration between the Department of General Practice Studies and the Department of A&E Medicine, together with the support of the District Health Authority, the Family Health Services Authority (then the Family Practitioner Committee), and the Local Medical Committee. The project reflected the A&E department's philosophy of care which was that any patient who chooses to attend the department should be treated as a legitimate user of the service. The A&E consultant, Dr Edward Glucksman, believed that the challenge for the department was to ensure that patients are provided with a service that is effective and appropriate to their needs. The local support for the project reflected the joint work that Dr Glucksman and the head of the Department of General Practice Studies (Dr Roger Higgs) had been involved in over many years to improve care across the primary secondary care interface. For several years they had been running monthly meetings between local GPs and hospital specialist teams, and this had contributed to a greater degree of trust and understanding between GPs and the A&E department than existed elsewhere in London.

Potential benefits of employing GPs in the A&E department were thought to include more effective use of hospital resources and through a more community-oriented approach the re-establishment of links between patients and their GPs, so contributing to continuity of care. Employing GPs in A&E might also contribute to the development of greater familiarity and mutual respect between hospital staff and local primary care teams. The purpose of the King's A&E Primary Care Project was to test these hypothetical gains.

A retrospective workload survey in 1985 had found that at least a third of new attenders to the A&E Department could have been managed in general practice, and that at least 75% of these patients attended between the hours of 9am and 9pm. Dr Glucksman and Dr Higgs used these findings to design a study protocol which was used to gain funding for the initial phase of the project.

The first phase of the King's A&E Primary Care Project sought to explore four key questions.

- why do patients attend A&E with primary care problems? (Green and Dale 1992)
- how do patients attending A&E with primary care problems compare with those presenting new problems in general practice? (Green and Dale 1992)
- how does the triage classification of A&E attenders into 'primary care' and 'true A&E' categories correspond with their care? (Dale *et al* 1995a)
- how does the primary care provided by A&E staff compare with that provided by local GPs working in an A&E setting? (Dale *et al* 1996; Dale *et al* 1995b).

In 1991, with Dr Jennifer Roberts (London School of Hygiene and Tropical Medicine) further funding was sought from the Medical Research Council to allow a second research phase, undertaking an economic analysis of the differences observed between GPs and A&E doctors' primary care consultations that had been identified in preliminary analysis of the data (Dale *et al*, 1991).

The applicability of the model of care was studied in the third phase (1995/6) following the implementation of the model of care at a number of A&E sites across London. This is described in Appendix IX.

3.2.1 Study design

In designing the study, great care was taken to ensure that the study protocol did not place additional strain on staff or patients within the department. Consideration was given to the following constraints:

1. the A&E department was physically cramped with minimal space for waiting or consultation
2. the need to ensure that patients were not inconvenienced by the study
3. the requirement that A&E staff needed to be able to respond, as required, to emergency clinical situations
4. the need to ensure that waiting times for patients were minimally affected by the study protocol; most patients were seen in order of registration at the department, and any marked deviation from this might cause patient dissatisfaction and so add to staff stress
5. day-to-day and seasonal variation in the case-mix and volume of patients within A&E
6. the need to develop commitment within A&E to the project and a shared sense of ownership with the nurses and doctors who would be affected by it, without jeopardising objectivity

The study depended on the prospective identification of patients with primary care needs. This involved modifying the triage system, a process that had to be facilitated and developed sensitively as its implementation was dependent on the active involvement and support of nurses. The nursing team, during this phase, was led by a group of experienced, resilient and motivated sisters, and their enthusiasm proved vital. Likewise, the consultant and registrars' commitment and support throughout the study was essential, and helped to ensure the SHOs' involvement.

During the design phase of the study, much effort was invested in information sharing and gaining involvement from A&E medical, nursing and administrative staff to ensure that the department was receptive to including GPs in its midst. Staff surveys were undertaken to gauge opinion and receptivity to the concept of the project (Dale & Green, 1991; Green & Dale, 1990). Information about the project was imparted at staff meetings and through informal discussions between the research team and members of the A&E department. Because most nurses and doctors worked shifts, multiple meetings were needed to ensure that all staff were informed and that commitment to the project was shared. Although difficult to quantify, this was crucial to successfully implementing the primary care service. These factors are discussed further in chapter 6 in relation to the applicability of the study's findings

The ideal design for this study was recognised as being a comparative trial in which each patient presenting with primary care needs would be randomly allocated to a GP, SHO or registrar following triage assessment. This would minimise biases that might otherwise enter patient selection. However, A&E is a difficult environment in which to conduct a randomised study given the unpredictability of workload, the number of staff, the need to avoid lengthy waiting times for patients, and the tradition of being seen in time order within A&E. In addition, the inadequacy of the waiting area at the department accentuated the need to ensure that patients were not inconvenienced by the study design. The department's managers and medical and nursing staff felt that a randomised controlled trial would be too disruptive, and would add to the strain on staff and patients alike. In consequence, a prospective controlled trial was designed in which 3-hour primary care consulting sessions were randomly allocated to named GPs and A&E staff. To minimise possible bias the pattern of when GPs were in the department was varied throughout the study period, and staff involved in the study were unaware of the sampling procedure.

Throughout the study period weekly rosters stipulated a named doctor with responsibility for 'primary care' patients for *every* three-hour session between 10.00 and 21.00. Neither the GPs nor the A&E doctors or nurses were informed about the study objectives, or whether any particular session was part of the study sample.

As GPs were supernumerary, it became clear during initial piloting that overall waiting times shortened during GP sessions. This had two effects. Firstly, in terms of the research design it introduced a possible confounding factor that might affect consultation process and patient satisfaction (see *section 2.7*). Secondly, it created potential difficulties in the waiting room with patients triaged as 'A&E' sometimes having to wait longer than 'primary care' patients; triage nurses were concerned about the acceptability of this. To minimise these effects, therefore, A&E

medical staff were asked not to call from the waiting room any patient triaged as presenting with primary care needs who registered during the hour before the start of a GP session. As a consequence, at the start of GP sessions there was usually a group of primary care patients who had been waiting for up to an hour or more, but by the end of the session waiting times had usually shortened.

The department introduced a policy decision that at times when the waiting times for 'primary care' attenders became more than 30 minutes longer than those for non-urgent 'A&E' patients, the triage nurse would instruct SHOs to see primary care patients until the waiting times for the two categories of patient equalised. This was intended to limit the impact of the new triage system on waiting times. Likewise, during sessions when GPs were working in the department, if the 'primary care' waiting time fell to less than 30 minutes of the 'A&E' time they were instructed to see 'A&E' category patients; such 'A&E' triaged patients, although treated by GPs, were not included in the study sample.

The aim of this procedure was that the consulting doctor should not have any control or influence over which patients they saw. The overall effect was that the overall distribution of waiting times for patients seen by SHOs and GPs was almost identical (see *section 4 I*).

Ethical approval

The study received approval from the Camberwell DHA Research Ethics Committee in 1988.

3.2.2 Developing the system of triage

A triage system had been in operation at KCH A&E since 1985. Initially, a qualitative and informal approach was used to prioritise patients with no strict criteria or explicit protocols. It involved prioritising presentations according to nurses' assessment of clinical urgency.

As discussed above, important adaptations were made to the system to provide a method for prospectively identifying the primary care content of patients' presentations. Categorical criteria for distinguishing 'primary care' and 'A&E' presentations are lacking, so a pragmatic approach based on *perceived need for care*, rather than diagnosis or duration of the symptoms, was developed. This was intended to provide an operational tool, not a screening instrument. Nurses showed considerable variation in perceptions about primary care, and over several months a new training programme was developed and implemented with the

nursing staff. The triage criteria were piloted, refined and re-piloted during 1988 to ensure consistency of practice.

The operational definition of a 'primary care' problem based on need for care was applied to all age groups. It was defined to include self-referred, non-emergency problems that could have been managed adequately and safely in an "average local general practice" (Table 3.1). Patients requiring immediate or urgent care, or those formally referred to A&E by a GP's letter or telephone call were deemed 'A&E'. Triage assessments were recorded on the front page of A&E records. Medical staff, therefore, were aware of the triage status of patients. Patients were not informed routinely.

TABLE 3.1: TRIAGE CRITERIA FOR 'PRIMARY CARE' AND 'ACCIDENT AND EMERGENCY' ATTENDERS

'primary care' attenders:

- 1) self-referred patients with symptoms likely to be caused by conditions not in need of immediate resuscitation or urgent care, and unlikely to require hospital admission
- 2) self-referred patients with non-urgent complications of chronic conditions

'accident and emergency' attenders:

- 1) all patients referred by letter or phone by a GP
- 2) all emergency presentations in need of immediate care or likely to require admission
- 3) trauma requiring urgent hospital assessment (e.g. clinically fractured bones and dislocations, head injuries with loss of consciousness)

The triage system operated around the clock to ensure consistency of practice. Nurses performing triage had at least six months' experience of the A&E department, and underwent training which included practical supervision and learning about the expertise and skills of local general practitioners. This included training sessions run by senior nurses, as well as by the Principal Investigator.

This method of classifying the primary care content of problems resulted in 41% (95% CI 39.6% to 42.2%) of attenders with new problems being categorised as 'primary care' (Dale *et al*, 1995a). This compares with the 27% of attenders reported as being identified by triage nurses at the Huddinge Hospital, Stockholm as presenting with non-urgent needs ("not requiring the resources of the emergency department being of a minor or non-acute nature": Hansagi, 1987), and the 40-50% classified at the Westmead Centre in Australia

(Andersen & Gaudry, 1984). These differences in rates probably reflect differences in the populations using the departments, health care systems, and triage systems.

Several differences were found in patient characteristics and consultation activities between 'primary care' and 'A&E' classified presentations treated by SHOs and registrars (Dale *et al*, 1995a). 'Primary care' presentations were of lesser severity, tended to involve problems of longer duration, and to have had contact with their GP or another member of practice staff (e.g. a receptionist or practice nurse) before attending the hospital. 'A&E' presentations were more than twice as likely to be injury-related, whereas there was a higher proportion of infectious diseases and disorders affecting the skin in 'primary care' presentations. Patients classified as having 'A&E' presentations received radiographic investigations around twice as frequently as those who were classified as 'primary care'. They were referred to on-call teams and had haematology and chemical pathology tests more than three times as frequently. Even so, 9.7% of 'primary care' patients were referred to on-call teams and a further 8.9% were referred to the fracture clinic or advised to return to the A&E department for follow-up. This was thought to reflect limitations in the sensitivity of triage practice and/or a clinical approach of junior medical staff that includes a propensity to intervene.

3.2.3 Recruiting and employing GPs to work in A&E as primary care physicians

In November 1988, all GP principals working within the area covered by Camberwell District Health Authority were contacted by letter, informed about the project and invited to apply to work on a sessional basis in the A&E department as primary care physicians. The criteria for appointment were that the GP should have undergone full vocational training, and preference was given, firstly to those who had recently completed training (that is, general practitioners registered for similar numbers of years to the A&E doctors), secondly to those with flexible hours of availability, and thirdly to those who had previous A&E experience. Eleven GPs applied, and six were appointed; two left during the study and were replaced. They received honorary health authority contracts and so had access to the full range of hospital services. Each was employed to work one or two 3-hour 'primary care' sessions per week, during which they worked as an integral part of the service. Of the GPs employed in the study, six (88%) had been registered for 5 years or less (that is, a similar length of time to the A&E registrars).

3.2.4 Creating a space for primary care consultation within A&E

A consulting room in the A&E department was designated and equipped for primary care consultations. The room was designed to provide a confidential environment with the essential furniture and medical equipment that would be found in most GP surgeries: a desk, an examination couch, wash basin, and standard medical equipment (ophthalmoscope, auriscope, stethoscope). This refurbishment served to provide a controlled environment for the study that was conducive to the provision of primary care, and for the duration of the study period doctors designated to see primary care patients were asked to use the room.

3.2.5 Pilot study and sample size calculation

A pilot study was conducted over a period of one month in February/March 1989 to test the feasibility of the project, the triage system, and the data collection methods. As there was no previous data on which to base sample size calculations, the pilot was also used for this purpose. Data on the rates of investigations and referrals performed by SHOs were analysed for 300 patients. Of these, 15 (5.0%) were referred to an on-call team (resulting in 8 (2.7%) who were admitted), 18 (6.0%) were referred to an outpatient clinic, and 78 (26.0%) were sent for an x-ray.

It was considered that the sample size for the study should be sufficient to allow the detection of at least the difference between 5% and 3% of patients being referred to outpatient clinics by SHOs and GPs respectively with a significance level of $p < 0.05$ and power of 90%. This required a minimum of 2012 patients in each arm of the sample. This was also calculated as being sufficient to allow the difference to be detected between 2% and 1% of patients being referred for admission by SHOs and GPs respectively with a significance of $p < 0.05$ and power of 70%.

The pilot data indicated that around 10 'primary care' patients were treated during each 3-hour session. On this basis, it was planned that 200 3-hour sessions should be allocated to A&E medical staff and a similar number to GPs during the data collection period.

3.2.6 Project management

The design, implementation, data analysis, and writing up of the study was the responsibility of the Principal Investigator. He was also responsible for managing the recruitment and day to day working of the GPs involved in the study, and for working with nurses, medical and administrative staff on the implementation of the new service within A&E.

During phase 1 of the study (the collection of consultation process and outcome data), a full time researcher and research assistants worked under his direction. In addition, other research staff were employed on short term contracts to assist with specific components of data collection and coding.

The researcher (Judith Green) had a medical sociology background and was employed to work particularly on patient perspectives in relation to health seeking, satisfaction and health status, and with the Principal Investigator was responsible for designing questionnaires used for these purposes.

The research assistants were employed to identify patients in the sample from the A&E register on a daily basis, locate and copy their A&E notes and, if completed, the consultation record form (see below), retrieve from hospital departments the results of any investigations performed, code and input data, retrieve hospital records for patients referred to on-call teams and outpatient clinics, and undertake initial data analysis. The Principal Investigator coded data relating to diagnosis and the outcome of tests. The research assistants also collected data from GP practices about care received by patients subsequent to attending A&E.

A medical statistician (Ms Fiona Reid) provided statistical advice and assisted with the log linear modelling (see *section 3.5*).

Phase 2 of the study (the economic analysis of the data) was designed jointly with Dr Jennifer Roberts. With Dr Roberts, the Principal Investigator supervised a researcher (Ms Henrietta Lang) and other research staff who collected, coded, input and undertook initial analysis of hospital costing data.

3.3 Data collection

Data collection for the main part of the study was carried out between 1 June 1989 and 31 May 1990. Bank holidays and the first two weeks of August and February (when A&E staff appointments change) were excluded. A total of 27 SHOs, three registrars and one senior registrar were employed during this period in the department, and all were included in the study. A weekly rota allocated responsibility for 'primary care' patients to one particular doctor for every three-hour session. Medical staff remained blind to whether any session was part of the study sample.

A random sample of sessions stratified by time of day and day of week was determined using a table of random numbers. General practitioners and A&E medical staff were considered as two

groups, and each group was allocated two or three weekday sessions between 10.00-13.00 and 14.00-17.00, one weekday evening session between 18.00-21.00 and one weekend day-time session for each week during the study period. Hence, between eight and ten sessions were sampled each week for a total of 48 weeks.

Throughout the study period, all doctors using the primary care consulting room (PCCR) were asked to complete an encounter form, the 'consultation record form', for each patient seen (Appendix VI). This was designed to facilitate data collection by prompting the doctor to record socio-demographic details (such as age, post code, occupation) that were not always present on case notes, and details of the process of care (such as laboratory and x-ray investigations, treatments and referrals), including where appropriate their interpretation of test results. It was not possible to arrange for doctors treating patients in other parts of the department to use this form, and for these patients data could only be retrieved directly from the notes. Doctors remained blind to how data from these forms would be analysed.

The patient sample consisted of all those who were assessed as presenting with new 'primary care' needs and who were treated during the selected sessions. Patients were unaware of their triage status, or the grade and specialty of their doctor. All patients treated during sampled sessions were identified from the A&E register, and the records of all those triaged as 'primary care' were retrieved by a research assistant during the following week. Occasionally, such as when the department was exceptionally busy, the triage status of patients was not recorded, and in such instances patients were excluded from the sample. This was unlikely to happen when general practitioners were present, since their work depended on being provided with patients assessed by triage as presenting with 'primary care' needs.

At the time of data collection, the department did not use a computer to store patient information. Hence all data had to be retrieved from hospital records and the 'consultation record' form. Data on the outcome of investigations performed was downloaded from laboratory computers. Costing data was collected retrospectively; the methods used are described in *section 3.4*.

3.3.1 Process and outcome measures

Explanatory variables included the consulting doctor; patient's age, sex, occupational class, post-code of residence, general practitioner, up to three diagnoses (coded using the Royal College of

General Practitioners' classification system (RCGP 1986) up to the fifth digit, and then re-coded according to chapter headings) and previous care administered for the presenting problem(s).

Occupational class was classified according to the Registrar General's coding system for the respondent or head of household when they were not employed. The RCGP classification system is closely based on ICD-9, and was chosen because it is more suited to the needs of primary care.¹ Slight modification was required to allow the classification of certain symptoms that had not been included. ICD-9 classification is based largely on pathological nomenclature and so is a useful nomenclature for many diagnoses, but less helpful for classifying symptoms, behaviour and clinical interventions (White, 1993).

Process variables included radiology, haematology, chemical pathology, and microbiology investigations; items prescribed (for patients not referred to on-call teams); and referral and discharge decisions made by the doctor. Data on the results of investigations were obtained from laboratory and radiology reports. All x-rays were reported on by radiologists, and both the radiologist's report and the requesting doctor's interpretation of the x-ray were coded. Items prescribed were coded using the BNF (1990).

Most data coding was undertaken by research assistants. The forms were all checked by the author for coding omissions and errors prior to inputting, and subsequently by a validation programme to check for inputting errors.

3.3.2 Patient satisfaction and health status

The need to consider patient satisfaction as part of an assessment of the quality of A&E care was discussed in *section 2 7*. At the time of data collection, however, there was no instrument for testing patient satisfaction that had been shown to be valid and reliable for A&E populations (Dixon & Carr-Hill, 1989)². A simple questionnaire was designed, therefore, which could be

¹ The International Classification of Primary Care (Lamberts *et al* 1993) has now become widely used, particularly outside the UK, for classifying patient encounters in primary care and enabling comparison between different settings. It has the advantage that it allows simultaneous classification of the symptoms presented by the patient, the process of care provided, and the diagnoses made. Together with Reed Codes, it has surpassed the RCGP system used in this study given its capacity to code problems from both the patient's and the doctor's perspectives

² Several questionnaires for measuring satisfaction in general practice have now been developed (Baker and Streatfield, 1995, Grogan *et al* 1995, Bamford & Jacoby, 1992, Baker & Whitfield, 1992, Baker, 1991; Baker, 1990). Baker (1990) produced the first reliable and valid scale designed to look specifically at satisfaction with general practitioners' services, but his scale the consultation satisfaction questionnaire had not been described at the time of data collection. Its use in an A&E setting has recently been described (Murphy *et al*, 1996)

administered over the phone or completed by the patient and returned by post and would provide simple quantifiable results to:

1. establish recovery in 7-10 days subsequent to attending A&E
2. establish health seeking behaviour during this period, including re-attendance at A&E or attendance at own GP surgery

There are numerous difficulties involved in devising a relevant but practical questionnaire for assessing patient satisfaction in the context of A&E services, particularly in relation to sampling and follow-up (Dixon & Carr-Hill, 1989). Satisfaction questionnaires need to enable patients to express differences in satisfaction between the many factors that relate to their experience of services, and results tend to be dependent on the way that questions are asked (Fitzpatrick, 1991). Patients are more likely to express dissatisfaction on scales that ask about specific areas of the service than those that ask more general questions. Several studies have shown that satisfaction is related to the affective quality of the doctor's manner, the amount of information conveyed by the doctor, the doctor's technical and interpersonal skills, and the length of the consultation, irrespective of the context in which health care is provided (Lewis, 1994; Calnan *et al*, 1994; Hall & Dorman, 1988). The timing of satisfaction surveys is important, and the longer the gap between the use of services and the survey, the greater the chance of recall bias with respondents overlooking matters that affected them during the episode of care (Carr-Hill, 1992).

A questionnaire (Appendix VII) was devised to be either self-administered (mainly using tick boxes and returned in a freepost envelope) or interviewer-administered over the telephone. Given the mobility, multi-ethnicity, high levels of illiteracy and language differences in the area, it was anticipated that response rates to a postal questionnaire would be particularly low. This was borne out during the piloting of the questionnaire; the response rate without a reminder was 32%. Hence, it was decided to use telephone follow-up whenever possible.

The questionnaire was intended to be

1. easy to administer either by telephone interview or by self-completion
2. specific to one visit
3. addressed aspects of the consultation relating to the patient's assessment of the doctor's manner, the care that they received in the A&E department (including the examination and investigations that were performed, and the treatment received), and overall satisfaction.

Other elements affecting patient satisfaction, such as the facilities, reception staff, nursing staff, were anticipated as acting equally on all patients in the study and so, in order to maintain the brevity of the questionnaire, were not included. Responses to satisfaction questions were recorded on 5-point Likert scales ranging from 'very satisfied' to 'very dissatisfied'.

In addition to the questions on outcome and satisfaction, patients were asked about intentions about health seeking behaviour in a similar future situation.

The sample of patients followed up comprised those who had attended during the randomly selected subset of 90 sessions and had received the pre-consultation interview about their reasons for attending the A&E department (Green & Dale, 1992; see Appendix VIII). They were consented at this time for follow up and were interviewed again 7-10 days later by telephone (or sent a postal questionnaire if they lacked a phone).

Postal satisfaction questionnaires tend to have poor response rates, and the use of the telephone for patient surveys has increased over recent decades (Barriball *et al*, 1996; Marcus & Crane, 1986). This has been made more viable by the increasing proportion of the population with access to a telephone. Telephone interviews offer greater efficiency in terms of interviewer time and use of resources compared to face to face interviews while maintaining the quality of the data collected (Oppenheim, 1992). They also allow greater control over the interviewing process with more immediate detection of interviewer or respondent problems than would be possible with face to face interviews conducted in patients' homes (Marcus & Crane, 1986).

Specific interview practices (guidelines, introductory sequences, strategies to build and sustain rapport, and methods of recording data) were agreed with the interviewers to encourage high response rates and to secure the validity and reliability of the data collected (Frey, 1989). The introductory sequence was standardised to contain sufficient information to briefly establish the credibility of the interviewer, explain the purpose of the study, what participation in the survey would involve, and give the respondent an opportunity to decline further participation. At the start of each interview it was established whether it was a convenient time and, if not, an alternative time for calling back was set. As the interviewers were also involved in collecting process data for the study this gave them considerable knowledge of the subject domain being explored. This was likely to contribute to obtaining valid and complete data (Barriball *et al*, 1986).

The interviewers administering the follow-up questionnaires were blind to whether the patient had seen a GP or a hospital doctor, and to the problem that had been presented in A&E to ensure that breaches in confidentiality did not occur. Frequent discussions among members of the research team throughout the period of data collection occurred to maintain interviewer consistency.

3.3.3 3-month follow-up of clinical outcome

Care received in the three months subsequent to attending the A&E department was assessed for the 1458 patients registered with practices in the Camberwell district who had been discharged from A&E for community or general practice follow-up. A brief questionnaire with two reminders was sent to GPs enquiring about the care (number of contacts, prescriptions, investigations and referrals) that each of these patients had required during this period. This questionnaire was intended to be completed by the GP; if requested, a member of the project team visited the practice to assist.

3.4 Assessment of hospital costs

The economic study was planned after preliminary analysis of the consultation process data (Dale et al, 1991), and so was carried out retrospectively. It involved re-analysing data in terms of the resources involved for each 'intervention' that patients in the sample experienced as a result of attending A&E. Resources used were categorised according to whether they related to staff time, diagnostic tests, or treatments and referrals (Table 3.2). The cost of each resource was then estimated using hospital costing data, supplemented as necessary with consultations with hospital finance staff and the managers of the units concerned.

Table 3.2 Categories included in the analysis of costs

Staff time:	Consultations Transactions
Diagnostic Tests:	Radiology Haemopathology Chemical Pathology Microbiology ECG
Treatments:	Pharmacy Dressings/minor treatments
Referrals:	Out-patients On-call teams Hospital admissions

Throughout, costs were calculated at 1990/91 levels. There was insufficient information available within the original study to allow calculation of costs of referral to rehabilitation and/or community services. The costs involved in employing nurses to triage patients into

'primary care' and 'A&E' categories were assumed to be the same as those for triaging patients under the system that was previously in place at KCH A&E, and so this was not included as a cost involved in employing GPs in A&E.

3.4.1 Diagnostic tests

Diagnostic tests were allocated to cost categories which reflected the staff time and consumables involved in the investigation: the Korner system^a was used for x-rays and the Welcan system^b for pathology tests. Overheads were added to the cost of staff time and consumables in proportions which reflected the greater and varying capital concentration in these departments.

The calculation of radiology costs illustrates the complexity involved in deriving costs for each procedure. In consultation with the consultant radiologist each x-ray was categorised (blind to the requesting doctor) to Korner categories A, B, C and D using the information that was available on the patient's diagnosis. A straightforward two-view examination of a suspected fracture or a chest x-ray come under the categories A and B, while C includes more complex examinations. The cost per Korner unit was £5.90 (radiology staff and materials at 1990/91 prices). An A category x-ray used 2 units, a B category 2.5 units, and so on. Overheads (administration, clerical staff, capital depreciation and maintenance costs and general hospital overheads, including heating and lighting) were estimated by hospital managers to be between 50-100% of the staff costs and consumables used.

The costs of microbiology, chemical pathology and haematology tests were calculated using wherever possible details from the laboratory records or computer system on the type of investigation that was performed. Overheads for the individual investigations were estimated at between 26% and 50% which took account of the greater capital concentration in pathology departments.

The costs for ECGs were calculated from estimating the nursing time (approximately 15 minutes at an average cost of £0.155 per minute), and the cost of the use of the ECG machine (including electricity, disposables, depreciation at an average estimated cost of £0.25 per test).

^a This categorisation weights investigations according to the amount of radiographer's time and materials used during the procedure

^b This measure is derived from the Welsh Workload Measurement System Manual, and is a comprehensive costing system of staff time involved in recording patients' identity, assigning tests, carrying out the test, and the interpretation and reporting of results

3.4.2 Treatment costs

1) prescriptions

Pharmaceutical prescription costs were estimated according to the drug prescribed, the quantity provided and whether the drug was dispensed during pharmacy opening hours or from the out of hours store in the department, using the hospital pharmacist's price list (which included overheads and staff costs). The cost of anti-tetanus toxin, including the time taken to administer the vaccination by nurses, was also calculated.

2) dressings

Observation of A&E nurses, together with discussions with nurse managers and staff, were used to estimate the time taken to dress and clean wounds and apply bandages. An average cost was estimated by considering these time costs and applying the price lists for dressings, support bandages and consumables used to clean and suture wounds.

3.4.3 Referral costs

1) outpatient referrals

Although data were available on outpatient referrals there was great difficulty in obtaining a complete data set relating to the outcome of each visit. In calculating the costs of outpatient referral it was assumed, therefore, on the basis of outpatient department data on non-attendance for first appointment, that only 75% of patients referred from A&E attended. Working with hospital finance department staff, each outpatient referral, including referrals to the fracture clinic, was costed by specialty from Camberwell Health Authority financial returns which were drawn up according to the NHS categorization that was in place at that time.

2) referral to on-call teams

Information on 'interventions' that took place once a patient was referred to an on-call team was very limited. From observation and discussions with departmental staff and managers it was estimated that on average a referral resulted in an additional 30 minutes of on-call house officer or SHO time and 15 minutes of registrar time (excluding the time involved in contacting the on-call team) in the management of the patient in the A&E department. The costs of investigations and treatments ordered by the on-call team for the patients were added, in addition to the costs of referrals by the on-call teams to outpatient clinics (costed as above)

3) admissions

In all, 128 (2.8%) of the 'primary care' patients were admitted. Calculation of costs was on the basis of Camberwell Health Authority financial returns, weighted by specialty and length of stay.

3.4.4 Calculation of doctors' time and transaction costs

A randomly selected series of 163 'primary care' video-taped consultations were used to calculate the duration of consultations (Dale *et al*, 1991). This included both initial assessment and treatment time, and time taken for discussing the results of any investigations, but excluded time taken to document the case notes (which was included as an administrative and transaction cost). The length of GP consultations was 2 minute and 58 seconds longer than those of SHOs and registrars; most of this difference was accounted for by the patient talking for longer.

The costs of doctors' time was estimated from their employment costs and converted to costs per minute after adjusting for working hours and leave. The hourly rate of pay for GPs was approximately twice as much as for SHOs.

Added to this were transaction costs which reflected the time involved in administration and communicating and negotiating about tests and referrals with patients and doctors, nurses and clerical staff in other departments. If, for example, a patient was referred for x-ray this had effects in terms of time for both doctors and other staff. Time taken to make arrangements by telephone and collate records are examples. Interviews with hospital managers and staff were undertaken to establish the time absorbed in writing notes and setting up investigations, treatments and referrals, and from this costs were calculated.

One minute was used as a rough approximation for the time taken by nurses to deal with tests and referrals (directing patients to other departments, receiving and passing on results, arranging for referral or further appointments) and one minute was taken as a rough approximation for the time taken by doctors in dealing with test results, and organising and negotiating referrals to out-patient clinics and treatments. In addition the result of each test ordered in the department was scrutinised by a registrar, and the time taken for this was approximated as 30 seconds per test

Referrals to on-call teams were estimated to take 15 minutes on average. They were each assumed to require on average at least two calls (through the bleep system), and the SHO was

likely to be advised about tests required that would then be undertaken. Each admission was estimated to involve on average 30 minutes of nurse time to accompany the patient to a ward and return. In addition, it was assumed that each admission took on average 30 minutes of administrative staff time. The costs of outpatient referrals depended on the time of the day and day of the week that the referral was made. At times when the out-patient department was open patients would go directly to the department to make their appointment, while at other times details were taken by administrative staff who then took them to the outpatient department when it next opened.

3.5 Analysis of results

Data were analysed using the SPSS-X and BMDP statistical packages. Statistical analyses consisted of the Kruskal-Wallis test to compare the distribution of continuous variables between groups; chi-square tests to investigate associations between pairs of categorical variables; and log-linear model analysis to estimate associations between more than two categorical variables. The best-fitting log-linear models were found by first fitting all models of uniform order, and then removing terms from the smallest well-fitting model by backwards elimination (Bishop *et al* 1975). The goodness of fit of log-linear models was tested using the likelihood ratio chi-square statistic, G^2 . A 1% level of significance was used for exploratory tests, and 5% for log-linear modelling.

3.5.1 Derivation of average cost per case

The costs identified for each 'intervention' category were aggregated for each type of doctor. This was divided by the total number of patients seen by each type of doctor to give an average cost per patient treated.

3.5.2 Sensitivity Analysis

There is much uncertainty about costs of services within hospitals, and possible reasons for bias in the observed cost differentials were, therefore, explored. Where confidence intervals on resource use were available these were used to calculate the maximum and minimum variation in costs that would be expected with 95% certainty. Likewise, confidence intervals were used for some cost vectors where statistical distribution data were available. As confidence intervals cannot be calculated for the multiplication of a resource use by a cost

vector, therefore for overall costs sensitivity analysis was used. The data was tested at various levels to explore the percentage error at which the differences in costs between groups would disappear, and in this way the robustness of the findings were explored.

3.5.3 Modelling annual costs

To estimate the annual costs involved in treating all 'primary care' patients at KCH A&E department in the 9am to 9pm period, workload models were constructed based on the following assumptions: firstly, that approximately 75% (56,000) of the total 75,000 patients attending the department annually do so between 9am-9pm, and secondly, that the percentage of patients triaged as 'primary care' (41%) during the sampled sessions reflects the overall proportion of 'primary care' patients attending A&E. This gave a total annual attendance of some 22,500 primary care patients during the 9am-9pm period. The costs of treating these patients using different configurations of medical staffing were estimated.

CHAPTER 4: RESULTS

4.0 Introduction

The final sample comprised 5088 'primary care' patients who attended and were treated in the A&E department during 419 randomly sampled sessions. Of these sessions, 215 (51.3%) had been allocated to GPs and 204 (48.7%) to A&E staff. GP sessions resulted in the inclusion of 2765 (54.3%) patients, and SHO and registrar sessions included 2323 (45.7%) patients. The slight extending of patients' waiting times during the hour before the start of each GP session (see *section 3.2.1*) contributed to the primary care workload during GP sessions (12.86 patients per session) being greater than during sessions allocated to A&E staff (11.39 patients per session).

The numbers of patients seen by GPs, SHOs and registrars reflected the extent to which A&E staff provided cover to the allocated doctor (both GPs and other A&E staff) during sessions when the 'primary care' workload was particularly busy. In consequence, a total of 1702 (33.5%) patients were seen by GPs (that is, 61.6% of the 2765 patients seen in the department during GP allocated sessions), 2382 (46.8%) by SHOs, and 557 (10.9%) by registrars or the senior registrar (treated in the analysis as a single group, hereafter described as 'registrars'). In addition, 105 (2.1%) patients were seen directly after triage by specialist staff (mainly paediatricians according to departmental policy), 199 (3.9%) patients left straight after triage, and a further 127 (2.5%) left before being seen by a doctor. Information about 15 (0.3%) of patients was missing.

Not all records were complete; percentages given below refer to proportions of patients for whom data were retrieved.

The number of consultations per doctor in the study ranged from 21-337. The median number of consultations for GPs was 201 (range 85-337), for SHOs was 89 (range 21-157), and for registrars was 136 (range 38-245).

This chapter presents an analysis of the data elicited in the phase 1 and phase 2 studies. While many of the findings have already been reported in peer-reviewed publications (see papers in supplement), this chapter contains substantial new information resulting from secondary analysis of the original data set. In particular, this relates to exploration of associations between consultation process variables and patients' expectations, consultation setting, duration into the study, specific diagnoses and intra-doctor group variation. In addition, satisfaction and outcome data have been analysed in much greater detail than previously. Unless otherwise stated, χ^2 -tests in this chapter are reported for one degree of freedom.

4.1 Characteristics of the sample

The characteristics of the patients in the sample are given in Table 4.1, and the duration and previous care of the problems presented are described in Table 4.2. As shown in Table 4.1, the sample included a large number of young adults; 41.7% of attenders were in the 17-30 years age band. There were slightly more males than females. Just under one-fifth of those whose occupational status was recorded were unemployed. Almost two-thirds of the problems presented were of greater than 24 hours duration, and 23.2% had a history of greater than one week (Table 4.2).

Table 4.1 Characteristics of primary care attenders included in the sample

Age in years (n=4641):	Number	(%)
0-5	416	(9.0)
6-16	497	(10.7)
17-20	426	(9.2)
21-25	839	(18.1)
26-30	666	(14.4)
31-50	1076	(23.2)
51-60	312	(6.7)
60+	409	(8.8)
Social class (n=1637):		
I	33	(2.0)
II	293	(17.9)
III Non-manual	313	(19.1)
III Manual	377	(23.0)
IV	174	(10.6)
V	135	(8.2)
Unemployed	312	(19.1)
Sex (n=4627):		
Female	2192	(47.4)
Male	2435	(52.6)

Table 4.2 Duration of the problems presented by primary care attenders and previous primary care received

Duration of problem (n=4320):	Number	(%)
<6 hours	662	(15.3)
6-24 hours	969	(22.4)
1-7 days	1685	(39.0)
>7 days	1004	(23.2)
Previous primary care (n=3623)		
GP	753	(20.8)
Other	106	(2.9)
None	2764	(76.3)

The characteristics of those who left immediately following triage and those who left while waiting for the doctor were compared with the rest of the sample. Those who left immediately after triage included a disproportionate number of patients in the 15-30 years age group (101/50.8% compared to 1970/40.5% of those who stayed, $\chi^2=8.39$, $p=0.004$). Those who left were more likely than others in the sample to have presented problems of longer than one week's duration (56/40.9% compared to 1059/23.4%, $\chi^2=22.21$, $p<0.001$). There were no differences between the age, sex, or GP registration status of those who left without being seen and others.

Excluding 3 patients who from the A&E record appeared to have waited longer than 7 hours, the average waiting time between registration and the time recorded as the start of the consultation with the doctor was 71.5 minutes (range: 0-330 minutes, median 61 minutes). The mean waiting time for patients seen by a GP was 70.5 minutes (range: 0-306 minutes, median 60 minutes), for those seen by a SHO was 70.0 minutes (range 0-330 minutes, median 60 minutes), and for those seen by a registrar was 80.3 minutes (range 0-278 minutes, median 75 minutes). The effect of A&E doctors not calling primary care patients from the waiting room during the hour before the start of a GP session ensured that the distribution of waiting times were remarkably similar for those seen by SHOs and GPs (Table 4.3). Patients seen by registrars were more likely to have been waiting for longer periods, reflecting the pattern of registrars being called to assist in the department at times when the workload was particularly heavy and waiting times long.

Appendix VIII gives the sociodemographic characteristics, decision making and expectations in attending A&E, and previous use of and satisfaction with health services for the sub-sample of 855 patients who were interviewed following triage but before being seen by a doctor. There were no significant associations ($p<0.05$) between the responses given in the pre-consultation interview and the type of doctor seen, indicating that the samples of patients seen by the different grades of doctor did not differ in terms of the measured characteristics.

Table 4.3: Waiting times between registration and being called by the doctor

Waiting time	TYPE OF DOCTOR SEEN						χ^2	df	p
	GP (n=1552)		SHO (n=1911)		registrar (n=485)				
	No.	%	No.	%	No.	%			
<30 minutes	240	(15.5)	415	(21.7)	80	(16.5)	57.4	8	<0.0001
30-60 minutes	555	(35.7)	566	(29.6)	117	(24.1)			
60-120 minutes	573	(36.9)	688	(36.0)	200	(41.2)			
120-180 minutes	157	(10.1)	190	(9.9)	75	(15.5)			
> 180 minutes	27	(1.7)	52	(2.7)	13	(2.70)			

4.2 Description of patients

The numbers of patients receiving investigations, prescriptions and referrals, and the diagnoses made (by RCGP classification chapter heading) are shown in Table 4.4. Just over half of the problems related to injuries or musculo-skeletal problems; the remainder included a broad range of other diagnoses. The commonest types of injury presented were injuries to the hand and wrist (239/5.1%); ankle and foot (292/6.3%); lacerations (416/9.0%); and abrasions and contusions (332/7.0%). In all, 1279 (27.6%) of patients in the sample had at least one of these injuries. They included 445 (26.1%) of patients seen by GPs, 641 (26.9%) of patients seen by SHOs and 193 (34.6%) of patients seen by registrars ($\chi^2=16.2$, $df=2$, $p<0.001$). They accounted for 454 (45.4%) of patients who had x-rays. While they resulted in 99 (71.7%) of referrals made to fracture clinics, they accounted for only 16 (4.3%) of the referrals made to on-call teams.

Table 4.4 Description of patients: investigations, treatments, referrals and diagnoses

Investigations	Number	(%)
Radiography (n=4606)	966	(21.0)
Haematology (n=4624)	125	(2.7)
Chemical pathology (n=4621)	88	(1.9)
Microbiology (n=4618)	143	(3.1)
ECG (n=4620)	92	(2.0)
Treatments		
Prescription (one or more items) (n=4242*)	1800	(42.4)
Anti-tetanus toxoid	372	(8.0)
Wound dressing/sutures	502	(10.8)
Support bandage/sling etc	687	(14.8)
Referral/disposal		
Community/General Practice	3676	(80.5)
On-call specialist team	376	(8.2)
Out-patient clinic	289	(6.3)
Return to A&E	225	(4.9)
Diagnoses		
Infectious and parasitic diseases	229	(4.9)
Endocrine and metabolic diseases	42	(0.9)
Mental disorders	93	(2.0)
Diseases of the nervous system	46	(1.0)
Diseases of the eye	145	(3.1)
Diseases of the ear	127	(2.7)
Cardiovascular & peripheral vascular diseases	67	(1.4)
Respiratory system diseases	302	(6.5)
Digestive system diseases	273	(5.9)
Genitourinary system diseases	254	(5.5)
Complications of pregnancy, childbirth, contraception	89	(1.9)
Diseases of the skin and subcutaneous tissue	289	(6.2)
Diseases of the musculo-skeletal system	634	(13.7)
Non-specific symptoms, signs	326	(7.0)
Injury and poisoning	2061	(44.4)
Social, marital and family problems	48	(1.0)

*excludes patients referred to on-call teams

4.3 Association between patients' expectations and consultation process variables

Patients' expectations for investigations, referral and treatment (see Appendix VIII) were cross-tabulated with the consultation process variables. No significant associations were found. For example, 36 (28.6%) of the 126 patients who expected an investigation received one compared to 177 (25.1%) of those who did not express this expectation ($\chi^2=0.659$, $p=0.42$).

4.4 Association between consultation setting and consultation process variables

For SHO and registrar-seen patients, the consultation process variables and patient characteristics were cross-tabulated with whether or not a consultation record form had been completed, a proxy measure for whether the consultation took place within the PCCR or in the normal 'minors' area⁵. A greater proportion of consultations occurring outside the PCCR were for injury-related problems; 961 (45.9%) compared to 352 (41.6%) ($\chi^2=4.68$, $p=0.03$). SHOs and registrars were equally likely to consult within or outside the PCCR.

Comparing patients with injury-related problems, there were no significant differences in rates of investigation for those within or outside the PCCR. Patients seen outside the consulting room were more likely to be referred to on-call teams or outpatient clinics; 13.7% compared to 9.4% ($\chi^2=10.55$, $p=0.001$).

For patients presenting non-injury-related problems, those seen outside the room were more likely to have x-rays (17.7% compared to 12.5%; $\chi^2=6.78$, $p=0.009$), haematology tests (8.6% compared to 4.6%; $\chi^2=7.78$, $p=0.005$), and chemical pathology tests (6.5% compared to 3.0%; $\chi^2=8.21$, $p=0.004$). There was no difference in rates of referral to on-call teams or outpatient clinics

4.5 Association between category of doctor and consultation process variables

The association between the doctor seen (GP, SHO, or registrar) and the main consultation process variables was investigated by χ^2 -analysis (Table 4.5). All process variables (except for the prescription of anti-tetanus toxoid) showed a significant association with the type of doctor seen,

⁵ While almost all GP consultations took place within the PCCR with completion of a consultation record form, a consultation record form was completed for only 847 (28.8%) of the 2939 patients seen by the SHOs and registrars. Of the 2092 consultations for which a record form was not completed 1063 (50.8%) occurred during 'GP sessions' and so would have taken place outside the consulting room as a GP would have been consulting within it. Most of the

with the GPs being less likely than the SHOs or registrars to initiate investigations, prescribed treatments or referrals. The largest effect sizes were for radiographic investigations and for discharge referral, but GPs also sent significantly fewer patients for haematology, clinical pathology and microbiology investigations.

Excluding patients referred to on-call teams, fewer of the patients who saw GPs were issued with prescriptions (Table 4.5). The mean numbers of items prescribed also varied with doctor seen: for GPs, 0.46; SHOs, 0.57; registrars, 0.63 (Kruskal Wallis $\chi^2=20.66$, $df=2$, $p<0.001$). The differences in prescribing were largely accounted for by more frequent prescribing of antibiotics, analgesics, and non-steroidal anti-inflammatory drugs by SHOs and registrars (Table 4.6). Specific drugs for which there was a significant association between the rates of prescribing and grade of doctor included paracetamol-containing preparations, erythromycin, and benzodiazepines.

Table 4.5 Number (%) of patients receiving investigations, prescriptions and referrals: associations with doctor seen

	TYPE OF DOCTOR SEEN			χ^2 (df=2)	p
	GP (n=1702)	SHO (n=2382)	Registrar (n=557)		
Radiography	207 (12.2)	619 (26.2)	140 (25.4)	123.7	<0.001
Haematology	14 (0.8)	106 (4.5)	5 (0.9)	57.9	<0.001
Chemical pathology	10 (0.6)	71 (3.0)	7 (1.3)	32.2	<0.001
Microbiology	35 (2.1)	99 (4.2)	9 (1.6)	19.4	<0.001
ECG	21 (1.2)	64 (2.7)	7 (1.3)	12.6	0.002
Prescription*	640 (39.7)	921 (43.6)	239 (46.5)	9.7	0.008
Anti-tetanus toxoid	115 (6.8)	209 (8.8)	48 (8.6)	8.4	0.21
Wound dressing/sutures	163 (9.6)	257 (10.8)	82 (14.7)	11.5	0.003
Support bandage/sling etc	222 (13.0)	349 (14.7)	116 (20.8)	20.2	<0.001
Referral to:					
Community/general practice	1509 (89.5)	1741 (74.6)	426 (78.0)	155.9	<0.001
On-call specialist team	84 (5.0)	253 (10.8)	39 (7.1)		
Outpatient clinic	66 (3.9)	175 (7.5)	48 (8.8)		
A&E	27 (1.6)	165 (7.1)	33 (6.0)		

* Excludes patients referred to on-call specialist teams

remaining 929 consultations can be assumed to have occurred outside the PCCR at times when the allocated SHO or registrar was (or should have been) occupying the room.

Table 4.6 Number (%) of patients prescribed drugs: associations with doctor seen

	TYPE OF DOCTOR SEEN:			χ^2 (df=2) p	
	GP (n=1612)	SHO (n=2105)	Registrar (n=512)		
Any analgesic	153 (9.5)	263 (12.5)	70 (13.7)	10.8	0.004
Codeine (+ derivatives)	19 (1.2)	19 (0.9)	4 (0.8)	0.97	0.615
Paracetamol preparations	134 (8.3)	244 (11.6)	65 (12.7)	13.53	0.001
Any antibiotic	273 (16.9)	382 (18.1)	104 (20.3)	3.12	0.210
Penicillin (+derivatives)	172 (10.7)	241 (11.4)	50 (9.8)	1.40	0.496
Chloramphenicol (topical)	38 (2.4)	45 (2.1)	15 (2.9)	1.16	0.560
Trimethoprim	21 (1.3)	25 (1.2)	6 (1.2)	0.12	0.944
Erythromycin	30 (1.9)	49 (2.3)	29 (5.7)	23.44	<0.001
Metronidazole	17 (1.1)	31 (1.5)	14 (2.7)	7.59	0.022
Antifungal (topical)	2 (0.1)	4 (0.2)	1 (0.2)	0.27	0.873
Non steroidal anti-inflammatories	103 (6.2)	181 (8.6)	54 (10.5)	11.22	0.003
Creams and emollients	22 (1.4)	14 (0.7)	3 (0.6)	5.61	0.060
Benzodiazepines	23 (1.4)	76 (3.6)	12 (2.3)	17.21	<0.001
Anti-emetics	11 (0.7)	11 (0.5)	2 (0.4)	0.74	0.692
Antidiarrhoea & rehydration salts	9 (0.6)	19 (0.9)	4 (0.8)	1.45	0.485
Asthma medication	13 (0.8)	19 (0.9)	6 (1.2)	0.58	0.747
Antihistamines	25 (1.6)	37 (1.8)	3 (0.6)	3.74	0.154

Overall, 304 (6.6%) of the study sample were diagnosed as having fractures, of whom 160 had fractures affecting toes, ribs or the nose. Most of the remaining fractures were of the hand or foot, none were compound or needed fixation. Despite the differences in the frequency of radiographic investigation, GPs and SHOs identified similar numbers of abnormalities. In all, 102 (6.0%) of all the patients seen by GPs and 150 (6.3%) of those seen by SHOs were identified as having fractures. The registrars identified a slightly greater proportion (9.3%) of patients as having a fracture, and this is consistent with the greater proportion of injury-related problems in their casemix (see below).

4.6. Log linear modelling

To check for any confounding factors that may be influencing the differences observed in consultation process variables, possible associations between the doctor seen and the main explanatory variables were investigated by χ^2 -analysis (Table 4.7). Two variables, namely age and an injury-related diagnosis were found to vary significantly with doctor seen. In addition, other

variables (such as diagnosis of a mental disorder or a disease of the skin) varied significantly but had small effect sizes.

Age and an injury-related diagnosis were also related to the process variables. As Table 4.8 shows those aged over 60 years were more likely to have x-ray and laboratory investigations, and to be referred to on-call teams.

Table 4.7 Associations between doctor seen and explanatory variables (including only those for which $p < 0.10$)

No (%) patients seen:	TYPE OF DOCTOR SEEN:			χ^2 (df=2) p	
	GP (n=1702)	SHO (n=2382)	Registrar (n=557)		
Age:					
0-5	108 (6.3)	267 (11.2)	41 (7.4)	64.7	<0.001
6-16	150 (8.8)	276 (11.6)	71 (12.7)		
17-20	171 (10.0)	204 (8.6)	51 (9.2)		
21-25	329 (19.3)	415 (17.4)	95 (17.1)		
26-30	257 (15.1)	327 (13.7)	82 (14.7)		
31-50	405 (23.8)	535 (22.5)	136 (24.4)		
51-60	135 (7.9)	129 (5.4)	48 (8.6)		
60+	147 (8.6)	229 (9.6)	33 (5.9)		
Diagnoses:					
Mental disorders	49 (2.9)	34 (1.4)	10 (1.8)	10.8	0.004
Diseases of the nervous system	11 (0.6)	32 (1.3)	3 (0.5)	6.2	0.044
Diseases of skin and subcutaneous tissue	129 (7.6)	128 (5.4)	32 (5.7)	8.5	0.014
Non-specific symptoms, signs	106 (6.2)	187 (7.9)	33 (5.9)	5.2	0.075
Injury and poisoning	748 (43.9)	1028 (43.2)	285 (51.2)	12.0	0.002

Table 4.8: Association between process variables and age; in parentheses, percentage of patients in ageband ($p < 0.01$; *** $p < 0.001$)**

	AGE (YEARS)							
	0-5 (n=416)	6-16 (n=497)	17-20 (n=426)	21-25 (n=839)	26-30 (n=666)	31-50 (n=1076)	51-60 (n=312)	61+ (n=409)
Radiography	6 (1.3)	131 (26.4)	85 (20.0)	179 (21.3)	115 (17.3)	230 (21.4)	76 (24.4)	109 (26.7) **
Lab tests	16 (3.8)	21 (4.2)	38 (8.9)	56 (6.7)	35 (5.3)	58 (5.4)	23 (7.4)	44 (10.8) ***
Disposal:								
oncall	44 (10.6)	30 (6.0)	28 (6.6)	56 (6.7)	56 (8.4)	69 (6.4)	27 (8.7)	66 (16.1) ***

The relationship between the various process variables and doctor seen was investigated while allowing for these two possible confounding factors, using log-linear models. For all seven process

variables, the best-fitting model of “uniform order” was found to be the one containing all the interactions between pairs of variables (Table 4.9; $p > 0.05$ indicates that the model fits well). In all seven cases, no further terms could be removed from the model without significant loss of fit, and so the models described in Table 4.9 were accepted as the best-fitting. From these models it is apparent that each pair of variables is associated, and that these associations are in each case independent of any third variable since no three-way interactions are present. Hence the relationship between each of the process variables and the doctor seen does not appear to be influenced by any differences in the distribution of age or injury-related diagnosis.

Table 4.9 Goodness of fit of log-linear models comprising all 2-way interaction terms for the variables: doctor seen, age, injury-related, and the stated process variable.

	G^2	df	p
Radiography	61.74	51	0.14
Haematology	37.70	51	0.92
Chemical pathology	50.10	51	0.51
Microbiology	48.83	51	0.56
ECG	53.10	51	0.39
Prescription (any vs none)	58.29	51	0.23
Referral (community/GP vs other)	47.71	51	0.61

Table 4.10: Odds ratios (95% confidence intervals) from the best-fitting log-linear models, for each of the process variables against the “doctor seen” variable.

	SHO vs GP		Registrar vs GP	
Radiographic investigation vs none	2.78	(2.32-3.34)	2.37	(1.84-3.06)
Haematology investigation vs none	6.17	(3.46-10.97)	1.32	(0.46-3.77)
Chemical pathology test vs none	5.71	(2.89-11.30)	2.63	(0.97-7.12)
Microbiology test vs none	2.10	(1.40- 3.14)	0.89	(0.42-1.89)
ECG investigation vs none	2.38	(1.42- 3.98)	1.25	(0.51-3.04)
Prescription vs none*	1.28	(1.11- 1.47)	1.54	(1.24-1.91)
Referral: Hospital vs Community/GP	2.88	(2.39- 3.47)	2.57	(1.98-3.35)

* Excludes patients referred to on-call specialist teams

Table 4.10 presents odds ratios resulting from the fitted log-linear models. For example, the odds of being sent for an x-ray if seen by a SHO compared to being seen by a GP were 2.78:1, and for a registrar versus a GP were 2.37:1. The odds of being referred to a hospital-based service (including

on-call teams and out-patient clinics) were 2.88:1 if seen by a SHO versus a GP and 2.57:1 for a registrar versus a GP.

4.7 Association between GP consultation process variables and duration into the study

To test whether the differences between the GPs and A&E medical staff altered as the GPs became more used to working within A&E, GPs' rates of investigation, treatment and referral were compared for the 1089 patients who they saw before December 31 1989 with the 613 seen after January 1 1990. No significant differences were found. For example, the rates for x-ray examination were 13.3% for patients seen in 1989 compared to 11.6% for those seen in 1990, while for referral to on-call teams/out-patient clinics the rates were 8.5% and 9.5% respectively.

4.8 Associations between diagnoses and process variables

Table 4.11 shows the distribution of patients seen by GPs, SHOs and registrars with diagnoses (given or suspected) listed by chapter headings (RCGP system of classification) who had an x-ray, were referred to an on-call team or were referred to an outpatient clinic.

As can be seen, for all diagnostic categories with the exception of one (complications of pregnancy, childbirth and contraception) SHOs ordered radiographic examinations more frequently than GPs. For seven out of the 16 categories, the differences between rates of investigation for the three types of doctor were statistically significant ($p < 0.05$). Likewise, with the exception of one category of diagnosis (diseases of the nervous system) SHOs referred patients more frequently to on-call teams than did GPs. For nine categories the differences between GPs, SHOs and registrars were statistically significant. A similar pattern occurred for referrals to outpatient clinics.

Table 4.11: Number (%) of patients seen by GPs, SHOs and registrars with given or suspected diagnoses who had an x-ray, were referred to an on-call team or were referred to an outpatient clinic (χ^2 test: * p<0.05, **p <0.01; * p<0.001); small numbers denote for each diagnostic group, the number of patients seen by each type of doctor for whom information about the process variable was available.**

DIAGNOSTIC GROUP	Investigated by x-ray			Referral to on-call specialist			Referral to outpatient clinic		
	GP	SHO	Reg/SR	GP	SHO	Reg/SR	GP	SHO	Reg/SR
Infectious and parasitic diseases	0/82 (0%)	9/124 (7.3%)	1/20 * (4.3%)	2/82 (2.4%)	14/121 (11.6%)	0/21 * (0%)	0/82 (0%)	7/121 (5.8%)	0/21 * (0%)
Endocrine and metabolic diseases	1/16 (6.3%)	9/23 (39.1%)	1/3 (33.3%)	2/16 (12.5%)	10/22 (45.5%)	0/3 * (0%)	1/16 (6.3%)	1/22 (4.5%)	0/3 (0%)
Mental disorders	2/49 (4.1%)	6/34 (17.6%)	1/10 (10.0%)	6/49 (12.2%)	10/34 (29.4%)	0/10 * (0%)	1/49 (2.0%)	2/34 (5.9%)	3/10 ** (30.0%)
Diseases of the nervous system	1/11 (9.1%)	6/32 (18.8%)	0/3 (0%)	3/11 (27.3%)	8/32 (25.0%)	1/3 (33.3%)	1/11 (9.1%)	6/32 (18.8%)	0/3 (0%)
Diseases of the eye	1/57 (1.8%)	2/68 (2.9%)	2/20 (10.0%)	7/57 (12.3%)	16/68 (23.5%)	5/20 (25.0%)	1/57 (1.8%)	7/68 (10.3%)	0/20 (0%)
Diseases of the ear	0/44 (0%)	1/64 (1.6%)	0/19 (0%)	4/44 (9.1%)	17/64 (26.6%)	0/0 (0%)	1/44 (2.3%)	1/64 (1.6%)	2/19 (10.5%)
Cardiovascular & periph. vasc dis.	5/24 (20.8%)	13/38 (34.2%)	1/5 (20.0%)	7/24 (29.2%)	18/37 (48.6%)	2/5 (40.0%)	1/24 (4.2%)	4/37 (10.8%)	2/5 (40.0%)
Respiratory system diseases	12/117 (10.3%)	43/155 (27.7%)	7/30 ** (23.3%)	5/117 (4.3%)	18/154 (11.7%)	1/30 * (3.3%)	2/117 (1.7%)	6/154 (3.9%)	2/30 (6.7%)
Digestive system diseases	3/100 (3.0%)	20/150 (13.3%)	3/23 * (13.0%)	10/100 (10.0%)	34/149 (22.8%)	5/23 * (21.7%)	0/100 (0%)	7/149 (4.7%)	1/23 (4.3%)
Genito-urinary diseases	3/94 (3.2%)	13/139 (9.4%)	2/21 (9.5%)	11/94 (11.7%)	41/138 (29.7%)	1/20 *** (5.0%)	5/94 (5.3%)	13/138 (9.4%)	6/20 ** (30.0%)
Complications of pregnancy, childbirth, contraception	4/33 (12.1%)	2/49 (4.1%)	1/7 (14.3%)	9/33 (27.3%)	18/49 (36.7%)	3/6 (50.0%)	1/33 (3.0%)	2/49 (4.1%)	0/6 (0%)
Diseases of skin/subcutaneous tissue	2/129 (1.6%)	3/128 (2.3%)	3/32 * (9.4%)	2/128 (1.6%)	12/128 (9.4%)	5/31 ** (16.1%)	3/128 (2.3%)	18/128 (14.1%)	0/31 *** (0%)
Musculo skeletal system diseases	25/234 (10.7%)	98/326 (30.1%)	22/74 *** (29.7%)	8/233 (3.4%)	20/324 (6.2%)	3/74 (4.1%)	9/233 (3.9%)	19/324 (5.9%)	5/74 (6.8%)
Non-specific symptoms, signs	9/106 (8.5%)	44/187 (23.5%)	9/33 ** (27.3%)	5/105 (4.8%)	18/183 (9.8%)	14/31 (12.9%)	2/105 (1.9%)	9/183 (4.9%)	1/31 (3.2%)
Injury and poisoning	164/748 (21.9%)	418/1028 (40.7%)	105/285 *** (36.8%)	14/745 (1.9%)	40/1024 (3.9%)	11/285 * (3.9%)	45/745 (6.0%)	83/1024 (8.1%)	30/285 * (10.5%)
Social, marital and family problems	0/13 (0%)	0/26 (0%)	0/9 (0%)	0/13 (0%)	2/26 (7.7%)	0/9 (0%)	0/13 (0%)	0/26 (0%)	1/9 (11.1%)

Table 4.12: Referral of patients to on-call teams: number (%) of patients referred for each diagnosis that resulted in at least 5 referrals to an on-call team

Problem (RCGP classification)	GP	SHO	Reg	χ^2	p
Diarrhoea and vomiting (15)	1 (2.9)	4(6.9)	0	NS	
Diabetes (720)	2 (28.6)	6 (75.0)	0	NS	
Alcohol problem (1100)	4 (44.4)	4 (44.4)	0	NS	
Conjunctivitis/corneal abrasion (1570)	2 (5.9)	7 (17.5)	1(10.0)	NS	
Wax/foreign body in ear (1705)	4 (26.7)	3(27.3)	0	NS	
Cerebrovascular Accident (2105)	1 (100)	2 (100)	2 (100)	NS	
Acute bronchitis/chest infection (2420)	2 (10.5)	4 (15.4)	1(12.5)	NS	
Dental problems (2610/2615)	3 (9.7)	4 (9.3)	1 (11.1)	NS	
Appendicitis (2715)	3 (100)	8 (88.9)	1 (100)	NS	
Gastro-intestinal tract bleed (2830)	1 (33.3)	6 (100)	0	5.14 (df=1)	0.023
Urinary tract infection (2935)	1 (4.0)	6 (12.0)	0	NS	
Pelvic inflammatory disease (3035)	2 (11.8)	6 (50.0)	0	6.11 (df=2)	0.047
Dysfunctional uterine bleeding (3135)	1 (5.3)	16 (47.1)	1 (33.3)	9.76 (df=2)	0.008
Miscarriage/ectopic pregnancy (3305/3310)	7 (53.8)	10 (41.7)	2 (66.7)	NS	
Skin infection (3615)	1 (2.4)	7 (14.0)	4 (22.2)	6.00 (df=2)	0.049
Musculoskeletal pain (4075)	1 (2.3)	4 (4.5)	1 (6.3)	NS	
Diseases of musculoskeletal system (4150)	8 (3.4)	20 (6.2)	3 (4.1)	NS	
Fracture facial bones(5005)	2 (25.0)	5 (29.4)	2 (28.6)	NS	
Mild head injury (5160)	0	11 (8.3)	2 (8.0)	NS	
Foreign body in eye (5210)	5 (50.0)	5 (22.7)	1 (33.3)	NS	
Infected operative wound (5275)	4 (30.8)	1 (100)	0	NS	
Pregnancy (6285)	0	5 (25.0)	1 (50.0)	6.03 (df=2)	0.049

Twenty-two different diagnoses or suspected diagnoses accounted for 175 (46.5%) out of the 376 patients referred to on-calls teams (table 4.12). Each of these diagnoses accounted for at least 5 (1.6%) of the referrals. In all, 1168 (25.4%) of the patients seen by the GPs, SHOs and registrars had at least one of these diagnoses. The distribution of these patients between GPs, SHOs and registrars was similar to that for the whole sample: 395 (33.8%) saw a GP, 640 (54.8%) saw a SHO, and 133 (11.4%) saw a registrar. While 44 (11.1%) of the 395 patients with these diagnoses who saw a GP were referred to an on-call team, this compared to 113 (17.7%) of those seen by an SHO and 18 (13.5%) of those seen by a registrar ($\chi^2=8.38$, $df=2$, $p=0.015$).

To identify whether the differences between grades of doctor in rates of referral to on-call teams were consistent across all patients with these diagnoses or just specific to some, for each referral to an on-call team occurred was cross-tabulated with the grade of the consulting doctor (table 4.12). The differences in rates was statistically significant for only 4 of the diagnoses (reflecting the small numbers of cases included), but for a further 15 out of the 23 conditions SHOs referred a greater proportion of patients to an on-call team than did GPs, and for a further 2 they referred the same proportion. This indicates that the tendency for SHOs to refer more frequently to on-call teams is

consistent across several types of patient presentation rather than related to just a few specific areas, suggesting overall differences in the threshold for making a referral.

Nineteen diagnoses or suspected diagnoses accounted for 156/289 (54.0%) of the patients referred for outpatient or fracture clinic appointments (table 4.13). Each of these diagnoses accounted for at least 4 (1.4%) of the referrals. In all, 866 (18.7%) of the patients in the sample had at least one of these problems, and 312 (36.0%) of these patients saw a GP, 445 (51.4%) saw a SHO, and 109 (12.6%) saw a registrar. Forty-six (14.7%) of the patients with these diagnoses who saw a GP were referred to an outpatient clinic compared to 87 (19.6%) of those seen by an SHO and 23 (21.1%) of those seen by a registrar ($\chi^2=3.67$, $df=2$, $p=0.159$). Cross-tabulation of whether or not referral to outpatient clinics occurred with the grade of the consulting doctor (table 4.13) showed that, although the differences between referral rates were statistically significant for only two diagnoses, for a further 12 of the 19 conditions SHOs referred a greater proportion of patients to out patient clinics than did GPs, and in a further one condition the referral rates were the same. As with the pattern of referrals to on-call teams, this indicates that the tendency for SHOs to refer to outpatients appears to be consistent rather than related to just a few specific diagnoses, suggesting again that the overall threshold for referral is lower.

Table 4.13: Referral of patients to out patient and fracture clinics: number (%) of patients referred for conditions which resulted in at least 4 referrals to a clinic

Problem (RCGP classification)	GP	SHO	Reg	χ^2	p
haemorrhoids/piles (2287)	0	3 (25.0)	1 (100.0)	NS	
urinary tract infection (2935)	1 (4.0)	2 (4.0)	2 (18.2)	NS	
dysfunctional uterine bleeding (3135)	1 (5.3)	4 (11.8)	2 (66.7)	8.97	0.011
skin infection (3615)	0	5 (10.0)	0	6.28	0.043
arthralgia/pain in joint (3980)	4 (26.7)	5 (31.3)	0	NS	
abdominal pain (4700)	0	3 (7.0)	0	NS	
fractured facial bones (5005)	1 (12.5)	4 (23.5)	2 (28.6)	NS	
fractured clavicle (5025)	2 (100)	3 (60.0)	0	NS	
fractured humerus (5030)	1 (100)	3 (100)	0	NS	
fractured hand (5040)	13 (81.3)	12 (75.0)	4 (57.1)	NS	
fractured finger (5045)	5 (83.3)	7 (53.8)	4 (80.0)	NS	
fractured ankle (5060)	2 (100)	10 (83.3)	1 (50.0)	NS	
fractured foot (5065)	3 (50.0)	6 (66.7)	3 (75.0)	NS	
fractured toe (5070)	4 (12.9)	4 (14.3)	1 (10.0)	NS	
fractured other (5075)	1 (33.3)	3 (75.0)	0	NS	
meniscus tear of knee (5099)	1 (25.0)	4 (50.0)	1 (50.0)	NS	
dislocated joint (5105)	2 (50.0)	3 (42.9)	0	NS	
sprained shoulder/elbow (5110)	4 (12.5)	0	0	NS	
sprained wrist/hand (5115)	1 (1.6)	8 (9.8)	0	NS	

Twenty-five diagnoses or suspected diagnoses accounted for 661 (66.1%) out of the 1001 patients referred for x-ray examination (table 4.14). Each of these diagnoses accounted for at least 7 (1.1%) of these examinations. In all, 1826 (39.3%) of the patients in the sample had at least one of these problems, and 650 (35.6%) of these patients saw a GP, 932 (51.0%) saw a SHO, and 244 (13.4%) saw a registrar. X-ray examination occurred for 148 (22.8%) of these patients who saw a GP compared to 413 (44.3%) who saw a SHO and 100 (41.0%) who saw a registrar ($\chi^2=79.75$, $df=2$, $p<0.0001$). Cross-tabulation of whether or not x-ray examination occurred with the grade of the consulting doctor (table 4.14) showed that for 20 out of the 25 diagnoses SHOs referred a greater proportion of patients for x-ray examination than did GPs, and in a further 2 they referred the same number. The differences were statistically significant for 11 of these diagnoses. As with referrals to on-call teams and outpatient clinics this indicates that the tendency to order x-rays appears to be consistent across diagnoses.

Table 4.14: Referral of patients to x-ray: number (%) of patients referred for conditions which resulted in at least 7 referrals for x-ray investigation

Problem (RCGP classification)	GP	SHO	Reg	χ^2	p
Chest infection (2420)	3 (15.8)	16 (61.5)	6 (75.0)	12.1	0.002
Asthma (2500)	1 (7.7)	6 (37.5)	1 (25.0)	NS	
Pleurisy (2520)	3 (100)	5 (83.3)	0	NS	
Osteoarthritis (3955)	3 (20.0)	9 (52.9)	3 (100.0)	7.9	0.019
Arthralgia/pain in joint (3980)	4 (26.7)	9 (56.3)	1 (14.3)	NS	
Sciatica (4015)	0	10 (40.0)	0	7.05	0.029
Back pain/strain (4020)	2 (3.9)	9 (18.4)	2 (16.7)	NS	
Foreign body in tissue (4085)	2 (14.3)	7 (28.0)	4 (57.1)	NS	
Chest wall pain (4640)	5 (20.0)	24 (66.7)	4 (50.0)	12.89	0.002
fractured facial bones (5005)	5 (62.5)	16 (94.1)	5 (71.4)	NS	
fractured rib (5015)	3 (12.0)	13 (43.3)	2 (50.0)	7.08	0.029
fractured forearm (5035)	2 (100)	12 (100)	13 (100)	NS	
fractured hand (5040)	16 (100)	16 (100)	7 (100)	NS	
fractured finger (5045)	5 (83.3)	13 (100)	5 (100)	NS	
fractured ankle (5060)	2 (100)	11 (100)	2 (100)	NS	
fractured foot (5065)	5 (83.3)	9 (100)	4 (100)	NS	
fractured toe (5070)	10 (32.3)	17 (60.7)	3 (30.0)	NS	
sprained shoulder elbow (5110)	8 (25.0)	16 (59.3)	0	8.54	0.014
sprained wrist/hand (5115)	17 (27.4)	54 (65.9)	12 (63.2)	22.16	<0.001
sprained knee (5125)	9 (20.0)	17 (47.2)	2 (33.3)	6.79	0.033
sprained ankle (5130)	27 (36.5)	52 (55.3)	15 (50.0)	5.98	0.050
sprained neck (5145)	1 (5.6)	7 (43.8)	2 (33.3)	6.85	0.032
mild head injury (5160)	9 (17.6)	48 (35.8)	9 (36.0)	NS	
lacerations/bites (5170)	6 (4.9)	34 (14.5)	2 (3.2)	12.18	0.002
crush injury (5205)	4 (80.0)	9 (60.0)	1 (50.0)	NS	

Ankle examinations represented the most common type of radiographic examination requested. They occurred in 29/207 (14.0%) of all GP-seen patients who were examined by

x-ray, 63/619 (10.2%) of SHO-seen patients, and 17/140 (12.1%) of registrar-seen patients. While SHOs and registrars x-rayed 55% and 50% of patients who were diagnosed as having a sprained ankle, GPs only x-rayed 37%.

4.9 Intra-doctor group variation

The distribution of rates for ordering x-rays and writing prescriptions (for patients not referred to on-call teams) for the individual GPs, SHOs and registrars in the study are shown in figures 4.1 and 4.2 respectively. Figures 4.3 and 4.4 show the distribution of rates for making referrals to outpatient clinics and on-call teams respectively. As can be seen, for all process variables the distribution of rates of intervention for GPs and A&E doctors were quite distinct.

Figure 4.1: The distribution of GPs, SHOs, and registrars according to rates of ordering x-rays: all consultations

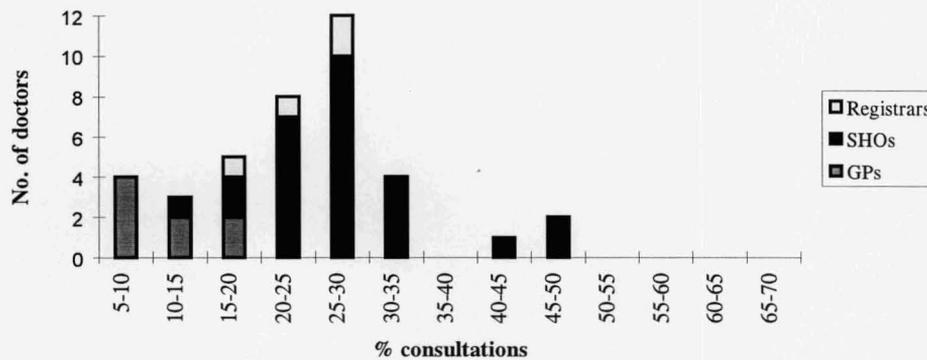


Figure 4.2: The distribution of GPs, SHOs, and registrars according to prescribing rates: all consultations, except those where patient referred to an on-call team

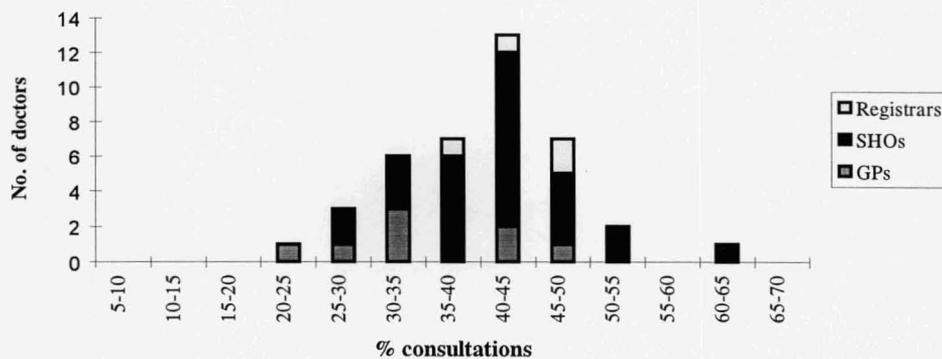


Figure 4.3: The distribution of GPs, SHOs, and registrars according to rates of referral to on-call teams: all consultations

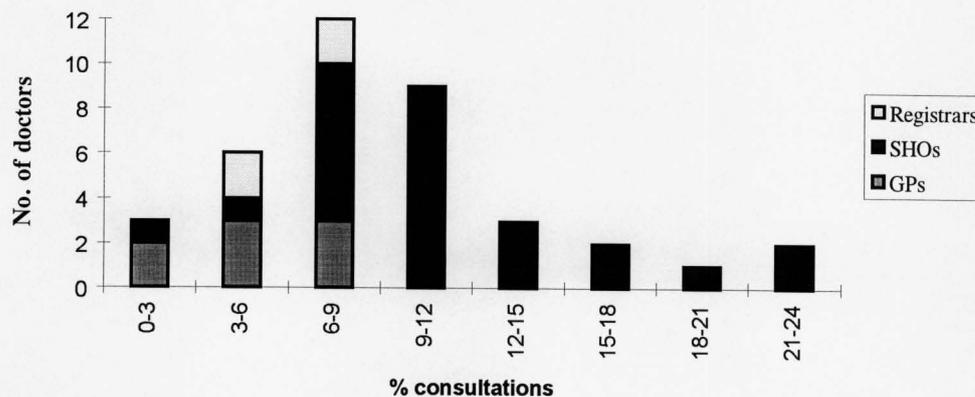
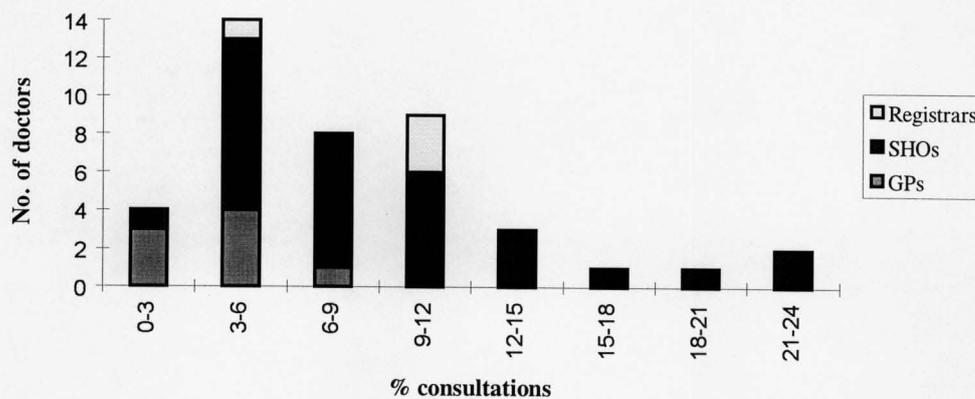


Figure 4.4: The distribution of GPs, SHOs, and registrars according to rates of referral to outpatient clinics: all consultations



The medians for the proportion of patients who were referred for x-ray investigation was 12.4% for GPs, 26.5% for SHOs and 24.1% for registrars. The medians for the proportion of patients (excluding those referred to an on-call team) who were prescribed medication was 39.6% for GPs, 47.1% for SHOs and 49.5% for registrars. The medians for the proportion of patients who were referred to on-call teams were 5.1% for GPs, 9.7% for SHOs, and 5.9% for registrars. The medians for the proportion of patients who were referred to outpatient clinics were 3.1% for GPs, 6.9% for SHOs, and 9.9% for registrars. Comparing these medians with the means for the process variables given in Table 4.5 indicates that for each the mean and median were very close to one another. As

another. For each process variable, the distribution of GPs, SHOs and registrars' rates of intervention approximated to normal distributions.

Given the relatively small numbers of patients seen by each individual doctor it was not possible to control for differences in case mix between the samples of patients that each saw. However, figures 4.5 and 4.6 show the distribution of rates for ordering x-rays and writing prescriptions respectively for the sub-sample of 2061 patients who presented with injury-related problems. As can be seen the pattern is broadly similar. For these patients, the medians for rates of x-ray examination were 24.7% for GPs, 40.0% for SHOs, 31.9% for registrars. The medians for the proportion of these patients who were prescribed a medication were 22.7% for GPs, 29.4% for SHOs, 36.1% for registrars.

Figure 4.5: The distribution of GPs, SHOs, and registrars according to rates of ordering x-rays: consultations for injuries and musculoskeletal problems only

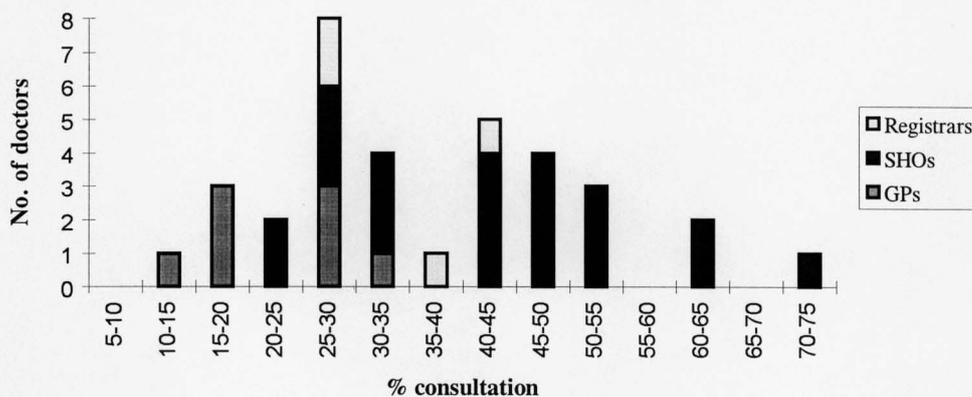
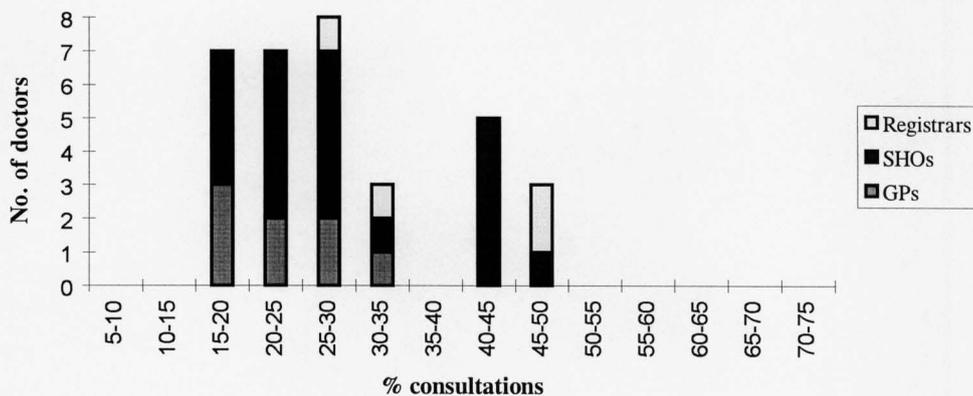


Figure 4.6: The distribution of GPs, SHOs, and registrars according to rates of prescribing treatments: consultations for injuries and musculoskeletal problems only



Taken together, it appears that the differences in consultation process variables observed between the GPs, SHOs and registrars reflect distinct characteristics of each group, rather than the effect of a small number of individual out-liers skewing the findings

4.10 Patient satisfaction and future health seeking behaviour

In all, 565 (74.7%) of the 756 patients who were sampled for follow-up interview responded to the telephone/postal survey. Of the 498 who were contacted by phone 439 (88.2%) responded compared (after one reminder) to only 126 (48.8%) of the 258 who were sent the questionnaire by post. Eighteen (3.6%) of those who were followed up by phone were either unknown at the telephone number that had been documented in A&E or the number was unobtainable. Twenty-one (8.1%) of those sent postal questionnaires were returned by the post office as 'addressee unknown'.

Those who were sent questionnaires included a higher proportion of members of minority ethnic groups (41.0% compared to 37.7% for those who were telephoned; $\chi^2=6.12$, $p=0.013$), and a higher proportion of people outside paid employment (56.6% compared to 33.0%; $\chi^2=39.3$, $p<0.0001$). While for 36.2% of those followed up by telephone the occupation of the household's main bread winner was in social class I, II, or III (non-manual), this was only true of 19.8% of those included for postal follow-up ($\chi^2=21.5$, $p<0.0001$).

Members of minority ethnic groups were less likely to respond; 218/314 compared to 343/441 (69.4% vs 77.8%, $\chi^2=6.70$, $p=0.01$). There was a trend towards interviewees within paid employment being more likely to respond; 340/445 compared to 221/310 ((76.4% vs 71.3%, $\chi^2=2.50$, $p=0.11$). These trends reflect differences in the characteristics of those who were followed up by telephone and those who were followed up by postal survey. There were no differences in consultation process variables between responders and non-responders.

Ninety-one (16.0%) of the interviews/postal questionnaires were completed within 7 days of the A&E consultation, 280 (49.6%) were completed between 7 and 10 days after the consultation, and 195 (34.4%) were completed more than 11 days after. While 76% of the completed telephone interviews occurred within 10 days, this was only true of 54% of the returned postal questionnaires ($\chi^2=25.6$, $p<0.0001$)

Of the responders, 240 (42.5%) had been seen in A&E by a GP, 268 (47.4%) by a SHO and 57 (10.1%) by a registrar/senior registrar. As shown in Table 4.15, there were high levels of satisfaction expressed for all aspects of the consultation, with 430/562 (76.5%) describing that they were 'very satisfied' or 'satisfied' with the clinical assessment (including examinations and investigations), 418/557 (75.0%) with the treatment, and 434/492 (88.2%) with the consulting doctor's manner. There were no significant differences in satisfaction ratings between the three groups of doctors

Table 4.15: Associations between doctor seen and patients expressing that they were completely or mainly satisfied with their assessment, treatment received and the doctor's manner

	TYPE OF DOCTOR SEEN:			χ^2 (df=2)	p
	GP	SHO	Registrar		
Assessment	182/239 (76.2)	205/264 (77.7)	43/59 (72.9)	0.641	0.726
Treatment	176/238 (73.9)	196/261 (75.1)	46/58 (79.3)	0.716	0.699
Doctor's manner	192/214 (89.7)	202/231 (87.5)	40/47 (85.1)	1.034	0.596

However, slight differences between groups were reported for dissatisfaction ('dissatisfied' or 'very dissatisfied'), although these were not statistically significant. Specifically, 9/213 (4.2%) of GP-seen patients compared to 20/231 (8.7%) of SHO-seen and 5/47 (10.7%) of registrar-seen expressed dissatisfaction with the doctor's manner ($\chi^2=4.49$, $df=2$, $p=0.106$).

There were no significant associations or trends between satisfaction ratings and the interval between the consultation and completing the satisfaction questionnaire. Nor were there any significant associations between satisfaction ratings according to whether the questionnaire was completed by phone or returned by post.

There were also no significant associations between patients' age, sex, ethnicity, expectations (given in Appendix VIII), and the consultation process variables and their satisfaction levels with the care that they received. Nor was there an association between waiting times and satisfaction ratings, except for those who had waited longer than 3 hours. These patients reported slightly greater rates of dissatisfaction, but the differences were not statistically significant.

In view of the recognised reluctance patients have to express dissatisfaction about health care, associations between satisfaction and explanatory variables were re-tested using a cut off point between very satisfied and all lesser expressed levels of satisfaction. Again, no significant associations were found.

There was, though, evidence that patients who were less satisfied about the services provided by their own GP also expressed higher levels of dissatisfaction with the service that they received in A&E. For example, 26/97 (26.8%) of those who expressed dissatisfaction about their own practice's services were dissatisfied or very dissatisfied with the treatment that they received in A&E compared to only 59/399 (14.8%) of those who were satisfied or had mixed feelings ($\chi^2=7.94$

p=0.005). The rates for dissatisfaction with the assessment received in A&E were 25/97 (25.8%) and 50/402 (12.4%) respectively ($\chi^2=10.88$ p<0.001), and for dissatisfaction with the doctor's manner in A&E were 12/80 (15.0%) and 19/355 (5.4%) respectively ($\chi^2=9.18$ p=0.003).

Likewise, there was also an association between dissatisfaction with A&E care received on previous visits to A&E and dissatisfaction for the current attendance. For those who had any previous experience of attending A&E, 11/42 (26.2%) of the patients who reported dissatisfaction about the care received on their last visit to A&E felt dissatisfied with the assessment received at the current visit compared to 57/403 (14.1%) of those who were satisfied or had mixed feelings about the last visit to A&E ($\chi^2=4.26$, p=0.039). The rates for dissatisfaction with the treatment received were 11/42 (26.2%) and 59/397 (14.9%) respectively ($\chi^2=3.64$, p=0.056).

Of those followed up, 217/565 (38.4%) said that they had received a prescription or been dispensed medication. They reported higher levels of satisfaction with the assessment they had received and with the doctor's manner than patients who were not given treatment: 183/214 (85.5%) of those who recalled receiving medication were fully or partially satisfied with the assessment compared to 241/341 (70.7%) of those did not ($\chi^2=16.05$, p<0.0001). Likewise, 181/196 (92.3%) of those who recalled receiving medication were fully or partially satisfied with the doctor's manner compared to 247/289 (85.5%) of those did not ($\chi^2=6.15$, p=0.013).

Most (413/553; 74.7%) patients recalled having been given advice, and 352 (85.5%) said that this had been helpful or reassuring. The remainder felt that the advice had been unhelpful. Of those who had no recollection of having been given advice, 74 (54.8%) would have liked to have received some. There were no associations between the category of doctor seen and perceptions of whether advice had been given or its usefulness. However, those who recalled receiving advice were considerably more likely to express satisfaction with all aspects of care received in A&E (Table 4.16). In addition, there were highly significant associations between perceptions about the helpfulness of the advice and satisfaction levels (Table 4.16).

The extent to which the patient felt that they had recovered by the time of the follow up survey was also strongly associated with satisfaction levels (Table 4.16). Of those who were recovered or improving, 359/468 (76.7%) recalled receiving advice in A&E compared to only 49/76 (64.5%) of those who were no better or were feeling worse ($\chi^2=5.22$, p=0.022). For patients who recalled receiving advice in A&E, there was also an association between feeling better and finding the advice given useful; 315/357 (88.2%) who were recovered or improving found the advice helpful compared to only 37/51 (72.5%) of those felt no better or were feeling worse ($\chi^2=9.27$, p=0.002).

Table 4.16: Satisfaction with the care received in A&E according to whether the respondent recalled receiving advice from the doctor, whether the advice given was helpful, and the clinical state at the end of week 1 (p<0.001)**

	<u>Received advice</u>		χ^2	<u>Advice helpful</u>		χ^2	<u>Clinical state</u>		χ^2
	Yes	No		Yes	No		Improving/ recovered	No better/ feeling worse	
Satisfaction with the examination									
complete	272 (66.3)	65 (47.4)	40.6***	249 (70.9)	15 (25.9)	102.6***	317 (66.3)	26 (33.8)	54.1***
fair	66 (16.1)	15 (10.9)		62 (17.7)	6 (10.3)		70 (14.6)	12 (15.6)	
mixed	34 (8.3)	17 (12.4)		23 (6.6)	11 (19.0)		43 (9.0)	8 (10.4)	
unhappy	29 (7.1)	25 (18.2)		12 (3.4)	20 (34.5)		33 (6.9)	21 (27.3)	
dissatisfied	9 (2.2)	15 (10.9)		5 (1.4)	6 (10.3)		15 (3.1)	10 (13.0)	
Satisfaction with the treatment provided									
complete	266 (65.5)	49 (36.6)	49.4***	247 (71.0)	9 (15.5)	126.4***	309 (65.5)	16 (20.8)	80.1***
fair	63 (15.5)	25 (18.7)		59 (17.0)	7 (12.1)		75 (15.9)	13 (16.9)	
mixed	29 (7.1)	17 (12.7)		23 (6.6)	8 (13.8)		30 (6.4)	16 (20.8)	
unhappy	34 (8.4)	21 (15.7)		14 (4.0)	22 (37.9)		39 (8.3)	15 (19.5)	
dissatisfied	14 (3.4)	22 (16.4)		5 (1.4)	12 (20.7)		19 (4.0)	17 (22.1)	
Satisfaction with the doctor's manner									
complete	292 (80.7)	65 (55.1)	38.0***	247 (71.0)	9 (15.5)	136.8***	329 (78.3)	34 (50.7)	33.7***
fair	44 (12.2)	22 (18.6)		59 (17.0)	7 (12.1)		52 (12.4)	15 (22.4)	
mixed	11 (3.0)	13 (11.0)		23 (6.6)	8 (13.8)		17 (4.0)	6 (9.0)	
unhappy	9 (2.5)	10 (8.5)		14 (4.0)	22 (37.9)		15 (3.6)	4 (6.0)	
dissatisfied	6 (1.7)	8 (6.8)		5 (1.4)	12 (20.7)		7 (1.7)	8 (11.9)	

4.11 Future help-seeking behaviour

Faced with a similar problem in the future, 138/238 (58.0%) of patients seen by GPs, 166/262 (63.4%) of those seen by SHOs and 39/59 (66.1%) of those seen by registrars said they would attend an A&E department ($\chi^2=2.15$, $p=0.341$). There was a trend towards GP-seen patients saying that they would either self-treat or visit their own GP in future with 81/238 (34.1%) of those who saw a GP saying that they would do this, compared to 80/262 (30.5%) of those who saw a SHO and 16/59 (27.1%) of those who saw a registrar. There were associations between satisfaction levels and choice of future health care provider, and those who were unsure about what they would do faced with a similar problem in the future included a greater proportion of dissatisfied patients.

Of those who were completely/partially satisfied with the doctor's manner, 258 (59.6%) said that they would return to KCH A&E if faced with a similar problem in the future compared to only 18 (31.6%) of those who were dissatisfied or had mixed feelings ($\chi^2=16.01$, $p<0.0001$). Similar associations were found for the other satisfaction measures

There was no association between waiting time and the action the patient would take if faced with a similar problem in the future.

Sixty-one of the patients who responded to the follow up survey had not been registered with a local GP at the time they attended A&E. By the time of the interview, 22 (36.1%) of these patients had either registered with a GP or said that they had made enquiries to do so, and this included a greater proportion of those who had seen a GP in A&E (12/25 (48.0%)) compared to 10/36 (27.8%) of those who had seen a SHO or registrar ($\chi^2=2.62$, $p=0.10$).

4.12 Clinical outcome and subsequent care

Health status at the end of the first week was included in the follow-up questionnaire. In all, 259/563 (46.0%) patients reported that they were fully recovered, 223 (39.6%) were improving, 67 (11.9%) had not changed, and 14 (2.5%) were worse. There was no significant difference in rates of recovery between those followed up by telephone or post, with 379/439 (88.3%) of the former describing that they were recovered or improving, compared to 101/122 (82.8%) of those followed up by post ($\chi^2=0.97$, $p=0.32$).

In the week between attending A&E and the follow-up interview, 108/565 (19.2%) had attended their own practice and been seen a doctor or practice nurse for the same problem that they had presented with to A&E. This comprised 48/240 (20.0%) of those seen in A&E by a GP, 48/268

(17.9%) of those seen by a SHO and 12/57 (21.1%) of those seen by a registrar ($\chi^2=0.51$, $p=0.774$). In addition, 30 (5.3%) of patients had re-attended at A&E, including 9 (3.8%) of those seen by a GP, 19 (7.1%) of those seen by a SHO, and 2 (3.5%) of those seen by a registrar. Although these differences are not statistically significant, they are in keeping with the differences in disposal decisions of the different categories of doctor.

Data on general practice care required in the three months following attendance at A&E were obtained for 1117 (76.6%) of the 1458 patients discharged to the community who were followed up. This included 438 who had seen a GP in A&E, 469 who had seen a SHO and 107 who had seen a registrar/senior registrar. Of these patients 255 (22.8%) had consulted their GP during this time on at least one occasion for the same reason as presented at A&E, and a further 583 (52.2%) had consulted for other reasons. There was a trend towards patients who had seen a GP in the A&E department making greater use of general practice in the three months subsequent to their hospital attendance, and receiving more frequent referrals and investigations (Table 4.17). This was consistent with the underlying philosophy of employing GP in the department which was to encourage the follow-up of patients by primary care services in the community.

Table 4.17. Associations between doctor seen and care in general practice during subsequent three months for patients discharged to community/GP follow-up

	TYPE OF DOCTOR SEEN			χ^2	p
	GP (n=438)	SHO (n=469)	Registrar (n=107)		
Attended GP for same problem	114 (26.0%)	103 (22.0%)	20 (18.7%)	3.550	0.017
Received an investigation	27 (6.2%)	20 (4.3%)	2 (1.9%)	4.06	0.131
Referred to outpatient clinic	4 (5.5%)	19 (4.1%)	3 (3.4%)	1.90	0.387

4.13 Costs

Table 4.18 presents for each cost category the total cost, number of episodes recorded, and average costs per case for the whole sample. The methods used to calculate these costs have been described in *section 3.4*. As can be seen, the costing categories with the greatest cost per episode were x-ray investigations, out-patient referrals, on-call team referrals and admissions. The cost of on-call teams referrals comprised 15.6% that related to on-call doctor time, 45.4% to investigations initiated in A&E by the on-call doctor, and 39.0% to costs relating to subsequent follow-up in outpatient clinics. The average cost per admission was £1534.58,

which reflected both the case mix of admissions (which included about a quarter who needed surgery) and the duration of stay.

Table 4.18: Total and average cost per episode recorded for each cost category

	Total costs (£)	No episodes	Cost/episode (£)
doctor consultation time	6 073	4 641	1.31
transactions	3 009	46 410	0.65
x-ray investigations	21 573	966	22.33
biochemistry	1 306	88	14.84
haematology	1 002	125	8.02
microbiology	1 874	143	13.10
electrocardiography	233	92	2.53
pharmacy	3 520	1 800	1.96
tetanus	383	372	1.03
dressings	1 938	1 189	1.63
outpatient referral	22 537	289	77.98
on-call referral	12 437	376	33.08
admission	142 716	93	1534.58

Table 4.19 presents for each cost category the total cost, number of episodes recorded, and average costs per case for each type of doctor. Because the differences in rates of admission were not statistically significant, costs are given both including and excluding admissions. Excluding the costs of admissions, the cost per patient treated was calculated as being £11.70 for patients treated by GPs, £19.30 for those treated by SHOs and £17.97 for those treated by registrars. If admission costs are included, the costs increase to £32.30, £58.25, £44.68 respectively.

'Staff time' costs (doctor consultation time and transactions time) for GPs were considerably higher than for hospital doctors. The costs per case were £2.89 for patients seen by GPs, £1.33 for those seen by SHOs, and £1.66 for those seen by registrars. This largely reflected the differences in cost and use of staff time. GPs spent on average 2 minutes and 58 seconds longer per consultation than SHOs or registrars, and their rate of pay was approximately twice the hourly rate of SHOs. However, SHOs and registrars initiated investigations, treatments and referrals more frequently.

The costs of diagnostic tests (biochemistry, haematology, microbiology, and electrocardiography) were £3.05 per patient seen for those treated by GPs, £7.30 for those seen by SHOs, and £6.13 for registrars. This largely reflected differences in the rates and quality of x-ray investigations undertaken. Hospital doctors were both more likely to order x-ray examinations, and to order more expensive examinations than GPs. X-ray investigations resulted in 85% of investigation costs for GP seen patients, 81% for SHO seen patients, and 91% for registrar seen patients.

Table 4.19: Costs of different types of A&E primary care consultation

COST CATEGORY	GENERAL PRACTITIONERS (N=1702)				SHOs (N=2382)				REGISTRARS (N=557)			
	No. of episodes	Total cost (£)	Costs (£) per case	No. of episodes	Total cost (£)	Costs (£) per case	No. of episodes	Total cost (£)	Costs (£) per case	No. of episodes	Total cost (£)	Costs (£) per case
Doctor consultation time	1 702	3 948	2.32	2 382	1 524	0.64	557	601	1.08			
Transactions	1 817	1 038	0.61	3 708	1 643	0.69	836	323	0.58			
X ray investigation	207	4 425	2.60	618	14 029	5.89	140	3 119	5.60			
Biochemistry	13	153	0.09	86	1 048	0.44	9	105	0.19			
Haematology	17	119	0.07	117	833	0.35	7	50	0.09			
Microbiology	39	442	0.26	115	1 310	0.55	11	122	0.22			
Electrocardiography	21	51	0.03	64	166	0.07	7	16	0.03			
Pharmacy	636	1 174	0.69	975	1 834	0.77	247	512	0.92			
Tetanus	115	119	0.07	209	214	0.09	48	50	0.09			
Dressings	603	612	0.36	1 026	1 048	0.44	274	278	0.50			
Outpatient referral	66	5 037	2.96	174	13 696	5.75	48	3 804	6.83			
On-call referral	85	2 791	1.64	252	8 622	3.62	39	1 024	1.84			
Admission	15	35 061	20.60	72	92 778	38.95	6	14 877	26.71			
TOTAL:												
including admissions		54 970	32.30		138 475	58.25		24 881	44.68			
excluding admissions		19 909	11.70		45 967	19.30		10 004	17.97			

Treatment costs (pharmacy, tetanus immunisation and dressings) showed less variation between patients seen by the different grades of doctor than was evident for the other cost categories. For GPs, treatment costs amounted to £1.12 per patient, for SHOs £1.30 per patient, and for registrars to £1.51 per patient.

The costs of referrals to outpatient clinics and on-call teams were £4.58 for GP seen patients, £9.37 for patients seen by SHOs, and £8.67 for registrar seen patients. Outpatient referral costs contributed to more than 60% of these costs for all types of doctor.

Although few patients referred to on-call teams were admitted, such referrals resulted in substantial costs. As a result, admissions contributed an average cost of £20.60 per patient seen by GPs, £38.95 for patients seen by SHOs, and £26.71 for patients seen by registrars.

Overall, the greatest difference in costs was between GPs and SHOs, with GP treated patients costing approximately 40% less when the costs of admissions are excluded, and 45% less when they are included.

4.14 Sensitivity analysis

Many assumptions were made in calculating the costs. While the estimates were based on the best data available, there is much uncertainty surrounding the costs of services within hospitals.

The costs of each type of intervention were explored individually and in aggregate to identify the variation necessary to change the ranking between doctor groups. Some of the categories of investigations performed comprised only small numbers of events (e.g. chemical pathology and haematology tests); however, over three-quarters of the cost differences for investigations was attributed to variation in the requesting of x-rays for which the differences between the three groups of doctors was highly significant ($p < 0.001$).

For treatment costs, the main difference in aggregate costs related to outpatient referrals and admissions. Because of the small numbers of admissions involved, aggregate costs were calculated both with and without admissions being included.

As described in Chapter 3, many assumptions were included in costing outpatient visits, referral to on-call teams and admissions. As conservative estimates of costs were applied throughout, the magnitude of the differences in costs may have been much greater than that calculated above.

Only when maximum estimates of 25% above average costs for GPs are compared to minimum estimates of 25% below average costs for hospital doctors do the latter appear less costly, by £0.12 per patient for registrars and £0.81 for SHOs. However, in practice any movement in aggregate patient costs resulting from different estimates of the values of key interventions would be anticipated as occurring in the same direction for all three doctor groups. It appears, therefore, that the difference in aggregate costs is highly robust.

The economic analysis reflected not only assumptions made in calculating the costs of procedures, but also the system of triage, casemix and absolute numbers of patients seen at KCH A&E department. As Table 4.19 shows, the principal cost categories for which consultations made by the GPs appeared more costly than those made by the A&E doctors was *doctor consultation time* (by £1 68/case compared to SHOs and £1.24/case compared to registrars). Excluding *admissions*, the cost categories for which SHOs and registrars were at least £2/case more costly than GPs were *x-ray investigation*, *outpatient referral* and (for SHOs) *on-call referral*. If the triage process or casemix was varied, and as a result the frequency of these events altered, this might lead to a sizeable impact on the differences in costs. For example, if the casemix varied so that the proportion of patients receiving x-rays, outpatient, and on-call referrals dropped by half (for all types of doctor), this would reduce the difference in costs between GPs and SHOs by £4.04/case, and between GPs and registrars by £3.54/case. Conversely, a broader triage definition of 'primary care' might lead to the inclusion of presenting complaints where GPs were more likely than A&E doctors to initiate investigations and referrals, so reducing the differences in costs that were observed. Such alterations in triage classification systems or practice, however, would represent a fundamental change in the underlying structure of the service model of this study, and the implications of such change is beyond the scope of the sensitivity analysis.

4.15 Modelling annual costs

The first model is based on all 22,500 primary care patients attending annually during the 9am-9pm period being treated by SHOs and registrars in the proportions described in the study; that is with SHOs seeing approximately 18,000 (80%) patients and registrars 4,500 (20%) of them at an average cost per case of £19.30 and £17.97 respectively (excluding admission costs). This gives a total cost of treating these patients of £428,265 per year.

The second model is based on GPs, SHOs and registrars seeing the same proportions of the primary care patient workload over the duration of a year as they did in the study sample; that is, GPs seeing 8325 (37%) patients at an average cost per case of £11.70 (excluding admission costs), SHOs seeing 11,475 (51%) patients and registrars 2700 (12%) patients. Applying the costing data to this model, the total cost of treating these patients would be £367,389 per year.

Thus the model that includes the employment of GPs to see 37% of the 'primary care' workload (approximately 8300 patients) generates a potential saving of £61,000 (£7350 per 1000 patients treated) per year at 1991 prices, if admissions costs are excluded. If admission costs are included the scale of difference is substantially greater, with estimated savings increasing to around £150,000 (£18,070 per 1000 patients treated by GPs) per annum at 1991 costs. As the differences in rates of admission were not statistically significant, the inclusion of these costs within the model needs to be interpreted with caution.

CHAPTER 5: DISCUSSION OF RESULTS

5.0 Introduction

In Chapter 2 (*section 2.6.2.2*) the notion that the needs of patients attending A&E with primary care needs might best be served by GPs was recognised as not being new, but this study is the first to provide rigorous evidence of the clinical and cost implications of such patients' being treated by A&E doctors. In the context of the inner city A&E Department studied, primary care consultations made by A&E doctors resulted in considerably greater utilisation of hospital investigative and specialist resources than those made by sessionally-employed GPs working within the department. The cost implications appeared to be considerable

For SHOs compared to GPs the odds ratios (95% confidence intervals) were 2.78 (2.32-3.34) for radiographic investigations, 6.17 (3.46-10.97) for haematology investigations, 5.71 (2.89-11.30) for chemical pathology tests, and 2.88 (2.39-3.47) for referrals to hospital outpatients or on-call teams. There appeared to be consistent differences in the thresholds for investigations and referrals that could be observed across most diagnostic groups, as well as for many specific diagnoses. Although within each category of doctor (GP, SHO or registrar) variation was found in the rates of investigations, prescribing and referrals, the overlaps between the distributions of each group was limited. This indicates that the differences in consultation process between GPs and A&E staff was not an effect of a few wayward out-liers, but appeared to reflect more systematic differences in consultation style and practice.

There was no evidence that this greater level of intervention had beneficial effects on clinical outcome or patient satisfaction. The yield of clinically important findings appeared to be similar for all groups, and there were no statistically significant differences between doctor groups for the outcome measures used to assess effectiveness (patient satisfaction, recovery, subsequent care received in general practice).

The factors that were associated with satisfaction were the following: satisfaction with current GP services, satisfaction with previous experience of A&E, recalling being prescribed medication in A&E, recalling receiving advice, finding the advice given helpful, and feeling better at the time of the follow up interview. Other features of the consultation, such as waiting time, did not appear to be significantly associated with satisfaction levels

During the study no formal or informal complaints were received from patients about the care provided by the GPs. Given the number of patients seen by GPs, the upper limit for the 95%

confidence interval of any particular adverse event occurring that was not observed in the study is 3/1702, that is less than one in 500 (Eypasch *et al*, 1995).

Considerable cost savings appeared to be associated with the employment of GPs. The analysis of average costs (excluding A&E department capital costs and overheads) indicated that if GPs, SHOs and registrars treated the same proportions of the primary care workload over the duration of a year as they did in the study sample (that is the GPs treat just over a third of the 'primary care' workload, approximately 8300 patients) a potential saving of £61,000 per year at 1991 prices would be generated if the costs of admissions are excluded, or around £150,000 per annum if this is included.

Although these results indicate that employing GPs in A&E is a cost-effective means of treating patients who present with 'primary care' problems, there are several methodological issues that require consideration. In this chapter the findings are reviewed and considered in light of the design of the study and relevant published literature. Issues influencing the more general applicability of the study's findings are discussed in Chapter 6.

5.1 Methodological considerations

In this section methodological issues are considered which may have an impact on the generalisability of the findings: the characteristics of the study population and the triage process used for sampling; the methods used to control the study environment; the accuracy and reliability of the processes used for collection of consultation process data; the validity of the outcome measures; and the assumptions made and estimations included in the costing study.

5.1.1 Study population and the triage process used for sampling

While other A&E-based studies have looked at consultation activities and outcomes, and from these sought to categorise patients' presenting needs, the strength of this study is that it was based on a prospective, controlled design. Data was collected over the duration of a year and across different times of the day and week to ensure that seasonal variation and other factors that might influence demand and patients' needs could be included and controlled for.

The characteristics and case-mix of the sample, however, reflected not only attributes of the population using A&E, but were also a function of the triage process. In the UK, A&E

demand has not been analysed before using prospective criteria of patients' primary care needs, and this complicates the comparison of the characteristics of the study population with those of other A&E populations that have been described.

The reliability and consistency of the system of triage needs to be considered. Triage is not intended to be used as a screening tool, and it is inappropriate to evaluate it in terms of a screening measure (Dale *et al*, 1995a). The conditions in which the triage assessment is occurring, the concerns and expectations of the patient, the experience and uncertainty of the nurse, together with anxiety about the medico-legal consequences of a mistaken assessment, may all influence its outcome.

From anecdotal comments made during data collection it was apparent that many triage nurses erred towards classifying patients as 'A&E'. This was despite the considerable efforts that were invested in triage nurse training and in challenging the department's organisational culture during the implementation of the study. Some nurses continued to equate 'primary care' with 'inappropriateness', and persisted in associating the triage classification of patients' needs with value judgements about their perception of the legitimacy of patients' decisions to attend A&E (Crouch & Dale, 1994; Dale *et al*, 1992).

Hence, the 41% of new attenders triaged as presenting with primary care problems is likely to be a conservative estimate of the primary care workload in the department studied (Dale *et al*, 1995a). Viewed retrospectively, many of the patients triaged as 'A&E' did not receive care that involved interventions that were beyond the scope of most, if not all, local general practices (Dale *et al*, 1995a). The true proportion of the workload that could have been managed in general practice is probably around 60-70%, which is similar to the proportions reported by studies in similar settings that have retrospectively used the Nuffield Provincial Hospitals Trust guidelines (see Table 2.2).

Further research is needed to test the extent to which the consistency and reliability of triage practice is amenable to staff training and audit, and the consequences this has on cost effectiveness. Some evidence of variation in the proportion of the workload that was classified as 'primary care' was identified between triage sessions undertaken by different nurses (Crouch & Dale, 1994; Green & Dale, 1990). However, it was beyond the scope of the study to determine the extent to which this reflected chance variation in the casemix of patients seen during different sessions or more systematic discrepancies between different nurses in the way they interpreted and applied the triage guidelines. The identity of the nurses who had

undertaken triage assessments was not included in the data set. The impact of different systems of triage on the cost effectiveness of employing GPs in A&E needs further study.

Although the triage criteria for 'primary care' specifically excluded those who the triage nurse anticipated as requiring admission (Table 3.1), approximately 1.5% of patients in the 'primary care' category were admitted to a hospital ward. This finding confirms the difficulty of assessing the extent of patients' needs during a brief, preliminary triage assessment in which only a limited amount of information is available to the triage nurse. It is consistent with other research (Young *et al*, 1996; Brillman *et al*, 1996, Birnbaum *et al*, 1994), and indicates risks that are implicit if triage assessments are used as a means of denying patients access to care (see *section 2.6.2.1*).

5.1.2 Methods used to control the study environment

A rigorously controlled trial was precluded by unavoidable constraints within a busy, over-crowded A&E department. This included the need for staff to respond without delay to life-threatening emergencies, unpredictable variations in workload, and the necessity to keep waiting times to a minimum. The best that could be achieved was a stratified random allocation of doctors to different times of the day and week throughout the study period.

The intention was that all 'primary care' patients would be treated by the allocated doctor (*section 3.3*), but this did not always occur. First, at times when the 'primary care' workload was excessive, other doctors were directed by the nurse performing triage to treat 'primary care' patients (this was to prevent unacceptably long waiting periods from occurring); and second, registrars in particular were often interrupted from completing 'primary care' sessions by departmental circumstances (such as, having to respond to patients with urgent or life-threatening needs, and providing advice or supervision to SHOs). Hence, patients were sometimes attended by a *non-allocated* doctor, both during sessions allocated to a GP and during those allocated to another member of A&E staff. Since this breakdown of randomisation was not always clearly documented, data for *all* recorded 'primary care' consultations during the selected sessions were included, and patient-level data were re-grouped according to the type of doctor actually seen. The loss of randomisation was allowed for by including confounding factors in the analysis of the data.

Despite these constraints, case-mix was remarkably similar for GPs and SHOs. It appears that only for registrars was the randomisation of patients partially lost, probably as a consequence of the conflicting responsibilities of their role in the department. For the 850 patients who were

interviewed before seeing a doctor (Appendix VIII) and for whom more detailed information was known about their socio-demographic characteristics, expectations and experience of health care, no differences were found between those that saw a GP, SHO or registrar. This provides further support for the consistency and lack of bias in the sampling method.

The analysis of case-mix was based on the diagnoses and problems recorded by the consulting doctor, and it is possible that doctors varied in their recognition of certain types of problem or in the way that they classified or recorded problems. A more rigorous, consistent method of recording presenting problems would have been desirable; for example, through training doctors to systematically classify patients' presenting problems and diagnoses at the time of the consultation (such as by using the Reed Codes that many GP patient record computer systems now use). However, at the time of the study the department was not computerised, and introducing such technology for the purposes of this research was not practical.

During GP sessions patient throughput tended to increase (because GPs were supernumerary) and in consequence there were slightly greater numbers of primary care patients sampled from sessions allocated to GPs than from other sessions. This was partly an effect of the study design which imposed additional waiting time in the hour leading up to each GP session on patients triaged as 'primary care' who might otherwise have been seen by A&E staff (see *section 3.2.1*). This had the unanticipated effect of controlling waiting times so that GP-seen and SHO-seen patients had almost identical waits; for both sub-samples of patients the median waiting times was 60 minutes, and their mean waiting times differed by only 30 seconds. The mean and median waiting times for patients seen by registrars were slightly longer, reflecting the tendency for registrars to be called to the department at particularly busy times when waiting times were becoming unduly long. However, there was no evidence that consultation process or outcome was affected by the length of time that patients had been waiting, and so this is unlikely to have been a significant bias.

There were differences in the length of shifts that GPs and A&E staff worked, and these could not be controlled for. While GPs worked three-hour sessions in A&E, SHO and registrar shifts were up to 11 hours in duration. It has recently been shown that the intensity of workload and length of shifts are key factors that SHOs identify as causing them stress during A&E consultations (Williams *et al*, 1997). Hence, duration of shift might have affected doctors' responsiveness to patients' needs, influencing the threshold for initiating referrals or investigations as well as patient satisfaction. Further research is needed to study the acute and cumulative effects that shift length and workload intensity have on consultation process and outcome.

At the time of the study KCH A&E department was renowned for being stressed, overcrowded and in need of major re-building (see *section 3.1*). These environmental factors, although not unique to KCH, may have had an effect on consultation behaviour, particularly on doctors who are working long shifts. Stress within the department has been identified as a key factor contributing to the consultation difficulties A&E SHOs encounter (Williams *et al*, 1997)

The study design sought to control the consultation environment (*section 3.2.4*). Although all doctors in the study were asked and repeatedly reminded throughout the data collection period to use the PCCR during sessions that they were rostered to see primary care patients, this could not be enforced. As a result, although almost all GP consultations occurred within the PCCR, this was not the case for those made by registrars and SHOs. Indeed, as many as 71% of the SHO and registrar primary care consultations may have occurred outside the PCCR. Some differences were found between consultations conducted inside and outside the PCCR, even after differences in case-mix had been controlled for; patients seen outside were slightly more likely to be referred to on-call teams or outpatient clinics. These differences, although insufficient in size to explain the differences observed between GPs and A&E staff, are noteworthy. Not only might these differences reflect an effect of the consulting environment on consultation process and outcome, but they may also be an indirect effect of attributes of the doctor that influenced their willingness to work in the PCCR, their approach to treating primary care patients, and their interest in the research study as a whole. There was anecdotal evidence that doctors varied in their attitudes towards working in the PCCR. Many of the A&E doctors disliked working in the PCCR and some felt that it 'slowed' them down. They preferred the open plan space where they usually treated ambulant patients, and some described it as being "easier to get patients in and out" of this area than in the PCCR

The design and organisation of the clinical setting can enable or hinder communication. As Zola (1963) described, patients are influenced by the cues and interest the doctor exhibits and so tell the doctor what they think the doctor is interested in hearing. It appears that in A&E, the open plan consultation area, because of its lack of confidentiality, may offer the doctor a means of avoiding the difficulties implicit in patients' psycho-social needs (Williams *et al*, 1997), and so helps to ensure a more 'sanitised' consultation focused on the specific symptoms that the patient presents. The association between work environment and consulting style within an A&E context needs further study.

5.1.3 Doctors included in the study

Given the small numbers of doctors involved, it is important to consider their representativeness. The GPs were all local principals, who were vocationally trained, had worked previously as A&E SHOs, and were in the early years of their careers. No information was available at the time of data collection (1989/90) about how they compared to the wider population of GPs locally or nationally in terms of rates of investigation, prescribing and referral. Further research would be

needed to test the impact of different selection criteria on the cost effectiveness of A&E primary care.

Data on SHOs' career intentions were not specifically studied, and hence associations between career intention and consultation process variables could not be investigated. At KCH, most SHOs are usually intent on hospital careers, with around a half working for Fellowship of the Royal College of Surgeons. Other departments might have a greater proportion of SHOs intent on becoming GPs, and it is possible that such SHOs might consult in a more primary care-oriented manner than observed in this study.

Although all staff involved in the study were expected to be familiar with departmental guidelines for patient management, including indications for investigation and referral, it appears that the interpretation and application of these guidelines varied. The analysis which was undertaken by diagnostic groupings showed that the differences between GPs, SHOs and registrars in rates of investigation, treatment and referral were consistent across the full range of patient presentations. In general practice, it has previously been shown that high and low referrers tend to behave similarly across all conditions (Wilkin & Smith, 1987), and it appears that the same applies within an A&E setting.

5.1.4 Methods used for collecting consultation process data

The intention was to record all interventions that occurred during each patient's attendance, and the sample size was sufficiently large to detect statistically significant differences in many of them. The consultation record form devised for the study provided a template to facilitate data collection, and in so doing served as a prompt for recording information about investigations, treatments and referrals. Consultation record forms were completed for almost all patients seen by GPs, but in only 29% of consultations made by SHOs and registrars. This difference reflects the number of consultations that were undertaken by SHOs and registrars *outside* the PCCR during sessions in which the designated doctor was using the room (see *section 5 1.2*).

Systematic differences in the consistency of data recording by GPs, SHOs and registrars, if present, may have resulted in under-estimation of the differences between the doctor groups. Intuitively, if the record form acted as a prompt, consultations in which the form was completed would tend to provide more accurate detail about interventions undertaken than in those where it was incomplete. Indeed, minimal disparity was found between data recorded in

the A&E case notes and in the consultation record form for consultations in which the form had been completed. While there is no evidence that the GPs systematically failed to document investigations, findings, and treatment plans (a possible explanation for the differences observed between them and the A&E medical staff), evidence to support the accuracy and consistency of the A&E doctors' documentation is weaker because of their less frequent use of the consultation record form. The true differences in resource utilisation, therefore, may have been greater than measured.

Each component of care (e.g. communication, investigation, referral, treatment etc) should ideally have been evaluated for necessity, timeliness and effectiveness, but it was beyond the scope of the study to judge the quality of care in this way or to investigate in detail the false positive/false negative rates for investigations and referrals. Such a study would be particularly difficult to conduct given the heterogeneity of an A&E population, the complexities involved in following up patients, and the lack of consensus about best practice. In addition, primary care is implicitly time-oriented (see Appendix I); without details of the previous care that has been provided, the necessity and timeliness of care provided in A&E would often be impossible to discern.

5.1.5 Reliability and validity of the outcome measures

The measures used for outcome were relatively crude. They focused on aspects with the greatest implications for costs, but were too insensitive to detect more subtle differences in outcome, rates of recovery or subsequent health care needs. Although significant differences in clinical outcome were not detected, the possibility that some patients were under-investigated or under-referred cannot be dismissed, and this may have resulted in missed or delayed identification of clinically significant abnormalities. Considerable difficulties were encountered in retrieving data from hospital records (especially, because of missing notes), and the accuracy and completeness of notes (particularly, GP records) meant that the care provided to the patient subsequent to attending A&E may have been under-estimated.

Although there was a trend towards patients who had seen a GP in A&E making greater subsequent use of general practice, these differences were not statistically significant and the effect sizes were small. From inspecting patients' A&E records, however, it appears that many patients had been advised about the importance of continuity of care, and been encouraged to attend their own general practice for review and further care. From the data collected for this study, the

extent to which subsequent attendance in general practice reflected under-treatment in A&E or planned follow-up could not be determined.

Given the broad range of conditions presented by A&E primary care patients, and that many of them are self-limiting disorders, a much larger sample size would have been needed to determine differences in clinical outcome for specific conditions. There are an increasing number of validated, reliable, and sensitive survey tools which provide measures of health status (Wilkin *et al*, 1992). In future research, these could be used to compare the patients' status when they first attended A&E with their status at a later point in time.

The overall response rate to the satisfaction and follow-up survey was high, and particularly so for interviews conducted by telephone (88.2% compared to 48.8% for mailed questionnaires). This justified the resources devoted to telephone follow-up (*section 3.3.2*). Those who were contacted by phone may have received additional information about the study, or may have more easily understood information about it, and this may have encouraged their willingness to participate. The interviewer training and preparation that occurred prior to the start of data collection probably were important in achieving the high response rate from the telephone interviews.

It appeared that the differences in response rates reflected not only the greater efficacy of telephone interviewing, but also differences in the characteristics of the sub-populations being surveyed. Patients who failed to give a phone number for follow-up may have included not only those who lacked access to a private phone (such as the more socially deprived, the homeless, and those with language differences), but also others who wanted to remain anonymous. Indeed, about 10% of the postal questionnaires were returned as "addressee unknown". The extent to which non-contact with potential interviewees was due to deliberate avoidance rather than documentation error could not be assessed, but neither is it known which way the bias, if any, would have gone.

It is well recognised that episode specific questionnaires may elicit more favourable satisfaction ratings from patients than general questions about satisfaction (Hall & Dorman, 1988), so the high degree of reported satisfaction that was found with all aspects of care was unsurprising. Given choice, patients tend to utilise the health care facility that they believe will provide them with the greatest overall satisfaction (Stratmann & Ullman, 1975). Previous health service experience is known to have a significant influence on both the evaluation (i.e. perceived quality) and the response (i.e. satisfaction) to health care that has been received (John, 1992). In this study,

satisfaction with the patient's own GP's services emerged as a particularly strong determinant of satisfaction with the care received in A&E, however this confounding effect was spread equally between the patients seen by the different grades of doctor.

While it is reassuring that there was no evidence that the less interventionist approach of GPs led to less satisfied patients, the questionnaire may have lacked sufficient depth to detect such differences. In particular, it may have lacked the sensitivity to detect whether satisfaction was influenced by the interpersonal skills of the doctors. It did not elucidate specific aspects of care that patients who expressed elements of dissatisfaction were unhappy about. Evidence that the questionnaire used has construct validity came from the highly significant associations identified between levels of satisfaction with the three aspects of the consultation tested, recollection of advice received and its usefulness, and the subjective state of well being of the patient at the end of the first week.

Patients' views of care are known to change over time reflecting recall bias and the extent to which they perceive themselves as getting better. Patients who feel that their condition has improved are likely to express greater satisfaction with the outcome and care that they have received (Woolley *et al*, 1978). This was observed in this study, regardless of the grade of the consulting doctor seen in A&E. It is possible that satisfaction with the consultation may lead to greater confidence in and/or adherence with the advice received and hence more rapid recovery. It cannot be determined which of these factors were more important in this study population.

5.1.6. Assumptions within the costing study

A&E care is difficult to cost as the consequences of different types of care extend beyond the A&E department to both hospital and community-based services. Furthermore, these consequences are difficult to identify and quantify, particularly over a brief time period. In addition, some resources are shared between activities making it difficult to allocate costs to specific areas of work.

The list of items costed in this study (*section 3.4*) while comprehensive, was not exhaustive because of the constraints within the original research project. For example, the cost impact of follow up in general practices and other primary care services in the community (such as district nursing) could not be estimated from the available data, nor could the costs of A&E follow-up or rehabilitation. However, no evidence was identified to indicate that GPs' less frequent use of investigations, prescriptions and referrals in A&E 'primary care' consultations resulted in a significant shift of activity to general practice services in the community. It was also

beyond the scope of the study to consider the longer term impact on overall health service workload and costs. Given the broad range of intervening factors that are likely to occur subsequent to attending A&E, the sample size required to test for longer term effects would need to be vast, and such a study lacks viability. The social costs to patients and their families and relatives could also not be included from the original Phase 1 data.

The calculation of costs assumed that the investigations documented by the doctor as having been requested were undertaken, that all prescriptions were dispensed and that the non-attendance rate for primary care patients referred from A&E to outpatient clinics was the same as the overall non-attendance rate for first appointments at the outpatient department (ie that only 75% of patients referred from A&E attended their first appointment). The extent to which these assumptions were correct could not be tested, and no studies investigating these issues have been reported in the UK literature. In the USA, a low rate of compliance with follow-up appointments made in the ED for patients with non-urgent conditions has been reported, and it appears that around half of all patients miss their follow-up appointments (Thomas *et al*, 1996; Magnusson *et al*, 1993; Vukmir *et al*, 1992; Shaw *et al*, 1990; Straus *et al*, 1983; Fletcher *et al*, 1974; Brook *et al*, 1973; Brook & Stevenson, 1970). Thomas *et al* (1996) also reported poor compliance with having prescriptions dispensed; 12% of those advised to take medications did not have their prescription dispensed. The extent to which this applies in the UK, and to this study population in particular, is unknown. It is likely that compliance will vary to some degree according to payment methods and to the cost implications that different interventions have for the patient. If the levels of non-adherence were as high as those noted in other countries this might reduce the cost savings gained from the employment of GPs.

The differences in rates of admission appeared to have a considerable effect on resource utilisation and costs, but because of the small numbers of cases involved the differences in rates were not statistically significant. There were also concerns that to some extent the differences in rates of admission may have been, at least in part, an artefact. Although GPs were instructed not to change the record of patients' triage classifications from 'primary care' to 'A&E', even when it was clear from the triage assessment that the patient was likely to require admission, there was anecdotal evidence to suggest that on occasion this may have occurred (particularly when GPs were nearing the end of a shift and did not want to initiate a

consultation that they anticipated would not be completed within the time remaining). Hence, the inclusion of these costs needs to be interpreted particularly cautiously.

Furthermore, it proved difficult to accurately cost referrals to on-call teams and admissions because of the heterogeneity of the population referred to on-call teams, the differing on-call arrangements and procedures of a wide variety of different specialist teams, the small number of cases admitted, and the considerable uncertainty in the resource implications of such referrals. Costs incurred to the A&E department through referrals to on-call teams also proved difficult to calculate. For example, the additional nursing costs involved in caring for patients awaiting admission to wards could not be calculated. More detailed studies are needed to explore the cost implications of referral to on-call teams and admissions on A&E and other parts of the hospital service as these costs are likely to be high.

Administrative and transaction cost analysis was concentrated on estimating costs to nurses and doctors within the A&E department (*section 3.4.4*), but nursing, doctor and administrative time would also have been used in other parts of the hospital associated with communicating results, advising and directing patients around the hospital. Some of these costs were included in estimates of the costs of tests, but not all. It was not possible to make a detailed assessment of the costs of procedures in all the various departments of the hospital.

A difficulty faced in the interpretation of the cost analysis is how to value the resources (e.g. radiology department, pharmacy) that might be released as a result of employing GPs. Estimated savings associated with employing GPs in A&E may be only partially realisable. The differences between GPs and A&E doctors are unlikely to be sufficient to allow changes in staffing levels or release of capital resources, and hence only consumables are likely to result in direct financial savings. The realisable savings, therefore, may only be slight because the marginal costs of treating primary care patients in A&E are relatively low. Hospitals vary considerably in their budgetary systems and clinical directorates, and this would influence the way potential savings are distributed within the hospital. At the time of the study the A&E department at KCH did not have budgets allocated for pharmacy and diagnostic facilities, or for out-patient or on-call referrals, and so would not have recouped the benefits of cost savings in these other areas of the hospital.

A&E departments have to be staffed and available to deal with life-threatening presentations and major trauma regardless of the primary care workload. Hence, most of the department's

costs are fixed because the facilities and staff are needed to treat emergency patients at all hours (*section 2.8*). Many resources are shared between different areas of activity, making it difficult to apportion the 'primary care' component of costs. The choice of whether a hospital doctor or a GP treated primary care patients would not have affected capital or overhead costs, and so these were not included in the analysis. Hence, the costs included were only the additional costs of treating 'primary care' patients in the A&E department. Management costs involved in administrating the scheme could also not be calculated, because these were absorbed into the research costs of this study. Thus, there may be important hidden costs that would need to be considered by hospitals planning to institute a similar primary care scheme.

It is the opportunity cost that is likely to be the most significant factor in the analysis of the benefits of employing GPs in A&E. The time spent treating one patient is the lost opportunity for seeing another. Lightening SHOs' primary care workload, for example, may give them more time to concentrate on the needs of patients (and their relatives/carers) who have more acute clinical needs. Such benefits were identified empirically at A&E sites in London that have implemented A&E primary care services (Appendix IX). The clinical, resource and cost implications that this may have were beyond the scope of the study to measure. Improvements were reported in the morale and effectiveness of departments resulting from reduced waiting times (if the GPs are supernumerary), less crowded departments, and less stressed staff. These are discussed further in Chapter 6.

Some analysis was undertaken with staff and managers to assess the realisable impact of GPs' employment in A&E on the costs and workload of supporting departments. The findings relating, for example, to the reduced rates of x-rays when a GP is employed in A&E suggest that on average during each three-hour 'primary care' session approximately one fewer x-ray examinations will be performed than if the patients had all been seen by hospital doctors⁶. Associated savings in consumables would have amounted to around £1.50 per patient. The opportunity costs were explored, and radiology staff reported that the extra time created could be used to do more teaching, provide staff support and allow staff to take appropriate breaks. This might improve quality, staff recruitment and retention, and reduce staff stress, although putting an economic value on such breaks is difficult. Alternatively, such time could have

⁶ X-rays were ordered in 12% of GP consultations compared to 26% and 25% of those of A&E SHOs and registrars respectively. Given that on average GPs see 9 patients in a 3-hour sessions (see Appendix IX), the anticipated saving in x-ray examinations is six investigations in every five 3-hour sessions.

been used to reduce waiting times for x-ray examinations requested from outside the A&E department.

A small reduction in outpatient referrals and admissions would not allow a reduction in facilities, but given the pressures on beds and outpatient clinics this might be of high value to a patient requiring urgent care. The health gain achieved is likely to vary according to how health service resources are used. However, it could result in a unit admitting a high cost patient which might place a greater stress on the unit's budget than one admitted from A&E.

There are a number of less tangible benefits that are difficult to measure. For example, the benefits of encouraging continuity of care through patients' own GPs. The longer term effects of encouraging patients to make greater use of primary care services in the community may have important cost implications for future service provision. Costs to patients and their families of using the A&E department rather than general practice were the subject of a subsequent study (Garcia de Ancos *et al*, 1993).

5.2 Generalisability of findings

The study was conducted under research conditions in a large inner city, teaching hospital A&E department renowned for its overcrowded, dilapidated state (see *section 3.1*). A number of issues need to be considered with regard to its generalisability. A&E case-mix varies between hospitals, and in general, departments in urban conurbations see a larger proportion of non-urgent, non-injury related problems than in other settings (Farmer & Chambers, 1992; Inwald, 1980). Although, as discussed in Chapter 2, there appears to be a significant primary care workload in most A&E departments in the UK, its scale varies between departments. The population attending KCH A&E included high proportions of patients who are socially deprived, and/or from minority ethnic groups. This population mix is typical of inner city A&E departments, but contrasts with that seen in many provincial departments. The effect of the open access clinics at the adjacent psychiatric and dental hospitals meant that fewer psychiatric and dental problems were seen within the department at KCH than would otherwise occur, although it is unclear what proportion of these additional cases would have been classified as primary care.

The proportion of patients registered with local GPs was higher than reported in studies at other London A&E departments (Farmer & Chambers, 1992), and this reflects the high proportion of patients who were locally resident. Many inner city A&E departments in London serve greater

tourist and commuter populations than does KCH, groups who are particularly likely to use A&E as a primary care facility. The relevance of the study's findings to other departments is likely to depend upon the characteristics of the population currently using A&E and the scale of their primary care workload.

While the study provides a model which could be used to assess other A&E primary care schemes using locally based costs, the limitations of hospital costing information, especially at the time when the study was undertaken, need to be considered. Although financial estimates have been refined in recent years, there are still large disparities between hospitals in their cost estimates for the same procedure. Until costing conventions and hospital accounting practice are universal, the generalisability of such costing data will be limited.

Since preliminary reporting of the results of this study in 1991 (Dale *et al*, 1991), supporting evidence for the generalisability of its findings has emerged from a number of studies in the UK and Ireland which have, at least in part, replicated it (Murphy *et al*, 1996; Ward *et al*, 1996; Sloan *et al*, 1994). These studies are discussed in Chapter 6.

Few studies have attempted to analyse the costs of general practice consultations using methods that are comparable to those used in this study. Graham and McGregor (1997) recently reviewed studies that specifically described the cost of a consultation in general practice and identified a total of 20 studies. They found the cost of an average 10 minute consultation to be £6.90 \pm 2.73 at 1995/6 prices. However, none of these studies attempted to identify, measure and cost all the relevant resources utilised, and most excluded capital costs, and so the findings are not comparable with those of the KCH study.

5.3 Explaining the observed differences

In addition to the considerable differences found between consultations made by GPs and A&E staff, some intra-group variation was also identified. While some of this could have reflected chance variation in the case-mix seen by individual doctors, it is well recognised both in general practice and hospital practice that doctors show considerable variability in their use of resources (Roland & Coulter, 1992; Morrell *et al*, 1971). Studies have noted as much as a 20-fold variation in referral rates from GPs to hospital outpatient departments (Moore & Roland; 1989; Wilkin & Smith, 1987). Despite extensive study, particularly in general practice, there remains a substantial proportion of variability in, for example, rates of re-attendance, investigation, referral, and prescribing, that cannot be accounted for. The quality

and context, rather than the quantity, of clinical experience are significant in explaining differences in consultation practice observed. There is considerable variation in the extent to which doctors practice in patient-centred or doctor-centred styles, and for most doctors their distinctive style is maintained between consultations (Byrne & Long, 1976). Doctors' attitudes and practices are likely to be influenced not only by their training and experience, but also by their work setting and colleagues (Zola, 1963). Factors such as doctor's willingness to tolerate risk and uncertainty, their personal interests, and their perceptions of the availability and benefits of potential interventions all appear to be important.

Clearly, one possible explanation for the differences observed in consultation practice is that they reflect quantitative differences in the clinical experience had by the GPs and the A&E staff. However, this does not offer an explanation for the differences observed between the GPs (most of whom had only recently completed vocational training) and registrars as the doctors in these two groups had all been registered as medical practitioners for similar numbers of years (*section 3.2.3*). Cooke (1996) in a letter following publication of the KCH findings in the *BMJ* asserted that A&E consultants "would show much better use of resources than their juniors: if they did not, then what does training achieve?" This, though, overlooked the evidence that the difference observed between SHOs and registrars was limited, which suggests that the clinical experience registrars gain through working in A&E and other hospital departments may have little effect on rates of investigation or referral for primary care patients (although, no doubt, it may have given them greater ability to assess and treat patients who have more serious morbidity). The question Cooke raises is pertinent, but evidence is lacking about how GP and A&E consultant consultations compare, or about how consultations made by consultants compare to those made by more junior A&E medical staff.

The largest difference in consultation process observed between GPs and A&E staff was in relation to x-ray examinations, and this constituted one of the main factors contributing to the differences in costs. SHOs requested x-rays twice as frequently as GPs without picking up greater numbers of clinically significant abnormalities. Part of this difference appeared to reflect x-rays being requested in circumstances where treatment was unlikely to be affected by the findings, such as for nasal injuries (de Lacey *et al*, 1977), soft tissue ankle injuries (Stiell *et al*, 1995; de Lacey & Bradbrooke, 1979), rib views in blunt chest trauma (Danher *et al*, 1984), and low back pain in the absence of clinical signs and symptoms suggesting serious pathology (McCall & Butt, 1987). A&E radiographs account for approximately 20% of all radiological examinations that occur within a hospital (Berman *et al*, 1985a), but only about 5% are clinically significant (Vincent *et al*, 1988). It has previously been argued that many x-ray examinations are taken in A&E "for clinical curiosity rather than clinical necessity"

(Redmond, 1985), although as the Royal College of Radiologists (1985) argued, a negative x-ray may have a clinical as well as a social value, and may allow earlier return to normal activities

A number of factors have been recognised as contributing to high rates of x-ray investigation in A&E. heavy workloads, fears of medical litigation, patients' expectations, and the absence of guidelines for objective selection of patients (Royal College of Radiologists, 1985). As Lamont (1961) stated "we who are employed in accident services know full well that very often it is not the patient who is being x-rayed but the spectre of litigation!". However, fear of medical litigation alone probably only accounts for a small minority of requests (de Lacey *et al*, 1979).

Similarly, very few emergency laboratory investigations appear to be helpful in the diagnosis of acute emergencies (Pennycook, 1995; Sandler, 1984). Sandler (1984) assessed the value of emergency biochemical, haematological, radiological and electrocardiograph tests in the diagnosis and treatment of 555 acute medical admissions. He found that only 17% of the tests were abnormal, and of these only one third helped in treatment and less than a third helped in diagnosis. He suggested that better undergraduate training, regular audit by senior medical staff, abolition of routine investigations, and more selective laboratory reports would help increase junior doctor's confidence in their own history-taking and diagnostic skills.

5.3.1 The relevance of GPs' approach to problem-solving

The study demonstrated significant differences in the quality and costs of care between GPs and A&E doctors. The experience and problem-solving strategies employed by GPs appeared to enable a large volume of patients to be seen without resorting to investigations, referrals and other costly interventions.

From the literature reviewed in Chapter 2, a broad range of factors all appeared likely to contribute to differences in consultation process 1) the greater emphasis on defensive practice and on making a diagnosis in hospital practice; 2) less highly developed consultation skills in hospital practice; 3) long-standing lack of respect/antagonism between hospital practitioners and GPs; 4) lack of interest in the primary care needs of patients; 5) lack of knowledge about primary care services in the community and a lack of confidence in the capabilities of such services; and 6) GPs' greater experience of dealing with undifferentiated, common problems and their continuing relationship with patients

It is well recognised that the clinical reasoning processes used in primary care are different to those of secondary care (Dixon, 1986; Groen & Patel, 1985). As Marinker (1988) stated, the GP's approach to clinical problem solving rests on a skilfully taken history, an economical physical examination and a minimal use of low technology investigation. The decision-making strategies of A&E doctors, on the other hand, appear more suited to managing the needs of patients attending with acute injury or life-threatening disease. The A&E doctors' approach not only involved greater utilisation of resources, but may encourage future dependency on A&E care.

Clinical interpretation may depend upon recognition by the clinician of 'forceful features' (Grant & Marsden, 1987; Gale & Marsden, 1982). These personally relevant items of information dictate the particular interpretation made of clinical information that has been elicited, and this interpretation will usually be tested by processes of actively seeking confirming or excluding features. GPs are skilled in using their knowledge of disease together with an understanding of the patient and their social context and relationships (RCGP, 1996). They aim to reduce both over-investigation and over-medicalisation (Marinker, 1988), and are familiar with the natural history of a broad range of presenting problems. They are trained to utilise clinical skills, including consultation skills, in preference to technological interventions, and to tolerate uncertainty. Time and symptomatic relief are often used as the appropriate first approach.

There appear to be three key components of GPs' experience and training which are likely to contribute to more cost effective treatment of primary care patients at A&E: i) the ability to identify, understand and treat patients' needs within a broader psycho-social context; ii) the ability to cope with diagnostic uncertainty and risk taking; iii) the ability to make more effective referrals back to community-based services for follow-up. These factors are discussed below.

i) ability to elicit patients' needs within a broader psycho-social focus

In *section 2.2.1* it was noted that while psycho-social problems frequently underlie the problems patients present with in A&E, they are rarely identified by A&E staff. Many patients with minor somatic problems have underlying stress, anxiety or depression, but in A&E patients are seldom encouraged to mention psycho-social issues and such problems may go undetected. A&E staff generally lack the training and orientation to assess emotional or psychiatric problems (Padgett & Brodsky, 1992; Olsson *et al*, 1986). Failure to carefully

determine the reasons why a patient is presenting, including the extent to which worry is a factor or a symptom, may lead to needless investigations (Warwick & Salkovkis, 1985)

In general practice, the centrality of the doctor-patient relationship in determining the content and outcome of consultations has long been recognised (Byrne & Long, 1976; Balint, 1964). The consultation is conceptualised as an opportunity for the doctor and patient to influence each other in identifying and choosing appropriate actions for each problem presented (Pendleton, 1983). Vocational training gives particular emphasis to the development of consultation skills. While the hospital posts are intended to increase clinical experience and skills, the year spent in general practice as a registrar is particularly focused on the development of problem-solving and communication skills within a broad psycho-social framework (Neighbour, 1987; Pendleton *et al*, 1984).

The interview style of GPs has been shown to correlate highly with the ability to detect psycho-social problems (Marks *et al*, 1979), and Goldberg *et al* (1980) demonstrated that trainees could be taught to improve their ability to detect such problems using videotaped feedback of their own consultations. An analysis of a random sample of 163 video-taped consultations with primary care patients at KCH A&E showed that GP consultations were on average almost 3 minutes longer than those made by A&E medical staff, and that most of this additional time was taken up by the patient talking (Dale *et al*, 1991). There was an overall trend for more topics, both medical and social, to be raised in GP consultations, and on average GP consultations included twice as many social topics as did those made by A&E staff. Analysing the opening of consultations showed that GPs displayed patient-centred behaviours (introducing themselves, making initial eye contact, allowing opportunities for the patient to make the opening comments) around twice as often as did A&E doctors. Although differences in patient satisfaction were not found in the current study between GP and A&E doctor consultations, there is evidence from general practice that longer consultations allow more effective communication, more discussion of lifestyle factors and other activities relating to health promotion, and achieve greater patient satisfaction (Wilson *et al*, 1992; Morrell *et al*, 1986).

ii) cope with diagnostic uncertainty and risk taking

Doctors appear to vary in their attitude to risk taking and their intolerance of diagnostic uncertainty (Grol *et al*, 1990; Cummins *et al*, 1981; Morrell *et al*, 1971). GPs have more experience than hospital doctors at managing the broad variety of presentations that are seen

in primary care, and in using time as a deliberate diagnostic aid. They are used to working in an environment where the prevalence of serious disease is low, and are less likely to overestimate the likelihood of severe disease (Starfield, 1993; Dixon, 1986). Patients are often given symptomatic treatment and asked to return if they do not feel any better. For many types of presentation, making a diagnosis is not as a high priority as reaching a shared management plan with the patient (Dixon, 1986; Howie, 1974). Vocational training is aimed at increasing GPs' ability to assess and understand the relative importance of symptoms and signs at early stages of illness.

The orientation of hospital medicine, however, is directed more towards the pursuit of diagnosis. In hospital practice, problems that are relatively uncommon in the population are commonly seen, and role models are specialists whose aim is to make a definitive diagnosis within a relatively short period of time. They tend to be much more aware than GPs of the rare but serious consequences of not performing a test. However, as Johnson (1991) stated, "the intolerance of uncertainty may lead to a pursuit of diagnostic certainty beyond what is likely to be clinically useful". Caplan (1975) suggested that ED staff feel under intense pressure to exclude all diagnostic possibilities, "although experienced clinicians know the futility of seeking absolute certainty, and know that the diagnostic process takes time. The walking patient with a non-urgent illness, therefore, receives incomplete care at high cost". The desire to minimise uncertainty and avoid risks may exaggerate the likelihood of rare conditions, with consequent failure to recognise common or psycho-social explanations for presented symptoms.

Recent work has identified that difficulties with communication are reported by many A&E SHOs as causing them particular stress during consultations (Williams *et al*, 1997a). The psychology literature reports various coping mechanisms that can be adopted in situations generating emotional stress, including 'defensive avoidance' or 'hyper-vigilance' (Janis & Mann, 1977). Within an A&E context, excessive rates of intervention might reflect hyper-vigilance, while 'defensive avoidance' might include strategies aimed at avoiding recognition of patient's psycho-social needs (see *section 5.1.2*).

iii) more effectively refer patients back to the community for follow-up

GPs are likely to be more familiar with the health services available in their local community, and how to make best use of them. They are likely to have greater skill at defining with the patient the appropriate level of care that is required, and so are better able to present referral

in contra-distinction to the traditional A&E culture which places little value certain types of need (see *section 2.4*).

A&E staff generally have limited knowledge about local primary care health services, and may lack confidence in them. This may deter them from referring patients back to general practice, and may lead to duplication of investigations or treatments, or unnecessary referrals to outpatient clinics or on-call specialist teams. This may reinforce patient-held beliefs that 'hospital is best'.

There is evidence that lack of awareness about community services may not only lead to more hospital-oriented care, but may be harmful to patients in other ways. For example, Roberts (1990) found that a quarter of the elderly (over 75 years) that were discharged from A&E suffered decreased functional abilities, of whom almost half were unable to do their own shopping and so had become more reliant on family, friends and neighbours. A&E staff, though, have been reported as giving little consideration to the functional consequences of an injury in elderly people, and of ascertaining the availability of support before discharging them (Currie *et al*, 1984).

5.4 Summary

This chapter has identified several methodological issues that need to be considered in the interpretation of the study's findings. These relate to the consistency and reliability of the triage process, the extent to which the study environment could be controlled, the representativeness of the doctors studied, the reliability and validity of the outcome measures and the methods used for collecting data, and the assumptions included within the cost analysis.

Despite these factors, the findings appear robust particularly in light of related research in hospital and general practice settings which provide a conceptual framework within which the differences between A&E doctors and GPs can be understood. The approaches used by GPs to problem-solve, elicit needs within psycho-social contexts, cope with diagnostic uncertainty and risk taking, and ensure continuity of care all appear to be highly relevant to managing primary care needs within an A&E setting. While the findings appear likely to be highly generalisable to similar A&E settings, the extent to which the model has applicability is considered in the next chapter. In the final chapter of the thesis, the implications of the findings will be discussed further, including the extent to which the same ends could be achieved by better training of hospital doctors (*section 7.2*) and issues requiring further research (*section 7.4*).

CHAPTER 6: APPLICABILITY OF THE MODEL OF CARE

6.0 Introduction

The previous chapter critically discussed the study's findings and its generalisability, and considered explanations for the differences observed between consultations made by A&E staff and GPs. In this chapter the applicability of the model of A&E primary care developed at KCH is discussed drawing on recent evaluations of A&E primary care service developments conducted at other hospitals (Appendix IX).

Chapter 1 identified a range of national and local issues that may impact on the development of services at the A&E/primary care interface. The model of care developed at KCH was defined to a considerable extent by the needs of the local population, the resources that were available, and the support and involvement of local key players (in particular, health authorities, GPs, and hospital clinicians and managers). Hence, there is a need to consider factors that may influence its applicability to particular settings.

6.1 Evidence supporting the applicability of research findings

Evidence supporting the applicability of the KCH model of A&E primary care to other sites has emerged from a number of studies in the UK and Ireland (Murphy *et al*, 1996; Ward *et al*, 1996; Sloan *et al*, 1994). Murphy *et al* (1996) studied five GPs employed in the A&E Department of St James's Hospital, Dublin on a sessional basis to manage patients triaged as 'non-urgent' (66% of all new attenders) and compared these GPs' consultations to those of 34 usual A&E medical staff. The A&E Department studied was considerably smaller than KCH A&E, with an annual attendance of 46,000 new patients per year. Unlike the KCH study, no attempt was made to separate the non-urgent attenders into 'primary care' or 'A&E' categories. The study design was a randomised controlled trial with ambulant patients allocated to see a GP or A&E doctor according to their time of arrival. The main effects recorded were resource use (investigations, prescriptions, referrals), patient satisfaction (using the Consultation Satisfaction Questionnaire (Baker, 1990)), outcomes (self-reported health status, unplanned re-attendance), and costs. In all, 4684 patients were studied and the findings confirmed lower GP use of diagnostic investigations and fewer referrals to out-patient and in-patient services. GPs referred more patients back to general practice for follow up. No differences were found in outcome measures (health status and patient satisfaction) between

patients seen by the different types of doctor. The only notable difference found between the KCH and the Dublin studies was that the latter reported GPs as being 1.4 times more likely than A&E doctors to write prescriptions. Murphy *et al* (1996) calculated costs using hospital costing data for laboratory investigations, x-rays, prescribed treatment and admissions, but only gave limited information about how their costs were calculated. The total costs saved by employing GPs were calculated as being £1r41,305 per 1000 patients seen by GPs. This is more than twice the savings of £18,807 (at 1991 costs) per 1000 'primary care' patients (including costs of any admissions) treated by GPs at KCH (see *section 4 5*). However, given the differences in the criteria for patients entering this study and the costs included in the analysis, the results are not comparable.

Ward *et al* (1996) studied 1078 patients triaged as presenting with primary care problems at St Mary's Hospital, London. According to workload and whether or not a GP was on duty, 58.4% of these patients had been seen by GPs employed on a sessional basis, and the remainder saw A&E staff. In total, 10 GPs were included in the study. Although the A&E serves a similar population to KCH, the triage system used (described in their paper as having been based on the KCH system) only resulted in 17% of patients being deemed appropriate for primary care. This was mainly because GPs were not assigned patients who were anticipated as requiring x-ray examination since it was assumed that GPs would be inadequately skilled to interpret x-rays (Fothergill *et al*, 1995). This study again confirmed that GPs made lower use of investigations and made fewer referrals to on-call teams and outpatient clinics. All staff involved had positive perceptions of the scheme. Outcome measures and costs were not included.

In the USA, where there has been greater competition between general practitioners/family physicians and specialists, and greater concern about cost containment, a number of studies have been undertaken which provide circumstantial support for the study's findings (see table 6.1), although all lack the robustness of the KCH study. Most have involved small numbers of patients, and lacked randomisation or the inclusion of data on clinical outcome, and the patient groups who received specialist or primary care have not always been comparable. The overall picture that emerges from these studies is broadly in line with the findings at KCH. Compared to general internists, family physicians appear to order fewer diagnostic tests, make referrals less often and admit patients less frequently.

Table 6.1: Studies undertaken in the USA that have compared GPs and specialists' consultations

Study	Design	Findings	Comments
Cherkin <i>et al</i> (1987)	Compared 132 family practice and 102 general internist recent graduates undertaking 5987 office based consultations with adult patients	General internists ordered ECGs, chest x-rays, blood tests 2-4 times more frequently than family physicians. They also referred a greater proportion of patients to other physicians.	No control for disease severity or patient mix. Preponderance of rural practitioners. Did not look at patient satisfaction, subsequent care (compared resource use at only one point of time) or clinical outcome. Data in medical records may have lacked accuracy
Noren <i>et al</i> (1980)	Compared 24,099 office based consultations made by 347 general internists and 610 family physicians with adult patients. Survey instrument was completed by physician for all or a specified sample of their patients seen during survey period.	Internists spent more time than family physicians examining (18.4 compared to 13.0 minutes) and instructing patients, and ordered more x-rays (53% compared to 19% of consultations) and laboratory tests (73% compared to 34% of consultations). Internists were approximately 40% more likely to refer their patients to another physician or agency (4.4% compared to 3.1%)	Differences may have reflected differences in case mix between the patients seen by the different groups of doctors and differences in practice organisation and payment systems. The study did not look at patient satisfaction, subsequent care, or clinical outcome.
Greenfield <i>et al</i> (1992)	Compared over 20,000 adult patients seen by 349 physicians practising family medicine, internal medicine, endocrinology and cardiology within health maintenance organisations, large multi-specialty groups, and solo practices or small single-specialty group practices	After controlling for differences in case mix, payment systems and practice organisation general internists had slightly greater resource utilisation rates than family physicians for investigations, prescriptions and admissions. Also found that fee-for-service systems had greater resource utilisation rates than HMOs and other prepaid systems	There may have been unrecognised differences in patient mix. No data on subsequent care, patient satisfaction or outcome included.
Bertaklis and Robbins (1987)	520 new patients were randomly allocated to either internal medicine or family practice residents in training, and followed up for periods of up to 3 years (mean 2.1 years)	Patients in the internal medicine group made more visits to acute care clinics and emergency rooms, and had more investigations than those in the family practice group. They also had a higher rate of non-attendance at clinic appointments.	No outcome measures included. Extent to which these differences reflect the impact of differences in training (and the emphasis placed on achieving a diagnosis) or other factors could not be judged.
Smith and McWhinney (1975)	Analysed recorded consultations made by 9 family physicians and 9 internists with 3 clinical problems presented by simulated patients.	Family physicians asked fewer questions, requested fewer items of data about physical examination, and ordered fewer laboratory and related tests than internists. A greater proportion of their questions were about mental status and life situation. No significant differences in diagnoses reached.	Relatively small numbers of doctors involved, and only three types of case presentation included. All the doctors were attached to the University of Western Ontario, and so the sample may lack representativeness
Starfield <i>et al</i> (1994)	Retrospectively reviewed the quality of care of 2024 outpatient medical records of 135 providers working in three types of practice setting (hospital outpatient clinic, community health centre, and physician's office)	Sample comprised patients who had been treated for diabetes, hypertension, asthma, otitis media or 'well-child care'. No consistent differences found in quality of care for patients treated in different types of settings, although there were considerable differences in costs	Although the study did not include clinical outcome measures, the authors concluded that shifting care towards lower cost providers should not lead to a deterioration in the quality of care

6.2 Correspondents' views about the applicability of the findings

While some applauded the findings of this study, others questioned the applicability of the research findings in correspondence in the *BMJ* and the *Journal of A&E Medicine* following their publication in 1995. Phillips (1996) in the *BMJ* stated, “[the KCH study provides] a compelling argument for hospital doctors - probably in all specialties - to spend a period in general practice learning some of the skills that seem to allow GPs to use clinical judgement rather than expensive investigations to assess patients with primary care needs”.

Despite the finding that GPs at KCH picked up similar numbers of fractures to the SHOs, Fothergill *et al* (1995) in the *BMJ* argued, supporting the triage criteria in use at St Mary's Hospital, London that “patients with recent injury who are likely to require radiography are best treated by doctors trained in accident and emergency medicine”. Even if this was correct (although research evidence to support this statement is lacking), in most A&E departments, including KCH A&E, only a small minority of patients are treated by A&E specialists. Most patients are treated by junior SHOs on six-month attachment to A&E, often working with little supervision. This criticism, therefore, seems unjustified.

Another letter to the *BMJ* argued for the need to “exercise caution when extrapolating from the experience of one department” (Burke & Rashid, 1995). This reported that in an A&E department in inner city Wolverhampton only 3.4% patients were judged to have problems that would have been managed more appropriately by a GP, and the validity of the KCH triage criteria was questioned. However, as Table 2.2 shows, the proportion of the workload judged as being of a primary care type at KCH is within the range reported by the majority of A&E workload surveys. As no previously reported survey gives support to their finding, the methodology applied at Wolverhampton needs to be questioned.

Spedding and McNicholl (1997) reported that in their A&E department no differences were found in rates of x-ray examination between two GPs (employed as clinical assistants) and SHOs who all saw the same spectrum of patients. However, they did not report the characteristics of the GPs, or what had been the criteria or methods used to recruit them. It appears from their letter that the GPs were seeing all types of patient presentation, rather than just those of a primary care type. Furthermore, their observation was based on a very restricted sample of GPs. Their finding, therefore, in no way detracts from those made at KCH.

A concern voiced anecdotally by many A&E specialists is that making A&E more responsive to primary care could ‘open the flood gates’ to demand. It has been claimed that if the perceived quality of care is high, patients will return more often (Shiner & Ledington, 1991).

Indeed, Roemer's Law states that 'increased medical care resources lead to an increased utilisation of the services available' (Roemer, 1961, Shain & Roemer, 1959). Clearly if employing GPs in A&E had this effect the case for employing them would need to be rewritten. However, it seems unlikely that such an effect would occur unless there was a large unmet need in the community and/or changes occurred in the thresholds for seeking care. Thresholds for seeking care could be measured to assess the likelihood of this occurring. However, it appears that the KCH model of A&E primary care encourages patients to become less dependent on hospital-based care (see *section 4.11*), and may strengthen confidence in and use of community-based teams.

6.3 Applicability of the model of care

Section 6.1 described how the applicability of the KCH model of A&E Primary Care to similar urban settings has been demonstrated in a small number of research studies. However, these services were operating (at least to some extent) under controlled, research conditions, and the evaluations were conducted soon after the services were first implemented. These studies, therefore, like the findings reported in this study, do not provide evidence of how the model operates after it has had time to become more established within a department. It has been suggested, for example, that GPs' consulting styles within A&E over time might drift towards those of A&E doctors, although as *section 4.7* described at KCH there was no evidence of this occurring during the 12-month data collection period..

Following commendation of the KCH A&E Primary Care Service by the National Audit Office (1992) and the Tomlinson Enquiry (1992), several A&E departments in London with similar resources, facilities and catchment populations to KCH established services based on this model. A number of these developments were evaluated in 1995/6 (Dale *et al*, 1996b; Dale *et al*, 1996d; Mascarenhas & Dale, 1996). These are discussed in Appendix IX.

It appears from these evaluations and from other reports of A&E primary care developments (e.g. Ward *et al*, 1996) that the model of care is highly applicable to A&E departments serving similar populations to that at KCH. They provide evidence about the ways in which A&E primary care services have been implemented and managed, and the extent to which specific determinants of change may influence the applicability of the KCH model of A&E primary care. Overall, these service developments appear to be highly valued by A&E staff, and are supported by local purchasers and patient and GP representatives (Table 6.2). However, without effective leadership, management, audit, staff development and

training the services may not run efficiently and potential benefits are unlikely to be realised.

Table 6.2 Benefits identified by stakeholders (see Appendix IX) from A&E primary care service developments implemented at other A&E departments in London

<p>for patients:</p> <ul style="list-style-type: none"> ◆ reduced waiting times ◆ accessible care ◆ appropriate response ◆ PCPs' wider knowledge and experience ◆ saves unnecessary tests and referrals ◆ greater continuity of care 	<p>for A&E staff:</p> <ul style="list-style-type: none"> ◆ improves staff morale ◆ supportive to medical staff ◆ allows more time for SHOs to deal with majors ◆ reduces stress for all staff ◆ raises awareness and encourages respect for primary care services in the community ◆ increases seniority within medical team ◆ increases stability of medical staffing in A&E ◆ facilitates relationship at hospital/primary care interface.
<p>for PCPs:</p> <ul style="list-style-type: none"> ◆ opportunities for professional development (minor surgery, treatment room care etc) and keeping abreast with developments in hospital medicine ◆ establishes and adds to prestige of general practice as a specialty with skills that contribute to the development of hospital practice ◆ stronger links with hospital colleagues ◆ increased job satisfaction • added remuneration 	<p>for the A&E department:</p> <ul style="list-style-type: none"> ◆ reduced waiting times ◆ greater morale and less stress ◆ employing local GPs strengthens links between GPs and hospital ◆ added kudos, which may help to recruit quality SHOs, nurses and senior medical staff ◆ raises awareness of community resources ◆ better use of resources and more appropriate response to an existing demand ◆ increase in availability of senior medical staff ◆ better management of workload ◆ high patient satisfaction

6.3.1 Contextual factors

As identified in Chapter 1, there are a range of contextual factors relating to A&E departments, the populations they serve, and issues within the broader health service environment, that may influence the relevance of the KCH model of A&E primary care to local circumstances. The interface between primary care and A&E services is being continuously re-shaped by changes happening within general practice and hospital services, as well as by those occurring elsewhere in the health service (Appendix III). The applicability of the model is likely to be particularly influenced by the volume and casemix of an A&E department's workload, together

with its culture and philosophy of care and the extent to which improving the quality of its primary care service is seen as a priority.

Although A&E consultants throughout the country appear to perceive increasing numbers of patients to be using A&E for primary care needs (Crimson & Francome, 1995), as argued in *section 2.2* a broad range of factors influences this demand. The primary care workload in many departments may be insufficient to make employing GPs as A&E primary care physicians a cost-effective option. The model appears likely to have greatest relevance and applicability in large, inner city departments serving commuting, tourist and/or socially deprived and homeless populations (Ward *et al* 1996; Owens *et al*, 1993, Wilkinson *et al*, 1977).

From the evaluations that have been undertaken to date, it appears that the department culture and environment needs to be conducive to developing the primary care orientation of the service. The extent to which the primary care demand is recognised as an issue will reflect the department's culture (see *section 2.4*). Like all organisations, each A&E department has its own culture, the "pattern of basic assumptions that have worked well enough to be considered valid and therefore the correct way to perceive, think and feel" (Schein, 1985). The culture not only encapsulates features such as the department's history, activities, philosophy and goals, and the personalities, skills and experience of its members, but also influences how the department perceives its purpose and function within the hospital and the district served, and the extent to which primary care is considered to be a legitimate part of this role. It influences all stages in decision making within an organisation: issue awareness, issue formulation, development of solutions, and the selection of a solution (Johnson & Scholes, 1993).

Unless the A&E environment is receptive, it is unlikely to perceive new models of A&E primary care as having local relevance. As Evans (1996) recognised, there is a need for policy makers and health authorities to address the cultural and political factors that shape the interface if they are to succeed in developing new services that span it. In *section 2.2*, the traditional culture within A&E departments was characterised as hostile to both the demand for primary care at A&E, as well as to general practice as a whole. Changing the culture within an A&E department is likely to be difficult because of its inextricable links with history, structures and personalities. Achieving change is likely to require a commitment from senior staff, managers and administrators and understanding of the capabilities of GPs. A collaborative approach appears necessary in order that staff at all levels of the department together with local GPs and purchasers share a commitment to the success of the new service. This will involve resolving conflicts that will

inevitably be present between the traditional A&E department philosophy of care and a primary care-oriented approach. Until these are tackled, the primary care service is unlikely to be valued within the overall A&E department service.

Potential levers for change include purchaser and hospital trust support. At KCH, the A&E Primary Care Service emerged as a provider-led initiative, but the impetus for more recent A&E primary care service developments appears to have largely come from purchasers, particularly in London following the availability of service development monies within the London Initiative Zone (LIZ). Within the LIZ area health authorities were keen to fund A&E primary care developments. Purchasers can exert some influence through the contracting process. In some cases departments appear to have accepted funding as a means of employing GPs to provide 'an extra pair of hands' and so help reduce the waiting times rather than to enable a positive response to patients with primary care needs. Unsurprisingly, in these circumstances GPs have been less integrated into A&E departments, and the ambiguity in their role and the limited value placed on their experience and training may have led to inefficient use of their skills.

The way that information is presented and disseminated is likely to be important. It is well recognised that where evidence from trials conflicts with received wisdom, the implications of the trial may be ignored or disparaged (Haines *et al*, 1996). Changing staff training programmes within the department may be an important initial step. Training programmes reflect and sustain value systems, and if the primary care role of A&E is to be taken seriously, then this will need to be reflected in the content and emphasis of staff training. At KCH, programmes that have been implemented include weekly primary care skills training for SHOs and an A&E nurse/practice nurse exchange scheme (Dale *et al*, 1997; Crouch *et al*, 1996b). In addition, triage training is of crucial importance to ensure that primary care patients are identified in a consistent and reliable manner (Crouch *et al*, 1993).

6.3.2 Other constraints

The implementability of the KCH model depends not only on creating a receptive A&E environment, but also on the availability and readiness of appropriately experienced, interested GPs to become involved, and the financial resources to employ them. Working in A&E will not suit the interests of many GPs. Indeed, for many GPs A&E work is an anathema; many choose to work in general practice to avoid the hospital environment and its structures.

An increasing shortage of GPs has been reported in the UK, particularly in inner city areas and other areas with socially deprived populations (Carlisle & Johnstone, 1996; GMSC, 1994). General practice appears to be increasingly unable to attract the best graduates from medical schools, and GPs are tending to retire at earlier ages (McBride & Metcalfe, 1995). There have also been difficulties recruiting GP registrars into training practices, particularly in inner city areas (Harris *et al*, 1996). An opportunity cost of employing GPs in A&E, therefore, may be that certain activities and services may become less available through general practice services in the community because of the scarcity of GP resource. However, the hours worked within A&E primary care services tend to occur mainly outside normal surgery hours (mid-afternoons, evenings and weekends) reflecting the times that A&E primary care demand is at its peak. It is unlikely, therefore, that employing GPs in A&E has a significant effect on the availability of services outside the hospital.

As discussed in Appendix III, morale in general practice has been low in recent years as a result of the NHS reforms and the introduction of the 1990 contract, and together with GPs' perceptions of increasing workload this may act as a significant barrier to recruiting A&E primary care physicians (Evans, 1996; Hayter *et al*, 1995). Although there is a lack of evidence about the extent to which workload has changed (Pederson & Leese, 1997), there is considerable anecdotal evidence that GPs' perceptions of increasing workload are acting as a barrier service development. The increase in workload has reflected an increasing emphasis in general practice on preventative and long term care, together with an on-going shift in the balance of care from acute hospitals to primary care (NHSE, 1996c; NHSE, 1994a; NHSME, 1993b). This trend has been accelerated recently by the opportunities contained within the Primary Care Act (Secretaries of State for Health, 1996).

While some districts have experienced difficulty recruiting adequate numbers of appropriately qualified GPs to work as A&E primary care physicians (see Appendix IX) it appears that where they have been successful, the GPs working within such schemes identify considerable personal and professional benefits. These include increased diversity and challenge in their working week from working with a different population of patients as part of a different team of doctors and nurses. In addition, the educational benefits of working within A&E are perceived to be valuable. It appears that with effective marketing of the benefits of working in A&E it is possible to make this work attractive to a sufficient number of GPs.

6.4 Variants of the model

A number of variants to the model have emerged. One variant which has been implemented in at least three A&E departments in London is the employment of a vocationally trained GP as a full-time A&E primary care consultant to lead primary care service developments, including the primary care training of medical and nursing staff. Such consultants may form important points of liaison between primary care and hospital services, but the direct impact of these appointments on the quality of care provided to patients has not been formally evaluated. At least two of these services also employ sessional GPs and/or nurse practitioners as part of their primary care service.

In some departments there has been interest in developing nurse practitioner roles in preference to employing GPs within A&E (Audit Commission, 1996; Dolan, 1996; Stewart, 1996; Beales & Baker, 1995; Dale & Dolan, 1994; RCN, 1994; Baker, 1993; Jones, 1993; Murphy, 1993; Burgoyne, 1992; Howie, 1992; Read *et al*, 1992a; Head, 1988). In part this may reflect a lack of understanding within A&E about the skills and practice of GPs compared to nurse practitioner roles, together with greater experience of employing nurses within existing organisational structures. Nurse practitioners in A&E vary in their experience and training, but most lack primary care or community nursing skills. In many A&E departments and minor injury units, based on the development of the nurse practitioner role in US emergency departments (Powers *et al*, 1984; Waeckerle *et al*, 1977), nursing practice has been extended to include initial assessment, suturing, phlebotomy, requesting radiographs, and prescribing specific medications according to agreed protocols (Beales & Baker, 1995; Meek *et al*, 1995; Davies, 1994; Baker, 1993; Burgess, 1992; Read *et al*, 1992; Potter, 1990; Morris *et al*, 1989).

In general, nurse practitioners tend to manage a narrower range of presenting problems than A&E doctors, and Read *et al* (1992a) found that their caseloads contained more trauma (86%). It appears that 10-15% or more of A&E patients can be treated by a nurse practitioner, depending on the scope of the nurses' training and local guidelines and protocols (Howie, 1992). However, the improved communication across the A&E/primary care interface and other gains that appears to follow from employing local GPs in A&E may not be observed.

While much has been written in the UK about the work of nurse practitioners, there has been little evaluation of their role in terms of cost effectiveness. The Audit Commission (1996) suggested that emergency nurse practitioners should be employed more efficiently through

better training, including nationally accredited courses, appropriate protocols, regular audit, and nurse dispensing. Without adequate training and supervision there is a risk that clinically significant cases will be missed (James & Pyrgos, 1989). There is evidence from recent UK studies that nurse practitioners who have undergone an appropriate training programme are able to request x-rays within set guidelines at least as well as SHOs (Freij *et al*, 1996; Thurston & Field, 1996; Macleod & Freeland, 1992).

Nurse practitioners are not necessarily cheaper to employ than doctors; it costs about 25% more per hour to employ a 'G' Grade nurse than a SHO and they usually see fewer patients per hour (Audit Commission, 1996). A comparison of service developments at the A&E/primary care interface in west London found that employment costs for nurse practitioners per patient seen were around twice those for GPs because of the differences in the rate at which patients were assessed and treated (Dale *et al*, 1996b).

There is much evidence from the USA that nurse practitioners can manage certain groups of patients effectively (Middleton & Whitney, 1993; Covington *et al*, 1992; Feldman *et al*, 1987; Powers *et al*, 1984) and that limb extremity x-rays ordered by nurses have at least as high a pick-up rate for abnormality as those ordered by house officers (Langston, 1973; Bliss *et al*, 1971). However, in the USA nurse practitioners are usually trained to Masters level and are certified through the American Nurses Association's certification examination, and have to acquire 75 hours of continuing education every 5 years to maintain certification. Evaluations of nurse practitioner roles in the USA are unlikely to be applicable to the NHS until nurse practitioner training has reached a similar level.

6.5 Summary and conclusions

This chapter has considered the applicability of the model of A&E primary care developed at KCH, and has discussed a number of factors that may be influential. These include the context of the department, such as the socio-demographic characteristics of the catchment population; organisational and structural factors, such as management support and operational issues; specific human resource issues, such as the availability of GPs to undertake this new role and team development; and the support of the health authority and the availability of adequate resources.

The successful implementation will rest on the development within A&E of a receptive environment, in which the philosophy of care, purpose and goals of the new service are explicit and

generally supported. Effective orientation and induction procedures for PCPs, guidelines and on-going audit are essential to maintain the consistency and quality of the service (Appendix IX).

Contextual factors that may influence the development of services at the A&E primary care interface were considered in Chapter 1(*section 1.1*). It was identified that NHS policies and priorities, the organisational setting and the needs of the local population, the competing interests of different professional groups and individuals, and the extent to which aims and values are shared across the A&E primary care interface may affect the applicability of the King's model of A&E primary care to any particular setting. As with any process of change management, the enthusiasm of key individuals is likely to determine the extent to which new services are successfully implemented. Without such leadership, key requirements for change are likely to be lacking. These include a shared vision and philosophy of care for the new service, support for service improvement and change from top management in the hospital and health authority, strong leadership for change within the A&E department, a participatory process to change involving staff at all levels of the A&E department and local GPs, and a commitment to on-going improvement in the quality of care.

CHAPTER 7: CONCLUSIONS

Previous chapters have considered the generalisability and applicability of the study's findings, and identified a range of factors that may influence the extent to which the KCH model of A&E primary care has local relevance. This chapter draws together the main themes of the thesis, summarises the evidence in favour of developing A&E primary care services, and considers the implications of this research study for medical training, future research, and the development of A&E and primary care services.

7.1 The rationale for employing GPs in A&E as primary care physicians

Several factors within the NHS are driving change at the A&E/primary care interface and the development and implementation of innovative models of care. These include:

1. increased recognition of the need to respond proactively to the demand for primary care at A&E
2. increased recognition of the role GPs can play as gatekeepers at A&E
3. concerns about waiting times in A&E
4. difficulties in recruiting all grades of A&E medical and nursing personnel
5. an increasing health service-wide focus on the primary/secondary care interface
6. the introduction of new forms of out of hours service delivery
7. new purchasing arrangements; unified health authorities, total purchasing pilots and locality purchasing
8. concerns about the costs of emergency care
9. increasing emphasis on cost effectiveness and service quality
10. growing emphasis on evidence-based care (Sackett & Haynes, 1995)

Earlier chapters of this thesis have demonstrated the relevance that the KCH model of A&E primary care may have to many of these issues. The study has demonstrated clear differences in the clinical practice of GPs and A&E doctors within a controlled research setting, and the findings suggest that employing GPs in A&E may lead to more effective, community-oriented care and contribute to reducing emergency admissions. The following factors all appear to contribute to the differences observed in consultation process: 1) the greater emphasis on defensive practice and on making a diagnosis in hospital practice; 2) the less highly developed consultation skills of A&E medical staff; 3) the long-standing lack of respect/antagonism

between A&E staff and GPs; 4) the lack of interest in the primary care needs of patients; 5) the lack of knowledge about primary care services in the community and a lack of confidence in the capabilities of such services; and 6) GPs' greater experience of dealing with undifferentiated, common problems and their continuing relationship with patients.

The employment of GPs in A&E appears to be a cost effective initiative, but as discussed in *section 5.1.6* the financial savings are likely to be dissipated across many directorates within the hospital. Although not the first study to demonstrate differences between GPs and hospital doctors' consultations, this is the first to do so in a controlled environment in which patients' needs and doctors' access to specialist and investigative interventions were all similar. The service developments evaluated in Appendix IX illustrate that with effective primary care leadership and service management the model appears to be highly applicable to other A&E sites serving populations similar to that served at KCH.

The study's findings are relevant to current debates about the quality of care provided in A&E departments, and the extent to which resources are used efficiently and effectively (see *sections 1.1.3 to 1.1.6*). A&E has a vital gate-keeping role within the health service, and the aim should be to provide appropriate responses to each patient's needs. The care provided in A&E should seek to encourage continuity of care in general practice, wherever possible; this involves setting limits on unnecessary intervention. However, the results of this study appear to indicate that A&E staff lack the skills that are appropriate to primary care needs, and previous research suggests that they may also lack the motivation to develop such skills. The resource implications (reduced rates of referrals, investigations and treatments, and more community-oriented care) indicate the importance of developing a primary care orientation within A&E services, and the need to challenge the traditional, 'hospital-centric' culture. As discussed in Chapter 6 and Appendix IX, employing GPs in A&E appears to be a highly effective way of challenging attitudes through the skills and knowledge that they directly bring into the department. The familiarity and understanding resulting from closer working may lead to more effective communication between community- and hospital-based teams, and may reinforce future use of community-based services. The case for employing GPs in A&E as PCPs is summarised in Table 7.1.

Since completing the data collection for the research project in 1990, at KCH A&E GPs have continued to work as primary care physicians seeing 7-9000 patients per annum, which gives an accumulated total of approximately 50,000 patients seen between 1991 and 1997. During this time, a total of 25 GPs have been employed by the service for periods of between one and

seven years. There has been continuous audit of investigations, referrals and prescriptions which has confirmed that the levels of intervention have varied little from those observed in the research study (KCH A&E Primary Care Service Business Report, 1995). There have been very few (in total, 12) written complaints received during this period from patients treated by PCPs relating to clinical care, and none have been pursued following receipt of a letter of explanation.

Table 7.1: The case for employing Primary Care Physicians in A&E

1. Patients often present at A&E with vague, undifferentiated problems that are unrelated to particular systems or disease processes.
2. The stressful and hectic environment that characterises A&E departments makes patient-focused care difficult to provide.
3. Few medical or nursing staff in A&E have received training to develop appropriate management and consultation skills for managing primary care problems.
4. GPs are more experienced than hospital doctors at managing a broad variety of presentations, and are trained to assess the relative importance of symptoms and signs at early stages of illness, to cope with diagnostic uncertainty and define the appropriate level of care that is required.
5. While the episodic care provided in A&E may be detrimental for certain patients (such as those with on-going problems or psychosocial needs), for many acute problems (such as acute conjunctivitis, gastro-enteritis, or earache), the convenience of being seen in A&E may outweigh the benefits of attending the GP surgery.
6. GPs make more appropriate use of resources, and appear able to provide more cost effective care.
7. GPs are familiar with the health services available in their local community, including how to refer to them and make best use of them, and so should encourage greater continuity of care and avoid unnecessary interventions in A&E. GPs appear to be more effective gate keepers in A&E than hospital staff.
8. Employing GPs in A&E should lead to greater understanding about primary care throughout the department, and so challenge some of the negative views that staff in A&E departments traditionally hold. In so doing it might contribute to improved relations between hospital and community services, improved communication, and more seamless care across the primary secondary care interface.
9. Working in A&E may add to GPs' job satisfaction, provide new challenges and opportunities for self development, and lessen professional isolation.
10. From society's perspective, the provision of non-urgent care at A&E may be an efficient use of health care resources, particularly for people who have difficulty attending GP services during normal working hours (such as those who are unable to take time off work or are unable to arrange carers during the day).

The model provides a benchmark against which alternative interventions can be compared. It provides a pragmatic approach to matching A&E resources to demand, given that with open access

care, A&E departments have little choice but to respond to lay perceptions of the need for immediate care. Although schemes aimed at denying patients access to A&E care have been tried in some health care systems (see *section 2.6.2.1*), philosophically and ethically such schemes are incompatible with the principles of the NHS. The KCH model of care, however, is consistent with the goals of efficiency, choice and quality espoused in the NHS reforms (see Appendix III). It is based on the twin premises that patients have a right to decide when to use A&E and that a quality A&E service should enhance and be supportive of community-based primary care.

One of the key themes in Chapter 2 was the impact of different incentives and disincentives on A&E demand and supply. One implication of the findings is that there may be a need to introduce incentives in A&E that will encourage referral back to the community. In the USA gatekeeping has been strengthened within managed care organisations, and this has had the effect of reducing A&E usage. Motivated by the need to contain health costs, many managed care organisations have implemented telephone triage systems that require patients or ED staff to seek pre-authorisation before the ED is used by the insured person (Franks *et al*, 1992). Such systems clearly have both costs and risks. It seems possible that in the UK new total purchasing and locality commissioning arrangements may drive similar changes. However, employing GPs in A&E provides an alternative model which is safe and acceptable to the public while also strengthening the gatekeeping role of A&E. The Chief Medical Officer has recently argued for developing and integrating emergency services within the community and for developing the provision of telephone advice lines (Calman, 1996). Within such a system A&E Primary Care could play a key strategic role.

As identified in Chapter 6 there are a number of obstacles that may impede the implementation of this model of care. Implementing A&E primary care successfully will involve considering elements of management change, structural change, and cultural and behavioural change within departments, and considering the relationships between these, purchasing priorities and other variables that influence service performance. The distribution of any cost savings resulting from the employment of GPs in A&E is an issue that those responsible for the purchasing and provision of A&E care will need to confront at a local level (see *section 5.1.6*).

7.2 Implications for undergraduate and postgraduate medical training

The study clearly has implications for undergraduate and postgraduate training and provides support for greater emphasis on the development of primary care consultation skills and attitudes. A&E SHOs themselves report a need for more support and supervision, and recent research has described the difficulties they experience in coping with vague, undifferentiated problems and patients with psycho-social problems (Williams *et al*, 1997b).

The large numbers of radiographs ordered by A&E doctors that appeared to be superfluous might indicate a need not only for guidelines to assist clinicians determine when x-ray examinations are required, but also training and support to enable them to cope with uncertainty and manage risks. However, given the inexperience of A&E SHOs, there is also an argument against over-constraining their practice because of the risks of failing to diagnose a fracture as a result of incomplete assessment (Matthews, 1986).

The model of care implicitly challenges traditional A&E organisational cultures and values. While the employment of GPs in A&E may not be relevant to all departments, there is probably a common need for A&E medical and nurse training to include consideration of the role A&E plays as a primary care provider. There may be considerable scope for multi-disciplinary and inter-disciplinary training to increase awareness in relation to working across the primary secondary care interface.

The Audit Commission (1993) has also argued the need for all hospital doctors to develop improved communication skills to improve the effectiveness of care. In the past, medical training, with its traditional emphasis on rare conditions and disease-centred care, has tended to place a high value on 'interesting medicine' that involves diagnosing and treating uncommon conditions and using high technology interventions. Within this context the skills and clinical methods used in general practice may appear nebulous and uninspiring. Changes currently taking place in under-graduate curricula are intended, in part, to redress the balance between attaining knowledge, skills and attitudes (GMC, 1993). They encompass greater emphasis in undergraduate training on the development of communication skills and of attitudes necessary for the achievement of high standards of care (GMC, 1993). The impact that this has on the attitudes and skills of the next generation of doctors will need to be evaluated.

It has been reported that there is a need to improve A&E SHO training (Rodenberg, 1996), and at present there is no core curriculum to guide SHO training. The study's findings support the need to include greater emphasis on the development of patient-centred attitudes and assessment and communication skills. Although there is a need for A&E SHOs to be proficient in a range of technical procedures, their training should also encourage skills that will enable a balance between seeking diagnostic certainty and responsible use of resources. This should include greater understanding of the risks of interventionist care.

The concepts of evidence-based practice are beginning to affect undergraduate, postgraduate and continuing education. However, the incentives to keep up to date and use interventions of proven clinical effectiveness are often lacking (Haines *et al*, 1996). As this study shows, there may be organisational and attitudinal factors that act as specific disincentives to practising more evidence-based medicine which need to be addressed through training programmes and organisational change.

At KCH A&E, training programmes have now been developed to challenge the negative views A&E staff have of general practice and other primary care services, to develop their communication and consultation skills, and to enable more effective referral to community based services. This has involved weekly seminars for SHOs to develop primary care skills, organising meetings between A&E and community staff, providing training events for GPs and practice staff, and organising a practice nurse and A&E nurse exchange scheme, together with opportunities for SHOs and registrars to visit local practices. Initial evaluation of these training schemes has been positive (Dale *et al*, 1997a; Crouch *et al*, 1996c), but further research is needed to test their applicability to other hospital specialties and other settings, together with the extent to which they have a measurable impact on patient care.

Similar ways of improving co-operation between A&E and general practice by developing closer working relationships between A&E and general practice staff have been reported elsewhere (Hadfield *et al*, 1994; Bedford *et al*, 1992). While some savings in the costs of A&E care could probably be recouped by such initiatives, it seems unlikely that the knowledge and skills gained will be sufficient to match the improvements in standards of care that may follow from employing GPs in the A&E department.

7.3 The broader context of A&E Primary Care

Although the main focus of the study has been on the hospital-side of the A&E/primary care interface, in terms of health service policy and planning it is important to continue to explore the impact that different arrangements in general practice have on A&E demand. As discussed in Chapters 1 and 2, and Appendices II and III, many features of general practice may affect demand for A&E care. Patients' perceptions of accessibility and availability of general practice are particularly important. For example, the trend towards larger practices was identified as being associated with a decline in patient satisfaction (Baker & Streatfield, 1995). Creating teams of small numbers of doctors, receptionists and practice nurses may offer a means of providing greater continuity and personal care within larger practices.

In addition to the service and training issues already discussed in this chapter, an increasing number of other areas of health service activity impinge on A&E primary care. These include the rationalisation of A&E services and the development of minor injury units, the interface between A&E and GP out of hours care, the provision of telephone advice and integrating access to emergency health care.

The effects of different options for managing patients' expectations for immediate access to health care advice in general practice on A&E demand needs further evaluation. Out of hours care, in particular, has traditionally been one of the most poorly integrated aspects of the health service, with much overlap between services provided by different agencies, and most particularly between A&E and general practice. For example, in Lambeth, Southwark and Lewisham it was estimated that the A&E departments manage as much as 50% of out of hours primary care contacts (Dale *et al*, 1996c). Recently there has been considerable change in the provision of out of hours primary care services (Hallam, 1997; Jessopp *et al*, 1997; South Wiltshire Out of Hours Project, 1997) following the provision of new service development monies (Dorrell, 1995). This includes the development of GP co-ops, and a considerable shift towards basing care around out of hours primary care emergency centres (Jessopp *et al*, 1997) and the provision of telephone advice. There is the potential for primary care emergency centres to develop within or alongside A&E departments (Kumar & Olney 1994), and in many districts such services are now developing (Jessopp *et al*, 1997). There is some evidence that patients are more likely to attend primary care emergency centres based near or alongside A&E departments than more distant community-based centres (Dale, 1996). The widespread introduction of out of hours primary care emergency centres might have an

appreciable influence of A&E department workload (Williams *et al* 1996), but evidence for this is still lacking.

7.4 Implications for future research

Key areas that have emerged as requiring more research relate to:

1. what impact does the development of A&E primary care services have on longer term health status and use of health services? What are the longer term cost consequences for patients and the health service?
2. what are the differences in the quality of consultations that account for the differences in process observed between GPs, SHOs and registrars? To what extent are these amenable to training interventions?
3. what is the cost effectiveness of different models of A&E primary care (e.g. GPs in A&E, primary care-trained nurse practitioners, training A&E doctors in primary care skills, primary care consultants)?

There are a number of specific areas that require research:

1. Understanding and influencing demand

What is the impact of new out of hours arrangements, such as GP out of hours co-ops, the increased provision of telephone advice, and the new primary care reforms on demand at A&E?

2. Decision making and clinical strategies

How do the consulting styles and decision making processes of A&E doctors and GPs compare? What are the acute and cumulative effects that shift length and workload intensity have on consultation process and outcome? Detailed descriptive analysis, such as using video-stimulated recall, might be helpful.

3. Patient satisfaction

Further research is needed to elucidate how patients evaluate A&E care. This could lead to the development of a validated assessment tool for measuring satisfaction within the context of A&E setting with more specific questions relating to the expressed behaviour and attitudes of the consulting doctor, possibly modified from existing measures (such as the Consultation

Satisfaction Questionnaire (Baker, 1990)). Further work is needed to research patients' experience and views about more specific aspects of professional performance in A&E and to detect the impact that this has on satisfaction and outcome.

4. Cost effectiveness and qualitative differences of alternative arrangements

Evaluating roles (e.g. through a comparative trial) of other members of primary care teams, such as nurses and social workers, within the provision of A&E primary care. Study of demand and supply of care at the interface between A&E primary care and out of hours care, and evaluation of different models to test the effectiveness of more integrated models of out of hours care. This should include costing the social consequences of different service arrangements, for example in terms of time off work.

5. Testing impact of training, guidelines and audit on clinical practice in A&E primary care

The impact of improved primary care training and better supervision and support of A&E junior doctors on cost effectiveness of care provided to patients with primary care needs, and its impact on A&E culture and the attitudes of staff .

7.5 Conclusion

The successful matching of demand and supply in relation to A&E services has been elusive for over 150 years, and the A&E/primary care interface has remained an area of considerable contention. This thesis has identified the many functions of A&E departments, and the range of factors that influence the demand for and supply of services. The demand for primary care at A&E departments appears to reflect the value placed by the public on the accessibility and availability of care in place and time, as well as the quality associated with a hospital-based service. For many people, convenience will often outweigh other considerations in their choice of health care provider, and there is little evidence that improving the accessibility of GP services, out of hours emergency centres and minor injury units in the UK will have a substantial impact on A&E demand.

The clinical and cost consequences of care provided by different grades of doctor have been described, and the model of care that includes GPs working within A&E was found to make more effective use of available human and capital resources, contributing to immediate and potential longer term benefits for patients and the health service. While it was beyond the scope of the study to identify specific elements of health gain, the care provided by GPs

appeared more likely to lead to the identification of psycho-social problems, the encouragement of self-care, and greater continuity of care. The approaches used by GPs to problem-solve, elicit patients' needs, cope with diagnostic uncertainty and risk taking, and ensure continuity of care all appear to be highly relevant to managing primary care needs within an A&E setting.

Pressure for change in emergency service provision exists across the NHS, and the importance of developing and integrating emergency services within the community has recently been emphasised by the Chief Medical Officer (Calman, 1996a). The challenges that A&E departments face, such as how best to respond to the immediacy of each problem presented within what are often busy, over-crowded environments, have persisted over many decades, but the model of care developed at KCH provides an example of how greater partnership and integration of care provided by different services can lead to improvement in the effectiveness of care.

Factors influencing the applicability of the KCH model of A&E primary care have been identified. Most importantly, the successful implementation of the model requires effective leadership and management to overcome the resistance imposed by traditional organisational values and constraints. However, there is a need for more research about the costs and quality of A&E care in different organisational settings.

In the future, new technologies may play a part in consolidating the role of A&E primary care. For example, the advent of Smart Cards and NHS-wide computer-linked records may enable greater continuity to be maintained as unique, comprehensive health records become established for each patient. This will accentuate the need for health professionals to work effectively across organisational interfaces in order to take advantage of these systems.

The study's findings re-emphasise the important role that GPs play as gate keepers to expensive, high technology, secondary care services, so helping patients to avoid over-medicalisation, over-investigation and over-treatment. This offers purchasers and providers a way of responding to A&E demand that is more closely integrated into the provision of primary care in the community, should help reduce waiting times, and enable A&E departments to run more smoothly. New locality commissioning arrangements to be introduced within the next wave of health service reforms may give groups of GPs greater responsibility for purchasing all health care for their patients from a fixed budget. This may provide GPs with an incentive and resources to purchase cost effective care, and avoiding unnecessary A&E care may be seen as a priority. Employing GPs in A&E appears to offer a means of achieving this.

APPENDIX I

Definition of primary care

'Primary care' implicitly relates to 'first contact' care, but there is no generally accepted definition of the components of primary care (IHSM, 1995). Definitions vary according to organisational and professional perspectives. The World Health Organisation (1978) has defined primary care as:

"Essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community by means acceptable to them.....It is the first level of contact of individuals, the family and the community with the national health system, bringing health as close as possible to where people live and work and constitutes the first element of a continuing health care process"

This definition is somewhat inclusive, saying little about the quality, ethos and content that distinguishes it from secondary care. Starfield (1993) has addressed some of the special features of primary care, and argued that primary care is first contact care, long-term, person-focused, comprehensive, continuous and has a co-ordinating, gate-keeping function. She suggests that it should be accessible in time and place at all times, and by cost and culture; is time-oriented and problem-focused in contrast to specialist care which is more disease-oriented; and provides care for the common problems in the population, and provides continuity of care over time. Where necessary, it refers patients to appropriate services and agencies in ways that will achieve greatest effectiveness and efficiency. In the UK, for example, general practice is closely related to other primary care services in the community, as well as to secondary care services for interventions that are not provided outside the hospital.

The varied ways in which problems present and evolve are among the key challenges of primary care. Symptoms are more diverse than in secondary care, and are often vague and undifferentiated. Problems are frequently multi-faceted, including social, physical and psychological components. Many of the problems which present to primary care do not fit neatly into defined disease entities (Fabb *et al*, 1997).

Gate-keeping is a core function in primary care. It is 'the process of matching patients' needs and preferences with the judicious use of medical services' (Franks *et al*, 1992). From the perspective of the health service, 'gate-keeping' implies a process of restricting access to high-cost specialist

services. But more importantly for the patient, it should offer protection from the harmful effects of 'over-medicalisation, over investigation and over treatment' (Marinker, 1988) while enabling the patient's needs to be directed to the service or practitioner that can most appropriately manage them.

McWhinney (1989) summarised the specific skills of GPs as comprising:

1. problem-solving skills for undifferentiated problems in a primary care context
2. preventive skills - the identification of risks and early departure from normality
3. therapeutic skills - the use of the doctor-patient relationship to maximise the effectiveness of all kinds of therapy
4. resource management skills - the deployment of the resources of the community and the health care system for the benefit of patients

However, primary care is not synonymous with general practice. While general practice often has a key, long-term co-ordinating function, there are numerous other services that contribute to the primary care system. These include dental health, community nursing, mental health, community pharmacy, optometry, chiropody and many other services to which patients have direct access. A&E departments have always been important primary care providers, although not offering the continuity or comprehensiveness of general practice.

APPENDIX II

The evolution of A&E departments in Britain: from casualty wards to the establishment of A&E Medicine as a specialty

This appendix provides a historical context against which the development of A&E departments can be viewed. Many of the issues that are important today have been present for much of the last 150 years. Throughout this period, casualty departments have been characterised by increasing workload, low status, general neglect, inadequate staffing and resources, and disquiet and concern has been expressed by both the medical profession and the public. Despite re-naming them as accident and emergency (A&E) departments in the 1960s, considerable rationalisation of their numbers, and the establishment of A&E medicine as a specific specialty in the 1970s, these issues are still very much alive.

There has been continuing ambiguity in the role casualty/A&E departments play at the interface between hospital and community-based services. As will be discussed, this is evidenced by on-going intense and, at times, vitriolic debate between GPs and consultants, reflecting a long standing antagonism between doctors holding hospital appointments and those who do not (Abel-Smith, 1964). Key strands within this debate are professional demarcation, status and income; appropriateness of demand; and philosophies and effectiveness of care. The gradual emergence of the concept of referral between the private practitioner and the private consultant, as well as between the GP and the hospital outpatient department, resolved some of these issues, but the problem of 'inappropriate' demand at casualty departments and how best to respond to it persisted.

The use and 'abuse' of casualty departments

The forerunners of A&E departments were the 'casual' outpatient wards or casualty departments established by many hospitals during the nineteenth century. They were set up in the face of increasing urbanisation, industrialisation, poverty and overcrowding (Nuffield Provincial Hospitals Trust, 1960). The numbers of hospital facilities expanded rapidly during the second half of the nineteenth century, and casualty departments became an increasingly important focus of health care for those who were unable to afford other types of care and did not qualify for Poor Law relief.

They were established alongside the outpatient clinics and dispensaries of the voluntary hospitals funded by public subscription, and later the public hospitals which were supported by local taxation. The distinction between casualty and outpatients was usually imprecise; St Bartholomew's was the first hospital in London to separate casualty patients from outpatients (Lancet Committee, 1869b).

From their earliest days, they threatened the professional standing and income of GPs, the surgeon-apothecaries who under the Apothecaries Act (1815) gained the legal status to treat, dispense and sell medicines. Concerns were expressed about the misuse of these services by people who could afford to pay. Hodgson (1849) complained about the "growing evil" through which "persons well able to remunerate medical men were allowed to be outpatients without the slightest enquiry as to their circumstances.in many instances applicants dress shabbily and even borrow their servants' bonnets and shawls in order that they may not be detected plundering the surgeon of his guinea". He suggested that "each applicant be compelled to bring a note of recommendation from the clergyman or a medical man in the district where he lives". The editor of the *Lancet* concurred that the "[abuse] is one of enormous magnitude and affects the social status of the profession to a degree greater than can easily be imagined."

In 1853, the *BMJ* in a leading article entitled "the abuse of hospitals and dispensaries, a monster evil of the Day" decried the "evils which arise from the present prevalence of indiscriminate medical charity" (Anon, 1853a). It argued that outpatient departments diminish "the earnings of the Physicians, surgeons and general practitioners practising within the sphere of operations of a hospital....Gentlemen's servants, clerks and well-to-do tradespeople with their wives and children absolutely encumber the waiting rooms of the London hospitals". As stated in another leading article, "the amount of fees which are unjustly filched from the profession by the hospital system is enormous" (Anon, 1853d).

It was argued that the system was morally abhorrent, because it failed to discourage those with means from seeking assistance. "[It] destroys or prevents the formation of provident habits among the poorer classes. The man who knows that charity is open to him whenever he wants a dose of medicine, is not likely to save money" (Anon, 1853a). It was stated that "the outpatients' rooms require a vigilant supervision; and no person should be admitted to the benefit of a medical charity...who does not bring a certificate from a known subscriber, a clergyman, or a specially authorised inspector, of inability to pay for medical attendance" (Anon, 1853b).

This campaign persisted in leading articles (Anon, 1853a-e) and correspondence. It was clearly a national problem. For example, it was reported that at the Bath United Hospital in 1852 around 14,000 patients had received gratuitous advice and medicine as outpatients, equivalent to one in four of the population of the city and its surrounding villages. It was implied that consultants and specialists were abusing their positions in the hospitals to deprive patients from general practitioners and recent graduates: "All honour to the men who gratuitously serve an ungrateful public! But we would ask them to pause in their work, to inquire whether they are not, by supporting the present system in its manifold abuses, injuring the profession as a whole" (Anon, 1853a).

The case for reform of the hospital system was strongly argued, and it was proposed that every town should set up its own hospital reform committee (Anon, 1853d). It was claimed that the medical profession was being "victimised and cheated by a "charitable public"...[and] a system which, if it be not suppressed, must in a very few years destroy the profession, by limiting the recipients of its emoluments to a lucky minority" (Anon, 1853b).

The Lancet Investigation (1869b), 16 years later, confirmed that casualty wards were still being abused by those who could afford to go elsewhere, but it considered that "it would be impossible to commit the power of refusal to any officer" given objections to refusing care to patients until their needs had been assessed.

Despite the reactions that such 'abuse' provoked, it is unclear whether its scale was as large as these reports suggest. Robert Bridges (1878), who later became famous as Poet Laureate, compared the stereotype of the casualty attender with his own experience as a casualty physician at St Bartholomew's Hospital: "I had been accustomed to believe that the casualty patients were chiefly made up of that weird class of persons that one sees in Cruickshank's etchings.....that idleness was their excuse for coming to the Hospital, and an hereditary taste for anything out of a bottle the unconscious motive of their seeking medicine.....but I can testify that I saw very little of this class of persons; in fact the majority of those I saw seemed patients in good faith".

In 1869 it was reported that Great Ormond Street Hospital had around 75,000 children attending its casualty outpatient ward each year, a number which had grown rapidly and was reported as having "evidently increased far beyond the expectation of the Managing Committee" (Lancet, 1869a). All of these patients were seen between the hours of 8.30am and 1pm, Monday-Saturday, by two physicians each working with a qualified assistant. The workload was heavy: "on the average, about 25 cases are seen by each attendant in the hour,

new cases requiring more time and care". The doors for admission to the ward were closed at 10am and mothers and children often had to wait in severely crowded areas for five hours or more. In response to the increasing demand, the hospital had decided that "no patient will henceforth be prescribed for a *second* time unless on the production of a subscriber's letter, or of a certificate from a doctor, minister of religion, Scripture reader, or city missionary, that the bearer is too poor to pay for medical attendance, and is a proper object of charity". The *Lancet* (1869a) recommended an increase in medical staffing levels so that doctors should see no more than 50 to 60 cases during a morning, that waiting times should be minimised, and that conditions in the waiting room be improved.

Concerns about departments becoming over-crowded and over-strained were frequently voiced (Lancet Committee, 1869b). Writing about St Bartholomew's Hospital, The Lancet Committee (1869b) described how on one occasion they observed 120 patients seen and treated in an hour and ten minutes ".....with a doubtful dose of physic, ordered almost at random, as if the main object were to get rid of a set of troublesome customers, rather than to cure their ailments". Bridges (1878) estimated that some 190,000 patients were seen each year at the casualty department, of which about 70% (130,000) were new visits. Only around 1% of new visits were admitted and about 5% were referred to outpatients. He prescribed quassia and iron or cod liver oil mixture to more than a third of them, which he explained reflected the prevalence of "atonic dyspepsia" caused by the "long hours that machinists and buttonhole-makers have to work, the stale air they breathe, and the cheap miscellaneous food that they are obliged to live on". He described casualty doctors as an "over-worked and under-estimated body of men", and estimated that in 1877 he alone saw 30,000 patients. As he said, "it is not unusual for a casualty physician to see 150 patients in less than 2 hours" (ie an average of less than 48 seconds per patient). He described the role of casualty as being that of the "filter of the hospital" determining which patients require admission, referral to outpatients or treatment, and considered that a good casualty "filtrator, working at high pressure, will pass at least 100 patients per hour".

Professional rivalries

Despite the concerns of GPs, during the second half of the century hospital policies about subscriber's recommendation were relaxed; at the London Hospital, for example, the number of outpatients who came with recommendations fell from 46% in 1855 to 9% by 1889

(Loudon, 1978). Nearly all the general hospitals provided free care, and this was considered by much of the population to be a natural right (Burdett, 1893).

However, GPs continued to argue that “casualty departments.....[be] strictly limited to accidents and street emergencies” (Lancet, 1887), reflecting the continuing threat posed by hospitals to their livelihoods. The demarcation disputes between GPs and consultants became increasingly vehement. In 1889, the *BMJ* published a letter signed by 110 doctors supporting resolutions to the BMA annual meeting condemning the abuse of outpatient departments (Rentoul, 1889). Another letter signed by 53 GPs claimed that “the abuse [of outpatient departments] was so great as to almost amount to a national calamity, inasmuch as habits of unthrift are encouraged, and a direct incentive is held out to improvidence and fraud”. It also discouraged local practitioners because of unfair competition (Woods, 1889).

In July 1889, Lord Sandhurst presenting the case for an inquiry into London hospitals, reported that in 1887 outpatients included “more than one million and a half, and the number keeps on increasing. These patients often have an almost interminable time to wait, and I have no doubt that many of them are able to pay for attendance and medicine. This is very hard on the small local practitioners who work hard for small fees, and it tends, I fear, to the pauperisation of a very large number of the community” (Hansard, 1889). In 1890, a House of Lords Committee was set up, and a new association of GPs was formed to give evidence to it - the General Practitioners’ Union (Abel-Smith, 1964). GPs reported to the Committee how the concentration of hospitals in London had resulted in considerably reduced numbers of GPs working in the metropolis. The teaching hospitals, however, argued the importance of outpatient departments as a source of interesting cases. Many hospital doctors felt it essential that large numbers of ‘trivial’ cases should continue to attend in order that sufficient numbers of interesting cases for teaching purposes would be seen amongst them. The Committee’s report was not in favour of changing outpatient departments, other than to encourage each hospital to limit the numbers of patients seen who could afford to pay.

Many hospitals took steps to check the number of outpatients through attempts to test their means (Abel-Smith, 1964). However, the tension between the public’s use of casualty services and the vested interests of different groups within the medical profession and the hospital establishment continued into the twentieth century. The issue of hospital abuse continued to be actively discussed; for example, there were twelve letters to the *BMJ* on the subject during the first six months of 1907 (Abel-Smith, 1964).

Gradually the principle of referral to outpatient departments became established, and the role of the GP as gatekeeper emerged. However, the casualty ward proved impossible to organise entirely on the basis of referral, because of its core function of accepting emergencies and those in need of immediate attention.

Increased availability of general practice

The early years of the century saw general practitioner care becoming more widely available through an extension of the pre-payment schemes devised by the Friendly Societies. The National Health Insurance Act (1911) resulted in all employed workers below an agreed age being required to enrol into an approved society which allowed any member (but not their dependants or families) to register with a GP and receive free care, sickness benefit and pharmaceutical benefits. Those who were not employed had to continue to pay GPs' fees directly or through the Friendly Societies' insurance schemes. Although an increasing proportion of the population now had access to GP care, the Act did not improve access for the poor, the young or the elderly.

Despite the Act, the trend persisted for attendances at casualty/outpatient departments to grow, and GPs continued to complain that their ease of access and convenience discouraged people from registering with GPs. This led to attempts in the 1920s and 1930s to clarify the respective roles of general practice and casualty departments. Although hospitals agreed only to accept patients in cases of emergency unless they had been referred by a GP, this appears to have had little effect, and casualty departments continued to provide an open access service.

In 1931, the BMA produced a new report on 'the problem of the outpatient' (BMA, 1931) in response to the increasing numbers of self-referred patients. It argued that "reform of the outpatient department is urgently needed", and stated that there were few persons, except those of the pauper class, who had "any real excuse for not having established family doctor relations with some practitioner". It recommended that "only such treatment should be given at the department as cannot in the best interests of the patient be obtained elsewhere under the usual arrangements as between private practitioner and private patient, or under contract arrangements". The teaching hospitals, though, were concerned to maintain outpatients as a source of interesting teaching material, and none of the London teaching hospitals insisted on a doctor's letter of referral (Hospital, 1931).

The establishment of the NHS

Following the establishment of the National Health Service in 1948, disquiet about casualty services continued. They were largely neglected areas of hospital practice. Most were in sub-standard premises and were staffed by newly qualified doctors with negligible supervision (Ministry of Health, 1962; Nuffield Provincial Hospitals Trust, 1960). Medical supervision was very haphazard and in many hospitals was shared amongst the resident house surgeons and house physicians who were expected to work in casualty as part of their other responsibilities.

The incidence of accidents increased rapidly in the years following the war, reflecting the growing numbers of motor vehicles capable of greater speeds; the mechanisation of industry, agriculture and the home; growth in the working population; and increase in the amount of travel for private and business reasons (Accident Services Review Committee, 1961). This further strained the existing accident services which the Accident Services Review Committee (1961) described as being “designed to meet the requirements of two or three generations ago..... quite inadequate for dealing with the present and increasing burden of accidents”. In 1946 there were 14,000 deaths in England and Wales resulting from accidents, but by 1962 this figure had increased to 18,000, and road accidents were responsible for 36% of them (Accident Services Review Committee, 1965). It was estimated that by 1960 there were over 5 million people who received injuries that might require care at an A&E department.

As McKeown (1966) describes, in the nineteenth century “hospitals were founded in the most casual and sometimes irresponsible manner: by the provision of a will; by the whim of an eccentric benefactor; by the design of young physicians or surgeons to improve their prospects; by the wish of a small community to have its own hospital”. As a result, in 1948 the location, size and character of many hospitals and their casualty departments bore little relation to the needs of their local populations. It was not until the 1960s that the concept of the district general hospital emerged with centralised A&E services serving populations of 150,000 to 300,000 (Ministry of Health, 1962). This provided the framework for what was gradually implemented over the following years.

It was generally supposed that after 1948 and the formation of the NHS which brought universal access to GP services the role of casualty departments for all but emergencies would decline. However, this did not occur. In part, this reflected the resilience of traditional patterns of help-seeking, but also that general practice’s failure to gain the additional investment needed to match the extension of coverage from 40% to 100% of the population brought about

by the NHS Act. During the 1950s, a number of government and professional committees reported on problems of poor premises and facilities, lack of training and lack of support in general practice (Fry, 1988; Collings, 1950)

The NHS Act resulted in GPs' remuneration becoming capitation-based. This had the effect of relieving GPs of the financial concerns which had driven much of the debate about the use of A&E. Indeed, after 1948 GPs had a perverse incentive to encourage A&E use, or at least not to actively discourage it, as a means of reducing their own workload, particularly in relation to minor injury and emergency care. GP services tended to be more poorly developed in areas where the public's use of general practice had traditionally been less well established, such as inner city districts.

During the early 1960s, comprehensive reviews of casualty departments were published by the Nuffield Provincial Hospitals Trust (1960), the Accident Services Review Committee (1961), and the Ministry of Health (1962). The Nuffield Provincial Hospitals Trust (1960) considered that the unqualified use of the word 'casualty' rendered the term meaningless. Each hospital had its own perception of the arrangements that it wished to provide for casualties, rather than an understanding of what was needed. Many hospitals had not altered their arrangements since 1948, and the study identified an urgent need for hospital authorities to review, reorganise and improve casualty services. They recommended that all hospitals should denote their casualty facilities as being for the reception of 'urgent accident and emergency' cases. They argued that services should be based on well-defined catchment areas, and that this would involve the rationalisation of existing services with the closure of smaller, inadequately staffed and resourced units. This would enable adequate staffing and resources to provide, including 24-hour coverage by adequately trained doctors. They recommended that much closer co-operation was required between casualty services, GPs, occupational health and other community-based services. These recommendations were supported by the Accident Services Review Committee (1961) and the Platt Report (Ministry of Health, 1962).

A&E Medicine becomes a distinct specialty

Since the early twentieth century, when orthopaedic surgery had developed to a point where operative treatment of certain fractures was accepted as being beneficial over non-operative care (BMA, 1912), orthopaedic surgeons had established casualty departments within their sphere of interest. Prior to this, the medical profession had given little attention to accidents

despite their prevalence among members of the working class; Cooter (1993) suggested that this was because they offered few opportunities for developing lucrative private practice

The Platt Report supported the view of the British Orthopaedic Association that orthopaedic surgeons should continue to be given responsibility for casualty departments. It recommended that the term “accident and emergency” should replace “casualty” as a means of emphasising the purpose of departments and of deterring non-urgent cases from attending. It argued that the number of A&E departments should be greatly reduced, but that the level of staffing in the remaining units should be substantially raised. It suggested that each A&E department should have at least three consultant surgeons, but did not favour full-time casualty consultant posts. This reflected a belief that full-time A&E work would not be sufficiently satisfying for a consultant, together with the influence orthopaedic surgeons interested in the treatment of serious trauma may have had on the report’s recommendations (Wilson, 1980).

Senior casualty officers thought differently, concerned about the lack of career prospects in the wake of the recommendation against establishing full-time consultant posts. During the 1960s they began to work actively towards establishing the specialty of A&E medicine. In 1963 the BMA formed a subcommittee of the Central Consultants and Specialists’ Committee to represent senior casualty officers. In October 1967 the senior casualty officers formed the Casualty Surgeons Association to actively promote and develop the work of A&E departments, and to encourage the development of a career structure and training (Caro, 1972).

Problems relating to lack of clinical supervision and staffing levels in A&E departments were again highlighted by the Accident Services Review Committee in reports in 1961, 1965 and 1970. The Accident Services Review Committee was a professional body which brought together representatives of 17 organisations. The reports severely criticised the standards of A&E departments, and the 1970 report expressed considerable concern about the failure to implement the Platt Report’s recommendations and the “deteriorating” staffing situation. A&E departments were being criticised both in the lay and medical press, and in television documentaries (Durbin, 1972). The lack of job satisfaction, training and career structure, together with the hours of work were blamed for contributing to the difficulties in recruiting staff (O’Connor, 1972). During the early years of the NHS, casualty departments had been staffed by many doctors who came from overseas, but changes in UK immigration laws, in addition to changes in other countries’ emigration laws (particularly in parts of the Indian sub-continent), had reduced the availability of this pool of doctors (Durbin, 1972).

In 1971, the appointment of 32 consultants in A&E medicine on an experimental basis was advocated by the Joint Consultants Committee of the BMA in response to the arguments made by the Casualty Surgeons Association. This was opposed by the British Orthopaedic Association who in a resolution passed in April 1971 felt that what was needed were more orthopaedic surgeons who could be in charge of the whole accident service, including in-patient and out-patient trauma care. Others felt that such appointments should be “a sort of hospital general practitioner with sufficient knowledge to carry out rapid sorting of cases, train the juniors and hold the administrative cords together” (Aldridge, 1972; Denham, 1972). There was also encouragement for physicians to play a larger part in A&E departments given that more than half of admissions from A&E were to medical and paediatric wards (Bainbridge, 1972).

The Department of Health agreed to the creation of 30 to 40 consultant posts who would be “expert in triage and resuscitation”, to be reviewed after three to five years (Bainbridge, 1972). These posts proved to be a success, with most post holders drawn from the ranks of the Casualty Surgeons’ Association (Wilson, 1980), and in 1977 the first specialist training programmes in A&E medicine were established (Dallos, 1988). By 1979 there were about 140 A&E consultants, with 15 senior registrars taking part on specialist training programmes (Anon, 1979b).

The establishment of the specialty of A&E medicine represented recognition of the knowledge and skills that are vital to A&E services. These developments were reported as having made a tremendous impact on morale and the effectiveness of departments (Anon, 1979b). They also paralleled developments in the USA and other countries. In the USA, the first emergency medicine residency program was established in 1970 and board-certification exams were first held in 1980.

During the 1980s and 1990s the establishment of A&E medicine as an academic and clinical specialty was consolidated. In 1981 the Royal College of Surgeons and the Royal College of Physicians of Edinburgh established a Fellowship in A&E medicine, and in 1987 the Section of A&E Medicine was inaugurated at the Royal Society of Medicine (Dallos, 1988). Controversy about who should run departments, and in particular the misgivings held by some orthopaedic surgeons about the appointment of A&E consultants, gradually faded. As discussed elsewhere in this thesis, to some extent it has now been replaced by controversy over the role that GPs might play in departments.

Conclusion

Throughout much of their history, casualty/A&E departments have had an ambiguous role at the interface between hospital services and general practice. Concern about the 'inappropriate' use or abuse of A&E/casualty departments has been a persistent feature of this history, together with recurrent attempts to define the 'true' functions of the department. Arguments about demand and workload have reflected more deep-rooted suspicions about professional demarcation and status. From their earliest days casualty departments have been used by the public as primary care services, particularly in urban areas and where access to alternative primary care provision has been limited. Despite universal access to general practice and the change in name from casualty to A&E, as well as other attempts to discourage the public from using A&E, this pattern has persisted. The numbers of new patients attending A&E departments has continued to increase (see Chapter 2).

Recent years, have seen the status of A&E departments and A&E medicine slowly evolving, reflecting the impact of technological advances and the growing professionalisation of A&E medicine. In addition, it represents greater recognition of the pivotal position played by A&E departments as not only the 'shop window' but also the 'gate-keepers' to the hospital. Developing the quality of primary care in A&E may offer a means of further strengthening the gate-keeping role and improving the effectiveness of departments. However, the hostility and suspicion that has traditionally typified the relationship between casualty/A&E departments and GPs is likely to be a major impediment to such change. This review provides a historical context within which some of the professional and organisational obstacles to implementing such developments can be understood.

APPENDIX III

The NHS reforms: their impact on general practice

This appendix identifies NHS policy, structural and organisational factors that may have had an impact on the A&E primary care interface. Since the mid-1980s the NHS has undergone considerable transformation. This began with the Griffiths Report (1983) which resulted in greater emphasis on management and devolved decision making, in line with the prevailing political ideology of the day. The report suggested replacing what had been a system of health service management based on consensus through district management teams with a new system based on general management structures. Health authorities were instructed to appoint general managers at every level of the NHS, and new line management structures began to evolve. Clinical autonomy became the central focus of management changes, challenging the status of the professional groups.

By the end of the 1980s, a paradigm shift was again occurring in the way all public services were delivered. Market principles were introduced and the contract became the principal means of achieving increased efficiency, choice, quality and accountability (Lewis, 1997). Hierarchies and professional values were replaced by “quasi-markets” and managerial values (Le Grand & Bartlett, 1993). This reflected the ideology that health care should be closely linked to the market economy, and that market forces should regulate the quantity and quality of goods and services.

The NHS reforms implemented in 1991 increased the power of health service purchasers, and introduced the purchaser-provider split and the concept of fund-holding which led to radical changes in general practice. They were driven by several competing objectives, including health gain, empowerment, effectiveness and efficiency (Duggan, 1995; DoH 1989a; DoH 1989c). The purported aim was to increase the availability, accessibility and quality of care while restraining costs. Purchasers were enabled to specify more exactly the services they wanted, with explicit criteria against which service performance could be judged. Increasing pressure was placed on clinicians and purchasers to base their agreed patterns of care on evidence of effectiveness (NHSE, 1996b; NHSE, 1995c). In addition, the importance of closer integration between primary and secondary care was emphasised to enable the development of ‘seamless’ patient care, an effective balance between community and hospital

based care, better collaboration between health care professionals, and more effective use of resources (NHSME, 1991).

The reforms were ostensibly about improving consumer choice (DoH 1989a; DoH 1989c; DoH 1991), and increasing accountability and consumer pressure. They were part of a broader political move to make all public services more responsive to consumers' preferences and demands (DoH, 1989c), reflecting an increasing involvement of the consumer in all walks of life. Health care providers and purchasers came under increased pressure to monitor patient satisfaction and involve patients in making decisions about their own care (DoH, 1991). The white paper, *Promoting Better Health*, argued that primary care services should become more responsive to patients' needs and that competition, in part through making movement of patients between practices easier, would lead to service improvements (Secretaries of State, 1987).

Evidence that consumer choice has been improved by the reforms is lacking, and indeed in many instances it may have been limited as a result of the commissioning process. The reforms also distorted priorities across the health service. For example, the quality standard introduced by the Patients' Charter of five-minute waiting times for initial assessment in A&E departments was widely seen by A&E consultants as not only irrelevant, but as distorting departmental priorities at the expense of increased waiting times for treatment (Crimson & Francome, 1995). Cugnoni *et al* (1995) surveyed attenders at an A&E department in 1992 and again in 1994 and found that only 12-17% of attenders were aware of the charter standard for initial assessment.

The 1990 GP contract and the NHS reforms (DoH 1989a; DoH, 1989c) encouraged further development of GPs' managerial role within larger teams. The contract shifted the balance of GPs' reimbursement from mainly an allowance/capitation based system towards a greater weighting for capitation. Its intention was to give GPs a financial incentive to "put patients first" (DoH, 1989c).

The contract, however, had what was widely viewed as an over-emphasis on prevention (Morrell, 1989). It imposed clinical direction for which evidence regarding effectiveness was lacking, particularly in relation to health promotion clinics. GPs' remuneration became more closely linked to achieving Health of the Nation and other health promotion targets, and managing long term illness such as diabetes and asthma. Furthermore, these activities had to be provided without the provision of additional resources, and so tended to occur at the expense of traditional activities, in particular demand-led consultations, while more patients

were treated who previously might have been referred to outpatient clinics. Extra clinics resulted in more hours at work which put strain on home and personal relationships, and new pressures on the doctor-patient relationship (Myerson, 1993; Hannay *et al*, 1992). The high levels of demand, together with the pace and the extent of change appear to have resulted in GPs experiencing more stress (Chambers & Belcher, 1993). As a consequence of these changes, GPs' ability and willingness to respond to their patients' immediate needs may have declined, and this may have had an effect on demand at A&E departments. Patients wanting immediate medical treatment are likely to be increasingly difficult to accommodate as GP services become more planned and organised into booked appointments.

It was intended that the pressures of the market would result in "good" practices attracting more patients, and gaining financial rewards through increasing their size. However, there is little evidence that patients exert consumerist behaviour in choosing or changing their general practice (Thomas *et al*, 1995; Williams, 1994; Billingham & Whitfield, 1993; Leavey *et al*, 1989). They often lack sufficient information to enable them to exert consumer choice. Salisbury (1989) found that only about one tenth of patients who change practice do so to obtain a better service. Most people only change doctor when their circumstances change, and only 5% do so because they are dissatisfied with the service that they have received (Ritchie *et al*, 1981). In part this reflects that for most people their contact with their GP is infrequent and spasmodic, while for those with long term illnesses the relationship of trust and confidence which has been established is a powerful motivation to remain with the same GP (Leavey *et al*, 1989). The geographical distribution of GPs, practice boundaries and ceilings on list sizes also places constraints on choice. However, it is possible that consumerist behaviour has increased as knowledge of the policy changes that have occurred since 1990 became more widely known and understood. In some areas general practices have encouraged this process through starting to advertise their services and so raise their local profile.

The NHS reforms and the contract have been widely blamed because of their negative impact on morale in general practice. Since the early 1990s, the number and quality of applicants for training posts and partnerships has been falling (McBride & Metcalfe, 1995). The contract antagonised general practitioners both because of the way it was imposed, and because of its contentious content (RCGP, 1996). It left many GPs feeling insecure, confused, frustrated or demoralised with reduced levels of job satisfaction and poorer mental health (Leese & Bosanquet, 1996; McBride & Metcalfe, 1995; Myerson, 1993; Sutherland & Cooper, 1992; Bain, 1991). Many GPs experienced a loss of autonomy and found themselves having to adopt more bureaucratic managerial roles (Chambers & Belcher, 1993). It threatened traditional values

and satisfactions associated with general practice (Fugelli & Heath, 1996; Myerson, 1993). For example, Leese and Bosanquet (1996) found that over half of 340 GPs surveyed in 1993 from six FHSA areas in England were opposed or strongly opposed to the 1990 contract and fundholding. As McBride and Metcalfe (1995) stated, “a demotivated profession cannot deliver the effective services that patients expect”. The new requirements and the changes in capitation pay arrangements which encourage larger list sizes both militate against time being available for the GP, a factor which has been identified as contributing to stress (Howie *et al*, 1992).

Faced with the extent and rapidity of recent change within the NHS, changing roles and boundaries at the primary-secondary care interface, and the diversity of models of care that are emerging, professional bodies like the General Medical Services Committee of the BMA have been trying to define the core components of general practice. The Royal College of General Practitioners has recently re-emphasised the central importance of the clinical competencies of GPs and their commitment to longitudinal, personal care (RCGP, 1996)

While the overall costs and benefits of the NHS reforms are unclear (Robinson & Le Grand, 1994), the emphasis on improving the overall effectiveness and efficiency of care has led to GPs and nurses undertaking many activities that have traditionally been performed by hospital doctors with blurring of the boundaries between hospital and community-based services (Moss & McNichol 1995; Glennerster *et al*, 1994). Fundholding and locality purchasing arrangements have resulted in the development of new practice-based services that would previously have been provided only in hospital settings (Black *et al*, 1994; Graffy & Williams, 1994).

Fundholding appears to have achieved reduced outpatient appointment waiting times and improved discharge information and access to investigations, but it appears not to have changed the way doctors practice (Audit Commission, 1996b). Concerns have been raised that the time and creative energy put into purchasing is at the expense of core activities in general practice (Pratt, 1997), and some A&E consultants perceive that fundholders increasingly use A&E services for interventions (such as x-rays) that they would otherwise have to pay for (Crimson & Francome, 1995). Fundholding appears to have achieved few efficiency savings, largely because of high transaction and management costs incurred by practices as well as by hospital and community trusts (Davies, 1995). There is also evidence that fundholding has had an impact both locally and regionally on widening inequalities in

access to primary care and secondary care services because fundholding practices seem to have been funded more generously than non-fundholders (Dixon *et al*, 1994).

Conclusion

In conclusion, it seems likely that the NHS reforms have had an impact on the A&E/primary care interface, but the scale of this effect on the demand for and supply of A&E services is obscure. A&E attendance rates continued to increase during the late 1980s and 1990s, but the extent to which this was a consequence of the reforms or pre-existing trends is debatable. As discussed in this appendix and in Chapter 1, there is evidence that the changes that have occurred in general practice as a result of the reforms may have eroded the personal-doctor relationship and be leading to less accessible care and decreased patient satisfaction (Keeley, 1991). This might be leading to increased demand for A&E care, as will be discussed in Appendix IV.

On the other hand, the reforms have led more GPs to offer a broader range of services, often from improved premises (Hannay *et al*, 1992). For example, the proportion of practices in Sheffield offering minor surgery clinics doubled from 10% to 21% between April 1990 and April 1991. This may be reducing the demand on A&E services, although the impact is only likely to have been slight given that most of these new services applied to planned care (such as health promotion clinics) rather than immediate needs.

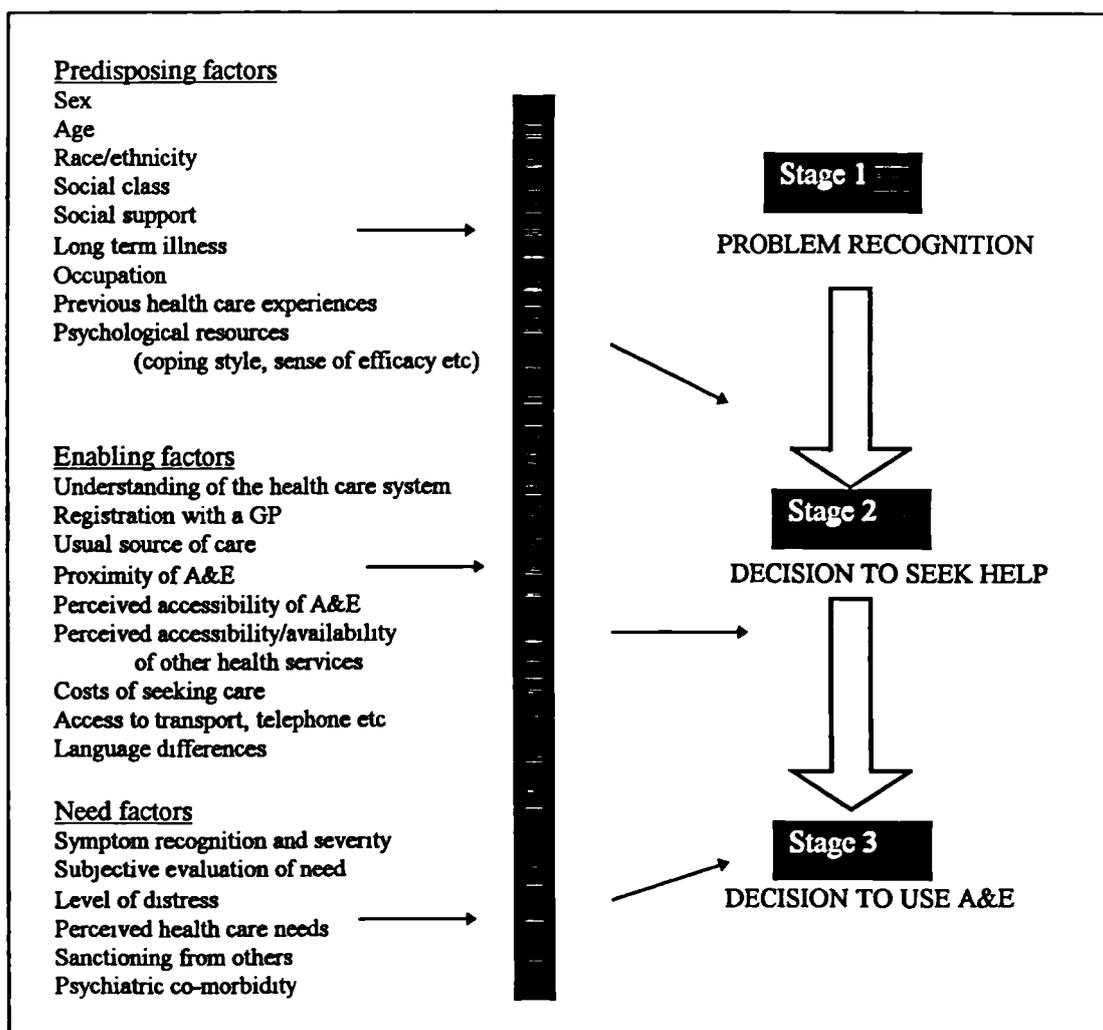
The purchaser/provider split introduced by the NHS reforms, and the increasing interest being given to effective management of the A&E/primary care interface has created the impetus for testing new models of care. In October 1996, the white paper *Primary Care: the Future. Choice and Opportunity* (Secretary of State for Health, 1996) was launched and the subsequent Act was passed in April 1997. This was designed to further empower and resource primary care, and was intended as a response to the rapid changes which had been occurring in the development of the internal market, particularly in respect of GP fundholding and commissioning. Its aim was to create the capability for the NHS to sanction and evaluate experiments in primary care that are designed to improve cost effectiveness and quality, and to create opportunities for implementing innovative arrangements aimed at meeting specific needs. The impact such pilots have on the A&E/primary care interface should be the subject of future research.

APPENDIX IV

Why patients use A&E: predisposing factors, enabling factors and need factors

This appendix provides a review of the considerable literature relating to why patients use A&E. The literature spans many years, and much of it relates to studies undertaken outside the UK, particularly from the USA. Padgett and Brodsky's (1992) three-stage model of the determinants of A&E use is a framework for considering the many factors which have been found to influence demand. The three stages of the model are problem recognition, decision to seek help, and decision to use A&E, each of which may be influenced by predisposing factors, enabling factors and need factors (Figure IV.1).

Figure IV.1: Three-stage model of determinants of A&E use
(modified from Padgett and Brodsky, 1992)



IV.1 Predisposing factors

Predisposing factors relate to the characteristics of the patient in terms of physical, psychological and social attributes. Most studies have found that males constitute more than half of A&E attenders, and that children under the age of 15 years contribute at least a third.

There are high rates of demand from the elderly. Studies from the UK and USA have consistently suggested that members of the elderly population have greater needs for A&E care than other age groups (Eagle *et al*, 1993; Wofford *et al*, 1993, Castillo & Pousada, 1993; Wood, 1992; Chambers & Johnson, 1986; Dove & Dave, 1986; Lowenstein *et al*, 1986; Wolcott, 1979). Very few elderly persons are perceived as attending with non-urgent needs, and a considerable proportion are admitted (Currie *et al*, 1984). Wass and Zoltie (1996) analysed the 6.9% increase in total attendances that had occurred in one A&E department between 1990 and 1994 and found that this was in large part explained by the 21% increase in attendance rates for patients aged 71-80 and 30% increase in those aged 81 years and older. Given current demographic trends (OPCS, 1993), it appears likely that there will be a continuing increase in the demand for A&E care from elderly members of the population over the next 30-40 years.

On the other hand, high rates of 'inappropriate' use are reported in children (Oberlander *et al*, 1993; Prince and Worth, 1992; Bowling *et al*, 1987). Parents naturally tend to be anxious about their children's symptoms and are more likely than other groups to err on the safe side (Kai, 1996a; Calnan 1983b).

Information about social class has tended to be conflicting with some studies finding differences between rates of attendance according to social class and others not. In part this is because variables such as social class, distance from hospital and need for care are often confounded as in many inner city areas, socially deprived populations tend to be housed within the vicinity of hospitals (Davidson, 1978; Ingram *et al*, 1978, Fairley & Hewett, 1969; Weinerman *et al*, 1966). Marsh and Channing (1987) found that within one practice population, A&E attendances were about twice as high throughout childhood for children living on a socio-economically deprived council estate compared to the rest of the practice population, but McKee *et al* (1990) found that within a district socio-economic variation between electoral wards was not significantly associated with attendance rates. Milner *et al* (1988) estimated that deprivation is responsible for as much as a third of the difference in rates of attendance between districts.

The homeless may also have particular difficulties in registering with GPs and gaining access to adequate primary care services (Little & Watson, 1996), and may make increased use of A&E for primary care needs (Little & Watson, 1996; Powell, 1987; Beckett, 1985, Davison *et al*, 1983). In 1996, Shelter (a pressure group for the homeless) published a report based on analysis of 1873 homeless and 28420 housed people who visited the A&E department at University College Hospital. Only 63% of the homeless were registered with a GP compared to 97% of the housed.

Social isolation appears to influence the propensity to turn to medical facilities for a broad range of psycho-social problems, and perceived loneliness seems to be one of the key factors leading to high rates of A&E use. Salkovskis *et al* (1990) in a British study found that over a third of A&E attenders (excluding those who were intoxicated or had any overt psychiatric problem) scored as 'cases' for anxiety and/or depression using the GHQ-28 and HAD scales; the rates remained at similar levels at follow-up one month later. They concluded that a worried or depressed patient is likely to have a lower threshold for seeking A&E care than others. While somatic symptoms may be the cause of pain or discomfort, stress amplifies the distress that is caused and adds urgency to seeking help (Mechanic *et al*, 1982). Depression, anger, disappointment and other emotional states may all affect patients' decision-making.

The relation between anxiety/depression, perception of symptoms and demand for primary care has been recognised for many years (Banks *et al*, 1975). Patients often seek care for the sympathy, reassurance and peace of mind provided (Llewellyn-Thomas *et al*, 1992). Warwick and Salkovskis (1985) argued that the decision to seek care reflects the inconvenience, pain and handicap caused by a complaint together with the worry engendered by the complaint, particularly fears concerning potential threats arising from not having sought medical care. Lack of social support may make it difficult for patients to 'wait and see' (Bell *et al*, 1991; Bell *et al*, 1990, Salkovskis *et al*, 1990; Mestitz, 1957). Virji (1990) studied patients attending one general practice without an appointment. He found that compared to those who had an appointment, there were statistically significant associations with social support problems, loneliness, and severe marital problems.

Koonman *et al* (1989) reported that between 2% and 60% of ED patients in the USA presenting with somatic symptoms have underlying psychiatric morbidity. Satin (1972) found that 75% of ED patients had psychosocial or environmental problems, but that only 16% were recognised. Olsson *et al* (1986) found that 38% of patients attending A&E who were not admitted to hospital identified psycho-social needs when interviewed 3-5 days after their visit,

but such needs had only been identified by ED staff in 5% of patients. Even when psycho-social problems are recognised, therapeutic options and follow-up are seldom discussed with the patient (Hansagi *et al*, 1990) Olsson *et al* (1986) found that 15% of ED patients thought contact with a social worker would have been helpful.

Although frequent attenders have not been separately studied in the UK, in other health care systems frequent A&E attenders have been found to be more likely to present with non-urgent problems than other patients (Jacoby & Jones, 1982, Mannon, 1976), and have been shown to suffer from a range of medical disorders, as well as having psycho-social problems, drug abuse and financial problems (Andren, 1988; Olsson *et al*, 1986; Andren & Rosenqvist, 1985; Hansagi *et al* 1985; Purdie *et al*, 1981; Magnusson, 1980a; Ullman *et al*, 1975). Frequent attenders tend to include those living alone, lacking social support, the mentally ill, the drug- and alcohol-dependent, and the poor and unemployed (Hu, 1992; Padgett & Struening, 1991; Andren & Rosenqvist, 1987b; Andren & Rosenqvist, 1985; Bohland, 1984; Purdie *et al*, 1981; Ullman *et al*, 1975) Powers *et al* (1983) demonstrated a correlation between the number of life events reported over the previous year and attendance rates at an ED. It is unclear the extent to which these factors apply in the UK.

IV.2 Enabling Factors

Enabling factors influence the patient's perception of the availability and accessibility of different health care providers that are available. Using A&E involves costs for patients, such as travel and time costs for the patient and those accompanying them. Convenience, familiarity, and low travel costs may all act as incentives to using A&E in preference to other potential providers. Patients will tend to utilise the facility that they believe will provide them with the greatest overall benefits at the lowest cost (Stratmann & Ullman, 1975).

Distance, whether based on actual measurement or travelling time, influences accessibility and in all health care systems is one of the most important determinants affecting use of services (Hull *et al*, 1997; Ward *et al*, 1996; Robson, 1995; Campbell, 1994; Beland *et al*, 1990; McKee *et al* 1990; Bentzen *et al*, 1987; Magnusson 1980b; Parkin, 1979; Roghmann & Zastonyy, 1979; Ingram *et al*, 1978; Russell, 1977; Ullman *et al*, 1975; Zola, 1973; Dixon & Morris, 1971, Morrell *et al*, 1970; Jehlik & McNamara, 1952). Russell (1977) presents one of the few attempts to mathematically model patients' decision-making in choice of care for minor injury. The study was based on analysis of interview data and data retrieved from medical records for 155 patients who had attended three A&E departments and 191 who had

attended general practice in the same districts served by these departments. Data on 62 variables was common to both samples. Logistic discrimination analysis identified only four 'objective' variables as influencing the patient's choice - distance from the hospital, distance from the GP, age, and diagnosis. Other factors appeared to have little effect.

In some areas, particularly in socio-economically deprived neighbourhoods, A&E departments may be more accessible than other primary health care services, particularly as GP services are least likely to be located in areas of greatest social deprivation (Boyle & Smaje, 1993T; omlinson, 1992; Knox, 1979). They are more likely to be used for non-trauma related needs than A&E departments situated in suburban and provincial areas (Calnan, 1984; Inwald, 1980; Fairley & Hewett, 1969). Magnusson (1980b) showed that ED utilisation was inversely proportional to the travelling distance to the hospital, and that this explained as much as 68% of the variation in attendance rates between 20 areas around Stockholm.

When the A&E department is more distant, the cost of attending A&E is likely to be greater in terms of time and travel; the problem will need to be perceived as having greater severity and/or the benefits of attending A&E will need to be valued as greater to make attendance worthwhile. Prince and Worth (1992) found that those who lived closer (less than 4 miles) from A&E were almost 50% more likely to use it for 'inappropriate' reasons than those living further way. Similarly, Inwald (1980) found that patients were twice as likely to self-refer to A&E in an urban district than in a rural area, and those in the urban area were more than twice as likely to attend with a 'non-emergency'. Peppiatt (1980) found that GPs who worked within 5 miles of an A&E department also expected their patients to attend A&E significantly more often than did doctors from other practices.

In urban areas, commuters and others with no immediate access to their usual primary care services, patients who are not registered with a GP, and the homeless (Shelter, 1996) are also likely to attend A&E. For example, while a study in Northampton found that only 5.7% of new A&E attenders were resident outside the district (Bryce & Houghton, 1993), at the University College Hospital in central London the proportion who were non-local residents was 48% (Owens *et al*, 1993) reflecting the large commuting, tourist and homeless populations served by the hospital.

Those whose first language is not English or who lack experience or knowledge of the organisation and provision of GP services may encounter particular difficulties in understanding and using appointment systems and out of hours services, and so may make disproportionate use of A&E (Watson, 1984). They are more likely to attend open-access

services and so may find the accessibility of A&E attractive. Members of ethnic minority groups may have lower levels of satisfaction with primary care services and so may make greater use of A&E, although there is little direct evidence of use of A&E services by Black and minority ethnic groups (Dale, 1995; Free, 1997; HEA, 1994). There is evidence that Asian patients report greater difficulty gaining access to their GP than do non-Asians, and have greater dislike of telephone consultations and deputising services (Rashid & Jagger, 1992). However, language difficulties are also a major problem in A&E work, particularly in areas with large ethnic or tourist populations (Leman, 1997). In the USA, racial differences have been established in the use of ERs which appear to be independent of economic and educational factors (White-Means & Thornton MC, 1989; Miners *et al*, 1978).

The accessibility of GP care and the ways in which GPs and their staff refer patients to A&E appear to influence patients' perceptions about when attendance at A&E is necessary (Chambers & Johnson, 1986). GP appointment systems have become the norm in the UK, and together with surgery waiting times, telephone access to GPs and out of hours care are frequently mentioned sources of patient dissatisfaction and reasons for attending A&E (Consumers' Association, 1993; Allen *et al*, 1988; Patients' Association, 1972). Many patients report limited availability of GP appointments as being a reason for deciding to attend A&E. Ritchie *et al* (1981) found that only 45% of adults reported that they could usually get an appointment within 24 hours of an urgent request, and Cartwright and Anderson (1981) reported a figure of 63%. Holohan *et al* (1975) found that 57% of 184 GPs surveyed felt that the increasing use of A&E departments reflected aspects of practice organisation, such as appointment systems and reception arrangements which were making GPs more inaccessible.

Accessibility of services is a major factor influencing patients' choice of general practice (Billinghurst & Whitfield, 1993; Salisbury, 1989; Williamson, 1989) and use of its services (Haynes & Bentham, 1982; Parkin, 1979). However, studies that have looked at different organisational arrangements in general practice have failed to demonstrate an association between attributes such as appointment systems, out of hours arrangements, practice size and use of A&E (Hull *et al*, 1997; Campbell, 1994). Russell (1977) using logistic discriminant techniques failed to identify a correlation between A&E attendance and either GP appointment systems or the use of deputising services out of hours. Other studies have also found that the use of deputising services does not appear to affect A&E workload (Watson *et al*, 1979; Williams, 1973). McKee *et al* (1990) found that GP list size had no significant effect on A&E attendance rates, while distance from the department accounted for 52% of the variation when socio-demographic variables were controlled for. More recently, Hull *et al* (1997)

attempted to correlate general practice characteristics associated with good quality primary care (such as immunisation rates, and practice management/structure) with adult A&E attendance. While distance and socio-demographic characteristics were strongly correlated with attendance rates, there was no relationship with practice characteristics. In Denmark, no change in the pattern of attendance at A&E could be shown in the aftermath of a reorganisation of general practice (Rasmussen *et al* 1994).

There has been a lack of research into the gate-keeping role that general practice receptionists play. Receptionists in all types of organisations have boundary controlling functions. For the patient, the receptionist may be the greatest obstacle to gaining access to the GP because of their control of the appointment system, the waiting room, and the urgency of requests for home visits (Drury & Kuenssberg, 1970). Arber and Sawyer (1985) interviewed over 1000 adults about their experiences of the reception process in general practice. Their results suggested that as practices become larger and more complex receptionists apply more rigid rules, leading to patients expressing greater hostility towards receptionists, and parents with dependent young children and young adults expressed more antagonism and were more likely to perceive the receptionist as a gate-keeper with whom they had to negotiate to see a doctor for acute care for themselves or their children. Over-protective receptionists may discourage patients from consulting with a GP, and thereby deflect needs elsewhere, such as to A&E departments.

Williams *et al* (1985) studied four urban areas and in each found that during out of hours periods around 40% of first contacts occurred with A&E departments rather than with general medical services. Cartwright and Anderson (1981) found that out of hours cover that is organised within the practice is the most popular option with patients, followed by cover from other practices, and least popular was cover by deputising services. On the other hand, Dixon and Williams (1988) found that most (over 80%) patients are satisfied by all aspects of emergency consultations with deputising services. There is little evidence that GPs' use of deputising services has an impact on A&E services (Russell, 1977; Williams *et al*, 1973), and A&E workload does not appear to have increased more in areas with established use of deputising services than in other areas (Williams *et al*, 1973).

While for some populations, such as the homeless, the use of A&E has been reduced by improving the availability of community-based primary health care (Powell, 1987), Campbell (1994) found no evidence that A&E self referral rates were influenced by the availability of GP appointments. He surveyed patients at 17 practices in West Lothian and found that

patients generally perceived primary care to be available for urgent problems, regardless of the availability of appointments. Jankowski and Mandalia (1993) compared A&E attendances at an inner city A&E department with those at a similar sized department outside London. They did not find access to primary care to be a major factor in determining A&E attendance. On the other hand, levels of 'inappropriate' or primary care attendance appear to be particularly high at weekends when access to community-based primary care is likely to be reduced (Bolton & Storrie, 1991).

Frequent A&E attendance may reflect problems, such as limited access to primary care, elsewhere in the health service (Malone, 1995). Even in countries which have less well developed primary care services than in the UK, only a small proportion of ED attenders appear to be heavy users. Such patients, though, may constitute a substantial proportion of the total workload (Baker *et al*, 1994; Hansagi *et al*, 1991; Schneider & Dove, 1983; Magnusson, 1980a; Ullman *et al*, 1975).

In the UK, it appears that using A&E as the usual source of primary care accounts for only a small proportion of demand. There could, though, be a larger group who are transient and make visits to multiple A&E departments, or who make infrequent use of A&E but still see it as their regular source of care. Bell *et al* (1991) found an association between non-registration with a GP and psychiatric morbidity among A&E attenders. However, people often choose to attend A&E despite the availability of general practice services.

Cartwright and Marshall (1965) reported that 90% of GPs surveyed considered that with adequate equipment and sufficient time the treatment of minor trauma was within the scope of general practice, but it appears that over the years GPs have become increasingly reluctant to manage acute minor injuries and to undertake technical procedures, such as incision and drainage of abscesses (Whitfield & Bucks, 1988; Honigsbaum, 1985a; Peppiatt, 1980; Cartwright & Anderson, 1981). A recent survey found that 95% of GPs in North Staffordshire would offer to treat a child following an accident if telephoned (Carter & Jones, 1993)

There is some evidence to suggest that patients underestimate the willingness of their GPs to treat minor trauma (Peppiatt, 1980; Holohan *et al*, 1975). Davies (1986), for example, found that despite patients being registered with a general practice that carried out most of the procedures for minor trauma, many patients felt that they would receive speedier or more convenient care from the A&E department. Steele *et al* (1994) studied accidents occurring in a population registered with three rural and three urban practices. While 91% of those

registered with urban practices and sought care following an accident presented initially to A&E, this was true of only 44% of those registered with rural practices, reflecting the more general tendency of urban populations to use A&E departments. The time and travel costs involved in attending A&E are likely to be much greater for rural populations.

The evidence from these studies suggests that despite a number of aspects of the organisation of general practice (such as appointment systems, deputising services, size of practice) being unpopular with patients, their impact on the demand for A&E services is unclear. The lack of effective control groups, in addition to differences in study design, the populations studied and the time when the studies were undertaken, complicates the interpretation of these studies.

IV.3 Need factors

The majority of symptoms people experience do not lead to a consultation with any health care professional. Studies of decision-making in relation to the use of general practice indicate that only between 3% (Banks *et al*, 1975) and 20% (Wadsworth *et al*, 1971) of symptoms result in a consultation. Most A&E attenders do not appear to perceive their problem as being of high urgency (Fitzgerald *et al*, 1986).

There are widely held beliefs in the lay population that A&E care is more appropriate than general practice in certain circumstances, such as for minor injuries (Calnan, 1983b). For many types of non-urgent problem, on-going continuity of care from a GP may not be perceived as required, and may be rated as being less important than other factors, such as ease of accessibility or availability. Patients vary in their knowledge and views about the services that GPs and A&E departments provide, how to contact a GP in an emergency, and the most appropriate service to use in an emergency, particularly during out of hours periods (North Beds 500 Project, 1995; Farrow *et al*, 1988; Singh, 1988; Davies, 1986; Kljakovic *et al*, 1981; Holohan *et al*, 1975).

Symptoms that persist beyond the 'normal' period may be perceived as a 'problem', and the decision to seek care is made to find out what is wrong, as well as to alleviate the problem (Calnan, 1983b). Judgements about the need to seek care are often based on the failure of 'common-sense knowledge' to make sense of the character of signs and symptoms experienced. Dunnell and Cartwright (1972) found examples of symptoms (such as depression, persistent headache, and boils) where lay people were less likely to seek care than doctors thought suitable, while Farrow *et al* (1988) found a tendency for the public to "over-react" particularly to symptom descriptions that described bleeding. Holohan *et al* (1975)

found that patients with minor injuries tended to exaggerate the likelihood of being referred by their GP to A&E. Farmer and Chambers (1982) in their study of patients attending six London A&E departments asked what patients would have done if the service at the department was not available: 59% to 72% said they would have gone to another A&E department, 10% to 26% would have gone to their GP, while only 3-9% said they would have gone home.

Help-seeking may be triggered by many factors: pain and anxiety, the occurrence of an interpersonal crisis, the perceived interference with personal or social relations, interference with job or leisure activities, sanctioning by another individual, the perceived significance of symptoms (such as, perceived seriousness and persistence), and accessibility of care (Mechanic, 1992; Zola, 1973). Perceptions of the urgency of seeking care and the type of care that is needed are drawn from a wide range of sources: friends, relatives, the media, prior experiences. Seeking reassurance from A&E departments may reflect a break down in traditional family support and lay networks that in the past might have been provided by the extended family and neighbours.

The perception about whether the problem will wait or needs to be seen immediately depends on both its context and nature. Alonzo (1980) argued that the response to what is perceived as an emerging health crisis is to devise a strategy to control the course of the illness through reducing, or alleviating symptoms (Alonzo, 1980). A crisis occurs when an effective coping strategy cannot be devised.

Redelmeier *et al* (1993) reviewed recent findings from research on judgement and decision making and found that patients often have difficulty resolving inconsistencies between emotions and rationality. This may be especially so for parents of young children and infants, and the need to share responsibility with others could become irresistible (Kai, 1996a; Bedford *et al*, 1992). There may be particular anxieties about specific symptoms such as fever and headache (Kai, 1996a). Balint (1964) suggested that in at least a third of presentations of a child's illness by the mother, the mother is seeking social support, and trying to gain the interest and empathy of the doctor. There is evidence that the anxiety they feel for the apparent vulnerability of their children is sometimes brushed aside by GPs and their receptionists as clinically unjustifiable with the result that mothers are left feeling incompetent (Williamson, 1989).

Only about 3-8% of self-referred people attending A&E will have tried to contact their GP beforehand (Singh 1988; Davison *et al*, 1983), and Nguyen-Van-Tam and Baker (1992)

suggested that these people are just as likely to be admitted as those who are referred. Jones and McGowan (1989) identified that patients who referred themselves to A&E for another opinion after consulting their GP were more likely to be admitted than other patients, and it appeared that patients from a small number of practices accounted for a large proportion of these cases.

The likelihood of having tried to contact the GP is greatest when the decision to seek care is made at home, but declines when the decision-maker is a friend or neighbour, and particularly when the police, bystanders, employers or teachers are involved in the decision to seek care (Calnan, 1984). This finding could, though, be confounded by differences in the seriousness of conditions between those that occur at home and those when the patient is away from home. Authority figures, in particular, are likely to err on the safe side because of moral, legal and economic pressures (Calnan, 1983a).

Morgan *et al* (1974) described how the “lay referral system” exerts influence on the decision to attend hospital, and found that 23% of referrals to A&E came from the workplace, 6% from school, and 6% from the street. Owens *et al* (1993) reported 7.5% of referrals came from the workplace, 3.4% by the police, and 9.3% from GPs. Bellavia and Brown (1991) found that 34% of ambulant patients who attended during weekday office hours received their injuries at work, and 13% came to the department because they had been sent from work. They questioned whether occupational health professionals understood the role of A&E.

Most occupational health services are only available during normal work hours; outside these hours, A&E departments often fulfil the role of an occupational health service. This often includes meeting the needs of hospital staff, for whom occupational health care tends to be limited to office hours at best. Indeed, it appears that hospital staff attend A&E more frequently than the rest of the workforce, and that most of the excess was accounted for by nursing staff (Mann, 1996). Work-related incidents, most of which were minor, accounted for 40% of the attendances made by nursing staff, four times the proportion recorded for the general public. The remainder were non-work related, mostly for non-urgent needs.

Patients’ attitudes and expectations of health care are in large part based on previous experiences with health services (Magnusson, 1980a). For example, using a hospital for one type of service increases the likelihood of its use for other unrelated services, presumably because of increased familiarity and confidence with the hospital as a whole (Roghmann & Zastonyy, 1979). Care previously received from an A&E department may influence individual and family patterns of self referral to A&E. In an American study, Jones *et al*

(1985) found that while 56% of those who had used an ED within the last year reported having attended an ED as a child, this was only true of 30% of non-users suggesting that early exposure to ED has an influence on later health-seeking behaviour. Furthermore, males had experienced more frequent attendance to an ED as children than had females, largely because of a greater prevalence of minor injuries. However, studies that have tried to compare patients' expectations with the care and investigations actually received in A&E show relatively poor correlations (Walsh, 1993a).

This suggests that health care professionals may have an important role in influencing long-term help seeking behaviour. High recall rates to A&E may encourage further use and dependency. Patients who anticipate referral may attend A&E directly (Holohan *et al*, 1975), and it has been suggested that GPs who refer most frequently to A&E also have the most self-referring patients (Anon, 1979). Morgan *et al* (1974) reported that many patients felt that the haste with which the A&E staff performed investigations and x-rays in itself justified their decision to attend, even if the results of the investigations were normal.

Very few studies have compared A&E users with non-users (or those using general practice) and so the extent to which the characteristics of these populations differ is poorly understood. However, it appears that few patients turn to A&E for all their primary care needs (Green & Dale, 1992a). For most patients, using A&E is a rational decision based on lay perceptions of health care needs (such as when they anticipate the need for an x-ray or other intervention that is unable in general practice) and their circumstances at the time (Murphy, 1993).

IV.4 Summary

Table IV.1 gives a summary of findings relating to factors that influence patients' choice of when to attend A&E. Studies vary in their settings, sampling frames (e.g. all patients, adult patients, children, ambulant patients, non-urgent patients), and the methods used to elicit and analyse data. This complicates the interpretation and comparison of findings. The decision to attend A&E is clearly multi-factorial and a broad range of determinants may be influential. Overall, however, the most significant factors in determining choice appear to be perceptions of urgency and need for A&E care, and the relative accessibility and availability of A&E services compared to general practice.

Table IV.1: Review of UK studies that describe factors given by patients that influenced their decision to attend A&E

Studies included:

1. Calnan, 1984	2. Patel, 1971	3. Bowling <i>et al</i> , 1987	4. Davies 1986	5. Singh, 1988
6. Morgan <i>et al</i> 1974	7. Wood & Cliff 1986	8. Russel, 1977	9. Farmer & Chambers, 1982	10. Holohan <i>et al</i> , 1975
11. Horder, 1988	12. Myers, 1982	13. Fisher, 1981	14. Davison <i>et al</i> , 1983	15. Campbell, 1994
16. Dennis, 1984	17. Free <i>et al</i> , 1997	18. Griffiths <i>et al</i> , 1967	19. Calnan, 1983b	20. Cartwright & Anderson, 1981
21. Morrison, 1992	22. Walsh, 1995	23. Green & Dale, 1992	24. Ward <i>et al</i> , 1996	25. Wilkinson <i>et al</i> , 1977
26. Anon, 1979	27. Prince & Worth, 1992	28. Watson, 1984	29. Lewis & Bradbury, 1981	30. O'Flanagan, 1976
31. Wood & Cliff, 1986	32. Inwald, 1980	33. Pease, 1971	34. Stewart <i>et al</i> , 1989	35. Murphy, 1993
36. Fry, 1960	37. Crombie, 1959	38. Blackwell, 1962	39. Wong & Brazier, 1986	

Factors identified as influencing demand;

in bold print, for studies that reported quantitative data, % of patients attending A&E who gave the given determinant as their reason for so doing

predisposing factors

occupation (if working daytime shifts, or for an hourly wage, may be unable to take time off to see doctor) **38**

ethnicity/cultural/language differences **16,17,28**

always go to hospital/prefer hospital **34:12%;39:5%**

being away from home/the distance from home/GP **1:3:4%;8:9:10-20%,12:15:18:37%;38**

preferring an anonymous service **10**

low expectations of GP **7:19,22;39:2%**

already under the care of the hospital as an outpatient **3:14%;14:18:7%;34:10%**

confidence in A&E/hospital care **11:33;34:16%;38:39:5%**

dissatisfied with GP **3:18%;9:3:5%;23:7%;24:4%;39:1%**

need factors

beliefs about the need for A&E treatment **3:22%;4:52%;5:37%;6:27%;8:10;12:47%;14:36%;19:21;22:17%;23:25%;24:27%;25:32%;27:25%;31:42%;39:45%**

anticipating an x-ray **5:24%;12;13:47%;21:35:46%**

anticipating stitches, dressing, strapping etc **13;19;35:27%**

specific types of injury (eg bleeding wounds) **1**

concern about children **1**

anticipating GP referral to A&E **6:9%;7;9:23% 33%;22:15%;23:7%;31:34:21%**

dissatisfaction with the advice or treatment given on this occasion and seeking another opinion **2,3,4;12:5%;14;18:6%;21;23;24:10%;27:5%;32:6-7%;33;34:6%**

difficulties of gaining hospital appointments lead to A&E being used as 'backdoor' to the hospital **26**

advised to attend by A&E staff over the phone **3**

advised to attend by GP or staff **2:3%;3:6%;12;14;19**

advised to attend by work, school or someone else **1;5:7%;7;9:10-18%;12:9%;21;25:11%;27:9%;31:21%;38**

enabling factors

24 hour availability of A&E 6 32%; 7: 10; 25; 31; 33; 34: 4%

unavailability of/inability to contact GP 2 8%; 3: 27%; 4: 31%; 5: 18%; 9 17-35%; 13: 26%; 14: 33%; 18: 15%; 22: 9%; 23: 21%; 27: 3%; 32 14-19%; 33; 34: 6%; 39 8%

unavailability of GPs in out of hours periods, did not want to see deputising doctor 2 30%; 34: 6%

anticipated wait for an appointment with their GP 1; 2: 15%; 3; 6; 7; 10; 12: 21%; 13: 11%; 15; 22: 15%; 23: 15%; 24: 7%; 27: 2%; 32: 3%; 33; 34 10%

more convenient/easier/quicker/less costly to go to A&E than GP 4: 71%; 5: 7%; 6: 45%; 11; 18: 27%; 21; 23: 14%; 24: 22%; 25 20%; 27: 22%; 31; 34: 10%; 38

the social context and time of the day 1; 3; 6; 10

not registered with a local GP 9 31%-65%; 11; 12: 3%; 14; 18; 32: 1-12%; 22 21%; 25; 38; 39: 10%

the amount of social support available 1; 6

unavailability of usual GP/GP on holiday and not willing to see other doctors in the practice 7; 31; 33

GPs unwillingness to treat minor injuries 4; 10; 12

poor understanding of the health care system 14

beliefs that GPs are unwilling to treat minor injuries 7, 10, 12, 20,

beliefs that A&E departments are for accidents 6; 19; 32: 42%-60%

lack of awareness of GP's out of hours arrangements 3; 10; 11; 21

not wanting to bother the GP, particularly during out of hours periods 4; 10; 19; 21; 38

visiting or passing hospital 12 2%; 21; 33

perceive the circumstances are inappropriate to contacting a GP, such as during the night, at a weekend, or over a holiday period 19

APPENDIX V

Triage in A&E departments: its scope and methods

Triage is the first point of contact with a health care professional in an A&E department. It refers to the formal process of assessment of patients on arrival to ensure that they receive appropriate attention with the requisite degree of urgency (Estrada, 1981; Rund & Rausch, 1981).

The term originates from the French verb “*trier*” meaning “to sort out” or “to choose”, and was originally used in the 1700s in relation to the grading of wool according to its quality and degree of fineness. In the nineteenth century it was used to describe the sorting of coffee beans into three classes according to their size and quality: best quality, middling and triage coffee. The latter consisted of all the bad, broken berries and constituted the lowest grade (Oxford English Dictionary, 1986).

In a clinical context triage was first introduced by Napoleon’s Surgeon-in-Chief Baron Larrey to determine the priority of treating wounded soldiers and which of them should benefit from the limited medical resources available (Haywood, 1984). Triage continued to be restricted mainly to the context of battlefields and major disasters until the late 1950s when triage began to be implemented in North American emergency departments as a means of prioritising workload according to urgency (Estrada, 1981). Weinerman *et al* (1965) described the first use of triage in a hospital civilian setting; this involved doctors assessing and prioritising patients’ need. However, nurses soon took over the triage role from doctors (Slater, 1970).

Formal systems of triage emerged in British A&E departments during the 1970s and 1980s, and by 1991 was being practised in more than half of all major and specialist A&E departments in England and Wales (Read *et al*, 1992a). The goals of triage vary between departments. First and foremost it is an organised system of assessment of the patient and sorting to ensure that immediate care and initiation of life saving measures is available for the injured or seriously ill patient (Estrada, 1981). Other goals include first aid, control of patient flow, assignment to correct area of care, observing vital signs, initiation of diagnostic measures (such as urine tests, x-rays), establishing rapport, providing patients with information (such as about waiting times), liaising with relatives and health care professionals, initiation of infection-control procedures, informing discharge planning, and management of

the waiting area (Gray, 1991, Carew-McColl & Buckles, 1990; Jones, 1988, Bailey *et al*, 1987; Harris & Fox, 1986; Nuttall, 1986, Blythin, 1983).

Estrada (1981) described the five essential components of nurse triage as initial assessment, appropriate physical examination, initiation of diagnostic procedures, documentation and a referral system. Swiftly made, accurate decisions are intended to ensure that patients with the most urgent need for medical intervention receive help and reassurance without delay (George *et al* 1993a, Read *et al* 1992a), and this has been seen as central in meeting the requirements of the Patient's Charter (Keighley & Maycock, 1992). A number of authors have advocated education about the appropriate use of A&E services, primarily by the triage nurse, as a means of decreasing the attendance rates of patients with primary care needs (Williams, 1992, Rock & Pledge, 1991; Farqhar, 1990).

However, there has been controversy about the extent to which such intervention is beneficial. Substantiated gold standards for triage do not exist. Although it is stated that nurse triage results in a reduction in levels of anxiety for patients and those accompanying them (McMillan *et al*, 1986; Wright, 1985) and an overall reduction in waiting time (Grose, 1988; Bailey *et al*, 1987; Nuttall, 1986; Shields, 1976), little is known about the accuracy and reliability of current methods (Brillman *et al*, 1996). Most studies have been small scale and anecdotal. George *et al* (1992) undertook a controlled trial of triage and found that it led to increased waiting times, particularly for those needing the most urgent attention, but a number of methodological problems were identified with this study raising doubts about its validity (Bache, 1992; Cruickshank, 1992; Dale, 1992b; Heyworth & Pledge, 1992; Porter, 1992). Mallet & Woolwich (1990) found that although nurse triage led to an overall increase in the time that patients spend in A&E, it enabled a reduction in the waiting time for initial assessment as well as in the waiting time for major cases. A limitation of studies that have evaluated triage systems, is that few make any mention of the training or qualifications of the nurses involved in implementing the system, nor of the presence or absence of audit and other quality improvement systems.

Burgess (1992) argued for combining triage and nurse practitioner roles as a means of not only prioritising the need for care, but also of treating swiftly those who present with a range of minor conditions. In a three-month trial, one-fifth of self-referred patients seen by a nurse practitioner were treated and discharged by her without referral to a doctor. Waiting times were significantly reduced, and patient satisfaction was greater.

Bursch *et al* (1993) found that patient satisfaction was associated with perceiving that care had been initiated promptly. Nurse triage is a means of achieving this, and they found that key determinants of overall satisfaction with the ED were patients' perceptions of how caring the nurses were, how organised the ED staff were, and satisfaction with the amount of information that nurses gave them about what was happening to them.

Despite the potential benefits of nurse triage (Gray 1991), and the recognition that triage is an area which may require more developed nursing skills than the general treatment area in A&E (Buckles, 1990; Bailey *et al*, 1987), there has been little research or development work conducted into the components involved in training nurses to triage competently. Studies have tended to focus on the specific tasks carried out by triage nurses (Pumell, 1991), and the skills necessary for recognising life-threatening or urgent conditions (Molitor, 1985). Current triage practices are not standardised or validated (Brillman *et al*, 1996), but the Department of Health has recently supported the introduction of the National Triage Scale that has been developed by the British Association of A&E Medicine and the Royal College of Nurses. Consistent training and accreditation methods for nurses are now more likely to develop.

The Audit Commission (1996) made a number of recommendations about making initial assessment and triage more effective. Triage is a stressful role, and there is a need to ensure that nurses are appropriately trained and prepared for the role and provided with continuing support (Johnson, 1996; Gray, 1991). There are ethical, operational and management issues that need to be considered. Jones (1993) argued that decisions that adhere to an official triage policy are more equitable and accountable. Patient treatment is likely to be more effective and consistent where the decision-making process is less subject to the idiosyncrasies of staff on duty. To achieve this, triage nurses are likely to require a broad background gained through training and experience (Shields, 1976). There is a need for well developed communication skills and interview techniques, as well as observation and documentation skills (Gray, 1991). Ethical issues also need to be considered (Jones, 1993; Mezza, 1992).

Read *et al* (1994) considered the importance of considering managerial issues, as well as such issues as department layout and nursing staff experience and commitment. There may be a need to employ additional nursing staff for implementing triage effectively and for structural alterations to departments to provide an appropriate environment with privacy (Rock & Pledge, 1991).

In the USA various attempts at standardised triage guidelines utilising algorithms have been suggested (Berman *et al*, 1989; Slay & Riskin, 1976). These systems were intended to be

used by staff with minimal medical experience and training, so relieving medical and nursing personnel from triage responsibilities. Computerised algorithms have been used since the 1970s and are intended to obtain a medical history and demographic data in an accurate and standardised form. They appear to achieve high sensitivity (Berman *et al*, 1989), but there has been a lack of prospective evaluation of these guidelines with sufficient follow up to enable their safety and applicability to be described. Until this has been done, such guidelines cannot be used reliably.

APPENDIX VI

A&E CONSULTATION RECORD

Please circle/enter as applicable

1 CASE NUMBER

For office use only

- | | |
|--|---|
| <p>2. A&E number</p> <p>3. Age 4. Sex F - 1 M - 2</p> <p>5. Address</p> <p style="text-align: center;">.....</p> <p>6. GP</p> <p>7. Occupation</p> <p>8. Date 9. Time</p> <p>10. Doctor: GP 1 SHO 2 REG/SR 3 OTHER 7 NONE 0 D/K 9</p> <p>11. Triage: A 1 B 2 C 3 D 4 E 5</p> | <p>1 <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> <p>2 <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> <p>3 <input type="checkbox"/><input type="checkbox"/></p> <p>4 <input type="checkbox"/></p> <p>5 <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> <p>6 <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> <p>7 <input type="checkbox"/></p> <p>8 <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> <p>9 <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/>
 <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> <p>10 <input type="checkbox"/></p> <p>11 <input type="checkbox"/></p> |
|--|---|

CLINICAL INFORMATION

- | | |
|--|--|
| <p>12. Duration: <6h 1 6-24 2 1-7/7 3 >1/52 4 D/K 9</p> <p>13. Contact with PC: Yes-GP 1 Yes-Other 2 No 3 D/K 9</p> <p>14. If yes: ADVICE/SELF HELP 1 TREATMENT 2 REF-A&E 3
REF-OTHER 4 D/K 9 N/A 0</p> <p>15. Investigations ordered: 15. X-RAY ... 16. HAEMO ...</p> <p>(Tick all relevant) 17. CHEMPATH ... 18. MICRO ...</p> <p>19. Prescriptions: 1</p> <p>20. 2</p> <p>21. Total no. items prescribed 22. Tet tox? YES 1 NO 2</p> <p>23. Other treatment</p> <p style="text-align: center;">If YES to 13:</p> <p>24. PC help/self help: REITERATED 1 CHANGED 2 D/K 9 NA 0</p> <p>25. Diagnosis: 1</p> <p>26. 2</p> <p>27. Disposal: HOME 0 GP 1 OTHER COMMUNITY 2
REHAB 3 RETURN A&E 4 OP APPT 5
HOSP SPECLTY 6 OTHER 7 FRACT CLIN 8
D/K 9</p> | <p>12 <input type="checkbox"/></p> <p>13 <input type="checkbox"/></p> <p>14 <input type="checkbox"/></p> <p>15 <input type="checkbox"/></p> <p>16 <input type="checkbox"/></p> <p>17 <input type="checkbox"/></p> <p>18 <input type="checkbox"/></p> <p>19 <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> <p>20 <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> <p>21 <input type="checkbox"/></p> <p>22 <input type="checkbox"/></p> <p>23 <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> <p>24 <input type="checkbox"/></p> <p>25 <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> <p>26 <input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> <p>27 <input type="checkbox"/></p> <p>28 <input type="checkbox"/></p> |
|--|--|

Please sign

APPENDIX VII

CASUALTY FOLLOW UP QUESTIONNAIRE

1. What has happened to your illness or injury since you came to casualty? (Ring one)

Completely recovered 1 Improving 2 No change 3 Worse 4

2. Did you receive any of the following? (Ring all applicable)

X-ray	1	Tetanus injection	4
Blood test	2	Pills or medicine	5
Other investigation	3	Prescription	6

Other (please describe) _____ 7

3. How satisfied were you with the thoroughness of your examination and any investigations that were done? (Ring one)

Completely satisfied	1
Fairly happy	2
Mixed feelings	3
Somewhat unhappy	4
Very dissatisfied	5

4. How satisfied were you with the treatment (or lack of it) you received? (Ring one)

Completely satisfied	1
Fairly happy	2
Mixed feelings	3
Somewhat unhappy	4
Very dissatisfied	5

5. How satisfied were you with the doctor's manner or behaviour towards you? (Ring one)

Completely satisfied	1
Fairly happy	2
Mixed feelings	3
Somewhat unhappy	4
Very dissatisfied	5

6. Did you receive any advice or reassurance from the doctor you saw? (Ring one)

Yes 1 No 2 Don't remember 3

(continued over)

IF YES

How would you describe how you felt about that advice?

(Ring one)

- It was very helpful or reassuring 1
- It was quite helpful or reassuring 2
- It was not particularly helpful 3
- I was very dissatisfied 4

IF NO

Would you have liked some?

- Yes 1 No 2 Don't know 3

7. Have you needed any other medical attention (for the same illness since your visit to casualty?)

Who have you seen (Ring all applicable)

- Yes - returned to casualty 1
- Yes - have contacted my GP 2
- Yes - saw nurse or health visitor 3
- Yes - been to an out-patient clinic at King's 4
- waiting for an out-patient appointment 5
- Yes - other 7
- No

Give further details if you would like to:

8. If a similar thing happened again, what do you think you would do? (Ring one)

- Come to King's casualty again 1
- Go to a different casualty department 5
- See my GP 2
- Treat myself 3
- Don't know 4
- Other 7

PLEASE USE THE SPACE BELOW TO MAKE ANY OTHER COMMENTS ABOUT YOUR VISIT TO CASUALTY

THANK YOU FOR YOUR HELP

APPENDIX VIII

Characteristics and expectations of the sub-sample of primary care patients who received a pre-consultation interview

This appendix gives the characteristics, expectations and health service experience of the sub-sample of 855 patients who had a pre-consultation interview. These patients had attended during a randomly selected subset of 90 sessions and they (or their carer in the case of children) were interviewed by a trained research assistant following triage while waiting to be called by the doctor. The interview consisted of open and closed questions, and covered four sets of variables that influence choice of A&E for primary care: circumstantial factors, sociodemographic characteristics, attitudinal factors, and health service experience. Following the interview they were consented for a follow-up interview/questionnaire to be conducted 7-10 days later (see sections 4.10 and 4.11).

Findings

Most patients lived locally, and only 8.7% lived outside the area. Most (79.6%) had been resident in the district for over 1 year, and most (79.8%) were registered with a local GP. Most (71.7%) attended A&E directly from home; very few patients had been taken ill in the street or some other public place. For only 46.4% of the sample, it was the patient who had decided to attend A&E. Most of the remainder had received advice from (or in the case of children the decision was made by) family members or work colleagues. 9% reported that they had received advice to attend from a doctor or other member of staff at their general practice or following a phone call to the A&E department.

Although almost two-thirds of the patients had no previous experience of the presenting problem, 19.1% had previously attended A&E with the same or a similar presentation. 15% of patients expected to receive an investigation, and most of these anticipated that an x-ray would be required. Very few patients (1%) expected to be referred to a specialist.

Around a quarter of patients had contacted their own GP prior to attending A&E, and either had been advised by the GP or a member of the practice staff (often a receptionist) to attend A&E or were dissatisfied with the advice that the GP had given them. A third of the patients had attended A&E either because the GP's surgery was shut at the time or because the wait for an appointment was anticipated as being too long.

Most of the patients appeared to be frequent attenders at general practice, with almost half (45%) having seen the GP on at least one occasion during the previous month. 26% of patients had in the past seen their own GP about their current problem.

Most patients were satisfied with the services that their GP provided, but 31% expressed dissatisfaction with at least some elements of the service. There were lower levels of satisfaction for out of hours access than for the accessibility of services within normal working hours.

Although 36.7% had attended A&E on at least one occasion during the previous year, few of the patients appeared to be frequent attenders or to have used A&E as their main source of primary care. Only 5% had attended an A&E department during the previous month (compared to 45% who had been seen by a GP during this period).

	Number	(% of respondents for whom data known)
SOCIO-DEMOGRAPHIC CHARACTERISTICS		
Residence in the area (n=830)		
Visitor	72	(8.7)
< 3 months	31	(3.7)
3-12 months	66	(8.0)
> 1 year	661	(79.6)
Registered with a GP? (n=847)		
Yes- local	676	(79.8)
Yes - out of area	99	(11.7)
No	72	(8.5)
Accommodation (n 798)		
Rented	536	(67.2)
Owned	226	(28.3)
squatted	7	(0.9)
homeless	10	(1.2)
Other	19	(2.4)
Occupational class of household's main bread winner (n=855)		
I	23	(2.7)
II	119	(13.9)
IIIN	112	(13.1)
IIIM	207	(24.3)
IV	97	(11.3)
V	55	(6.4)
Unemployed/retired/student	242	(28.3)
Ethnic origin (n=696)		
UK	484	(69.5)
Irish	27	(3.9)
African	42	(6.0)
Caribbean	99	(14.2)
Asian	34	(4.9)
Mixed	10	(1.4)
Place attended from (n=855)		
Home	613	(71.7)
Work	157	(18.3)
School	23	(2.7)
GP surgery	6	(0.7)
Other	56	(6.5)

DECISION MAKING AND OTHER PROCESSES INVOLVED IN ATTENDING A&E

Who suggested attending A&E? (n=855)

Patient	392	(45.8)
family member	277	(32.4)
work colleagues	52	(6.1)
GP	53	(6.2)
occupational health	18	(2.1)
teacher	9	(1.1)
telephone advice from A&E	6	(0.7)
other	48	(5.6)

How did you get to A&E? (n=854)

on foot	141	(16.5)
own car	150	(17.6)
driven in private car	152	(17.8)
public transport	254	(29.7)
ambulance	37	(4.3)
taxi	111	(13.0)
other	9	(1.1)

Past experience of the presenting problem (n=845)

None	529	(62.6)
long standing problem	7	(0.8)
attended A&E	161	(19.1)
attended GP	85	(10.1)
other	63	(7.5)

Did you consider seeing your own GP today (n=678)

No- surgery shut	135	(19.9)
Wait for appointment too long	91	(13.4)
not possible- for other reasons	53	(7.8)
inappropriate for current problem	198	(29.2)
contacted GP and advised to attend A&E	61	(9.0)
contacted GP, and dissatisfied with advice	98	(14.4)
general dissatisfaction with GP service	42	(6.2)

Specific expectations (n=829)

an investigation	126	(15.2)
x-ray	92	(11.1)
treatment	408	(49.2)
referral	9	(1.1)
diagnosis	216	(26.1)
advice	128	(15.4)

PREVIOUS EXPERIENCE OF/SATISFACTION WITH HEALTH SERVICES

Previous visit to GP (n=732)

< 1 week	168	(22.9)
1-4 weeks	179	(24.5)
1-6 months	203	(27.7)
6-12 months	67	(9.1)
> 1 year	107	(14.6)
Never	8	(1.1)

Problem presented on that occasion (n=694)

Same as current problem	180	(25.9)
Different problem	514	(74.1)

Overall satisfaction with GP care (n=721)

satisfied	496	(68.8)
mixed	80	(11.1)
dissatisfied	145	(20.1)

Satisfaction with office hours access to GP (n=653)

satisfied	479	(73.4)
mixed	98	(15.0)
dissatisfied	76	(11.6)

Satisfaction with out of hours access to GP care (for those with experience of out of hours arrangements; n=342)

satisfied	221	(64.7)
mixed	51	(14.9)
dissatisfied	70	(20.4)

Previous visit to A&E (n=831)

< 1 month	42	(5.0)
1-6 months	128	(15.4)
6-12 months	136	(16.3)
1-2 years	115	(13.8)
> 2 years	278	(33.4)
Never	132	(15.9)

Problem presented on that occasion (n=692)

Same as current problem	53	(7.6)
Different problem	639	(92.4)

A&E previously attended (n=709)

King's	508	(71.6)
Other	201	(28.4)

Previous experience of KCH (n=848)

Inpatient	215	(25.4)
Outpatient	125	(14.8)
Both in- and outpatient	78	(9.2)
Unsure	20	(2.4)
None	410	(48.4)

APPENDIX IX

Evaluations of A&E primary care initiatives in London

Introduction

This appendix considers data on the implementation, efficiency and effectiveness of A&E primary care services that were established following commendation of the KCH model of A&E primary care by Tomlinson (1992). It draws on findings from empirical studies conducted at the A&E departments of KCH, Lewisham Hospital, Ealing Hospital, Chelsea and Westminster Hospital, and Central Middlesex Hospital which have all employed GPs as primary care physicians (PCPs) to treat patients presenting with primary care needs. These studies were commissioned by Lambeth, Southwark and Lewisham Health Authority (Mascarenhas & Dale, 1996) and Ealing, Hammersmith and Hounslow Health Authority (Dolan *et al* 1997; Dolan *et al*, 1996; Dale *et al*, 1996b; Dale *et al*, 1996d) as part of their evaluations of initiatives funded by the London Primary Care Development Programme. The aims and methods of these evaluations are summarised below, together with the main findings. Their implications are discussed further in Chapter 6.

Evaluation objectives

The objectives of these evaluations were broadly similar: to describe the strategic context, including organisational structure, activity and characteristics of the primary care service developments.

Methods

Table VIII.1 describes the methods that were used. At each site consideration was given to the range of services offered; the staff and other resources utilised; the population who use the service; the approach used for classifying patients into primary care and A&E categories; existing activity and process data; existing policies and procedures; staff and organisational perceptions; community support, such as through discussions with community health council and representatives of non-statutory organisations; organisational and management issues; training requirements as perceived by nursing, medical and administrative staff; and relationships with other services.

Methodological considerations

The limitations of the methodologies included

- relatively short time scales (less than 6 months) attached to each of these projects
- the diversity of the sites under consideration
- difficulties associated with defining the time at which evaluation should occur given variation in the duration (6 months to 3 years) since services became operational
- variation in the extent of data available at each site; it was beyond the resources available to each study to collect new activity and process data
- lack of comparability between data sets from different sites owing to differences in definitions and coding systems in use.

Table IX.1: Data collection methods used to evaluate the A&E primary care services

- Individual face to face meetings with key personnel at each site
- Postal questionnaire to lead contact point on each site - to request data on waiting times, patient characteristics, attendance times etc.
- Focus groups involving managers, A&E consultants, nurse practitioners, GPs, nurse managers, business managers and representatives from purchasers
- Postal questionnaire to medical, nursing and administrative staff on each site
- Postal questionnaire/interviews with community health council and selected community groups
- Personal interviews with selected individuals to follow up where data was incomplete
- Questionnaire to relevant Local Medical Committees

Findings

Service goals

Services appeared to differ in their purpose, aims, and goals. The intentions of those commissioning services, and the links with other primary care developments and overall primary care/A&E strategies, were not always clear. At a number of sites there appeared to be ambiguity in the understanding of PCP roles and capabilities, and the extent to which they overlap with nurse practitioner roles.

Needs and Demands

The need for each service development had not been clearly defined. Overall, there was a lack of data about the demand for each service. Routine data collection varied, in terms of purpose, content and consistency, and there appeared to be insufficient routine data to determine the extent to which services met the needs of specific groups in the community, like the homeless. Although at many sites provider unit staff argued that the hours of

availability of the PCP services needed to be extended to provide greater coverage, evidence to support this was lacking.

Service development

i) Patient classification

Workload activity appeared to vary considerably between services (see table below). Triage systems varied across the sites, making meaningful comparison of workloads difficult, and there was considerable variation in the extent and content of triage training and audit. Overall, triage training appeared to be a largely informal process; few sites had systematic programmes in place.

Triage appeared to lack consistency, and there was evidence of some lack of agreement (especially between PCPs and senior medical staff and nurses) about what constitute 'primary care' problems. At all sites, triage nurses appeared cautious about classifying patients' needs as 'primary care'. In consequence, PCPs were often treating patients triaged as 'A&E'. The results of an audit of PCP activity at one site, for example, indicated that of the 1602 patients seen only 24% were priority 5 (primary care), 48% were priority 4 (non-urgent A&E), and 22% were priority 3 (moderately urgent A&E). From the care provided by PCPs, it appeared that most of those who had been placed in category 4, at the very least, could have been appropriately triaged as 'primary care'.

ii) Recruitment, training and development

At most sites there were considerable discrepancies between the role described in PCP job descriptions and what PCPs actually did.

The training and development of PCPs varied between sites. At KCH and Ealing, it had been built into the fabric of their employment, with each PCP contractually obliged to participate in a monthly training/audit programme. At other sites, training and development occurred on a much more ad hoc basis.

While at KCH, almost all PCPs are principals on the local health authority GP list, at other sites significant numbers of PCPs were principals from outside the district or are non-principals because of difficulties gaining interest from adequate numbers of local GPs. As a result, the links with local primary care services at these sites are less well established than intended.

Audit and quality

While the KCH and Ealing services each had management/administration commissioned specifically for the primary care service, services at other sites appeared to lack management/administrative input and had an evident lack of overall leadership and development. At these sites there appeared to be a lack of formal protocols, procedures and policies regarding the primary care service. Without audit, the extent to which PCPs worked to common goals or varied in their practice was unknown. PCPs appeared to be unaware of departmental policies and procedures, and their adherence to them was not audited.

Costs & Activity

The table below shows variation in the activity and workload of different A&E primary care services. Costs in terms of PCP employment costs alone varied from £10.28 per patient treated to £14.30 per patient reflecting the differences in the numbers of patients seen by PCPs per hour.

	No. of patients seen by PCPs in 1996	No. of patients seen per hour	PCP employment costs/patient
Ealing	7557 (est)	3.7	£10.28
Chelsea and Westminster	2057 (est)	1.8	£14.30
KCH	7977	3.0	£10.56
Lewisham	7935	2.8	£12.70

ORGANISATIONAL VIEWS ABOUT DEVELOPMENTS

Despite the limitations noted above, the services all appeared to be highly valued by the full range of stakeholders. From focus group meetings, staff questionnaires, and stakeholder interviews the following organisational views were elicited.

Perceived benefits for patients

Significant benefits for patients, particularly related to improvements in the quality and appropriateness of services they were likely to receive, were generally felt to have occurred.

1. Accessibility

- reduced waiting times
- immediate access to experience primary care professionals
- improved availability of service
- a more “sympathetic”/”compassionate” response to patients’ with primary care needs
- patients perceived to have greater confidence in the service

2. Clinical quality

- improved quality of service overall
- increased seniority and competence of staff
- GPs’ greater breadth of knowledge and experience when compared to SHOs
- longer consultation times, more time with individual patients
- more holistic/comprehensive consultation
- more likely to receive health promotion/education advice as part of the consultation
- continuity of patient care, more likely to see one person for the whole episode
- improved environment and privacy
- help for patients needing to register with a GP
- treatment less hurried, staff less distracted
- less stressful and traumatic
- increased patient satisfaction, “more compliments and a fall in complaints”
- less antagonism and aggression (particularly related to waiting times)

3. Appropriateness

- reduction in number of investigations, treatments
- reduced number of specialty referrals

Benefits for staff

Positive benefits perceived for staff fell broadly into categories relating to improved management of workload, improvements in the public image of the department, more effective working across the hospital/primary care interface, and improvements in a range of activities within each department.

1. Improvements for the department as a whole in better managing workload

- supports all staff whole working within the department

- improves morale
 - offers greater stability and balance within the department, as SHOs only employed on 6 month contracts
- 2. Image of department, with greater effectiveness across the hospital/primary care interface**
- focus of change within the hospital
 - acts to facilitate relationships and understanding across the divide between hospital and primary care
 - offers status for the department and may be an attractive feature in recruiting SHOs and consultant posts
- 3. Improvements in a range of activities undertaken in the department**
- frees up SHOs to deal with patients with more acute clinical needs
 - reduces stress and frustration, particularly for triage nurses
 - opportunities to raise A&E staff awareness about health promotion and resources available in the community
 - allows the provision of less hurried patient care

Benefits for the A&E Service

Benefits identified for the A&E service mainly related to more effective service provision at the hospital/primary care interface, better use of available resources, and strengthening the seniority of clinical staff within departments.

1. The hospital/primary care interface

- increased links with GPs
- complements GP role in the community.
- increased links with community services generally
- positive profile of A&E to public.

2. Use of available resources

- better overall use of department, x-ray, laboratory and specialist resources

- improved clinical management
- more appropriate skill mix
- improved work environment

3. Strengthening senior clinical staff within departments

- overall increase in senior experience in the department, mature, experienced practitioners
- may provide increased support to junior staff
- additional resource for teaching students and junior medical and nursing staff

Difficulties faced in the implementation of the services

A range of difficulties had been encountered in setting up these services. Issues identified included the following:

1. Being clear about the nature of the service they were seeking to develop and what was expected

- being clear about the concept being developed
- reaching shared agreement about goals
- being clear this is a development opportunity rather than a threat to existing structures

2. Winning support from other staff within the A&E department, in other hospital departments and GPs

- 'selling' the philosophy of the new service
- responding to anxieties

3. Operational/practical implications

- limited experience in the A&E department of developing new services from scratch
- limited additional funding

- waiting for building work to be completed
- changing triage practice
- managing relationships within steering group
- tight time scales
- lack of computerisation and effective systems which could be easily linked in
- developing appropriate audit mechanisms

4. Strategies used for overcoming difficulties

Many of these services were still in the early stages of development at the time of the evaluation. Almost all acknowledged the following were helpful/essential in overcoming obstacles to implementation.

- Externally provided funding
- Networking before the service started, talking to people both in and outside the department
- Good preparation - good liaison between purchasers and providers
- Drawing on examples of other initiatives, experience elsewhere
- Teamwork
- Clear role definition, detailed and explicit protocols

Conclusions

The following conclusions and recommendations emerge from these studies:

- the aims and objectives of the services need to be more clearly delineated together with criteria against which they will be monitored and assessed
- needs assessment should be closely linked to service development to ensure that resources are being used appropriately, and that the case for the need for the service can be effectively made
- parameters for monitoring demand should be negotiated and where possible a consistent approach should be adopted. This would enable comparison of the work performed by different A&E Primary Care Services

- the strategic position of A&E primary care needs to be made more explicit at a local level and linked into the overall primary care and A&E strategies, including issues like out of hours service developments
- developmental activities, such as team building, professional training and development, are essential
- audit and performance monitoring arrangements are needed to support consistency and effectiveness
- triage systems could be improved through refining the assessment criteria and through providing nurses with more training and feedback on performance
- greater emphasis could be placed on the recruitment of local PCPs to enable stronger links to be forged with local practices
- workload and activity of PCPs should be monitored in relation to overall activity of the A&E department as part of a review of hours of service availability
- further analysis is needed of the cost effectiveness of A&E primary care services in light of different organisational arrangements

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