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1. **Introduction**

This paper pulls together, for the first time, the key factors driving change in Scotland’s health care system. Much of the information is already in the public domain but in this analysis we attempt to examine the inter-dependency of the various drivers and to seek to provide some clarity about what they mean for the future shape of the health service in Scotland.

The position is complex. Not all of the factors driving change point in the same direction. But the implications are obvious:

- change is inevitable
- given the complexity of the drivers, planning for change is essential
- “more of the same” is not the solution – to meet the challenge of the drivers will require new ways of working, involving the whole health care system in the change process.

We do not attempt in this document to provide solutions. Rather, we seek to inform a debate about what those solutions might be. That debate needs to involve patients, the public, NHS staff and our clinical leaders. Its outcome will have considerable influence on the development of the National Framework for Service Change and its subsequent implementation.

As the commentary contained in this document demonstrates, health care service change needs to be part of a wider reform agenda. We start from a position where the health of Scotland’s people compares unfavourably with most of Western Europe. That will require a continued focus on health improvement and on narrowing health inequalities. Changes in health care will have to be accompanied with complementary improvement in social care. Workforce redesign will be vital to secure service change. The inter-dependencies are considerable. But the focus of this work is on the changing health care environment. What are the factors that will impact on how we deliver care in Scotland and what do those factors tell us about our future change agenda?
2. The changing population, patterns of ill-health and the health service response.

The first section of this report outlines some key trends and future prospects in Scotland’s demography, patterns of ill-health and use of health care services. These make up perhaps the most fundamental long-term context in which to consider whether the current model of health care in Scotland is the best-suited to meet the needs of Scotland’s people.

It is important to remember that Scotland is not alone in facing many of these changes and challenges. An ageing population and the growing burden of chronic disease are factors which are common to almost all advanced industrial societies. Because of Scotland’s relatively poor health in a Western European context and the prospect of a particularly steep decline in population in Scotland, there is a tendency to concentrate on problems felt to be unique to Scotland. We do have to deal with Scotland’s particular issues but it is just as important to understand the challenges which we share with other societies. Other health care systems, such as Kaiser-Permanente and the Veterans Health Administration in the United States, the Canadian health care system and, increasingly, the NHS in England, have gone further than NHS Scotland in facing up to the implications of these broad demographic and epidemiological shifts by developing more proactive, preventive and community based approaches. We need to learn from such developing responses. The policy environment in Scotland particularly in terms of Joint Future, Community Health Partnerships and unified NHS Boards, means that we are well-placed to share experiences and move forward.

The changing population.

Scotland is faced with a declining population and an ageing population. Scotland’s population is projected to decline at an accelerating rate over the next forty years. At first the decline will be relatively gentle, from 5.06 million in 2003 to 5 million in 2016 and 4.88 million in 2026. Thereafter the rate of decline steepens to give a predicted 4.83 million in 2031 and 4.54 million in 2042. (GRO Scotland, 2004). It has been estimated that the projected decline by 2020 is greater than for any EU-15 country – the only other EU-15 country facing a decline being Germany although parts of other EU-15 members are also expected to experience a fall in population (GRO Scotland, 2002).

While the existence and extent of the decline in Scotland’s population is unusual, the ageing of Scotland’s population is not. All industrial nations are experiencing an ageing of the population as a result of declining fertility and increasing life expectancy. It is the interaction between the ageing of the population and the overall decline that sets Scotland apart.

The long term shifts in Scotland’s age structure can be seen in the age pyramids shown in Figure 1. 1911 showed the classic pyramid shape reflecting high levels of
fertility and significant levels of mortality in childhood and adulthood. By 1951 we see the effects of the post-war baby-boom on the youngest age cohort and 2001 and 2031 see this cohort moving up through the age range. Perhaps what is most striking about the figures for 2031 is that the age groups 60 to 64 and 65 to 69 will be the largest five year age groups in the population with, broadly speaking, younger age groups getting progressively smaller.

Most significant, of course, in terms of implications for healthcare is the growing share of the older groups in the population. In 1911, people aged over 65 made up 5.4% of the population; in 1951, 10.0%; in 2001 15.9% and in 2031 they are projected to constitute 26.6% of the population. The growth of the over 80s is proportionately even more rapid. In 1911, 0.6% of the population was aged 80 and over. In 1951 the figure was 1.3%; in 2001, 3.8% and by 2031 8.2% of the population will be aged 80 and over.

A more detailed picture of the dynamics of the increase in the size of the older age groups is shown in Figure 2. In terms of recent historical experience there has
been something of a contrast between the older age groups below 80 years old and those above. The last twenty years have seen relatively little change in the size of the age groups between 65 and 80. However the rate of increase in the size of the age group 80 to 84 showed a distinct acceleration in the late 1970s. The same thing happened to the 85 and over age group in the early 1980s. Broadly speaking, over the last twenty years the number of people aged 80 and over has been growing at an unprecedented rate.

Looking to the future, in broad terms we will see a renewed growth in the number of older people aged 65 to 80. Numbers in the age groups 80 to 84 and, in particular, 85 and over will show an even faster rate of increase.

The pattern of demographic change is not consistent across Scotland. Lothian NHS Board area has by far the biggest projected growth in population through to 2018 (7%). The areas with the biggest projected falls are Orkney (10%) and the Western Isles (17%).

Figure 3 shows patterns of population change from 1986 to 2002 and also projections to 2018 by age group for selected Health Boards. It can be seen that there are considerable variations in the patterns of change particularly in relation to rural areas. Dumfries and Galloway shows the particularly rapid growth in numbers in the older population projected for some rural areas with a projected growth in numbers of those aged 75 and over of 49% compared with 27% for Scotland as a
whole. Greater Glasgow on the other hand is projected to experience an increase of only 7% in the numbers aged over 75.

Forth Valley is typical of the central-belt areas in Scotland with a predicted decline in the number of children aged 15 and under, a fall in numbers aged 30 to 44 and a rise in all older age groups. Some rural areas (see the graphs for Dumfries and Galloway and Orkney) are projected to show particularly marked falls in the numbers aged 30 to 44.
What are the implications of this ageing population in terms of the burden of ill-health and demands on the health care system? In general the older a person is, the more ill-health they will suffer. They will have a higher incidence of chronic disease and on average a greater number of long term conditions. However we need to bear in mind that the balance of evidence at an international, British and Scottish level is that age for age older people have been getting healthier. So, while we can expect an increasing burden on health care from an ageing population it is not as straightforward as saying that an e.g. 20% increase in the number of older people means a 20% increase in the demand for health care.

In Scotland, Stearns and Butterworth (2001) carried out analyses in this area as background to the work of the Care Development Group. They analysed data from the 1985 OPCS Survey of Disability among Adults in Private Households and the 1996/7 Disability follow-up to the Family Resources Survey. They concluded that

‘Overall, disabled elderly people (in all living conditions combined) decreased as a proportion of the population between 1985 and 1996/7. The best estimate of the reduction overall is of 0.2 or 0.3 percentage points per year in the UK, though evidence indicates that the rate of reduction may have been slightly greater in Scotland.

More recently an analysis of trends in Healthy Life Expectancy in Scotland from 1980 to 2000 based on the General Household Survey has been carried out by a team at ISD Scotland. The overall picture seems to be that healthy life expectancy at age 65 has increased significantly although not as quickly as overall life expectancy. Thus a reasonably high proportion of the extra years involved in increased life expectancy have been years of healthy life. This would again suggest that for a given age group the trend is likely to have been one of declining ill-health. (Clark et al., 2004)

A high proportion of health care expenditure and in particular hospital expenditure occurs in the years immediately preceding death. For example, the 5% of patients in the last year of life generated approximately half the hospital expenditures for the population aged 65 and over in 2002 (Seshamani, 2004). Proximity to death is a much more powerful predictor of hospital expenditure than age alone.

This relationship between hospital expenditure and proximity to death provides the basis for an elegant calculation of the extent to which the impact of an ageing population on health-care expenditure is likely to fall far short of being proportional. Seshamani (2004) compared two methods of projecting future hospital expenditure. The first assumed that each age group would generate a constant per capita amount of hospital-based health care expenditure over the years 2002 to 2026. The second method incorporated per capita levels of expenditure specific to proximity to death. Incorporating the effects of proximity to death in the expenditure model halved the estimated increases in real national hospital expenditure over time.

This is another, and extremely powerful, way of making the point that improved age-specific levels of health in the older population are likely to mitigate to a considerable extent the impact of growing numbers of older people on the demand for health care.
The ageing population will mean growing numbers of older people who are experiencing ill-health with greater or lesser levels of dependency. However the ageing of the population will also mean much higher numbers of healthy older people in the population. Later sections of this report will consider the evolving health care workforce and the pressures which demographic change are likely to exert on the shape of the workforce. In this context increased numbers of older ‘potential carers or care workers’ should not be forgotten. The challenge will be to mobilise them in ways which will benefit both the carers and the cared for.

In the light of these demographic and social trends it is clear that we need to find new and better ways of delivering healthcare. ‘More of the same’ will not be sustainable.

The changing social context.

Rising numbers of older people will lead to an increasing demand for healthcare and other care services. How much this results in an increase in demands on the National Health Service will depend upon the availability of other forms of care such as the informal care provided by family members, friends and other members of the community.

A key source of informal or unpaid care is the people who live in the same household. The last half century has seen a major decline in older people living in the same household as their adult children or in other more complex types of household. The vast majority of older people now live alone or with only their partners.

The last ten years have seen a particularly rapid rise in the number of older people living alone. Between 1991 and 2001 the numbers of people aged 85 and over who lived alone increased from 30,000 to 44,000. This mainly reflected a rise in numbers in the age group but also a rise in the proportion living alone (ISD Scotland, 2003).

This proportion is not likely to change a great deal in coming decades but there will be a continued increase in the numbers of older people living alone reflecting the rapid growth in the numbers of older people already discussed.

There is relatively little hard data on long term trends in the ability and willingness of society to provide care outwith the formal care sector. However the available evidence indicates strongly that the level of provision of unpaid care is at best not increasing and is certainly not keeping pace with the growing need for care of an ageing population. There is evidence that the balance of unpaid care is shifting. Informal care is increasingly provided by daughters and sons and in particular by partners living within the same household. Less is being provided by friends, neighbours and other family members. (Hirst, 2001; Pickard, 2002)

Many of the care needs of frail older people are as much social as medical. As will be seen later in the context of rising emergency admissions, it is sometimes the lack of integrated and preventive health and social care which means that a crisis leads
to an emergency inpatient admission. Our response to such issues requires a ‘whole system’ approach involving clinical input by a range of skilled people, excellent links with social care and greater patient involvement.

In summary, as well as being driven by increasing numbers of older people and their pattern of ill-health, demands on the health service are likely to be determined by
a) trends in the need for all forms of care for older people which in turn will be driven largely by the changing social circumstances of older people and
b) trends in the availability of care across the spectrum from formal social care to informal, unpaid care within and beyond the family.

Patterns of ill-health.

Scotland’s pattern of ill-health in broad historical and comparative context

Scotland’s changing pattern of mortality and disease over the last two centuries is broadly similar to that of other industrial nations. Scotland has experienced its own version of what is commonly called the epidemiological transition. The late nineteenth century and the first half of the twentieth century saw a pattern of disease associated with rapid industrialisation and urbanisation with high levels of childhood mortality and a high prevalence of infectious disease. As these scourges were conquered in the first half of the twentieth century and as the population has become older, the major burden of ill-health facing the health service is increasingly that of chronic disease. Again this increasing burden of chronic disease is a global pattern.

However, Scotland’s pattern of ill-health and mortality does have its own strongly marked features. Although Scotland’s health is improving and policy and delivery is now focused on increasing that rate of improvement, Scotland tends to lie at the bottom end of European league tables of mortality and morbidity. The current position was summarised in the Chief Medical Officer’s Annual Report for 2003: ‘By the beginning of 2001, it was well known that Scotland’s health,
although improving was poor compared with other nations in Europe. For example, recent estimates of comparative life expectancy at birth put Scotland at (women) or close to (men) the bottom of the list of western European countries (see Figure 4).

Recent research has focused on mapping precisely where Scotland stands relative to other countries in terms of ill-health and mortality and, most importantly, why it is that the Scottish population experiences such relatively high levels of ill-health and mortality.

The "Scottish effect"

People living in deprived areas tend to have higher levels of mortality. Some of the difference in mortality between Scotland and the rest of the United Kingdom can thus be explained by the fact that the Scottish population experiences higher levels of deprivation than the rest of Great Britain. Earlier studies by Carstairs and Morris suggested that in 1981 higher levels of deprivation accounted for most of the excess mortality experienced in Scotland. However more recent analysis shows that in 1991 only 40% of Scotland's excess mortality was accounted for by deprivation (PHIS/ISD Scotland, 2001).

Leon et al (2003) have placed Scotland’s health record in a longer-term international context. Scotland has not always been at the bottom of Europe’s mortality league table. Things only started to go wrong for Scotland in the second half of the twentieth century. In 1950 Scotland was in the top half (7th) of 17 European countries with life expectancy at birth better than that of France, Spain and Italy for example.
By 2000 Scotland had the lowest female life expectancy of these Western European countries and only Portugal had a lower male life expectancy. Moreover this poor mortality experience is concentrated in particular age groups. Children and young people in Scotland have tended to have mortality levels around the western European norm. Only by the time they reach their thirties (women) and forties (men) do Scottish adults start to show higher mortality rates with the result that Scotland has among the worst mortality in Western Europe in late adulthood and early old age.

Scotland’s health is not poor in all respects. Scotland has the worst death rates in Europe for cardiovascular diseases and lung cancer. But in contrast Scotland performs relatively well in terms of external causes of death such as injuries and violence (e.g. road accidents) and Scotland’s infant mortality is around the European average.

Apart from the effects of deprivation, why is Scotland’s health so bad relative to our European neighbours? Scotland’s high death rate from lung cancer suggests that Scotland’s higher level of smoking may play a role. It has been suggested that recent increases in causes of death such as cancer of the oesophagus, liver cirrhosis and suicide – bucking the downward European trend – may point to issues of alcohol abuse. The Scottish diet, low in fresh fruit and vegetables and high in saturated fat may play a role.

These ‘lifestyle factors’ may turn out to be the surface elements of a much deeper explanation for Scotland’s particularly poor health over the last century. This would be rooted in Scotland’s culture and psychological traits and would trace the impact of the decline in Scotland’s heavy industrial base and possibly the withering of many of the supportive institutions associated with Scotland’s traditional rural and industrial communities (Hanlon et al, 2003).

The poor health of the Scottish population and its high levels of mortality pose a major challenge to Scotland’s health services. However it is an open question as to how much of Scotland’s health and mortality deficits can be cured by the treatment offered by the health service. An improved health service can undoubtedly make a contribution but the solution is more likely to be found in preventive action and health improvement associated with a transformation in the relevant aspects of life circumstances and lifestyle choices. In terms of the public health policy response there is a recognition that ‘health’ will only be improved when organisations work in partnership.
The dominance of chronic disease

The increased incidence and burden of chronic disease is a worldwide phenomenon. Scotland shares the challenge this poses for health services with other advanced industrial nations.

The following broad phases have been suggested to characterise the changing pattern of disease and the response of health care systems: until 1950 the major focus of healthcare was infectious disease; during the second half of the twentieth century health services were oriented towards the provision of episodic care for acute conditions. In the 21st century, chronic disease will be the major challenge for health care (Anderson, 2004)

If we accept the broad terms of this analysis our National Health Service was introduced at the tail end of the era in which the main challenge was infectious disease and has been largely geared to dealing with acute conditions on an episodic basis. This is of course something of a caricature and health care delivery in Scotland is beginning to develop ways of addressing the needs of an ageing population for whom chronic conditions are the major problems. But it is clear that more needs to be done.

It is perhaps partly a reflection of this acute orientation of healthcare in Scotland, as elsewhere, that we are only beginning to gather information about the prevalence and burden of chronic disease in Scotland.
“Historically, acute and immediately life-threatening problems were the principal concern for health-care systems. Advances in biomedical science and public health measures over the past century have changed this dramatically. However, most health care systems have not kept pace with the decline in acute health problems and the increase in chronic conditions. Although there are notable exceptions, such as experiences with community-oriented primary care, most health care today is still trying to manage chronic problems using acute care mentality, methods and systems.” (Epping-Jordan et al., 2003)

In painting a picture of chronic disease in Scotland we have to rely largely on the knowledge that Scotland’s experience is not likely to be qualitatively different to that of other advanced industrial societies and on data which allows some limited comparison.

The most direct evidence of the prevalence of long-term conditions in Scotland comes from the Scottish Health Survey.

Figure 5 shows the proportion of the Scottish population by age groups from 16 to 74 reporting any long-standing illness in 1998 as well as the number of separate conditions they reported. Even for age groups 45 to 54, ‘early middle age’, 45% of the population reported at least one long-standing illness. In the age group 65 to 74, 62% reported at least one long standing illness. (The data is not shown but these patterns are highly similar for men and women).

Reporting of multiple chronic conditions increases even more rapidly with age with 29% of those aged 65 to 74 reporting two or more longstanding illnesses. It is very likely that age groups above this range will have an even higher prevalence of multiple chronic conditions. An American study based on Medicare records rather than self-reporting showed that the mean number of chronic conditions reported by those aged 65 to 69 was 1.88 compared with 2.71 for those aged 80 and over. (Wolff et al., 2002)

The Scottish Health Survey also shows us the main types of longstanding illnesses experienced by the Scottish population. Figure 6 shows the proportion of Scottish men and women who report different types of chronic condition. Around a third of men and around a quarter of women aged between 65 and 74 report a long-term condition to do with the heart or circulatory system (heart problems, stroke and including high blood pressure) while the proportions reporting a condition to do with the musculo-skeletal system (e.g. arthritis, back problems) are 22% for men aged 65 to 74 and 34% for women of the same age.
The impact of chronic conditions on people’s ability to carry out their everyday activities should not be underestimated. British data shows that 15% of people reporting one chronic condition also report limitations on their activities, 28% of those with two chronic conditions, 42% of those with three, 52% of those with four and 67% of those with five or more. (Department of Health, 2004)

People with chronic illnesses generate substantial demands on health services. It has been estimated that 75% of all US health care expenditures are related to the
treatment of chronic conditions (Hoffman et al. 1995). At a UK level patients with a chronic condition account for 80% of all GP consultations. They are twice as likely to be admitted to hospital and experience longer stays when they are admitted (Department of Health, 2004)

There are some key chronic diseases in children which will influence the demand for healthcare – in particular obesity, diabetes and asthma. The proportion of Scottish children who are overweight or obese has been increasing markedly until, by 2002, around 21% of 3-4 year olds and 33% of 12 year olds were overweight (NHS Quality Improvement Scotland, 2003). Unless reversed soon, this trend is expected to produce negative health effects, both physical (including cardiovascular disease, diabetes, osteo-arthritis) and mental (including low self-esteem, depression) in later life. Among children and young people, the incidence of diabetes has increased three-fold over the past 30 years (Scottish Intercollegiate Guidelines Network, 2001).

According to the 1998 Scottish Health Survey, the prevalence of diagnosed asthma was 17.5% for children and young people aged 2-15 years. Prevalence appears to have been increasing over the previous two decades at around 5% per annum. In contrast, GP consultation and hospitalisation rates have declined, presumably through the development of more effective forms of symptom control combined with the wider dissemination of good practice guidelines. Like diabetes, hospitalisation for asthma is potentially avoidable through good quality community-based care.

In terms of primary care contacts for long-term conditions more generally, Scottish data has just become available which monitors the diagnoses for patient contacts with all members of the primary care teams of a 6% sample of practices across Scotland.
Figure 7 shows the proportion of the population under and over age 65 having a primary care contact for a range of chronic conditions. These are the twelve chronic conditions defined as part of the new primary GP contract and the two additional categories of depression/anxiety and osteoarthrosis. Over a quarter of those aged 65 and over are seeing their GP or other member of the practice team for hypertension with coronary heart disease, diabetes, respiratory problems, depression and anxiety and osteoarthrosis the other main reasons for contact.

Figure 8 shows the proportion of the population in different age groups who had a contact with a practice team member for none of these chronic conditions, one of them or two or more of them in the year April 2003 to March 2004. In the 65 to 74 age group 57% of the population had a primary care contact for at least one condition and 18% were seeing the primary care team for two or more. In the 75 to 84 age group 61% had a contact for at least one condition and 22% for two or more. The contact rate for these chronic conditions falls away for those aged 85 or over. It must be remembered that these fourteen conditions make up a relatively narrow definition of chronic disease. A more comprehensive definition might well push up the proportions even further.

Health care associated morbidity.

One aspect of ill-health which should not be neglected in assessing the ‘drivers for change’ in the Health Service is ‘iatrogenic morbidity’ - illness or injury resulting from the healthcare system itself – and in particular morbidity resulting from admission to hospital. The aspect of iatrogenic morbidity which tends to hit the headlines is
healthcare associated infection (HAI) and in particular Methicillin-Resistant Staphylococcus Aureus (MRSA).

Until recently, the subject of healthcare associated infection (HAI) registered only on the fringes of public consciousness. Nowadays, it has a profile commensurate with an issue of major national importance: an unprecedented level of media coverage has fuelled public awareness and concern about HAI. The inescapable truth is that HAI is still a significant cause of ill-health, which is precisely why it remains a priority for the Scottish Executive. The facts speak for themselves: Walker (2002) estimated, by applying English estimates of prevalence to Scottish patterns of activity that hospital acquired infection is estimated to cost up to £180 million per year in NHSScotland alone or, to put it another way, keeps up to 1040 NHS beds continuously occupied. A recent editorial in the British Medical Journal highlighted the fact that something above one in ten of patients admitted to hospital suffer an adverse event related to their admission or care (Smith, 2004). The paper from which this figure was derived reported that half of these adverse events were preventable (Vincent et al., 2001) – suggesting that half were not.

The control of HAI is essential for two simple reasons: it protects the health of patients and staff alike, and it limits the resources devoured by potentially preventable infections. The Scottish Executive is acutely aware of the pressures doctors, nurses and other healthcare staff face in providing quality healthcare to meet the increasing demands and expectations of the public. The public, however, also have the right to expect that they will not acquire dangerous or distressing infections while receiving healthcare. The Ministerial HAI Task Force was established in 2003 to action a major three-year programme of work detailed in the Ministerial HAI Action Plan (Scottish Executive Health Department, 2003) in which the Scottish Executive laid out its commitment to tackling the issue through a comprehensive, coherent, wide-ranging and multidisciplinary approach.

Progress, to date, has been substantial with outputs including an NHSScotland Code of Practice for the Local Management of HAI and Hygiene; the National Cleaning Services Specification, a best practice statement on urinary catheterisation linked to new national surveillance initiatives; a framework for mandatory induction training on HAI; guidance on the management of HAI outbreaks; implementation of the Antimicrobial Resistance Strategy and Scottish Action Plan and expansion of the national HAI surveillance programme.

The philosophy of the HAI Task Force is to build on and harmonise with existing systems as far as possible and to provide a foundation for effective prevention and control for NHSScotland. In order to achieve healthcare environments that demonstrate the principles of “clean hospitals, clean hands, clean instruments” where “Infection control is everyone’s responsibility”, such a broad and coherent approach is necessary.

However in reality these conditions represent a major source of pressure on the NHS – as well as the resources needed for treatment they also tie up resources through the need for isolation of affected patients. And to add the final twist to the vicious circle it should be born in mind that high bed occupancy and patient turnover tends
to increase the incidence of hospital-acquired infections (Department of Health, 2003).

The possibly damaging effects of hospital admission are not limited to healthcare associated infections. Hospital admission and extended stays in hospital can have a range of damaging effects particularly for older people. It seems generally accepted that if an older person is kept in hospital for longer than two or three days, the simple fact of being in a hospital bed may lead to a variety of physical, psychological and social negative consequences. These include loss of functional capacity, the possibility of pressure sores, confusion and disorientation - especially for patients with pre-existing conditions such as dementia - and the dissolution of support networks which may have existed to maintain the older person in the community. The evidence is that the older is the patient the greater are the hazards of hospitalization (Creditor, 1993; Covinsky et al. 2003). Any deterioration caused by the hospital stay is likely to make it more difficult to rehabilitate the patient and may lead to delays in discharge.

Trends for specific conditions.

As examples of trends and future prospects for the burden of specific conditions, data for cancer and dementia are presented in this section.

Incidence of both these sets of conditions is closely related to age. They illustrate more specific aspects of the impact of the expected growth in the numbers of older people.

![Incidence trends and projections. All cancers (with 10 most common identified) Scotland: 1961/65 to 2016/2020](source: ISD Scotland)
Figure 9 shows past trends and projections until 2016-2020 of all cancers with the ten most common cancers separately identified. It can be seen that the increase in the number of cases of cancer has been more or less linear for a long period of time and that this broad trend will continue. The future increase is expected to be overwhelmingly a reflection of the ageing of the population rather than any increase in the incidence of cancer within age groups.

Dementia is a condition whose incidence is particularly closely associated with age. The most authoritative prevalence estimates show that 1.4% of people aged 60 to 64 have dementia rising to 13.0% of those aged 80 to 84 and 32.2% of those aged 90 to 94 (NHS Health Scotland, 2003). The projected numbers of cases shown in Figure 10 are obtained by applying current age and gender specific prevalence rates to projected numbers in the relevant age groups. It can be seen that the ageing of the population and in particular the growth in the numbers of the oldest old will produce a doubling in the number of people with dementia in the next forty years and a trebling in the number of people aged 85 and over with dementia.

Although we are looking here at examples of particular conditions, it must be recognised that as increasing proportions of people with cancer or dementia (or any other particular condition) fall into the older age groups, the likelihood increases, as we saw in the section on chronic disease, that these individual conditions will manifest themselves as part of a pattern of multiple morbidity for a given patient – thus calling for a holistic patient centred approach as well as the appropriate specialist care.
The incidence of these conditions has a relatively straightforward relationship with age. Hence future trends, largely based on expected patterns of demographic change, can be mapped with a reasonable degree of confidence.

Much more uncertain however are the prospects for ill-health as a result of a range of ‘life-style’ related risk factors such as smoking, alcohol and obesity all of which show worrying trends with major implications for future demands on the health services. However given the fact that these risk factors are ‘life-style related’ – the result of decisions people make about how they live their lives – they are not pre-determined. They will be influenced by broad patterns of social and cultural change. Absolutely crucial however will be appropriate and effective policies developed as part of Scotland’s health improvement strategy. (Scottish Executive, 2003).

The health service response: patterns of patient activity.

Trends in patient activity reflect both the numbers of patients treated by the health service and changes in the way they are treated – for example the move from inpatient to day case settings for many types of surgical procedure or the increasing role of members of the practice team other than the GP in primary care.

These trends in patient activity are not in themselves sources of pressure or independent drivers of change in the NHS. They constitute in many cases evidence of how the system of health care delivery has responded to external drivers such as increasing numbers of older people. They reflect the pattern of supply of healthcare services as well as changes in demand. Extrapolation of historical trends in patient activity cannot therefore be taken as a stand alone source of evidence on future drivers for change. However, long term trends in patient activity can help us understand how the service has responded to changing patterns of demand in the past and may continue to respond in the future if the model of service delivery does not change.

Ideally we would be able to show long-term trends in all forms of patient contact and treatment as a basis for understanding how the whole system of care has evolved in recent decades. However this is not possible largely because of the recent emergence of newer, more localised and flexible forms of care. New data sets to reflect new patterns of care are being introduced – but because they are new they cannot be used to map patterns of change.

The key data set upon which we can rely to chart changing patterns of care in the health service relates to inpatient admissions and in particular emergency inpatient admissions.

Trends in emergency inpatient admission are particularly important for an understanding of how the health care system in Scotland has responded to the demographic and epidemiological changes we have outlined (ISD Scotland, 2003)
Firstly, the health care system must be seen as a whole system in which changes in one area produce knock on effects across the system. From this point of view, trends in emergency admissions do not just reflect what happens in hospitals but are the outcome of what happens throughout the system of health and social care and in society as a whole. Trends in emergency admission are thus the best long-term indicators of what has happened in other parts of the system. They help us to understand how the whole system of care has responded to the demographic and epidemiological pressures we have outlined.

On the other hand, rising emergency inpatient admissions have knock on effects throughout the rest of the system. These show themselves in the form of winter bed crises, the stubborn issue of delayed discharges and the impact on waiting times.

Figure 11.


Source: ISD Scotland

Emergency admissions.

Steadily rising numbers of emergency inpatient admissions have been perhaps the major source of pressure for the NHS over the past twenty years and more. Increasing numbers of emergency admissions among the very old have been especially problematic (NHS Quality Improvement Scotland, 2004).

Though the rate of emergency admission among older age groups has not been rising faster than among younger adults (Figure 11), emergency admissions of older people have been a source of much greater pressure on the system. This is in part because of rapidly rising numbers of the very old in the population. In addition, among younger adults a higher proportion of the increase in admissions has consisted largely of very short stays in hospital than has been the case for older
patients. Average lengths of stay for older people after emergency admission, as well as being much higher than for younger adults, stopped falling several years ago.

The impact of these trends can be seen in Figure 12 which shows the total number of bed days occupied by patients admitted as an emergency inpatient divided into four broad age groups. It can be seen that patients aged 80 and over have accounted for almost the entire increase in bed days required by emergency inpatients over the last twenty years.

![Figure 12. Bed days required by emergency inpatients by broad age group. 1981 to 2002. Scotland](image)

The impact is more than simply the use of beds. As we have seen, there is increasing concern that unnecessary days spent in hospital may have deleterious consequences for older patients. Over 85% of delayed discharges occur after emergency admission (ISD Scotland/NHS Argyll and Clyde, 2004). In addition winter bed crises, with their serious knock on effects throughout the system, are overwhelmingly the product of surges in the emergency admission of older people. Emergency pressures are one of the main factors making it difficult to bring down waiting times as emergency admissions cut into the resources (beds, staff, theatre time) needed for elective care.

One pattern of emergency admission has been increasingly common in recent years. This is recurrent emergency admission in a relatively small period of time. The number of multiple emergency admissions of older patients has been rising particularly rapidly over the last twenty years. Figure 13 shows the proportion of the population who experienced three or more emergency admissions in a single year.
from 1981 to 2001. For example, in 1981 0.5% of the population aged 85 and over were admitted as an emergency three or more times in a single year. By 2001 this had risen to 2.6% of the population aged 85 and over. As we have seen, the

**Figure 13**  Patients with 3 or more emergency admissions within 1 year by age group. Per 100,000 population. Scotland 1981 to 2002.

**Figure 14**  Bed days occupied by patients with one, two and three or more emergency admissions in a 1 year period. Patients aged 80 and over 1981 to 2002
numbers in the population in this age group have been growing particularly quickly so that the numerical increase was even greater – from 242 patients in 1981 to 2,321 patients in 2001.

As can be seen from Figure 14, the relatively small number of patients aged 80 and over admitted three or more times in a year account for a high proportion of the total increase in emergency bed days in recent years.

The increase in multiple emergency admissions has been spread relatively evenly across diagnosis groups. The main exception is that the rise has been particularly marked in patients with a coded diagnosis of 'symptoms and signs'.

Similarly, if one compares the distribution of diagnoses among patients admitted once in a year with the distribution among those admitted twice in a year and those admitted three or more times in a year there is relatively little difference between the three groups. The main exception is that among patients aged 65 to 79, respiratory conditions made up a higher proportion of diagnoses among those with multiple diagnoses (ISD Scotland, 2003). This may be particularly significant in that the surges in emergency admissions that trigger winter bed crises consist primarily of older patients with respiratory conditions (Damiani and Dixon, 2002).

Understanding the rise in emergency admissions.

The role of demographic, epidemiological and social change.

To what extent has the increase in emergency admissions been a reflection of the demographic changes outlined in an earlier section? The answer depends upon the age range considered.

If we look at the entire population across all ages, the calculation is that population change accounted for only 2.7% of the increase in emergency admissions between 1981 and 2001. In other words, if age-specific emergency admission rates had remained unchanged between 1981 and 2001 and the only change had been in the size of population age groups, emergency inpatient admissions would have increased in total by around 5,000 rather than the increase of 191,000 which actually took place.

If we look at the population aged 65 and over, population change accounted for 13.5% of the increase in emergency admissions. Even if we limit ourselves to the age groups whose numbers were growing fastest and who experience the highest rates of emergency admission – those aged 80 and over – demographic change accounted for only 25.3% of the total increase in emergency admissions (ISD Scotland, 2003; Kendrick and Conway, 2004).
To what extent did rising emergency admissions reflect changes in the health of the population? A recent Scottish study specifically and directly tested the hypothesis that rising emergency admissions could be related to changes in the health of the population and came up with negative results (Hanlon et al., 2000). As has already been outlined, the evidence strongly suggests that the older population was becoming healthier, age for age, in these years. This will have worked to counteract the impact of growing numbers of older people on the overall burden of ill-health faced by the health service.

The conclusion is that only a small proportion of the rapid increase in emergency inpatient admissions in the 1980s and 1990s was attributable to a greater ‘burden of ill-health’ in the older population.

Social factors may have made some contribution to the rise in emergency admissions. As we have seen there was a rapid increase in the 1990s in the numbers of the oldest old living alone. In addition, the contraction in levels of continuing hospital care for older people coupled with the policy of maintaining older people in their own homes wherever possible meant a relative decline in the proportion of older people living in long-term residential accommodation and greater numbers of relatively frail older people living in their own independent accommodation. There may also have been a relative decline in the availability of informal care over the period. These changes may have served to increase the demand for formal care directed at the health and social care system. It is impossible to quantify the impact of these ‘social factors’ on emergency admissions. However their impact is unlikely to have been of the same order of magnitude as that of the ageing population. In addition it must be remembered that social change will have primarily affected the requirement for ‘care’ in general rather than for health care in particular and the translation of such an increased demand for care into emergency inpatient admission is itself a system response rather than a direct reflection of need.

The conclusion has to be that the increase in emergency admissions (and multiple emergency admissions) among older people has not primarily been a direct reflection of increased morbidity or ill-health in the older population but has in the main been a reflection of the way in which the whole system of care has tended to respond to these increasing demands. The underlying logic of this response will be explored next.
The response of the care system.

Only a moderate proportion of the increase in emergency admissions can be attributed to factors 'external' to the care system: demographic change; changes in levels of ill-health; relevant aspects of social change especially in relation to the supply of unpaid, informal care. To explain most of the increase we must look to factors 'internal' to the health and social care system. We must look at how the system has responded to the changing demands of an ageing population.

Primary care.

The role of primary care is key to understanding the rise of emergency admissions of older people. The shape of primary care in Scotland has been changing rapidly in recent years. There has been a move towards larger practices and a shift towards multi-disciplinary and team-base practice. The new GMS contract is bringing major changes particularly in relation to out-of-hours care.

However two long-term defining features of primary care mean that GP referral plays a crucial role in understanding changing patterns of emergency admission. The first is that GPs are the main gatekeepers to emergency inpatient care with an order of magnitude of 70% of emergency inpatient admissions resulting from GP referral (Donaghy et al., 1998). The second is that emergency inpatient referral is a relatively unusual result of a consultation. In 2001 there was on average one emergency inpatient referral for every 47 GP consultations (ISD Scotland, 2003). This means that small, almost imperceptible changes in GP referral behaviour can have large effects on the number of emergency inpatient referrals.

For the sake of illustration let us round the numbers and assume that 1 in 50 GP consultations result in an emergency inpatient admission. Thus for every 1000 patients seen by a GP, 20 will be referred for emergency inpatient admission. If GPs were to refer one extra patient per 1000, this would result in an increase in inpatient referrals from 20 to 21 per 1000 or an increase of 5% in the number of emergency admissions.

As a very rough order of magnitude a full-time GP will have around 4000 patient contacts per year or 1000 per quarter. **Each GP has only to refer one extra patient per quarter to produce a 5% rise in emergency inpatient referrals.**

In making a decision about whether to refer a patient for emergency inpatient admission a GP will make a rational assessment of the options for care which are available and make a decision in the best interests of the patient. Whether emergency inpatient referral is seen as the best option will depend crucially on the availability of resources and systems—such as integrated care teams or other forms of flexible support for patients at home— which could provide alternatives to inpatient
admission and the extent to which the GP sees these systems as safe, accessible and credible. However emergency inpatient admission will often be seen as the simplest and most effective way of ensuring a patient gets immediate and appropriate attention. The hospital is the one part of the system which hardly ever says ‘No’.

Some of the dominant patterns of change in primary care over the last twenty years may well have worked to push up the referral rate. These would include a shift away from personal continuity of care (larger practices, out-of-hours services etc.), an increase in defensive medicine (Summerton, 1995 and 2000) and an increase in other demands on GPs. However even if none of these changes were occurring, the overall increase in demand for care directed at a primary care system which is often under pressure and working close to capacity may itself produce higher referral rates and thus a disproportionate increase in emergency admissions. Such considerations may be particularly applicable to frail older people (ISD Scotland, 2003).

GP referral for emergency inpatient admission forms perhaps the key fulcrum in the system of cause and effect which influences the emergency inpatient admission rate. The dynamics which influence the decision to refer are poorly understood.

This account has emphasized how the difference in order of magnitude between GP contacts and emergency admissions means that tiny changes in GP behaviour can have a major impact on numbers of emergency admission. The dominant pressures have meant that these powerful dynamics have tended to work to increase emergency admissions. However the same powerful ‘multiplier effect’ could work the other way. Any interventions which could help to produce relatively small downward changes in the GP emergency referral rate by providing other options for care will have powerful effects on numbers of emergency admission. To reverse the example given above, if alternatives were introduced to enable GPs to avoid referring one patient every three months, this would be equivalent to reducing emergency admissions by 5%. If we could provide for the GP an alternative to admission for one patient per month, we could reduce emergency admissions by 15%. The ‘GP multiplier’ is no longer an inexorable ratchet in the wrong direction but a powerful lever for change.

Social care.

Most of the care (in the widest sense) needed by the older population is not medical. As we have seen much of the increased need for care generated by an ageing population of whom a greater proportion are living at home is an increased need for social care as much as it is a need for healthcare. The Wanless Report came to a clear and unambiguous conclusion on this issue:

‘Health and social care are inextricably linked. There are many interactions between the two sectors. For example, recent increases in the number of older people being admitted to hospital in an emergency partly reflect reductions in the availability of appropriate social care.’ (Wanless, 2002)
Over the last two decades it would seem to be difficult to argue that social care has received the resources necessary to avoid it being the source of the third of the major ‘care deficits’ - alongside informal care and primary care - which have spilled over into rising emergency admissions among older people.

Nevertheless, local authorities have worked tirelessly to meet the needs of older people through a wide range of services within the resources allocated to them. They are the main providers or commissioners of social care services designed to support people at home. In 2002-03 they invested nearly £1 billion in services for older people, out of a total of £1.2 billion for all community care groups. Local authorities purchased approximately 500,000 hours of home care service per week for over 67,000 people in 2002-03. About 25% of the care packages were for 10+ hours home care per week. Of the total number of people provided with a service, 45,000 were over 75+ years. Besides domiciliary services such as home care and domiciliary meals, local authorities provided or commissioned care home places for nearly 40,000 residents and day care services for about 22,500 people in the same year.

The level of expansion in financial expenditure over the ten years, from £314m in 1990 to nearly £1 billion in 2003, demonstrates the very significant increase in level of need. The response to this increase in need has been significant improvements in the way social care is provided, and particular in the development of joint working. Social care cannot be seen separately from medical care and as it has expanded, so has more integrated care been developed.

Since 2001 there has been a very significant drive through the Joint Future Agenda to develop joint working with the health service in order to support people at home. This includes joint services such as Rapid Response Teams, joint rehabilitation teams and joint older peoples/joint community care teams. Other joint actions taken to reduce avoidable emergency admissions to hospital include locating social work staff in A&E units, intensive nursing and social support in sheltered housing, intensive home care or “step up and step down” units. The development of Community Health Partnerships is further promoting the joined up approach.

However, successfully reducing the levels of avoidable admissions does depend on a range of joint working factors, such as organisational, financial, or possession of knowledge about options. Informal factors such as positive collaborative working between GPs, community nurses, allied health professionals, and social workers at the grass roots level can be critical.

Overall, although joint working is improving the effectiveness of existing services and use of resources, the growth of level in need has outstripped the capacity of social and health care services to meet the needs of older people.

The supply of hospital beds.

The supply of hospital beds and ease of access to them is generally accepted to be a factor in determining the level of emergency admissions. This would be a
particular instance of Roemer's law whereby whatever hospital beds are available will tend to be occupied. One consequence of changes to elective care and in particular the shift from inpatient to day case treatment has been a decline in the number of hospital beds occupied by elective patients. This has been almost exactly balanced by the increase in beds occupied by emergency patients. It may be that an unintended consequence of the freeing up of beds by changes in the pattern of elective care has been further reinforcement of system tendencies towards increasing emergency admissions.

Lack of integration.

The final ‘facilitating factor’ in explaining the rise in emergency admissions may be one of the most fundamental but also the most elusive in terms of direct evidence. This is the historical legacy of fragmentation in the care services whether in the form of the split between the primary and acute sectors, specialisation within the acute sector or the divide between health and social care.

In other words, part of the explanation of the rise in emergency admissions, and particularly of the rise in multiple emergency admissions among older people, lies not in pressures in one part or other of the system but rather in the very nature of the system itself. In particular, a major part of the explanation could lie in the extent to which the system does not function as an integrated and co-ordinated system of care but rather as a collection of fragmented, unco-ordinated and specialised silos.

As Donald Berwick has pointed out "Rates of hospital use are a litmus test for the integration of care" (Berwick, 2002)

The increase in multiple emergency admissions among older people was highlighted in the Report of the CMO's Expert Group on Healthcare of Older People (Chief Medical Officer, 2002). In that report the concept of 'structural ageism' was introduced to help understand the perception that the NHS does not adequately meet the needs of older people despite there being little or no evidence that NHS staff hold explicitly ageist attitudes.

'The failure of NHSScotland to adapt to the changing needs of a changing population could also be seen as "structural ageism". In other words, a traditional service designed around isolated episodes of care within well-defined specialties and agencies cannot fully meet the needs of increasing numbers of older patients especially those with chronic current, multiple and recurrent medical problems.'

Harrison (2001) has given perhaps the most extended treatment of how the delivery of health care in the United Kingdom has been structured by the needs of professional specialisation and the degree to which resulting specialised models of care are particularly inappropriate in the areas of emergency care and care of the elderly.

It must be recognised of course that in policy terms Scotland is increasingly well-placed to address these issues of integration and fragmentation (Woods, 2001). Initiatives such as Joint Future and more recent developments such as unified
Health Boards and Community Health Partnerships are providing an organisational framework much more conducive to integrated working than in the past. In service delivery terms, real progress in joint working has been made. However in this section the discussion has been in terms of traditional and deeply-embedded patterns of silo-based working. Translating a better policy environment into integrated service delivery at the front-line – as it affects the patient – is still a massive challenge.

From the perspective of the issues of fragmentation of care outlined in this section, the rapidly rising trend in multiple emergency admissions among older people is a reflection precisely of a system attempting to cope by providing increasing numbers of isolated episodes of care rather than providing the integrated and supportive care which is so often needed.

Elective care.

The provision of elective care has also had to respond to increasing demands associated with an ageing population and changing patterns of ill-health. Additionally, in many areas there has been increasing recognition that older people are as entitled to and are as likely to benefit from treatment as are younger people. This has paralleled a lower tolerance of ageism and unjustified ‘age-related thresholds’ for treatment in the NHS.

Thus the demand for treatment has risen and the provision of planned procedures and other forms of elective care has risen. However it is impossible to track numerically the overall volume of ‘activity’ which this represents precisely because of changes which have taken place in the way services are delivered.
Over the last twenty years there has been a progressive transfer of many forms of elective surgery from an inpatient environment to a day case setting. The pattern has been extended as increasing numbers and types of procedure are carried out in an outpatient setting or in primary care. This tendency towards a localisation of elective care has occurred in part for reasons of efficiency and in part for reasons of patient comfort and convenience. It has involved a widening empowerment of staff as surgery has ceased to be the exclusive preserve of surgeons and other hospital based clinicians and has provided opportunities for other health care professionals to widen their skills and the scope of their relationship with their patients.

This shift along the spectrum from inpatient settings to primary care can be regarded as the result of creative responses to increasing demand and increasing technological potential. However in many respects – such as the carrying out of minor surgery in a primary care setting – it is still early days and there is a massive potential for further shifts. Some areas however, are pushing the boundaries (see Box)

**The evolution of cataract surgery**

Twenty years ago it was inconceivable that ophthalmic nurses would be running their own clinics, providing a minor surgery service and teaching junior doctors how to use various pieces of equipment. It was also unheard of that optometrists would refer patients directly to the hospital eye service or even treat patients in their practices. However in some parts of Scotland this is becoming common practice offering great benefits to patients. Similarly it was almost inconceivable that cataract surgery would be performed as a day case procedure.

Patients no longer need to be given a general anaesthetic as local anaesthesia for the procedure is now the norm. Nor do they require to be admitted up to two days prior to the procedure due to comprehensive pre assessment. Ophthalmic pre assessment involves complex measurement that requires high level technical skills. Initially undertaken by consultants or senior medical staff this is now nurse led. Having a local anaesthetic enables patients to have their procedure partially dressed, return to the ward area to have some light diet then to return home as soon as nurses are happy to discharge patents. They will be followed up six weeks later in a nurse led cataract clinic. Quite a different story from care in the 70’s and 80’s which had patients remaining in bed for 2 days post operatively sometimes on restricted diet then followed up at regular intervals until the Consultant was ready to discharge.
The process has not gone as far in Scotland as it has in England for example. A recent Audit Scotland Report showed that overall Scotland has lower day surgery rates than England (Audit Scotland, 2004)

One of the main threats to the smooth delivery of much elective care comes from the kind of emergency pressures which have already been outlined. Before a surgical procedure can be carried out a range of resources have to be brought together at the right time and the right place: surgical staff, nursing staff, anaesthetist, theatre time, beds. Remove any one of these components and the operation has to be cancelled.

Where the same staff and resources are available for both elective and emergency care, emergency treatment will always come first – because it is an emergency. The need to perform emergency treatment can mean the loss of one or more of these components.

This is a further example of a situation where a whole system solution is required. Stresses in the provision of emergency care have knock-on effects to planned activity causing the frustration of cancellation and delay. To some extent the answer to providing better and quicker elective care lies in reducing avoidable emergency admission. But it also involves doing more of the role enhancement and smarter working described above.

Implications.

This account has highlighted three dominant and related developments in the Scottish population’s need for healthcare. The first is the growth in the number of older people and in particular the number of relatively frail older people living at

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**Developing minor surgery in Primary Care.**

As a result of redesign work in Grampian around four years ago several GPs were trained and accredited to a higher level than GMS surgery by the Director of Day Surgery. They were able to do more complex skin lesions, vasectomies etc.

Each LHCC took things forward in a slightly different way. In North Aberdeenshire two GP surgeons were appointed – one with a background in general surgery and one with a long history of providing GMS surgery at practice level.

These GPs

- Operate at each of the four community hospitals, providing rapid local access to treatment.
- Have time dedicated to supporting the network of GPs providing minor surgery within their own practices.
- Have performance related pay based on waiting times, quality outcomes and demonstration of support for GMS surgeons.

At one community hospital the local general surgery clinic waiting time fell from 22 weeks to 8 Weeks. These “referral” surgeons have now been organised into a network of surgeons together with the practices providing the enhanced service in minor surgery.
home. The second is the emergence of chronic disease as the main challenge facing the health service. The third is the need to tackle avoidable emergency hospital admissions.

"The predominant acute disease paradigm is an anachronism. It is shaped on a 19th century notion of illness as a disruption of the normal state produced by a foreign presence or external trauma e.g. infection or injury .... Under this model acute care is that which directly addresses the threat ... In fact, modern epidemiology shows that the prevalent health problems of today (defined both in terms of cost and health impact) revolve around chronic illness" (Kane, 2002).

The major locus of pressure on the NHS over the last twenty years has been the rise in emergency admissions especially among older people. The increasing burden of ill-health associated with an ageing population only explains a small proportion of this increase in emergency admissions.

The most fundamental strand of explanation for the rise in emergency admissions lies in the mismatch between the needs of the population for proactive, integrated and preventive care for chronic conditions and a healthcare system which is still organised primarily to provide specialized, episodic care for acute conditions.

In this sense Scotland’s experience can be seen as exemplifying a more general situation outlined by the World Health Organisation’s chronic conditions team:

“Effective prevention and management of chronic conditions requires an evolution of health care, away from a model that is focused on acute symptoms towards a co-ordinated, comprehensive system of ongoing care. Without this type of change, health care systems will grow increasingly inefficient and ineffective as the prevalence of chronic conditions rises. Health care expenditure will continue to escalate but improvements in population health status will not” (Epping-Jordan et al., 2003)

Future patterns of patient activity in the NHS in Scotland will depend upon the extent which services continue to be delivered according to the old model.

This makes the future much less pre-determined. The impact of future demographic and social change on emergency inpatient admissions among older people will depend upon how the health and social care system responds to their needs.

Three broad scenarios can perhaps usefully be envisioned:

1. Trends in age specific emergency admission rates continue to rise broadly in line with those of the last twenty five years. The future trend in acute bed requirements for older people would be an extrapolation of Figure 12.

2. Age specific emergency admission rates stabilise. Any future increase in emergency admissions will be a reflection primarily of the numbers of older people. Given future demographic projections, this would imply an increased requirement for acute beds for older people.
3. The health and social care systems change sufficiently to make a significant impact on the number of avoidable emergency admissions and lengths of stay among older people. Age specific emergency admission rates among older people decline and lengths of stay resume their historic downward trend: this offsets to a significant extent the impact of rising numbers of older people.

What are the likelihoods? There are some signs already of shift from Scenario 1 to Scenario 2. In the last very few years there have been signs of a flattening off, at a Scottish level in the rate of emergency admission among older age groups. This has been concentrated in those Health Boards which have made deliberate efforts to begin the move towards a situation in which only those older people who really need to be admitted to hospital are admitted.

The progress which is made towards Scenario 3 will depend upon reform and reorientation of the health and social care systems to a more preventative and less reactive approach to the care of older people.

International experience suggests that it is possible to alter the balance of the healthcare system way from acute hospital based responses. Much of the discussion in the United Kingdom has focused on the results achieved by the Kaiser-Permanente system in the United States with much lower level of inpatient admissions and bed days than in the NHS. This performance reflects a higher level of co-ordination between primary and secondary care physicians and a systematic and highly-developed approach to chronic disease management across the whole population (Ham et al, 2003; Dixon, 2004)

Perhaps the most dramatic example in this area was the achievement of the Veteran’s Health Administration in the United States. In 1995 the VHA began to transform its medical care system from a hospital-based system to one providing comprehensive services according to a primary-care based model. Between 1994 and 1998 this was associated with a 55% reduction in the number of acute beds. Analysis of survival rates in cohorts of VA patients with serious chronic conditions over the same period showed either no effect on survival or improved survival rates (Ashton et al., 2003)

More specific approaches such as intensive case management have shown promising results. Intensive case management adopts a proactive and preventive approach to managing the health needs of a relatively small group of people identified as being most at risk of inappropriate hospital admission. It emerged in the United States as a response to the kind of pressures which have been outlined in this report (Aliotta, 2001). The Evercare model of intensive case management has been piloted by the Department of Health in England. In these pilots, the principal criterion for identification of the target group is that they have experienced two or more emergency admissions in a given year. The present analysis has shown that this relatively small group of patients have accounted for the bulk of the increase in emergency bed days in Scotland since 1981. Evaluation of the Evercare model and similar initiatives has shown significant reductions in emergency admissions and bed usage among such target groups.
Thus there is an increasing body of experience showing that there are ways in which the long-term rise in emergency admissions among older people could be stabilised and even turned around. Even given the massive demographic challenge which we face, the future pattern and level of emergency admissions among older people in Scotland – historically the greatest source of pressure on the NHS – is not pre-determined. Our best way of tackling this source of pressure may well be simply to provide the better co-ordinated, more integrated and more preventative care which our older people deserve.

3. Health inequalities

The current situation

Inequalities in health between socio-economic groups are a problem facing all developed countries (van Doorslaer et al, 1997) but are a particular issue in the UK. Levels of income inequality are only part of the story - the UK experiences levels of health inequality comparable to the US despite having narrower income inequality (van Doorslaer et al, 1997). Within the UK, Scotland exhibits particularly high levels of health inequality despite having lower levels of income inequality than England as a whole (Gravelle and Sutton, 2003). It is the poor health consequences of poverty that set Scotland apart. The increasing concentration of poor health in deprived groups is also the main cause of the widening health gap, though increasing polarisation of socio-economic circumstances also plays a role (Gravelle and Sutton, 2003). Therefore, as well as improving the poor life circumstances of parts of the Scottish population, it is necessary to break the link between poverty and poor health.
The Measuring Inequalities in Health Working Group recently presented data on levels of socio-economic inequality across a range of twenty-three indicators of health and health related behaviour (Scottish Executive Health Department, 2003). A sample of the results confirms the levels of health inequality experienced in Scotland.

In 2002 37% of mothers in the most deprived fifth of Scotland's postcode sectors smoked during pregnancy compared with 14% in the most affluent fifth. In 1999, 73% of 5 year old boys in the most deprived areas suffered from dental caries compared with 39% in the most affluent. In the years 2000-2002 4.1% of female babies were classed as low birthweight in deprived areas compared with 1.8% in affluent areas. The rate of hospital admission as a result of an accident in 2001 for boys aged 0 to 9 was 1.77 per 100 in deprived areas and 1.02 per 100 in affluent areas.

Among adults, 39% of males in the most deprived fifth of the population smoked in 2001 compared with 21% of the most affluent. In 2001, 21% of women aged 16 to 64 in deprived areas reported they had a limiting long-standing illness or injury compared with 8% in the most affluent areas.

These inequalities in health related behaviour are of course reflected in levels of inequality in mortality and life-expectancy. For example, the all cause mortality rate per 100,000 women aged under 75 in deprived areas in 2001 was 452 compared with 245 in affluent areas. In 2000/02 life expectancy at birth for women in deprived areas was 76.3 years compared with 80.9 years in the affluent areas of Scotland. (In terms of healthy life expectancy a recent report by ISD Scotland showed gaps of 10.9 years for females and 17.4 years for males in the years of life expected to be in good health between the most and least deprived fifths of the population (Clark et al, 2004).

Although many of these indicators showed improvement in the 1990s – e.g. fewer women smoking during pregnancy, fewer hospital admissions for accidents to children, increased life expectancy – there was no sign of a consistent narrowing of the levels of inequality.

In addition the report points out that measuring socio-economic inequality at an area level – as these indicators do – is likely to considerably understate the level of inequality which would be found if the indicators were based on individual measures of socio-economic condition. Some well-off people live in areas classified as deprived and deprived people live in areas classed as affluent. This tends to lead to an understatement of the true levels of inequality.

The role of health services

It has traditionally been thought that health care had only a limited impact on population health, with lifestyle factors and the social environment being more important (McKeown, 1976). However, the development of health care technologies that have proven to be effective and can be applied on a substantial scale suggest a more prominent role for health care in improving health (Bunker, 1995). Evidence
from the US and cross-country comparisons, for example, show that places with stronger primary and community health care systems have better health (Macinko, Starfield and Shi, 2003; Shi, Starfield, Politzer and Regan, 2002). The effects are likely to be strongest for disadvantaged groups (Shi and Starfield; 2001), suggesting that redesign of health services in the community could play an important role in reducing health inequalities. Since this is where there are the largest health gains to be had, this would also contribute to overall health improvement.

There is only limited evidence from Scotland of the extent to which health care services reduce or contribute to widening health inequalities. Recent reviews of the evidence (Goddard and Smith, 2001; Dixon et al, 2004) find some general UK trends. Because deprived populations experience worse health they tend to have higher rates of health care consumption. The key questions are whether these consumption levels are high enough and whether access to health care is timely, appropriate and of equal quality.

The First Report of the National Review of Resource Allocation found that the most deprived areas in Scotland had lower than expected rates of hip replacement, coronary artery bypass grafts and prescriptions of lipid-lowering and anti-depressant drugs. The Standing Committee on Resource Allocation’s most recent research highlights continuing inequalities in access to, and uptake of, health care (McConnachie and Sutton, 2004).

Health care use in deprived areas is characterised by relatively high use of unscheduled care and relatively low use of scheduled care. The reasons for this are likely to be complex and multi-faceted. Part of the reason may be the ‘hierarchy of needs’ whereby health care interventions that are effective over the long term are of lower priority to those with multiple social and economics needs in the short term. But there may also be aspects of the health service system that cause problems - despite having higher than expected numbers of visits to GPs, deprived populations are less likely to have scheduled visits with hospital specialists (van Doorslaer et al, 2004; Morris et al, forthcoming).

The way forward

The health service is failing to serve the population groups who need it most. The health care system needs to become more responsive to these groups.

Part of the solution may be that Boards need to be more proactive in planning services and ensuring that resource distribution is fair. The geographical concentration of deprivation in Scotland creates specific pressures related to deprivation for particular Health Boards. Although the current resource allocation formula for NHS Boards includes deprivation in the factors taken into account in allocating resources, its focus is only on distributing resources between Boards. There is considerable variation across NHS Boards in the extent to which resources are targeted at deprived populations (McConnachie and Sutton, 2004) and addressing these issues needs to become part of the governance arrangements of the NHS in Scotland.
There are also simple structural problems that could be addressed. Much of primary medical care is delivered through general practices. These are small organisations with considerable autonomy and there is substantial variation between them. A recent review of the structure of general practice found that practices serving deprived areas had poorer structural and organisational conditions than other practices. Deprived practices were likely to be smaller, staffed by more inexperienced GPs and less likely to participate in a variety of voluntary schemes that promoted quality care and secured access to additional resources such as Personal Medical Service pilots, training and accreditation by the Royal College (Mackay and Sutton, 2003).

The Scottish Executive announced support earlier this year for Unmet Needs pilots in the three NHS boards with the highest levels of deprivation – Greater Glasgow, Argyll and Clyde and Tayside – to look at issues such as access to treatment for major diseases and the uptake of screening and prevention services. Further work is required to determine the extent to which health inequalities exert pressures on particular parts of the service and whether these pressures need to be addressed through service redesign.

Health inequalities are a priority area for the NHS Performance Assessment Framework (PAF) but the Health Improvement Self-Assessment returns for 2003/04 highlighted the perceived lack of a clear national framework for tackling health inequalities and the need for strong national and local leadership which can be translated into innovative action at local level.

Tackling health inequalities is a key priority for the Scottish Executive. It is planned therefore to develop a national Framework for Tackling Health Inequalities which will contribute to addressing this need. This will have a clear focus on NHS services and delivery but will set these in the wider context of Community Planning Partnership strategies to tackle health inequalities.

In summary, the challenge for the NHS in Scotland in tackling inequality and its effects on health is fourfold:

1. ensure that NHS resources are deployed strategically to maximally impact on reduction in population ill health and inequalities in health.
2. ensure that its own actions do not add to inequalities by being more easily accessed by more privileged subgroups of the population.
3. build on the success of population based interventions like the cervical screening programme that in recent years has vastly reduced inequalities in access to this intervention.
4. play its part in confronting the determinants of ill health and inequalities.
4. Patient Expectations

The health care stage is currently undergoing a shift in emphasis with patients and the public moving toward the centre and the health care system and those working in it moving towards more backstage or supporting roles. Patients of the future will become decision makers, case managers and co producers of health and health care. This change will be facilitated by access to their medical history via electronic patient records and access to a wide range of health information via the internet. The shift is from a paternalistic system based on the patient as a passive recipient of care towards one in which they are recognised as actively involved in their care and treatment (RCN 2004).

It has been fuelled by a series of social and political pressures that have included:

- The requirement for greater accountability of public services
- The need to show efficient use of public services
- The demand for a greater voice for the healthcare consumer

This shift is evolutionary and may bring a different set of expectations to those currently held by patients. Nevertheless it is vital to take account of current expectations in order that they inform the future development of healthcare services.

A recent survey into the Public Attitudes to the National Health Service in Scotland (2004) aimed to explore public attitudes to modernisation of the NHS. Modernisation or redesign of health services encompasses increased access, choice, the level of public involvement and responsiveness. This survey provides a baseline of current attitudes to the NHS in Scotland but we have to anticipate how some of these attitudes will change over time.

The level of awareness and use of new services suggests that there is still work to be done around informing patients of what services are available and how best to access them. Although patients were aware of some services such as day cases or consulting pharmacists for minor ailments they were less aware of new initiatives that increased access such as telephone consultation or nurse and pharmacist prescribing. The survey however, also demonstrates that certain aspects of the modernisation programme are proving effective. It reports that patients are accessing primary care consultations more quickly than previously and their contacts are with a wider range of health care professionals, particularly practice nurses.

One unexpected finding from the survey was that in Primary Care, despite high levels of satisfaction with contact with their own GPs, other GPs and practice nurses, patients thought there was a greater need for improvements across all facilities and aspects of service delivery when they thought about their last contact with a GP other than their own. When they saw another GP, people thought there was a particular need to improve the professional having enough knowledge of their situation to deal with them effectively, being listened to by or having enough time with another GP. They also thought there was a greater need to improve car-parking and child friendly facilities despite the fact that they were the same as if they had seen their own GP or a practice nurse. This suggests that there is more to be done
to increase patients’ confidence in health professionals they don’t know and could have implications for initiatives designed to increase access and choice through widening the pool of professionals who might handle cases.

Satisfaction with NHS services is at least as high as in 2000 and in some cases is higher. 90% of patients reported that they were very or fairly satisfied with key service areas. Some improvements were identified in the survey that applied across most parts of the NHS. Others were specific to individual services. A large proportion of those surveyed were optimistic about the future of the NHS and expected improvements over the next few years. Importantly there is clear link between patient satisfaction and some of the key aspects of modernisation especially shortened waiting times and extension of choice.

The survey revealed certain access issues that patients suggested could be improved on. Availability of convenient appointment times, being able to talk to health professionals by phone and better car parking facilities were highlighted. Other issues relating to communication were reported by the patients surveyed. These included being given information about treatment, being encouraged to ask questions and the general usefulness of the information that was given. In the past patients have been talked at rather than listened to. This is no longer acceptable. Patients should not only have more say in their own care and treatment but also have more influence about how services should be designed and delivered. There will however, be some patients who will want others to make decisions on their behalf. Patient advocacy is likely to play an important part in moving away from the current paternalistic model. Advocacy is an important way of enabling people to make informed choices about, and to remain in control of their own health. Advocacy can also help people have access to information they need, to understand the options open to them and to make their wishes known. It is a key part of a modern, patient focused NHS.

The survey demonstrates the wide gap that remains between the level of influence people think they should have compared with the level of influence they have in practice. Forming relationships between professionals and service users should be a two way process for change. This change can only be sustained in an organisation that supports such developments.

**What Patients want currently from the NHS**

- Treatment that is effective and delivers good outcomes
- Services that are quick and easy to use
- Services that are well organised
- To be treated with dignity and respect
- To be treated in places that are safe clean and comfortable
If as suggested, the 2004 survey is used as a baseline for current attitudes we must consider what patients will expect from the NHS in the future. We can expect them to demand safe, high quality treatment with minimum variation across the country. They are likely to value ‘high-tech’, proactive services delivered by highly motivated staff. Patients will be reluctant to wait for appointments in both primary and secondary care settings and will expect their care to be integrated, well coordinated and not subject to organisational difficulties (Wanless 2002). This will be possible through the development of multidisciplinary teams further expanding the range of professionals a patient can access. If they have to go into hospital, they will expect higher quality accommodation and food and that their stay as an inpatient is kept to a minimum. Length of stay varies enormously across the country and is often based on historical practice. The future patient is likely to expect that their personal needs and circumstances are taken into account and that there is consistency both of standards, access and length of stay. They will want something that is tailored to their needs and meets the best standards of customer care found elsewhere. For patients in remote and rural communities it may mean that their appointment times are coordinated with travel arrangements thus minimising the time spent away from home.

What this means is that we have to develop a responsive health service that will be better, safer, quicker and closer to patients, their families and carers. To realise this goal we will have to make some fundamental changes to the way services are provided. We are aware that there are sometimes low expectations of public confidence in the ability of services to deliver the standards and responsiveness that patients expect (Disney et al 2004). Patients have a desire to be involved in managing their own care and to influence how services are developed (Robinson 2004). Harnessing the motivation of frontline staff to work in partnership with patients in order to make the necessary changes to service delivery may be one way of helping to create and sustain this type of environment.

The Future Patient will likely:

- be more educated,
- not have enough time to get things done,
- be more affluent,
- be less deferential to authority and professionals,
- have more to compare the health service against, and
- will want more control and more choice – they will reject “one size fits all” services.
5. Remoteness and Rurality

One fifth of the Scottish population lives in a rural area (Scottish Executive, 2004). Of these people, a significant number live in very remote areas that require different healthcare arrangements to cope with times of enforced self reliance due, principally, to weather and transport difficulties.

Healthcare arrangements for remote and rural areas are currently facing a set of distinct and complex challenges. The various drivers for change outlined elsewhere in this section (such as deprivation, demography, workforce developments and technology) will impact on rural and remote areas in ways which often differ significantly from their impact on less remote and more urbanised localities.

There is therefore a need for a nuanced and specific response to the healthcare issues of remote and rural areas. There must be an alternative to the dominant model of healthcare thinking in Scotland, which has been distinctly urban based.

Demography

Population sparsity introduces difficulties in the economic delivery of services (Deauville, 2001; Skills for Health, 2004). Low absolute numbers lead to difficulties in sustainable service provision and the retention of clinical skills.

Rural areas are projected to show especially strong shifts in the balance of the population towards older age groups and a decline in younger economically-active age groups. This has implications for increased demand for health care for older people and the recruitment of staff to provide care.

Deprivation

Deprivation in rural areas has tended to be hidden, in part because of inadequate and inappropriate definitions and measures (Barnett et al, 2001), masking unmet need (Stark et al, 2004). The healthcare effects of deprivation in remote and rural areas are amplified by problems of access and the disproportionate cost of travelling to services.

Access

Transport infrastructures are not always optimally configured to allow access to services for people in remote and rural Scotland. Long distances and the lack of a transport infrastructure increase the inaccessibility of services (Scottish Executive, 2004). The disproportionate cost of travel and infrequent scheduling of services make it extremely difficult for families to visit and provide support for patients in hospital. This will increase the emotional cost and physical toll of supporting relatives away from home. Longer recovery times may result.
Education and training drivers

Distance from major centres means that clinical staff often have to extend their skills beyond their core areas (Swan et al, 2004). The breadth of work delivered by clinical staff in remote and rural settings may make it difficult to maintain skills across a broad range of clinical areas. Inaccessibility of training programmes may lead to skills decay and increases in clinical risk and stress at work (Douglas and Laird, 2004).

Workforce drivers

The current service relies on the contribution of dedicated professionals, many of whom are reaching the latter stages of their working lives and have contributed long periods of on-call service in addition to their standard role. Replacing this workforce with younger healthcare professionals who are more used to working in the wider NHS in extended teams will be a major challenge. Extended teams protect them from the frequent on-call rotas and clinical diversity that is the bread and butter of remote and rural health care.

Compliance with developments such as the European Working Time Directive often requires larger clinical teams, but there may be insufficient workload to support larger teams in rural and remote areas. A rural environment may not be able to support the career pathways seen as desirable in the current specialist practice environment. Working in a remote or rural environment may therefore be seen as a career cul-de-sac.

Quality drivers

National quality improvement programmes may not be sensitive to the needs of small teams working in a rural environment. Although clinical and service outcomes are often good and patient evaluation of service provision is positive, services may not be able to satisfy the detail of process requirements.

Implications

The fragility of services and closeness of the public to service providers means that remote and rural areas often feel the effects of change sooner than urban areas (Skills for Health, 2004). They act as a ‘litmus test’ for the health service as a whole. Addressing the drivers acting in remote and rural Scotland on a whole-systems basis will be of benefit to all.

Many potential solutions will be the same. They will include transport arrangements, service access, professional standards and accountabilities, multidisciplinary team working and education and training structures. It is, however, unrealistic and unsustainable to expect the same configuration of care to be used throughout Scotland.

Developing a model (or models) that balances equitable access with sustainability is the challenge for the whole service in Scotland. remote and rural areas are at the forefront of these developments.
6. Finance and performance

How does the performance of the NHS in Scotland compare with that of other health care systems? The comparison of the performance of different health care systems is a complex and difficult task. Differences in administrative systems, priorities, characteristics of populations, data definitions and registration procedures are only some of the wide range of factors which can serve to render apparent differences in performance misleading.

However two reports published in 2004 (Audit Scotland, 2004; Civitas, 2004) as well as recent work by the Scottish Executive provide information on the broad parameters of inputs and outputs of the Scottish and English health care systems in particular. Both reports demonstrate that Scotland spends more on health care per head of population than does England (see Figure 15 below). Recent analysis by the Scottish Executive confirms this trend over a longer period. Figure 16 shows NHS expenditure per capita for Scotland and England from 1979/80 onwards and projected expenditure for 2004/05 to 2007/08. This shows a consistent, but gradually narrowing gap over the last 25 years.

Figure 15

Financial years 1979/80 to 2007/2008 (projected)
Over the period as a whole per capita NHS expenditure has grown considerably in both countries reflecting both inflation and real increases in NHS spending. Scotland has maintained its absolute advantage in terms of per capita spending. The level of spending per capita in Scotland has remained well above that in England. However, since the early 1990s this absolute advantage has not kept pace with the overall increase in spending so that the ratio of Scottish NHS expenditure to that in England has declined steadily. For the 1980s and into the early 1990s, per capita NHS expenditure was around 25% higher in Scotland than in England. By 1999/00, the advantage had shrunk to 20% with spending in Scotland at £974 per head compared to £813 in England. By (2002/3) the real gap had narrowed further to an order of magnitude of 14% difference in per capita spend. (The apparent widening of the gap in 2001/2 and 2002/3 was due to Scotland adopting a change in accounting base two years earlier than England). Thus Scotland’s relative advantage in terms of NHS spending, while still considerable, has been shrinking steadily in recent years. By 2007/08 the gap is projected to have declined to around 10%.

These figures refer only to state-funded health care spending. Scotland has a lower level of private health care provision. Thus the gap in terms of total health care spending would be somewhat smaller. In terms of the wider context, the Scottish level of per capita spending on health care is now around the European average (Audit Scotland, 2004).
Higher spending in Scotland is reflected in a higher level of staffing per head of population in Scotland across a range of categories. Scotland has been reported as having 0.71 GPs per 1000 population compared with 0.52 in England. In 2001 there was 1.68 hospital medical staff in Scotland per 1000 population compared with 1.35 in England. Finally Scotland employed more nurses per head of population than England with 7.3 per 1000 population compared with 5.4 in England (Civitas, 2004).

Comparison of the number of beds per head of population is complicated by Scotland’s greater (but declining) use of long-stay or continuing care beds. If these are included in the total Scotland appears to have twice as many beds as England per head of population (6.2 as against 3.0). However if the comparison is restricted to acute beds, Scotland has 3.5 beds per 1000 population compared with 2.8 for England (Audit Scotland, 2004).

Thus Scotland’s higher levels of spending on health are reflected in higher levels of staffing and beds.

However if comparative measurement of such healthcare ‘inputs’ has its difficulties they are as nothing to the difficulty of measuring the ‘outputs’ of the healthcare system in terms of clinical outcomes and improved health. Separating out the effect of the health care system on health outcomes from the effects of broader factors such as pre-existing levels of population health and resilience is all but impossible. After a comprehensive survey of the available evidence, the Civitas report came to the following conclusion:

“Overall, and contrary to common belief, though health funding has been higher in Scotland for many years, health outcomes are not uniformly worse in Scotland than in England … Outcomes in Scotland are generally speaking worse but some are equal or slightly better than those in England. Whether this is because of fundamental health system flaws, genetics or unhealthy lifestyles we cannot really say.” (Civitas, 2004)

Is the Scottish health care system less cost-effective than the English? The answer depends upon the extent to which Scotland needs its extra healthcare expenditure to overcome those unfavourable factors which work against delivering comparative health outcomes. The effect of higher levels of deprivation in Scotland has already been discussed. Higher levels of rurality and remoteness in Scotland are also a significant factor. They make it much more difficult to fine tune the relationship between needs and resource. Ensuring adequate access to healthcare for people in remote parts of Scotland – and particularly inhabitants of the Scottish islands - can be much more expensive than in urban or central belt areas. For example spending per head of population in 2003 in Fife was £1034 compared with £1868 in the Western Isles. Finally the smaller size of the private sector in Scotland will affect the amount of NHS money needing to be spent to achieve equivalent aggregate healthcare outcomes.

A definitive answer is impossible. What is unarguable is that Scotland does spend a good deal more money on healthcare than England – although as we have seen Scotland’s extra spending has been steadily declining in proportional terms. What
Scotland gets for that extra investment is much less clear and needs to be addressed.

Relatively high levels of spending on health in Scotland and the relatively poor record of Scotland in terms of ill-health and mortality are long-term historical legacies (cf. Dixon et al., 1999) It has been suggested that the performance of the NHS in England in recent years has improved in areas such as emergency care and waiting times to an extent which has not been matched in Scotland. It may be that because of its relatively lower levels of capacity in terms of staffing and beds, England reached a ‘crunch-point’ several years ago which forced the adoption of more aggressive policies in terms of modernisation and reform. Scotland’s higher levels of capacity may have allowed the Scottish system a few more years of being able to avoid facing up to the need to modernise the system. If so we have an opportunity to make the necessary changes before they are forced on the system by the kind of generalised bed crises which were beginning to occur in England.

In the light of the demographic and other analysis elsewhere in this paper, one thing is clear. Increases in resources will be required to meet increased demand. But it is equally clear that no matter how generous those resources - and the planned Health budget will exceed £10 billion per annum in a few years - the answers to the challenges are not wholly financial. It will be necessary to find ways to fully account for the service change that increased resources bring but it is also important to ensure that the nature of the service purchased changes to meet the changing needs of patients and that the financial system is sufficiently flexible to be able to shift resources where they are needed.
7. Workforce

Introduction

The size and composition of the workforce is a key determinant of the capacity of the NHS. This chapter will try to describe some of the current trends, the factors driving workforce change, and the implications of these pressures for the future shape of NHS Scotland.

The recent report *Securing Future Practice: Shaping the New Medical Workforce for Scotland* (2004) recognises the intimate relationship between the structure of the health service and its staff. It concludes that:

“The medical workforce can only be secured by simplifying its structure, through service re-design and by effective national and regional planning. This will deliver the doctors and the service Scotland needs.” (Temple 2004)

This is true not just for the medical workforce, but for the other, often larger, groups of health care professionals as we shall see. It suggests that service redesign is therefore necessary if workforce pressures are to be effectively addressed. It is also the case that those workforce pressures are themselves a factor in shaping service re-design and re-configuration. Service change needs to be sustainable and one of the factors that will define sustainability is the availability of healthcare professionals with the right skills, in the right place, at the right time. While the medical workforce is an important factor to consider it is by no means the only workforce issue we need to be aware. Securing the right number of nurses, allied health professionals etc the right roles is also essential.

It can be difficult to determine what is driving change and what is a response to that driver, with responses often instigating further changes. An example of this could be the push to reduce junior doctors’ hours in the early 1990s with a response from professional regulators to facilitate expansion of the scope of practice of non-medical healthcare professionals. This then became a driver in itself with the professions responding by introducing new roles and integrating new skills into professional portfolios as part of a holistic package of patient care, even when those skills were traditionally performed by another group of healthcare professionals. Roles developed at that time have now become integrated into mainstream ways of working. This reflects the willingness on the part of the NHS workforce to respond with flexibility, adapting to new requirements for the benefit of patient care. Examples of new roles developed more recently are provided later in this chapter.

The absolute driver for change in all of this is securing service provision for patients who need access to healthcare and who require to be seen by the right people, with the right skills, in the right place at the right time.
Workforce Dynamics

A number of developments have brought workforce dynamics to the forefront of planning concerns. These include
- fewer people of working age;
- an increasing proportion of women in the workforce (60% of the medical student intake in Scotland is now female);
- greater demand for both flexible working patterns and part-time working to reflect the need for work/life balance;
- increased demand for career breaks;
- a reduction in the length of the working week in line with the European Working Time Directive (EWTD);
- skills shortages in some specialist areas;
- remote and rural challenges with respect to recruitment and retention.

Strategies employed by NHS Scotland to date address these pressures and have included:
- flexible working patterns;
- a re-distribution of workload across the healthcare team;
- development of staff;
- widening the entry gate to healthcare education;
- the use of telemedicine and automation;
- integrated workforce planning to make the best use of available resources.

Size and composition of the workforce

As can be seen from Figure 17, there has been an increase in staff numbers in each of the clinical groups since 1993. However, this has been accompanied by a slight increase in the number of consultant posts vacant for longer than 6 months from 2001-2003 (Scottish Executive Health Department 2004), supporting the argument that a solution that relies on more staff working as they have always done is not the solution. Some specialist positions are hard to fill generally across Scotland, with shortages acute in certain areas. For example, shortages in radiographers and radiologists have delayed the roll-out of breast cancer screening for women aged 64-70 in certain parts of Scotland.
Between 1998 and 2002 the number of health sector employees increased by more than 12% compared to an increase in other sectors of 5.4%. Thus the health sector has been growing recently in absolute terms and as a proportion of all employees. (Future Skills Scotland 2004)

Factors arising from changes in the future medical workforce

Scotland, with five medical schools, produces enough medical graduates for the needs of NHS Scotland. However, as is made clear in Securing Future Practice (Temple 2004), this picture disguises the fact that many of those who study in Scotland intend to, and do, practice elsewhere following qualification. While the number of doctors per capita in Scotland is not particularly high by international comparisons (see Table 1 below), it is in relation to other parts of the UK.
Table 1. Selected OECD countries. Doctors per 100,000 Population (as at 2001)

<table>
<thead>
<tr>
<th>Country</th>
<th>Doctors per 100,000 Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>330</td>
</tr>
<tr>
<td>Germany</td>
<td>330</td>
</tr>
<tr>
<td>Netherlands</td>
<td>330</td>
</tr>
<tr>
<td>Spain (as at 2000)</td>
<td>330</td>
</tr>
<tr>
<td>Greece</td>
<td>440</td>
</tr>
<tr>
<td>Ireland</td>
<td>240</td>
</tr>
<tr>
<td>UK (as at 2000)</td>
<td>200</td>
</tr>
<tr>
<td>Scotland (as at 2002)</td>
<td>260</td>
</tr>
</tbody>
</table>

Source: OECD Health Data 2003

The Securing Future Practice report suggests a number of steps to begin to address this issue, but it would be ten or twelve years before an expansion in student numbers would have an impact on the supply of doctors to the service. In the short term, it will be necessary to redesign services to enable the most efficient use of medical staff and to re-profile the function of units which might otherwise become increasingly unsustainable.

According to the recent Review of Basic Medical Education in Scotland there is

“…clear evidence of increasing difficulty in filling medical posts in NHS Scotland, with vacancies for both consultants and GPs rising and very small shortlists for vacant posts. Thus, the service faces increasing difficulty in recruiting to its current posts at a time when it is seeking to expand its manpower.” (Calman and Paulson-Ellis 2004)

It is recognised that certain areas in Scotland do experience challenges in recruiting and retaining staff for various reasons, including remoteness and rurality. This is in addition to the challenges associated with national shortages in some specialities.

Modernising Medical Careers is a UK programme of redesign that encompasses all the current training posts and programmes for doctors. Full implementation of all aspects of the policy will have wide reaching implications across many staff groups and it is now widely seen as the opportunity to modernise clinical careers. Additionally, it offers a real opportunity to plan specialty programme outputs (including general practice) accurately to service need. On leaving medical school graduate doctors will enter a two-year foundation programme focused on developing
key competencies. On successful completion of a foundation programme a doctor will move onto a specialty programme; it is likely that this will involve a competitive selection process with numbers of programmes determined by service projection need. The demonstration of competency will be the key to career progression, rather than the length of time spent in a particular programme. This is an important step towards developing the modern medical workforce of the future, better equipped, flexible and fit for purpose.

Factors arising from changes in the future nursing workforce

In the past eight or nine years, the recruitment and retention picture relating to the nursing workforce has changed from one causing considerable concern to one where some stabilisation has been observed. This has been in large part due to new recruits and better retention with initial recruits to pre-registration nursing programmes increasing from 2,400 in 1995/96 to 3,400 in 2001/02.

Compared with other parts of the UK, Scotland has an enviable number of nurses per head of population as illustrated in Table 2.

Table 2.

<table>
<thead>
<tr>
<th>Country</th>
<th>Nurses per head of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scotland</td>
<td>7.4</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>6.9</td>
</tr>
<tr>
<td>Wales</td>
<td>6.4</td>
</tr>
<tr>
<td>England</td>
<td>5.6</td>
</tr>
</tbody>
</table>

We cannot afford to allow this picture to make us complacent in Scotland because of the challenges in retaining nurses. International recruitment drives are attractive to English-speaking nurses and the United States needs to recruit 1.1 million nurses by 2010. The outflow of UK nurses to the USA in 2003 was around 2,000. (Buchan and Secombe, 2003). Both Australia and Canada have shortages with more projected and Southern Ireland, with its transition to a new educational system for pre-registration nursing students, will require to fill the gaps left by a ‘fallow’ year when no new registrants will enter the workforce. The proportion of nursing posts vacant for more than 3 months has remained relatively stable at around or below 1% from 1996 – 2003. However, the total number of vacant nursing and midwifery posts are at the highest since 1999 at around 3.5%. (Buchan and Secombe, 2003)

The Wanless Report estimated that demand for nursing input in England will grow by up to one third by 2022 but that it will be possible to meet this demand given the planned increase in the supply of nurses (Wanless, 2002).

The ageing nursing workforce (with the average registered nurse being over 40 years of age and even older in some specialties in the community (Buchan and Secombe 2003)) means that we need to use what we have flexibly and in a ‘employee friendly’ manner in order to retain older nurses in the workforce.
The new pay and career structure resulting from Agenda for Change may also present retention challenges for NHS employers. Expectations are high, with pressure on those implementing pay modernisation to achieve it consistently across the UK (see more on Agenda for Change below).

Actual requirements for nursing numbers will eventually be quantified through the annual national workforce plan, however detailed figures are not yet available. In addition, systems for assessing nursing workforce requirements and matching those requirements with workforce numbers have been unreliable to date (Scottish Executive Health Department 2004). This is being addressed through a national action plan.

Factors arising from changes in the future Allied Health Professions workforce

Allied Health Professionals (AHPs) provide a wide range of healthcare and therapy services. Each profession provides a specific contribution to each patient care episode as part of a holistic package of care. Direct specialist interventions and treatments provided by these professionals are part of the high quality service aspired to by the NHS. The Allied Health Professions include podiatrists, dieticians, occupational therapists, speech and language therapists, orthoptists, physiotherapists, radiographers, prosthetists and orthotists, and art, drama and music therapists.

Figure 18. Allied Health Professionals. Trend in wte for selected staff groups

![Graph showing trends in wte for selected staff groups]

Source ISD Scotland Workforce Statistics
AHPs provide services across health, education and social care settings and provide speedy access to hospital- and home-based treatments and therapy for patients with many types of conditions - both chronic and acute. In the last decade there have been large increases in the six largest AHP staff groups (Figure 18).

Despite this increase in numbers, growing demand for AHP services means that there has been a small increase in the number of AHP posts which have been vacant for three months or more with the highest proportion of long-term vacancies in 2004 being in Speech and Language Therapy (3.7%).

Factors arising from changes in the gender balance of the workforce

Over three-quarters of the health service workforce are female. Women are particularly dominant in Nursing and Midwifery, Allied Health Professions and Administrative and Clerical posts. We are also witnessing an adjustment to the medical workforce in favour of women. While in 2003 only slightly over 40% of medical staff were women (Scottish Executive Health Department 2004), some 60% of the Scottish medical student intake is now female (Temple, 2004). As this trend becomes established in the service it may have major implications for total workforce numbers given the greater tendency for women to seek flexible working patterns and to make use of career breaks.

Interestingly nursing and midwifery and dental staff saw more full-time working in 2003 than in 1993 (Scottish Executive Health Department 2004) There has been a small increase in the proportion of males working in nursing and midwifery compared to a significant increase in the numbers of females working in the medical and GP groups, but this would not seem to account for the very different changes in part time working recorded between these groups.

Implications of demographic change for the workforce

As we saw in Section 2 the Scottish population is falling, from 5.06 million in 2003 to a projected 4.83 million in 2031 (General Register Office for Scotland, 2004). Projected population decline is forecast to be uneven across Scotland as will accompanying shifts in the age structure (Figure 3). Future patterns of decline in the population of working age will be particularly important in terms of recruitment to the NHS.

NHS Scotland as the single largest employer in Scotland is heavily influenced by developments in the labour market and by factors impacting on recruitment and retention of staff. The changing demography of Scotland will result in greater demand for health services – and by implication healthcare professionals - as the labour market simultaneously contracts. The challenge of recruiting more staff from a shrinking labour market, as well as retaining existing staff, will be a difficult one to meet and serious consideration must be taken as to how this can be achieved. The trend brings with it the potential of exacerbating the existing pattern of differential inflation in the NHS by further driving up staff costs.
The age profile of NHS Scotland staff is an important issue that we must take into consideration. There is a significant bulge in the age profile of staff in the 40-49 year old age group:

“Looking at the age profile of the economically active population in Scotland, 25.4% are in the age group 40-49 years, with a further 19.2% falling into the 50-59 years group. This compares with 32.1% and 21.0% of the NHS Scotland workforce falling into the 40-49 and 50-59 age groups respectively.” (Scottish Health Workforce Plan 2004)

Accommodating an ageing workforce and integrating staff into new ways of working within NHS Scotland will be a major task for NHS Scotland over the next ten years.

On the positive side, there remain a number of largely untapped resources in Scotland which we now need to systematically develop, Scotland’s large pool of psychology graduates being but one. There is a growing body of scientific evidence of the salience of psychological factors for health. Psychological care has often been neglected by healthcare planners despite the huge prospective staff resource for this type of care.

Factors arising from health and safety considerations

There has been a serious effort in recent years to improve the health and safety of staff and the resulting quality of care provided for patients. This is most explicit in the European Working Time Directive, which stipulates a 48 hour maximum average working week. These changes in the terms, conditions and working hours of health service staff will drive a revolution in the way in which health services are delivered across the UK. There are particular issues around the delivery of services in rural and sparsely populated areas in light of these changes and the need to secure European Working Time Directive compliance raises particular issues for staffing small or isolated sites. The necessary move from on-call rotas to shift patterns will in all likelihood make some smaller units non-viable in their current form.

The European working time regulations already apply to all NHS staff and began to be phased in for junior medical staff in August 2004. The regulations impact most acutely on their on-call and out of hours commitments. The NHS has traditionally relied, for day to day delivery of the service, on junior doctors doing a practical working “apprenticeship” over long hours with relatively little supervision, particularly in the area of unscheduled emergency care. This approach has resulted in tired doctors working below their full potential with the associated risks to patients, prompting a concerted effort to move away from that approach.

The UK is almost unique in the Western world in its reliance on doctors-in-training to deliver service. Our belief is that the public want more ready access to care delivered by “trained staff”. The hours limits imposed by the working time contract and the New Deal contract are reducing the amount of service provided by hospital based junior doctors and leading acute services towards a more consultant delivered
model of care, where the ratio of consultants to junior doctors is greater, consultants are more directly engaged in emergency and routine day to day care; and junior doctors develop their skills through more structured, higher quality training, compared to the “on the job” training they currently receive.

This new model of care is in line with the emphasis on higher standards of clinical governance and rigorous maintenance of high quality safe care. It is in line with a consultant led service, safe hours limits, and the concept of junior doctors as essentially supernumerary, rather than providers of variable quality routine patient care.

The requirements of the Working Time Regulations can be broadly summarised as follows:

- an average of 48 hours per week
- an average of 8 hours work in 24 hours for night workers
- a limit of 8 hours work where risk assessment has identified special hazards
- free health assessments for night workers
- 11 hours rest in each 24 hours
- 24 hours rest in a week (or 48 hours in a fortnight)
- a rest break if the working day is longer than six hours
- 4 weeks’ paid leave a year

From 1 August 2004 doctors in training have been subject to weekly working time limits, which will apply progressively as follows:

- 58 hours from 1 August 2004
- 56 hours from 1 August 2007
- 48 hours from 1 August 2009

Doctors in training are already restricted under the New Deal contract to no more than an average of 56 hours actual per week. An individual doctor will be able to sign a waiver under the European Working Time Directive and opt out of the 58 hour limit after 1 August 2004 but will still be bound to an average of 56 hours actual work a week under the New Deal contract. The waiver is voluntary and workers cannot be required to sign it. Employees cannot opt out of the rest requirement.

The second “key message” of Securing Future Practice: Shaping the New Medical Workforce for Scotland (2004) succinctly appraises the consequences of the Working Time Regulations for the shape of NHS Scotland:

“To comply with the working time regulations by 2009, we will not have sufficient doctors across all grades to provide 24/7/52 care in every locality and unit functioning today. As a result it will be increasingly difficult to deliver a service especially for 24/7/52 emergency care. Since there is at present limited prospect of employing more doctors to staff the current service, there will inevitably be increasing difficulty in retaining and recruiting doctors. Even if we could secure the numbers required to meet our current service need, current practice suggests that these would not uncommonly be trainees. That would be wrong. Doctors in training already provide too much care.” (Temple 2004)
The need to secure European Working Time Directive compliance raises particular issues in staffing small or isolated sites. Securing Future Practice states that the provision of 24 hour cover by locally based consultant surgeons in every remote or rural area in Scotland is unsustainable and that service provision in these areas will only survive with closer links to larger better resourced centres. (Temple 2004)

A number of possible redesign solutions to the difficulties of staffing the service have been suggested (Department of Health, 2004). Simply recruiting additional junior staff - even if they could be supplied – is not a feasible solution because the workload on these sites is not generally such to provide appropriate training. Potential solutions include the use of telemedicine, restriction of emergency admissions in the out of hours period for some specialities in particular hospitals, the use of multi-disciplinary teams to provide out of hours cover, and strengthening A&E out of hours by merging it with out of hours GP cover.

It is therefore clear that service change is inextricably linked to the modernisation of working conditions in the NHS and the associated drive to higher standards of patient care. The status quo is not an option in Scotland either for service provision or for workforce roles and responsibilities.

The working hours limit imposed by the working time directive and the New Deal contract is reducing the amount of service provided by hospital based junior doctors. This is leading acute services towards a more consultant delivered model of care where the ratio of consultants to junior doctors is improved and where consultants are more directly engaged in emergency and routine day to day care. As a result, junior doctors will develop their skills through more structured, higher quality training, compared to the “on the job” training they currently receive.

This new model of care is in line with the emphasis on higher standards of clinical governance and rigorous maintenance of high quality safe care. It is in line with a consultant led service, safe hours limits, and the concept of junior doctors as salaried trainees, rather than providers of variable quality routine patient care.

It is therefore clear that service change is inextricably linked to the modernisation of working conditions in the NHS and the associated drive to higher standards of patient care.

The impact of pay modernisation

The Consultant Contract was agreed across the UK and was introduced from 1 April 2004. The deal in Scotland is broadly aligned with the new consultant contract agreed in England. It will take a more managed approach to the scheduling and organisation of a consultant’s activity, through explicit agreement between consultants and managers of all the consultant’s weekly activities. As with the New Deal contract it is designed to accommodate the constraints placed by the European Working Time Directive. It links consultants’ pay progression to the achievement of
agreed objectives and fairly recognises the on-call and out of hours commitments provided by consultants. The new contract will provide a more effective system of planning and time-tabling of consultants’ duties and activities within the NHS. However many of the benefits will become apparent over time while the financial consequences have been felt immediately. NHS Boards will have to utilise the new contractual arrangements as part of the toolkit for securing change. In particular agreed objectives need to be linked to the agenda coming out of the National Framework for service change.

**Agenda for Change** is the new UK-wide pay system designed for non-medical staff and affects 130,000 staff in the NHS - the vast majority of staff in NHS Scotland. When fully implemented, this new pay system will offer:

- Greater scope to develop new jobs bringing more patient centred care and more varied and stimulating roles for NHS staff.
- Equal rewards for equal effort.
- Harmonised conditions of service for NHS staff.
- Better links between pay and progression.
- Structured personal development planning.

Overall, the new system is designed to more effectively reward staff for the job they are doing while establishing a framework to allow the development of new skills and roles to meet the demands of a dynamic and developing service. At the time of publication Agenda for Change has not been fully agreed or implemented.

There are three significant features of this pay structure that have the potential to impact on service and staff.

- **The new system is based on a job evaluation system specifically designed for the NHS and will be used to ensure that staff receive equal pay for work of equal value.** The new job evaluation scheme is a means of fairly rewarding staff by measuring their job-related skills, knowledge and responsibilities.

- **The NHS Knowledge and Skills Framework**
  This will help staff develop their skills to the full by ensuring better links between education, development, and career and pay progression for all NHS staff.

- **Recruitment and Retention Premia**
  NHS organisations will be able to use these premia to address recruitment and retention difficulties caused by external labour market pressures. Where there are widespread recruitment and retention pressures affecting a particular group of staff, premia may be decided on a national basis on the recommendation of the review body or the new negotiating council for non review body staff.

The new **General Medical Services** (GMS) contract has been in operation since 1 April 2004. It introduces a local contract between Health Boards and each General Practice (as opposed to the previous agreement between the Health Department and individual General Practitioners). This will reward Practices for achieving
specified quality outcomes in their treatment of patients. The new contract is not simply an administrative change in the remuneration of GPs. It will act as a powerful lever for service redesign, with profound implications for staff working within primary care and the balance of work between primary and secondary care sectors. The contract’s funding formula focuses on the needs of patients and practice workload rather than on GP numbers. The contract is expected to improve quality of care for patients, drive service redesign, develop services and new ways of working in primary care, change the balance of service delivery, and enhance multi disciplinary team working. It provides unprecedented opportunities for primary care teams to deliver services in new ways, particularly in the out of hours period. The new GMS contract needs to respond to service change and, in particular, the need to deliver more and better treatment for chronic conditions at the local level.

The new GMS contract is expected to have a significant impact on workforce issues through:

- **Expansion in number of staff working in primary care:**
  a) Improved recruitment and retention of GPs with more young doctors choosing a career in general practice.
  b) More practice nurses to support service redesign and the delivery of the Quality and Outcomes Framework, especially in chronic disease management.
  c) More Allied Health Professional, Pharmacy and Administrative staff providing services.

- **Expansion in roles and skill mix of staff working in primary care.**
  a) More GPs developing special interests, to widen range of services available in primary care, working in partnership with secondary care.
  b) More Practice Nursing and other staff developing wider range of skills (both more specialist and generalist), again especially in chronic disease management.
  c) The potential for primary care staff to become partners in practices.

- **Out of Hours arrangements**
  The transformation of out of hours care from being doctor based to multi-professional and multi agency requires:
  a) Significant increases in the numbers and skills of a range of health care professionals working out of hours, especially nursing and paramedic staff, working in a variety of settings.
  b) Developments in out of hours services may lead to a change of roles and responsibilities for staff working in primary care, community hospitals, minor injury units, secondary care, mental health, pharmacy, dental, social care and other services.
  c) Fewer doctors working in out of hours with many more salaried GPs being dedicated to out of hour services, increasingly as part of a structured career path.
  d) Out of hours working will be seen as important part of a managed career for NHS staff.
It is anticipated that the numbers, skills and experience of staff working in out of hour services will develop over time in partnership with unscheduled care changes. The implications of these changes will be managed in the context of integrated NHS services across Scotland. Staff roles will develop to support team working across local NHS services.

In primary care and Out of Hours joint working including with Social Work Services will develop under the Community Health Partnerships.

Securing Future Services

In acknowledgement of the need to secure future services, the Scottish Executive’s Partnership Agreement, published in May 2003 (A Partnership for a Better Scotland: Partnership Agreement), promised continued investment in our public services, delivered around the needs of individuals and communities. The agreement included a commitment to:

- developing and supporting the NHS Scotland workforce to meet gaps in workforce provision;
- increasing the overall numbers in key sections of the workforce;
- supporting continuing professional development of staff;
- addressing issues of recruitment and retention of staff.

The Partnership Agreement made specific commitments to an additional 600 medical consultants by 2006, 1,500 allied health professionals by 2007 and the recruitment of 12,000 registered nurses by 2007. A pledge was also made to increase the dental workforce, expand training facilities and reward preventive dentistry.

NHS Scotland will need to remain alert to the existence of a number of local employers in the NHS in England with the ability to vary terms and conditions of service in a positive direction for staff.

Partnership for Care (SEHD 2003) acknowledged that service redesign would present real challenges for NHS Scotland. NHS Boards are now required to develop change and innovation plans that, amongst other things, challenge traditional boundaries of service delivery in order to develop sustainable services.
The Partnership Agreement (2003) contains 13 specific workforce commitments:

**All staff:**
- An entitlement to continuous professional development for all staff and increased flexible working.
- The implementation of Agenda for Change.
- Further incentives to attract and retain GPs and other health staff - for allied health professionals and in cases of shortage, could include contributions to student loan repayments.

**Nurses and midwives:**
- Bring 12,000 nurses and midwives into the NHS by 2007.
- Treble existing numbers of nurse consultants to 54.
- Guarantee of one year’s employment for all newly qualified nurses and midwives.
- Develop a wider role for nurses to get the full benefit of their skills and give them greater career opportunities.
- Implement nationally co-ordinated nursing bank arrangements.

**Doctors:**
- Aim to increase the number of consultants in the NHS by 600 by 2006 and continue to build on that increase thereafter.

**Dentists:**
- Pursue mechanisms which encourage preventive dentistry and design appropriate reward measures to support that objective.
- Recognise the need for an increase in the number of dentists and dental graduates in Scotland. Undertake an assessment of the reasons for the shortfall in the number of dentists in some areas of Scotland and the options for addressing that.
- Expand the capacity of dental training facilities in Scotland by establishing an outreach training centre in Aberdeen. Consult further on the need for its development to a full dental school.

**Allied Health Professionals:**
- Ensure a total of 1,500 extra Allied Professionals, such as radiographers, physiotherapists, dieticians and chiropodists.

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**Care sectors other than health.**

Workforce challenges faced by healthcare providers are also experienced in other allied care services. Workforce planning in social care is dictated largely by market forces and those employed within social care represent 8% of all public sector, and 55% of all independent sector, employees. Of the 118,000 staff employed within social care (compared with 147,000 staff employed in NHS Scotland), there are 7,500 qualified social workers. The remainder includes support staff and other qualified staff who are often shared with the healthcare sector. However, the challenges associated with gender mix and age composition are the same as for the health care sector. The Chief Social Work Inspector’s 3rd Annual Report (*Progress with complexity: the 2003 national overview report*) highlights that 61% of the Social Work Activities Workforce is aged 40 or above and 80% are female. We find ourselves therefore in the same situation, with the same workforce pressures and competing for the same pool of potential employees.
Working in partnership with Local Authority colleagues is essential in order to secure future services; without this, joint working will not be achieved and the ambitions around collaboration expressed through Community Health Partnership arrangements would remain only a vision. The drive to remove any mutual misunderstandings and to join forces has never been more acute. A joint vision is essential in order that services develop for the benefit of the Scottish public.

Responding to the needs of a dynamic service through new roles

It is clear that new roles are being developed in response to the changing face of healthcare, and in turn will continue to change the way that health care is delivered as these new ways of working become an integral part of healthcare delivery.

The development of new roles was the subject of a recently produced briefing paper New Ways Of Working: Examples From Home and Abroad (SEHD 2004).

The briefing paper focused on a number of drivers for new role development and included The Right Medicine; a Strategy for Pharmaceutical Care (SEHD 2002) which outlines the Scottish Executive’s commitment to make better use of pharmacists’ skills and expertise to improve patient care.

Areas of future pharmacist activity include:

- A chronic medication service (CMS) allowing a patient to have their medicine supplied, monitored and reviewed for up to 18 months as part of a shared care arrangement between their community pharmacist and general practitioner.
- Managing a minor ailments service (MAS) and common conditions for patients exempt from prescription charges.
- Improving public health and safety of medicines through the provision of Pharmaceutical Public Health Services (PPHS) and advice to patients and the public.
- An Acute Medication Service (AMS) with support for pre-admission, admission and discharge planning processes as well as supporting self-administration of medicines in hospital and medication review.
- Electronic prescribing and ePharmacy (on-line from GP to Pharmacist).

The briefing paper also highlighted the role of General practitioners in Scotland who have a specialist interest. Some of these ‘specialist GPs’ undertake additional training to enable them to take referrals from GP colleagues for the assessment and/or treatment of patients who might otherwise have been referred unnecessarily to hospital, in addition to providing a full range of services for their own patients.

An alternative to this model is that the GP may provide an enhanced service for particular conditions or patient groups. This type of enhanced service includes GP run clinics in drug misuse, public health, sexual health, dermatology, management of back pain, rheumatology and other areas.
Within Scotland, there is enormous potential to identify new roles that are compatible with the Scottish context of care. Devolved power for health and education provides us with opportunities to do things differently while acknowledging the absolute need for patient safety within a patient focused service. The regulatory and legal implications of role development are vitally important, particularly in regard to patient safety and all role development must take place within the facilitative legal, employment governance and professional regulatory frameworks that exist.

The Scottish Executive Health Department is currently developing a framework for new nursing roles and this has the potential to be applied to role development in staff groups other than nursing. It identifies three different types of role development:

- Those that “expand” an existing role by having duties delegated from another group of healthcare workers.
- Those that involve an extension or enhancement of an existing role and that fit with the recognised scope of practice for that particular profession.
- Those that require the generation of a completely new role and involve detailed preparation through education and training, in addition to specific regulatory and governance arrangements.

The framework will provide a helpful tool for workforce developers aiming to systematically structure role development efforts.
Fitness for Purpose and the need for competence

The requirement for a *fit for purpose* workforce - one that has the necessary competencies to deliver the service required - has rarely been more acute. The NWC in partnership with education providers and commissioners has a pivotal role to play in facilitating the development of competency frameworks that assist NHS workforce developers in Scotland in identifying and addressing fitness for purpose requirements.

In judging the effectiveness of local, regional or national initiatives that focus on the fitness for purpose of the workforce; the quality of the *inputs*, (e.g. competency based role development) needs to be compared with the quality of the *outputs*, (e.g. reduced waiting times or better clinical outcomes).

Conclusion

Significant service change is inevitable if we are to meet the challenges facing NHS Scotland, including the higher standards expected by the public. A clear picture of that strengthened, sustainable service must be developed to allow for effective workforce planning - the National Framework for Service Change will provide that picture.

While Scotland appears to be slightly better placed than other parts of the UK in terms of staffing levels per head of population, this takes no account of the far higher numbers of hospitals per head of population in Scotland. This needs to be accurately quantified and the effect on staffing adequately assessed.

But as well as being a response to service change, workforce pressures are a clear driver for improvement. It is imperative that a *rational* structure is developed, incorporating multi-professionalism, team focused care delivery, greater and more systematic use of new technologies, local diagnostics and better primary care. Any sort of a unstructured response to workforce pressures, arrived at hurriedly or by default, would be inappropriate. Planning is essential and this may mean a re-profiling of services across Scotland with greater emphasis locally on diagnostic care, chronic care, minor injuries and some outpatient and elective activity. It will have a particular impact on unscheduled care where the health and safety imperatives associated with the reduction in working hours will be most obvious.
8. Clinical Standards and Quality

Introduction

Scotland’s Health White Paper, Partnership for Care, laid great emphasis on the setting and monitoring of national clinical standards for NHSScotland. This reinforced the commitment in an earlier White Paper (Designed to Care, 1997) that ‘‘good quality healthcare delivered consistently and to a high standard must be a key objective of the NHS in Scotland’’. Indeed, together with improvement in the health of the people of Scotland, it is the key objective.

The Scottish Executive has put in place arrangements to set standards for NHSScotland and to monitor the performance of NHSScotland against them. The Performance Assessment Framework includes standards for access (waiting times) and clinical quality standards. This reflects the Executive’s commitment to achieve and to demonstrate quality improvement and to reduce variations in access and quality in different parts of the country.

Clinical standards are now key drivers in NHSScotland in relation to:

- **clinical practice** - enabling healthcare professionals to assess, review and where necessary change the way in which they treat particular conditions and care for patients;

- **service planning and design** - providing evidence on safe and effective clinical care to guide decisions on service configuration;

- **performance assessment** - enabling objective measurement of performance for use by each NHS organisation and across the NHS through benchmarking, by the Scottish Executive as part of the Performance Assessment Framework, and by NHS Quality Improvement Scotland in its monitoring role;

- **patients and the general public** - providing a clear statement of what they should expect from the NHS and a means of reporting to them on performance that they can easily understand.

Background

The practice of developing standards is long-established in the NHS and has been adopted by many groups and organisations. The Health Act 1999 introduced a statutory duty in relation to the quality of the services provided. Although this was a new role, it built upon a long-standing research tradition and over a decade of investment in clinical effectiveness with clinical audit and clinical guidelines developed and pioneered in Scotland, through the Scottish Intercollegiate Guidelines Network (SIGN). The Acute Services Review (1998) recommended the development of a national system of assuring the quality of clinical services in Scotland. A Clinical Standards Board for Scotland (CSBS) was established in 1999, responsible for developing a national system of quality assurance of clinical
services designed to promote public confidence that the services provided by NHSScotland are safe and that they meet national agreed standards; and to support NHSScotland in delivering the highest possible standards of care. In January 2003, CSBS and a number of other organisations involved in work on the quality of clinical services were brought together into a new special health board, NHS Quality Improvement Scotland (NHS QIS), responsible for delivering a co-ordinated strategy for improving clinical effectiveness and the quality of patient care.

Clinical Standards

Clinical standards define the levels of performance that are expected of an individual healthcare professional, a unit, a hospital, a practice or a healthcare system. They provide a mix of quantitative and qualitative statements of performance, accessible to healthcare professionals, managers, patients and the general public.

The standards developed by NHS QIS focus on clinical issues but include non-clinical factors that impact on the quality of care. This is important as, from a patient perspective, care should be a holistic and integrated process. NHS QIS standards relate to the effectiveness of clinical practice to the environment in which it is delivered, and to its responsiveness to the needs and preferences of patients.

NHS QIS standards are designed to support the delivery of:
- higher standards of care;
- improved outcomes to the patients;
- better experiences for patients and carers, and
- better use of resources (in recognition of the fact that money used ineffectively in one area is money that could be put to better use elsewhere).

Better outcomes (either the restoration of good health or achievement of the best quality of life possible) are the ultimate test of any healthcare intervention. However, given the time lag between an intervention and a clear outcome, and the many factors that can be involved in influencing an outcome, most standards have to relate to processes with well-established links to the desired outcome. It is for this reason that all NHS QIS standards are evidence-based in the sense that they are supported by evidence that achievement of the standards will lead to a better outcome or a better experience for patients and carers. That does not mean that every standard is underpinned by high quality scientific evidence (e.g. a randomised control trial); only that there is some evidence that the standard is a means to a desired end. A major part of NHS QIS’ work is to identify, analyse and assess a wide range of evidence from a variety of sources as the basis for standards development.

NHS QIS aims to set standards that are achievable but stretching. Some standards are categorised as essential, which means that they should be met wherever a service is provided in NHSScotland (NHS QIS’ standards apply to all parts of NHSScotland); others as desirable, which means that they represent levels of performance that are being achieved in some parts of NHSScotland and demonstrate levels of quality which other providers should strive to achieve.
All NHS QIS standards are developed in close partnership with healthcare professionals and members of the public and are subject to wide consultation. Achievement of these standards across the NHS is demonstrated through a self-assessment of progress against standards together with supporting evidence analysed by NHS QIS, followed by focused review visits conducted by clinical peers, trained and supported by NHS QIS. An agreed local report is published alongside an overview of NHSScotland.

Current Position

Building upon the foundations laid by CSBS and by SIGN, NHS QIS has now published twenty four sets of clinical standards / quality indicators and five further sets are in development. In addition, it is working on the development of a framework of healthcare governance covering all the elements required to ensure delivery of safe, effective and patient-focused care and including financial, staff, and information governance as well as clinical governance. The central importance of these standards has been recognised in the Spending Proposals announced by the Executive in September 2004, which set performance against these standards as one of the key targets for NHSScotland in the period to 2008.

NHS QIS' future work programme has the healthcare governance standards (including risk management and patients safety) as its centre piece within which NHS QIS will continue to set and monitor condition-specific standards. These will be focused on five key themes:

- cancer;
- cardiovascular disease;
- mental health;
- children;
- the management of chronic conditions.

In addition, NHS QIS has endorsed the Royal College of General Practitioners practice accreditation scheme as a basis for quality assurance in primary care. All NHS QIS’ work seeks to follow patients’ journeys of care and this approach will ensure not only that there is a focus on primary and community as well as hospital care but also on the links between different parts of the Service. In all its work, special attention will be paid to the needs of those people who face barriers in using health services, in order to address issues of health inequalities and social exclusion.

As health services are increasingly delivered by the NHS in partnership with other agencies, so too NHS QIS is working with the inspectorates responsible for other sectors to develop joint standards and monitoring arrangements. Such standards have been developed jointly by NHS QIS and the National Care Standards Committee for primary dental services; and initiatives are underway in relation to children’s services (with child protection an initial priority), learning disabilities, mental health and older people.
Assessment of progress

It is evident from the early part of this section that a standards-based approach to quality assurance of healthcare services is well-established in Scotland. In addition to political and managerial support, Scotland has been successful in winning and sustaining clinical “buy-in” to this collaborative approach to standards development and assessment. Scotland’s approach to healthcare governance is now being followed by the other countries in the UK, and standards form part of initiatives such as the National Services Frameworks in England.

There is also some encouraging evidence that the standards and associated monitoring processes are leading to quality improvement. The inclusive way in which standards are developed means that they are widely used by clinicians to review their own services and to introduce changes where necessary. Clinical governance is also an increasingly effective mechanism for ensuring that standards are used in this way at local level. But it is equally clear that standards need to be backed by a robust external review process if they are to be - and to be seen to be – fully effective.

Neither standards nor monitoring of performance are ends in themselves; the key test is whether they are leading to sustained improvements in the quality of patient care.

The aim must be for clinical governance to have the same profile and “bite” as financial governance. Local governance arrangements need to be strengthened both to address the variations that currently occur and to raise the profile of clinical governance within NHS Boards. For this to happen, robust data are required, akin to those on resources and activity. The development of clinical datasets linked to the standards will strengthen clinical governance processes locally; it will also enable the clinical component of the Health Department’s Performance Assessment Framework to be strengthened so that this aspect of the Accountability Review process can be made more robust and challenging.

Implications for the National Framework for Service Change

The work of NHS QIS in setting standards for clinical services and in monitoring performance against these standards is fundamental to future service improvement. Change, whether in clinical practice or service design, needs to be driven by safety and quality considerations, as defined in evidence-based standards, if it is to gain clinical and public credibility and thus to be delivered effectively and sustainably. If it cannot be demonstrated that a change will lead to improvement in the safety or quality of clinical care and treatment, there is little chance of winning clinical or public support for it. NHS QIS standards are the culmination of well-established and varied processes designed to establish what is best practice in terms of both clinical effectiveness and feasibility. They also provide an evidence-based means of addressing variations in standards of care in different parts of the country. Standards do not in themselves resolve the debate nor should they be, as is sometimes claimed, drivers of centralisation of services. Rather, they inform the
debate on such issues and enable decisions to be guided by evidence on clinical
and cost effectiveness.

Clinical standards also have a key role in easing the passage of implementation of
service change, not only with healthcare professionals but also with the public. It is
clear, for example, that patients are willing to travel if it can be demonstrated to them
that treatment at a specialist centre will produce better standards of care and a better
outcome. Equally, the standards identify those aspects of service provision that can
be provided safely and effectively at local level.

The development and assessment of clinical standards in Scotland has achieved
successful alignment of the clinical priorities identified through policy with those of
healthcare professionals, patients and public. The natural incentive for healthcare
professionals to do a good job has been harnessed successfully.

Healthcare systems in competitive environments have demonstrated success
through both competitive pricing and achievement of high standards of clinical care.
One of the ingredients of this success has been the alignment of both political and
corporate objectives, with the objectives and performance of clinical staff. This has
been achieved through clear communication, and through performance management
which places considerable weight on the achievement of clinical quality standards,
and good access to services. Although NHSScotland is not in a competitive
environment, there is still a requirement to demonstrate to the public that the NHS
offers value for money and is responsive to public needs. That requires a clarity and
consistency about the quality of care – best expressed through clinical standards -
and regular and repeated communication across all part of NHSScotland to reinforce
the expected performance from the organisational level down to individuals.

Standards therefore, if used properly, can guide and support the processes of clinical
and service change. Equally, their existence in the public domain means that
decision makers cannot ignore them. Publication of standards and information about
performance will over time significantly alter the relationship between patients and
communities on the one hand and decision makers on the other. They will lead to a
more informed debate about service configuration and about performance. This is of
particular importance in a publicly-funded and managed healthcare system such as
NHSScotland both in terms of decision-making and accountability.
9. Medical science

The early decades of the 21st century will see a rapid acceleration in the introduction of innovative medical devices and procedures. These will have an impact on the quality and outcomes of care delivered to patients, as well as the location of that care. The expected revolution is a result of the convergence of a number of separate strands of technology and science. The technologies can be described using a range of often overlapping terms including miniaturisation, biosensors, bioengineering, nanotechnology, biomaterials science, micro-electronics and tissue engineering. In parallel, advances in genetics, molecular and cell biology will continue to ensure that new treatments become available. While these will often offer incremental improvements on existing medicines, breakthrough products can also be anticipated that allow remediation of previously incurable or intractable conditions. Similarly, advances in biotechnology are providing new understanding of diseases and their treatment that will make possible much more tailored approaches to disease management in the foreseeable future.

These anticipated advances will have considerable implications e.g. for the treatment of age-related and chronic degenerative conditions. They will raise a number of financial, social and ethical issues that will have to be addressed but the potential impact is difficult to understated. As the American futurist and physician Dr Patrick Dixon has said, “two great techno-revolutions will impact on the future of healthcare; digital and genetic. The digital changes what we do – the genetic has the power to change who we are. Both together will transform every aspect of health services.”

This paper will attempt to trace the likely shape of some of these developments and describe the implications for the structure of health service delivery in Scotland.

Early diagnosis

Rapid development of diagnostics will allow earlier diagnosis of disease and therapies to be targeted more precisely. In the area of scanning, for example, new systems will be able to diagnose cancers at a very early stage, in which current technology, such as CT and MRI scanners which provide increasingly detailed information about the structure or anatomy of diseased organs or sites, will be supplemented by more dynamic systems like Positron Emission Topography (PET) scanners which will give information on function as well as structure. Biosensors will change the precision of laboratory profiling of patients and take diagnosis further into the GPs office or the home. Complex conditions currently treated by specialist may in future be treatable by GPs, in the home setting or as day cases in hospitals as a result of earlier diagnosis and innovative treatments of the conditions.

Genetic screening will have an enormous impact on our ability to identify those members of the population or in families who are more susceptible to particular diseases (this technique can already be used to determine those at increased risk of particular cancers). New technologies will not only allow the early identification of disease development from blood and other samples, but also determine the effectiveness of the subsequent treatment. In future we will be able to match the drug to the patient’s ability to metabolise it, improving efficacy and reducing both drug wastage and side effects. Our current limitations mean that we are often unable to diagnose disease before the emergence of symptoms, whilst usually being
unaware of the particular treatment which will work with a particular genotype. By allowing the identification of the earliest pre-disease changes the genomic sciences will open the door to preventative lifestyle choices and regular surveillance or screening of high-risk groups.

The identification of conditions which cannot yet be treated might raise a number of ethical issues and increase demand for counselling services and so forth. Huntington’s Chorea is a classic example of the difficulties surrounding this area. The test for this genetically inherited condition (which is extremely debilitating and ultimately fatal) has been available for a number of years but it requires psychological as well as physical management of that person who then has to live with the knowledge of the condition for many years.

One consequence of early-life identification of genotype will be a requirement on individuals to manage their own risk profile. This will depend on the willingness of citizens to take responsibility for their own health needs. This may mean a greater role for primary care in pre-empting the onset of disease by giving periodic health appraisals to patients, reducing the numbers referred to the secondary care regime by allowing early diagnosis which in turn will allow less drastic interventions. This has been described as a move from a “late disease” to an “early health” model.

Sustaining an ageing population

Orthopaedic implants will continue to improve as technology improves their function and reliability. In the longer term technologies will develop to allow the treatment of nerve damage, such as the use of implants to manage the tremor associated with Parkinson’s disease. These have the potential to facilitate more care in the community, while reducing the intensity of the support required to encourage this shift.

The medical devices industry is also developing a range of products from simple home gadgets, rehabilitation products, artificial limbs and appliances to transport and mobility aids – all of which will contribute to more home care with lower intensity supervision – by increasing healthy life expectancy. Keeping people out of hospital has the potential to deliver huge benefits both for the patient and in terms of cost. The ability to better manage chronic diseases through electromechanical support (and as we shall see, telemedicine) will need to be grasped, the likely increase in demand for these technologies should drive down prices.

Developments in cardiology such as the use of the stent have resulted in a dramatic drop in coronary artery bypass treatments. This allows patients to be treated and allowed to return to their life relatively quickly and also reduces a great deal of expensive hospital activity. Similarly, microwave endometrial ablation is a minimally invasive surgery which can be a viable alternative to hysterectomy, performed with little more than day inconvenience for the patient.

The likely shortfall in human donors for heart and kidney transplants could lead to high demand for the application of xeno-transplantation technology utilising transgenic pigs. However this currently a controversial issues until the viruses associated with pig tissue can be eliminated. New centres - separate from acute
beds to avoid capacity being overwhelmed - may be required to pioneer such new processes and techniques.

There are also developments in the use of stem cells technology in growing and repairing tissues; e.g. use of stem cells secreting dopamine inserted into brains, enclosed in micropore tubes which allow the dopamine to infiltrate out but keep the stem cells in. Thus in Parkinson’s disease, where the nerve cells secreting dopamine die, or in Alzheimer’s disease where the cells that make other neurotransmitters die, creating new nerve tissue from stem cells offers a potentially important therapy.

**Device drug combinations**

These include devices such as closed loop insulin management systems incorporating blood sugar sensors and delivery pumps. These systems are already demonstrating benefits in terms of the elimination of the consequences of poor management of diabetes, such as blindness, ulcers and amputation and should be expected to ease the burden of particular types of chronic disease management.

**Tissue engineering**

With an ageing population the demand for tissue regeneration and repair technologies will increase. Examples include the replacement of corneal tissue and nerve and blood vessel replacements.

It seems likely that the effect of this technological change will be to accelerate some of the trends in healthcare delivery we are seeing. It should be possible to do much more diagnosis, treatment and monitoring locally (including in the home). A number of developments will come together to increase healthy life expectancy while allowing more people to stay at home. However, there will be even more complex, specialised and expensive treatments that we will be able to provide in a strictly limited number of locations in a country of Scotland’s size.

The cost of keeping up with and applying these fruits of research in the medical sciences, including for new medicines, is likely to exceed economic growth in most developed countries for the foreseeable future, placing pressure on health care budgets. The issue confronting Scotland is how the NHS can meet the needs of an increasingly educated and growing elderly population as the working population – and so tax base – shrinks.

The OECD *Health at a Glance 2003* report stated that spending on Heath care was outstripping economic growth in most OECD countries and that “Development and diffusion of medical technologies and new drugs are among the main drivers of rising health expenditures”. Pharmaceutical expenditure doubled in real terms in Sweden and Australia between 1990 and 2001. The benefits of applying new drugs developed to treat conditions caused by lifestyle choices are clear but the cost can be very high. A more cost-effective use of resources may be to focus on encouraging the right lifestyle choices in a more determined way. The Wanless
report looked at the example of statins, which play a key role in managing Chronic Heart Disease (CHD) for those who are considered to be at risk. However it is lifestyle choices around diet and smoking which creates this risk in the first place, particularly so for those with an underlying familial or genetic risk. The report estimates that smoking cessation costs between £212 and £873 per quality adjusted life year, compared to a range of between £4000 and £8000 per quality adjusted life year for statins. This seems to suggest that the NHS will need to focus more on health promotion if it is to avoid paying for the looming cost, in drug bills, of the extremely poor lifestyle choices of the Scottish population.

Rather than focusing on the growing demands for new drugs and treatments, and so cost, it might be argued that it is more sensible to look at these questions from the perspective of the cost to wider society of untreated disease. Whilst this approach would render the predicted growth in spending on new drugs and treatments more palatable, it does not answer the central question of how the NHS can match finite supply to ever-growing demand.

Supporting Research in the NHS

How can Scotland capitalise on these various research thematics? There is a dual approach to this: support basic and translational research within home-based University, pharmaceutical, medical devices and biotechnology centres; configure the NHS in Scotland such that it is an internationally competitive and receptive environment for the global pharmaceutical industry to bring their trials of novel agents. There have been two important reports published recently about reorganising the UK’s clinical research effort (Academy of Medical Sciences, 2003; Bioscience Innovation and Growth Team, 2004) both of which make a series of funding recommendations. In essence, they build on the concept of managed networks, uniting basic and clinical researchers at the interface between laboratory and the bedside, and large scale trial networks based in teaching, district general hospitals and primary care. Undoubtedly, Scotland would benefit from consideration of these initiatives and applying them to her own research infrastructure.

Getting Research into Practice

Research has been an activity integral to healthcare provision since the creation of the NHS. Yet it is only in relatively recent times that there has been so much emphasis placed on evidence as the driver for change. It is rare for a single research report to provide incontrovertible evidence in isolation and thus methods to synthesise multiple findings have been developed. Such reviews often give clarity from diverse research findings and can thus form the basis for improved guidance, change of therapy or service delivery.

As part of the drive to improve clinical effectiveness, guidelines based on sound evidence are well established in Scotland through the work of the Scottish Intercollegiate Guidelines Network (SIGN). Indeed, their evidence collating activities now also figure strongly in clinical standards used by NHS Quality Improvement
Scotland. However, for improvements to be achieved across the service, such research-based recommendations must be appropriately and generally incorporated into practice. Current goals aiming to improve clinical effectiveness are likely to be slowed or jeopardised by the lack of routine mechanisms to encourage change.

Achieving change is widely recognised to be difficult. Although a range of interventions have been shown to be effective in changing professional behaviour in some circumstances, “magic bullets” do not exist. Such successes as there have been have not proved generalisable across the plethora of clinical situations. It is now generally accepted that passive dissemination alone is rarely sufficient to prompt change. However, there is evidence that, guidelines can trigger change, particularly where they are felt to take account of local circumstances and given some active support to dissemination and implementation.

In reviewing work on specific interventions, Effective Health Care (1999) concluded that a variety of interventions may lead to change in different settings but that the underlying reasons were not always clear. In these circumstances it becomes difficult to be able to give prospective guidance to those planning change on the most effective mechanisms to overcome the inherent resistance to change that tends to exist in large complex organisations such as the NHS. However, some common issues can be identified: having some understanding of the barriers to change; gaining some commitment to the need for change; effective communication and support for the change management process.

Conclusion

Most commentators seem to agree that developments in medical science are set to revolutionise health care through new diagnostic tools, techniques and therapies and drugs. At the forefront of these changes will be a clear understanding of the susceptibility of each individual to particular conditions as a result of genetic screening, with the probable shift from secondary care interventions to guided self-care that this will entail. It is also likely that a number of technologies and devices have the potential to significantly increase healthy life expectancy, thus ameliorating some of the predicted cost of caring for the ageing population.

It is also clear that these improvements will come with a cost, at least in the short to medium term. In most developed countries healthcare spending is outstripping economic growth, with new medical technologies and drugs playing a key role in increasing demand - and thus expenditure - in response to the continuing advances from medical research. Longer term, the potential for better avoidance of ill health may offset the increasing costs of treatment. Nevertheless, Scotland has a significant opportunity to contribute to biomedical research, creating collaborations between the NHS, University and pharmaceutical sectors, and therefore contributing to the health and wealth of the Nation.
10. Information and Communication Technology

There is a huge amount of variability in the way information and communication technologies are used across NHS Scotland. Many GPs or hospitals have developed unique IT systems or some form of personal care record, but the information held within them cannot be shared across the NHS as should be expected.

The Wanless report, prepared for the Treasury in 2002, pointed out that the health service’s annual ICT spending per employee was lower than any comparable sector of the economy and considerably lower than in the health services of comparator countries (1% of UK health spend, 6% of US health spend). It suggests that, “In the UK health service, ICT systems have typically been developed and implemented in a piecemeal way at local level. While there are many examples of systems which work well for particular hospitals or GPs the systems are not integrated across organisations or indeed sometimes across a single hospital.” Furthermore, “The UK is a late, slow adopter of [medical] technology”.

This prevents the efficient movement of information or patients through the healthcare system. It is now clear that these disconnected IT systems are not able to support the modern NHS that patients and clinicians alike need. Of course all developments in ICT use in healthcare require to be expressly underpinned by a rigorous commitment to patient confidentiality, data security and the protection required to give confidence to the public and individual patients in this regard. There is ample evidence from around the world that this is perfectly feasibly.

Electronic Health Record

The creation of a standards-based Electronic Health Record is central to the modernisation of the health service. Access to, and sharing of, this record will require a nation-wide high speed and high capacity IT and telecommunications infrastructure. In itself the EHR offers huge benefits to the patient in terms of safety by ensuring that the appropriate health professionals have access to the necessary clinical information when needed, whether at a GP’s surgery or an Accident and Emergency department. It would also reduce one of the most common sources of patient frustration – repeated requests at each stage of the patient’s journey for the same information. The potential of the electronic health record is only fully realised when considered alongside the second phase technologies and tools it allows: electronic prescribing, electronic booking of appointments, patient access to records (including the ability to record treatment or dietary preferences and next of kin details in a section of the record “owned and managed” by the patient), storage of electronic images, use of sophisticated nationwide epidemiological tools and the interrogation of data across the whole healthcare system to accurately record the location, type and effectiveness of NHS activity. Finally, efficient transfer and simultaneous viewing of information across the health service is crucial if we are to truly break down the false barriers between what we categorise as primary, secondary, tertiary, and social care in Scotland. Some health care providers, such as the Veterans’ Health Administration in the USA, are already reaping the benefits of such an integrated ICT system.
**Electronic Booking**

Electronic booking can allow patients to choose a convenient date and time for their initial hospital appointment, booking electronically immediately at their GP’s practice or using the telephone or internet at a later stage. This has the benefit for the patient of introducing a degree of choice and convenience which has long been expected from other services. For the clinicians it cuts down on unnecessary paperwork and correspondence - from the GP to the consultant and from the consultant to the patient. In Scotland an electronic booking system has been developed and proved in a small number of GP practices and clinics. For various reasons it was found to be problematic, more for ‘people’ reasons than IT related. Some GPs were hard to convince that they should add to consultation time for appointment booking. Consultants were also protective of ‘their’ clinic and unwilling to let others make these bookings. NHS England is pushing ahead with electronic booking and it will be interesting to monitor progress with it.

The Patient Focused Booking programme led by Centre for Change and Innovation (CCI) enables patients to negotiate appointments by phone. This is currently being piloted in thirty major appointment centres.

**Picture Archiving and Communications Systems**

Picture Archiving and Communications Systems (PACS), a digital system, is currently being introduced across the NHS in England. PACS allows images to be captured, stored, distributed, displayed statistically, or as moving digital images, and attached the patient’s electronic record. It has huge potential to smooth the journey for the patient and improve the efficiency of the service. Simultaneous analysis of images by specialists in other parts of the country – or the use of spare capacity of specialists in outside NHS Scotland to reduce waiting times and delays – is now completely feasible with appropriate investment in the infrastructure. Patients at Minor Injuries Units in Rural Areas could particularly benefit from PACS, avoiding unnecessary and time-consuming visits to busy Accident and Emergency departments at the nearest population centre. The benefits can be summarised as:

For patients:
- More effective care as the most appropriate care teams are assembled regardless of location e.g. with applications for clinical care through managed clinical networks.
- Faster access to medical imaging and results
- Reduced re-testing caused by loss of film
- Fewer appointment and operations postponed due to non-availability of X-rays

For clinicians:
- Improved image quality and viewing capability
- Reduction in time spent looking for images
- Images available at any time
- Simultaneous viewing across multiple sites
For NHS Scotland

- More efficient use of facilities and staff, regardless of location
- Reduced expenditure on film and transport

**Electronic Prescribing and Electronic Transmissions of prescriptions**

E-pharmacy is a broad term encompassing the use of technology to assist in prescribing. Using computer programmes to generate prescriptions is now common place across Scotland. This has reduced clinical risk, frees up clinical and administrative time and assists patients in obtaining appropriate medication for both acute and repeat prescriptions. Currently IT support generally stops at that stage and the printed prescription then has to be taken to the community pharmacy to dispense. This stage should become obsolete in the future with the ubiquitous adoption of Electronic Transmission of Prescriptions (ETP).

ETP offers a range of benefits for patients and clinicians alike. It would allow prescriptions to be transferred electronically to the community pharmacist nominated by the patient, improving patient safety by reducing prescription errors and providing better information at the point of prescribing and dispensing. Prescription information could be linked to the patient’s record to attach medication details to the patient’s record. This could provide data for national level analysis of the link between prescribing and patient outcomes. GPs in Scotland already use a computer programme to generate prescriptions. This should also be the case with hospital medication records, with both systems linked to a common patient record, protected by strict need to know access. In the Veterans’ Health Administration a simple system allows those administering drugs to electronically record what is being given to a particular patient. That information then attaches to the patient’s electronic record, detailing precisely what has been administered when. This offers great opportunities in terms of increasing patient safety and reducing errors.

**Clinical Systems**

Across NHS Scotland multiple clinical systems have been developed and implemented, often with little or no regard for information or technical standards. While a few departments may benefit from this approach there is rarely a facility to share information with other professional groups, beyond the confines of the hospital, or even with other parts of the same hospital. The acquisition of a common clinical system is a key part of the development of a corporate NHS Scotland with the ability to plan services effectively. The physicist Lord Kelvin stated that:

“if you cannot measure it, you cannot improve it”.

This is true of the activity and efficiency of the health service. Information should be managed to agreed national standards and shared between professional groups and across geographical boundaries as is appropriate for the best possible patient care. Again, this is a crucial step in strengthening managed clinical networks. An effective system would support further implementation of information standards which will have an important role in clinical governance, system change and in appraisal and re-validation of staff. Clinical decision support could be incorporated and reminders, e.g. for annual blood tests, could be supported.
Telemedicine

Telemedicine, the ability to deliver medicine remotely using Information and Communication technologies, including tele-consultations, transfer of digital images etc. It has many uses including:

- the ability to deliver a service in remote or rural areas which would otherwise be unsustainable for cost or population density reasons
- allowing GPs to consult with specialists remotely to avoid unnecessary referrals
- establishing networks of learning for clinicians to reduce professional isolation and disseminate best practice.

Grampian has led the way in the application of telemedicine, most notably through its network of Minor Injuries Units linked to clinical support at Aberdeen Royal Infirmary. This technology is being used to provide local access to high quality services in areas in which direct consultant support is untenable. It will also play a key role in delivering integrated unscheduled care in the out of hours period following the introduction of the new GMS contract. The telemedicine network for paediatrics in Scotland is another example of telemedicine being deployed to improve the quality of care delivered across Scotland by linking doctors to national centres of excellence in this specialty. The potential to apply such methods and technology in a country with the geography and population distribution of Scotland is great. The benefits are particularly clear in terms of the maintenance and development of services and skills, including diagnostics, in remote and rural areas.

Throughout this paper the influence of an ageing population on the structure of the health service has been discussed alongside the need to treat more people at home. Tele-links might be one way of dealing with the need to support large numbers of vulnerable people at home efficiently, and could reduce risk to the extent that people who would otherwise be forced into care are allowed to remain in familiar surroundings. This could mean regular tele-conferencing between a healthcare professional and the individual involved. In our consideration of medical sciences we looked briefly at the development of a number of devices which would support low intensity home care. These include mechanical devices which can monitor everyday activities, such as motion sensors, gauges which monitor water use etc. When connected to an intelligent system to allow us to build up a picture of normal daily activity for that vulnerable individual the potential is very large indeed. It could be that tele-conferencing is used when the individual’s pattern of activity differs sufficiently from the norm to warrant contact from a healthcare professional – preserving as much of that individual’s independence as is possible.

The spread of telemedicine in Scotland has so far been piecemeal, often being adopted as a result of a local champion or to avoid the collapse of a particular service in the face of various pressures including staffing difficulties. NHS Scotland could benefit from a far more systematic approach to the application of telemedicine, both in terms of rigorous consideration and application of the possibilities opened up by it, and in terms of the support that is given to those who want to adopt a telemedicine approach.
The creation of NHS 24 marked a change in the way that care is provided by NHS Scotland and offers a new technical infrastructure within Scotland. Key to this infrastructure is the integration of technology both across Scotland and vertically within local systems. This in turn offers:

NHS 24 is a national 24-hour service providing two core services:
- Clinical assessment, advice and referral; and
- Health information by telephone

The aim of NHS 24 is to simplify access to local healthcare services by providing a 24-hour integrated service which allows patients and their families to access health advice and information when they need it. NHS 24’s second key aim is to reduce inappropriate use of other services by assessing patients’ needs, offering advice where possible and referring to other services as required based on clinical need. Critically, NHS 24 also aims to increase levels of self-care and improved health and outcomes by providing a wide range of quality assured health information. Wanless describes a future 2022 health service in which patients with better access to information have driven the health service from a model of informed consent to one of informed choice. The enablement of the public is of critical importance to the appropriate use of healthcare services of the future. A planned NHS Scotland Online Health Information Service could provide access to both the information that is needed to achieve this state, and via access to a future electronic record, where patients are enabled through technology to become more involved in their healthcare. NHS 24 will also trial digital television in 2004 as part of the NHS Direct DTV programme. NHS 24 is a major step towards building capabilities in this area which could then be applied more widely in the area of IT and telemedicine when the appropriate infrastructure has been put in place.

**Conclusion**

There are a number of clear issues which NHS Scotland must face, and for which ICT offers potential solutions. Staff and resources need to be used more efficiently, patient safety must be improved by having information available at the right place and time and by reducing errors caused by legibility or accessibility issues. A whole range of pressures - around workforce (including the need to maintain skills), resources and demography - are coming to bear. NHS Scotland needs to use the combination of new information systems and telemedicine to maintain and develop services which might otherwise be unsustainable. Information and Communication Technology and Telemedicine systems should not be bolted onto a reconfigured health service, they are central to its development and understanding their capabilities should be integral to service planning in the future. It is clear that other healthcare providers have already developed systems which meet the needs of healthcare in the 21st century. They have demonstrated that implementation problems are surmountable; we must learn from them.
11. Conclusions

In this report, we have outlined the main factors driving change in NHS Scotland. What do these drivers mean for healthcare delivery in 20 years time?

All of the drivers described will have an impact, but three in particular – and our response to them – will determine the shape of health care in Scotland in 2024:

- demographic change and associated shifts in the pattern of ill health will determine the demands on the health care system
- workforce pressures will be the bottom line in determining how we are able to respond to these changes in demand
- developments in technology, and in information and communications technology in particular, will give us the tools to fundamentally reshape how health care is delivered.

The next 20 years will see an ageing population, a continuing shift in the pattern of disease towards long-term conditions, and growing numbers of older people with multiple conditions and complex needs. These changes in themselves will make the current model of healthcare delivery unsustainable.

We will no longer be able to afford a healthcare system which more often than not waits for a medical crisis before providing care. This reactive approach too often results in an unnecessary, damaging, expensive and prolonged hospital admission. We need a healthcare system with an emphasis on providing continuous preventative care for people with long-term conditions to balance our ability to react quickly and safely to medical emergencies.

Not only will there be more older people in 20 years time, but their demands – along with the rest of the population – will be different. They will be less deferential and less unquestioningly accepting of treatment. They will demand to understand and be involved in the care they are offered. They may have full access to a range of evidence on best practice via the internet.

For some, this level of patient involvement will be seen as a nuisance. It is the opposite. Patients and their carers will be the best resource we have for dealing with the growing burden of long-term conditions. They will have the time and the motivation to become expert partners of NHS staff. In this context, the role of healthcare professionals will increasingly be that of supporting and facilitating the management of long-term conditions by patients and carers.

Shifts in demography, epidemiology and attitudes tend to have their effects over a relatively long period of time. In contrast, many of the factors relating to the workforce are having a rapid and pronounced impact right now. They require immediate responses, which may have long-term implications.

The NHS in 2024 will require a set of staff providing a substantially different service in different working environments and with different skills and roles. The size and
composition of the workforce is perhaps the most important determinant of the capacity of NHSScotland.

The impact of the European Working Time Directive, the New Deal for Junior Doctors, new contractual arrangements for GPs and consultants, and the need to improve the standard of care available to patients are among the current factors causing pressure for change in the system. Many of the pressures place limitations on the supply of medical or surgical input; when that is set alongside the potential for much-increased demand, the case for change is obvious.

Work on national workforce planning is underway. It will be essential to link service planning to workforce planning at every level (local, regional and national). We need to ask some fundamental questions about the recruitment and training of medical and nursing staff in Scotland. There are issues about the sustainability of our medical schools, just as there are issues about the sustainability of our health services.

We also need to be sure that we make the best and most appropriate use of our staff. Given population trends, recruitment may be more competitive in the future. If we are to successfully attract and retain high-quality staff, we need to offer careers in a modern, attractive environment.

We also need to ensure that the roles of staff meet the changing demands of the service. If we are right about future trends in service provision, we will need clinical generalists working in local environments with increasing degrees of specialisation in complex and more centralised environments. Given the time lag in training medical staff, we need to be planning urgently for these future scenarios.

Recent years have seen a range of initiatives to enhance and broaden the roles of healthcare professionals throughout the NHS. These developments need to be accelerated to deliver better service in the face of new and increasing demands and to make NHS careers all the more fulfilling and attractive.

Technology is not a panacea, but information and communication technology has the potential, in combination with organisational modernisation, to revolutionise the way health care is delivered.

Many of the interactions between patients and the health service will be conducted electronically by 2024. At the end of 2002, 40% of Scottish households had access to the internet, and that figure is increasing rapidly. It is easy to envisage a situation where patients could access officially-recognised websites run by physicians and other specialists.

The aim of increasing patient involvement would also be much enhanced if patients were able to access and update their individual electronic patient record. We might expect that by 2024 patients will be able to carry a credit card-sized copy of their medical record.

An Electronic Health Record will be perhaps the single most important development in ICT aimed at supporting a new model of healthcare delivery. Patients will
increasingly have a complex mix of medical and social problems requiring input from several different services. Co-ordination of care can best be built on the basis of a comprehensive electronic patient record. If care is to become preventive and anticipatory, patients must constantly be monitored for signs of incipient crises (‘kept on the radar’). Again, a comprehensive real-time record is a necessary foundation for such care.

As a basic building block for such developments, it will be vital to make universal the use of the Community Health Index (CHI) in the very near future. Indeed, if we are to maximise the potential of technological advances, NHSScotland will have to achieve a step change in joined-up information technology.

Diagnosis will be fundamentally different by 2024. The use of advanced information and communication technologies will permit tele-diagnosis and the centralisation of complex and expensive diagnostic services. At the same time, engineering advances will lead to lower-cost imaging and other diagnostic methods that can be used in the community and in the home.

Communication between healthcare professionals and patients will be revolutionised by broadband video link-ups, enabling visual communication and monitoring on tap. The greatest need of many older, frailer people in the community is to be ‘kept an eye on’. Developments in ICT will transform the ways in which this can be achieved.

The effect of technological change in general may be to further accelerate some of the changes we are seeing already. It should be possible to do much more diagnosis, treatment and monitoring work locally (including in the home), but there will be even more complex, specialised and expensive treatments available that we will be able to provide in only a few locations in a country the size of Scotland.

It is important to remember that Scotland is not alone in facing many of these changes and challenges. An ageing population and the growing burden of chronic disease are factors common to almost all advanced industrial societies. Because of Scotland’s relatively poor health in a Western European context and the prospect of a particularly steep decline in population, there is a tendency to concentrate on problems felt to be uniquely ‘Scottish’. We do have to deal with Scotland’s particular issues, but it is just as important to understand the challenges we share with other societies.

Similarly, many of the workforce pressures the NHS is facing are not unique to Scotland. Other healthcare systems have gone much further in embracing the potential of information and communications technology to transform healthcare.

We need to get much better at learning from how other systems have faced common challenges and embraced new opportunities. Systems such as Kaiser-Permanente and the Veterans Health Administration in the United States, the Canadian healthcare system and, increasingly, the NHS in England are showing the way in facing up to the implications of these broad demographic and epidemiological shifts by developing more proactive, preventive and community-based approaches. We need to learn from such developing responses. The policy environment in Scotland,
particularly in terms of Joint Future, Community Health Partnerships and unified NHS Boards, means we are well-placed to share experiences and move forward.

Taking all of the above together, the picture that emerges is one in which it is possible to deliver much more close to the patient’s home and more ownership is available to the patient, and in which a new range of highly-complex and specialised avenues are opened up. The current trends in health care might be summarised as moving from general care in district hospitals towards better primary care and specialised hospital care. This polarity of care is likely to increase and intensify over time.

The pace of change is likely to quicken, and it will be important to plan for some of these changes. Integrated planning of service configuration, service design and workforce requirements will be necessary. By 2024, the provision of a modern health service in Scotland will require new infrastructure (particularly information technology, where the current position across NHSScotland seems some way short of best practice), new thinking and new skills. The future of health care will not be ‘more of the same’.
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