NHS
Lothian

OUR HEALTH, OUR FUTURE
Public Health 2009/11

Annual Report of the Director of Public Health and Health Policy

OUR HEALTH, OUR FUTURE

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1
FOREWORD AND INTRODUCTION

I am pleased to present my fifth report as Director of Public Health and Health Policy, 'Our Health, Our Future' for 2009-2011. The Annual Report of the Director of Public Health and Health Policy is an independent assessment of the current state of health of the people of Lothian and the opportunities and challenges we are currently facing. This report examines and draws together the links between the health of people around the world and our health here in Lothian. The world is increasingly interconnected. People, goods and ideas move rapidly across the globe with the potential to deliver harm as well as benefit as has been witnessed during the last two years. In the report we consider some of the global issues that have an influence on our health and local health services. We also highlight local knowledge that is having an influence on the world health stage. The H1N1 flu pandemic is a good example of a global and local problem that required global and local solutions. It has been necessary to work closely with local, national and international bodies to develop an effective response. It is vital to look at how other countries dealt with the pandemic and learn from their experiences. It is also essential that we continue to feed our own experiences back to the international community to increase the pool of evidence-based knowledge.

While every patient is an individual with individual needs and should be treated as such, 80% of chronic disease worldwide could be avoided by investing in reducing exposure to ten common risk factors (see **Box 1**). That means addressing the social determinants of health that led to the exposure as well as the risk factors themselves. Studying the global burden of disease reminds us that people everywhere die of the same causes. There are many other health services and professionals across the world dealing with similar problems and coming up with novel solutions that could benefit the populations of other countries too. Starting to tackle diseases globally will require a mixture of global regulation, changes in how we all share our assets and resources and heavy and sustained investment in the early years of life from all countries of the world. The changes will improve our physical, social and learning environments and allow systematic implementation of evidence to deliver effective interventions.

Studying the global patterns of health and disease can help us design, resource and deliver services to address Lothian's health needs. Where there are gaps in the evidence we should move more quickly to find ways to fill them, for example, through our partnerships with the universities, the Scottish Collaboration for Public Health Research and Policy, colleagues in other organisations and other countries. In this report we detail some of the highs and lows of managing evidence-based health interventions at local and national level, including the costly delay in introducing alcohol brief interventions and the potential benefits from implementing

our local research into the epidemiology of swine flu – quickly but carefully testing out innovative approaches, to gather evidence to pass to others to improve health in the future.

Box 1 10 COMMON RISK FACTORS[1]	Healthy Years Lost
Smoking	13
Alcohol	8
Overweight	8
High blood pressure	7
High blood glucose	6
Physical inactivity	5
High cholesterol	4
Illicit drugs	3
Occupational risk	2
Low fruit & vegetables	2

We live in uncertain times and we can not assume that our freedom to travel, to consume and to access financial and natural resources will continue unchecked. The volcanic eruptions in Iceland and Indonesia and the devastating and unfolding tragedy in Japan demonstrate that it is important to be prepared for all potential challenges to public health, be they local, national or global. The consequences of the ash cloud from Iceland's Eyjafjallajökull volcano were very far reaching and interrupted lives, lifestyles and livelihoods across the globe. Not only did air travel come to a standstill with over 100,000 flights cancelled, it had an important, if temporary, impact on the economies and infrastructure of many countries. Luckily for Scotland weather and various other factors limited the adverse consequences of volcanic ash and sulphur on human health so disaster recovery plans were not activated. However, it provided an opportunity for the plans to be tested and highlighted areas of weakness, such as the need for real time air quality monitoring to inform decision making, which are now being addressed.

We also live in challenging financial times in Lothian, with the public sector facing major challenges to continue to provide the level of services the public has come to expect, against a backdrop of real reductions in budgets. It is important not to stall or lose the progress we have made in improving health and reducing health inequalities. The NHS, particularly in Scotland, has an enviable record of providing equitable services. In many other countries, people with lower incomes or lower levels of education are less likely to receive effective treatments than those who are most affluent. Lothian has services that are trusted and supported by our most vulnerable populations; we offer

low threshold care, early intervention with children and families, maintenance and a patient-supportive approach to recovering potential. We have found that people engage more effectively with services that are person centred, that show they are reliable and trustworthy, that share enough information and don't let hierarchy get in the way of effective prevention, treatment and care[2]. To enable these services to continue to provide equitable health care we must learn lessons from the recessions of the 1980s and 1990s and from other countries and health systems.

During 2005-2009, the healthy life expectancy of the neighbourhoods in Lothian with the lowest levels of deprivation was among the highest in the world; while men in the most deprived populations had a life expectancy at birth below all of the OECD countries and similar to that found in Mongolia and East Timor. Rates of

"Walter Hayes[3] created a just in time lecture for the Japan disaster **within 12 hours** after the event. **Within 14 hours** Eugene Shubnikov was able to put the lecture on the web, and to link it to 3 of our major disaster lectures, Earthquake, Tsunami and Radiation health. These lectures had been translated into Japanese and up to 13 different languages. **Within 15 hours** after the earthquake we notified all 50,000 of you and distributed the lecture to many thousands of people through you as a result of your generosity and copying the lecture to your colleagues. Our radiation lecture was distributed hours before there was major damage to the nuclear reactor."

Professor Ronald LaPorte, Department of Epidemiology, University of Pittsburgh

change their relationship with food and physical activity, However, given the global scale of the problem and the fact that around 65% of the Scottish adult population are overweight or obese, short term projects focused on individual behaviour change are not enough to make a significant change. It will take more time to build the will necessary to create change on the scale required to change the way we think about food, drink and physical activity so that they contribute rather than detract from our health and well-being as individuals and as a society.

This annual report considers influences on the health of the population of Lothian from global initiatives to local research and practice and the role Lothian has to play in the global arena. We also look towards the future, highlighting what needs to be done to address the issues raised. In summary, a healthy future depends on addressing unmet need and unachieved potential by:

- giving every child the best start in life;
- enabling all children, young people and adults to maximize their capabilities and have control over their lives;
- creating fair employment and good work for all;
- ensuring a healthy standard of living for all;
- creating and developing sustainable places and communities; and
- strengthening the role and impact of ill-health prevention.

premature death and disability have reduced but those with fewest resources have fewer life chances and accumulate greater exposure to physical, social and environmental harm across the life course. This seems to magnify the risks associated, for example, with alcohol or obesity. The increasing prevalence of obesity and imbalance between food intake and physical activity raises the risk of premature death and disability and is seen most clearly in the rising prevalence of Type II diabetes. We have seen good results from small scale interventions designed to help people

My responsibility as Director of Public Health is to ensure that everyone is aware of the inequitable patterning of health and disease in the population and provide guidance on what to do about it. Our future depends on all agencies investing wisely in the six areas above so that we can see, feel and measure continued reduction in the risk of preventable, premature death, disability and distress. If all of us in Lothian experienced health as good as those in the least deprived neighbourhoods, we would have achieved our goal of being in the world's top twenty-five health systems.

2

OUR HEALTH GLOBALLY

2.1

THE GLOBAL BURDEN OF DISEASE (GBD)

Harry Campbell, Sarah Wild & Eilidh Fletcher

The social, political and economic factors that determine people's health at national and local level are the same wherever you live[1,2]. The risks to health and well-being result from the same top ten risk factors[3]. The way we balance our response to those risk factors while we work together to address the reasons why not everyone can achieve their potential for good health determines how the health system works at national and local level. It also has an impact on how positive or negative the experience is for those who use or work in our services.

By measuring the global burden of disease, countries and health systems can gauge how various diseases and injuries affect their population. Also by understanding the variations in health and mortality risks across countries, they can assess their progress towards health equity and the effectiveness of the contribution of their health system. This enables national and local governments, health services and communities to determine whether they are focussing on the right kinds of public health and health service investments. It also guides national and local estimates of the immediate future as well as the longer term burden of disease. Knowledge of the immediate future burden of disease is particularly important at local level when we are facing new threats to health or when old problems re-emerge from the shadows. On April 26, 2009, the first 'just in time' global lecture on H1N1 was published and updated daily[4]. This global effort summarised the science, clinical and public health picture so that those of us who were responsible at local level didn't have to work things out from scratch and could concentrate on local priorities. In Lothian, we have learned from the emergence of Hepatitis B and HIV where response was slow. Our response to the global and local threats from climate change, recession and obesity requires further attention.
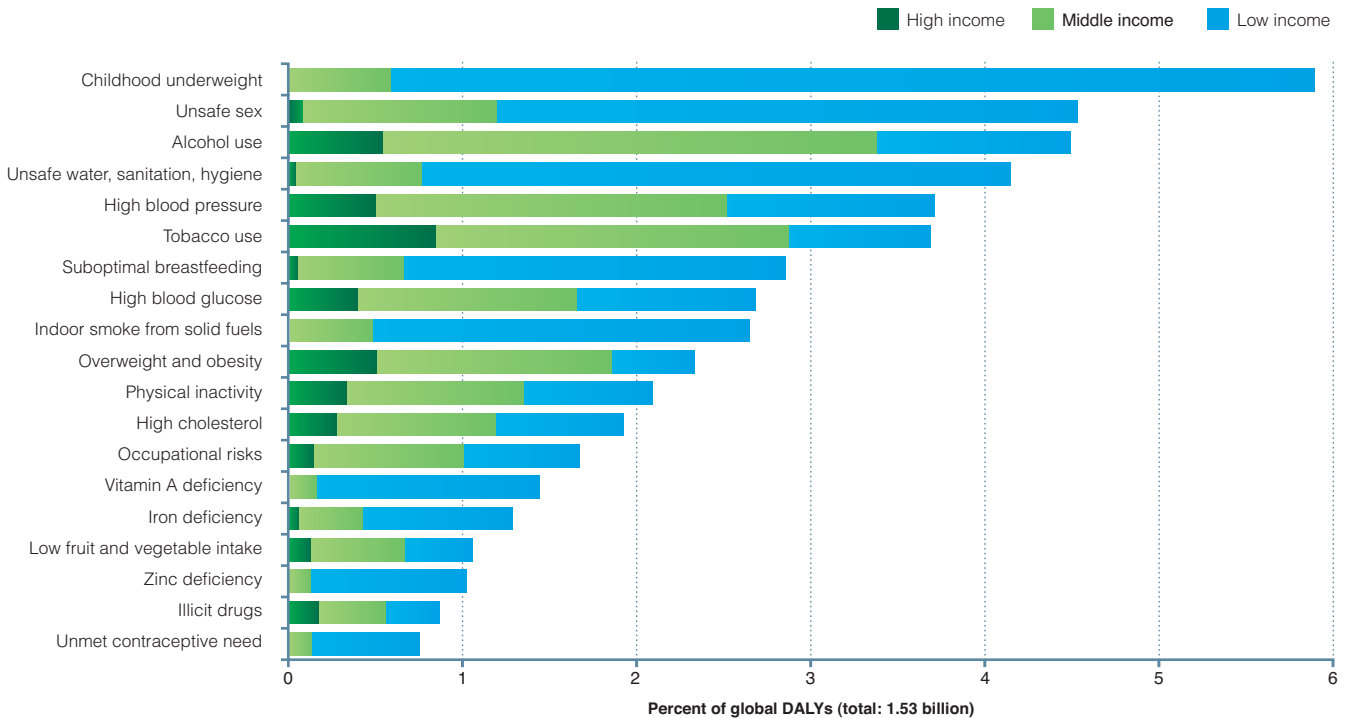
Introduction

The first World Bank Global Burden of Disease Study[5] was set up to assess the burden of disease consistently across regions, diseases and risk factors and to develop methods to estimate health loss associated with deaths and disability, measuring the number of years of full health lost. The study introduced the concept of the disability-adjusted life year (DALY) (see **Figure 1**). This allows the years of life lost due to premature death (for example, pneumonia in children) to be quantified along with chronic, disabling diseases that do not cause death (for example, cataracts causing blindness) but reduce the years of life lived in full health. The study describes the burden of disease itself as "a measurement of the gap between the current health status and the 'ideal' situation – where everyone lives into old age, free of disease and disability"[5].

Figure 1

Percentage of disability-adjusted life years (DALYs) attributed to 19 leading risk factors, by country income level, 2004[6]

Legend: ■ High income ■ Middle income ■ Low income

Chart categories (top to bottom):
- Childhood underweight
- Unsafe sex
- Alcohol use
- Unsafe water, sanitation, hygiene
- High blood pressure
- Tobacco use
- Suboptimal breastfeeding
- High blood glucose
- Indoor smoke from solid fuels
- Overweight and obesity
- Physical inactivity
- High cholesterol
- Occupational risks
- Vitamin A deficiency
- Iron deficiency
- Low fruit and vegetable intake
- Zinc deficiency
- Illicit drugs
- Unmet contraceptive need

X-axis: 0 to 6

Percent of global DALYs (total: 1.53 billion)

The World Health Organization (WHO) supports regular updates on the number of cases, disability and deaths for over one hundred diseases and injuries. These estimates now include the most important risks underlying the major diseases. They also identify the risk factors to be tackled if the global burden of disease is to be reduced successfully. Estimates of the burden of disease provide valuable data for planning approaches to prevention and health services and for informing priority setting and resource allocation. This report examines the conditions that impact most on the global burden of disease and illustrates the common nature of the risk factors. Exposure to these risks, however, is shaped by the social, environmental and economic factors that are the wider social determinants of health and effective action, whether at global or local level, requires attention to risk and the reasons why we are exposed in the first place.

GBD ESTIMATES IN SCOTLAND AND THE UK

The Scottish Public Health Observatory compared mortality between Scotland and other countries for 1950-2000 in 2006[7]. A preliminary estimate of UK burden of disease was carried out in 2008[8].

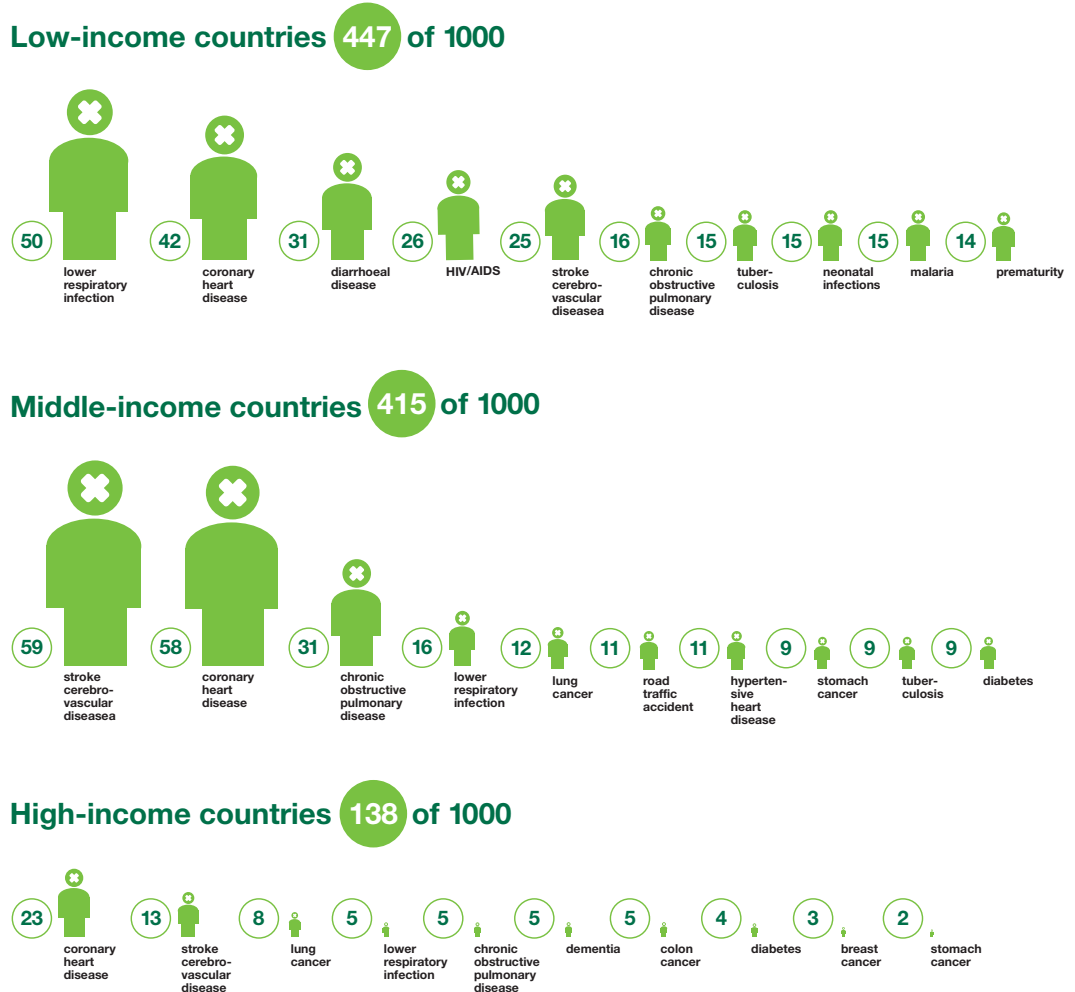**Reducing the Global Burden of Disease contributes to *"the 'ideal' situation – where everyone lives into old age, free of disease and disability."***

The global situation

In 2004, about 59 million people died across the world. The number one killer was cardiovascular diseases. In 2004, 7.2 million people (12.2%) died of coronary heart disease and 5.7 million (9.7%) from stroke or another form of cerebrovascular disease. To put this into context, imagine a diverse international group of 1,000 individuals, representative of the people who died in 2004. Of those 1,000, 138 would have come from high-income countries, 415 from middle-income countries and 447 from low-income countries. **Figure 2** shows the main causes of deaths in high, middle and low income countries of the world.

In high-income countries, more than two-thirds of all people live beyond the age of seventy and predominantly die of chronic diseases: cardiovascular disease, chronic lung disease, cancers, diabetes or dementia. Pneumonia is the only leading infectious cause of death. In middle-income countries, nearly half of all people live to the age of seventy and chronic diseases are the major causes of death, just as they are in high-income countries. Unlike in high-income countries, however, tuberculosis and road traffic accidents are also leading causes of death. In low-income countries fewer than a quarter of all people reach the age of seventy and over a third of all deaths

Figure 2

Top 10 causes of death by country income levels[9]

Low-income countries 447 **of 1000**

50	42	31	26	25	16	15	15	15	14
lower respiratory infection	coronary heart disease	diarrhoeal disease	HIV/AIDS	stroke cerebro-vascular diseasea	chronic obstructive pulmonary disease	tuber-culosis	neonatal infections	malaria	prematurity

Middle-income countries 415 **of 1000**

59	58	31	16	12	11	11	9	9	9
stroke cerebro-vascular diseasea	coronary heart disease	chronic obstructive pulmonary disease	lower respiratory infection	lung cancer	road traffic accident	hyperten-sive heart disease	stomach cancer	tuber-culosis	diabetes

High-income countries 138 **of 1000**

23	13	8	5	5	5	5	4	3	2
coronary heart disease	stroke cerebro-vascular disease	lung cancer	lower respiratory infection	chronic obstructive pulmonary disease	dementia	colon cancer	diabetes	breast cancer	stomach cancer

are among children under fourteen. People predominantly die of infectious diseases: pneumonia, diarrhoeal diseases, HIV/AIDS, tuberculosis and malaria. Complications of pregnancy and childbirth continue to be leading causes of death claiming the lives of neonates and mothers.

Low and middle-income countries now face a double burden of increasing chronic, non-communicable conditions and communicable diseases that traditionally affect resource-poor countries. Over ten million deaths in 2004 were among children under five years of age and 99% of them were in low and middle-income countries. The main causes are neonatal problems, pneumonia, diarrhoeal disease and malaria. An estimated 39% of child deaths (4.1 million) were caused by micronutrient deficiencies (lack of essential vitamins and minerals), underweight, suboptimal breastfeeding and preventable environmental risks. Most of these preventable deaths occurred in the WHO African Region (39%) and the South-East Asia Region (43%)[5].

The leading global risks for mortality are high blood pressure (responsible for 13% of deaths globally), tobacco use (9%), high blood glucose (6%), physical inactivity (6%), and overweight and obesity (5%). These factors are responsible for increasing the

risk of chronic diseases such as heart disease, diabetes and cancers. They affect countries across all income groups: high, middle and low.

Eight factors that increase risk of death from cardiovascular disease are: alcohol use, tobacco use, high blood pressure, high body mass index, high cholesterol, high blood glucose, low fruit and vegetable intake and physical inactivity. 61% of cardiovascular deaths, the leading cause of death worldwide, can be attributed to these risks. Although these risk factors are usually associated with high-income countries, over 84% of the total global burden of disease that they cause occurs in low and middle-income countries. Reducing exposure to these eight risk factors would increase global life expectancy by almost five years.

Nine environmental and behavioural risks, together with seven infectious causes, are responsible for 45% of cancer deaths worldwide. For specific cancers, the proportion is higher: for example, tobacco smoking alone causes 71% of lung cancer deaths worldwide. Tobacco accounted for 18% of deaths in high-income countries and almost one in ten adults worldwide.

Patterns of disease are changing across the world due as a consequence of changing socio-economic circumstances, the decline in communicable diseases and an ageing population. The most recently published estimates of global mortality and burden of disease suggest that the proportion of deaths due to non-communicable disease (mainly cardiovascular disease and cancer) will rise from 59% to 69% between 2002 and 2030[7]. By 2015, the number of deaths associated with tobacco use each year is expected to exceed the number of deaths from HIV/AIDS by 50% and to be associated with 10% of all deaths. If approaches to prevention remain unchanged the four leading causes of burden of disease in 2030 are likely to include HIV/AIDS, unipolar depressive disorders, coronary heart disease and road traffic accidents.

Figure 3

Causes of death in Scotland[10]
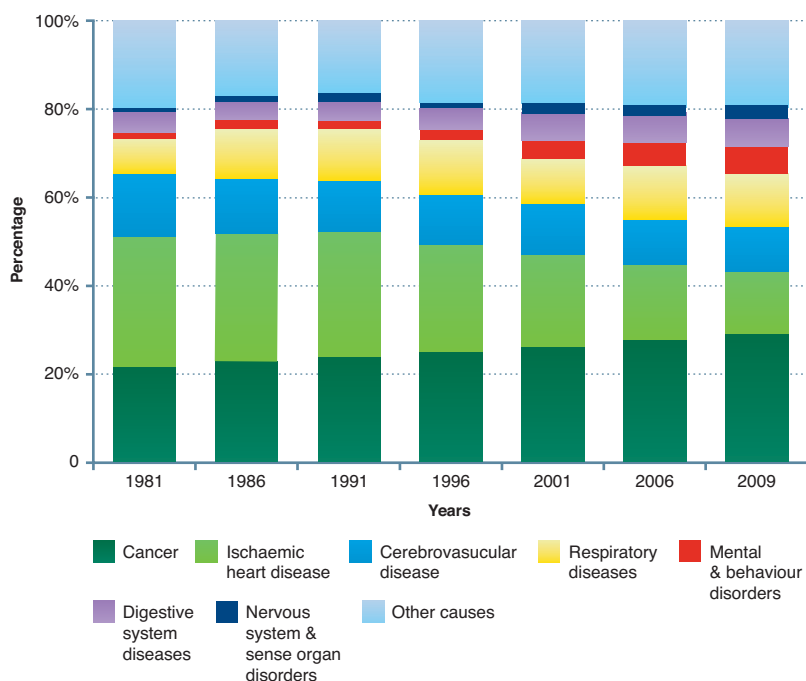
The Scottish situation

In 2009, 53,856 deaths were registered in Scotland[10]. This was the lowest total recorded since the introduction of civil registration in 1855 but more than half of all deaths were still due to the so-called 'three big killers' (see **Figure 3**).

The 'top ten causes of death' in Scotland are broadly similar to the main causes of death in other high income countries (see **Figure 1**).

- Cancer – 15,187 deaths, or 28% of all deaths;
- Coronary heart disease (CHD) – 8,274 deaths, or 15%; and
- Cerebrovascular disease (stroke) – 4,906 deaths, or 9%.

Other common causes of deaths registered in 2009 are included in **Table 1**.

There were 235 deaths of infants (children aged under 1) in 2009; a rate of 4 deaths per 1000 live births[11]. In 2005, the infant mortality rate was 5.2 per 1000 in Scotland compared with 2.4 per 1000 in Sweden[12].

Table 1: Other common causes of death in Scotland, 2009[10]

| Cause of Death	Examples	Deaths	%
Circulatory system diseases other than CHD and Stroke	Aortic aneurysm, atrial fibrillation & flutter, and hypertensive disease	3,589	7%
Chronic lower respiratory diseases	Emphysema	2,986	6%
Mental and behavioural disorders	Due to alcohol or drugs	3,327	6%
Digestive system diseases	Chronic liver disease	3,006	6%
Other respiratory disease	Pneumonia	2,503	5%
Nervous system diseases	Alzheimer's disease	1,657	3%
Accidents	Falls, transport accidents	1,332	2%
Genitourinary system diseases	Renal failure	1,269	2%
Endocrine, nutritional and metabolic diseases	Diabetes	873	2%
Certain infectious and parasitic diseases	Septicaemia	838	2%
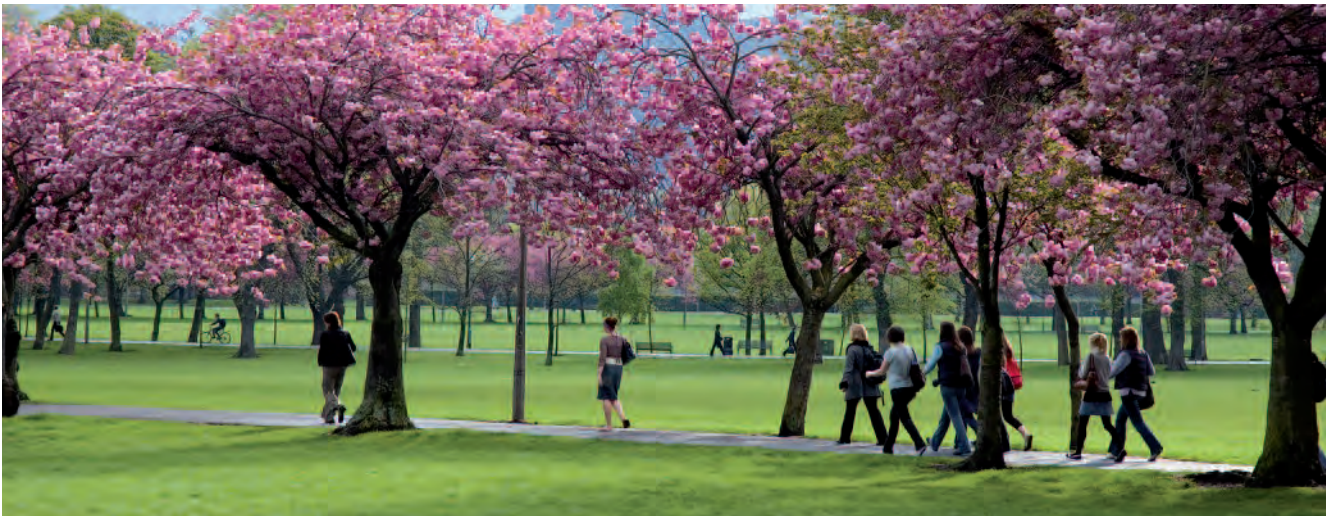
Figure 4

Estimated numbers of people with diabetes based on populations alone or combination with trends in BMI[14]
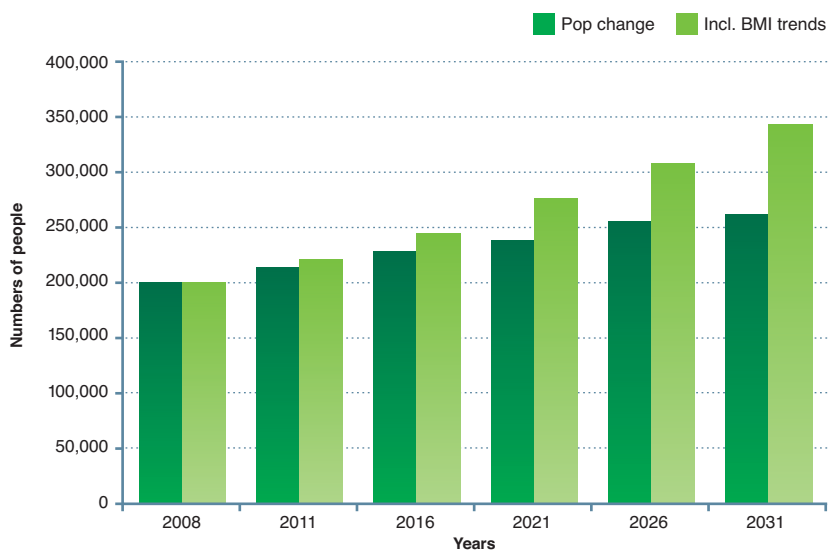
"A steep increase in cases of diabetes ... can be expected over the next twenty years ... prevention and early attention are required."

Case study:
FUTURE DIABETES IN SCOTLAND

Burden of disease estimates for diabetes in Scotland are based on population-based data on diabetes diagnoses combined with survey estimates of the proportion of diabetes that is undiagnosed[8]. Future projections have been made based on trends in the main factors that influence diabetes risk in a population: the distribution of age, sex and body mass index. **Figure 4** shows the steep increase in cases of diabetes that can be expected over the next twenty years and for which prevention and early attention are required urgently. These estimates can also be used to:

1. Estimate the impact of introducing a systematic diabetes prevention programme including diet, exercise and practice[13].

2. Predict the effects of a screening programme to identify people with undiagnosed diabetes and of interventions that reduce the prevalence of obesity in the Scottish population, similar to approaches used in other countries to predict the future burden of diabetes.

3. Estimate the future need for more screening for the eye complications of diabetes.

Key points

- Effective local public health action depends on global public health effort based on high quality data on exposure, risk factors and major disease outcomes.

- Estimates of the burden of disease can provide valuable data for planning approaches to prevention and health services and for informing priority setting.

- Populations are ageing owing to successes against infectious diseases. At the same time, patterns of physical activity and food, alcohol and tobacco consumption are changing the risk of non-communicable disease.

- Understanding the role of these risk factors is essential for the development of clear and effective strategies for improving global health.

- Patterns of risk and disease vary between countries and over time but sustainable improvements in the global burden of disease require attention to the social, environmental and economic factors that affect exposure to risk.

Recommendation

- Continue to support the data gathering and analysis necessary to plan and evaluate policies and interventions designed to reduce the risk of premature death at local, national and global level.

2.2

HEALTHCARE SYSTEMS

THE INFLUENCE OF DIFFERENT GLOBAL HEALTHCARE SYSTEMS ON HOW PATIENTS EXPERIENCE HEALTH IN LOTHIAN.

Dermot Gorman & Liz Grant

A healthcare system consists of organisations, resources and people whose primary purpose is to improve health. People who migrate to Scotland come with different expectations of healthcare shaped by those in their countries of origin. Understanding the differences between health systems gives us insights into important training needs for our staff, the production of appropriate health information for local migrant communities and how best to care for all patients living in Lothian.

Health systems and services

Health systems differ across the world, reflecting each country's economic, political and social conditions and aspirations and willingness to prioritise health. Not all are equitable, with access in some systems dependent on social status, location and money. Many are fragile, with shortages of health workers particularly affecting healthcare systems in low income and transitional economies. For individuals, service delivery is the most visible part of a health system. Services are often judged on their responsiveness to immediate problems, on their apparent appropriateness to the local context, on their capacity to meet particular needs of the communities in which they function and on whether they can provide quality services with sufficient resources and motivated staff.

While an effective health system has an impact beyond service delivery, the way that services are organised and delivered depends on the availability of goods and services through trade, food and water, transport, sanitation, industry and the quality of the wider social, political and physical environment. Unemployment, insecure work or working in poor conditions have negative consequences for health and health services[1]. For health systems to function effectively, a healthy workforce, and well established health facilities are essential, but so are things that are often ignored, such as health literacy of staff and patients, the appropriate use of effective medical technologies including laboratories and engineering support, alongside effective management and oversight underpinned by financial stability (see **Box 1**).

There is also a role for health systems in helping understanding who the 'choice makers' in society are – the multi-nationals who produce and market the food on our shelves, the advertisers who create desire and demand, the planners and programmers who develop and decide the layout of the environment – and in showing how they influence choice, and demonstrating the consequences of these choices.

Box 1

With a strong health system, becoming and remaining healthy is easier for individuals. Six building blocks have been identified as the basics of a strong health system[2]. These are:

- Service delivery
- Human Resources
- Information
- Medicines and technologies
- Leadership and governance
- Finance

Effective health systems aim to provide a 'chain of care' that stretches from prevention of illness through to palliative and end of life care. The best health systems are based on the need to ensure comprehensive, universal access which is integrated, continuous and people centred. Health systems have a responsibility to develop clinical and public health interventions which must be safe, as well as being cost effective. We often take it for granted but Scotland enjoys good health governance. Strategic policy frameworks exist, based on widespread involvement and regulation with legislation supporting these frameworks to create an enabling environment for a healthy, well Scotland.

Across the world the poorest and least well educated often have the least power to speak out about their health needs and, in many countries, even struggle to enter into the health system. Where tailored services are developed to support specific needs of more vulnerable communities, these are more likely to receive fragile or short term funding. Unfortunately, this is as true in Scotland as in countries with more fragile mainstream funding[3,4].

Delayed access to prevention or treatment is the major preventable factor in the global burden of disease. Unattended obstructive labour, lasting days on end, is not uncommon in Africa where health workers are scarce. Maternal and child mortality is high. Many of those who survive develop fistulas, leaving them rejected and stigmatised, kept away from others because of their constant leaking of urine and faeces. This is preventable if they had received early enough care, remediable if they are supported to come to one of the few fistula services, but rarely prioritised by health systems struggling to cope with more visible diseases.

Late presentations or failure to attend appointments are not about indifference, or forgetfulness, but about desperation, no-one to make initial referrals, no money and travel or childcare difficulties. In Uganda, for example, 45% of patients who finally arrive at the country's main hospital in Kampala arrive too late to be treated. Most either die in the hospital or leave to die at home, with conditions that could have been prevented or treated if the right care had been received in time. These experiences help explain the way that newer residents of Scotland expect health services to work in Lothian. Helping staff and patients understand the past and responding appropriately to their needs increases our ability to enable people to engage with prevention and treatment.

Service costs

While cost is not the only factor that can make it difficult for people to use health services, it is one of the most important. Health systems vary in the proportion of the population that is covered. Most health services in Scotland are 'free at the point of delivery'. However, this is not the case in other parts of the world. In the United States, for example (see **Box 2**), the cost of treatment for major acute illnesses and for ongoing chronic disease is often out of the reach of lower income families. As the costs of treatment rise as a proportion of disposable income, more households experience catastrophic costs or impoverishment[5].

Box 2

COMPARISON BETWEEN UNITED KINGDOM AND UNITED STATES OF AMERICA

United Kingdom

- Free for all residents
- Financed through national insurance contributions and taxes on income
- National health system well established
- Greater emphasis placed on having an equitable health system that is accessible and appropriate for all

United States

- High costs for all
- Exact price dependent on type of insurance plan an individual has in place
- Benefits through private insurance companies that are either bought individually or through a full time employer
- Healthcare is not seen as a further extension of services provided to the public by the government, even though providing healthcare for all citizens is no different than providing a free public education, or police services

Source: Allison K. Marsh, Biology & Health Policy undergraduate, University of Rochester

Why do different healthcare systems matter here in Lothian?

A new Commonwealth fund report[6] allows us to look at overall differences between the healthcare systems of seven developed countries. This year the UK ranked first for efficient and effective healthcare measures. Comparing care in Lothian with that in other countries can provide ideas and models to improve our health system. While health systems in many low income countries face problems because of a lack of resources and few diagnostic tools, practitioners may focus more on understanding the multiple social, spiritual and family needs of their patients. The engagement with communities and the role of other agencies in healthcare, notably from a faith based background, is often greatest where health systems are most fragile. Many low income countries in Africa rely on community transport systems to bring patients to hospital, on community social networks to provide care for patients living with incurable illnesses. People are not only cared for in the community but by the community and in a spirit of 'community', and of togetherness. Traditionally, as health systems strengthen

and economies grow, control of health is tightened into a central organisation. Yet understanding the importance of shared care could transform healthcare in many high income countries.

Our own health system, like many health systems in high income countries, was initially structured to deliver health services as if diseases came as individual travellers, visiting one at a time. Yet health needs are becoming increasingly multiple and complex. The mark of a 21st century health system is its capacity to respond flexibly and equitably to changes in the composition of the population and their health needs. Year on year, the global movement (of people, ideas, beliefs, materials, money and tools) increases, creating public health opportunities but also public health challenges. Old diseases like TB or new diseases such as H1N1 can potentially travel around the world in under a day. Our health system is adapting to respond to emerging health problems and new diseases. Being in constant touch with other health systems, charting the rise and fall of disease patterns, allows our system to improve its capacity to cope.

People also move from across the globe into Lothian. NHS Lothian is committed to providing a quality service for all those seeking care, regardless of their cultural background or country of origin. Their needs are diverse and changing and the mark of a truly effective service is its capacity to respond to care for each individual patient as if that patient were the most important person in the world. One way the NHS in Lothian has approached this movement has been to engage with other health systems from countries to learn from their strengths. Health workers from all backgrounds – medical and nursing staff, information technologists, nutritionists, physio- and occupational therapists, engineers, technicians, public health staff and managers from across NHS Lothian – have spent time in low income countries supporting their colleagues. Many have travelled during their own time, using holidays to work. Lessons learned from experiences in working in many different health systems are invaluable to NHS Lothian. New approaches to disease prevention, new understanding about care expectations, better ways of performing simple clinical tasks, and above all an enthusiasm to care have contributed enormously to the development of local health services.

Perhaps the most important lesson our staff learn from working in other healthcare systems is how the services in people's countries of origin shape their expectation of care here. Work that we have undertaken in Lothian shows that new migrants to Scotland may often expect to pay for services (which may be a barrier to their use) and may spend their own, often scant, resources having investigations privately that they would have normally received in their home country but are not offered by the NHS here. One example is ultrasound investigations during pregnancy. Our work in maternity care also shows that many migrants may be unaware of the roles, training and expertise of NHS staff. Consequently a large effort is going into cultural competency and diversity awareness training to ensure that our staff are providing a first class service and that migrant and other groups with additional needs are not excluded from services.

Compared to many health systems across the globe, the Lothian health system is strong, with excellent resources, skilled practitioners at every level, equitable access to care for all, and comprehensive coverage of health needs.

Key points

- Healthcare systems differ depending on the economic, social, political and culture of countries – the systems elsewhere in the globe that people come from to Lothian shape their expectations of care and health related behaviours.

- Strong healthcare systems support population health but this also depends on improving the wider determinants of health.

- Healthcare in the UK compares favourably to other developed countries, scoring highly on effectiveness and efficiency.

- Healthcare systems need to learn from other places and adapt to population change.

- When trained, health service staff provide culturally competent care of a standard that is hard to beat.

Recommendation

The Lothian health system needs to remain strong and flexible enough to continue to meet the needs of different local communities as it does successfully now by:

- Ensuring that resources to support effective communication reflect health needs;

- Supporting staff in developing partnerships that enable them to work with and exchange knowledge with colleagues in other countries;

- Challenging society's 'choice makers' and encouraging choice options that improve and enhance health for all;

- Recognising that preventing many of the problems that patients experience will be addressed most effectively by investing in services delivered with and through communities;

- Supporting the personal and organisational advocacy essential to deliver improvements in equity and justice for health; and

- Ensuring that our learning from the world's best, through initiatives such as 5x5x5, is evidenced by changes in investment and in clinical practice.

2.3

GLOBAL THREATS AND GLOBAL TARGETS

HEALTH IMPACT OF NATURAL EVENTS AND THEIR IMPACT ON ACTIVITIES OF DAILY LIFE

Steve Harvey & Richard Othieno

The health impact of natural disasters is never entirely determined by nature, but depends on how well economic, cultural, and social developments are interconnected. The impact on affected areas differ based on pre-existing social, physical and economic vulnerabilities, with those suffering greater deprivation affected more. The pre-existing socio-economic conditions and investment in infrastructure plays a significant role in the ability of societies to respond immediately to the disaster and to cope with the aftermath. Countries and regions with lower levels of economic development, poor governance and weak institutions, and a high degree of inequality have a higher avoidable death toll from natural disasters. The impact of such events can be mitigated more effectively if the vulnerabilities of affected groups of people are identified and taken into account from the beginning. The need to reduce social inequalities in response to incidents is addressed as part of the longer term recovery effort. These steps are considered increasingly in our local health service and multi-agency emergency and business continuity plans.

Introduction

There are many man-made and natural threats to public health. These can impact on human health, economic and political stability, trade and tourism and affect our access to goods and services. One such threat was the fall-out from the volcanic eruption in Iceland early in April 2010. The explosive eruption of the Eyjafjallajokull volcano blew a dense ash cloud over Iceland that reached heights of between 6 to 11 kilometres into the upper atmosphere[1] and the wind blew the ash towards the UK and other European countries. Due to previous experiences associated with aircraft flying through dense volcanic ash, all airports in Britain and Northern Ireland were closed. Edinburgh Airport activated its emergency arrangements to deal with stranded passengers, with advice being given via the media. There was widespread anxiety about the disruption of air travel, how long it would last and whether volcanic ash would have an impact on human health when it settled on the ground. At national and local level multi-agency arrangements to respond to an emergency were put into action. This event was unusual because it caused disruption in high income countries.

Volcanic ash and SEPA

The Scottish Environment Protection Agency (SEPA) is responsible for protecting and improving the environment in Scotland[2]. They regulate activities that may pollute the physical environment, for example, air, water or soil. Volcanic ash contains potentially harmful substances in the form of water-soluble materials, mostly acids and salts, which cling to the particles and have the potential to become an environmental hazard. When an incident such as an ash cloud occurs a systematic hazard assessment is undertaken as quickly as possible to assess the size and composition of ash particles so that the risk of harm can be assessed in different regions. Decisions are then made on whether there are immediate risks to health, whether people or animals staying in affected areas are at risk following an eruption, and whether crops and natural resource, for example, water, remain fit for consumption. The potential risk varies with the weather so local knowledge of the hazard and plans to minimise risk are important.

Air quality monitoring, laboratory and modelling studies have produced national and international air quality standards and limits to the acceptable concentrations of specific airbourne hazards. In the first week of the volcanic ash incident rain/snow samples were submitted to SEPA for analysis. A microscopic examination of the samples collected on the ground in Scotland showed that the dust contained particles typical of volcanic material. The concentration of chemicals in the air, close to the ground and in the particles that settled on the ground, was so small that they were unlikely to cause significant health impact. The Automatic Urban and Rural Network (AURN) air quality monitoring station at St Leonards, Edinburgh measures particulate matter concentrations at ground level. On 10th April 2010 it picked up volcanic ash particulate levels that were not hazardous to health. The picture was similar across the rest of the UK as well.

The information and modelling generated by SEPA and Met Office enabled Health Protection Scotland to provide information to policy makers and health advice to the general public. In Scotland, volcanic ash caused few health problems, because the ash cloud kept very high up in the atmosphere and only small quantities of dust settled at ground level, but did generate much anxiety and, as we have seen in the case of Eyjafjallajokull, caused major disruption to travel and transportation services.

Air quality monitoring for airborne hazards

The recent volcanic eruption, with the widespread effect on air transport and the uncertainty on the health impact, illustrates the need for real time air quality monitoring to inform decision making. Following the Buncefield petro-chemical fire in December 2005, it was recognised that new ways of assessing the risk of potential adverse events was required as the previous method of risk assessment had not identified the main threats to health found in this fire: vapour cloud formation, flash fire and explosion[3]. Over the last five years, the Directorate of Public Health and Health Policy in NHS Lothian has increased its focus on the role of the physical and built environment on the public's health. We have developed a process for assessing planning applications that are subject to pollution prevention and control regulations and respond to concerns from local residents and partner organisations.

In addition to the proposal for changes in the approach to planning the location of facilities with the potential to have an adverse impact on health, a committee of air quality specialists called an 'Air Cell' has been established. The role of the committee is to improve and provide risk assessment, monitoring and alerting capabilities in England and Wales and provide advice for action. Scotland has developed a similar system called 'Airbourne Hazards Emergency Response' (AHER) an air quality monitoring and modelling service for responding to incidents and emergency situations. This will enable SEPA, Health Protection Scotland, Health Boards and other agencies to carry out rapid and high quality public health risk assessments based on real time air quality monitoring and complex modelling data. The information generated will enable responding agencies to provide more appropriate and timely responses, particularly during an incident. NHS Lothian represents Scottish Health Boards on the liaison group. It is hoped that when fully established the AHER services will be used to support response to small incidents such as the recent fire at the printing factory (see **Box 1**) in Livingston, West Lothian.

Image courtesy of Lothian and Borders Fire and Rescue Service. www.lbfire.org.uk

The main outputs from this initiative will be:

- Access to laboratories to analyse air samples for a comprehensive list of the potential pollutants during and after an incident or emergency situation; and
- Hand held air monitoring equipment, operated and maintained by science field staff for use during an incident or emergency situation.

Conclusion

The Eyjafjallajokull volcanic eruption was a large scale event with little actual health impact on the physical health of the public. There was, however, an immediate social and economic impact on many individuals, organisations and countries, and the effect was felt globally. The event was a reminder of the effect a large scale disaster can have on every day life, and its potential to affect large numbers of people. This scenario could have arisen if the gases had been poisonous and found in the air close to the ground. The management of such a disaster would have required timely air quality modelling information to support the complex coordination, management and control of the health effects.

Key points

- Natural threats to public health can be difficult to predict and have unpredictable consequences.
- Contingency plans are in place for a variety of natural and man-made threats and the ability to analyse potential hazards.
- Organisations worked together to deal with the immediate consequences of the volcanic eruptions earlier this year, accessing each other's data to provide a wider picture.
- Scenario modelling can improve preparedness, enable early intervention and reduce the adverse impact of natural and man-made disasters, particularly on vulnerable populations.
- Communication to the public and policy makers is an essential component of disaster management particularly to allay anxiety, fear, concern and misinformation.

Box 1

LARGE SCALE FACTORY FIRE IN WEST LOTHIAN

In the early afternoon on Thursday 16th September 2010 the peace and quiet of West Calder was shattered by the sirens of 12 fire engines racing to Brucefield Industrial Estate. A large scale fire had taken hold in a print factory and about 70 firefighters were needed to tackle the blaze.

This was a significant incident that required the evacuation of many local businesses and the re-routing of local rail services.

Residents in Murieston were advised to stay indoors and keep windows closed.

Mutual aid was provided by Fife, Central, Tayside and Strathclyde Fire and Rescue Services and further resources were provided by Lothian & Borders Police, the Scottish Ambulance Service, NHS Lothian Public Health and Health Policy Directorate, Network Rail, SEPA, Edinburgh Scientific Services, Scottish Water and the WRVS.

It took about six hours to bring the blaze under control and surrounding roads in the area were closed until the following day.

Recommendations

- Organisations should continue to invest in translating scientific and technical expertise and systematic analysis of past events into practical plans to prevent and respond to emergencies.

- Despite a contraction of resources available to public health, we should contribute to efforts that will improve monitoring, modelling and evaluating threats to the physical environment.

- As with other threats to human health, a high quality emergency response such as improving the air quality monitoring and modelling service in Scotland is important but not sufficient. We must also tackle the chronic problems, reducing the risk to vulnerable populations who are housed in areas where the risks to the built and physical environment are greater, whether this is contaminated land, flooding or the impact of industrial processes.

VOLCANIC ERUPTIONS
CASE HISTORIES

⇩

CAUSES OF RISK

PYROCLASTIC FLOWS	VOLCANIC ASH

LAVA FLOWS	TOXIC GAS	LAHARS

FLYING DEBRIS	LATERAL BLAST
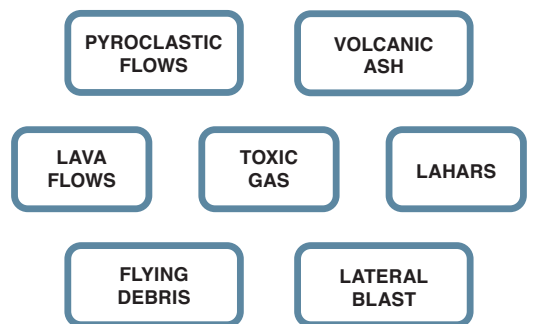
Source: Walter Hays[4]

*Pyroclastic flow: a fast-moving current of super-heated gas (up to 1000C) and rock which reaches speeds moving away from a volcano of up to 450 mph.

*Lahar: a type of mud flow composed of a slurry of pyroclastic material, rocky debris and water.

2.4

TOBACCO

Dermot Gorman

Effective tobacco control and Stop Smoking Services are vital if we are to limit the damage caused to health by tobacco use. Legislation and national regulation are required, alongside targeted interventions tailored to help individual smokers to stop smoking. Smoke free laws will reduce respiratory illness and heart disease in the community quickly (2-4 years) and reduce lung cancer rates over the following years (steady reduction after 5-9 years). In countries with tobacco control measures in place and where most of the population has accepted the negative health consequences of tobacco use (mostly industrialized countries), the vast majority of smokers want to quit. In many such countries, around a third or more of smokers attempt to quit each year. Lothian Stop Smoking Services are providing effective, evidence-based services and meet Scottish Government smoking cessation targets, reducing the burden of tobacco use on the Lothian population.

Introduction

Worldwide, tobacco is recognised as the largest single cause of preventable ill-health killing over 5 million people a year – 600,000 due to the effects of second hand smoke (passive smoking) alone. While about 22% of the world's adult population smoke (36% of men and 8% of women) there are large regional differences. As smoking rates in Europe and the developed word decline tobacco use will increasingly become a feature of low and middle income countries – currently one third of the world's smokers are in China. In coming decades, therefore, the burden of disease will be unequally distributed around the globe and concentrated on the poor.

The World Health Organisation (WHO) Framework Convention on Tobacco Control[1] recommends five policies for curbing tobacco use:

- smoke free environments;
- cessation programmes for tobacco users;
- advertising bans;
- health warnings on cigarette packs; and
- higher taxation of tobacco.

According to WHO, only 5.4% of the world's population was covered by comprehensive smoke free laws in 2008. Smoke free legislation has been restricted almost exclusively to the developed world, with most of the world's population still exposed to tobacco smoke. Many countries are tied economically to the tobacco industry, with an agricultural sector linked to tobacco production, cigarette factories providing employment and vested interests wishing to maintain and support the industry. Although the lifelong costs to health through exposure to tobacco outweigh increased revenues, there are obvious, immediate disincentives

Health inequalities and prevention

Scotland has adopted WHO's Framework Convention and is making progress in reducing tobacco-related harm in the Scottish population since the smoking ban in March 2006[2]. Nonetheless, Scotland still has over 13,000 deaths a year due to tobacco and 15,000 young people start on the conveyor belt towards ill-health and premature death each year. The difference in life expectancy between smokers and never smokers is greater than that between the most affluent social groups with about 10% smoking and the least affluent where over 40% smoke.

To help combat widening inequalities and reduce the appeal of tobacco to young people, two pieces of legislation were published under the Scotland's Future is Smoke Free banner: A Smoking Prevention Action Plan in May 2008[3] and the Tobacco and Primary Medical Services (Scotland) Act in January 2010[4]. These change how tobacco is marketed and sold in Scotland by:

- restricting point of sale advertising;
- raising the age one can buy tobacco to 18 years;
- prohibiting the display of tobacco products;
- banning vending machines;
- heavy fines of up to £20,000 for unregistered tobacco retailers; and
- criminalising proxy purchase of tobacco (purchase of tobacco for people under 18).

In the UK the inequalities gradient in tobacco use is pronounced. As a consequence, there has been an increasing requirement to ensure that Stop Smoking Services engage people from lower socio-economic groups, those with particular health problems or difficulties in accessing traditional services, such as pregnant

for some governments to reduce their tax take by implementing effective tobacco control. Despite the positive impact on the health, well-being and economic productivity of their citizens that tobacco control brings it is a sad fact that globally 170 times more money is collected in taxes on tobacco production than is spent on tobacco control.

women or people from minority ethnic groups. In the UK, smoking in migrant groups is generally at the same or slightly lower levels to the local population but some ethnic groups have higher rates (notably 40% of Bangladeshi men and 29% of Pakistani men).

With migration an increasing part of the Scottish landscape we are continually refining our services to cater for the needs of migrants. Lothian's Minority Ethnic Health Inclusion Service (MEHIS) has co-ordinated the development of a national resource to help people from a range of minority ethnic groups quit by explaining how the NHS Stop Smoking Services work. We also run a successful Polish language service. Two Polish language groups have been established and promotional materials produced in Polish. Services are also tailored to meet the needs of other minority populations. For example, most staff have received deaf awareness training and promotional materials have been produced in British Sign Language. Even without release of the resources to implement the Prevention Action Plan we have been working with high schools and youth groups and providing interventions designed to increase the proportion

of smoke free homes. Smoking indoors and exposing children to the toxins in environmental tobacco smoke is more common in Britain than in many other countries, even our colder or wetter neighbours. This means that the current situation is not inevitable and change is possible.

NHS Lothian has clear outcome targets set by the Scottish Government and is on track to achieve them. Between April 2008 and March 2011, we anticipate that 11,218 clients will have stopped smoking and with some significant service changes there is now improved access for clients. The number of groups offered across NHS Lothian has increased to 60 per week to meet demand and provide a fast response to referrals. Subsequently, the number of referrals to the service treatments provided, and their success, has increased significantly year by year.

With staff being encouraged to share good practice and a robust induction and continuing education programme in place, the enhanced skills of the Stop Smoking team have also increased their effectiveness and subsequently more of those clients setting quit dates are successful (see **Table 1**).

Table 1: Table showing success of Stop Smoking strategies over time

Period	Referrals	Quit Dates Set	Successful Outcomes	Successes Rate*
2007/08	5,210	4,196	1,659	40%
2008/09	9,508	7,073	3,001	42%
2009/10	13,285	9,467	4,193	44%

* Percentage is based on total clients with a quit date in this time frame

Source: National Smoking Cessation Database 2010

Image courtesy of No Smoking Day

Stop Smoking Services have also addressed smoking in the workplace, both for NHS staff and for local employers including council staff. A dedicated staff member has been allocated to develop services tailored to meet the needs of workplaces and to date 41 local employers have engaged with the service. Hospital-based cessation services have continued to develop and link with services based in the community. The local services are also enhanced by the national pharmacy cessation scheme. The local coordinators work closely with community pharmacies to ensure that clients receive the appropriate level of support.

Key points

- World-wide tobacco is the main cause of preventable ill-health.
- According to WHO, only 5.4% of the world population is covered by comprehensive tobacco legislation.
- Globally, 170 times more money is collected in taxes on tobacco production than is spent on tobacco control.

Recommendations

- Locally, nationally and internationally, we must continue to push for tobacco control.
- Smoking cessation is one of the most cost-effective treatments available. The cost-effectiveness of stop smoking treatment services is proven and "represents excellent value for money compared with many other healthcare interventions[5]." Funding for this treatment service, unlike other clinical services, is based on short term funding. It is vital to ensure that funding for smoking cessation treatment is maintained so that the 22% of the Lothian population that are regular smokers can access treatment[6]. Further investment is required to increase the level of service available to hospital patients, visitors and staff. Funding for smoking prevention should be released to enable evidence-based approaches to prevention and early intervention to be introduced with smoke free homes as a priority.

3

OUR HEALTH LOCALLY – IMPROVING ACCESS, ENGAGEMENT AND OUTCOMES

3.1

HEALTH INEQUALITIES PART 2

FOCUS ON EQUITY

Michèle McCoy & Joy Tomlinson

Despite improvements in the overall health of the population significant numbers of people still do not achieve their potential for good health. There is now good and growing evidence to show what should be done to increase the likelihood that people will enjoy healthy, active, fulfilling lives wherever they are on the health gradient, while also improving the health of those in greatest need. Addressing health inequalities requires action at global, national and local level. Such interventions should take account of the personal, socio-economic, cultural and environmental conditions of each individual and the communities in which they live and work.

Introduction

One of the key functions of public health is to help populations to be as healthy as possible. People in different social circumstances experience differences in health outcomes and life expectancy, with people living in deprived circumstances being more likely to die at a younger age. These deaths could be avoided. We now understand the links between poverty and ill-health better than ever before. There is a substantial body of evidence which demonstrates the gradient in health experience across all social groups and the magnitude of avoidable poor health that separates those in more deprived circumstances from the rest[1,2]. Scottish Government policy supports a focus on early intervention; *Equally Well*[3], the *Early Years Framework*[4] and *Achieving our Potential*[5] all set out to address the underlying causes of Scotland's health and

other inequalities. Within Europe a strategic framework for combating poverty was produced in 2010[6] and work continues to focus on improving the health of people from vulnerable groups[7]. The WHO report on the social determinants of health *Fair Society, Healthy Lives'*, known as the 'Marmot Review', was published in the spring of 2010 and sets out the link between social and economic inequalities and their impact on health[3]. The Review highlights the need for action at both national and local level across all the social determinants of health if health inequalities are to be reduced. Six key objectives have been highlighted which need to be addressed to make health more equitable:

- Give every child the best start in life;
- Enable all children, young people and adults to maximise their capabilities and have control over their lives;

- Create fair employment and good work for all;
- Ensure a healthy standard of living for all;
- Create and develop healthy and sustainable places and communities; and
- Strengthen the role and impact of ill health prevention.

Life expectancy in Lothian

Figures 1 & 2 show life expectancy for men and women in the least deprived and most deprived 15% of the population by council area across Lothian[8]. These figures illustrate clearly the variation in life expectancy across each of the deprivation categories, with those in the most affluent section of the population having a greater life expectancy.

Lothian initiatives

The Equally Well national framework[3] for action on health inequalities has supported two developments in Lothian, 'Support from the Start'. The Equally Well Early Years test site in East Lothian and Keep Well. 'Support from the Start' and Keep Well comprise programmes of interventions that focus

on improving the health of those in more deprived circumstances and aim to make health more equitable for all.

'Support from the Start', was established in East Lothian in March 2009. The Council, NHS and community organisations have been working together to improve access to support services which will help to close the health gap. The aim is to improve existing service pathways and/or develop new ones for addressing health inequalities in the early years. Engaging communities in working with partner organisations to identify and implement the actions required to improve the health of their youngest members is an essential feature of this programme. All the interventions focus on collectively improving the health outcomes for the youngest members of the community. Examples include: supported development of local projects such as play and literacy groups, story telling groups, music and literacy; created space for learning and reflections of staff and communities through action learning sets and conferences; building of leadership through a network of service, community and strategic champions; targeting of breakfast provision and redesign of oral

Figure 1

Male Life Expectancy at birth in Council areas (most deprived and least deprived) 2004–2008[8]
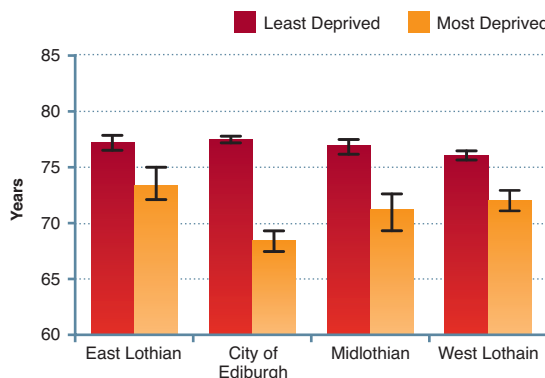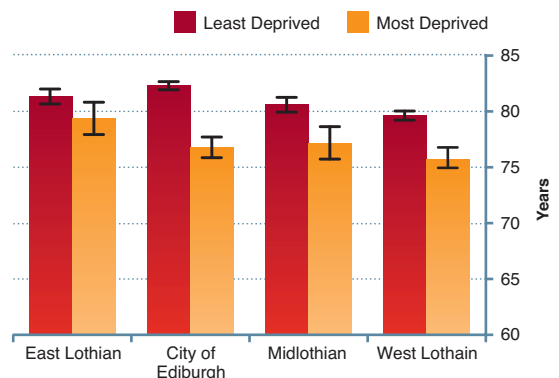

Figure 2

Female Life Expectancy at birth in Council areas (most deprived and least deprived) 2004–2008[8]

Please note that the figure for East Lothian females should be interpreted with caution, the confidence interval in this locality is wide and overlaps with life expectancy of the least deprived.

health promotion in two local community areas. The expected outcome is to prevent the risk of disadvantage in health outcomes being passed from one generation to the next. Four broad outcomes have been identified: increased community engagement; improved support for parents and carers; improved support for families; the creation of child friendly environments[9].

Keep Well was launched as a pilot in fourteen General Practices located in areas of deprivation across Edinburgh in 2006/7. People aged 45-64 and registered at these practices were invited to have a cardiovascular health check. In 2009, Keep Well was extended to include five West Lothian practices. The project also expanded to include other groups in Lothian at particularly high risk of heart disease. These vulnerable groups include people who are homeless, also offenders and ex-offenders. Some people from particular ethnic backgrounds are known to have higher risk and those include South Asian

people and Gypsy/Traveller populations. The programme is integrated into existing General Practice activity and all of the patient information collected is added to a patient's routine health record. This makes it significantly different to other health improvement initiatives that have occurred in the past.

At the heart of Keep Well is recognition of the importance of making health more equitable and the important role of the health service in achieving this[10]. The health checks are delivered to those in greatest need[11] and focus on ill-health prevention, rather than waiting for people to develop health problems like angina or stroke. Since the start of the project 17,564 people in Edinburgh have received a health check (to end of October 2010), 1,775 people in West Lothian (December 2009 – end of October 2010) and 547 people from key vulnerable populations (January – end of October 2010).

Image courtesy of Equally Well

Addressing health inequalities and closing the gap in health outcomes between the most and least affluent requires multi-faceted action with individuals, families and communities. This article has highlighted two recent programmes and work in NHS Lothian. They are two examples of a range of interventions taking place across our communities. The importance of such a range continuing to progress supports the need for a multi-faceted approach which targets those most in need.

Key points

- We require a progressive multi-faceted approach to reducing health inequalities.
- The benefits of action in the first five years of life are well evidenced and should continue to be prioritised.
- Universal health services should be targeted to meet areas of greatest need and focus on primary prevention, to stop ill-health wherever possible.

- There should be a holistic model of health improvement embedded in existing primary care services.
- We should strengthen pro-active primary prevention to avoid health problems occurring in the first place.

Recommendation

- All agencies should ensure that they take action to break the cycle of poverty.

"Best thing I ever done, the nursing staff make you feel so relaxed, your MOT for the Body is an excellent way of finding out what you have to do to get back on track. Do not be afraid- what I found out has made me a better person for the check, and now I know how to look after my body. Would highly recommend to anyone and free of charge."

Quote from a Keep Well patient.

3.2

EARLY YEARS AND THE IMPORTANCE OF PREVENTIVE ACTION

Michèle McCoy

The first five years of life are crucial in child development. These are the years where cognitive development is greatest and therefore provide the ideal opportunity to lay the foundations for maximising health and well-being. A growing body of evidence and policy supports allocating resource to the 'early years' so that support and services are available to support parents and guardians in helping children to achieve their future potential. This approach aims to break the cycles of poverty, unemployment and poor health experienced across the generations in some local communities.

Introduction

The first five years of life provide the best possible opportunity to lay the foundations for health and well-being. Securing the best possible outcomes for children and young people requires consideration of emotional, behavioural, cognitive and psychological development. Approaches that support individuals, families and communities to develop their potential are more likely to reduce the risk of future health-related problems.

Why the early years are important

The healthy development of babies and young children is essential to improving future population health and reducing early deaths from preventable disease[1]. The foundations for future physical, intellectual and emotional development, health and well-being are laid down in the antenatal and early childhood periods. Exposure to positive experiences, social and environmental circumstances can have lifelong effects on an individual's risk of obesity, heart disease, mental health, educational attainment and economic status[2]. Healthier physical and social environments support and encourage competent and confident individuals and communities to achieve their health potential. To make inroads into the health gap faced by some communities, health, local authority and third sector organisations need to work with local people to implement policies and practices that increase their resilience to deal with adverse events and reduce their exposure to harm. This requires knowledge and understanding to foster health assets and increase capacity for health. Health assets include people's aspirations and sense of control over their lives within the community. It is a social model that recognises the context in which individuals live their lives, and the various protective, or harmful, interpersonal relationship processes that shape communities. Equal weight should

be given to measuring their strengths, abilities and aspirations as well as to the individual's health needs and their ability to benefit from interventions designed to tackle the specific risks they face[3].

Children require appropriate love and stimulation – provided by parents/carers, nursery and pre-school experiences. Therefore, all universal services should support children so they may realise their potential. Action with individuals and families in the early years requires an environment which supports access to education for child and parent, adequate income for food, fuel, housing and good quality child care. Evidence has identified a clear link between social policy particularly 'family generosity' and outcomes for children and their families. This is illustrated by **Figure 1**.

Support from the start

A focus on action in the early years, which is preventive, seeks to avoid problems occurring in the first place. It is a more effective use of resources than waiting until crises develop before intervening. Many of the risk factors for poor health outcomes are interlinked, so they should not be addressed in isolation. Effective interventions should foster multi-agency service provision which take account of the whole family and their life circumstances, supporting children, families and carers. Services should help to build capacity and resilience in individuals and families to deal with events rather than be defeated by the challenges of everyday life. This requires public services to work together in preventing health-related problems across society.

It is collective action which is required to achieve comprehensive health improvement and effective partnership working. This is challenging and the types of partnership required to affect populations health are among the most difficult to sustain. Such partnerships require targeted actions over sustained periods so that real change is possible[4].

The Equally Well Task Force states that '_… this means continuing to support the full range of preventative services, focusing not only on the early years, but also on areas such as family support, education and learning support, employability services, drugs and alcohol services, community policing and services targeted at vulnerable groups such as looked after children and offenders'._

There are many examples of early years intervention work being taken forward by NHS Lothian in partnership with other agencies, all supporting a multi-faceted approach. Some of these are actions that help to avoid a problem occurring in the first place and some of the interventions address existing behaviours and circumstances which have the potential to cause a health-related problem. The health service, whilst it can make a significant contribution, cannot undertake the work required for the 'best possible start' in isolation. Recommendations based on the evidence from the early years intervention work and some of the work being undertaken in Lothian to support those recommendations is described below.

Parenting support
Parenting support should provide a range of opportunities to help parents and prospective parents understand their own social, emotional, psychological and physical needs and those of their children and enhance the relationship between them. Multi-agency parenting strategies exist in all local authority areas[5,6,7]. Each is aiming to increase parenting capacity by offering opportunities for staff working with parents and also parents themselves to develop their skills in parenting. The aim is to offer support to parents as need dictates.

The Family Nurse Partnership is also being tested in Edinburgh. This programme, developed by David Olds in the USA, is an intensive home visiting programme for young, vulnerable first-time mothers offering support in their role as parents[8].

Support for good quality early learning
Parents/carers are not the only key contact for children in their early years, nursery nurses and early-years teachers are also essential. High quality opportunities for early learning can minimise the adverse impact of adversity in the early years and improve school readiness. In taking a multi-faceted approach to early intervention for children it is therefore essential to ensure capacity and appropriate workforce skills across relevant agencies. For example, the national Equally Well Sites in East Lothian and Midlothian both focus on improving multi-agency service provision so that all children are

Figure 1

Family Generosity and infant mortality[9]
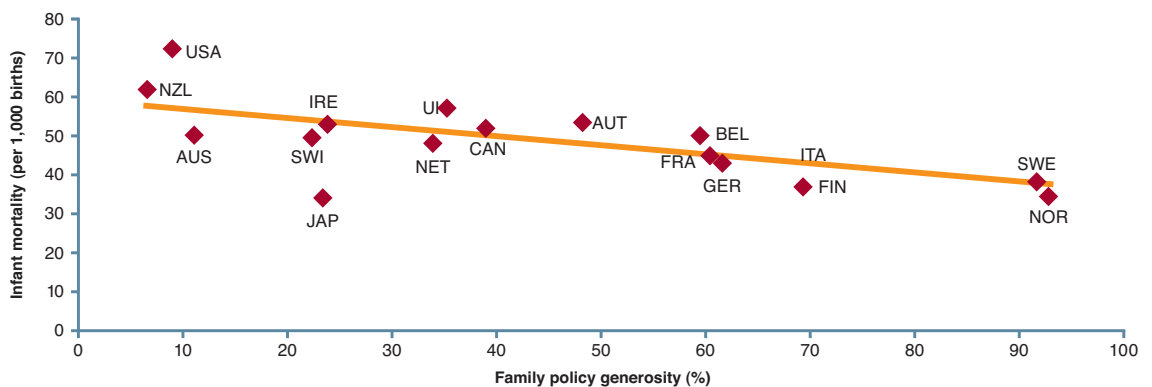
best able to make the most of the opportunities for education upon entry into school at the age of five years[10]. The programme is designed to reduce the risk of disadvantage in health outcomes being passed from one generation to the next.

Support for breastfeeding and early nutrition

Supporting an increase in breastfeeding rates and evidence-based practice in infant feeding is an essential part of improving nutrition levels in children. In a developed country like Scotland, similar interventions can be used to reduce the risk of obesity and malnutrition. This should be done by creating an environment which helps women to initiate and maintain successful breastfeeding. Early childhood is also crucial in establishing healthy eating habits to introduce healthy foods as fun before they are required as fuel and to learn a healthy balance between food and physical activity. Example of projects in Lothian include: the NHS Lothian refreshed Breastfeeding and Infant Feeding Strategy; community food projects and support for developing skills in producing healthy family meals[11].

Becoming smoke free

The use of tobacco in pregnancy is one of the most important risk factors for foetal growth and development and whilst many women quit smoking without assistance, support to stop remains important and every opportunity should be taken to provide support and advice, access to services and increase the proportion of homes and cars that are smoke free. NHS Lothian has a comprehensive smoking cessation programme which pregnant women are able to access.

Developing a family-centred-approach

Preventive activities need to be sustained and extended further so that they are core to universal provision, with additional support where need is greatest. Child development is influenced by many factors in the family, community and broader socio-economic environment. Effecting real change requires action at home, at work, and at policy level. The NHS, as an employer of a significant number of parents on lower incomes has a particular responsibility to ensure that its policies and practice support its ambition to contribute to giving every child the best start in life.

Key points

- Early intervention helps avoid problems occurring.
- Giving every child the best possible start requires taking a holistic approach to working with individuals, families and communities.
- Building capacities to cope with life experiences is crucial to reducing health inequalities.
- Capacities in individuals need to be complemented by action to improve the physical and social environment and reduce the impact of child poverty.

Recommendation

A sustained commitment to multiple interventions in the early years and early responses as problems emerge is required for real change in the health outcomes in our population. Evidence supports action on parenting support, good quality early learning opportunities for all children, increasing breastfeeding rates, reducing smoking in pregnancy and tackling child poverty.

3.3

HEALTH SERVICE UTILISATION

Harry Purser, Hannah Anwar & Alison McCallum

The area that NHS Lothian serves has seen significant population growth in the last twenty years and it is projected that this increase will continue. High quality information about the incidence and prevalence of disease, the effectiveness of current prevention and treatment and the extent to which the current patterns of health service use show equitable access and reflect ability to benefit is essential. There have been some efforts to align resources with levels of need, particularly in primary care but this has only been partially successful. Given the current economic situation and evidence of harm to health experienced in other countries and in previous recessions there is a risk that patterns of health service use contribute to rather than reduce health inequalities. Health systems, for example, may respond to demand rather than need and divert resources away from prevention and population health interventions, especially in a tight financial climate.

Introduction

The population of Lothian continues to grow. It is estimated that during the 18 year period from 1991-2009, NHS Lothian saw population growth of around 11% (81,000 people). Population is a key driver of need for health services and over the next 10 years further population growth of just over 64,500 (7.7%) people is anticipated. This is the equivalent of asking existing staff and services to take on meeting the needs of another town, similar in size to Livingston. There are three sources of population growth: increased births, people living longer and inward migration. Lothian is experiencing all three combined with a continued reduction in childhood deaths, an increasing number of adults of working age, premature deaths occurring later in middle age and a slower decline in the population aged over 65 years.

The health service contribution to continued improvements in healthy life expectancy depends on the continuation of a universal service, free at the point of use, which values continuity of care and delivers prevention, treatment and comfort in an integrated way. Universal services are important because, for most conditions, the burden of disease reduces as income and education levels increase. On average, the most deprived 10% of the Scottish population has 70% more male and female deaths under the age of 70 than the most affluent 10%. However, even in GP practices that serve the most affluent areas, a quarter (24.7%) of deaths in men occur in those aged less than 70 years.

Meeting current and future needs

Patterns of treatment are changing with increased recognition that there is a chronic problem underlying most acute illnesses requiring hospital treatment. This is seen in the alcohol use that results in attendance at accident and emergency or the elderly

person who has fallen and broken their hip. For this reason, there is an increasing focus on integrating care between health, local authority and the third (voluntary) sector, as well as between primary care and specialist services. At the same time, the economic situation means that greater attention is being paid to how resources, (expertise, equipment and money) can be used to deliver services that will aid all parts of the population to achieve their potential. This means taking a more systematic approach to assessing the ability of new technologies and interventions to provide benefit to the population of Lothian and ensure the provision of effective care and retention of trust and confidence.

There is also a need to distinguish between need/benefit and demand. Effective and equitable health services do their best to assess need for healthcare, modifying the way that services are provided so that they offer people the most appropriate balance of prevention, cure or comfort. Demand is different. It is influenced by knowledge

of services, how, where and by whom they are supplied, perceptions of the balance between risk and benefit, trust in providers and personal preference. Demand for specific interventions is not always driven by ability to benefit. The inverse care law was first described in Britain in 1971[1]. Since then, researchers and practitioners have worked together to:

- Look for and identify unmet health need;
- Investigate disparities in treatment rates and patterns of health service use;
- Develop an increased understanding of the barriers that parts of the population face in accessing services; and
- Develop tools that help in assessing the health needs of hidden populations, offering appropriate services, and undertaking active follow up.

Since the risk of future disease and the burden of existing conditions fall more heavily on those with fewer resources and quieter voices, these populations should receive more of our attention.

Figure 1

Population projections 2020
Population by age and sex
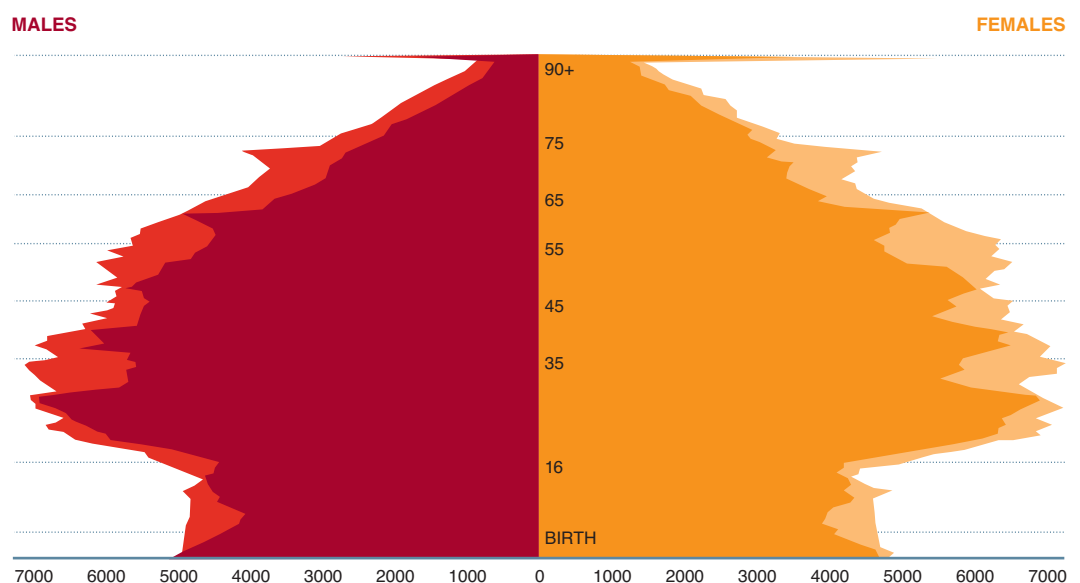
Source: GRO(S) 2009

Primary care: increasing engagement

Primary care is the first point of contact for most of the population with the NHS and 90% of patient contact occurs in primary care[2]. Excluding out of hours services, NHS Lothian has 827 General Practitioners working in 124 GP practices with 880,862 registered patients. In Lothian 18 practices have more than 20% of their patients living in the areas with the highest concentration of deprivation while in three practices this affects more than 50% of their population. Lothian is fortunate that primary care professionals who are passionate advocates care for many of our most vulnerable residents. Their patients report high levels of trust and appreciate the flexible, non-hierarchical, patient-centred healthcare offered. For many such patients, the primary care team is the constant in their lives. It provides access to expertise in the practice and in the local community for patients with multiple illnesses drug and alcohol problems, social and housing issues. Most countries that do not have this gate-keeping function have higher rates of socio-economic inequalities in access to planned care and more difficulty in delivering care for people with more than one chronic condition.

> The health service is delivered largely in primary care. The essence of effective primary healthcare is equitable provision of services, comprehensive care, inter-sectoral action, community involvement and appropriate use of technology[3].

Primary care is of central importance for population health. However, in Scotland, as in many other countries, primary care data are a largely untapped source of intelligence about the health needs of the population. Until recently, data about primary care were limited to information collected for management, largely payment purposes, or as answers to specific research questions. However, this fairly limited activity-based data has not been enough to assess whether the needs of individuals and communities are being addressed appropriately. This situation is changing. It has become easier to extract and analyse primary care data securely in ways that mean that individuals are not identifiable. Various groups of health professionals and researchers are examining this data to explore the relationship between need, service use and outcome. As the work

of the primary care data group develops, it will contribute to the intelligence required to embed data-collecting processes as routine practice in all health programmes, as has been seen with Keep Well and Alcohol Brief Interventions.

Figure 2

Primary Care Consultation Trends in Lothian
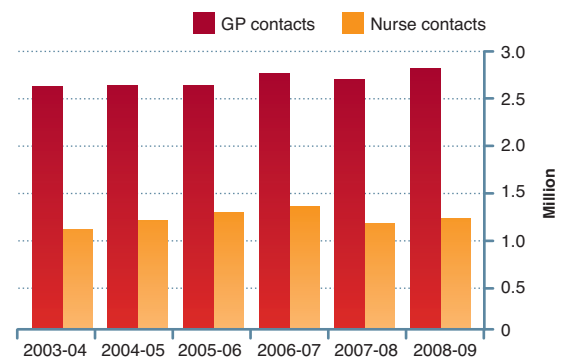
Source: HIU, NHS Lothian

Population screening and case finding activity

Screening offers individuals the opportunity to check for indicators of developing disease, prevent it becoming established – to avoid serious illness and premature death - and reduce the length of treatment and its intensity, for example, breast screening (see **Figure 3**) and cervical screening (see **Figure 4**). Unfortunately, even the best screening programmes have side effects; no matter how hard we try to minimise false positive and false negative results, they will still occur. Even with an effective screening programme in place, there are conditions where screening just brings treatment forward in time and does not improve the long-term outcome. In the worst cases, treatment is of limited effectiveness or is so unpleasant that there is a question mark over whether it should be offered outside research efforts to develop better treatments. For these reasons, screening programmes should meet certain criteria before they are introduced. New screening guidelines from the World Health Organisation have been introduced and are at the centre of our efforts to ensure that new screening programmes are designed, delivered and evaluated in partnership with their target populations[4].

Figure 3

Breast screening – three year moving averages[5]
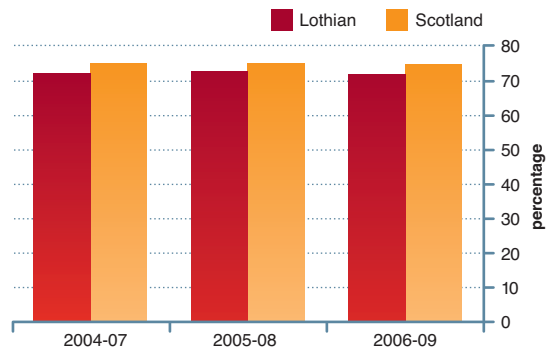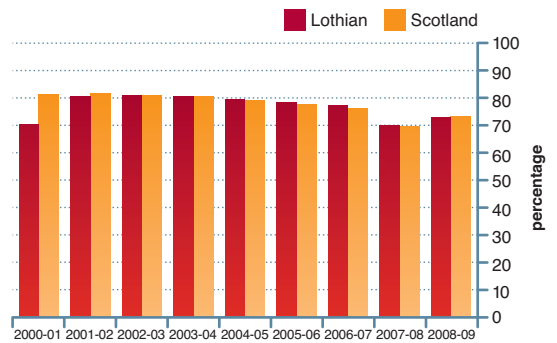**% uptake females aged 50-70 years**

Figure 4

Cervical screening: Annual uptake
% eligible population[6] * #

*Scotland figures excludes Lothian NHS Board for 2000-01 to 2006-07 (data calculated on a different basis - calendar year).

#For 2000-01 to 2006-07 data for Lothian NHS Board are calculated on a different basis - calendar year

Providing safe, effective services

Over the past year, we have been working with colleagues in hospital and community services to improve patient safety. Restrictions in antibiotics, improvements in cleaning and the healthcare environment, attention to hand washing, detailed surveillance and early intervention have enabled rates of Clostridium Difficile and MRSA to fall significantly. Interventions begun by critical care staff have reduced the rates of catheter related blood stream infections consistently. We are now looking at how to concentrate efforts in areas where infection rates are slower to improve. These are often where patients have multiple and complex needs or are otherwise vulnerable. Avoidable harm can be minimised when prevention, treatment and care is organised and delivered in ways that:

- Address the need for some populations, neighbourhoods and individuals to require more of a service (a bigger dose), or for it to be organised and delivered differently to receive the same level of benefit;

- Ensure that individual services and programmes, particularly those for the most vulnerable populations, are based on secure and sustainable infrastructure so that successful programmes and pilot interventions are not abandoned but can be absorbed into routine service provision through a process of ongoing evaluation and continuous quality improvement; and

- Take account of the evidence that exists on how to help people engage with services and continue to attend for care by being welcoming, building and sustaining their trust.

One globally-recognised measure of improvement of health services is a reduction of amenable mortality. Amenable mortality is death in people under 75 that should not occur in the presence of timely and effective heath care. Amenable mortality in Lothian has fallen in all socio-economic groups but, more recently, it has fallen significantly in the lowest and second lowest socio-economic group. Amenable mortality has fallen more rapidly over time than all cause mortality. This may reflect the fact that the most frequent causes of amenable mortality are those for which there have been advances in early intervention and treatment. The Scottish Government Quality Strategy[7], however, has chosen all cause premature mortality as its measure of premature death. This is a major step forward because achieving a significant reduction in premature death requires action to address the social determinants of health such as education, housing, income and environment. It means building on the interventions that have reduced the proportion of children in poverty in Lothian, learning from countries that have lower levels of exposure to violence and addiction, particularly among young people, as well as addressing the main personal and social risk factors for premature disease and death.

Key points

- Lothian saw population growth of around 11% between 1991-2009, with an estimated 7.7% growth predicted for the next ten years. This is the equivalent of asking existing staff and services to take on meeting the extra needs of a town the size of Livingston.

- This increase, along with constrained financial resources, puts pressure on the NHS to deliver more with less. This requires a greater focus on integrating healthcare, allocating resources effectively and efficiently and distinguishing between need/benefit and demand.

- An important area for this work is Primary Care, most people's first point of contact with the NHS. Our increasing ability to access, extract and analyse primary care data enables us to explore the relationship between need, service use and outcome.

Recommendations

- The focus on measuring activity and demand should be balanced by more greater attention to health needs, particularly the requirement to focus resources on effective treatment and care and on reducing the adverse consequences of inequalities on health.

- Over the next year we will improve our ability to measure the extent to which services are designed and delivered in ways that reduce the risk of avoidable harm.

3.4
WHAT DID THE DOCTOR SAY?

Kate Burton

The Scottish Government is committed to maintaining and improving a patient-centred healthcare system, engaging with individuals to ensure they are engaged in decisions about healthcare in general and their health in particular. However, the low level of health literacy (the ability to find, understand and apply health information) is a significant issue. Those with the lowest health literacy may not be benefitting from services that would prevent ill health and mitigate against ongoing or chronic health problems. It is important the NHS looks at a range of initiatives to tackle low health literacy, recognising our responsibility to present information in the most appropriate and accessible way.

Health literacy – a public health priority

Health literacy has been described as *'a more powerful predictor of health inequalities than age, income, employment status, educational attainment or ethnic group'*[1]. In Scotland 40% of adults have trouble understanding information about their health and finding their way around the health service. Put simply, they have difficulty knowing what is wrong with them and how to treat it. This is what is known as poor health literacy. Unless something is done to help address the gaps in understanding the full potential of our health services is unlikely to be realised. This is all the more important at a time when the NHS expects patients to play a more active role in decision making about their health and healthcare.

What is health literacy?

The term *health literacy* was first defined in 1974 as the ability to read and comprehend written medical information and instructions[2]. Today the definition has broadened and recognises that health literacy is the ability to obtain, process and understand health information and services in order to make appropriate health decisions and follow instructions for the treatment and prevention of ill-health[3].

Health literacy – *"put simply people have difficulty knowing what is wrong with them and how to treat it."*

How bad is the problem?

Widespread low health literacy in Scotland exists not just because some people have difficulty reading, but because much health communication routinely contains jargon and unfamiliar phrases. The problem appears worse amongst lower socio-economic groups, ethnic minorities, elderly people and those with chronic or disabling conditions[2]. Low health literacy invariably results in poorer health[3].

Specifically patients with low health literacy:

- Are at greater risk of hospitalisation and have longer hospital visits;
- Have higher rates of admission to emergency services;
- Make more mistakes with their medication and treatment plans;
- Have less knowledge of disease management and healthy behaviour;
- Are less able to make decisions with healthcare professionals; and
- Make less use of preventative services.

Engaging patients in a shared approach to their healthcare and treatment is a major objective of current health policy in Scotland. The Scottish Government is committed to a patient centred healthcare system, delivered by a well-prepared workforce, effective at preventing disease and tackling health inequalities[4]. Yet without addressing low health literacy such efforts may result in those who need healthcare not being able to fully access and engage with the services they need. It is against this backdrop that the Scottish Government commissioned a scoping report on health literacy in 2009[5] and is now preparing the *Strategic Framework for Health Literacy* for consultation in spring 2011.

Improving health literacy

Internationally, and in Scotland, various initiatives have sought to tackle low health literacy, but the evidence base remains patchy. Two of the best known and effective interventions are the 'teach-back' technique and 'Ask Me 3'. Both these American techniques relate to improving interpersonal communication with patients and are simple and easy to adapt to a Scottish context.

Teach-back involves asking patients to demonstrate or explain in their own words what they have just been told by the clinician, nurse or pharmacist. It is not a test for the patient but rather a chance to check their understanding and teach again if necessary. For example, the patient could be asked *'I'd like you to explain how you will take your medication, so that I can be sure I have explained everything correctly'*. In using teach-back if the patient cannot explain or demonstrate what they should do then the health professional must assume responsibility for having not provided their patients with an adequate explanation or understandable instructions. Research

indicates that 'teach-back' is effective in improving patients' understanding and health outcomes. For example, patients with diabetes where clinicians assess their comprehension and recall with the 'teach-back' technique have significantly better diabetes control than patients whose clinicians do not use the technique[6].

'Ask Me 3' encourages patients to ask, and health professionals to answer, three basic questions during every consultation:

- What is my main problem?
- What do I need to do about it?
- Why is it important for me to do this?

A recent study in the USA[7] measured the results of implementing 'Ask Me 3' in a paediatric health centre. Of the 393 parents surveyed all "liked" the technique and found the questions *"helped them get more information about their child's health"*. Interestingly the parents also felt that the clinician spent more time with them, even though the study did not show any increase in the consultation time.

Ready Steady Baby

Ready Steady Baby is a health literacy intervention for pregnant women in deprived communities in north Edinburgh. The project aims to improve the health literacy of pregnant women to increase their control over their lives, their health, their ability to seek out information and their ability to take responsibility. It is being piloted for 12 months, and has been developed in partnership with midwives, health visitors, GPs and the voluntary sector. The project is delivered by adult literacy workers from Edinburgh's Health & Literacy project* and is funded by NHS Lothian. The local area faces many of the problems associated with poverty and disadvantage, including low uptake of antenatal care.

Ready Steady Baby is based on the Baby Basics programme developed in the USA[8] and works with women on a one to one and group basis. The workers assess the health literacy needs of pregnant women at booking clinics by discussing the Ready Steady Baby book; this publication is produced by NHS Health Scotland and is distributed to all pregnant women. At antenatal clinics and classes, staff use specially developed antenatal health education materials and literacy support to enable women to be involved in their healthcare during their pregnancy. The project also provides 1:1 literacy support for those women with very low literacy. The project also seeks to raise health professionals' awareness of literacy problems and introduce the 'teach-back' and 'Ask Me 3' techniques. The project works in a dynamic way, developing and adapting approaches to suit local circumstances and will be evaluated using an action research process.

Key points

- Health literacy is not just about being able to read and understand health information.

- It is an ability which enables individuals to make informed health decisions in the context of every day life, empowering people to take more responsibility for their health and wellbeing and that of families and communities.

- NHS Lothian is learning from other healthcare systems and adapting existing techniques to the particular Scottish and Lothian context.

- Health literacy involves both the public and healthcare professionals, working together to ensure information is delivered in the most appropriate way.

Recommendations

- Low health literacy is a major public health problem and further research is required to identify effective ways of getting patients better informed about their own health and actively involved in their healthcare.

- Health literacy improvement needs to be integrated and incorporated into all national, regional and local health programmes and services.

- Teach-back and 'Ask Me 3' techniques are simple tools for improving interpersonal communication with patients and should be implemented across NHS Lothian.

*The project is a key partner in the Edinburgh City Literacy and Numeracy Partnership (CLAN)

3.5

THE BUILT ENVIRONMENT

Margaret Douglas & Martin Higgins

Our built environment is an important determinant of health and health inequalities. Put simply, where we live and work has a major impact on our wellbeing. It is now well recognised that health inequalities are caused by social inequalities[1]. Social inequalities are also linked to our built environment. For example, we know that people's attitudes and feelings about their neighbourhood directly influence their health and wellbeing. Within Lothian people living in poor quality housing, and in neighbourhoods with poorly maintained public areas and poor access to health-promoting services and amenities, are most likely to suffer from poor health [2-6]. NHS Lothian is involved in a number of activities that are designed to contribute to healthier built environments and thus a healthier population.

How does the built environment affect health?

The design and build quality of housing, workspaces and public spaces all affect health. For example, people living in warmer, more energy efficient homes are less at risk from cold and have better health outcomes, particularly related to cardio-respiratory disease. Every winter in Scotland there are over 2,000 deaths that are attributable, in part, to cold weather and related conditions[7]. There are known health risks associated with indoor air pollution from tobacco, radon, cooking pollutants, volatile organic compounds and asbestos. High levels of humidity and mould can also cause poor health, notably exacerbating symptoms for people with asthma[8,9]. Overcrowding may contribute to poor mental health and the spread of communicable disease such as helicobacter pylori (associated with stomach ulcers and other gastric ailments). High levels of noise can cause annoyance, loss of sleep and depression. Natural light can also contribute to mental wellbeing.

The built environment can also encourage or discourage active travel[10]. Increasing walking and cycling in preference to car travel could increase physical activity and reduce air and noise pollution, road crashes, CO_2 emissions and community severance[11]. Areas of green space that are attractive, accessible, well connected and designed to encourage use by people in different age groups can also encourage physical activity. There is also evidence that access to and use of green space improves mental health[6]. Neighbourhood design can encourage social interaction and community networks, which is important for mental health, as well as providing informal support networks for some people. The provision of neighbourhoods with easy access to amenities, services and employment can give residents economic and other[12] opportunities that are conducive to better health. For this reason mixed use neighbourhoods are usually preferred to locating residential areas distant to service, retail and employment[13].

Planners in Glasgow have developed the Healthy Sustainable Neighbourhood model, which represents the elements needed for balanced, healthy and sustainable communities (see **Figure 1**). They worked with public health colleagues in the Scottish Health Impact Assessment Network to develop a set of questions for each of these elements that can be used to judge whether plans for a neighbourhood are likely to support health. The model is now being tested in one of the Scottish Government's Equally Well test sites. Equally Well projects focus on actions and activities that reduce health inequalities. The test site in Glasgow is exploring how to integrate health into spatial planning on the basis that applying health improvement principles at design and planning will have the best chance of improving population health.

NHS Lothian initiatives

In Lothian, the Public Health & Health Policy Directorate has worked with partners in local councils for several years on health impact assessments of specific large developments, such as the proposed new towns at Blindwells in East Lothian, Winchburgh in West Lothian and the master plan for Pennywell in North Edinburgh. These assessments aim to identify the potential ways these developments might affect the health of their residents and make recommendations to maximise health gains and minimise health harms (see **Box 1**).
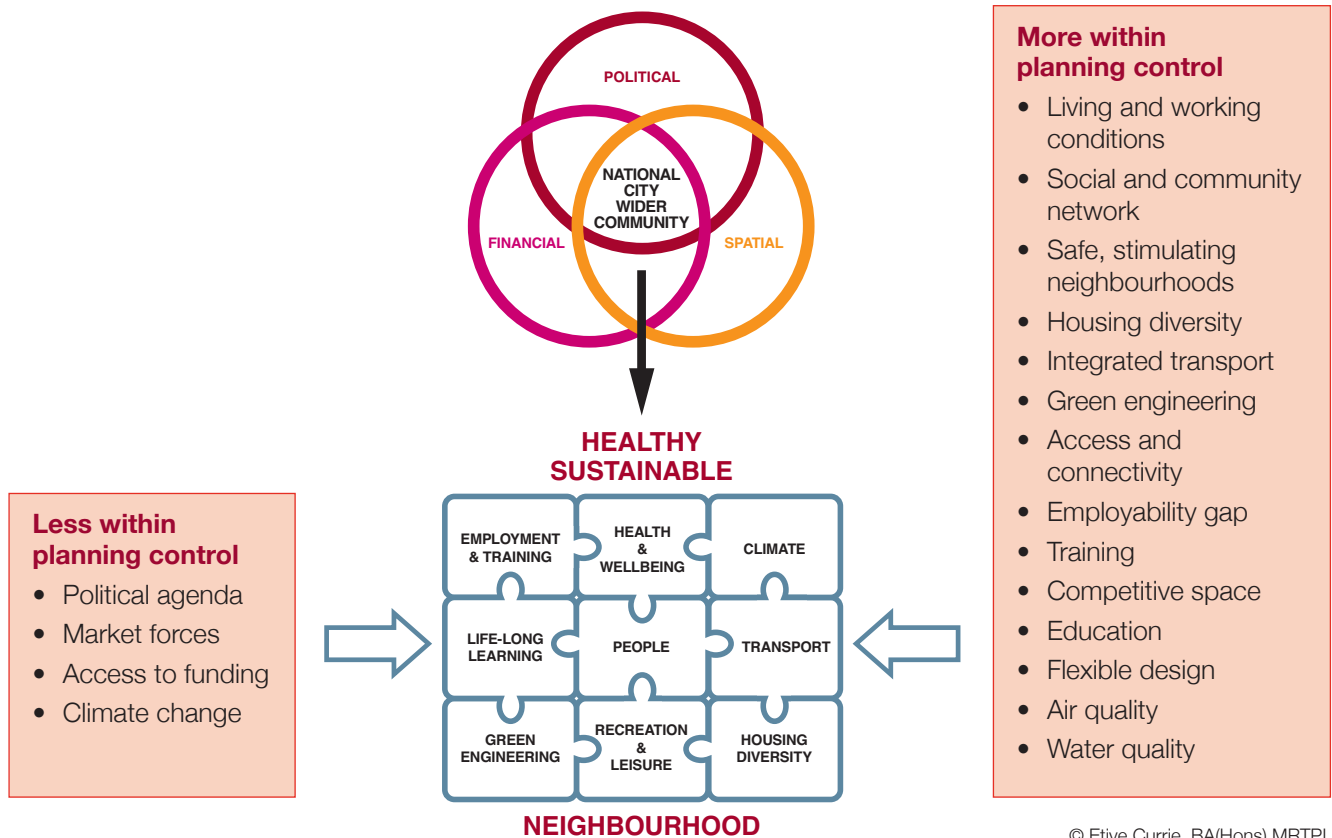
Figure 1
HEALTHY SUSTAINABLE NEIGHBOURHOODS MODEL

More within planning control
- Living and working conditions
- Social and community network
- Safe, stimulating neighbourhoods
- Housing diversity
- Integrated transport
- Green engineering
- Access and connectivity
- Employability gap
- Training
- Competitive space
- Education
- Flexible design
- Air quality
- Water quality

Less within planning control
- Political agenda
- Market forces
- Access to funding
- Climate change

© Etive Currie, BA(Hons) MRTPI.
Development and Regeneration Services,
Glasgow City Council, 2007.

NHS Lothian has a significant capital building programme. Healthy built environment principles have been agreed and tested to ensure that new hospitals and healthcare facilities are health promoting (see **Box 2**). These principles form the basis of the Design Quality Framework that describes the approach to capital planning in Lothian. The principles have been tested against recent newly planned facilities and the capital planning process has been reviewed to ensure they are being addressed consistently (see **Box 3**).

Box 2
KEY AREAS OF IMPACT FROM HEALTHCARE FACILITIES
- Location, access and design can impact on physical activity levels.
- Views and use of green space can also encourage physical activity and also improve mental health.
- Food provision can support healthy eating.
- Design can encourage or discourage social interaction.
- Noise, light and legibility of design impact on mental wellbeing of users.
- Healthcare facilities can contribute to the local economy and instil a sense of 'civic pride' in local communities.

Box 3
NHS LOTHIAN PRINCIPLES ON THE BUILT ENVIRONMENT AND HEALTH

Overarching aim

NHS Lothian is committed to improving the quality of life of people who use our premises as patients, staff, visitors and the local communities by enhancing and creating buildings and spaces that are healthy for present and future generations and environmentally sustainable.

Overarching principles

Location and access

Each facility should be located and designed to secure maximum benefit from transport access, related health and community services, social and environmental amenities.

Planning process

The planning process for new buildings and renovations should facilitate active participation and collaboration with patients, carers, staff and wider groups of affected people.

Design

The design of each facility and its environment should promote best working practice, be welcoming and accessible to people of all walks of life, and all abilities, and generate a sense of wellbeing, belonging and place to all who use it.

Integration with the community

The design, vision and ethos of each facility should capitalise on its potential benefit to the local community and be physically integrated with the neighbourhood it is located in.

Facilities

Each health service development should seek to provide relevant facilities that maximize its support for active lifestyles, learning and liveability for patients, visitors and staff.

Building quality and materials

The building quality and materials should optimise whole life value and seek to minimize the environmental impact of the development and enhance the wellbeing of users.

Key points

- The built environment is one of the key determinants of health and health inequalities.
- The built environment can have impacts on physical and mental health.
- New approaches that integrate health improvement into planning and design processes may help reduce some of the place-based inequalities that are evident in Lothian.

Recommendation

- Reducing place-based inequalities will be a key contribution to our efforts to tackle social and health inequalities. We are learning more about this topic every day but must continue to research the impacts of the built environment and use this knowledge to make improvements that maximise the benefits of new developments. The development and redevelopment of the built environment should be designed with an eye to the future, to support needs that may evolve over time.

4

OUR HEALTH IN THE FUTURE – INTERVENTIONS TO REDUCE THE FUTURE BURDEN OF DISEASE

4.1

EPIDEMIOLOGY

ADDRESSING THE SOCIAL DETERMINANTS OF HEALTH

John Frank, Sally Haw & Prem Gajree

Social injustice kills people on a large scale. Through epidemiology we know where and how and can compare ourselves with other countries. We have made progress in addressing major public health problems over the past decade with improvements in both prevention and management (treatment) of chronic diseases like coronary heart disease. However, other health issues, for example injecting drug use, HIV/AIDS and homelessness, remain a challenge. We lag behind our European neighbours and must introduce more effective programmes and policies to reduce the future burden of disease. We must address the social determinants of health and also influence significant cultural change – a bigger challenge in a recession but essential if we are to maintain the momentum of good work already done. Individuals and families need to consider the social determinants of health within their own control to improve what they can – diet, alcohol, tobacco and exercise.

Introduction

Compared with other Western European countries, Scotland has one of the highest mortality rates and lowest life expectancy. Scotland is also characterised by marked inequalities, with men from the poorest communities dying 13 years earlier and experiencing seven more years in poor health than men from the most affluent communities. A similar pattern is seen for women[1]. There has been little change in these markers over the past decade, despite a plethora of short term policies and programmes that have largely focused on short term, small scale projects aimed at changing individual lifestyles, rather than the broader social determinants of health. Indeed, at national level, there is substantial evidence that health inequalities in youth and younger adults have increased, due to various forms of 'self-harm': alcohol and drug misuse, violence and suicide[2].

In Lothian, there is evidence that drug-related harm and death is occurring at a later age than in the 1980s. Access to drug treatments and surgery are more equitable but there is less evidence of a real commitment to investing in programmes and policies that address the reasons why people turn to alcohol, drugs and food so easily as ways of escape from reality in the first place. Known in public health terms as the upstream social determinants of health, these include the built environment, transport policies, education, genetics, maternal and child health, racism and language barriers, physical activity, violence and community values. We can compare the level of our inequality, using the Gini-coefficient of inequality – the most commonly used measure of inequality, where 0 is total equality, and 1 is total inequality[3,4] (see **Figure 1**). Scotland sits at 0.31 compared to the UK as a whole

at 0.35, Denmark at 0.29, Sweden 0.25, Norway 0.26, Germany 0.27, Netherlands 0.30 and Canada at 0.33, these being the countries against which we benchmark performance[5]. Given this comparison, local improvements in the socio-economic gap in mortality amenable to healthcare are welcome. Such interventions, however, may be vulnerable to the dramatic cuts in funding for the public sector that Scotland is likely to face in the near future. By developing an evidence-base about effective public health interventions, we are in a better position to provide a rational basis for prioritising investment that is likely to reduce rather than increase the burden of disease and health inequality gradient.

Figure 1

List of countries by Gini coefficient 2011[3,4]
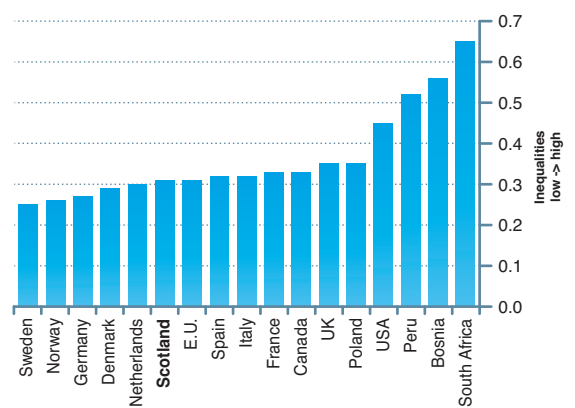
Box 1

The Scottish Collaboration for Public Health Research and Policy (SCPHRP) was established in the summer of 2008. Its remit is:

• To identify areas for developing novel public health interventions that equitably address major Scottish health problems;

• To foster collaboration between government, researchers and the public health community to develop a national programme of intervention development, large-scale implementation and robust evaluation; and

• To build capacity within the public health community for high quality collaborative research that will have maximum impact on policies, programmes and practice.

The Collaboration's initial work was to identify effective interventions that address the social determinants of health in a process that involved over 70 Scottish experts (see www.scphrp.ac.uk). Structured rapid reviews of these interventions have now been completed and in the rest of this article we summarise their main conclusions.

Early life

Evidence outlined in other articles in this report overwhelmingly shows that early life experience has a major impact on health and social outcomes. The roots of many of today's health problems – addictions, mental health problems, obesity and coronary heart disease – lie in the early years[6]. Sensitive periods in brain development in the first five years of life which make young children particularly susceptible to adverse conditions also make them amenable to intervention[7,8]. Interventions that promote good parenting and attachment support social and cognitive development and improve outcomes[1]. A recent strategic review of health inequalities in England[9] suggests we need proportionate universalism. This is the provision of services for which everyone is eligible but where the scale and intensity of early intervention is proportionate to the level of disadvantage, equivalent to providing a higher or more frequent dose of a medicine to patients with more severe disease. Overall, this might amount to 1.5-2.0% of GDP to support children's early development. In a structured review that followed, a mix of programmes was outlined that, building on existing work in Scotland, could turn around the life chances of children in a few years[10].

Table 1: Analysis grid for environments linked to obesity (ANGELO)[21]

Scale / Domain	Micro-environment (settings) (e.g. household, community) Food Physical activity	Macro-environment (sectors) (e.g. regional, national) Food Physical activity
Physical	What is available? For example, buildings, amenities and land use patterns.	
Economic	What are the monetary cost factors/influences/consequences?	
Legislative	What are the rules/legal guidance/policy messages?	
Sociocultural	What are the attitudes, beliefs, perceptions and values?	

Adolescence and young adulthood

Investment in interventions in the early years alone will not ensure that children and young adults achieve their full potential. As children grow they are exposed to an increasing number of influences through school, their peer group and the community. Risk and protective factors from these domains have been shown to be common to a range of adolescent risk and deviant behaviours, including substance misuse, sexual risk behaviour and delinquency[11]. The evidence-base is less well developed than that for interventions in early life but two US programmes have been identified:[12] the Seattle Social Development Project[13] which focuses on primary age school children; and the Strengthening Families Programme 10-14[14]. Both are effective in reducing multiple risk behaviours. In addition, the Gatehouse Project[15] from Australia, which focuses on school ethos and connectedness (a sense of belonging) shows promise. All three programmes are complex interventions that act on a range of factors simultaneously. Most intervention programmes in Scotland have focused on individual risk behaviours. The available evidence provides a strong argument for a collaborative, cross-sectoral, community-based demonstration project that aims to reduce multiple risk behaviours[12]. The equivalent approach in treatment services is the additional benefit following the shift to multi-disciplinary interventions in cancer and stroke.

Working Life

Adult obesity has been confirmed as one of the most serious global public health problems. In Scotland, 22% of men and 24% of women are classified as obese (BMI >30)[16]. On average, obese adults die nine years earlier than others. Changes in eating patterns at individual and population level will only be possible if accompanied by changes in the physical, economic, political and socio-cultural environment[17]. Tackling obesity is a public health priority in Scotland[18]. It is suggested that four types of intervention are likely to have the greatest impact on obesity[19]. These include: interventions to increase walking and cycling; health interventions that target those at greatest risk; controlling the availability of and exposure to obesogenic (energy dense) foods and drink and workplace interventions. Obesogenic products include sugary soft drinks, sweetened breakfast cereals, confectionery, savoury snacks, cakes, pastries and biscuits, desserts, fatty spreads and sweetened dairy products.

Later life

The origins of illness and disability in later life can clearly be linked to early life experience and are strongly socially patterned. Older people in the lowest socio-economic group have a shorter life expectancy but also live more years in poor health[1]. A recent professional literature review[20] concluded that there are large gaps in the evidence-base and where studies have been conducted, evidence on effectiveness is often conflicting. There is some evidence, however, for encouraging exercise which can improve aspects of functioning such as walking in older people and recent Scottish policy advocates many of the interventions reviewed such as falls prevention, tele-care and co-ordinated, integrated care delivery. The impact of many of these interventions for older people in Scotland is, as yet, unknown. This impact therefore, along with the feasibility, affordability, sustainability and effects on equity would need to be considered when developing any new and innovative interventions in this field.

Key points

- Over the last decade there has been little improvement in Scotland in many of the traditional markers of health inequalities, such as all cause mortality, hospitalisation and healthy life expectancy.

- For each life stage there are effective or promising interventions that focus on the social determinants of health and have the potential to reduce the future burden of disease.

- The four rapid reviews we have completed suggest profound changes in the social determinants of health are required if Scotland is to overcome its current public health problems.

- Major cultural changes will also be required to achieve this end, changes that influence child development, youth risk-related behaviour, adult eating and activity patterns and the way we approach maintaining the elderly in the community.

Recommendations

- Individuals and families need to consider the social determinants of health within their own control to improve what they can – diet, alcohol, tobacco and exercise.

- To better assess the impact public health programmes and policies have on health and health inequalities, we need more sensitive measures that are tractable and amenable to change.

- Surveillance should include sensitive measures of health and function that: occur earlier in the life-course; are amenable to change; reflect the future 'life chances' and health status; and are strongly patterned by socio-economic position[22].

4.2

ALCOHOL

WHERE HAVE WE COME FROM AND WHERE ARE WE GOING?

Jim Sherval

There is clear and overwhelming evidence that alcohol misuse has profoundly negative effects on both individuals and their society. Alcohol misuse is a problem for Scotland in particular, with some of the highest alcohol-related death rates in the UK, a significant increase in alcoholic liver disease in the last twenty years and one of the highest death rates for liver cirrhosis in Western Europe. There is a need for coherent and cohesive action between the NHS, the Scottish Government and wider civil society to address these problems. The NHS can and is working to help individuals deal with the consequences of harmful drinking but we all need to drink less and this can only happen through nationwide political action.

Introduction

An article published in the British Medical Journal (BMJ) entitled 'Scots lead the way on Alcohol' states Scotland has "produced the most impressive plan of action yet seen in Britain on how to combat alcohol problems. The report recognises that this is a job not just for government or for doctors or any other single group but a job for everybody in Scotland"[1]. An accompanying editorial notes "it is sometimes argued that increasing the cost of alcohol puts an unfair burden on the innocent social drinker without altering the behaviour of the heavy drinker, but there is plenty of evidence that this is not so, and recent figures from Lothian show a fall in harmful effects among heavy drinkers after a modest price rise"[2].

The BMJ article and editorial are from 1985 and the report was by a group chaired by the late Sir John Crofton. The 'recent figures from Lothian' were from a study by Bob Kendall, who became Scotland's Chief Medical Officer in the 1990s, and Bruce Ritson. Since 1985 Scotland's alcohol problem has got far worse while the research on interventions such as the influence of price has greatly increased. Yet the same excuses are still heard about punishing the sensible drinker.

In the intervening time much research has been undertaken to explore why there is such a problem with alcohol in Scotland and to examine the effectiveness of measures that can be used to reduce the level of alcohol dependency and binge drinking. Scotland now has a very good strategy to tackle alcohol related problems at a population level. *Changing Scotland's Relationship with Alcohol: a Framework for Action*[3] set out the need for change and draws on research that charts the costs and impact of alcohol on Scotland and its people. Public health welcomed this Framework as it clearly took a population and evidence-based approach. Alcohol problems are not just for young binge drinkers and dependent street drinkers: given that as a population we are drinking at unsafe levels, **we all need to drink less**.

HEALTH PROBLEMS CAUSED BY BINGE DRINKING[4]

- Brain damage
- Alcohol Poisoning
- Gastrointestinal Tract issues: acute haemoraging of the oesophagus, gastitis
- Long-term effects: blood pressure, strokes, heart diseases
- Cancer: breast cancer, oral cancer
- Sketal Muscle Damage: acute myopathy

"Alcohol problems are not just for young binge drinkers ... we all need to drink less."

Alcohol Brief Interventions

Alcohol Brief Interventions (ABIs) have been a big part of the NHS contribution to the strategy of lowering Scotland's alcohol intake. Led by NHS Lothian's Health Promotion Service, ABIs are now firmly established in primary care and maternity services and will be expanding into Accident and Emergency. While it took nearly twenty years to be introduced, it is a great example of evidence-based policy implementation. It is a pity that it was necessary to set a target and provide a ring fence of funding to mandate the incorporation of this service. Success to date has inspired other services, for example podiatry, pharmacy and sexual health services, to look at the needs of their patient populations so that more services can provide brief interventions as part of routine care. This will enable greater coverage of the population at risk. NHS Lothian has had considerable success in training over 80% of Lothian GPs in screening and delivering ABIs. This is very encouraging; however, action by the NHS alone will not solve this problem.

Figure 1

UK Alcohol Consumption
Litres of pure alcohol consumption
per capita in the UK, 1900-2006[10]
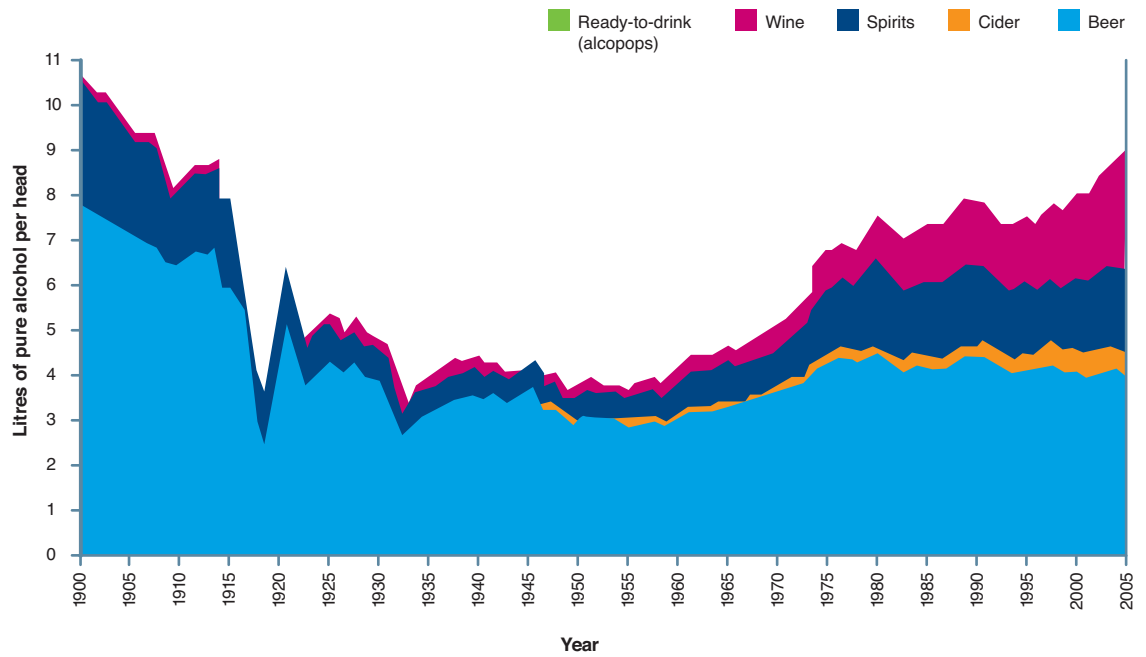
Alcohol misuse and price

Tackling alcohol misuse and its consequences are key issues for the NHS in Scotland in general and NHS Lothian in particular. Between 1998 and 2004, 15 of the 20 local authority areas in the UK with the highest alcohol-related death rates were in Scotland. This included men and women in Edinburgh and West Lothian[5]. Between 1998 and 2002 there was a 52% increase in alcoholic liver disease in Scotland and we now have one of the highest death rates from liver cirrhosis in Western Europe[6].

There is a clear and long standing relationship between the affordability of alcohol and levels of consumption. This has been established across many countries over time[7]. In the UK, alcohol is now 69% more affordable than in 1980, with consumption increasing by around 20% over the same period. The World Health Organisation (WHO) considers that tackling the affordability of alcohol is a key component of an effective alcohol strategy. To implement the rest of the Framework and ignore the price of alcohol would not

make sense. Introducing a minimum price would create a price below which a unit of alcohol could not be sold. Minimum pricing would apply to all alcoholic drinks but it would not result in an increase in the cost of all drinks, only those which are currently sold below the level set. It would primarily affect low cost, high alcohol products such as ciders and own-label vodka and would impact most on harmful drinkers[8].

A study conducted in two Edinburgh hospitals compared alcohol purchasing and consumption by ill drinkers in Edinburgh with wider alcohol sales in Scotland[9]. The study looked at the last weeks or typical weekly consumption of alcohol by type, brand, units, purchase place and price. Patients consumed a mean of 198 UK units per week. The mean price paid per unit was 43p (lowest 9p per unit) which is below the 72p mean unit price paid in Scotland in 2007. Of units consumed, 70% were sold at or below 40p per unit and 83% at or below 50p per unit.

There is a short time-lag in the strong correlation between affordability of alcohol and deaths from liver cirrhosis. Based on the available evidence minimum pricing, like the smoking ban, would save lives within a year. A study undertaken in Sheffield[8] supports this: their model suggests a 40p minimum price would save about 70 lives in year one, rising to 365 lives per year by year ten.

Any minimum price should be set at a level which will have an impact on consumption and alcohol related diseases and deaths. While most attention has been paid to a minimum price of 40p this should be in tandem with a ban on promotions as together these produce an additive effect. At higher minimum prices the additive effect of a promotions ban lessens until at 60p there is little additional effect. In the end there is a choice between how many deaths might be prevented and what might be a publicly acceptable level for the minimum price.

Raising the legal age of consumption and purchase reduces consumption levels in young people (including binge drinking), and reduces the levels of alcohol-related traffic crashes, injuries and fatalities[11]. Age verification is an important aspect of this area and the Challenge 21 and Think 25 policies used by some retailers are very welcome. All licensees should be encouraged to sign-up to these initiatives[12]. It may be that the threat of a locally imposed purchase age will reinforce this voluntary measure.

Longitudinal studies consistently suggest that exposure to media and commercial communications on alcohol is associated with the likelihood that adolescents will start to drink alcohol, with increased drinking amongst baseline drinkers and drinking more if they are already consuming alcohol[13].

WHO, in their submission to the World Health Assembly, noted that it is very difficult to target young adult consumers without exposing cohorts of adolescents under the legal age to the same marketing practices. Controls or partial bans on volume, placement and content of alcohol advertising are important parts of a strategy, and research results underline the need for such controls or bans, in particular to protect adolescents and young people from pressure to start drinking. Marketing practices that appeal to children and adolescents could be seen as particular policy concerns[14].

In conclusion, we need wider societal action to complement the individual work such as ABIs. We could have acted in 1985 and introduced ABIs at the same speed and with the same systematic approach that we use for medicines but we didn't. As a result we now have a very large problem.

Key points

- Scotland knew in 1985 that price was crucial to prevent alcohol problems.
- Our current strategy is a good one but without a minimum price per unit of alcohol it is seriously undermined.
- We all need to drink less and we need leadership on this from people in positions of power.
- We should consider a bigger restriction on advertising and raising the legal age of purchase and consumption.

Recommendations

There should be:

- Restrictions in advertising, particularly to young people;
- Minimum pricing;
- An extension to and routine delivery of ABIs across the NHS and other organizations;
- Leadership from the top of all organizations to promote a reduction in alcohol consumption; and
- Support to Licensing Boards who wish to use licensing to regulate the provision of alcohol.

4.3

THE IMPACT OF THE SWINE FLU PANDEMIC ON HEALTHCARE PROFESSIONALS AND PREGNANT WOMEN IN LOTHIAN

Vittal Katikireddi, Graham MacKenzie & Kate Smith

We set out to study the impact of the 2009 A(H1N1) 'swine flu' pandemic on healthcare workers and pregnant women in Lothian. We report on the challenges of studying a rapidly developing situation and present a summary of the initial findings from the research. The PIPPIN study (Prevalence of Influenza A(H1N1) in Professionals and Pregnant women in NHS Lothian) will help us to better understand the implications of this pandemic on healthcare workers and patients (locally and more generally) and will also contribute to planning for future pandemics.

Introduction

In spring 2009, the World Health Organisation declared the first worldwide pandemic influenza (flu) outbreak for over 40 years. Last year's Public Health Annual Report described the public health response to this outbreak.

We identified the need for high quality research into the impact of 2009 Influenza A(H1N1) (swine flu). Accordingly we established a partnership between NHS Lothian (Public Health and Health Policy and Maternity Services), the University of Edinburgh (Obstetrics and Statistics), the Regional Virology Laboratory in Glasgow and the Wellcome Trust's Clinical Research Facility. The aims of the PIPPIN study (Prevalence of Influenza A(H1N1) in Professionals and Pregnant women in NHS Lothian) were to investigate the levels of immunity to A(H1N1) in healthcare workers [Phase 1] and the effects of A(H1N1) on pregnant women [Phase 2].

Phase 1 – Healthcare workers

During the A(H1N1) pandemic, there was anxiety that high numbers of healthcare staff might be affected by A(H1N1), particularly as many would come into direct contact with symptomatic patients. In September 2009 our team saw an opportunity to undertake research into A(H1N1) in NHS Lothian. We set out to identify what proportion of healthcare workers in NHS Lothian naturally possessed antibodies

to A(H1N1) at two time points – before and midway through the pandemic. The study needed to recruit unvaccinated healthcare workers, because vaccinated people would exhibit antibodies that would be indistinguishable from naturally acquired antibodies. Given the importance of improving understanding of the A(H1N1) pandemic, the Wellcome Trust Clinical Research Facility agreed to reprioritise their work to support the PIPPIN study.

Recruitment into Phase 1 took place over a five day period starting on 28th October 2009. Volunteers completed a short questionnaire (including details on age, gender, occupation and history of flu-like symptoms since spring 2009) and gave an anonymous sample of venous blood. In total, 493 NHS Lothian healthcare workers were recruited into the study. The study participants closely matched the age, sex and occupation distributions of staff in NHS Lothian. The Virology Laboratory in NHS Lothian also identified 471 anonymous age and sex matched samples stored from healthcare workers from the months prior to the start of the A(H1N1) pandemic. All samples were forwarded to the Regional Virology Laboratory in Glasgow. The Glasgow Laboratory liaised with the Health Protection Agency Centre for Infections in Colindale (London) to develop the necessary assays. The Glasgow Laboratory performed all of the virology testing for the PIPPIN study.

Preliminary analyses have shown that 6.6% of healthcare workers tested prior to the A(H1N1) pandemic showed antibodies to A(H1N1). These healthcare workers are likely to have been exposed previously to flu strains that caused their immune system to produce antibodies similar to those raised against A(H1N1). For those healthcare workers tested during the pandemic, 10.3% had antibodies to A(H1N1). While this represents an increase in immunity levels during the pandemic it suggests that only one in ten healthcare workers had antibodies to A(H1N1) by November 2009.

This was despite the fact that almost one in two study participants recalled having had flu-like symptoms since A(H1N1) had been identified in Scotland. More detailed analyses from Phase 1 were undertaken in 2010 and will be more widely available in 2011.

Phase 2 – Pregnant women

Scientific reports from the early days of the A(H1N1) pandemic, and high profile cases in the media, appeared to suggest that pregnant women were at increased risk of catching A(H1N1) and developing complications. In order to investigate this further we recruited over 400 pregnant women who agreed to give a blood sample and complete a questionnaire between December 2009 and April 2010. The information gathered is now being analysed and research findings will be published shortly, with preliminary findings showing that A(H1N1) infection was relatively uncommon in pregnant women and serious complications were rare.

Key points

- The A(H1N1) pandemic presented an excellent opportunity to study a new pathogen.
- The success of the PIPPIN study relied on intense bursts of collaborative work and quick decisions from the funding organisation (the Chief Scientist's Office).
- In November 2009, six months after the first cases of A(H1N1) were reported in Scotland, relatively few healthcare workers exhibited antibodies to A(H1N1) despite high recall of flu-like symptoms since the start of the pandemic.

Recommendation

- The NHS, universities and funding bodies should support practical research during Public Health emergencies.

4.4

CHILD HEALTHY WEIGHT

LESSONS FROM ABROAD AND FROM OUR LOCAL COMMUNITIES.

Graham McKenzie & Cath Morrison

NHS Lothian is working with partner organisations and communities to prevent children and young people becoming obese and overweight. This preventive work is supported by access to treatment when required. Lothian was the first area in Scotland to take this balanced approach. This work is based on findings from a French study that showed benefits across communities but that was particularly effective in more deprived communities. This work is helping to build on the limited evidence base available internationally to identify what works locally.

Introduction

Overweight and obesity levels have increased dramatically in all age groups over the past thirty years. It is estimated that up to two thirds of adults and one third of children and young people are now overweight or obese (see **Figure 1** & **Table 1**). Problems of this scale are not simply the result of a lack of will power by individuals. There is clear evidence from the English school surveillance programme, and more recently from the Scottish school surveillance programme, that overweight and obesity in childhood increases with deprivation. Last year's Public Health annual report[1] looked at obesity and the environment, highlighting the need to make neighbourhoods more friendly for walking and cycling and to change food production, distribution and composition. This article focuses specifically on child healthy weight.

Initiatives and interventions

In December 2007, the Scottish Government announced a new target[2] for NHS Boards to deliver a family-centred weight management intervention to overweight and obese children and young people, with a focus on healthy eating, physical activity and behavioural change. In Lothian we were set a target of delivering such a programme to almost 3000 children. This was the first time that government policy was accompanied by investment to tackle child healthy weight across Scotland. Colleagues from a wide range of different organisations in Lothian (NHS, local authorities, leisure organisations, voluntary sector and universities) met to identify the best way to meet this target.

"Overweight and obesity levels have increased in all the age groups over the last 30 years.

Colleagues from across the statutory and voluntary sectors were concerned about the impact of screening and targeting the large numbers of overweight/obese children and young people required to meet the Scottish Government target. There was general concern that such an approach could cause stigma for families and harm the relationship between professionals and parents. As a result, we started to consider two distinct approaches as an alternative:

- **prevention** of overweight/obesity for families, regardless of weight, in a school/community setting; and
- **treatment** for groups and individuals if overweight or obese, but on a referral basis.

However, in early 2008 there were few high quality studies published in scientific journals on approaches to preventing childhood overweight and obesity. We searched for promising interventions, following leads from colleagues, conferences, reports and other sources. There was considerable interest in a French study called Ensemble, Prévenons L'Obésité des Enfants (EPODE) – which translates as 'together, let's prevent obesity in children' – and its predecessor Ville Santé ('healthy town').

A conference presentation provided some data unavailable elsewhere at that time. These studies took a whole-town approach, starting small (Ville Santé ran in the towns of Fleurbaix and Laventie with populations of 2,222 and 4,444 respectively) before expanding to larger towns with populations of up to 100,000 with EPODE. The French approach evolved in three stages, starting with schools and extending to include the whole town (for example large employers, supermarkets and food outlets) and, towards its later stages, expanding to include specific support for individuals when required (health coaching). The French approach involved a combination of social marketing run from central offices in Paris, and local involvement (leadership by the town mayor and community development) to tailor the programme to meet local requirements and maximise uptake.

Figure 1

Percentage overweight and obese children in Primary 1 (Local Authority funded schools) in Lothian
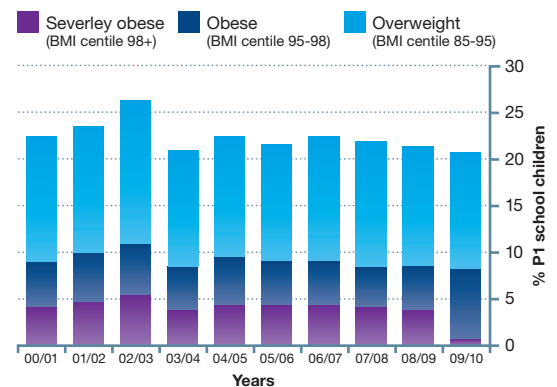
Source: Child Health Surveillance Program, ISD Scotland

Table 1: Definitions of overweight and obesity in children and adults[3]

	Children and young people	Adult
Overweight	≥91st Body mass index (BMI) centile using Child Growth Foundation Chart for those aged 5 years and above). Use World Health Organisation charts for children aged less than 5 years[4].	BMI ≥ 25 kg/m2
Obese	≥98th BMI centile using charts as above	BMI ≥ 30 kg/m2

A calculator estimating BMI centile (children) and BMI (adults) is available at the following link: nhslothian.scot.nhs.uk/getgoing/index.htm

The preliminary results of the French approach were striking. Between 1992 and 2004 the proportion of children who were obese in the two towns fell from 11.4% to 8.8% (see **Figure 2**). Over the same period the proportion of obese children in two 'comparison towns' without the intervention increased from 12.6 to 17.8%. Crucially, the benefits were greatest for those children living in higher levels of deprivation (see **Figure 3**). The study was finally published in December 2008[5]. The findings appeared to fit closely with our plans so we obtained agreement from the Scottish Government in early 2009 that we would adapt the EPODE preventive approach as the major focus of our work. Schools have been central to the development of the preventive programme which has involved the following stages:

- identifying communities;
- consultation with professionals and communities;
- delivery of community development and social marketing approaches; and
- evaluation in each of the four local authority areas in Lothian.

By working with schools and colleagues in community learning and development and the voluntary sector we have been able to engage with families in areas of multiple deprivation, addressing healthy eating, cooking on a budget, physical activity and the links to wider health and wellbeing. This work is expected to lead to sustainable changes that will impact on the family and wider community, leading to further opportunities in training, volunteering and employment for some participants.

Figure 2

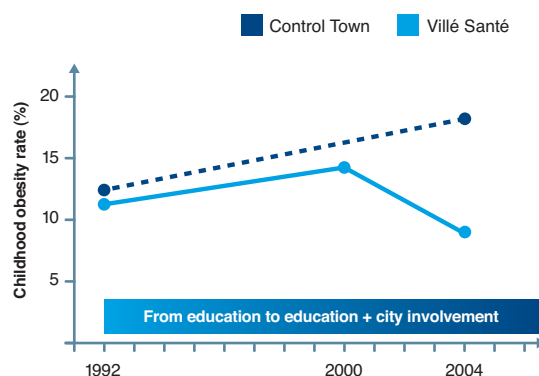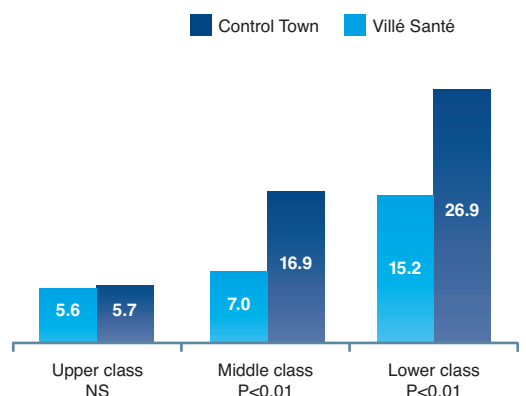**Childhood obesity prevalence data in Villé Santé (Healthy Town) and in CT (Control Town)[5]**

Figure 3

Prevalence data of obesity according to socio-economic criteria in 2004 in VS and CT[5]

In addition to this community-based preventive approach we have worked with colleagues in two Scottish universities to develop a weight management programme called 'Get Going'. This enables parents or professionals to seek specialist support for a child or young person who is obese or overweight. Many treatment services struggle to engage with children and families. This programme provides an opportunity to work with local families, communities and professionals to design more responsive and effective services.

Key points

- The French EPODE study provides evidence to support a community-based approach to preventing overweight and obesity in children and young people. This approach is being adapted for use in four communities in Lothian.
- Data from England and, more recently, Scotland suggest that overweight and obesity is more common in children and young people in more deprived communities.

- Programmes aimed at reducing the prevalence of overweight and obesity should monitor their impact on health inequalities.
- Community involvement is central to the success of programmes geared at reducing overweight and obesity in childhood.
- The evaluation of the Get Going treatment programme will help NHS Lothian plan weight management services for children and young people for the future.

Recommendation

- Child healthy weight programmes – and related national targets – should balance prevention and treatment.
- Long term action is required to reduce the impact of overweight and obesity in children and young people.
- Services need to be redesigned with young people and their parents so that they are able to engage with families and communities more effectively.

5 AFTERWORD

We are lucky in Scotland that it is rarely necessary for us as Directors of Public Health to take concerns directly to the public because our advice is being disregarded. The current economic climate, however, causes me some concern. This is my third period of austerity as a doctor. I was a junior doctor in the 1980s and a new consultant in London in the 1990s. Careful analysis of the impact of previous recessions on health and health services in Scotland and in other countries enables me to conclude that, managed in line with the evidence from around the globe, things will be really difficult for between two and five years but they will get better. Unfortunately, however, there are some examples of policy and practice from previous recessions at home and abroad where evidence has been disregarded and avoidable ill-health and death have resulted. As a consequence, our aspiration to close the gap within a generation is abandoned and, instead, a generation has its choices and life chances severely limited.

The NHS in Lothian has a good track record of identifying and addressing inequity in service provision but it does so within a set of rules and policies that are agreed nationally and internationally. A health service that is free at the point of use is the rational, equitable and evidence-based approach to the challenge of reducing inequalities in avoidable premature death, disability and distress. The evidence on the adverse effects of making people pay for health services is well established. This solution is often recommended as a way of increasing revenue available and reducing what is perceived as inappropriate use of services. However, it reduces service use among those with greater levels of need and fewer resources, who already face the greatest barriers to service use. The policy has limited impact on the understandable wish of patients to visit specialists or to have the latest treatment, even treatments that provide limited benefit. The ability to afford prescribed medicines and other treatments follows a similar pattern.

populations with increased levels of need, developments associated with Keep Well mean that we are much closer to providing equitable services for gypsy travellers.

Vigilance and surveillance during hard times are vital or essential services will be unavailable when required. In Lothian, in 1982, there was an epidemic of Hepatitis B among injecting drug users[1]. This followed an acute shortage of legally available clean needles and syringes. Medical and public health advice to reduce the spread of infection by making clean needles and syringes available was rejected. This expert advice also had an eye to the prevention of future harm. In December 1981, the first cases of HIV and AIDS were reported in injecting drug users in the United States and in December 1982, the first case of mother to child transmission was reported. Stored blood samples from one general practice indicate that HIV became epidemic in Edinburgh during late 1983 – early 84[1], two years after the cluster in the United States. By the end of 1986, approximately 1500-2000 drug users in Lothian, mostly young adults, were estimated to be infected with HIV. The first 20 cases of mother to child transmission were reported in 1984/5, again two years after the cluster in the United States.

This experience led to the development of excellent services from which other countries now learn. It is a recent example of the long history of people in Lothian developing effective ways of caring for patients with chronic unglamorous conditions that are difficult to manage. Primary care is central to these efforts. Additional evidence for opiate substitution in the context of high quality primary care in the care and reduction in the risk of premature death were published in 2010[2]. This adds to the evidence of the effectiveness of methadone programmes in reducing harm from illegal drug users (systematic review). Unfortunately, because opiate substitution is not the complete

The introduction of payments to use health services has been shown elsewhere to increase healthcare inequalities. It would also make it more difficult to change the balance between primary and secondary care and to increase the proportion of care that is delivered in a planned rather than an emergency setting as patients present with more advanced disease or avoidable complications. While the recession has seen a disproportionate reduction in the funding for many services focussed on the

answer, some people consider it controversial in a way that treatments for other conditions are not. It is important that we maintain levels of unmet need for health and social care for this population and their families at low levels. Cities in countries without universal services including opiate substitution, exchange of needles and drug paraphernalia and practical support face situations similar to Lothian in the 1980s but on a much larger scale[3]. Our experience of developing just and equitable services and of the wider links between health and justice will be examined in more detail in my next report.

Drug misuse is not the only area where the evidence-based interventions are implemented more slowly than is reasonable. There are other examples where the type of intervention affects how quickly evidence is implemented. The evidence on how to provide effective smoking cessation and alcohol intervention services was first published over 20 years ago. Unlike medicines, however, there is no single agreed process for managing the introduction of effective programmes, and disinvestment in ineffective ones. It is only over the last three years, since ring fenced funding has been available, that these evidence-based treatments have been introduced as co-ordinated services on a scale that reflects the level of need in the population. Going forward, smoking cessation and alcohol brief interventions should be funded as mainstream services at the level required to meet population health needs. As two of our most effective treatments their continuation will have a significant impact on reducing premature death in Lothian.

Investment in public health interventions is often cut or rejected outright on the basis that it takes a generation to see a difference. This misleading language may be used to justify inaction; it may take a generation to see the full effect, but careful research and rapid, rigorous evaluation will often show evidence of benefit and

harm at population level within a one to two year period. 'Support from the Start', the Equally Well test site in Lothian has collected evidence of improvement in the health and wellbeing of children and families using various of different methods. Together, these results reflect the findings of large research studies and should help us measure reduction in the risk of future problems. We already have reliable estimates of the benefit of investment in the early years as each £1 produces a benefit equivalent to £5-7 saving on interventions required in older children and adults.

A helpful policy environment is important. The report from 1997-1999 from one of my predecessors, Dr Helen Zealley, noted that 30% of children in Lothian were living below the poverty line. Since 10-20% of children's health is directly related to their social circumstances, the passing of the Child Poverty Act is a welcome step in the right direction. Child poverty is much higher in the UK than in our comparator countries. Eradicating child poverty would have a major and long lasting positive effect on health and wellbeing in Lothian, among adults as well as children. This is because it would require: attention to helping everyone achieve their potential; a commitment to healthy places; employment that provides a living wage; social protection throughout life; universal healthcare; and action to reduce the prevalence of the individual risks to physical and mental health that are associated with premature death[4]. Combining commitment to this goal with careful evaluation would also help us prioritise our use of resources, focussing on tackling unmet need and ability to benefit. We have much to teach others about equitable treatment for common chronic conditions, particularly the role of primary care, but there is a lot still to be done if we are to tackle the excess burden of ill-health among our most vulnerable parents, children and young people. This is our chance to improve our health, and our future.

6

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