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Dear First Minister

I would like to present to you my Annual Report, Health in Scotland for 2006.

Any time that Scotland's health is discussed the phrase "sick man of Europe" seems to creep into the discussion. In fact, Scotland's health is not the poorest in Europe. It is improving rapidly and, on the basis of my experience of work being done to improve health in other European countries, I can say that many of the Scottish health improvement programmes are seen by our neighbours as being at the leading edge in terms of design and implementation of such programmes. Although the health of all sections of the community in Scotland is improving we cannot disguise the fact that it is not improving fast enough for the poorest sections of our society. Those who have least access to income, employment and good housing experience much higher levels of ill health. They have a less positive experience of life and less physical and psychological resilience when it comes to meeting challenges. I have no doubt that health inequalities, however defined, remain our major challenge.

Scotland has actively tackled tobacco smoking which is probably the single most important preventable cause of inequality in life expectancy. Our European neighbours have found much to admire in the way smoking has been tackled by Scotland and in the way the Scottish population has responded. There is no doubt that the past year has been of considerable importance for public health.

In this year's Report, I have focussed on the significance of the first few years of life as a basis for subsequent health and well being in adulthood. Work emerging from a number of different countries shows very clearly that the circumstances in which a child is brought into the world and in which he or she lives in the first few years of life can have a major impact on future physical and mental health. Adversity in pregnancy and in the years leading up to school age needs to be tackled if we are to have a positive impact on health inequalities. The educational and social consequences of adverse life circumstances means that children grow into adults who are more likely to be excluded from society and suffer poor health. They are also more likely to cause problems for their own families and the communities in which they live. The number of children in Scotland estimated to be living in adverse circumstances is alarming. A number of initiatives identified in the Report have shown that investment and support of expectant mothers, their infants and young children, can make a real difference to their future health and life prospects. I believe we can identify those at greatest risk and we should develop an effective support programme to ensure that we have every opportunity to maximise their potential for a healthy and fulfilled life.

The Report highlights the vital role which education within schools and other settings can play in achieving this outcome. The challenge is to ensure that all such children are identified and that we work across all sectors to provide them with appropriate and sustained support.

In doing so we must not forget the importance of research and evaluation in identifying the most effective ways of providing such support. Although Scotland has less than 10% of the population of the United Kingdom, our research regularly captures more than 10% of the UK research budget. We have an active and able community of researchers who can support the introduction of new programmes of care for mothers and children and the lessons we learn will influence policy throughout the world.

One of the Chapters highlights the issues of violence and health. Consistent with the major theme in the Report, it highlights the importance of early years, alcohol and drug use and chaotic life circumstances in determining levels of violence. We substantially underestimate the amount of violence in our communities. The Violence Reduction Unit has done much to foster working across sectors to find ways of preventing violence rather than simply treating its effects. There is little doubt that when infants fail to develop their ability to empathise and form attachments to others, there is an increased risk that they will be involved in violence in later life.

Communicable disease respects no boundaries and the past year has highlighted the need for high vigilance in dealing with problems such as E. coli O157. Diseases of animals such as avian flu, foot and mouth disease and other, more esoteric infections have implications for human health and are providing new challenges for Scotland. Immunisation programmes continue to expand and it is essential that we recognise their importance despite the absence of diseases which they are designed to prevent.

I believe that new insights into the way that health is created have emerged over the past few years that are very significant. These insights offer Scotland the opportunity to take the lead in developing new approaches to health development and improvement.

I look forward to working with you and colleagues in the Scottish Government to turn this vision into a reality.

DR HARRY BURNS
Chief Medical Officer
November 2007
chapter 1
smoking and health – progress in Scotland

Estimates of smoking prevalence in the adult population (aged 16 and over) in Scotland by Community Health Partnership, 2003/04 (%)

| Adult Smoking | <20.0% | 20.0 to 24.9% | 25.0% to 29.9% | 30.0% to 34.9% | 35.0%+ |

NHS Health Scotland, ISD Scotland, ASH Scotland
Introduction

Over 13,000 people in Scotland die every year as a result of smoking with deaths due to coronary heart disease, stroke, lung cancer, chronic obstructive lung disease and a range of other diseases. It is estimated that 1,500 – 2,000 of these deaths are due to environmental tobacco smoke. Significant progress has been made in tackling smoking in Scotland. However, approximately a quarter of all Scots still smoke and people living in the most deprived areas of Scotland are more than twice as likely to smoke as those who live in the least deprived areas. Rates of smoking vary considerably between geographical areas. The recent Scottish smoking atlas estimates smoking rates in Community Health Partnerships in Scotland range from 18.6% to 37.5%.

2006 was a particularly significant year for tackling tobacco-related harm in Scotland as restrictions on smoking in enclosed public places came into effect on 26 March.

Progress in tackling smoking

The last 10 years have seen a number of important policy documents and strategies. These include wide-ranging actions on prevention, education, protection, controls and reducing health inequalities.

In 1998 Smoking Kills, the UK White Paper on tobacco, set out a range of measures to tackle tobacco-related harm. In addition to UK action on tobacco advertising, tobacco taxation and smoking in the workplace, it provided a framework for action in Scotland. New funding was provided over 3 years for work on smoking prevention and the development of specialist NHS smoking cessation services. In 1999 the Scottish Public Health White Paper “Towards a Healthier Scotland” confirmed tackling tobacco as a Government priority and set targets for reducing smoking prevalence. In 2001 nicotine replacement therapy became available on NHS prescription adding further impetus to smoking cessation services.

In 2003 the Scottish Executive re-established a Tobacco Control Strategy Group to coordinate action across the national agencies and to assess tobacco control policy. Improving Health in Scotland: The Challenge published later that year, made tobacco a special focus topic and committed to review tobacco control policy in Scotland. Following that review, the Scottish Executive launched an action plan, A Breath of Fresh Air for Scotland, in 2004. This set out proposals for a national debate on actions to minimise the impact of second-hand smoke. Following national consultation, the Smoking, Health and Social Care (Scotland) Bill was presented to the Scottish Parliament in December 2004. The Bill set out comprehensive legislation prohibiting smoking in virtually all enclosed public places. It received Royal assent in August 2005 and was enacted on 26 March 2006.

Smoking causes over one in five of all deaths in Scotland and is the leading preventable cause of ill-health and premature death.
Impact of the smoke-free legislation

A comprehensive evaluation has been set up to examine the health, behavioural, socio-cultural and economic impacts of Scotland’s smoke-free legislation using a combination of analysis of routine health, behavioural and economic data and 8 specially commissioned studies\(^5,6\). Full results will be available in 2008 but the preliminary findings are very positive.

Impact on air quality

A study of air quality in a random sample of 41 pubs in two Scottish cities found an 86% reduction in PM\(_{2.5}\) particles after implementation of the legislation\(^7\). PM\(_{2.5}\) is small particulate matter of less than 2.5 microns in diameter. Ninety percent of PM\(_{2.5}\) comes from tobacco smoke. The data on air quality indicate high levels of compliance with the legislation and are consistent with national compliance data from Environmental Health Officer inspections\(^8\). Of 67,219 inspections of pubs and other workplaces conducted to the end of 2006, 98.8% were compliant with the smoking regulations.

Early impact on health

Reductions in second-hand smoke exposure have been accompanied by early improvement in health. A study of 77 non-smoking bar workers in Dundee showed a reduction in respiratory and sensory symptoms and an improvement in lung function one and two months post-legislation\(^9\), although seasonal factors cannot be ruled out as an explanation. Another study (CHETS) surveyed 2500 primary school children before and after the legislation and measured cotinine, a marker of exposure to tobacco smoke\(^10\). Children reported no shift of second-hand smoke exposure from public places into homes following the legislation, and there was a fall in cotinine levels. In the Health Education Population Study, adults reported no change in exposure to smoke in homes and a reduction in exposure in public and work places\(^5\). Again, the reduced exposure was confirmed by falls in cotinine levels.

There is also some evidence of improvement in health at a population level. Recent research suggests that second-hand smoke increases inflammation in blood vessels and increases the stickiness of blood cells, making it easier for blood clots to block arteries and cause heart attacks. In common with other countries, emergency hospital admissions for heart attacks have been falling for some time in Scotland. Heart attack admission rates fell at an average rate of 3.8% per year in the ten years before the smoke-free legislation. For the six months following the implementation of the legislation the annual rate of decline increased by more than six-fold to 25%\(^11\). A separate study of people admitted to coronary care units in 9 major Scottish hospitals found a 17% fall in admissions in the 10 months after the legislation compared with the corresponding 10 months in the preceding year, with a larger reduction among non-smokers.\(^11\) These changes are very encouraging, but it will be important to confirm that they are sustained over a longer period.
Impact on use of smoking cessation services

There were 46,466 recorded quit attempts during 2006 and an estimated 4.3% of smokers in Scotland made a quit attempt with an NHS smoking cessation service. Statistics on smoking cessation product prescribing show seasonal variation, with the first quarter of each year being the peak period. There was an especially sharp rise in prescribing in the run-up to the introduction of the smoke-free legislation, in March 2006. Calls to SMOKELINE, the national quitting-smoking helpline, rose in the run-up to the legislation, peaking at 6,593 in March, falling to 2,658 calls in April, then reverting to the levels of previous years.

Smoking prevalence

Smoking prevalence for the adult population aged 16+ was estimated as 25.0% in 2006 compared to 26.2% in 2005.

For children, 69% of 13 year olds in 2006 reported they had never smoked compared to 59% in 2004. For 15 year olds the corresponding improvement was from 39% in 2004 to 47% in 2006. In 1996, 30% of 15 year olds reported that they smoked regularly. In 2006 this figure was down to 12% for boys and 18% for girls.

Support for the smoking ban

There is strong and increasing support for the legislation. A repeat cross-sectional survey of Scottish adults aged 16-74 years found that between September-December 2005 and September-December 2006, support for the legislation rose from 88% to 93% among non-smokers and from 53% to 65% among smokers.

Future developments

As we look ahead there is an increasing focus on the challenge of preventing young people from taking up smoking. In 2006 a Smoking Prevention Working Group was set up as a sub-group of the Scottish Ministerial Working Group on Tobacco Control. Towards a Future without Tobacco, published in November 2006, contained 31 recommendations about reducing availability, discouraging young people from smoking, further research and new targets for 13 and 15 year olds. A key recommendation was the proposal to raise the minimum age of purchase from 16 to 18 years of age. The Working Group also recommended a comprehensive reassessment and reform of education on tobacco, alcohol and other drugs in Scottish Schools. A national consultation on the recommendations is planned in 2007.

Significant progress has been made in tackling smoking in Scotland in 2006. Considerable challenges remain, in particular in preventing young people taking up smoking, but the potential health rewards are huge.
chapter 2
the health of children: an overview
Last year’s Chief Medical Officer’s report emphasised the importance of children’s health and well-being, not only to our current child population, but to our whole nation. There are immediate effects of poor child health in terms of the considerable strain it puts on parents and carers. Even more important is the lifelong impact of poor physical or mental health in the early years of life on the potential that child might have achieved.

We must think of health and well-being holistically as not just the absence of disease, but the positive presence of physical, mental and emotional well-being, the capacity to function independently in society, form satisfying relationships, feel a purpose in life, cope with adversity and have hope and resilience. A child’s potential can be represented diagrammatically as in figure 1. Throughout life factors act to diminish that potential, whilst others act to promote and protect it. Some examples are illustrated – readers will be able to think of many more.

As a society, we need to strengthen promoting and protecting factors and, wherever possible, remove or reduce the effects of the adverse ones – and we need systems to monitor progress in both, and in eventual outcomes.

Subsequent chapters cover a number of important areas for child health, reporting progress, setting out the potential for further improvements, and identifying some gaps in our current knowledge.

**Inequality and child health**

It is important to appreciate, when reading these individual chapters, that the child populations involved are not discrete. The risk factors for, and therefore the experience of, these health problems cluster in vulnerable groups. For example maternal depression may impact on an infant’s development even when that mother has very strong family support, a secure income, good housing, and prompt support from primary care and specialist mental health services.

Depression in a single woman, dependent on benefits and living in poor housing, with no support from partner, family or friends, and no motivation to contact health services (or even a barrier to this such as language or disability), can result in risks to her child’s immediate physical well-being, as well as long-term development. A child born into disadvantage is very much more likely than his or her more privileged peer to suffer from not just one but several, or all, of the subsequent chapter topics: infections, poor nutrition, mental health problems, poor educational attainment, unintentional injuries and substance misuse.

**The importance of attachment and parenting**

In the early months and years it is crucial that each child has the opportunity for a warm reciprocal relationship with a small group of special adults who respond to the child’s varying needs for stimulation or soothing, shape his or her later...
relationships and emotional self regulation, and give the capacity to learn and develop empathy.

The most dramatic changes in brain structure that take place during the early years of life are seen in the area involved in social behaviour. There is increasing evidence that children's early experiences can influence the way the brain develops.

Creating a favourable environment for Scotland's babies, toddlers and preschool children is therefore a key for society as a whole and the health service has an important part to play. Parenting programmes serve an important purpose in ameliorating some of the effects on a child of a family's vulnerability, but further efforts are required to make families less vulnerable in the first place, for example by early recognition, support and treatment of mental health or substance misuse problems, improved housing and neighbourhood environments, and improved job opportunities.

Child poverty

Child poverty damages both those who suffer it and society more generally: inequity breeds crime, vandalism, fear of crime, dependency.

The recent Poverty in Scotland 2007 report highlighted the 240,000 children living in Scotland who are part of households with an income so much lower than the typical income for households in Scotland that we can consider them to be living in poverty (60% below median equivalised income). The same report also showed that nearly one in four children in Scotland (23%) live in relative poverty and almost one in eight children in Scotland (13%) live in absolute poverty. Although child poverty is still at an unacceptably high level in Scotland, it is reassuring that since 1996/97 there has been a reduction in child poverty from 33% to the 23% of today. Yet the high level of poverty suggests that thousands of our children continue to live in circumstances that have implications for their current and future health.

Figures from the 2001 Census showed that lone-parent households now make up 25% of all households with children in Scotland. In some deprived areas of Glasgow the figure is 50%. The 2002 Scottish House Condition Survey (Newhaven Research) estimated 33% of properties in Scotland to be in “urgent disrepair”, and 1% (approximately 20,000 properties) below tolerable standard. The University of Glasgow Centre for Drugs Misuse Research estimated that in 2003, 6,142 children in Glasgow City were living with a parent with a substance misuse problem. Among other problems caused by problem substance use, intoxication and withdrawal symptoms are important causes of poor emotional relationships between parents and children.

It is estimated that in 2003, 6,142 children in Glasgow City were living with a parent with a substance misuse problem.
Recent policy focus on assessing and addressing needs

A number of National Policies developed or implemented during 2006 aim to set the holistic analysis of need, or risk, in context, and to direct the provision of children’s services appropriately: The Education (Additional Support for Learning) Act, Health for All Children 4, and Getting it Right for Every Child.

The implementation of Health for All Children 4, is supported by a National Information Technology system, from which some early, provisional data are available. The key summary indicator, known as the HPI, is established by 2-3 months of age, after a process of assessment of risk and protective factors, involving the family, the health visitor and any other professionals involved in providing services to the family. The health visitor then records the HPI on the national Child Health Surveillance Programme – Preschool system. If it is concluded that the infant and family’s needs are “core”, further contacts will be scheduled for only routine immunisations and screening (such as vision screening in preschool year, height and weight at school entry). If, however, the infant and family’s needs are considered to be “additional” or “intensive”, then additional services and support are provided for that child and family. As the child grows older and other services such as childcare and education become involved they must work together to maintain up-to-date assessment of need of that child and family, and continue to provide additional services to meet the extra needs.

Whilst the use of HPI is still at an early stage, and not all services are yet using it, figures already show that in areas with a high concentration of deprivation, such as Greater Glasgow, higher proportions of infants warrant additional or intensive support in order to achieve their potential. However, one of the authors of the Health For All Children 4 report (David Elliman, personal communication), has stated that, if assessment is carried out appropriately, he would expect at least two-thirds of infants in a multiply-deprived urban population will be found to have additional or intensive support needs. There may be a temptation to set thresholds for additional services at the level based on our current pattern of services available. Only if we truly quantify need can we develop the services to meet it. We know that very significant numbers of Scotland’s children are failing to meet their potential in all manner of ways, and hence so too is our nation. In those areas with greatest need due to high levels of social deprivation we are probably setting our thresholds too high for those in greatest need. If we fail to target our services and continue to provide only our current level of service to these children and their families, we cannot hope for an improvement.
chapter 3
early years, children and young people:
mental health
Introduction

In Scotland at any one time about 10% of children and adolescents will have a mental health problem of sufficient severity to affect them on a daily basis – the rate rises with age.19

Influences in very early life for future mental health

Babies are born helpless. Their overriding biological drive, however, is to establish and adapt to the relationship with their parents. That early parent-infant relationship (or good infant mental health) is critical to child development both within the family and in society. Increasing evidence highlights the importance of antenatal maternal health and wellbeing to the later social, emotional and cognitive development of the child.20

The structure of the human brain is highly malleable at birth. Development in key areas of the brain continues from early in the womb until adolescence, but the antenatal period and first years of life mark the period of most rapid change. Infant brains develop most rapidly in the first year of life, but development is selective and purposeful. The infant’s instinct is to seek out relationships and the parent’s role is in responding and enhancing the relationship. “The instruction to attend to the primary caregiver is genetic, the outcome depends on what happens.”22 The process is often referred to as “attachment”. The infant has no choice in the attachment relationship formed. He or she must adapt best to what is (or is not) provided by the parent. Good attachment helps the infant to develop the capacity to balance and control feelings, deal with stress, be adaptable and to form future relationships.

Infants who develop a secure attachment can be distinguished from others at 1 year by their ability to show greater positive interactions during play. Insecurely attached infants are at greater risk of problems in emotional development, and children with very poor attachment experiences are at greatest risk of failure to thrive in early years and behaviour problems, lowered self-esteem and schooling difficulties in childhood and adolescence. Children who have had poor attachment experiences are overrepresented in social services referrals and youth justice systems. They are also more likely to suffer anxiety and depression in adult life. In one long-term follow-up of children suffering abuse in the first years of life, 90% had at least one psychiatric diagnosis by age 17.24

Factors influencing attachment include features in the parent, infant and the environment. Poverty is the most important broad risk factor predicting later life maladjustment. For the parent, her ability to provide secure attachment is influenced by her own experiences of being parented, mental health or addiction problems, and domestic violence. Infant factors include prematurity, disability and illness.

Biological mechanisms linking early life to future adult mental health problems

In the past few years, attempts have been made to explain the biological links between adverse and chaotic early life and subsequent high risk of poor physical and mental health. A number of scientists have pointed out the strong relationship between deprivation, the body’s hormonal response to stress and subsequent risk of ill health. An intriguing hypothesis has emerged which owes much to the work of individuals such as Sir Michael Marmot in London, Professor Bruce McEwen in New York and several other groups around the world whose studies have produced supporting evidence for a biological link.
As a baby develops in its mother’s uterus, its development is influenced by the biochemical signals it receives from its mother’s blood. The suggestion is that an expectant mother living in adverse circumstances will produce high levels of stress hormones which will influence the baby in a number of ways. McEwen has carried out a number of complex and elegant studies which show that exposure to high levels of mother’s stress hormones antenatally, together with over production of its own stress hormones after birth, can influence a baby’s brain development in ways which predispose the infant to increased risk of physical and psychological illness.

Development of disordered mental health

When a child exhibits a mental health disorder, abnormalities in areas of behaviour, development, relationships and emotions may be communicated in subtle ways. Assessment needs to ascertain the impact of these factors on the child and family’s well-being, any risk to the child or others, the strengths that the child and family have to deal with the difficulties and the explanatory model that the family uses to understand the difficulties. The presence of predisposing, precipitating and perpetuating factors are important in assessing why there is a disorder presenting in any child at a particular time. Also of great importance is the presence or absence of any protective factors that may reduce the likelihood of a disorder developing or improve outcomes for the child. For example, a young person with a genetic predisposition towards psychotic illness may have an adolescent first episode precipitated by stressful life events and substance misuse. High expressed emotion within the family may perpetuate the symptoms while high verbal IQ and hence good insight may be a protective factor.

A traumatic event (e.g. abuse experiences) can influence the developing brain and damage the developing pathways in such areas as emotion and memory so that memories become intrusive and disturbing and cause severe emotional reactions. Physical and mental health disorders in parents can cause disruption in child development mediated through the development of insecure attachments. The lifelong ability to relate properly to others can then be impaired and this will disrupt the later ability to form relationships, to work, deal with adversity and also predisposes to mental disorders. An insecurely attached child is more vulnerable than others to be the victim of traumatic experiences. The development of disorders such as depression and psychosis can be associated with earlier trauma.

Children who require to be looked after and accommodated are among the most developmentally vulnerable and have a very high rate of mental health disorders. These children are less likely to develop protective factors such as good peer relationships because they may have particular difficulty forming new attachments, attachment figures may be unavailable, particularly in residential care, placements are often changing and there can be repeated rehabilitations into chaotic homes with variable competencies in parental care. Disruption in attachment relationships can result in poor regulation of emotions in later life. Young people who have problems with regulation of their emotions may turn to drugs and alcohol to provide the soothing that has not been available through attachment relationships.
Meeting the mental health care needs of infants, children and young people

There is a continuum from mental health to mental ill health in childhood and adolescence and there is a complex interaction between a child (temperament, nature, genetics, intelligence, experience, etc.) and his or her circumstances. Finding out why a child or adolescent is suffering from mental health difficulties and influencing change is an important role of Child and Adolescent Mental Health services (CAMHS). Promoting good maternal mental health and early parent-infant attachment, to ensure optimal early infant development, is an important role of Perinatal Mental Health Services (PMHS).

The work of perinatal mental health teams

The Mental Health (Care & Treatment) Act, Scotland (2003) recommended the establishment of suitable facilities to admit mentally ill mothers with babies, and the development of linked specialist community and maternity liaison services. In Scotland, tiered services now exist in a number of health board areas. They assess and treat women with, or at high risk of developing, significant mental illness in pregnancy or the postnatal period, to facilitate and enhance mother-infant relationships where the mother suffers from mental illness, and to support partners and other family members.

Postnatal depression and puerperal psychosis are thought of as typical, but women may suffer any form of mental disorder during pregnancy or postnatally, and increasing numbers of women with severe enduring mental illness are now becoming parents. Early effective treatment of the mother is essential to improve child development, but evidence suggests that there is a need to specifically address the parent-child relationship, in addition to treating the mother, to maximise child outcomes and good infant mental health. Disciplines in perinatal mental health teams include:

- psychiatrists
- mental health nurses
- clinical psychologists
- social workers
- nursery nurses
- health visitors and
- occupational therapists

There are close links to primary care and maternity services. Interventions for the mother are biopsychosocial in approach, and a range of techniques, including infant massage, video interaction feedback, play therapy and education on child development are used to enhance parent-child attachment. Regional specialist inpatient mother and baby mental health units bring these interventions together for the most severely ill women, allowing them to continue to interact with their babies while recovering from illness.

The work of child and adolescent mental health teams

Many children who attend a child and adolescent mental health team will have more than one area of difficulty. Mental health problems and other developmental problems such as speech and language or motor difficulties are often inextricably linked. Understanding child or adolescent disorder requires a comprehensive consideration of all contexts. Children with complex developmental problems, such as Autistic Spectrum Disorders, Attention and Hyperkinetic Disorders and Tic Disorders are also more at risk of developing problems recognised in adolescence such as Eating Disorders. For example, eating disorders can be formulated in social and developmental terms but they have a very high medical morbidity and huge impact on body development, linear growth, bone density and secondary sexual characteristics. These children also have an increased risk of other psychiatric disorders such as depression, obsessive compulsive disorder with subsequent impact on social, emotional and academic development and achievement.

Children who require to be looked after and accommodated are among the most developmentally vulnerable and have a very high rate of mental health disorders.
What constitutes a child and adolescent mental health team?
CAMHS services take account of the developmental stage of the child. Professionals often develop expertise in working with a particular age group with particular developmental needs. Examples include infant mental health clinics focusing on parent-infant interaction, and adolescent psychiatry that takes a particular account of the maturational tasks of adolescence such as development of independence and establishment of gender role. CAMHS services aim to assess, treat and prevent disorder. An integrated approach to services from Health, Social Work and Education is essential to meet the child's needs.

The disciplines required within CAMHS teams include:
- Psychiatry medical staff
- Mental Health Nursing
- Clinical Psychology
- Psychotherapy
- Occupational Therapy
- Dietetics
- Speech and Language therapy
- Family Therapy
- Other health staff such as Paediatric Neurology, Physiotherapy and Creative Therapies
- Social Work
- Teachers
- Other Non-health Staff

Highly specialised services
These provide services for children and young people with a greatly increased vulnerability for mental health disorders. These may include:
- Learning Disability CAMHS
- Forensic CAMHS
- Looked after and accommodated Services
- Inpatient Units
- Academic CAMHS

What interventions work to improve child and family outcomes?
Interventions aimed at promoting good parent-infant relationships may be universal (population-based) or targeted at high risk families and can be home or centre-based. Child-focused, goal-directed, well-structured interventions have the best outcomes. Such interventions are cost-effective\(^\text{38}\). However, no one approach suits all infants or families and several interventions targeted at high risk families are often necessary.

Measures that improve preparation for parenthood:
These include parenthood programmes in schools and using computerised dolls. For new parents, the Solihull Approach trains health visitors to detect and improve parent-infant relationship difficulties, and improves health visitor confidence in resolving behavioural problems. The Positive Parenting Programme (“Triple P”) is a further evidence-based intervention that enhances parents confidence and skills in managing child behaviour.

Examples of successful intensive interventions with high-risk families:
- **Abcderian Project (USA)**: high-risk families were offered intensive support in the first 5 years. At age 3 the intervention group had average IQ, outstripping the non-intervention group. They had significantly greater educational achievement at age 12 and their use of special educational services was halved.
- **Sunderland Infant Project (UK)**: health visitors used video feedback to help improve parents' sensitivity in parent-infant interactions, with different levels of intervention dependent on need. There was a reduction in insecure attachment.
- **Nurse Home Visiting Programme (USA)**: a series of studies using nurse home visiting in pregnancy and early years with vulnerable young mothers resulted in greater stability for the mother and less antisocial behaviour in offspring.
Progress in Scotland
Over the last four years, child and adolescent mental health services have developed in the context of the Needs Assessment Report on Child and Adolescent Mental Health. This major needs assessment used data from all frontline services in contact with children and adolescents including CAMHS, police, social work, education and primary care. Innovations in practice, such as the “New to CAMHS” training programme run by National Health Service Education for Scotland, and the development of Community Health and Social Care Partnerships aim to bring key agencies together to benefit children and their families. Other new developments include the building of a new 24-bed adolescent unit in the West of Scotland due to open in Autumn 2008, and planning of the expansion of inpatient services nationally from 44 to 56 inpatient beds by 2010 (Child Health Support Group Inpatient Working Group 2004).

Over the last three years, specialist perinatal mental health services have been developed in the west, east and north of Scotland. Dedicated inpatient units, in Greater Glasgow & Clyde (opened in 2004) and Lothian (opened in 2007), provide regional services to almost all of Scotland. Primary care and the voluntary sector have also been active in recognising and providing for the particular needs of this group.

Further examples of Scottish programmes
- **Mellow Parenting and Mellow Babies**: group approaches for vulnerable families where parent-infant interaction problems have been identified. Behavioural interventions and video feedback are used. Early results suggest improved mother-infant relationship and improved maternal depression in the Mellow Babies intervention.
- **Infant Mental Health Short Life Working Group (HeadsUp Scotland, 1996)**: summarised existing evidence for improving infant mental health at population level and for high-risk families and made recommendations for the Scottish context.
- **Sure Start Scotland**: promotes a range of local interventions across Scotland.
- **LAAC training**: Basic mental health training for those working with looked after and accommodated children.

What further research is needed?
- Exploration of biological mechanisms that link early life adversity to adult disease.
- Assessing the impact of maternal mental disorder and treatment on the developing fetus.
- Good psychopharmacological research is vital.
- Sound epidemiological research to understand the interplay between mental health disorders and their genetic and environmental aetiologies.
- A model of evaluation of complex intervention in CAMHS from qualitative investigations to randomised controlled trials to ensure that new innovations for children and their families are useful and cost-effectiveness in a Scottish setting.

Summary
Pregnancy and the first years of life have a huge influence on the future mental health of the child and future adult. Adverse events during this time can lead to irreversible problems for future ability to cope with everyday life and increase the probability of future poor mental and physical health. Such problems can then run on across generations. It is essential that we recognise the need to invest in the health of infants, young people and children as action by effective Child and Mental Health Services and other agencies can reap substantial long-term rewards for our future child and adult populations.
The use of tobacco, alcohol and other drugs by parents and children

Awareness has been growing in recent years of the immensely damaging direct and indirect effects of tobacco, alcohol and other psychoactive drugs on very large numbers of children in Scotland. Whilst tobacco use is declining, alcohol consumption has been increasingly, particularly among women and young people generally. In the last 30 years, the misuse of a number of other psychoactive drugs has become much more widespread. These include cannabis, heroin, cocaine, benzodiazepines, amphetamines and solvents and other volatile substances.

Impact on children

Psychoactive drug use can harm children in a number of different ways. These include: short and long-term effects on development due to maternal use during pregnancy; exposure to second-hand tobacco and other smoke; the consequences for the child’s physical, emotional and social development of parental behaviour directly or indirectly influenced by drugs; acute intoxication due to accidental ingestion of drugs; the impact on children of alcohol and other drug use in the wider community; and early tobacco, alcohol and drug use by children themselves.

How many children are involved?

The number of children involved is substantial. Although the proportion has been falling, recent surveys suggest that about 25% of women in Scotland smoke regularly during pregnancy, ranging from 9% of the most affluent to 42% of the least affluent fifth of the population. This equates to around 12,500 babies each year. A similar number of women report they drink alcohol during their pregnancy. It has been estimated that between 41,000 and 59,000 children have at least one parent who is a problem drug user and around 70,000 with at least one parent who is a problem drinker. The most recent survey of 13 and 15 year old children in Scotland found that among 13 year olds, 4% were regular cigarette smokers, 14% had had an alcoholic drink in the last week and 13% had used an illegal drug in the past year; among 15 year olds, 15% were regular smokers (12% of boys and 18% of girls), 36% had had an alcoholic drink in the past week and 23% had used an illegal drug in the past year (usually cannabis). Regular cigarette smokers were much more likely than non-smokers to have used illegal drugs.

Predisposing factors

Parental psychoactive drug use is much more common among people in more disadvantaged circumstances, but by no means exclusively so. Children who start using tobacco, alcohol or other drugs when in their early teens or even younger are more likely than others to have had a disturbed childhood; to live with a single parent or step-parent or parents who themselves use drugs; to be less closely supervised by their parents; and to be involved in truanting or juvenile offending. Those who start early are more likely to become involved in multiple drug use and develop drug dependencies which may continue into adulthood, often with serious consequences for their health and well-being. Whilst early drug use occurs across the social spectrum, young people who subsequently develop serious drug problems are much more likely to be from disadvantaged families or live in less affluent areas.
Evidence for harm

There is a growing amount of evidence of the harm to children caused by parental smoking. Smoking during pregnancy can affect the child in a variety of ways (See Box). In addition to the physical effects, a number of studies point to a link between maternal smoking and behavioural problems during childhood and later life. An important recent study from Denmark found that the more a woman smoked during pregnancy, the lower was her son's IQ at 18, even when the mother's social status and education and other factors were taken into account. This suggests that the mental development and life prospects of thousands of children in Scotland are being damaged by maternal smoking during pregnancy.

Health problems of children of smokers

Exposure during pregnancy
- Spontaneous abortion
- Premature birth
- Low birth weight
- Still birth
- Sudden infant death after birth
- Attention deficit disorder and other behavioural disorders after birth
- Lower mental ability and academic achievement
- Type 1 diabetes

Exposure during infancy and beyond
- Middle ear infections
- Lower respiratory tract infections
- Asthma and wheezing
- Sudden infant death

Heavy drinking during pregnancy can lead to fetal alcohol syndrome - growth retardation, abnormal facial features, intellectual impairment and other abnormalities. It is less clear what effect moderate levels of alcohol use during pregnancy may have on the baby but there is sufficient concern for the British Medical Association recently to recommend that women should avoid alcohol altogether. Parental problem drinking can cause many difficulties for children, leading for example to violent parental behaviour, financial problems and neglect.
Many problem drug users use large quantities of different drugs either simultaneously or consecutively and may also have a poor diet. If pregnancy occurs in these circumstances, it is difficult to determine their combined impact on the fetus but it is unlikely to be anything but harmful. Heroin and other opiates, cocaine and benzodiazepines can all cause severe neonatal drug withdrawal symptoms which can take weeks or months to resolve. After birth, the child may be exposed to many sustained or intermittent hazards as a result of parental problem drug use. These include poverty; physical and emotional abuse and neglect; dangerously inadequate supervision; intermittent or permanent separation, inadequate accommodation and frequent changes in residence; toxic substances in the home; interrupted or otherwise unsatisfactory education or socialisation; exposure to criminal adult behaviour and social isolation.

A large proportion of children in Scotland who are in residential care or otherwise looked after are in this position as a result of parental problem drinking or drug use. In 1998/99, parental drug misuse was a major factor in 40% of Child Protection orders in Glasgow and in 2000 parental drug and alcohol misuse was cited in 70% of child protection case conferences in Dundee. Within an enlightened and well thought out strategic framework, the NHS, social services and the voluntary sector in Scotland have all contributed to a range of new services and professional training opportunities designed to help this most vulnerable group.

Nevertheless, the huge numbers of children involved, the sensitivities around intervening in family life and the limited effectiveness of many interventions mean that services are unable to prevent severe harm to many children. Efforts to discourage women from using tobacco, alcohol and other drugs during pregnancy and the continuing development of services and other measures to minimise the impact of parental drug use on children should thus be given a high priority.

In terms of policies, professional awareness and innovative responses, the UK in general, and Scotland in particular, have done much to address the impact of parental drug and alcohol misuse on children. Within a large proportion of children in Scotland who are in residential care or otherwise looked after are in this position as a result of parental problem drinking or drug use.
chapter 5
nutrition
Early years, children and young people: nutrition

The Scottish national diet has been the focus of increasing Government attention over the last two decades and has been repeatedly identified as a key priority. This chapter focuses on 2 key areas: Infant feeding and the eating patterns of Scottish school children.

Infant feeding

Good nutrition, particularly amongst 0-2 year olds, is a foundation for future health. This period is critical for infants and the potential consequences of poor nutrition at this time can include death and illness. It can also cause delayed mental and motor development, impaired intellectual performance and future work capacity.

Optimal nutrition is exclusive breastfeeding for around 6 months and then continued for up to 2 years and beyond with the appropriate introduction of nutritious weaning foods. Breastfeeding protects the infant from future diseases such as gastroenteritis, otitis media, urinary and upper respiratory tract infections, obesity, type 1 and 2 diabetes and high blood pressure.

The Scottish National breastfeeding target set in 1994 was that, by the year 2005, more than 50% of women should still be breastfeeding their babies at 6 weeks of life.

The present position of breastfeeding in Scotland

In the Infant feeding survey 2005, three-quarters of all mothers had given formula milk by the age 6 weeks rising to 92% by 6 months. Just under half of the mothers were not following key recommendations for preparing formula milk and just under half who were using formula milks were not using the recommended milks. More positively there has been a marked trend towards the later introduction of solid foods.

Breastfeeding* at the 6-8 Week Review by NHS Board of Residence and Year of Birth

Most of Scotland’s NHS Boards record information on infant feeding as part of a routine child health surveillance system (CHSP-PS). These Board areas cover 84% of Scotland’s pre-school population. The data for 2006 show:

- 44% of mothers were recorded as breastfeeding at the health visitor’s first visit (around 10 days) and 36% as breastfeeding their babies at 6-8 weeks. This compares with 45% and 37% respectively in 2005.
- A wide variation in breastfeeding rates, varying in 2006 from 31% in NHS Lanarkshire to 59% in NHS Lothian.
- All breastfeeding rates at 6-8 weeks were lower than the national 50% target.

Older mothers are more likely to breastfeed than younger mothers and breastfeeding rates are higher in more affluent areas.

* Exclusively breastfed or fed mixed breast and bottle.

These figures relate to the portion of NHS Highland inherited from former NHS Argyll & Clyde on 01/04/06 (i.e. Argyll & Bute local council area).

Data for 2006 are provisional.

Source: ISD Scotland

CHSP-PS

February 2007
Provisional figures for 2006 show a slight decrease in breastfeeding rates at 6-8 weeks from 2005 levels. However, rates have risen overall since 2001.

Data on infant feeding at 5-7 days of age show a worrying increase in supplementation of breastfeeding by formula and other milks in the early days and a fall in overall breastfeeding rates. The greatest decline in breastfeeding is in the first 72 hours and early supplementation of breastfeeding is strongly associated with early discontinuation of breastfeeding. A recent systematic review found that breastfeeding initiation and duration rates in the UK were amongst the lowest in Europe, particularly in the most deprived socio-economic groups. Reasons suggested include society and cultural norms as well as clinical problems, organisation of health services and lack of preparation of health professionals and others to support breastfeeding effectively.

**Action to improve breastfeeding rates**

Breastfeeding is encouraged at many levels. For example: National health promotion adverts; policies in NHS maternity hospitals and primary care teams working with individual women and community groups. NHS Board Breastfeeding Strategy Groups, in particular, support a wide range of innovative work such as improving capacity and capability of health professionals through training, supervised clinical practice and implementing the UNICEF UK Baby Friendly standards.

Clinicians, health promotion experts, local authorities and voluntary organisations have worked with local communities to train peer volunteers to increase the public’s acceptability, knowledge of and confidence in breastfeeding. Other partners in the community deliver projects such as the Glasgow “Breastfeeding Friendly Nursery” that promotes breastfeeding in the pre-5 setting.

**National progress**

Key areas of a new National Infant Feeding Strategy being developed include:

- Increasing both initiation of and duration of breastfeeding
- Minimise the risks of formula feeding
- Supporting good weaning practices
- Increasing public knowledge and acceptance of breastfeeding
- Raising awareness of legal rights for infant feeding
- Ensuring integrated, multi-sectoral support

- In 1996 only one NHS Board had a breastfeeding strategy, in 2005 only one did not.
- In 1993 there were four breastfeeding support groups – there were 150 in 2005.
In 1994 there was only one peer support programme, increasing to 11 by 2005.

58% of Scottish babies are now born in a UNICEF “Baby Friendly” accredited hospital compared with 34% in Wales and Northern Ireland and 9% in England.

The University of Paisley is the first University in the World to receive a UNICEF UK Baby Friendly award.

The Breastfeeding (Scotland) Act 2005 makes it an offence to prevent or stop a person in charge of a child under the age of 2 years, who is otherwise permitted to be in a public place, from feeding milk to that child. This legislation is the first of its kind in the UK and Scotland is one of the few countries worldwide to enshrine such protection in national legislation.

The challenge ahead

There has been a great deal of work on infant feeding over the past 10 years. However, breastfeeding rates are still disappointingly low and we still have a lot to do. If we are to increase breastfeeding rates we need a huge shift in social and cultural attitudes and there is some evidence that this is happening. Research carried out following the first Scottish breastfeeding TV campaign in 2001 showed that people were much more aware of the benefits of breastfeeding and most were able to name some of these benefits. However there are apparent difficulties in translating this understanding into providing optimal nutrition for infants in Scotland.

The eating habits of 11, 13 and 15 year olds in Scotland between 1990 and 2006:

Eating well is a long-term investment in health. Habits formed in childhood and adolescence are thought to track into adulthood influencing the risk of future chronic diseases. As children grow older they have more control over their food choices with greater opportunities to choose and buy their own food and drinks outside the home. There are many influences on food choices including exposure to foods in the home and at school, taste preferences, affordability, advertising and personal concerns about weight and body image.

This following section describes the eating habits of adolescents in Scotland in their final year of primary school and in second and fourth years of secondary school. They are aged around 11.5, 13.5 and 15.5 years. The data are from the Health Behaviour in School-Aged Children (HBSC): WHO Collaborative Cross-National Study in Scotland conducted by the Child and Adolescent Health Research Unit (CAHRU), the University of Edinburgh. Scotland has participated in 5 consecutive HBSC surveys carried out every 4 years in the spring since 1990.

International comparisons have highlighted the poor diet of Scottish schoolchildren relative to Europe and North America. Young people in Scotland have high levels of consumption of soft drinks, sweets, chips and crisps.

Concerted efforts in Scotland to improve children’s experiences of food in school include implementation of Hungry for Success and more recently the Schools (Nutrition and health promotion (Scotland) Bill. These aim to increase access to healthier food choices within school by setting strict nutritional standards.

The following important findings are examples from the HBSC survey.

Breakfast consumption

Breakfast is recognised as an extremely important meal for young people nutritionally but also for its support of cognition and learning. Eating breakfast every school day declines with age. Seventy-seven percent of 11 year olds eat breakfast compared with 51% of 15 year olds. There is no gender difference at age 11 but at ages 13 and 15 girls are less likely to eat breakfast regularly than boys. Between 1990 and 2006 there has been a gradual decline in eating breakfast every day, apart from a small increase between 2002 and 2006 among girls.
Lunch on school days

Pupils were asked what they do for lunch on school days for the first time in the 2006 survey. Over 90% of 11 year olds eat a packed lunch or a school dinner and 5% go home for lunch (see Figure 5.2). Among 13 and 15 year olds, the favoured option for lunch is buying it outside school from a local shop, café or van (39% and 42% respectively) followed by eating school lunches (32%; 28%) or a packed lunch (16%; 14%). Four per cent of 15 year olds claim not to eat lunch at all and 10% go home for lunch. A higher proportion of girls (38%) than boys (30%) eat school lunches and a higher proportion of boys (33%) than girls (23%) buy lunch outside.
Fruit and vegetable consumption

Fruit and vegetables are vital components of a healthy diet and protect against certain diseases such as heart disease and some cancers. Daily fruit consumption decreases with age especially between 11 and 13 years (51% and 36% respectively). A higher proportion of girls than boys consume fruit daily at all three ages (Figure 5.3).

Daily fruit consumption has increased overall since 2002 for both boys (31% to 36%) and girls (36% to 43%). Among 11 year olds daily consumption of fruit has increased by approximately 10% (boys: 37% to 46%; girls: 45% to 55%). Girls are more likely to eat vegetables daily than boys at all three ages but consumption does not decline with age, unlike fruit. There has been a small increase since 2002 in daily vegetable consumption among 11 year olds (from 34% to 39%) and 15 year olds (from 30% to 36%). A significant increase is found for boys at age 11 (29% to 35%) while for girls increases are found among 13 year olds (38% to 46%) and 15 year olds (30% to 41%). Overall, daily vegetable consumption increased from 33% in 2002 to 38% in 2006.

Sweets consumption

There is a slight increase in the daily consumption of sweets between ages 11 and 13 years. Approximately one-third of young people eat sweets every day and there are no gender differences at any age. Daily consumption of sweets has declined significantly since 2002 from 47% to 34% for boys and 43% to 34% for girls.

Figure 5.3 Eat fruit daily

![Bar chart showing daily fruit consumption by gender and age group.](source: HBSC Scotland 2006)
Consumption of cola/other sugary drinks

Regular consumption of cola and other sugary drinks can lead to tooth erosion as well as potentially contributing to obesity. It also takes the place of more nutritious drinks and food. Soft drinks are associated with reduced milk and nutrient intake and with increased calorie consumption, body weight, and type 2 diabetes. Sugary drinks are consumed daily by 32% of boys and 25% of girls. While there is a gender difference overall, it is only found in one of the three age groups: the 13 year olds. Daily consumption of these soft drinks does increase between P7 and S2 (23% to 30%) but then remains relatively stable.

Daily consumption of cola and other fizzy drinks has decreased very significantly between 2002 and 2006 from 47% of young people down to 28% of them. The presence of a separate question on diet soft drinks (not in the 2002 questionnaire) may have affected responses but is unlikely to have contributed to the apparent total decrease in daily consumption.

Consumption of diet cola/diet soft drinks

Diet soft drinks are consumed daily by 19% of young people and there are no age or gender differences. No comparisons can be made with 2002 as an item on diet drinks was not included.

Water consumption

Water is consumed daily by 47% of boys and 54% of girls. Thirteen and 15 year olds are less likely to drink water (47% and 50% respectively) than 11 year olds (56%). Overall, girls are more likely to drink water daily than boys. The daily consumption of water is more than double the daily consumption of diet soft drinks and nearly double the daily consumption of sugary soft drinks.
Overall changes

Young people’s eating habits have improved with increases between 2002 and 2006 in daily consumption of fruit and vegetables and decreases in daily consumption of sweets and sugary soft drinks. Breakfast consumption declined between 1990 and 2002 but this decline appears to have halted between 2002 and 2006. The uptake of school meals declines significantly between Primary 7 and Secondary School. There will be an opportunity to compare the eating habits of young people in Scotland with those from the 40 other member countries of the HBSC study when the HBSC international report is published in 2008.

Summary

Good nutrition in the first two years of life should be based on effective breastfeeding. The level of breastfeeding in Scotland is much too low and, despite effort and action over the past 10 years, remains low. More concerted action and support at a local level for mothers is needed along with a significant shift in social and cultural attitudes to breastfeeding in Scotland.

It is important to continue to monitor the eating habits of Scotland’s school children. The trends to date show a mixed picture with encouraging trends in a number of areas but some worrying trends such as declining uptake of school meals as children progress through school.
chapter 6
the impact of learning and education
The impact of learning and teaching on health

The Scottish Education system is the envy of many countries throughout the world. It has developed as part of a tradition in which innovation is promoted, intellectual debate and research stimulated and wealth created through employment. Such aspirations foster a climate in which the life chances of children and young people are enhanced. The links between learning and teaching in schools as an aid to health and well-being, and as a support for both learning and teaching are well established. Where young people have a positive educational experience, and have the opportunity to complete their education, a positive impact on health and social functioning is well accepted. Policy makers and practitioners have worked to ensure that health and well-being is established as a core aspect of school life.

Since devolution in 1999 the Scottish Government has developed a wide range of policies aimed at improving the health and wellbeing of children and young people within an education and social context. Our National Health: A Plan for Action, A Plan for change (2000) outlined the intention for all schools to be health promoting by 2007. The Scottish Health Promoting Schools Unit was then established in May 2002 and in 2006 a strategic national partnership engaging education and health collaborated to produce a strategic plan for Health Promoting Schools in Scotland.

At local level Education and NHS partnerships have developed approaches to health promoting schools within the context of Community planning and Integrated Children's Services. They recognise the important contribution schools make towards achieving the seven key outcomes for children which are: “All Scottish children and young people should be safe, nurtured, healthy, achieving, active, respected and responsible and included”. A number of important developments have contributed to achieving these outcomes:

Hungry for success was introduced by the Scottish Executive in 2003. It set out a vision for revitalising school meals services in Scotland and had a number of far-reaching recommendations connecting school meals with the curriculum as a key aspect of health education and health promotion. It established for the first time in the UK national nutrient-based standards for school lunches along with a mechanism for monitoring these standards.

The place of health promotion in schools and the importance of sound nutritional guidance to ensure accessible high quality food and drink within schools has now been enshrined in legislation with the passing of the Schools (Health Promotion and Nutrition) (Scotland) Act 2007. In February 2003, The Scottish Executive introduced Active Schools as a key element of the National Physical Activity Strategy. Curriculum for Excellence (2004) has highlighted four capacities for children to be developed through a revised curriculum for those aged between 3 and 18. This Curriculum aims to support children and young people to be:

- Successful learners
- Confident individuals
- Responsible citizens
- Effective contributors

By ensuring that children and young people are healthy we maximise their opportunities to fulfil these capacities.

There can be no doubt that there is policy commitment to improve the health and wellbeing of children and young people within the school and community setting.
In order to ensure that the health promoting school approach is integrated within the core business of schools all Local Authorities and NHS Boards in Scotland have developed an accreditation scheme which allows schools to benchmark themselves against agreed health promoting criteria. These criteria were developed to reflect the key characteristics contained within Being Well Doing Well\(^78\) and How Good is Our School?\(^79\).

### Health promoting criteria for schools

- Leadership and management
- Ethos
- Partnership working
- Curriculum, learning and teaching
- Personal, social and health education programmes
- Environment, resources and facilities

The World Health Organisation’s Commission on the Social Determinants of Health\(^80\) identifies access to and quality of education as critical factors for health.

This was reinforced at a symposium held in Copenhagen (2006) when the Organisation for Economic Co-operation and Development (OECD) and the Centre for Educational Research and Innovation (CERI) presented their findings. The proceedings of the symposium were published in a document entitled *Measuring the Effects of Education on Health and Civic Engagement*\(^81\). Chapter 4 of the report analysed the evidence and concluded that “there are substantial and important causal effects of education on health”. It further added that:

“These studies indicate the substantial public significance of the potential role of education in improving health.”\(^82\)

In the 2002 Health Behaviour in School-Aged Children\(^83\) study report, one section related to Scottish children’s school experience. In a summary of main findings it reported that:

- Young people with positive perceptions of school are more likely to report being happy and confident as well as having overall life satisfaction.
- A quarter of pupils in Scotland report that they like school a lot. This is similar to the average proportion across all 35 European and North American countries included in the HBSC study.
- Scottish pupils feel less pressurised by schoolwork than their English and Welsh counterparts.
- Pupils in Scotland are more likely to report that they find their classmates kind and helpful than in Wales and England.

These findings support the importance of the school to the health and well-being of children and young people in Scotland. Her Majesty’s Inspectorate for Education (HMIE) highlight the importance of health and wellbeing when undertaking inspections of schools and education departments. Within Scotland a number of case studies highlight the important contribution schools are making to improving the health and wellbeing of children, young people, school staff and the wider community.

1. **Craigie Transition Project Case Study Just MAGIC:** Craigie High School Cluster, Dundee “The transition project was an integrated programme of sport and the arts for girls who were moving from P7 to S1, which was developed in the Craigie High School cluster area in Dundee.”

2. **Farr High School Case Study To go the extra mile! Sutherland** “Farr High School works closely with the local community on the recycling project, Bettyhill Environmental Action Group, which gives young people experience of a real enterprise project. The school, which houses nursery, primary and secondary pupils, also takes a whole school approach to support for pupils, transition and physical activity.”

3. **Lochend Learning Community Case Study Success of the volunteer parent; Glasgow** “Involvement of parent volunteers with physical activity sessions linked to breakfast club provision.”

4. **Uyeasound Primary School Case Study The Rainbow Light School:** Shetland “Uyeasound Primary School transformed their outdoor space with the project ‘Using creativity to promote physical, social, mental and spiritual well-being’. The project to create a colourful and vibrant play area complements the school’s whole school approach to health through the learning environment, healthy eating, exercise and creativity.”

www.healthpromotingschools.co.uk/
The following are examples of the range of activities undertaken by schools aimed at improving the health and wellbeing of children and young people:

- Discussion activities in Primary schools and planned learning activities offer children the opportunity to express feelings and ask questions.
- Many schools across Scotland have established breakfast clubs, offering pupils a nutritional breakfast and welcoming start to their school day.
- The Active Schools programme provides a wide range of high quality opportunities for children to be active in and around the school including travel, play, sports, dance organised games and out-of-school sporting and other physical activities which complement the PE curriculum.
- The Scottish Government is committed to providing 2 hours good quality PE to every pupil in Scotland. It has provided funding to employ additional PE specialists and to allow primary teachers to gain a professional qualification in PE. Learning and Teaching Scotland are currently taking forward a programme of work to support schools, which includes drafting outcomes for the 3-18 curriculum. All authorities are expected to be making progress in providing every pupil with 2 hours good quality PE by August 2008 and HMIE are monitoring progress as part of their inspections. For further information go to http://www.ltscotland.org.uk/physicaleducation/index.asp
- Y-Dance is supported to develop, deliver and provide resources to enhance the delivery of dance education in schools. Successful pilots of the Dance in Schools Initiative in Midlothian and Inverclyde in 2005 have led to the programme being rolled out across Scotland. The national programme is being evaluated by the University of Edinburgh and this will inform wider discussions about the promotion of physical activity in Scottish girls and young women.
- Play@Home – began as a partnership programme between Fife Council Education Service and NHS Fife. The Scottish Executive provided additional funding from December 2004 to March 2007 to allow the Fife play@home Co-ordinator to work full-time as a National Advisor, promoting physical activity in early years and play@home across Scotland and offering training and support to professionals seeking to introduce the play@home programme in their own area.
- Eat Well to Play Well is a nutrition and physical activity game for nursery children aged between 3 and 5 years. It was developed by a team of community dietitians, pre-5 staff and a physical activity coordinator in Paisley. It has been developed to include resources for parents.

Summary:
Access to positive educational experiences for children and young people provides the opportunity for them to maximise their potential and improve the life chances in relation to health, wellbeing and employment. To be able to benefit from this educational experience children, young people and those who provide education both within the school and the community, including at home, need to be as healthy as they can be. Poor health of the learner and or the educator restricts the opportunities for maximising achievement and attainment – Lack of access to high quality learning and teaching reduces the potential to lead a healthier life and to be able to contribute to the well-being of society.
Introduction

Infections continue to be a major public health problem in Scottish children. Significant progress has been made in reducing their impact, but much remains to be done to reduce disease and suffering, especially in infancy. One particular success story has been the effectiveness of immunisation programmes in preventing communicable diseases.

Immunisation played a major role in ending the large outbreaks and epidemics of childhood infections seen in the early 20th century and the substantial death and disease they caused. Children are now routinely vaccinated and protected against measles, whooping cough, Haemophilus influenzae type b (Hib), meningitis C (Men C), mumps, polio, diphtheria, tetanus and rubella. Advances in epidemiology, microbiology, immunology and biotechnology have led to the development of safer, more effective vaccines along with new vaccines for previously unchallenged infectious diseases.

Infections in early years: the burden on children and families

In 2006 there were 248 deaths in children under 1 year in Scotland, with five of these due to infections. In the 1-4 year age group, infections accounted for 12.8% (6) of the 47 deaths recorded. While deaths are now relatively rare, infections still exact a high cost on children. 13,640 children under 5 were admitted as emergency cases to Scottish hospitals with a diagnosed infection. This was 42% of all emergency admissions in that age group (table 1). Over half of those infections were respiratory. An estimated 50% of GP consultations in children are due to infections, especially respiratory infections. Streptococcus pneumoniae, Respiratory Syncytial Virus (RSV) and influenza A cause most of these infections and consultations for all three peak in the under 5s84. Data from Scottish Practice Team Information (PTI), which represents 5% of primary care coverage across the country show that acute upper respiratory tract infections are the commonest reason for children under 5 seeing a GP. Other infections are frequently diagnosed (Table 2).

<table>
<thead>
<tr>
<th>Table 1: Diagnoses of infections in children under 5 admitted as an emergency into acute hospitals in Scotland (year ending 31 March 2006)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age groups (years)</strong></td>
</tr>
<tr>
<td><strong>All main diagnoses</strong></td>
</tr>
<tr>
<td>Infections</td>
</tr>
<tr>
<td>Intestinal infections</td>
</tr>
<tr>
<td>Bacterial infections (incl. TB, whooping cough)</td>
</tr>
<tr>
<td>Cerebral infections (incl. meningitis)</td>
</tr>
<tr>
<td>Viral infections (incl. chickenpox, mumps, measles)</td>
</tr>
<tr>
<td>Other infections</td>
</tr>
<tr>
<td>Suppurative and unspecified otitis media</td>
</tr>
<tr>
<td>Croup, laryngotracheitis, etc.</td>
</tr>
<tr>
<td>Other upper respiratory tract infections</td>
</tr>
<tr>
<td>Acute bronchitis and bronchiolitis</td>
</tr>
<tr>
<td>Pneumonia and other lower respiratory tract infections</td>
</tr>
<tr>
<td>Urinary tract infections</td>
</tr>
<tr>
<td>Infection of skin and subcutaneous tissue (incl. scabies)</td>
</tr>
<tr>
<td><strong>Total number recorded as due to infections</strong></td>
</tr>
<tr>
<td>Percentage due to infections</td>
</tr>
</tbody>
</table>

Source: ISD Scotland (SMR01)
Extracted November 2006
### Table 2:
Top 10 reasons for attending primary care – GP consultations for children aged less than 15, at a sample of Scottish practices (Year ending March 31 2006)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Consultation reason</th>
<th>Age group (years)</th>
<th>No. of contacts</th>
<th>Contact rate¹</th>
<th>Consultation reason</th>
<th>Age group (years)</th>
<th>No. of contacts</th>
<th>Contact rate¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acute upper respiratory infections²</td>
<td>less than 1 year</td>
<td>49,900</td>
<td>930.2</td>
<td>Acute upper respiratory infections²</td>
<td>1 - 4 years</td>
<td>99,250</td>
<td>466.6</td>
</tr>
<tr>
<td>2</td>
<td>Digestive/abdominal Signs and Symptoms</td>
<td></td>
<td>23,800</td>
<td>444.1</td>
<td>Infectious diseases⁴</td>
<td></td>
<td>52,250</td>
<td>245.8</td>
</tr>
<tr>
<td>3</td>
<td>Diseases of the skin and subcutaneous tissue³</td>
<td></td>
<td>22,150</td>
<td>413.3</td>
<td>Circulatory and respiratory Signs and Symptoms</td>
<td></td>
<td>46,900</td>
<td>220.6</td>
</tr>
<tr>
<td>4</td>
<td>Infectious diseases⁴</td>
<td></td>
<td>20,550</td>
<td>383.2</td>
<td>Diseases of the skin and subcutaneous tissue³</td>
<td></td>
<td>41,950</td>
<td>197.2</td>
</tr>
<tr>
<td>5</td>
<td>Circulatory and respiratory Signs and Symptoms</td>
<td></td>
<td>20,500</td>
<td>382.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Skin Signs and Symptoms</td>
<td></td>
<td>15,100</td>
<td>281.8</td>
<td>Otitis media and other disorders of middle ear and mastoid</td>
<td></td>
<td>34,600</td>
<td>162.6</td>
</tr>
<tr>
<td>7</td>
<td>Conjunctivitis and other disorders of conjunctiva</td>
<td></td>
<td>13,050</td>
<td>243.4</td>
<td>Skin Signs and Symptoms</td>
<td></td>
<td>28,250</td>
<td>132.8</td>
</tr>
<tr>
<td>8</td>
<td>Diseases of upper respiratory tract⁵</td>
<td></td>
<td>10,500</td>
<td>195.3</td>
<td>Diseases of upper respiratory tract⁵</td>
<td></td>
<td>27,550</td>
<td>129.7</td>
</tr>
<tr>
<td>9</td>
<td>Otitis media and other disorders of middle ear and mastoid</td>
<td></td>
<td>6,900</td>
<td>129.0</td>
<td>Conjunctivitis and other disorders of conjunctiva</td>
<td></td>
<td>19,250</td>
<td>90.5</td>
</tr>
<tr>
<td>10</td>
<td>General abnormal Signs and Symptoms NEC⁶</td>
<td></td>
<td>6,550</td>
<td>122.0</td>
<td>Acute pharyngitis and acute tonsillitis</td>
<td></td>
<td>18,600</td>
<td>87.4</td>
</tr>
</tbody>
</table>

Dark shading indicates conditions caused by infections
Pale shading indicates conditions often caused by infections
No shading indicates conditions that are mainly non-infectious

Source: PTI
1 Rates are per 1000 population and are standardised by deprivation (and age/sex where applicable).
2 Excluding acute pharyngitis, acute tonsillitis, acute laryngitis and tracheitis.
3 Excluding infections and malignancies.
4 Excluding meningococcal, skin, respiratory and urinary tract infections, gastroenteritis, and osteomyelitis.
5 Excluding influenza, pneumonia, acute bronchitis, acute bronchiolitis, chronic sinusitis, chronic disease of tonsils and adenoids and malignancies.
6 NEC = Not Elsewhere Classified.
For infections where no vaccine currently exists, or where questions remain about the effectiveness of the available product, continued vigilance and surveillance; early recognition of signs and symptoms and appropriate management and treatment through primary care combine to reduce the impact of these infections.

Inequalities in health – infection and immunisation

The greatest burden of childhood infections in terms of both morbidity and mortality is seen among the most deprived sectors of the population. Deaths from infectious or respiratory diseases are 2.5 to 3.0 times higher in children in social class V (unskilled) compared with Social class I (professional). One study showed increasing hospital admission rates with increasing social deprivation for all respiratory infections in all age groups, but particularly those aged less than 5, where admission rates were nearly twice as high in the most deprived quintile compared to the least. This pattern is also seen in primary care. Separate studies have shown higher morbidity from infections in children from more deprived backgrounds for RSV, meningococcal infection and invasive pneumococcal disease (IPD). But the pattern is maintained for respiratory infections as a whole.

In Scotland deprivation impacts on immunisation rates. The Scottish Immunisation Recall System showed that the average primary immunisation uptake was 92.1% in the most deprived group of children (Carstairs: decat 7) compared with 96.8% in the least deprived group. Children in more deprived groups were also vaccinated at a later age.

Invasive bacterial infections

Following the control, through vaccination, of Meningitis C and Haemophilus Influenzae group B – Streptococcus pneumoniae has emerged as one of the most common remaining invasive bacterial infections. Every year 60 – 100 children in Scotland suffer from invasive pneumococcal disease (figure 1). This infection can have serious life-threatening consequences including meningitis, septicaemia and acute pneumonia. Non-invasive infections requiring treatment, especially middle ear infections (otitis media), also affect many children. Otitis media is one of the top ten reasons for primary care consultation for under 5 year olds in Scotland (PTI data – table 2).
In 2006 a vaccine against pneumococcal infection was introduced into the childhood immunisation schedule. This vaccine, a pneumococcal conjugate vaccine (PCV), protects against seven vaccine serotypes. These serotypes caused 50% to 76% cases of IPD in children under 5 in Scotland (2003 – 2005). The new vaccine has an excellent safety profile when given alone or at the same time as other routine immunisations. There is also evidence that the vaccine may provide cross protection for other pneumococcal serotypes. It also appears to prevent asymptomatic carriage of the bacteria and could have an indirect protective effect for non-immunised individuals.

**New vaccination schedule**

In September 2006 changes were made to the childhood immunisation schedule following recommendations of the Joint Committee on Vaccination and Immunisation. This introduced the new PCV vaccine and brought in other modifications. The main changes were:

- The addition of the pneumococcal conjugate vaccine (PCV) at 2, 4 and 13 months of age;
- One dose of Men C vaccine at 3 months and 4 months of age;
- A booster dose of Hib and Men C vaccine (given as a combination vaccine) at 12 months, to continue protection against these infections later in life.

The new immunisation schedule is more complicated because infants are now offered different combinations of vaccines at the 2, 3 and 4 month visits; are given three injections at 4 months of age and are called for an additional visit. The first cohort of Scottish children to begin the new schedule are not yet old enough to have completed their primary immunisations but vaccination uptake will be monitored carefully to ensure that the high uptake rates of previous years are not adversely affected by the changes in the immunisation programme.

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**Figure 2**

(Source: ISD)
Immunisation uptake

The uptake rates in Scotland as a whole are very good with above 95% for diphtheria, polio, pertussis, tetanus, Hib and Men C by age 24 months (figure 2). Uptake of Measles Mumps Rubella (MMR) vaccine at 24 months was 92.1% in 2006, an improvement on 2005, continuing a steady climb in coverage since the low point in June 2003 (85.8%) following the Wakefield controversy. The Scottish Government set a new HEAT (Health, Efficiency, Access, Treatment) target in 2006 of 95% uptake of at least one dose of MMR by the age of 5, to maximise protection in children before they begin school. In 2006 uptake at age 5 reached 93.8%, and has continued to improve in the first half of 2007 (to 94.4%).

Pneumococcal vaccination

The first cohort of children to receive three PCV doses are still too young to have completed the full three-dose course, but early indications are that the vaccine uptake has been good, with 95.1% receiving the first dose of PCV. In addition 85.5% of older children, offered a single dose of vaccine as a catch-up, had been vaccinated by August 2007. Both of these figures will continue to rise. The first official figures for PCV uptake will be published in December 2007.

Conclusion

Infectious diseases still pose a considerable threat in early life with large numbers of infants, suffering from infections, having to attend their GP or being admitted to hospital as an emergency. Immunisation is and will continue to be one of the priority public health measures to protect children from these dangers.

In the coming years, a number of challenges face those responsible for delivering immunisation programmes. Foremost among these are:

- Continuing efforts towards reaching the new target of 95% uptake of one dose of MMR by age 5.
- Maximising the uptake of the new PCV vaccine in children under 2.
- Retaining the current high levels of vaccination coverage, during the changeover period to the new immunisation schedule and beyond.
- Planning and preparation for the introduction of Human Papillomavirus (HPV) vaccine in girls aged 12 – 13 in a programme beginning in 2008 with a catch-up campaign for older girls over the subsequent 2 to 3 years.

The uptake rates in Scotland as a whole are very good with above 95% for diphtheria, polio, pertussis, tetanus, Hib and Men C.
chapter 8
early years, children and young people:
environment and unintentional injury
Introduction

From conception to adolescence, the interface between children and their environment is different from their parents and grandparents. Children are not simply small adults. They behave very differently as they explore their surroundings and are at greater risk from threats they may not recognise or to which they cannot readily respond. As they grow, children spend time in different settings from adults making the quality of these environments, such as schools and places where they play or socialise, critical to their health and safety. Also important is the fact that, relative to their body size, children breathe, eat and drink much more than adults (see Table 1).

Combined with children’s immature metabolism and rapidly developing body systems, children are often at special risk from contaminants in air, food, water, soil and in their homes. For example when children are exposed to lead, mercury and solvents these can destroy brain cells and prevent the formation of vital connections in the brain. This can result in a loss of intelligence and behavioural problems. Environmental toxins can also damage the developing reproductive, endocrine and cardiovascular systems. This has made the reduction of hazardous chemicals in the environment a key objective of government.

Throughout life “windows of vulnerability” to specific environmental risks open and close.

In the embryo, growth is rapid as cells take on characteristics appropriate to their future function. Here, concern typically relates to maternal exposure to toxins with potential to harm the baby. Immediately following birth, body structures continue to evolve, forming vital connections.

In the first year, the developing nervous system is especially vulnerable to damage, e.g. from metals such as lead and mercury. The immature metabolism absorbs, distributes and excretes many substances differently from that of adults. This creates special challenges for regulators seeking to create child-safe environments.

Fundamentally, children have more years of life ahead of them giving extra time to succumb to the chronic effects of environmental exposures. Sometimes disease results from cumulative exposure to harmful agents whilst, in other cases, an early, and possibly time-limited exposure, increases risk to health in adulthood. Skin cancers, for example, can sometimes be linked to excessive exposure to Ultraviolet (UV) light in childhood. A single episode of sunburn with blistering of the skin is considered to increase the future risk of melanoma for the rest of that child’s life.

As a child becomes increasingly independent this brings different risks. For example, the pattern of child injuries changes as developing neurophysiological responses confront new environmental challenges. Infants are especially at risk of falls from the arms of carers or collisions with moving objects, with a relatively high risk of head injury. As these children become toddlers (from the second to the fifth year of life approximately) they become more active, exploring their surroundings, e.g. staircases or accessible household objects. Falls and ingestion of poisons and medicines become frequent. As they reach school age greater muscular control allows protection of the face and head making fractures and lacerations to hands and arms more common as they are increasingly used to break falls or deflect blows.

The rapidly maturing neurological, muscular, skeletal and intellectual status of growing children, however, offers limited protection from many environmental hazards. Injury risk in childhood is strongly socially patterned – a sure sign that environmental factors operate in the web of causality. Scottish data consistently demonstrate that children from our most deprived areas are three times as likely to die from unintentional injury as children in the most affluent places: http://www.isdscotland.org/isd/3067.html. This is even more marked for fire deaths. Notably, no environmental threat is greater than road traffic - the largest single cause of traumatic death in schoolchildren.

### Table 1 Comparison of infant and adult intakes relative to body weight

<table>
<thead>
<tr>
<th>Medium (Unit)</th>
<th>Infant (&lt;1 year)</th>
<th>Adult</th>
<th>Ratio (Infant/Adult)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air (m³/kg-day)</td>
<td>0.44</td>
<td>0.19</td>
<td>2.3</td>
</tr>
<tr>
<td>Water (g/kg-day)</td>
<td>161.0</td>
<td>33.5</td>
<td>4.8</td>
</tr>
<tr>
<td>Food (g/kg-day)</td>
<td>140.0</td>
<td>23.0</td>
<td>6.1</td>
</tr>
</tbody>
</table>

Source: Licari, L. et al. Children’s health and the environment: developing action plans
Today there is much to celebrate in relation to children's environmental health in the developed world. At the same time, we in Scotland, following the experience of the particular threat to children of E.coli O157, recognise the potential threat of new infectious diseases. However, there is now a new pattern of disease in children in which environment plays a role but which is poorly understood. Diseases such as asthma have greatly increased in the past 30 years. Other disease in which environmental factors may be responsible include birth defects, leukaemia, childhood cancers and attention deficit/hyperactivity disorders in children.

Scotland overall enjoys a high quality, healthy environment, inherited, but also secured and protected through policies shaped by concern for safety and health. However, in less affluent areas, the picture is often quite different. Here, the problem is seldom toxic or infectious hazard, but rather, untidy, uncared for and damaged localities. Lacking in amenity, alienating and frequently threatening, these environments contribute to a cocktail of disadvantage inconsistent with health and well-being.

Unsatisfactory places sustain inequality and cannot nurture the behaviours, attitudes and resilience required for future health. A relevant environmental health agenda for the 21st century is as much about the creation of places which engender good physical and mental health, as it is about protection from hazards. Nested within this wider agenda, and reflecting their special vulnerability, is a distinct children's environmental health agenda.

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An International Dimension to Children's Health and Environment

Children's environmental health is now a focus for the World Health Organisation. The Children's Environmental Health Action Plan for Europe (CEHAPE) focuses on environmental risk factors considered to have most impact on the health of children across 53 European countries.

Amongst the key goals of the initiative are safe drinking water and adequate sanitation; protection from injuries; the opportunity for adequate physical activity; clean outdoor and indoor air and environments free from chemical hazards.

Since committing in 2004, as part of the UK, to participate in CEHAPE, Scotland has contributed to preparation of the UK's submission to an Intergovernmental Mid-term Review scheduled for June 2007. The meeting will take stock of progress and hear national proposals for further improvement. Examples such as changes to Scotland's building regulations in 1996 to prevent scalds by requiring thermostatic valves at bath hot-water outlets; the publication of a new bathing water strategy and, not least, the 2006 legislation on smoking in public places allow Scotland to demonstrate a UK lead in progress towards some CEHAPE Goals.
Complex problems demand fresh approaches

Scottish environmental health specialists recently analysed today’s generic challenges in environmental health. Amongst these were:

1. Identifying approaches to policy and action on environment that recognise health and well-being as not the product of simple cause and effect relationships but rather a complex mix of physical social and behavioural factors.

2. Understanding and delivering health promoting environments.

3. Accepting that how people feel about their physical surroundings, can impact on not just mental health and well-being, but also physical disease processes (of special relevance to health inequalities).

4. Reflecting in policy, that the health we inherit in later life is substantially programmed in childhood.

By implication, the right environments for children benefits their health for all of their lives. The challenge, like so many in public health, is about accepting the complexity of our environment, creating better systems and organising to deliver healthier environments for children.

Scotland’s Strategic Framework for Environment and Health announced in 2005 continues to be built on these principles. 2007 will see further development of proposals culminating in discussion amongst interested parties on how the framework will be used to develop action on initial priorities. Given the importance of the environment for children’s health today and in the future the Scottish Framework must address the very special issues of children’s environmental health.

how people feel about their physical surroundings, can impact on not just mental health and well-being, but also physical disease
chapter 9
violence in scotland
Violence in Scotland is a chronic problem. Levels of violent incidents have not changed for at least 30 years and have probably remained static since the 1930s. Glasgow has the highest homicide rate in Europe per head of population: the rate of murder committed with a knife is 3.5 times higher than that of England and Wales. Economically, the impact on Scotland is substantial - treating those affected by violence costs an estimated 3-6% of the NHS budget. This equates to almost £400 million. Each murder investigation costs the justice system an estimated £1.3 million, while each serious assault costs an average £19k. With over 90 murders and 6000 serious assaults in 2006, violence poses a significant threat to Scotland’s health – and wealth.

The World Health Organisation (WHO) report on violence (2002) highlights Scotland as having a homicide rate of 5.3 per 100,000 population in males aged between 10-29, with an overall rate of 3.1. This is similar to Argentina, Costa Rica and Lithuania. The rate in England and Wales for the same age group is 1.0 per 100,000. However, murders in Scotland are the tip of an iceberg, beneath which lies an increasing volume of attempted murders, serious and simple assaults and a culture of knife carrying. Police figures tell an incomplete story; surveys in A&E departments in Scotland and in England and Wales indicate that on average only 30% of violence presenting to emergency departments is reported to the police.

The impact of violence on victims is incalculable, not only from the initial offence but long term. High rates of injury and illness are related to assaults, and violence leaves permanent scars, both physical and psychological. A deprived young urban male may suffer 60 years of physical incapacity as a result of injury and associated decline in quality of life and self esteem.

Yet violence is not an inevitable part of the human condition. The WHO highlights that “in much the same way as infectious diseases and other threats to public health have been in the past, violence can be prevented and its impact reduced”.

Scotland has come to a crossroads over the past three years in relation to tackling violence, with a range of policy makers across health, education, police and other areas recognising that there are opportunities to change our culture by changing our methods. It is the public health approach to violence prevention which offers Scotland the best opportunity to shrug off its past and provide a safer, healthier environment for its people.

### Table: Serious Violence in Scotland 1996-2006

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<thead>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious assult etc</td>
<td>6,631</td>
<td>6,195</td>
<td>6,716</td>
<td>7,326</td>
<td>6,892</td>
<td>7,546</td>
<td>7,593</td>
<td>7,514</td>
<td>7,768</td>
<td>7,151</td>
</tr>
</tbody>
</table>

Includes: Murder, Attempted Murder and Serious Assault
Source: Scottish Executive Statistics
Tackling violence using a public health approach

Surveillance – understanding the problem

The under reporting of violence in Scotland may be down to a number of factors, e.g. lack of access to phones to report, victims on the fringes of criminality themselves or victims with the intention to perpetrate retaliatory violence. The result of this under reporting is that an incomplete picture of violence exists, limiting the ability of agencies including the police to prevent victimisation, target offenders and impact on environments that enable violence to occur.

Further, existing interventions targeted at reducing violence cannot be accurately evaluated to establish their effectiveness. A true measure of their success will be in reducing the number of patients presenting to A&E, GPs and dentists as a consequence of violence. For this to occur, injury surveillance must be the cornerstone of violence reduction in Scotland.

Data from the Scottish Trauma Audit Group (STAG) indicates that over the 6 week period in March 2006, 3281 individuals reported to A&Es in Scotland as victims of violence. Yearly, this equates to an estimated 28,400 presentations. When one considers that only 7000 crimes of serious assault are reported to Scottish Forces in a year, the disparity is significant and much effort needs to be expended to narrow the gap.

Cooperation with the police and the NHS in Scotland, and in particular with Accident and Emergency Departments, is well developed. A data set of questions was developed (see text box) which enable in depth analysis of the problem and tasking of different agencies to tackle it. An initial paper based pilot by Glasgow Royal Infirmary of anonymised injury surveillance indicated that it was feasible and did not impact negatively on hospital time. Recommendations for further roll out of the system were dependent on an electronic solution to capture data to aid compliance and the dissemination of timely information.

As a result Lanarkshire NHS Board and Glasgow Royal Infirmary are about to embark on electronic injury surveillance project. Similar projects are being developed in Aberdeen, Edinburgh and Fife, with the aim of introducing a national surveillance system.

Injury surveillance

Injury surveillance questions are designed to gather information that can be acted upon by agencies such as the police and councils to prevent further injuries occurring.

Questions are asked about:

- Location and address of the assault, e.g. licensed premises, home or street.
- Weapons used, e.g. knife, glass, blunt objects.
- Was assailant known? e.g. acquaintance, stranger.
- Reason for assault, e.g. gangs, drugs, racial, religion.

From the data other agencies can examine licensing of premises, improving lighting and services in assaults hot spots, improving transport services and taxis to disperse people from potential flashpoints, to better direct policing to areas where intelligence suggests that injuries are likely to occur.
Understanding the risks and protective factors of violence is key to developing strategies that will bring about the sustainable change required. However, there is no single cure - violence is a multi-faceted problem with complex causality.

Violence risk factors such as alcohol, drugs, deprivation and exclusion from school have been well documented. However, despite the plethora of work required on aspects such as swift visible justice for offenders, gangs and territorialism, it is the focus on the skills delivered in the early years of life, such as communication, empathy and problem solving, which research suggests will deliver the most significant impact on levels of violence. A noticeable lack of these skills is evident amongst those with poor behavioural control. Efforts to address these issues when individuals enter the criminal justice system prove to be expensive and often unsuccessful, whereas targeted support of parents and children in early years has shown significant results in terms of equipping youngsters with the skills that enable them to lead lives where violence is not an inevitability.

Interventions and implementation

To truly act to reduce violence in Scotland, we must address through treatment and police enforcement not only violence as it occurs, but also before it occurs by working with communities throughout Scotland to prevent violence before it starts. To do this we must consider three tiers of intervention:

- PRIMARY PREVENTION – seeking to prevent the onset of violence, or to change behaviour so that violence is prevented from developing.
- SECONDARY PREVENTION – to halt the progression of violence once it is established or for those at risk – this is achieved by early detection followed by prompt, effective treatment.
- TERTIARY PREVENTION – the rehabilitation of people with an established violent behaviour or affected as a victim.

There are some extremely promising, evaluated interventions designed to deal with violence already in place in Scotland, aimed at preventing the onset of violence, tackling those at risk and dealing with those who have already perpetrated violence or have been victimised: Triple P (Positive Parenting Programme), PALS (Parents Altogether Lending Support), violence and alcohol counselling within hospital clinics and innovative enforcement will all deliver reductions.
Control of Violence for Angry Impulsive Drinkers (COVAID)

Maxillo Facial Surgeons in Glasgow deal with a serious facial injury, on average, every 6 hours, 24 hours a day, 365 days a year. Over a third of victims will have been assaulted more than once in the previous year, and over half will have consumed alcohol prior to their assault. In an attempt to address the factors which led to the assault, three hospitals in Glasgow are involved in a trial where nurses deliver a brief motivational intervention (COVAID) within hospital clinics to equip victims with skills to prevent further injury.

The Nurse Family Partnership

The Nurse Family Partnership is a programme designed by David Olds of the University of Colorado. Over the past 27 years it has been implemented in various parts of America. Evaluation shows reduced child abuse and neglect and less parental alcohol and drug abuse. It targets predominately young, poor, single mothers as early as 1 year in pregnancy as possible and has three aims: to improve the outcomes of the pregnancy by helping women improve their prenatal health; to improve the child’s health by providing more sensitive and competent care; and to improve parental life by helping parents plan future pregnancies, complete their education and find work.

Table 1 – Interventions to prevent and tackle violence

<table>
<thead>
<tr>
<th>Primary</th>
<th>Secondary</th>
<th>Tertiary</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Early year enrichment to develop empathy and other social skills, e.g. “Roots Of Empathy”</td>
<td>■ Reducing underage alcohol consumption</td>
<td>■ Weapon searching and targeting violent criminals</td>
</tr>
<tr>
<td>■ Parenting programmes for all parents; Triple P (Positive Parenting Programme), PALS</td>
<td>■ Diversion activity</td>
<td>■ Counselling in trauma clinics, e.g. violence brief motivational interviewing, alcohol counselling.</td>
</tr>
<tr>
<td>■ Targeted parenting programmes, e.g. Dundee Family Project, Nurse Family Partnership</td>
<td>■ Creating safer city centre and night time economy</td>
<td>■ Swift visible justice for violent offenders</td>
</tr>
<tr>
<td></td>
<td>■ Campus police officers in schools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ SNAP – Stop Now and Pause – tackling violence/children and their parents</td>
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</tbody>
</table>
However, scaling up of such initiatives and the delivery of a Scottish-wide parenting policy and early years support is the greatest challenge. The report by the Work Foundation in 2006, states that “Investing in early years is as close as it gets to magic without being magic”. Parenting support and enriched day care, and preferably both together, create children with better behaviour and attitudes who will arrive at school with a capacity to learn. Programmes that continue into primary school have the most sustained long-term effects.

**Triple P - Positive Parenting Programme**

Is a multi-level, prevention-orientated parenting and family support strategy. It incorporates five levels of intervention, from birth to age 16. Evaluation of Triple P shows consistent findings of decreases in child behaviour problems and meaningful outcomes for both parents and children. Running in Glasgow since 2003, the programme has demonstrated increasing self esteem and confidence in parents.

**Operation Blade**

In the early nineties, Strathclyde Police launched Operation Blade, designed to crack down on violent crimes involving knives. Operation Blade was prompted by a wave of media publicity about knife crime and resulted in more than 5,000 weapons being handed in to the police.

Some time later, Glasgow Royal Infirmary conducted a detailed analysis of the impact of Operation Blade. The report read: “There were no significant differences in the nature or number of assault victims attending this hospital one year after Operation Blade compared with the month before its implementation.” The report concluded: “Operation Blade reduced the number of serious stabbings for a period of ten months, but subsequently numbers surpassed those prevailing before its implementation.”

Operations similar to Blade have been carried out across Scotland over 2006 and 2007. Although successful in the short term, the reductions and activity were not sustainable.

Setting up of many of these programmes will be financially onerous with few benefits in the short term; but if Scotland is committed to reducing the burden of violence in the long term then such programmes are key.

**Conclusion**

A Public health approach is best placed to deliver many of the long-term solutions to violence, and Scotland is one of the few countries to commit to reducing violence long term by examining opportunities to prevent the development of violent individuals. By looking after our children and developing our early years provision, the possible future benefits stretch far beyond that of violence prevention and will help to deliver the Scottish Government’s promise of a healthier, wealthier and safer Scotland.

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Investing in early years is as close as it gets to magic without being magic.
chapter 10
communicable disease and environmental health
Significant incidents in 2006

**Highly Pathogenic Avian Influenza (HPAI) – Cellardyke Harbour, Scotland**

In April 2006 a dead Whooper swan found floating in Cellardyke harbour, Scotland, was submitted for routine testing as part of the ongoing UK wild bird survey. The H5N1 virus was isolated and characterised as HPAI by the national reference laboratory at Veterinary Laboratory Agency, Weybridge. The single incident generated significant media and public interest and lead to many reports of dead swans, ducks and geese, which were collected by the State Veterinary Service and tested at Veterinary Laboratory Agency, Weybridge. There were no further detections of HPAI H5N1 in wild birds or domestic poultry. Since that time the number of reports of dead wild birds has significantly declined.

**Anthrax incident in the Scottish Borders**

In August 2006 a 50 year old man living in a rural part of the Scottish Borders died due to infection with anthrax. This was the first fatal case of human anthrax in the U.K for over 30 years. This individual had developed a sudden severe illness, which progressed rapidly over 3 days leading to his death from septicaemia. Bacillus species identified in blood cultures taken on hospital admission were later confirmed as Bacillus anthracis by the Health Protection Agency (HPA) Novel and Dangerous Pathogens Laboratory at Porton Down. Subsequent investigations by agencies including the US Centres for Disease Control and Prevention in Atlanta (CDC) confirmed that inhalational anthrax was the most likely cause of death. The deceased was a craftsman wood-worker and musician known to have used animal skins obtained from road kills, including deer and badger, in making musical instruments including African-style drums.

Intensive investigations were carried out at his home to try to identify a source. Investigations of home and workshop did not identify any Bacillus anthracis spores. Further investigation of African drums to which he had been exposed during drumming classes did identify contamination with Bacillus anthracis spores. Viable spores were also identified at a number of locations where the drums had either been stored or used at classes, both in Scotland and in England. Locations in Scotland identified as being contaminated were subsequently decontaminated using gaseous Chlorine Dioxide, by a specialist contractor from the USA, previously involved in the anthrax decontamination of the US Capitol complex and other buildings contaminated in 2001. Post decontamination sampling verified that the agreed standard of “no detectable viable spores” set by a local Clearance Committee for publicly accessible locations had been attained.

Previous non-fatal cases of human anthrax infection implicated drums and goatskins from Haiti and West Coast African countries, leading the US to ban the importation of goat hides from Haiti. This case highlights risk of exposure within the UK to Bacillus anthracis from imported West African drums made using goat hides in particular.

**E.coli O157**

In April and May 2006 an outbreak of infection with an extremely rare strain of E.coli O157 occurred in a nursery in Fife. The strain was a sorbitol fermenting E.coli O157 with a particular genetic fingerprint or Pulse Field Gel Electrophoresis (PFGE) pattern. Six children from the nursery were affected, and five suffered the serious complication of Haemolytic Uraemic Syndrome. The infection appears to have been passed from child to child, although how the first child became infected is unknown. Seven further cases were identified in family contacts of the nursery cases. At around the same time, seven more cases of this unusual form of E.coli O157 occurred throughout Scotland, bringing the total to 20. Health Protection Scotland also became aware that four cases of this unusual type had also occurred in England earlier in the year. The most diligent investigation by NHS Fife health protection team working with Health Protection Scotland failed to find any links between these cases or the nursery, despite the extreme rarity of this particular strain of E.coli O157. No further cases of sorbitol fermenting E.coli O157 have occurred in Scotland since the outbreak ended in July 2006.
**Outbreak of Q Fever in a meat-processing plant in Bridge of Allan**

At the start of July 2006, an unusual illness was reported in workers in a meat processing plant in Bridge of Allan, Scotland. The plant, which slaughters and processes up to 2,000 cattle and 10,000 sheep per week, had a workforce of 228 people with many more people visiting the site. Symptoms included fever, dry cough, muscle/joint pain and headache. In total 49 people were symptomatic, 9 of whom had more serious symptoms and were admitted to hospital with atypical pneumonia or neurological symptoms. Initial investigations confirmed Q Fever as the cause of the outbreak. An outbreak control team lead by the NHS Forth Valley health protection team was given very strong support from Health Protection Scotland (HPS) professionals.

Subsequent work included screening of all staff working at the plant. By May 2007, 111 confirmed cases, 28 probable and 5 possible cases were identified. Q fever or “Queensland Fever” is considered to be endemic in sheep and cattle and human infection is often associated with contact with sheep or cattle. This is now recorded as the UK’s largest ever outbreak of Q Fever.

**New challenges**

**Health protection framework for pandemic influenza**

HPS produced an updated version of the Health Protection Framework in December 2006 for use by health protection teams in Scotland. This document summarises the roles and responsibilities for health protection teams during the phases of the pandemic and aligns the Scottish health protection response to that of the other countries in the UK.

**New strain of verocytotoxin producing E.coli O157**

As mentioned earlier an outbreak of infection with a new strain of E.coli O157 occurred in 2006 centred on a nursery in Fife. The strain is more difficult to identify and potentially more serious than the verocytotoxin producing E.coli (VTEC) usually seen in Scotland. The Scottish Health Protection Network Steering Group has asked HPS to update the existing guidance on the management of incidents of VTEC. HPS is currently convening a group of experts to complete this task by the spring of 2008.
Healthcare Associated Infection (HAI)

Health Protection Scotland is working on a coordinated programme approach to the reduction of HAI, focusing on those Hospital Associated Infections where there is the most potential for prevention. Programmes have been developed for Staphylococcus aureus bacteraemia reduction, surgical site infection reduction and Clostridium difficile reduction. These programmes take quality improvement approaches to clinical practice in order to improve outcomes. A programme has also been developed to address the important issue of decontamination of medical and dental instruments and work to achieve the highest practicable standard for decontamination of re-usable medical devices in Scotland.

Tackling antimicrobial resistance to antibiotics is also an important challenge and joint working between HPS and the reference laboratories for Meticillin Resistant Staphylococcus aureus (MRSA) and Clostridium difficile is progressing to enhance our understanding of the epidemiology of these organisms.

A key element of preventing the spread of healthcare associated infections is good hand hygiene. The Scottish Government’s Healthcare Associated Infection Task Force provided funding to NHS Boards to employ the local Hand Hygiene Co-ordinators who are working to improve hand hygiene practice and compliance amongst healthcare workers, patients and visitors. This campaign will continue until at least March 2008. The important messages on hand hygiene have also been conveyed to the general public through successful TV and media advertising campaigns during January 2007. These will be repeated in early 2008.

The Deputy First Minister and Cabinet Secretary for Health and Wellbeing also launched good hand hygiene packs for school children in September 2007, as part of a campaign to instill a culture of good hand hygiene in young children that should last through their lives.

A key element of preventing the spread of healthcare associated infections is good hand hygiene.
Hepatitis C (HCV)

Following an extensive public consultation in 2005, the Health Minister and Chief Medical Officer launched Scotland’s Action Plan for Hepatitis C in September 2006. Its aims are:

(i) to prevent the spread of HCV, particularly among intravenous drugs users
(ii) to diagnose HCV infected persons, particularly those who would most benefit from treatment
(iii) to ensure that those infected receive optimal treatment care and support.

The Plan is in two phases:
Phase 1 during September 2006 – August 2008 comprises 41 actions spread across the three areas of prevention, testing, treatment, care, support and education, training, awareness-raising. The Scottish Executive Health Department (SEHD) provided an additional £4 million to NHS Boards to support the implementation of local action during Phase 1. One key action for NHS Boards is preparing costed proposals for developing Phase 2 services within the three above areas.

The Action Plan is being co-ordinated by HPS and a Scottish Action Plan Co-ordinating Group, comprising representatives of key stakeholder groups, is overseeing the implementation.

Organisational developments in health protection

Establishment of a Health Protection Advisory Group for Scotland

A Health Protection Advisory Group (HPAG) was established in August 2005 to advise the Chief Medical Officer and NHS National Services Scotland (the parent body of HPS) on health protection priorities and on the effectiveness and efficiency of the health protection function across Scotland. It also supports the continued corporate development of Health Protection Scotland. The group has a very senior multidisciplinary multi-agency membership. This includes representatives of NHS Boards, Local Authorities, Health Protection Scotland and other national organisations with an interest in health protection and relevant professional and staff bodies. It is chaired by Professor James McEwen, former Henry Mechan Chair of Public Health, Glasgow University and former President of the UK Faculty of Public Health.
International developments in health protection

New European Centre for health protection

In 2005, the European Community established the European Centre for Disease Prevention and Control (ECDC), based in Stockholm, to coordinate member states’ public health agencies, principally on health protection issues. Scotland’s lead health protection organisation, Health Protection Scotland, is working in partnership with the Health Protection Agency (HPA) for England, Wales and Northern Ireland to ensure effective working within this new European approach.

New international health regulations established

Communicable diseases do not recognise any country’s boundaries. Following the outbreak of SARS which resulted in 810 deaths in 29 countries, and increasing concern about pandemic influenza, the World Health Organisation (WHO) acted to strengthen international co-operation to combat the global spread of new and emerging infections. These International Health Regulations (IHR 2005) put in place a framework to allow this cooperation to take place. These regulations aim to prevent the international spread of disease while also seeking to limit the disruption of international traffic and trade. They require countries to report all events that could result in public health emergencies of international concern. They are a welcome development in the drive to protect public health of the people of Scotland.

Communicable diseases do not recognise any country’s boundaries.
Chapter 1
5. Edinburgh: NHS Health Scotland.
11. Prof J Pell, personal communication
12. Source: ISD Scotland
13. Source: ISD Scotland
14. Source: The essentialgroup/NHS Health Scotland
15. Source: Scottish Household Survey
16. Source: SALSSUS (children interviewed Aug-Dec 2006) – 23,000 pupils from S4 (13 year olds) and S6 (15 year olds) took part (approximately 18% of eligible children) with a response rate of 15%.

Chapter 2

Chapter 3

Chapter 5
Chapter 7
84. Health Protection Agency, October 2005; Health Protection in the 21st Century - Understanding the Burden of Disease (The burden of infectious diseases)

Chapter 8

Chapter 9
89. England and Wales – police research group
90. WHO report on Violence (2002)
93. 55% of all murders in Strathclyde 2006/2007 were committed within a residential setting – the majority were male upon male.
94. Wave report. www.wavetrust.org
95. How small children make a big difference. Provocation series volume 3 Number 1 The work foundation. Alan Sinclair.
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