NHS SCOTLAND

Chief Medical Officer's Annual Report 2014-15

PART 2: THE HEALTH OF THE NATION

healthier scotland
SCOTTISH GOVERNMENT

Health Improvement

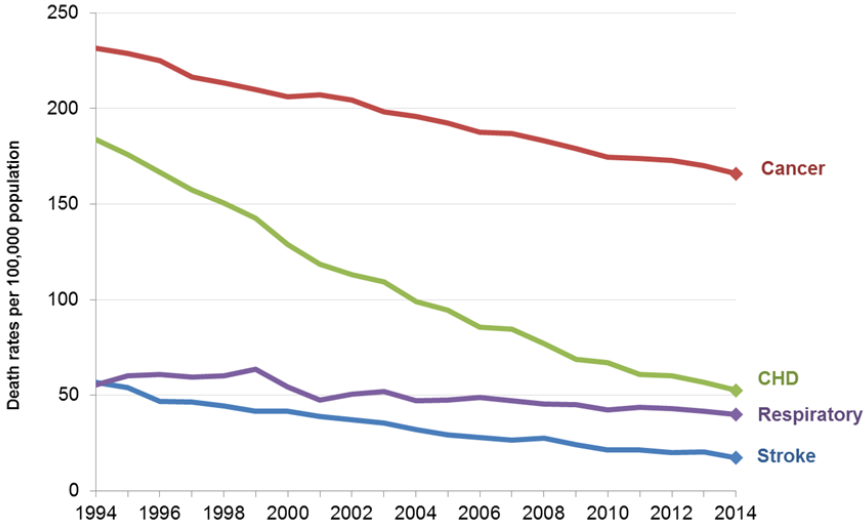
Communicable Diseases

Health Improvement:

Premature mortality

Premature mortality has reduced substantially in recent years, down 38% since 1994. There have been particularly large falls in early deaths due to heart disease (71%) and stroke (69%) over the last 2 decades, while premature deaths due to cancer – the leading cause of death – have reduced by 28% over the same period. However, around 20,000 people in Scotland still died before the age of 75 in 2014.

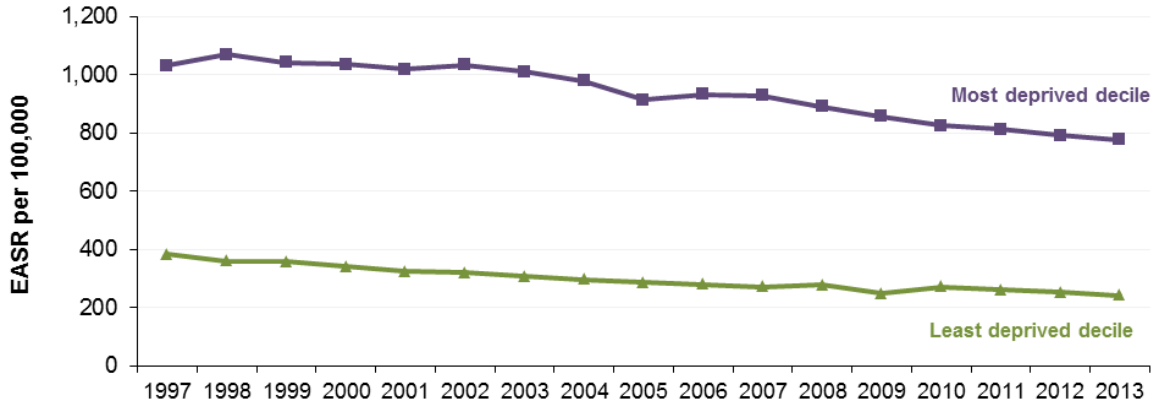
Death rates (<75y) per 100,000 population by selected causes, Scotland 1994-2014



There is a clear association between excess mortality and mental wellbeing. A recent population-based historical cohort study found that the average reduction in lifespan in those previously hospitalised for mental disorder compared with the general population is 17 years. People with eating disorders (39-year reduction) and 'complicated' personality disorders (27.5-year reduction) were worst affected.

The Scottish Government's *Long term Monitoring of Health Inequalities Headline Indicators Report* shows that the *absolute* gap in premature mortality between the most and least deprived deciles has continued to reduce since 2002. However, in 2013 premature mortality *relative* rates were 3.2 times higher in the most deprived areas than in the least deprived areas, compared to 2.7 times higher in 1997.

All-cause mortality (<75y) by deprivation, Scotland 1997-2013
(European Age-Standardised Rates per 100,000)



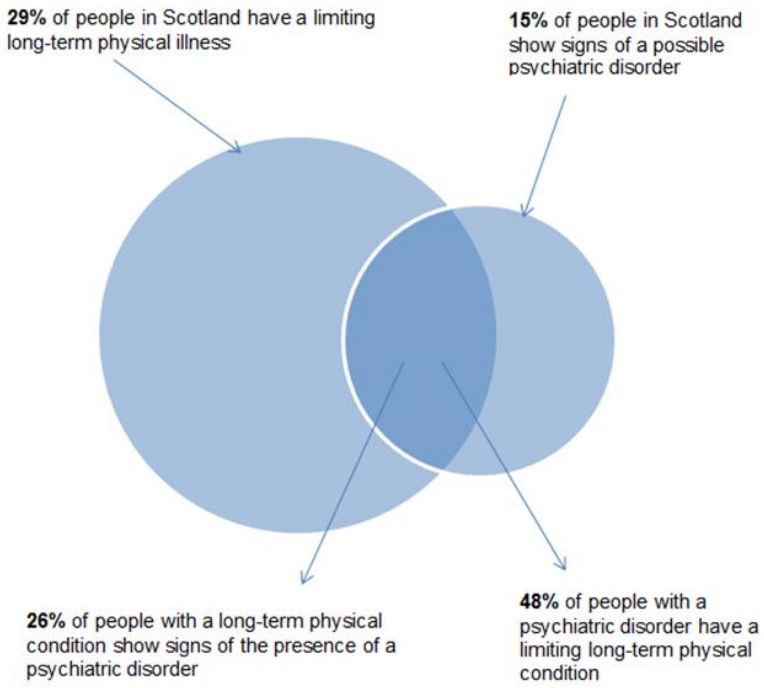
Co-morbidity

Co-morbidity is the concurrent existence of 2 or more health conditions in the same individual. The clinical consequences of co-morbidity on outcomes for people and for health and care systems are widely acknowledged. For example, the challenges associated with delivering effective, safe and person-centred treatment, care and support in the context of health and care systems and guidelines that are largely structured around single diseases.

The World Health Organisation (WHO) considers mental wellbeing to be fundamental to their definition of health. Mental disorders often co-exist with other diseases, including cancers and cardiovascular disease, and risk factors such as obesity, excessive alcohol consumption, and low levels of physical activity, are common to both mental disorders and other non-communicable diseases.

The Scottish Health Survey (SHeS) shows that 46% of adults (aged 16 and over) had at least one long-term condition. This figure was comprised of 31% who had one or more limiting conditions, and 15% with only non-limiting conditions. Of those with at least one limiting physical condition, just over a quarter (26%) showed signs of the presence of a psychiatric disorder. Conversely, almost half (48%) of those showing signs of a psychiatric disorder also had a limiting physical condition.

Co-morbidity in Scotland, 2012-14



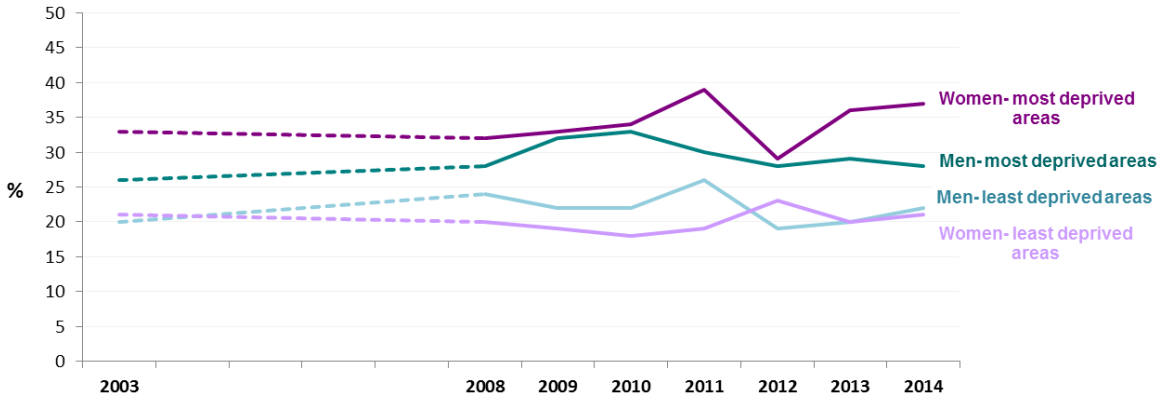
Obesity and Diet

Obesity occurs when energy intake from food and drink consumption is greater than energy requirements of the body's metabolism over a prolonged period, resulting in the accumulation of excess body fat. It is responsible for about 5% of deaths a year worldwide, and its global economic impact amounts to roughly $2 trillion annually, or 2.8% of global GDP or nearly equivalent to the global impact of smoking.

Obesity can reduce people's overall quality of life, create a strain on health services and lead to illness and premature death due to its association with serious chronic conditions such as type 2 diabetes, cardiovascular disease (including hypertension and stroke), and a range of cancers. Severely obese people have been found to be 3 times more than those of healthy weight to need social care and obesity is linked to infertility in women and impotency in men. In addition, some mental health problems such as depression, bipolar disorder and anxiety are associated with obesity, although the direction of causality is uncertain. While additional longitudinal data is required to fully understand drivers, research suggests that overweight and obese children are at greater risk than children of healthy weight to become obese adults, and have a higher risk of morbidity, disability and premature mortality in adulthood.

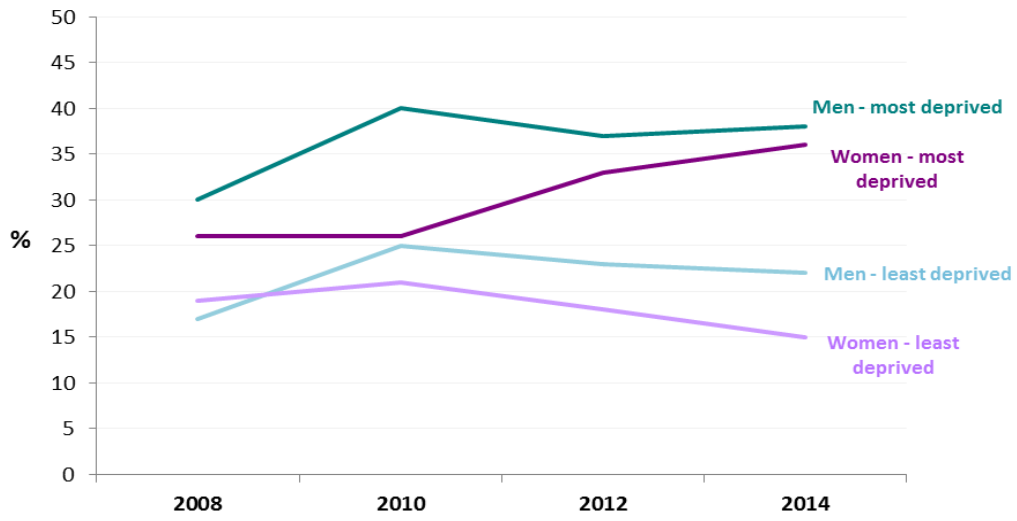
The Scottish Health Survey 2014 found that almost two-thirds of adults (65%) in Scotland were overweight or obese (Body Mass Index (BMI) > 25), with 28% classified as obese (BMI > 30). In addition, around one in six (17%) of children were at risk of obesity, with a further 14% at risk of overweight. There has been a significant increase in the proportion of adults aged 16 to 64 categorised as obese, from 17% in 1995 to 27% in 2014, although the level has remained fairly constant since 2008. Women have higher rates of obesity than men (29% compared to 26% in 2014) with obesity rates highest in areas of greater deprivation. This pattern is particularly marked among women in the most deprived quintile in 2014 having obesity rates 16 percentage points higher than women in the least deprived quintile.

Obesity rates (adults) by gender and deprivation, Scotland 2003-2014



Poor diet continues to be a major driver of the obesity epidemic. Food Standards Scotland published their latest review of progress against the Scottish Dietary Goals (SDGs) in April 2015. It reported there was little progress towards meeting the goals over the period 2001 to 2012. This was apparent across all deprivation groups. In 2014, the SHeS found only one in five adults (20%) and one in seven (14%) children met the recommendation of at least 5 portions of fruit and vegetables a day, while around one in ten adults and children consumed no fruit or vegetables. The SHeS 2014 also demonstrated an increase in daily consumption of sweets / chocolates and of non-diet soft drinks among the most deprived quintile. As shown below, at least daily consumption of non-diet soft drinks by women living in the most deprived areas has increased by 10 percentage points in just 6 years and is now 2.5 times higher than women living in the least deprived areas.

Consumption (once or more per day) of non-diet soft drink, by area deprivation and sex, Scotland 2008-2014



The Scottish Government and COSLA published the Prevention of Obesity Route Map in February 2010. The Route Map makes a long-term commitment (over 20 years) to tackling overweight and obesity, to help achieve a healthier Scotland and contribute towards sustainable economic growth. The Programme for Government 2015/16 contains a commitment to update the Route Map, including an aim to identify and adopt new actions.

The Supporting Healthy Choices (SHC) framework outlines the Scottish Government and the Food Standards Scotland ambition to work collaboratively with partners to improve Scotland's diet and tackle health inequalities. Rebalancing our diet, and that of our children, is a responsibility shared between individuals, communities, industry and Government. The food and drink environment has enormous potential to encourage and influence healthier choices, across the whole food journey from advertising and in-situ marketing to reformulation and provision of healthier products. This SHC framework is centred on rebalancing the Scottish diet using four core principles:

- put children's health first in food-related decisions
- rebalance promotional activities to significantly shift the balance towards healthier choices
- support consumers and communities with education and information
- formulate healthier products and menus across retail and out of home catering

Physical activity

There is strong scientific evidence that sufficient, regular physical activity is beneficial for the health of body and mind. Physical activity improves the health of the heart; skeletal muscles; bones; blood; immune system and nervous system; and reduces the risk of over twenty five chronic health conditions, including coronary heart disease, stroke, type 2 diabetes, cancer, obesity, mental health problems and musculoskeletal problems. Physical activity improves psychological wellbeing; self-perception and self-esteem; and mood and sleep quality. There is also evidence it can help prevent or delay the onset of functional limitations, improve functional ability, and reduce falls, as well as contributing to the maintenance of cognitive function and delaying the onset of cognitive decline associated with ageing. Increasing physical activity in older adults is therefore an important way to improve healthy life expectancy.

In contrast, physical *inactivity* shortens life expectancy. The most recent global estimate is that inactivity is responsible for 9% of global mortality, or 5.3 million of the 57 million deaths that occurred worldwide in 2008, making inactivity the fourth leading cause of global mortality.

In 2014, 63% of adults in Scotland met the guidelines on moderate or vigorous physical activity (MVPA) of at least 150 minutes of moderate, or 75 minutes' vigorous activity, or an equivalent combination of the two, per week. This figure has not changed significantly in the 2012-2014 period. Men are more likely to meet the physical activity guidelines than women (68% v 59% in 2014). Activity levels are significantly associated with age, with adherence in 2014 highest among adults aged 25-34 (79%), and steadily declining with increasing age, with the lowest proportion found among adults aged 75 and over (26%).

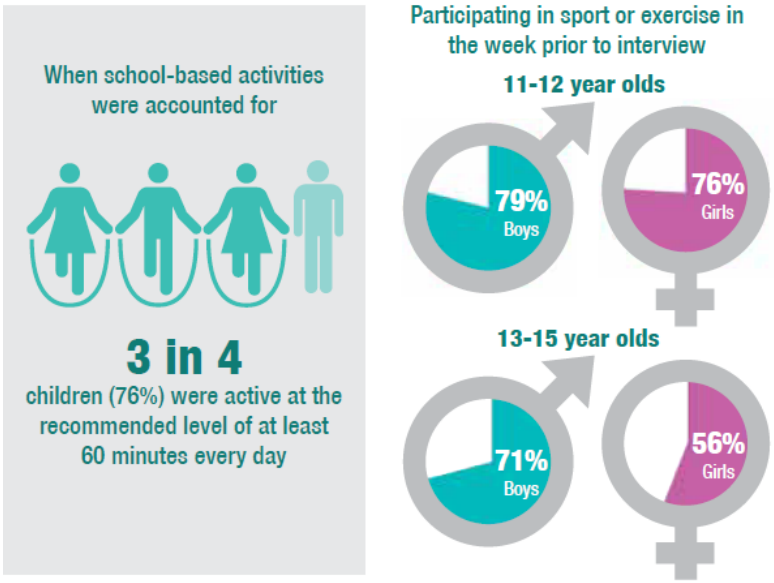
About a fifth (22%) of the adult population were inactive in 2014 – doing less than 30 minutes of moderate activity (or 15 minutes of vigorous activity) per week. The trend has also been stable in recent years. The groups most at risk of being physically inactive in Scotland are: those with a disability and/or long-standing poor health; older age groups; women, teenage girls and ethnic minorities (particularly of South Asian origin).

UK guidelines on physical activity also state that adults should carry out activities that strengthen muscles on at least 2 days per week. Adherence to the muscle strengthening guidelines is lower than

adherence to the guideline on MVPA. Only a quarter of adults in Scotland (26%) met the recommendations for both MVPA (150 minutes) *and* muscle strengthening (2 days per week) in 2014.

As shown, 76% of children aged 2-15 met the physical activity guidelines of being active for at least 60 minutes per day in 2014, an increase from 71% in 2008. However, the Scottish Health Survey also finds that, while the gender gap between boys and girls physical activity has narrowed since 2008, teenage girls activity levels remain markedly lower than teenage boys.

Physical Activity among young people, Scotland 2014



As with other population health challenges like diet and obesity, addressing physical inactivity is complex and requires multiple actions and interventions across a range of sectors including education, transport and environment and health. Scotland's Physical Activity Implementation Plan sets out a range of actions being delivered with partners in environment, workplace settings, healthcare settings, education settings and sport and active recreation. These actions contribute to the long term outcomes sought for sport and physical activity in Scotland as articulated in the Active Scotland Outcomes Framework (see below), developed collectively with national and local partners through the National Strategic Group for Sport and Physical Activity (NSG) and published in 2014. A suite of indicators is used to measure and report on progress which includes measures of both opportunity and outcome.

This info graphic was developed from the UK Chief Medical Officers' 2011 Physical Activity Guidelines. It is designed for use by healthcare professionals but has been well received by many others and shared widely using social media.

Vision: A More Active Scotland

Physical activity is about getting people moving. Daily walking, playing in a park, going to a gym, training with a team or aspiring to win a gold medal- it doesn't really matter how people get active, it just matters that we do.

Being physically active contributes to our personal, community and national wellbeing.

Our vision is of a Scotland where more people are more active, more often.

National Outcomes

Business	Employment	Research and Innovation	Young People	Early Years	Healthier	Inequalities Tackled	Life Chances
Safe from Crime	Sustainable Places	Resilient Communities	Environment Valued	National Identity	Impact on Environment	Older People Supported	Public Services

Active Scotland Outcomes

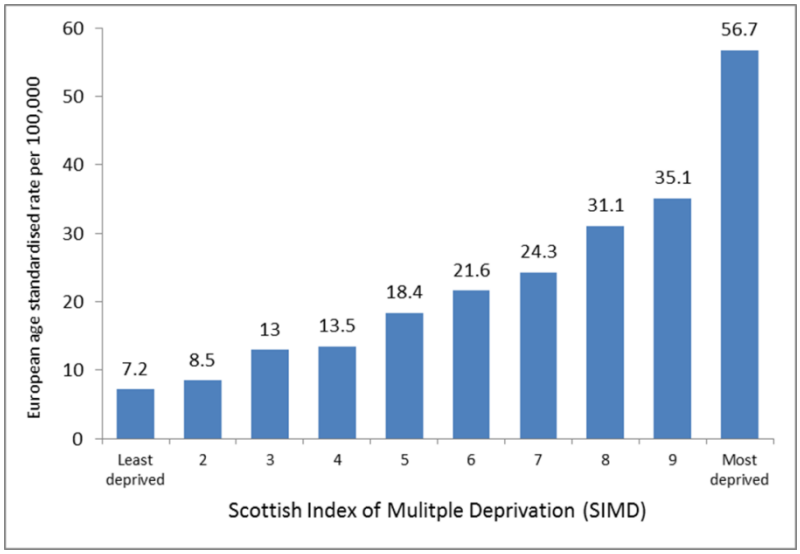
We encourage and enable the inactive to be more active	We encourage and enable the active to stay active throughout life	We develop physical confidence and competence from the earliest age
We improve our active infrastructure – people and places	We support wellbeing and resilience in communities through physical activity and sport	We improve opportunities to participate, progress and achieve in sport

Equality – Our commitment to equality underpins everything we do

Alcohol

Scotland's relationship with alcohol continues to be a challenging one. While the most recent data paints a mixed picture: consumption relatively stable, alcohol-related deaths up for the second year running, hospital admissions continuing to fall, the scale of the problem remains clear. Alcohol sales data show that adults in 2014 Scotland drink almost a fifth more than our counterparts in England and Wales (fuelling higher levels of harm), rates of alcohol-related hospital admission are 4 times higher than they were in the early 1980s and we have the highest rate of alcohol liver disease and cirrhosis in Western Europe. And it is those living in our poorest communities that are hit hardest. Mortality rates among those living in the 10% most deprived communities are around 8 times higher than rates in the least deprived areas of Scotland.

Alcohol-related deaths by deprivation decile, Scotland 2014



However, one potentially important development is the increasing number of people who are choosing not to drink. SHeS 2014 shows an increasing proportion of both men and women abstaining from alcohol over the last decade, with 14% of men and 18% of women now non-drinkers. Non-drinking is most common among those aged 75 and over but is prevalent across all age groups, with, for example, 13% of 16 to 24 years being abstinent. The highest rates of non-drinking are found among those living in the 20% most deprived areas of Scotland, with 1 in 5 reporting not drinking alcohol.

The Scottish Government's Framework for Action includes over 40 measures to reduce the damaging impact of excessive alcohol

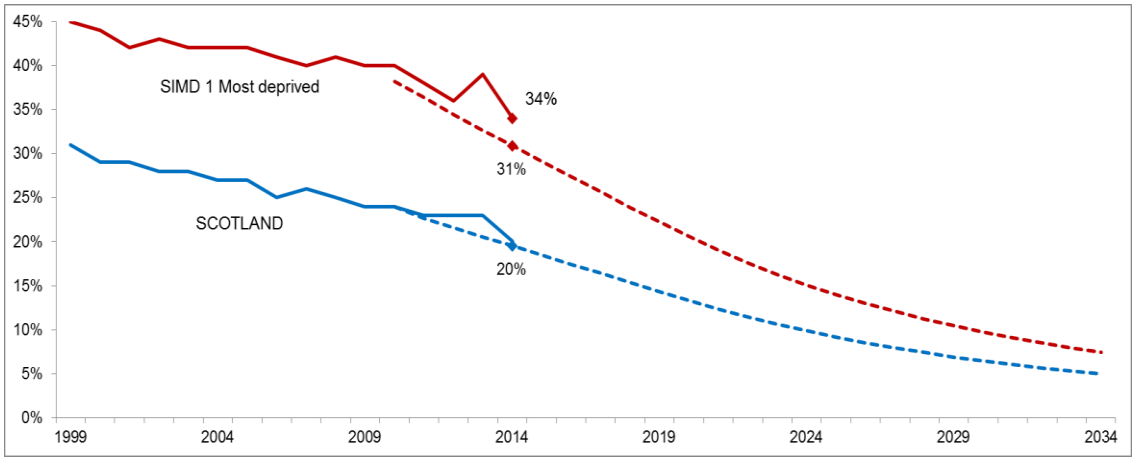
consumption. During 2014-15, almost 100,000 alcohol brief interventions were delivered to assist individual cut down on their drinking, while the target of ensuring that over 90% of clients wait no longer than 3 weeks from referral received to appropriate drug or alcohol treatment that supports their recovery continues to be exceeded each quarter. The UK CMOs' new consultation on guidelines for lower risk alcohol consumption were launched in January 2016. The main recommendations are that men and women are advised not to regularly drink more than 14 units a week; to spread drinking over three or more days if drinking as much as 14 units a week and there is no safe amount of alcohol that can be drunk during pregnancy.

Tobacco

The World Health Organisation considers tobacco to be one of the biggest public health threats the world has ever faced, killing nearly 6 million people a year worldwide. Smoking is the leading preventable cause of ill-health and premature death in Scotland, with half of all regular cigarette smokers estimated to die prematurely as a result of smoking. Smoking is associated with around a fifth of all deaths, and around 128,000 hospital admissions, per year in Scotland. This places considerable pressures on NHS services with annual costs potentially exceeding £0.5 billon.

The Scottish Household Survey 2014 found that adult smoking prevalence was 20%, a drop from 23% in 2013. This is the sharpest year-to-year decline in smoking rates over the duration of the time series. The decline in 2014 brings smoking prevalence in line with our projections towards the 2034 policy target (smoking prevalence of 5% or less by 2034). However, as with many other lifestyle factors significant inequalities remain: in the 20% most deprived areas 34% of adults smoke, compared to 9% in the least deprived areas.

Smoking prevalence: 1999-2014 and Projected smoking prevalence towards 2034 target



Figures from the SHeS 2014 showed that 11% of children are exposed to others' smoke in the home. We have set a target of a reduction to 6% (from the 2013 baseline of 12%) by 2020 and have run the *Take it Right Outside* social marketing campaign to help make parents aware of the dangers of smoking in the home and in cars. Exposure to second hand smoke will also be tacked via the Smoking Prohibition (Children in Motor Vehicles) (Scotland) Bill which bans smoking in cars when an under-18 is present. The Bill was passed by Parliament in December 2015 and is expected to come into force later this year.

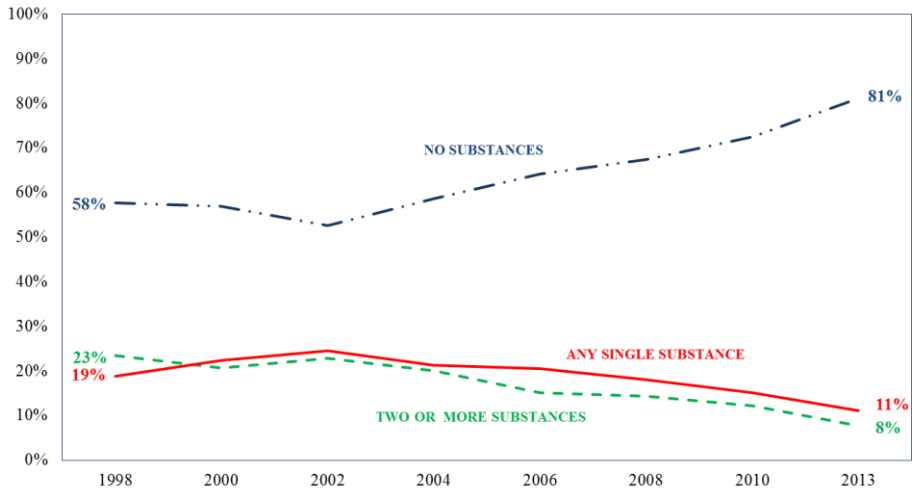
The Health (Tobacco, Nicotine etc. and Care) (Scotland) Bill reaffirms our commitment to tobacco control with further measures to limit its availability to under-18s, the introduction of the Challenge 25 age verification policy, and a new offence of smoking within a designated perimeter around buildings on NHS hospital grounds. In addition, working alongside the UK government, we will be one of the first countries to introduce standardised packaging on tobacco products to further reduce their visibility and their appeal.

Substance use among young people

New analyses of Scottish Schools Adolescent Lifestyle and Substance Use Survey (SALSUS) data found that levels of multiple substance use (that is the regular use of more than one substance – tobacco, alcohol, drugs) has fallen substantially over time and is at an all-time low (data published in 2014 showed that individual use was also the lowest recorded). Among 13 year olds the use of 2 or more substances has

decreased from 5% in 1998 to 1% in 2013 and, as shown, among 15 year olds from 23% to 8%.

Multiple substance use among 15 year olds, Scotland 1998-2013



Many different aspects of pupils' lifestyles were found to be associated with higher levels of multiple substance use. However, 2 key risk factors emerged:

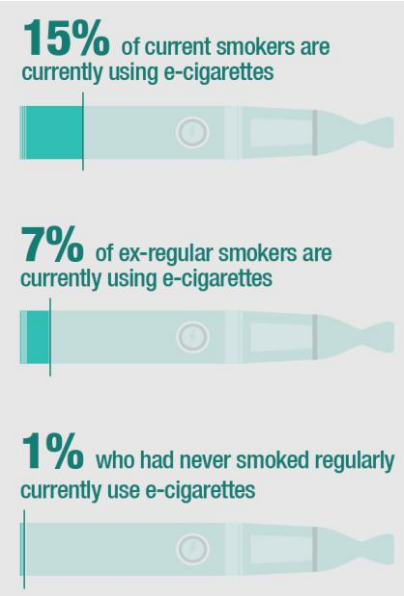
- Disengagement with school (increased levels of exclusion and truanting were strongly associated with the use of 2 or more substances).
- Lower supervision and structure in leisure time activities (a greater number of evenings spent out with friends, more time spent 'hanging out in the street', lower levels of club/group membership and lower parental knowledge of activities were associated with the use of 2 or more substances).

Electronic Cigarettes (e-cigarettes)

Electronic cigarettes continue to attract much interest and debate in academic, public health and media circles. A major challenge has been the lack of good quality evidence on the prevalence of e-cigarette use and the profile of users. Data availability is beginning to improve, however. For the first time the SHeS 2014 asked about e-cigarette use. It found that around 1 in 20 adults in Scotland are current users with a further 10% reporting that they have used e-cigarettes in the past. As with tobacco use, e-cigarette use is much higher in the most deprived areas of Scotland: 22% of adults in the most deprived areas use or have used e-cigarettes compared with 8% in the least deprived. Of current

smokers, half reported ever using e-cigarettes, including 15% currently using. E-cigarette use among ex-smokers is relatively low, at 7%. At present, studies have consistently shown very low levels of experimentation in non-smokers (0.1-3.8%).

Adult use of electronic cigarettes, Scotland 2014



SALSUS 2013 provides good quality data on use among Scotland's young people. It found that pupils who had tried smoking, used to smoke or are current smokers were more likely to have tried e-cigarettes. Seventeen percent of 15 year olds and 7% of 13 year olds reported ever trying or using e-cigarettes, with 6% of regular and 2% of occasional smokers using them at least weekly. Around 4% who had never smoked had ever used them, with the vast majority of these trying them once or a few times.

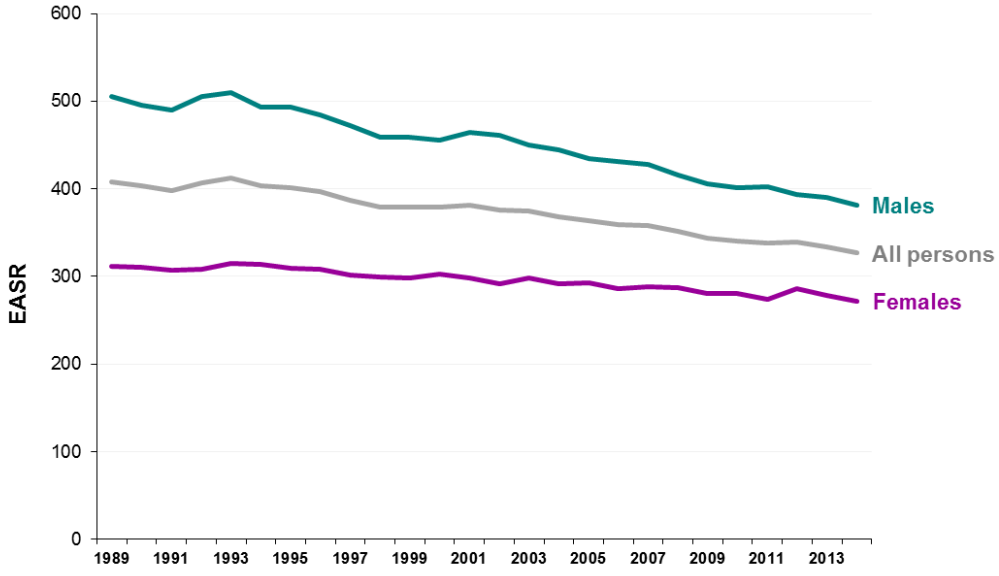
The Scottish Government has aimed to strike a balance on electronic cigarettes between the opportunity they provide in terms of harm reduction as a method used to stop smoking tobacco and managing unknown risks. It is particularly important to protect children. Concerns have been raised that experimentation with e-cigarettes may lead to nicotine addiction or act as a gateway to tobacco smoking with sophisticated marketing by the tobacco industry. The Health (Tobacco, Nicotine etc. and Care) (Scotland) Bill will introduce a minimum age of 18 for their purchase, require that retailers be registered centrally to sell e-cigs, will ban sales from vending machines and will prohibit most forms of domestic advertising of e-cigarettes. When implemented the European Union Tobacco Product Directive (TPD) will introduce

regulations on e-cigarette safety, contents and marketing (alongside other controls on tobacco, including an end of selling cigarettes in packs of 10). Further research evidence is emerging all the time and Scottish Government will monitor these studies very carefully.

Cancer

In 2014, 15,746 people in Scotland died from cancer (excluding non-melanoma skin cancers). As shown below, age-standardised cancer mortality rates have decreased by 20% since 1989, with a greater fall in males than in females (24% and 13% decrease, respectively). Cancers of the lung (4,117), colorectum (1,525), breast (976), prostate (906) and oesophagus (850) were responsible for more than half of the deaths from cancer in Scotland in 2014.

Cancer mortality rates, Scotland 1989-2014 (excluding non-melanoma skin cancer)
European Age Standardised Rate (EASR) per 100,000 population



Significant patterns exist when examining cancer mortality by deprivation. The Scottish Government's recent Long-term Monitoring of Health Inequalities report shows that while cancer mortality rates (aged <75) have fallen in both the least and most deprived areas over the last 15 years, there has been a slight widening in the inequality gap (as measured by the relative index of inequality).

One of the keys to improving cancer mortality rates is early diagnosis, and the Scottish Government has invested £39 million in our Detect

Cancer Early programme. The key aim of which is to encourage people, regardless of their personal circumstances, who have any unusual or persistent changes to their body, to visit their GP. Revised referral guidelines also assist GPs in spotting symptoms of cancer sooner and ensuring that patients who require urgent attention are quickly assessed by a specialist. We also continue to invest in advanced treatment techniques to provide Scottish patients with access to the best treatments possible. Our new Cancer Plan, due to be published this year, will provide an opportunity to build on existing programmes to ensure that the diagnostic and treatment services meet the needs of the Scottish population.

Mental health

Mental health is one of the top public health challenges as measured by prevalence, burden of disease and disability, with around 1 in 3 people estimated to be affected by mental illness in any one year. Mental health problems cover a continuum from symptoms at a sub-clinical threshold which interfere with emotional, cognitive or social function, to severe clinically diagnosed mental illnesses. Examples include common mental health problems such as depression and anxiety, and severe and enduring mental health problems such as schizophrenia.

The Scottish Health Survey finds that the mean score on the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) has been steady (at around 50.0) between 2008 and 2014. The proportion of adults in Scotland who have a below average WEMWBS score has remained at 15% between 2008-9 and 2012-13. In 2012-13, 26% of adults in the most deprived areas had a below average WEMWBS score, compared to 6% of adults in the least deprived areas. The inequality gap has widened in recent years.

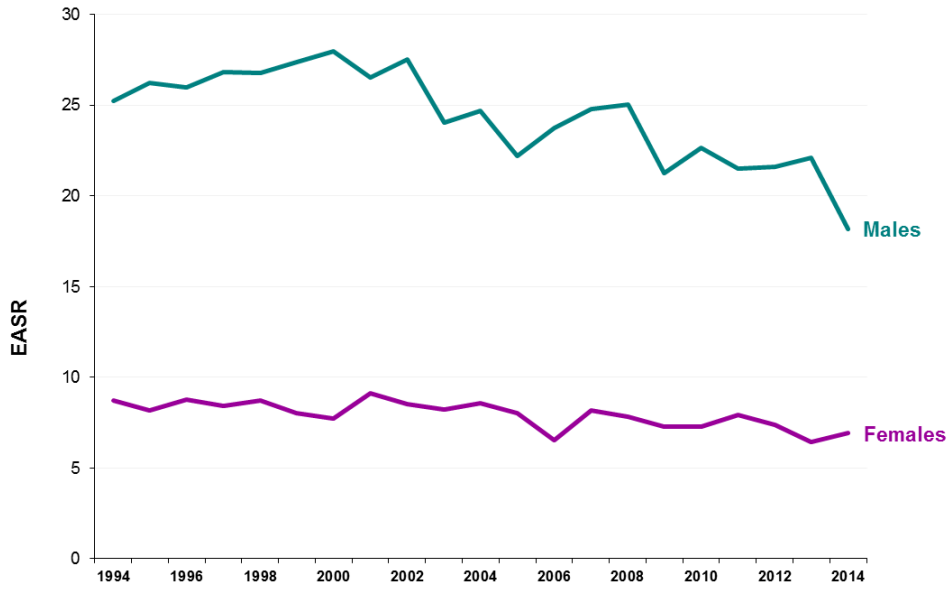
The Mental Health Strategy for Scotland: 2012-2015 sets out the Scottish Government's key commitments in relation to improving the nation's mental health and wellbeing and for ensuring improved services and outcomes for individuals and communities. The strategy includes 36 commitments, 7 key themes and 4 key change areas it adheres to in achieving these priorities. The strategy promotes safe, effective and person-centred health and care. In addition to focussing on improved service delivery it emphasises actions that individuals and communities can take to maintain and improve their own health. We anticipate the next strategy will be produced after the May 2016 election, subject to the administration’s priorities.

In January 2016, First Minister Nicola Sturgeon announced that more than £54m will be made available to improve access to mental health services. This additional investment will help improve access to psychological therapies for all ages including for children and adolescents' mental health services.

Suicide

There has been a 17.8% reduction in the suicide rate in Scotland over the period 2000-04 to 2010-2014, with the number of deaths by suicide in Scotland in 2014 the lowest in a single year since 1977. In 2010-14, the suicide rate was more than 3 times higher in the 10% most deprived areas compared to the 10% least deprived areas. However, over the last decade the gap between rates in the most and least deprived areas has narrowed.

Suicide rates, Scotland 1994-2014, European Age Standardised Rate (EASR) per 100,000 population



The Suicide Prevention Strategy for 2013-16 sets out a range of commitments designed to continue the downward trend in suicide rates which we had already seen in the previous 10 years. The commitments are based on emerging evidence about suicide and its prevention.

Communicable Diseases

Vaccine Preventable Disease

The Scottish Immunisation Programme continues to develop in response to newly available vaccines and emerging threats.

Since the beginning of 2014, immunisation programme developments include:

- offering seasonal flu vaccine to all children from age 2 years to the end of primary school;
- introducing vaccination against Meningococcal B disease for infants;
- expanding protection against meningococcal disease for adolescents with the introduction of ACWY vaccine for those aged 14-18 years and new university entrants;
- continuing with the phased catch-up programme for herpes zoster (shingles) vaccine for those aged 70-79 years.

These developments mean that over 2 million vaccines are now offered every year to protect the population of Scotland. The programme is delivered by colleagues in Scottish Government working closely with Health Protection Scotland, NHS Boards and primary care. Immense benefits are already being seen and we continue to monitor impact against more recently introduced vaccines.

Meningococcal disease

Meningococcal disease, caused by the bacteria *Neisseria meningitidis*, is an important cause of morbidity and mortality in Scotland, particularly among children and young people. In the first 6 months of 2015, 38 cases were reported, similar to the same period in 2014, in which 73 cases were reported for the entire year. Serogroup B continues to dominate, but as for elsewhere in the UK, cases of serogroup W have risen markedly, including an outbreak of four cases associated with Scouts returning from an international camp. New vaccination measures against both Group B and W disease have been put in place and are under evaluation.

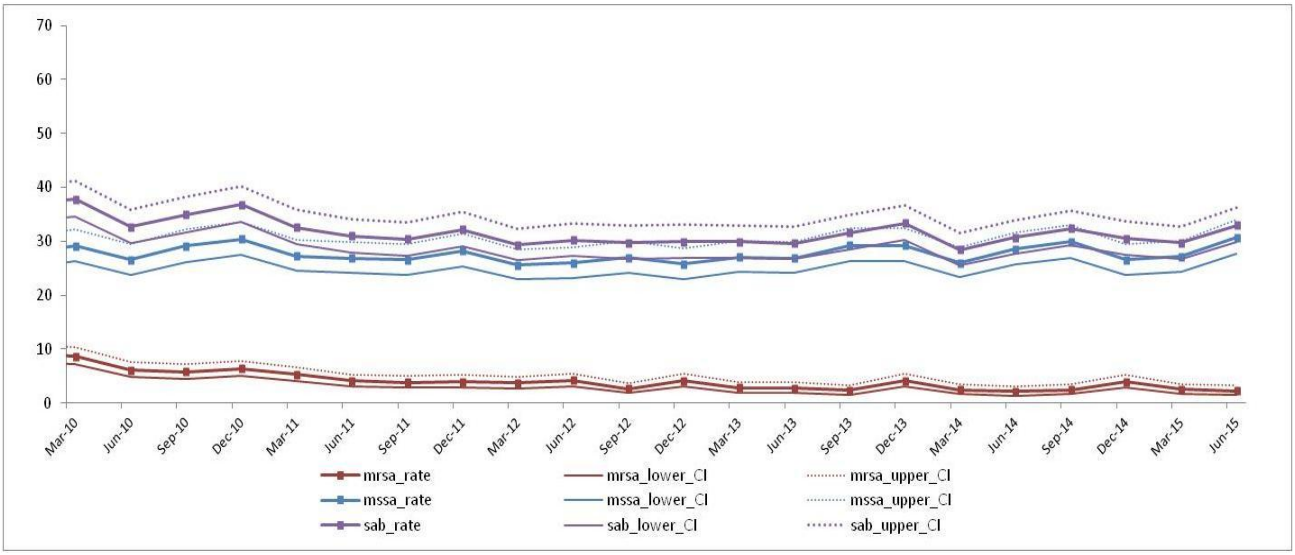
Healthcare Associated Infections and Antimicrobial Resistance

Healthcare associated infections (HAIs) continue to represent a threat to safe care, wherever that is delivered. HAI place a significant financial burden on NHSScotland with HAI originating in acute care estimated to cost the NHS in Scotland £137 million annually. The recently acknowledged global issue and threat of antimicrobial resistance (AMR) means that prevention and control of all infections is a key continuing requirement in healthcare to minimise the need for antimicrobials, in addition to good stewardship of antimicrobials when required.
HPS routinely monitors the incidence of key selected HAI, as follows:

Staphylococcus aureus bacteraemia

During 2014, a total of 1,567 cases of *Staphylococcus aureus* bacteraemia including 141 (9.0%) meticillin resistant *S. aureus* (MRSA) were reported. This represented an annual incidence of *S. aureus* bacteraemia of 30.4 per 100 000 acute occupied bed days (AOBDs). This was not significantly different compared to the previous year.

Figure 1: Overall quarterly *S. aureus*, MRSA and MSSA bacteraemia incidence rates for Scotland (per 100 000 AOBDs) for the period Q3 2010 to Q2 2015.

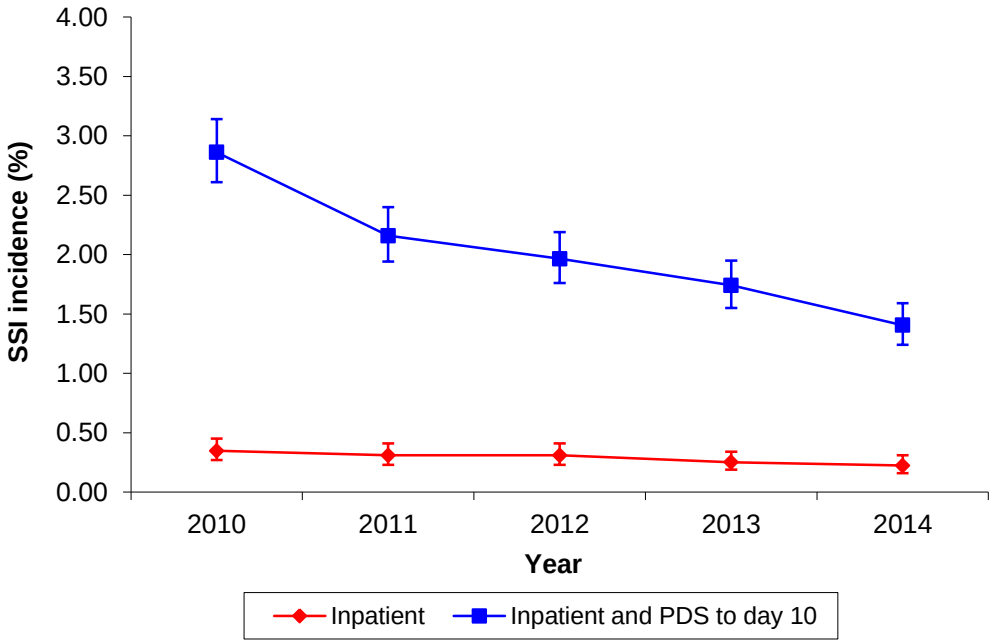


Screening for antibiotic resistant organisms on admission to hospital is one of the key infection prevention activities in acute care. A national MRSA screening policy has been in place in Scotland since March 2012. Compliance with application of the Clinical Risk Assessment is a level 3 HAI Key Performance Indicator, which was introduced in 2013. The compliance, reported between January 2014 and June 2015 was 79%, below the Scottish Government Health and Social Care Directorate (SGHSCD) target of 90%. The current screening policy with this level of compliance remains clinically and cost-effective when compared with universal MRSA screening, due to the added benefits of pre-emptive isolation and significantly lower cost of CRA

Surgical Site Infection (SSI)

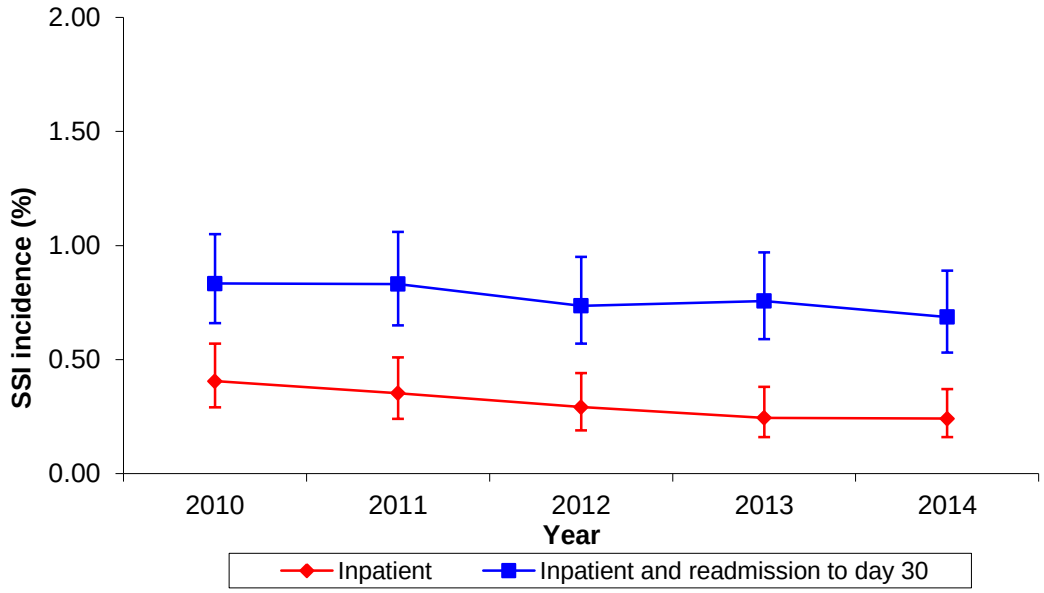
The incidence of SSI (inpatient and post discharge surveillance (PDS) to day 10) following Caesarean section surgery decreased from 1.74% in 2013 to 1.41% in 2014 (Figure 2). The SSI incidence has remained unchanged for the first 6 months of 2015 at 1.2%.

Figure 2: Incidence of SSI following caesarean section procedures in Scotland (inpatient and PDS to day 10), 2010 to 2014.



The SSI incidence for hip arthroplasty, for both inpatient and readmission to day 30 remained stable.

Figure 3: Incidence of SSI following hip arthroplasty procedures in Scotland (inpatient and readmission to day 30), 2010 to 2014.



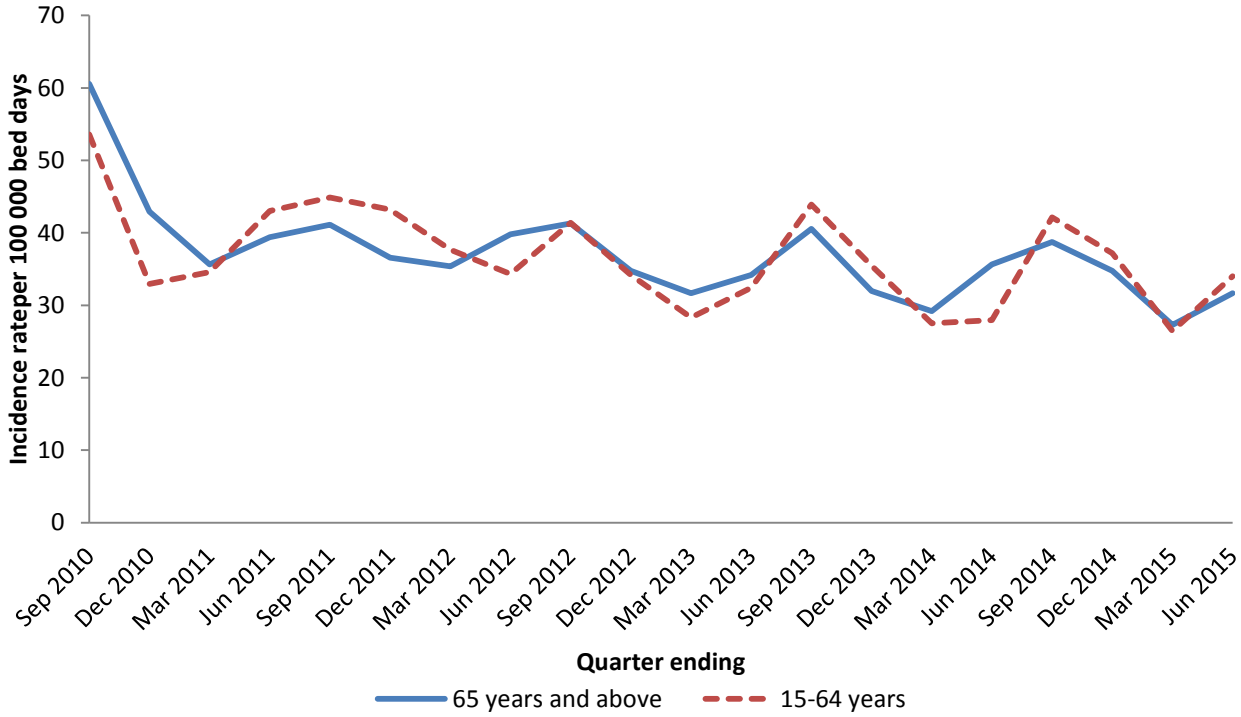
Intensive care unit HAI surveillance

During 2014, 2.5% of patients staying in an intensive care unit for more than 2 days developed an ICU acquired selected HAI. The incidence of bloodstream infection, central venous catheter related infection and pneumonia remained unchanged from 2013.

Clostridium difficile infection (CDI)

The annual incidence rate for 2014, in patients aged 65 and above, was 34.5 per 100,000 total bed days, which is unchanged compared to 2013. In patients aged 15 to 64 years, the annual incidence rate for 2014 was 33.8 per 100,000 acute bed days compared to 35.0 per 100,000 acute bed days in 2013). In the first 2 quarters of 2015, the burden of CDI Seasonality has been observed in the pattern of quarterly rates over the past 5 years

Figure 4: Overall quarterly CDI incidence rates for Scotland in patients aged 65 years and above (per 100,000 TOBDs) and 15-64 years (per 100,000 AOBDs) for the period Q3 2010 to Q2 2015.



A one-year sentinel study carried out in 2013/14 involving 5 Scottish NHS Boards showed that a substantial proportion of CDI cases (26%) reported in Scotland were community associated (CA-CDI). Historically, CDI has mainly been considered an HAI. Beginning in 2016, HPS will report on the proportion of CA-CDI in national surveillance publications. To improve understanding of CDI mortality trends in Scotland, CDI case patient data from the national surveillance programme were linked to hospital episode and mortality data between 2009 and 2013. The results showed there was a decrease in 30-day all-cause mortality among patients with CDI from 19.8% to 17.0% between 2009 and 2013, with a year on year decrease of 5.6%. Thirty-day mortality was higher in patients with healthcare-associated CDI.

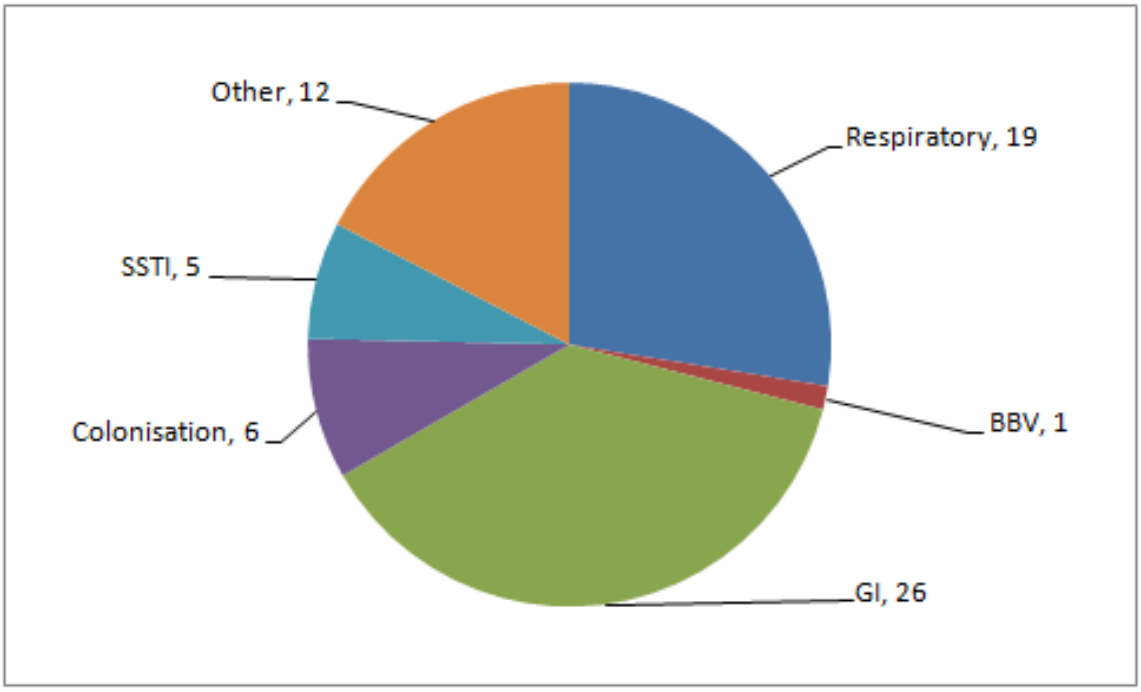
These results may suggest improvements in the quality of care received by CDI patients in recent years; however, the observed decline may be indirectly linked to overall improvements in mortality among the general population of Scotland, which needs to be assessed.

HAI Outbreaks

From January 2014 to September 2015, a total of 69 health-care associated outbreaks were reported to HPS of which: 17 were of the highest category Hospital Infection Incident Assessment Tool (HIIAT) red, 35 were HIIAT amber and 16 were green. One outbreak was ongoing at the time of this report, thus final HIIAT assessment was not complete.

Figure 5 shows the infection types that arose in healthcare related outbreaks reported from January 2014 to September 2015. The most commonly reported outbreaks involved respiratory and gastrointestinal infections similar to findings in 2013. The most common organism causing gastrointestinal outbreaks was Norovirus (n=13) and *Clostridium difficile* (n=13). The most common organism causing respiratory outbreaks was influenza (n=9).

Figure 5: Types of HAI outbreaks and incidents (n=69) reported to HPS, January 2014 to September 2015.



Norovirus outbreaks continue to be the most common cause of ward closures within NHS boards. Figures are reported from mid-year to mid-year due to the seasonality of norovirus. Reported ward closures for

season 2014/2015 were higher (n=222) compared with the previous season 2013/2014 (n=116). This may be due to a decrease in bay closures for season 2014/2015 (n=17) compared with season 2013/2014 (n=117).

Escherichia coli and its antimicrobial susceptibility

In Scotland, *Escherichia coli* (*E. coli*) is the most common pathogen implicated in bacteraemia in community and healthcare settings. During 2014, there were 4,539 cases of E. coli bacteraemia in Scotland compared to 4,321 in 2013. The incidence increased from 69.8 per 100,000 bed days in 2010 to 88.2 per 100,000 bed days in 2014. There have been 2,645 cases of *E coli* bacteraemia between January and June of 2015. A national *E. coli* bacteraemia programme is being established to monitor the burden of *E.coli* bacteraemia and to inform interventions/changes in practices.

Antimicrobial susceptibility among *E. coli* bacteraemias has remained stable since 2011. Non-susceptibility to co-amoxiclav in continues to occur at a very high frequency, (32.6%), and potentially could compromise infection management. Prescribing policies leading to the restriction of broad-spectrum agents in general (in particular carbapenems), IVOST (IV switch to oral therapy) and de-escalation initiatives may have driven the increased use of co-amoxiclav. The proportion of extended-spectrum beta-lactamase (ESBL) producers among *E. coli* bacteraemias has remained stable since 2011.

Carbapenemase Producing Organisms

Multidrug resistance among Gram-negative organisms continues to be a major threat to public health and patient safety. In particular, the emergence of carbapenemase producing bacteria is concerning as this leaves few options to treat severe infections. In 2014, a total of 43 carbapenemase-producing organisms (CPO's) were reported to HPS from the Antimicrobial Resistance and Healthcare Associated Infection (AMRHAI) Reference Laboratory at Public Health England (PHE). This was an increase compared to 2013 (n=22), however this increase could reflect ascertainment bias due to better awareness and implementation of screening in high risk populations rather than a genuine increasing

incidence. For the first 6 months of 2015, there have been a total of 25 CPO's reported.

Controlling Antimicrobial Resistance in Scotland (CARS)

Established in 2015, the Control of Antimicrobial Resistance in Scotland (CARS) team in HPS is leading Scotland's strategic response to control of antimicrobial resistance (AMR) in line with the UK five- year antimicrobial resistance strategy 2013-2018.

Building on the successful antimicrobial prescribing work led by the Scottish Antimicrobial prescribing Group (SAPG) in Scotland under the existing AMR strategy (SCOTMARAP 2); a number of work streams have been developed with a focus on:

- Surveillance - CARS is working with Scottish Microbiology and Virology Network (SMVN) and other partners to further standardise and improve AMR data systems to improve AMR monitoring and provide an early warning of new types of resistance threats.
- Animal health - Working with partners, the CARS team is ensuring that measures to prevent animal infection and to optimise animal prescribing are in place across all animal health sectors, particularly those which are important in relation to the development of AMR.
- Research- working with partners to develop a strategic approach to AMR research including scoping out research priorities, approaches, collaborations and funding opportunities.
- Education and engagement- working with NES and other partners to ensure that AMR is a component of the education of all relevant professional groups including those working in animal health.

Summary

Health Protection Scotland continues to coordinate the national leadership in tackling HAI and AMR and whilst some improvements have been seen in selected SSI there remains a burden of HAI requiring further reduction. Key initiatives introduced in the last year include: evidence reviews to inform infection prevention and control guidance, decontamination monitoring, guidance for endoscopes and equipment used at the patient bedside, establishing the CARS programme and

campaigning to prevent the risk of norovirus. In addition HPS has provided expertise to support outbreak preparedness within NHS boards and utilised the national reference laboratory intelligence to inform our work. Newly established enhanced surveillance and research studies will add to this intelligence to inform future strategies for prevention of HAI.

Blood Borne Viruses and Sexually Transmissible Infections

A new Sexual Health and Blood-Borne Virus (SHBBV) Framework (2015-2020) was published by the Scottish Government in September 2015. The framework is a natural progression, rather than a reworking, of the previous SHBBV Framework 2011-2015. It combines areas of work surrounding Sexual Health, HIV, hepatitis C and hepatitis B and is a multi-agency, cross agenda approach based on 5 high level outcomes.

Hepatitis C Virus Infection

New national guidance on the treatment of Hepatitis C virus (HCV) was released in Scotland in August 2015 following a review of clinical evidence by expert stakeholders. The new guidance advises Sofosbuvir-based regimens as the first-line prescribing choice for treating the majority of patients with genotypes 1, 2 and 3.

In the first quarter of 2015/16, over 400 individuals commenced treatment for chronic HCV infection, almost three-quarters of whom were being treated with a sofosbuvir-containing regimen. Challenges relating to the identification of HCV infected individuals, particularly those with advancing disease, and the accessing of funds to pay for the therapies, remain.

Complementary guidance on treatment prioritisations, in terms of timing only, was published in the SHBBV Framework as above; targets of at least 1,500 people being treated annually from 2015, and a 75% reduction in end stage liver disease by 2020, were set.

In recognition of Scotland's pioneering work in the field, the inaugural World Hepatitis Summit was held in Glasgow in September 2015. The summit, co-sponsored by WHO and the World Hepatitis Alliance, was hosted by the Scottish Government in association with HPS and Glasgow Caledonian University. The aim was to help countries enhance action to prevent viral hepatitis infection and ensure that people who are infected are diagnosed and offered treatment. Policymakers, patient

groups and other key stakeholders attending the summit issued The Glasgow Declaration on Hepatitis promoting the elimination of viral hepatitis as a public health concern and urging governments to work with WHO to define and agree on global targets for prevention, diagnosis and treatment.

HIV

At the end June 2015, over 5,000 people are estimated to be diagnosed and living with HIV in Scotland. An estimated further 1,600, however, remain undiagnosed and novel methods are required to promote HIV testing in a variety of settings. Following a change in the law in April 2014, the first licensed HIV self testing kits, based on a finger prick blood sample, went on sale at the end of April 2015. This approach, where the individual can read their own test result within 15 minutes, increases the options for HIV testing as part of the prevention toolkit. These kits are available online and it is expected that these will also be available to purchase over the counter in due course. Furthermore, developments in laboratory testing now mean that all new HIV diagnoses are subjected to a supplementary new test, the avidity antibody test, developed by the BBV specialist testing laboratory in Glasgow. The results of this test are used to determine the proportion of those who have recently acquired their HIV infection, that is, within the previous 3 to 4 months. This service was implemented across all NHS board areas during 2014 and the most recent data up to the end September 2015 indicate that over one third of newly diagnosed men who have sex with men (MSM) have recently acquired their HIV infection. This is the highest proportion among all risk groups tested and suggests that the majority of HIV transmission in Scotland is occurring among this group. This test has also been helpful in outbreak situations.

An increase in the number of people who inject drugs (PWID) diagnosed with HIV infection in Glasgow is currently under investigation. Between January and August 2015, 36 HIV infections had been diagnosed, including 10 with evidence of recent infection. Glasgow typically records around 10 new cases of HIV related to injecting drug use each year. Control measures including awareness raising of the risk of HIV among PWID and services in contact with this population, and reminding PWID not to share injecting equipment and to use condoms for sexual intercourse, have been implemented. Foil for smoking heroin is available as an alternative to injecting, and provision of injecting equipment including water is widely available with PWID not limited in the volume they can access. Control measures also include increasing

HIV testing by a variety of services in contact with those at risk and measures to engage cases in HIV treatment.

Sexually transmitted infection

Evidence from the monitoring of laboratory positive diagnoses of sexually transmitted infection (STI) indicate that the incidence of STIs among the young heterosexual population and MSM through unprotected sexual intercourse remain a problem in Scotland: challenges for control and prevention continue. Thus, this remains a priority area for the Scottish Government as outlined in the SHBBV Framework 2015-2020. In this respect, chlamydia testing policy has been an area of review and the Scottish Government commissioned a cost effectiveness study. HPS, in conjunction with other clinical and research partners, notably modelling experts at the University of Bristol, published the results of the cost-effectiveness analysis in January 2015. The model was sensitive to several parameters, particularly the health state utility values for pelvic inflammatory disease and tubal factor infertility, however, based on conservative modelling assumptions, current testing activities in Scotland do not appear to be cost-effective. The study highlighted areas where cost effectiveness could be improved and this information will be used to inform the guidance around testing practice.

HIV infected Health Care Workers and Exposure Prone Procedures

In January 2014, the CMO distributed a letter communicating changes to policy in Scotland (and across the UK) in relation to the practice of exposure prone procedures (EPPs) by healthcare workers living with HIV. The letter briefly summarised the conditions for being cleared to perform EPPs based on viral load and treatment regime and also explained the requirement of healthcare workers to be registered on a confidential national register, the UKAP-OHR (UK Advisory Panel for Healthcare Workers Infected with Blood-borne Viruses – Occupational Health Monitoring Register for BBV Infected HCWs). This change reflects accumulated evidence that shows there is an extremely low risk of transmission from an infected HCW to a patient, and has benefitted a number of healthcare workers who are living with HIV in Scotland.

Accompanying this policy change is an updated guidance document from Public Health England describing the management of HIV infected HCWs who wish to perform EPPs

https://www.gov.uk/government/publications/hiv-infected-healthcare-workers-and-exposure-prone-procedures.

Gastrointestinal and Zoonoses Infections

Verotoxin-producing *E. coli*

In 2014, there were 263 faecal culture positive cases of *E. coli* O157 notified to HPS in 2014. This represented an increase on the 167 cases reported in 2013. The reasons for the increase observed in 2014 compared to 2013 were due in part to the fact that the number of cases reported in 2013 was the lowest annual total for 5 years and substantially below the annual average for that period (221 cases per annum). Nine general outbreaks of verotoxin-producing *E. coli* (VTEC) were reported to HPS compared to three in 2013. Of these 9, 7 were identified as serogroup O157, one was serogroup O125 and one was both serogroup O157 and O103. Further information on these outbreaks is contained in the HPS Weekly Report on general outbreaks of infectious intestinal disease in 2014. (http://www.hps.scot.nhs.uk/ewr/redirect.aspx?id=64290)

The consistently high rates of VTEC infection reported in Scotland as compared to other UK countries, and indeed the increase in outbreak cases observed in 2014, underlines the need for the continued and comprehensive application of the wide range of existing control measures embedded in food safety and other guidance in Scotland. In addition it highlights the importance of a comprehensive multi-agency approach to tackling VTEC in Scotland as set out in the VTEC Action Plan for Scotland; more information on the VTEC Action Plan can be accessed at: http://www.scotland.gov.uk/Publications/2013/11/8897/0.

The VTEC Action plan was published in November 2013 and contained 86 recommendations designed to tackle VTEC/ *E.coli* O157 in Scotland. Scottish Government requested that HPS take responsibility for monitoring and coordinating the implementation of the actions plan.

Recommendations were divided into 8 areas of work (animal attractions, clinical, communications, environmental, Food Standards Scotland, private water supplies, public water supplies, research & surveillance). It was recognised that communications will crossover a wide range of work streams. It is anticipated that the working groups will complete their actions by 2017.

Hepatitis E

Over the past few years Hepatitis E has emerged in Scotland and elsewhere in the UK as a pathogen of increasing importance. Until recently Hepatitis E was considered mainly travel-related among those returning from Hepatitis E endemic areas; however, indigenous cases are now recognised as an important component of infection in Scotland. Since 2011, there has been an increase in laboratory reports of Hepatitis E from 13 in 2011, to 78 in 2012, 95 in 2013 and 161 in 2014, more than ten-fold the number four years earlier. In response to this increase HPS has established a Hepatitis sub-group of the SHPN-GIZ group. The Hepatitis E group is a multi-agency group with representatives from Food Standards Scotland, NHS Board Health Protection Teams, virologists, clinicians, veterinary consultant, Public Health England, SNBTS and academia. The group aims to work to achieve a better understanding of the epidemiology of hepatitis E in Scotland to help inform public health action to reduce the incidence of disease.

Imported infection and travel abroad

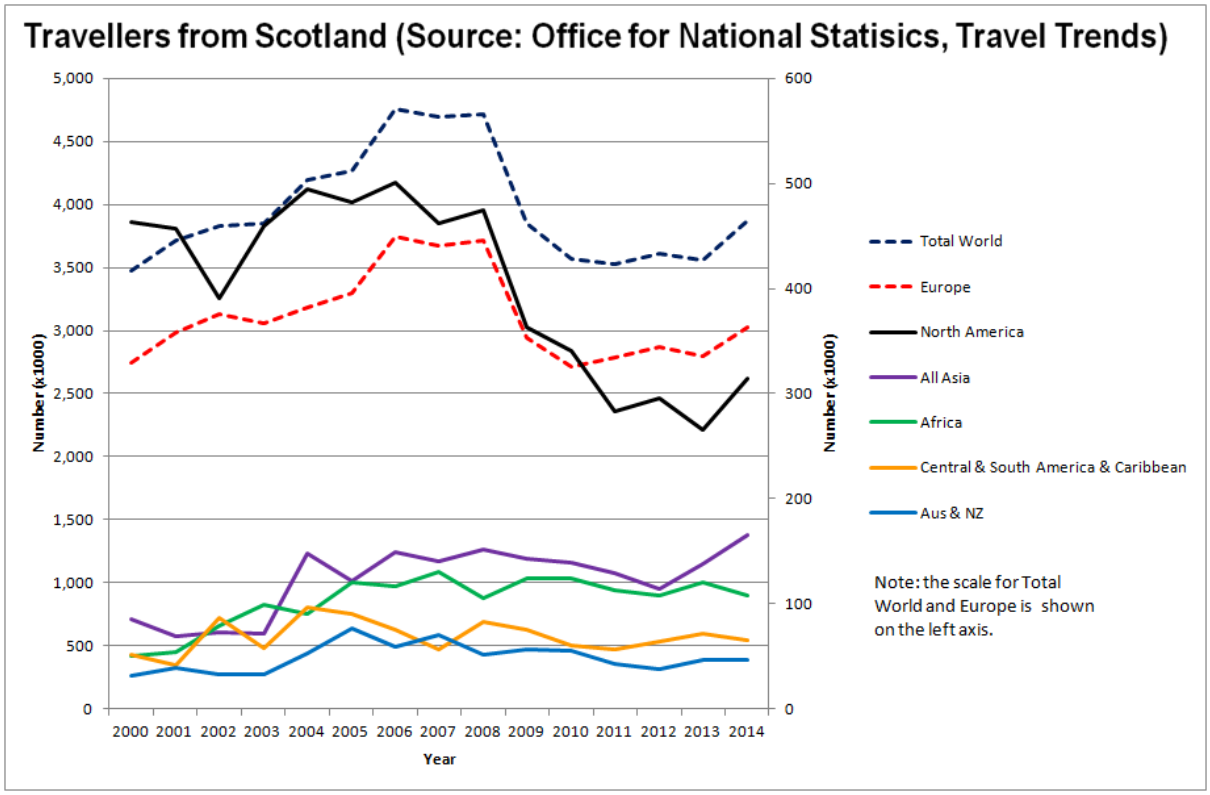
As part of its remit to protect the health of the Scottish public, Health Protection Scotland (HPS) provides advice and guidance to health professionals and members of the public on:

- risks associated with travelling abroad
- assessment of emerging risks abroad and imported infections

In 2014 to fulfil these responsibilities the Travel & International Health team (TIHT) of HPS continued to carried out surveillance of travel-related infectious disease imported in Scotland, surveillance of outbreaks and incidents abroad, in particular by supporting the risk assessment for the 2014 Commonwealth Games, and also playing a central role the Scottish public health response to the Ebola outbreak in West Africa.

In 2014 [1], there were approximately 3.9 million journeys abroad from Scotland, representing 6% of total journeys from the UK. This was an increase of 9% over the previous year's figure. In 2014 Europe (78%) was the most visited destination followed by North America (8%), Asia (4%), Africa (3%), Central, South America and the Caribbean (2%) and Australia and New Zealand (1%) (Figure 6).

Figure 6. Travellers from Scotland[1]



Forecasts indicate further increases in Global and UK travel abroad, along with the ever present risk of emerging infections of high pathogenicity and/or transmissibility (refs), and incursion of infections into new geographical areas (refs). HPS strives to intelligently translate the various data through risk assessment into tools for planning, management, advice and guidance. Recent work carried out during the Commonwealth Games, has helped build the capacity in HPS to accurately assess the plethora of data available.

TIHT maintain 2 evidence-based, travel health advice websites. TRAVAX (www.travax.nhs.uk) is aimed at health professionals and assists with pre- and post-travel assessment, and fitfortravel (www.fitfortravel.nhs.uk) directly speaks to the travelling public. Both sites highlight developing issues and rely on competent assessment of real-time data on risks abroad, along with clinical and epidemiological evidence, to produce timely and appropriate advice and recommendations for actions.

Surveillance of Imported infection

Surveillance of key imported infections is one indicator HPS uses to assess wider public health risk. Those infections which are reported to HPS as imported are included in the annual totals of travel-related infection authored by TIHT in January each year since 2013. [2]
In 2014, 203 episodes of schistosomiasis were reported, making this the most frequently reported travel-related infection. This disease is transmitted through contact with affected fresh water particularly in sub-saharan Africa. School visits to countries where *Schistosoma sp* and other pathogens are endemic are now commonplace. In response to this HPS has developed guidance specifically for school groups [3] and continues to advise that travellers who bathe in fresh water in endemic countries are tested for infection on their return home.

In terms of infectious risks to travellers, we know that food and water-borne diseases resulting in travellers' diarrhoea and similar illnesses are amongst the most common affecting travellers. Non-viral gastrointestinal infections were among the most frequently reported by the laboratories to HPS as travel-related during 2014, the most common being *Giardia* spp (36) followed by *Cryptosporidium* spp (31) and *Shigella* spp (22). It is highly likely, however, that the real incidence of these infections is much greater.

Cyclospora cayetanensis is a protozoan parasite that causes diarrhoea, particularly in developing countries. In July 2015, Health Protection Scotland (HPS) identified an unusual increase in *Cyclospora* infections in travellers to Mexico and informed Public Health England (PHE), who identified additional cases. *C. cayetanensis* was identified in 21 returned Scottish travellers from the Riviera Maya region of Mexico between 1 June 2015 and 22 September 2015. In total, 176 cases were reported of which 79 cases were reported from the UK and 97 in Canada. An outbreak control team managed the UK investigation. Patients were interviewed about travel history, food consumption, clinical symptom details and demography using a questionnaire.

This increase in cyclosporiasis in the UK and Canada occurred in people returning from 32 hotels on the Riviera Maya coast of Mexico. No formal epidemiologic study was conducted. Drinking water was an unlikely source as several different water networks supply the resorts. Geographic and temporal associations suggest the outbreak was related to a consumed product(s) distributed throughout the region rather than hygiene deficiencies in individual hotels. Close collaboration with the Scottish Parasite Diagnostic and Reference Laboratory were crucial in the early identification of this rare pathogen. This outbreak has now been published in Eurosurveillance: http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=21284.

Supplementing routine laboratory reports, HPS also receive information from NHS Boards on potential outbreaks of infectious intestinal disease believed to have been acquired abroad[4] In 2014, information was circulated concerning 30 potential outbreaks of infectious intestinal disease in persons returning to Scotland from abroad. Most commonly mentioned countries were Turkey (7 outbreaks), Spain (7), Egypt (3) and Tunisia (2) which are all popular tourist destinations.

Vector-borne diseases remain a risk for travellers and HPS provide guidance on prevention, prophylaxis and treatment via TRAVAX and fitfortravel. Malaria was the most commonly reported vector-borne disease in Scotland in 2014 with 76 reports: representing less than 5% of the UK total. [5] Those visiting friends and relatives (VFRs) abroad represented the greatest proportion of cases with 18 reports (28%). Africa contributed 91% of the 75 reports where region of transmission was recorded; West Africa alone contributed 53% (40) of the reports. In line with the region of transmission 83% (63) of the reports were due to infection with *Plasmodium falciparum,* with *P.vivax* (9, 12%), *P malariae* (5, 7%) and *P ovale* (1, 1%) providing the remainder; 2 were mixed infections. Risks faced by travellers may be linked to travel at short notice with lack of preparation and appropriate advice. In particular VFR travellers may have a belief in innate immunity or the safety of their destination and fail to take adequate precautions. The possibility should always be considered in a febrile individual arriving from a country where malaria is endemic.

Of the other vector-borne infections reported in 2014, dengue virus (28) was most common although 13% lower than in 2013 (31) followed by 6 reports of chikungunya virus, compared to 2 in 2013. In 2014 imported West Nile virus cases were reported in Scotland for the first time with 3 reports. While there is significant public health concern over the establishment of vector-borne diseases in Europe, particularly in Southern Europe, opportunity for the establishment of such infections in Scotland is limited by climate. Nonetheless as the distribution of such vector-borne infections continues to increase, the risk of disease for travellers from Scotland may increase as a result.

Surveillance of outbreaks across the world

As in previous years, during 2014 HPS continued to monitor and assess international occurrence of infectious diseases of global importance such as Middle East Respiratory Syndrome Coronavirus (MERS-CoV), influenza, measles and poliomyelitis.

Two events in 2014 raised the profile of the international nature of disease transmission for Scotland being 1) the Glasgow Commonwealth Games and 2) the Ebola outbreak in West Africa.

Commonwealth Games

In 2014 the 20th Commonwealth Games was held in Glasgow between 23 July 2015 and 3 August 2015. This was the largest sporting event ever to be held in Scotland with 6500 athletes from 70 countries taking part across sites in Glasgow, Edinburgh and Perthshire, with an estimated 600,000 individuals visiting Games-related events.

In preparation HPS reviewed and enhanced its routine surveillance. The international component of this was carried out by TIHT who stepped up routine surveillance activity, and added in daily contact with colleagues from the European Centre for Disease Prevention and Control (ECDC) to ensure completeness in risk identification.

Eighty-eight new incidents were identified through this enhanced surveillance system as having the potential to be imported and transmitted during the Games, mainly measles (14) and cholera (11). Incidents originated in Asia (23), Africa (15), Europe (15) and Oceania (12). Seventy six of these events were identified by HPS with a further 13 arising as a result of ECDC activity. All were categorised as being very low risk to the Games.

While risk assessments carried out were generally straightforward the report of the Ebola outbreak in West Africa required a more thorough assessment based on reviews of pathology, natural history and epidemiology. Even this was assessed as being very low risk to the Games.

In addition to ensuring safety of public health and integrity of the Games, a key objective in carrying out this extended Epidemic Intelligence was to allow application of lessons learned and help develop a legacy for surveillance of emerging infections and other hazards in Scotland. In 2015 HPS has applied these lessons to ensure systematic methods for assessing the risks of emerging diseases and other hazards.

Response to Ebola

In March 2014 the world became aware of a developing outbreak of Ebola Virus Disease (EVD) which occurred for the first time in West Africa; previous outbreaks of EVD, first identified in 1976, had occurred in Central and East Africa usually lasting for weeks to months. It is likely the outbreak was initially caused due to consumption of bush meat but it was sustained due to local burial practices and the rural nature of the cases. A further complication was that the outbreak initially involved 2 countries. Attempts by local health authorities and the WHO failed to contain the outbreak and the infection was soon spread to Sierra Leone.

Soon after the outbreak escalated and on 8 August 2014 WHO declared a Public Health Emergency of International Concern (PHEIC). In response to this declaration the UK and Scottish CMOs issued letters giving guidance to NHS volunteers who wished to support the WHO-led response. Volunteers began to leave in November as part the UK

component of the international response. In early 2015 the outbreak began to show initial signs of decreasing incidence and increasing control.

As of 25 October 2015 in Sierra Leone, Guinea and Liberia 28,539 confirmed, probable and suspected cases had been reported and 11,298 deaths. Small numbers of cases were continuing to be identified and WHO has not declared the PHEIC to be over. A total of 21 possible cases and one confirmed case presented in Scotland.

Prior to March 2014 HPS had already been applying lessons learned as the result of 2012 Crimean Congo Haemorrhagic fever case who was cared for in Glasgow before being transferred to the Royal Free High Level Isolation Unit in 2012.

From March during the early stages of the outbreak and prior to the Glasgow Commonwealth Games HPS reviewed the data from the area on a daily basis and kept travellers and health professionals informed via TRAVAX, fitfortravel and HPS websites.

A key early HPS action was the establishment of a multi-disciplinary VHF working group. This group met in order to ensure thorough discussion, planning, preparation and exercising, Scotland could be placed in a confident position to respond to any EVD case in Scotland.

From July during the Commonwealth Games period HPS provided guidance to health professionals, raising awareness, and responding to an increasing number of enquiries seeking advice. In addition HPS engaged well with the media during this high profile period, while maintaining confidentiality of two possible Games presenting in the Commonwealth Games Village.

Staff from Scottish agencies including, NHS, Scottish Government and NGOs, went to Sierra Leone to help control the outbreak there and prevent further international spread. PHE established coordinated means of identifying deployed volunteers to facilitate risk management both in West Africa and on return. A total of 112 returning workers were processed, of whom 36 were military.

A critical element of HPS response was in guidance production. This included guidance on the transfer, diagnosis and management of possible Ebola cases identified in the community and in healthcare facilities and infection control precautions for VHF for hospitals, primary

care and, the Scottish Ambulance Service (in collaboration with SAS). Guidance was also produced for non-healthcare settings such as schools and universities, as well as guidance on port health. This guidance was updated in real time to ensure alignment with other public health organisations such as PHE, WHO and CDC. Evidence was also produced on waste management, decontamination and procurement. HPS published guidance on suitable personal protective equipment (PPE) products and how they should be worn, enabling local ICTs to purchase sufficient PPE for their Board By December every board had at least the minimum number of coveralls required.

HPS collaborated with NES to produce a training video 'Viral Haemorrhagic Fever (VHF) - The correct order for donning and the safe order for removal and disposal of Personal Protection Equipment (PPE)' as well as posters and checklists for donning and doffing PPE.
On 29 December 2014 the first case of Ebola to be diagnosed within the UK was confirmed in Scotland by the Scottish National Viral Haemorrhagic Fever Test Service (SNVTS). The patient was a healthcare worker who had recently returned from Sierra Leone to Glasgow via London Heathrow. While the case was managed clinically by Greater Glasgow and Clyde NHS Board, HPS carried out contract tracing on passengers who had been on the flight she had taken from London, identifying 76 possible contacts. By 31 December 2014 all of these had been contacted, interviewed, given advice and, where appropriate had ongoing monitoring arranged.

Following confirmation of Ebola infection, the case was managed in the Brownlee Centre prior to transfer to the Royal Free HLIU . Appropriate staffing levels, PPE, and isolation facilities were deployed in the Brownlee and there was no onward transmission of Ebola infection. Review of the process involved indicated that they were safe and effective.

Management of possible cases included the presentation, isolation, transfer and testing of a possible case in a remote region of Scotland. The majority of possible cases were returning healthcare or aid workers from West African countries affected by the Ebola outbreak.

References

National Records of Scotland (2015), *Vital Events – Deaths*, http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/deaths/age-standardised-death-rates-calculated-using-the-esp

Scottish Government (2015), *Long Term Monitoring of Health Inequalities: Headline Indicators – October 2015* http://www.gov.scot/Publications/2015/10/6061

Hughes, L.D., McMurdo, M.E.T. & Guthrie, B., (2013), *Guidelines for people not for diseases: the challenges of applying UK clinical guidelines to people with multimorbidity*. Age and Ageing, 42(1), pp.62-9.; Boyd, C.M. & Fortin, M., (2010), *Future of Multimorbidity Research: How Should Understanding of Multimorbidity Inform Health System Design?* Public Health Reviews, 32(2), pp.451-474.

World Health Organization (2013), *Mental Health Action Plan 2013-2020.* apps.who.int/iris/bitstream/10665/89966/1/9789241506021_eng.pdf?ua=1

Analysis of the Scottish Health Surveys 2012/2013/2014 by Health Analytical Services Division.

Data from Scottish Health Surveys 2012-14.

McKinsey Global Institute (2014), *Overcoming obesity: An initial economic analysis* http://www.mckinsey.com/insights/economic_studies/how_the_world_could_better_fight_obesity

Public Health England (2014) *Making the case for tackling obesity – why invest?* https://www.noo.org.uk/gsf.php5?f=313571&fv=21268

See Public Health England: *Health risks of adult obesity* http://www.noo.org.uk/NOO_about_obesity/obesity_and_health/health_risk_adult

Simon G.E. et al (2006), *Obesity and psychiatric disorders in the US adult population*. *Arch Gen Psychiatry*; 63(7):824-830.

See Public Health England: *Health risks of childhood obesity* *https://www.noo.org.uk/NOO_about_obesity/obesity_and_health/health_risk_child*

Obesity rates are not available for all adults prior to 2003.

Scottish Government (2015), *Scottish Health Survey 2014* http://www.gov.scot/Publications/2015/09/6648

Food Standards Scotland (2015), *Monitoring progress towards the Scottish Dietary Goals 2001 to 2012 - Report 1* http://www.foodstandards.gov.scot/monitoring-progress-towards-scottish-dietary-goals-2001-2012-report-1#sthash.pyG2YvpI.dpuf

Scottish Government (2015), *Scottish Health Survey 2014* http://www.gov.scot/Publications/2015/09/6648

Scottish Government (2010), *Preventing Overweight and Obesity in Scotland: A Route Map Towards Healthy Weight* http://www.gov.scot/Resource/Doc/302783/0094795.pdf

Scottish Government (2014), *Supporting Healthy Choices: A Framework for Voluntary Action* http://www.gov.scot/Publications/2014/06/8253

C3 Collaborating for Health (2011), *The benefits of physical activity for health and wellbeing*. http://www.c3health.org/wp-content/uploads/2009/09/C3-review-of-physical-activity-and-health-v-2-a-20121011.pdf

Department of Health and Human Services (2008) *Physical Activity Guidelines Advisory Committee Report,* Washington, DC

Start Active, Stay Active. A report on physical activity for health from the four home countries' Chief Medical Officers. 2011. https://www.gov.uk/government/publications/start-active-stay-active-a-report-on-physical-activity-from-the-four-home-countries-chief-medical-officers

Department of Health and Human Services (2008) *Physical Activity Guidelines Advisory Committee Report,* Washington, DC
Burns, H. and Murray, A. (2012), *Creating Health Through Physical Activity*. *BJSM*, 1-2.

I.M. Lee, Shiroma, E.J., Lobelo, F. et al (2012), *Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy*. *The Lancet*, 380, 9838, 219-229.

Scottish Government (2015), *Scottish Health Survey 2014* http://www.gov.scot/Publications/2015/09/6648

Scottish Government (2014) Active Scotland Outcomes Framework, Outcome 1: We encourage and enable the inactive to be more active Summary Evidence Account

Non Communicable Disease Prevention: Investments that Work for Physical Activity. BJSM, 46, 10: 709-712. http://bjsm.bmj.com/content/46/10/709.full

Scottish Government (2014) *A More Active Scotland: Building a Legacy from the Commonwealth Games* http://www.gov.scot/Publications/2014/02/8239

National Records of Scotland (2015), *Alcohol-related Deaths* http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/deaths/alcohol-related-deaths

National Services Scotland, Information Services Division (2015), *Alcohol-related Hospital Statistics Scotland 2014/15* https://isdscotland.scot.nhs.uk/Health-Topics/Drugs-and-Alcohol-Misuse/Publications/2015-10-13/2015-10-13-ARHS2014-15-Report.pdf?50928896666

Robinson M, Beeston C, McCartney G, Craig N. *Monitoring and Evaluating Scotland's Alcohol Strategy: Annual update of alcohol sales and price band analyses*. Edinburgh: NHS Health Scotland; 2015. http://www.healthscotland.com/uploads/documents/25918-1-MESAS%20sales%20price%20-%20Aug%202015.pdf

National Services Scotland, Information Services Division (2015), *Alcohol-related Hospital Statistics Scotland 2014/15* https://isdscotland.scot.nhs.uk/Health-Topics/Drugs-and-Alcohol-Misuse/Publications/2015-10-13/2015-10-13-ARHS2014-15-Report.pdf?50928896666

Data from ScotPHO *Scotland and European Health for All (HfA) Database* http://www.scotpho.org.uk/comparative-health/scotland-and-european-hfa-database

Data provided by National Records of Scotland.

Scottish Government (2015), *Scottish Health Survey 2014* http://www.gov.scot/Publications/2015/09/6648

Scottish Government (2009), *Changing Scotland's Relationship with Alcohol: A Framework for Action* http://www.gov.scot/Resource/Doc/262905/0078610.pdf

National Services Scotland, Information Services Division (2015), *Alcohol Brief Interventions 2014/15* https://isdscotland.scot.nhs.uk/Health-Topics/Drugs-and-Alcohol-Misuse/Publications/2015-06-30/2015-06-30-ABI2014-15-Report.pdf?31312197447

National Services Scotland, Information Services Division (2015), *National Drug and Alcohol Treatment Waiting Times Report: April - June 2015* https://isdscotland.scot.nhs.uk/Health-Topics/Drugs-and-Alcohol-Misuse/Publications/2015-09-29/2015-09-29-DATWT-Report.pdf?31312197447

World Health Organisation (2015), *Tobacco: Fact sheet N°339*

Doll, R. (1994) *Mortality in relation to smoking: 40 years' observations on male British doctors* BMJ 1994; 309 doi: http://dx.doi.org/10.1136/bmj.309.6959.901

Scottish Public Health Observatory (2012), *Smoking Ready Reckoner* http://www.scotpho.org.uk/downloads/scotphoreports/scotpho120626_smokingreadyreckoner.pdf

Scottish Government (2015), *Scottish Household Survey Annual Report - Scotland's People* http://www.gov.scot/Topics/Statistics/16002/PublicationAnnual

Data provided by Scottish Government, Health Analytical Services Division.

Scottish Government (2015), *Scottish Health Survey 2014* http://www.gov.scot/Publications/2015/09/6648

Scottish Government (2015), *Multiple substance use among adolescents in Scotland: profile and trends* http://www.gov.scot/Resource/0048/00484688.pdf

See, for example, Etter JF, Benowitz N, Eissenberg T, McRobbie H. (2014), *Electronic cigarettes: review of use, content, safety, effects on smokers and potential for harm and benefit*, Addiction, 109: 11: 1801–1810 (http://www.ncbi.nlm.nih.gov/pubmed/25078252); *Smoking Toolkit Smoking in England Survey*, http://www.smokinginengland.info/

National Services Scotland, Information Services Division (2014), *Scottish Schools Adolescent Lifestyle and Substance Use Survey (SALSUS): Smoking among 13 and 15 year olds in Scotland 2013* http://www.isdscotland.org/Health-Topics/Public-Health/Publications/2014-11-25/SALSUS_2013_Smoking_Report.pdf

National Services Scotland, Information Services Division (2015) *Cancer Mortality in Scotland (2014)* https://isdscotland.scot.nhs.uk/Health-Topics/Cancer/Publications/2015-11-17/2015-11-17-CancerMortality-Report.pdf?86828249693

While the overall age-standardised rate of death due to cancer has decreased, the actual number of deaths has increased: this largely reflects an increase in older age groups within the population, and the fact that cancer is a relatively common disease among the elderly.
National Services Scotland, Information Services Division (2015) *Cancer Mortality in Scotland (2014)* https://isdscotland.scot.nhs.uk/Health-Topics/Cancer/Publications/2015-11-17/2015-11-17-CancerMortality-Report.pdf?86828249693

Scottish Government (2015), *Long-term Monitoring of Health Inequalities* http://www.gov.scot/Resource/0048/00487927.pdf

Scottish Government (2012), *Mental Health Strategy for Scotland: 2012-2015* http://www.gov.scot/Resource/0039/00398762.pdf

Scottish Government (2015), *Scottish Health Survey 2014* http://www.gov.scot/Publications/2015/09/6648

Scottish Government (2015), *Long-term Monitoring of Health Inequalities* http://www.gov.scot/Resource/0048/00487927.pdf

Scottish Government (2012), *Mental Health Strategy for Scotland: 2012-2015* http://www.gov.scot/Resource/0039/00398762.pdf

National Records of Scotland (2015), *Age-standardised Death Rates Calculated Using the European Standard Population* http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/deaths/age-standardised-death-rates-calculated-using-the-esp#Tables Coding for deaths by suicide has recently changed; in order to have a consistent comparison, long term trends are presented using old coding rules.

Scottish Government (2013), *Suicide Prevention Strategy 2013 – 2016* http://www.gov.scot/Publications/2013/12/7616

Office for National Statistics. Travel Trends 2014. London: ONS; 2015

Redman C, Genasi F, Smith V, Brownlie S, Locking M. Travel-trends and travel-related infections 2011-2012. HPS Weekly 2013;47(2013/03):30-3

Travel and International Health Team. Travel Health Guidance for Schools. First ed. Glasgow: TRAVAX; 2013

Smith-Palmer A. Gastro-intestinal and ffdborn infections: overseas outbreaks of infectious intestinal disease. HPS Weekly 2015;49(21):178-9

Munro J, Redman C, DenhamB, Smith V. Travel health: Malaria in Scotland and the UK: 2010-2014. HPS Weekly 2015;49(30):279-92

This publication is available at **www.gov.scot**

Any enquiries regarding this publication should be sent to us at
The Scottish Government
St Andrew's House
Edinburgh
EH1 3DG

ISBN: 978-1-78544-970-3 (web only)

Published by The Scottish Government, January 2016

Produced for The Scottish Government by APS Group Scotland, 21 Tennant Street, Edinburgh EH6 5NA
PPDAS63778 (01/16)