Chapter 2

Mortality, morbidity and wellbeing

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Surveillance and studying the epidemiology of diseases have been a driving force behind improvements to public health. They help to identify and prioritise where action is needed, characterise and inform our understanding of the drivers affecting public health and monitor the effectiveness of our interventions.

In this chapter the distribution of disease is considered, with a specific focus on change over time, the relationship with age and, where space allows and information is available, the relationship with deprivation and ethnicity. Mental wellbeing is also described, but due to the current paucity of data, information on this only comprises two pages.

As a general rule, routinely available information has been used, such as data from death certificates, GP registers and hospital episode data. Routine data commonly have limitations. For example, the QoF (Quality and Outcomes Framework) prevalence data of serious mental health problems will be affected by the completeness and accuracy of GP recording and the accuracy of the total practice list size. These limitations are addressed in more detail in the 'How to use this report' section of this report.

For the majority of diseases in this chapter there is a strong relationship with deprivation. People in the most deprived areas (the most deprived quintile) almost invariably have higher rates of disease and mortality due to disease than those living in the least deprived areas (the least deprived quintile).

There is evidence to support the fact that the health inequalities described are often also affected by the geographical areas considered. For example, the least deprived differ little geographically in life expectancy at birth, whereas the most deprived in the north and midlands have lower life expectancies than their counterparts in the south.

The negative correlation between life expectancy and years spent with a limiting long-term illness or disability shows that those living the longest are generally living the least amount of time with a limiting long-term illness or disability.

The international comparisons in this chapter, examining the trends over time for life expectancy at birth and 65, infant mortality, and mortality due to cardiovascular disease (CVD), cancer and liver disease, suggest we can do better in several areas. A real success in England is the improvement in male life expectancy at 65. However, liver disease mortality is increasing in England at a time when the average of our closest counterparts (EU members that joined pre 2004) is decreasing. Liver disease is considered in more depth later in this chapter. The rise in mortality due to different types of liver disease (cirrhosis of the liver, liver cancer, infectious hepatitis) suggests both a preventative approach, addressing the main underlying risk factors of obesity, alcohol use and hepatitis infection, and better early identification and treatment will be needed.

When considering England alone, the major driver of the reduction seen in 'all cause' mortality is the reduction in deaths from CVD. However, CVD remains the single most prevalent cause of death, accounting for almost a third of deaths.

Cancer accounts for around a quarter of deaths. More than 1 in 3 people will develop cancer at some point in their life. In 2009, around 265,000 cancers were diagnosed in England and cancers of the lung, bowel, breast and prostate accounted for over half the total number of cases. It has been estimated that in 2011 around 1.8 million people in England were living with cancer or were cancer survivors.

More than three in five cancers occur in people aged 65 and over; cancer incidence rates are, however, rising at a rate over and above that caused by the ageing population alone. There have been significant rises in lung cancer and uterine cancer in women, prostate cancer in men, and in melanoma skin cancer, liver cancer, kidney cancer and cancers of the mouth and salivary glands in both sexes.

Both CVD and cancer are linked to numerous risk factors. It has been estimated that 43% of new cases of cancer are linked to lifestyle and environmental factors, with smoking alone accounting for almost 20% of new cases (23% in men and 16% in women). After smoking, dietary factors, being overweight or obese and harmful alcohol use are the biggest risk factors.[1]

For CVD, 16.2% of deaths have been attributed to high blood pressure, with smoking, high cholesterol, and being overweight or obese as the next biggest risk factors.[2] Physical inactivity has recently been estimated to account for 10.5% of coronary heart disease, and 16.9% of all cause mortality in the UK[3]. It is also a major risk to overall physical and mental wellbeing. Key risk factors for mortality and morbidity are examined in Chapter 3.

Mortality due to infectious diseases is declining thanks to the reduction in the number deaths due to respiratory infection, which still remain the largest cause of death due to infectious disease. Despite the success of infectious disease control measures efforts must continue as many deaths due to infections are preventable. Vaccination remains one of the most effective public health interventions, yet there is still slow uptake in certain groups (see Chapter 5).

There are some areas of excellence in data collection e.g. cancer; the National Cancer Intelligence Network (NCIN) and the United Kingdom Association of Cancer Registries (UKACR). There are other areas where there is a paucity of national, routinely collected information e.g. data on some musculoskeletal disorders, sensory disorders and skin diseases. Despite efforts by many people, the coverage of the congenital anomalies registers is not complete across the whole of England. Due to such data issues, this report includes data not routinely collected through formal mechanisms, such as that provided on certification of visual impairment by Moorfields Eye Hospital NIHR BRC, and on skin diseases from RCGP Research & Surveillance Centre (via Professor Williams, Dr Scourfield and Dr Fleming).

Clearly national systems of surveillance should be developed balancing the usefulness of data with the burden imposed on those collecting it. However, for historical reasons data have been more robust in those diseases which contribute significantly to mortality rates. Data are often lacking for those diseases which contribute significantly to disability. In future, this balance will need to be addressed.

A central issue when displaying the epidemiology of diseases is defining the diseases considered. Ideally, the categorisations used should allow for both mortality and morbidity data to be shown, where appropriate. The categorisations should also allow some comparability, both nationally and internationally, with other assessments of the population's health. Finally, they should reflect recent changes in understanding about how we define disease and be relevant to the local epidemiological picture.

It is not possible to address all diseases in this report. A number of summary indicators (e.g. 'all cause mortality', 'life expectancy at birth' and 'life expectancy at 65', etc) and international comparisons are considered. More detailed information on specific diseases and groups of diseases is also provided.

The general structure of this chapter is based on the broad disease groupings outlined in the WHO Global Burden of Disease (GBD) study[4]. To assist the interpretation of data, a table of ICD10 codes used to define different groupings is provided at the end of the chapter. Within this structure, for each disease grouping, one of the following has been chosen: a specific disease e.g. pancreatic cancer; a broad grouping of diseases e.g. cardiovascular diseases; or a key disease within the broad grouping that is most relevant to England e.g. chronic kidney disease within the genitourinary section.

Summary data for the broad disease groupings used are given in the key facts box. These summary data are the number of potential years of life lost due to death (calculated using 75 years as the cut off point) and the annual number of hospital bed days. Around 2,288,300 potential years of life were lost (to age 75) in 2010; 32% due to malignant neoplasms (cancer), 19% due to CVD, 13% due to injuries, 8% due to digestive diseases, 5% due to suicide and death of undetermined intent and 4% due to communicable diseases. Hospital bed days paint a slightly different picture with neuropsychiatric conditions accounting for the largest proportion (14%) of hospital bed days.

Unless otherwise stated, mortality and hospital admission data are analysed based on primary cause. While using the primary cause of death/hospital admission is useful in understanding the overall pattern of mortality and morbidity it does not address the issue, or the causal role that other diseases may have had. This should be borne in mind with any interpretation of the data.

The focus on single causes also belies a much more complex picture in real life. As we have an ageing population, we expect to see growing numbers of individuals with complex patterns of co-morbidity through chance alone.

Within this chapter there are instances where co-morbidity needs to be taken into account in the interpretation, e.g. in the figures given for common mental disorders, the total prevalence is less than the sum of the individual disorders, because of co-occurrence of the disorders.

In Chapter 3, we are able to move towards a more 'whole person' approach. We examine how the lifestyle and medical risk factors that account for most of the burden of disease co-occur with individual risk factors. In part, this is because such information is available.

Planning around surveillance needs will require careful consideration of current gaps in data, the reasons for these gaps and the best approaches to address them.

1 Parkin DM, Boyd L and Walker LC. The fraction of cancer attributable to lifestyle and environmental factors in the UK in 2010. Summary and conclusions. *British Journal of Cancer* (2011) 105, S77–S81.

2 NHS Choices Atlas of Risk, (http://www.nhs.uk/Tools/Pages/NHSAtlasofrisk.aspx)

3 Lee IM, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT; Lancet Physical Activity Series Working Group. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. Lancet. 2012 Jul 21;380(9838):219-29

4 WHO. Global health risks: mortality and burden of disease attributable to selected major risks. 2009.

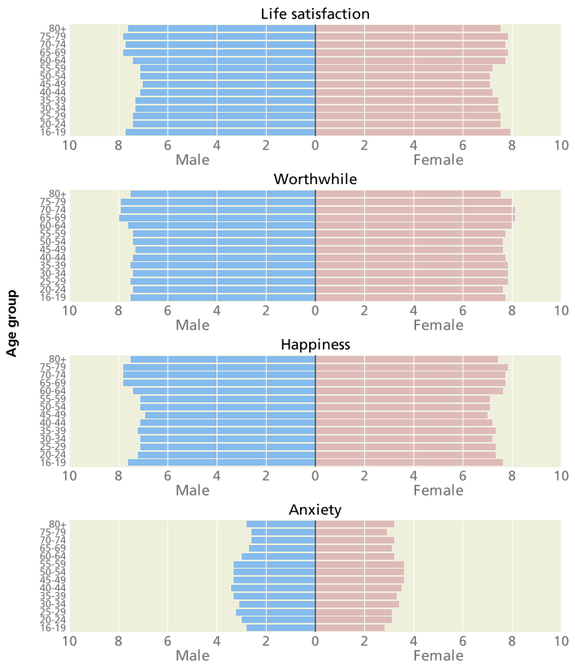
Wellbeing is a new and evolving concept in public health and health services. It includes emotional, social, psychological, mental and physical dimensions. This section focuses on mental wellbeing.

Mental wellbeing is not just determined by the absence of mental health problems; it is characterised by social and psychological wellbeing which enables and supports good relationships, emotional resilience and physical health.

Different methods exist to measure wellbeing. ONS is developing a framework of objective and subjective indicators across a range of life aspects, such as relationships, health, work, local community and personal finance/debt. Subjective mental wellbeing measures included are: life satisfaction, happiness, anxiety, and purpose in life. The Public Health Outcomes Framework will use four subjective measures of wellbeing as defined by ONS, alongside an average WEMWBS score for adults aged 16+. Approaches to measuring wellbeing continue to develop nationally and internationally.

Different measures of wellbeing are generally consistent regarding age, sex, employment status and health. The wellbeing of men and women differs little, wellbeing declines in middle age and is higher in post-retirement age groups and in young adults.

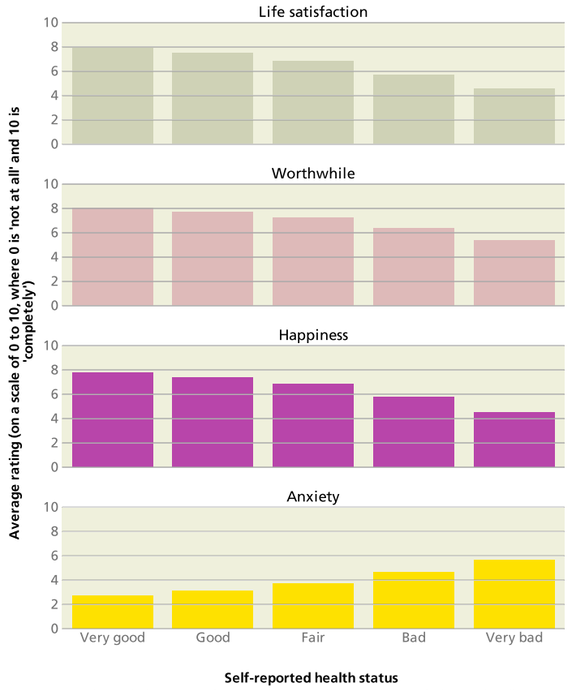
Wellbeing scores by age and sex, United Kingdom, April - September 2011



Average rating (on a scale of 0 to 10, where 0 is 'not at all' and 10 is 'completely')

Source: Annual Population Survey (APS) subjective well-being six month dataset (April to September 2011), ONS. (Data are considered experimental statistics)

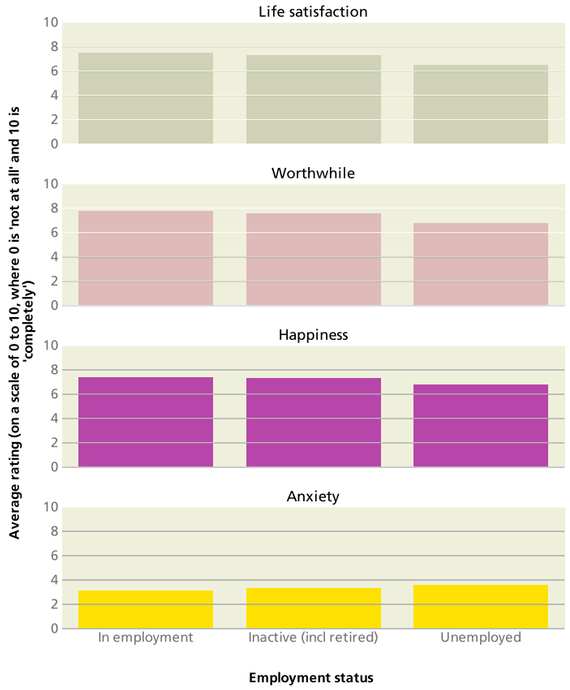
Wellbeing scores by self-reported health status, United Kingdom, April - September 2011



Self-reported health status

Source: Annual Population Survey (APS) subjective well-being six month dataset (April to September 2011), ONS. (Data are considered experimental statistics)

Wellbeing scores by employment status, United Kingdom, April - September 2011



Employment status

Source: Annual Population Survey (APS) subjective well-being six month dataset (April to September 2011), ONS. (Data are considered experimental statistics)

People not in work (excluding the retired) and people living in poverty have lower wellbeing than other groups, reporting more anxiety, and less happiness, satisfaction with life and sense of purpose.

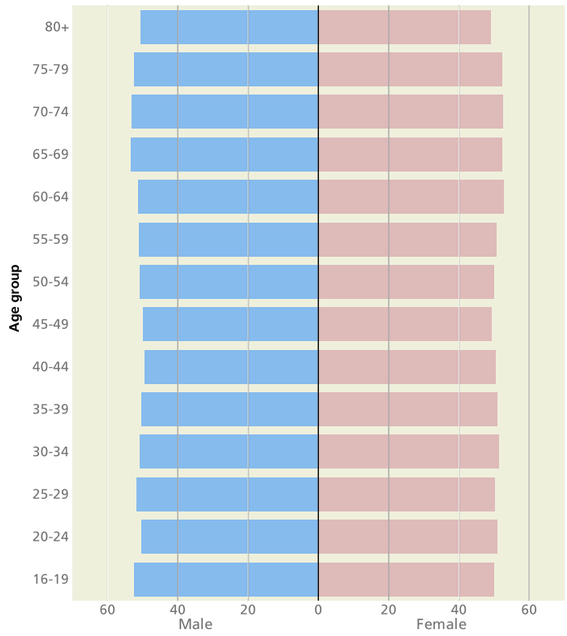
Mental wellbeing and health are associated and appear to influence each other.

There is a growing evidence base for approaches that improve wellbeing at both individual and population levels. Giving children a good start in life and supporting parents demonstrate positive effects across the life course.

There is good evidence supporting workplace programmes and interventions which aim to improve wellbeing in adults e.g. programmes working with people seeking employment and those experiencing work-based stress. Health improvement initiatives are enhanced by integrating mental wellbeing and psycho-social approaches, particularly those which aim to affect physical activity levels, smoking, sexual health, diet, and alcohol and drug misuse.

The close relationship between wellbeing and mental and physical health requires health and public health services to provide a 'whole person' approach to health. Increasing access to, and uptake of, psychological therapies (including mindfulness based stress reduction) can be an important public health intervention.

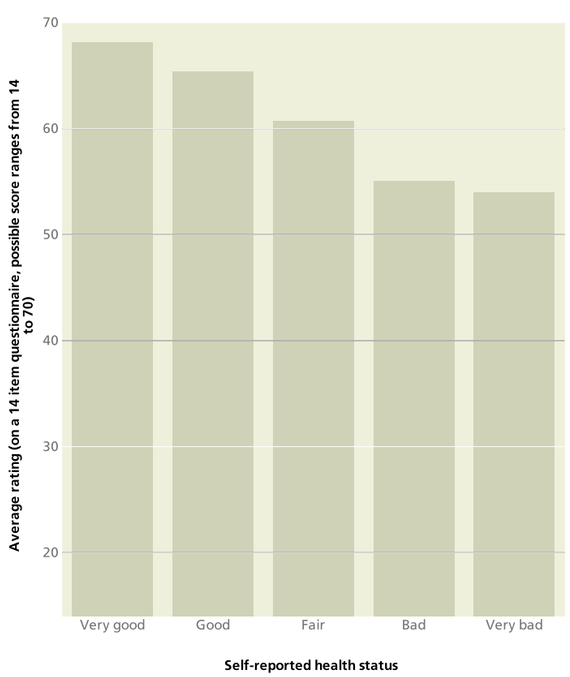
Wellbeing scores (WEMWBS) by age and sex, England, 2010



Average rating (on a 14 item questionnaire, possible score ranges from 14 to 70)

Source: Health Survey for England, 2010. Copyright © 2012, re-used with the permission of The Health and Social Care Information Centre. All rights reserved. (Provided by Dr H Maheswaran, Dr P Kimani, Professor S Stewart-Brown, Univeristy of Warwick Medical School)

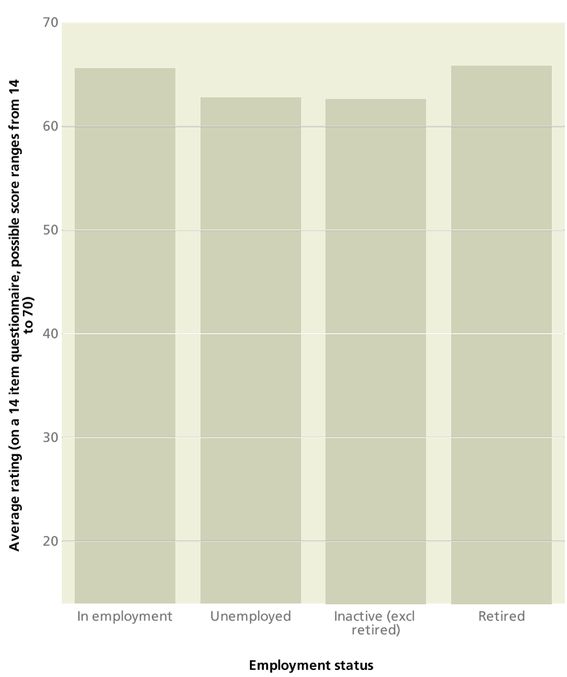
Wellbeing scores (WEMWBS) by self-reported health status, England, 2010



Self-reported health status

Source: Health Survey for England, 2010. Copyright © 2012, re-used with the permission of The Health and Social Care Information Centre. All rights reserved. (Provided by Dr H Maheswaran, Dr P Kimani, Professor S Stewart-Brown, Univeristy of Warwick Medical School)

Wellbeing scores (WEMWBS) by employment status, England, 2010



Employment status

Source: Health Survey for England, 2010. Copyright © 2012, re-used with the permission of The Health and Social Care Information Centre. All rights reserved. (Provided by Dr H Maheswaran, Dr P Kimani, Professor S Stewart-Brown, Univeristy of Warwick Medical School)

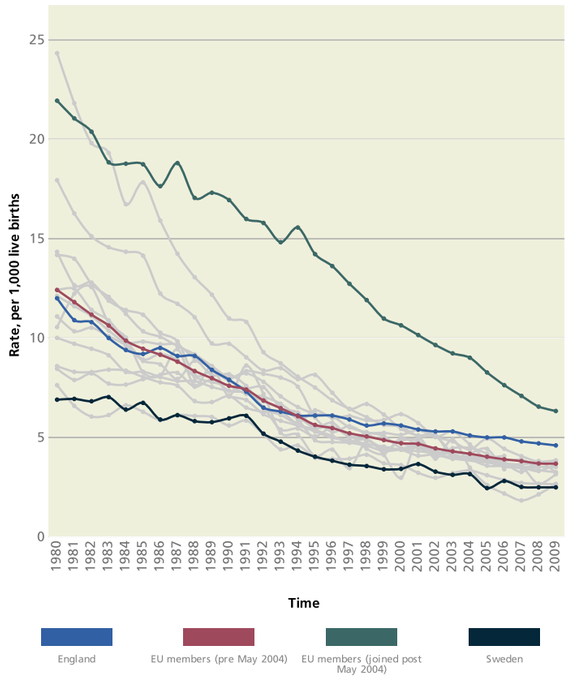
Health outcomes reflect differences in lifestyle-related risk factors, health seeking behaviour, and early detection and effectiveness of service provision. To be able to interpret and act on health outcomes it is important to understand variations in underlying causes.

Differences in health outcomes between countries can highlight national successes and identify lessons to be learned from other countries. However, comparisons must be treated with caution as they may reflect differences in diagnostic coding practices and data handling etc., rather than true differences in outcomes. The choice of comparator, and comparator countries, will also influence apparent differences. EU countries provide England's closest comparators.

This section compares premature mortality and other outcomes against the average rate of the EU-15 (EU members pre May 2004) and the average rate of EU members who joined post May 2004. Individual EU-15 county rates are shown in grey, with those with the highest and lowest rates highlighted. As many EU countries have lower life expectancy than England, the comparison used here defines premature mortality as <65 years.

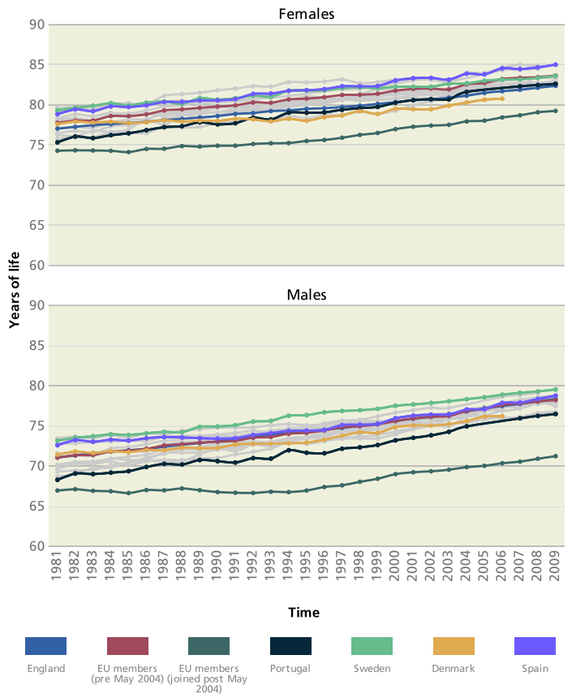
It is increasingly common to define premature mortality as <85 years. As this convention proliferates, consideration of the definition of 'premature mortality' should remain under review. Using <85years would expand the focus of premature mortality to include an age range with substantial, preventable mortality rates.

Trend in infant mortality, England and EU countries, 1980 to 2009



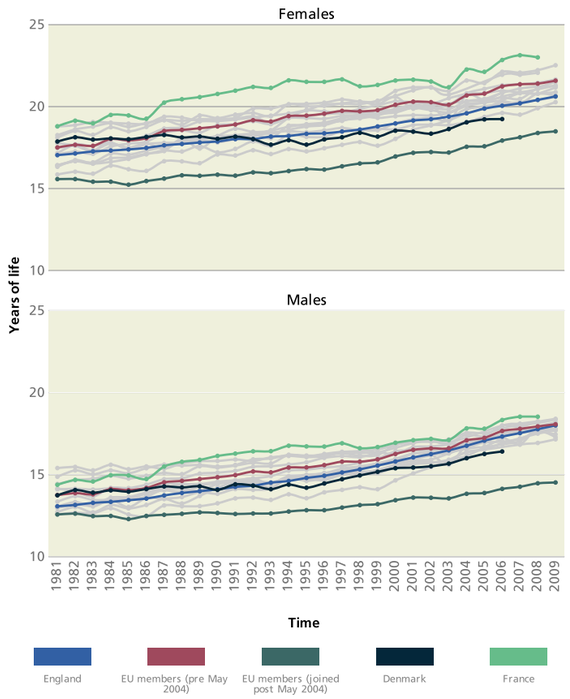
Source: EU: WHO, Health For All data set; England: ONS.

Trend in life expectancy at birth, England and EU countries, 1981 to 2009



Source: EU: WHO, Health For All data set; England: ONS.

Trend in life expectancy at 65 years, England and EU countries, 1981 to 2009



Source: EU: WHO, Health For All data set; England: ONS.

Male life expectancy at 65 has increased more rapidly than in many EU-15 countries. This may reflect a combination of declining smoking-related deaths and improved health care, especially the management of chronic conditions.

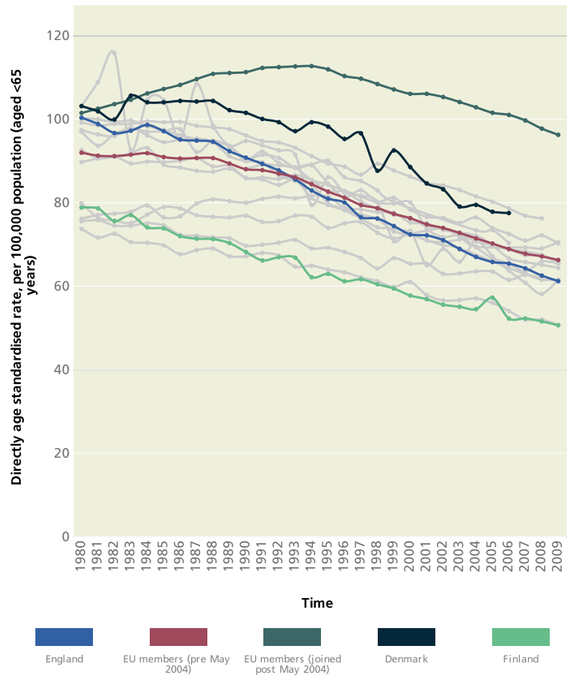
Female life expectancy has also increased, possibly due to improved health care. However, the peak of expected deaths due to the smoking epidemic has not yet been reached.

Alcohol related deaths and infant mortally are a serious cause of concern. Death rates from cirrhosis have been rising in England at the same time they are falling in other EU countries. 30 years ago the UK was close to the average EU-15 infant mortality rate, we now have the highest rate in the EU-15.

Cancer outcomes have improved but lag behind those of some EU-15 and other comparable countries. International rates for cancer survival are difficult to compare. However, there is a cohort of countries against which we can reliably benchmark. UK survival rates for lung, breast, colorectal, and ovarian cancers have improved but lag behind those of Australia, Canada, Denmark, Norway and Sweden[1].

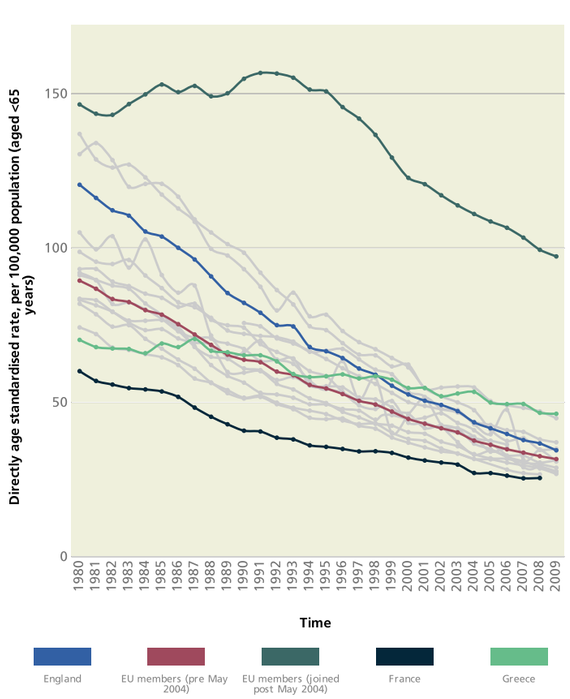
1 Coleman MP, et al, (2011). 'Cancer survival in Australia, Canada, Denmark, Norway, Sweden, and the UK, 1995–2007 (the International Cancer Benchmarking Partnership): an analysis of population-based cancer registry data'. *The Lancet*, vol 377, no 9760, pp 127–38.

Trend in premature mortality (ages under 65) from cancer, England and EU countries, 1980 to 2009



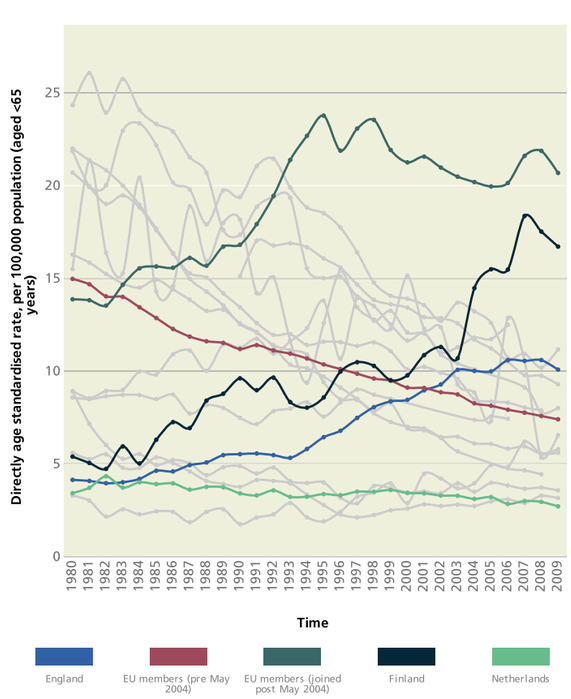
Source: EU: WHO, Health For All data set; England: ONS.

Trend in premature mortality (ages under 65) from cardiovascular diseases, England and EU countries,1980 to 2009



Source: EU: WHO, Health For All data set; England: ONS.

Trend in premature mortality (ages under 65) from chronic liver disease and cirrhosis, England and EU countries, 1980 to 2009



Source: EU: WHO, Health For All data set; England: ONS.

Life expectancy is an important summary measure of population health. 'Life expectancy at birth' is an estimate of the average number of years a person can expect to live. 'Life expectancy at 65' is an estimate of the average number of remaining years a 65 year old can expect to live.

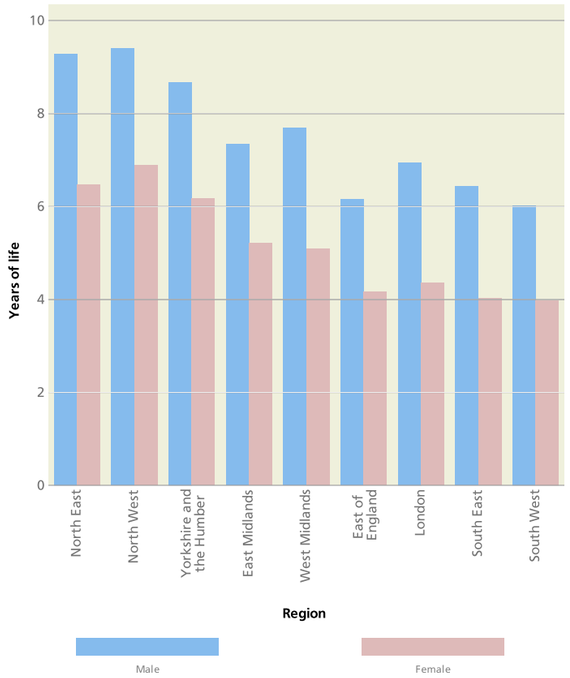
In 2008-10, life expectancy at birth was 78.0 for men and 82.4 years for women, and at 65 years it was 18.0 and 20.6 years respectively. It is lower in deprived populations, the north and the midlands.

'Healthy life expectancy' measures how many years a person can expect to live in good health. In general, where life expectancy is lower, so is healthy life expectancy but there is considerable variation.

Life expectancies at birth, and at age 65, have improved in recent years. This reflects the reduced impact of risk factors (especially smoking) and advances in health care e.g. improved detection and treatment of high blood pressure, heart disease and cancer.

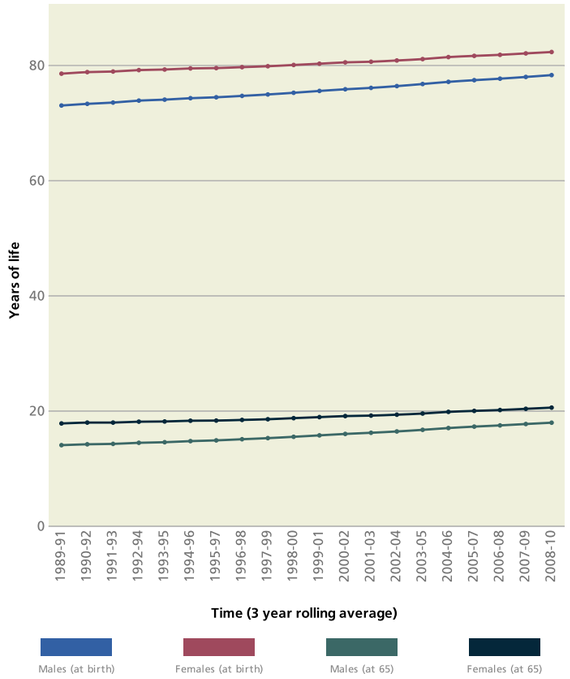
English life expectancies can move closer to the best levels found in EU countries. Concerted effort to improve access to services is likely to increase life expectancy at 65. Broad action addressing determinants of health is required to improve life expectancy at birth.

Differences in life expectancy at birth between the most and least deprived quintile in each region by sex, England, 2005-09



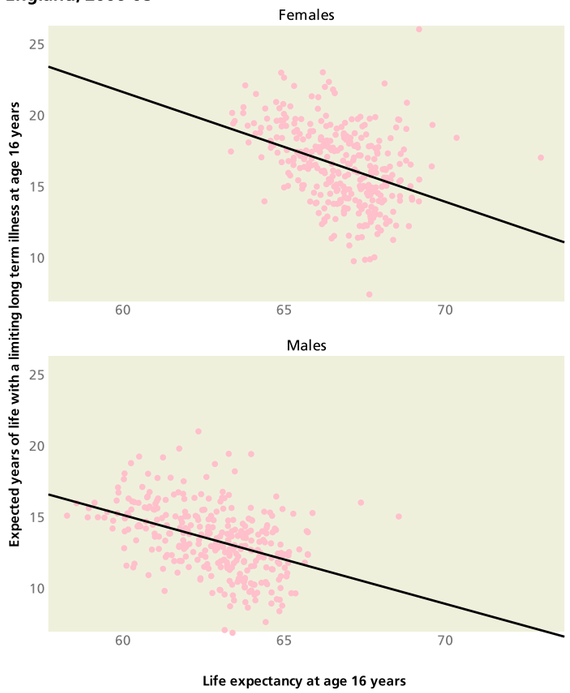
Source: 2011 Local Health Profiles. (Analysis by DH)

Trend in life expectancy at birth and at age 65 by sex, England, 1989-91 to 2008-10



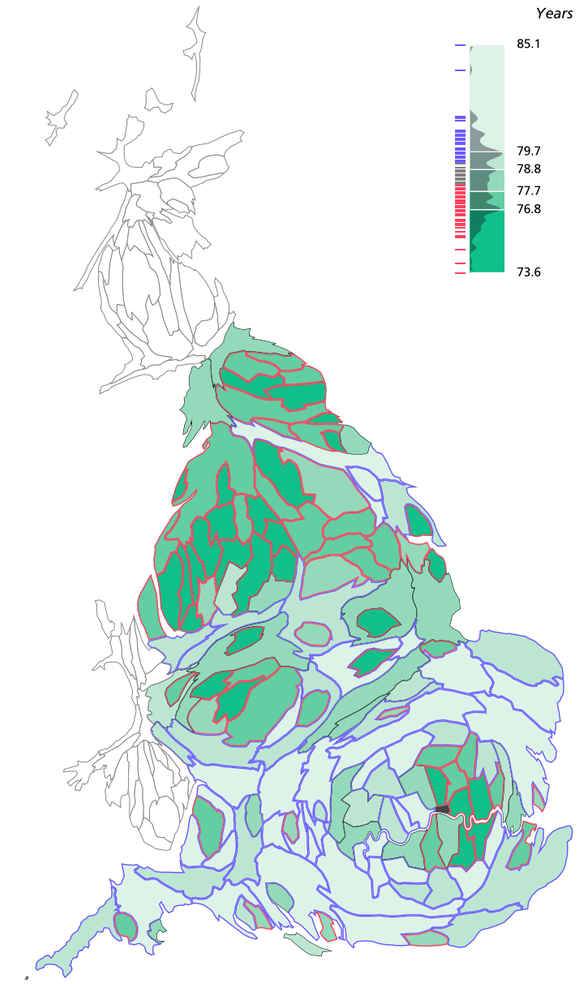
Source: Interim Life Tables, ONS.

Comparison of life expectancy and expected years of life spent with a limiting long-term illness or disability for local authorities, England, 2006-08



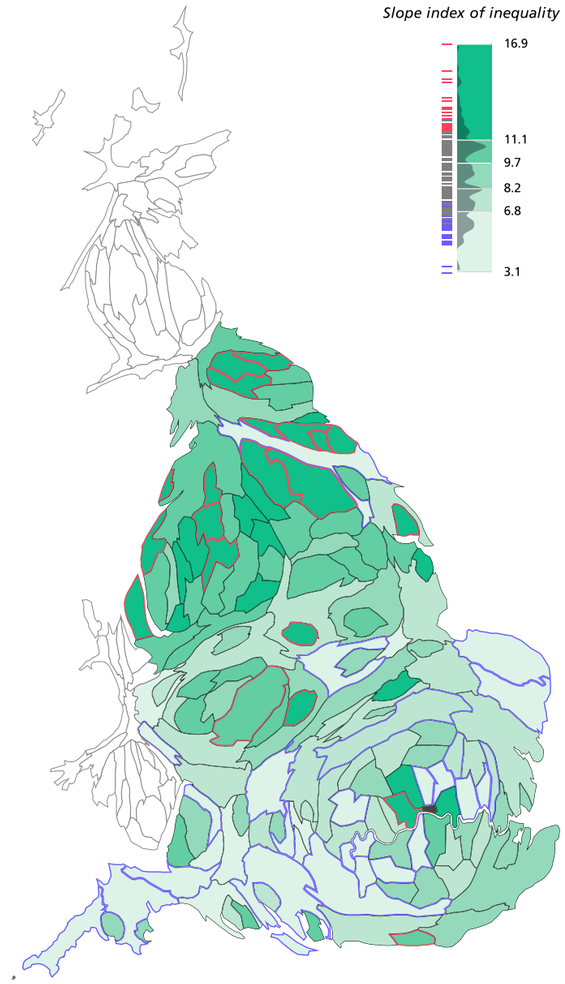
Source: Life expectancy (LE) and Disability-free life expectancy (DFLE) experimental statistics, ONS.

Life expectancy at birth for males by upper tier local authority, England, 2008-10



Source: Life expectancy statistics, ONS.

Slope index of inequality for life expectancy at birth for males by upper tier local authority, England, 2006-10



Source: LHO.

Differences in all cause mortality (all causes of death), after adjustment for age and sex, indicate health inequalities between areas and groups. Comparing age specific rates for broad causes of death show which deaths are premature and avoidable.

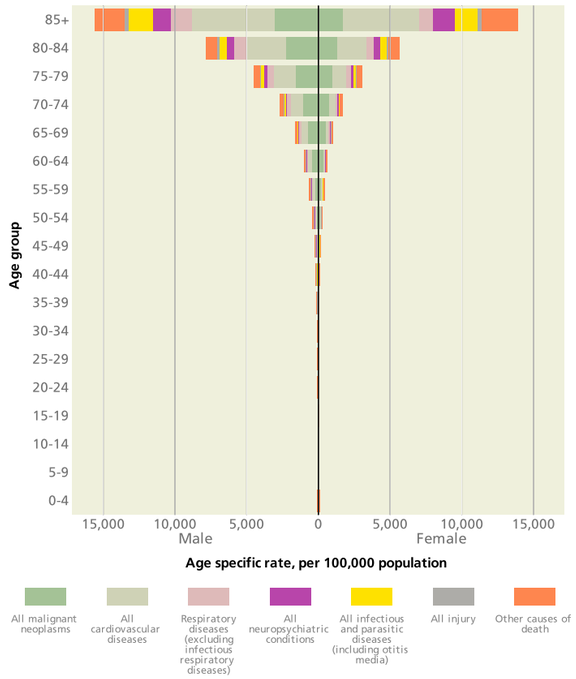
In infants and young children, 'other causes', infections and injury are most prevalent. As children grow older, injuries and violence become most prevalent, especially motor vehicle traffic accidents and suicides. For people in their 30s, cancer and cardiovascular deaths increase in prevalence and from around 40 onwards cancer is most prevalent. Cardiovascular disease is the most common cause of death in the population, being the most prevalent cause of death in those over 80.

Geographical differences are due to inequalities in social determinants of health (Chapter 4) and specific risk factors (Chapter 3).

Reducing inequalities in all cause mortality rates can be addressed by improving population health, encouraging conditions which promote healthy behaviours, making sure people recognise symptoms and seek help early, and ensuring equitable access to evidence based services. These efforts should reach everyone but focus on those whose needs are greatest.

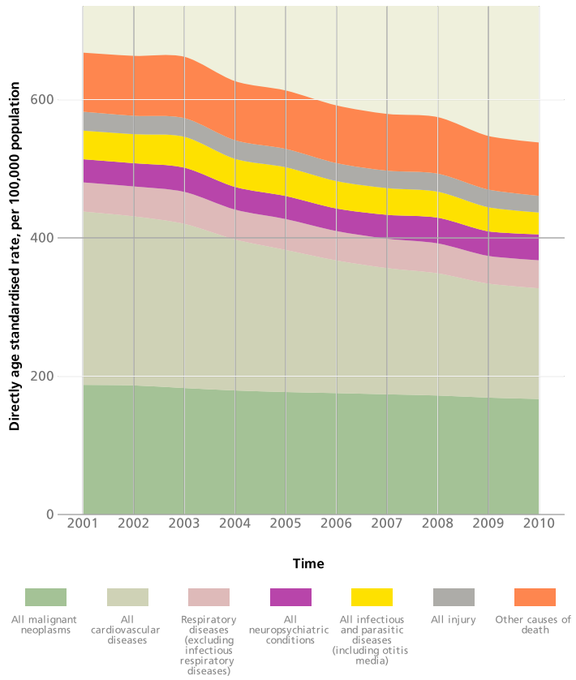
Improving children's health will increase the likelihood of their being healthy adults.

Mortality due to all causes (and sub-categories) by age and sex, England, 2008-10



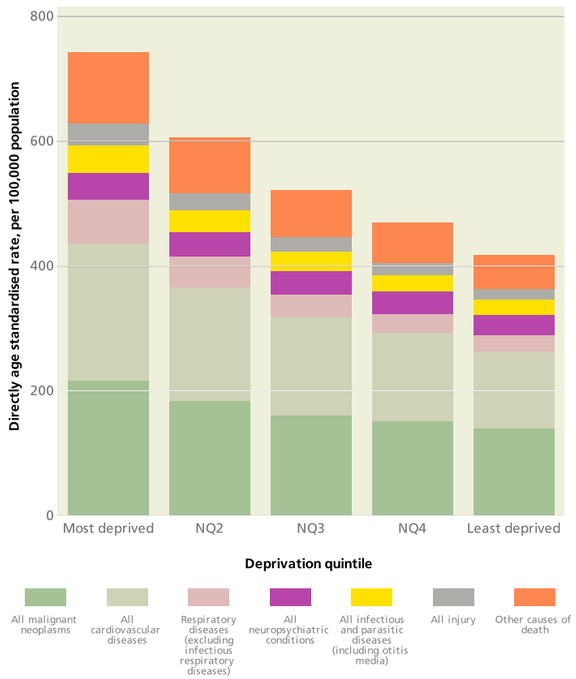
Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Trend in mortality due to all causes (and sub-categories), England, 2001 to 2010



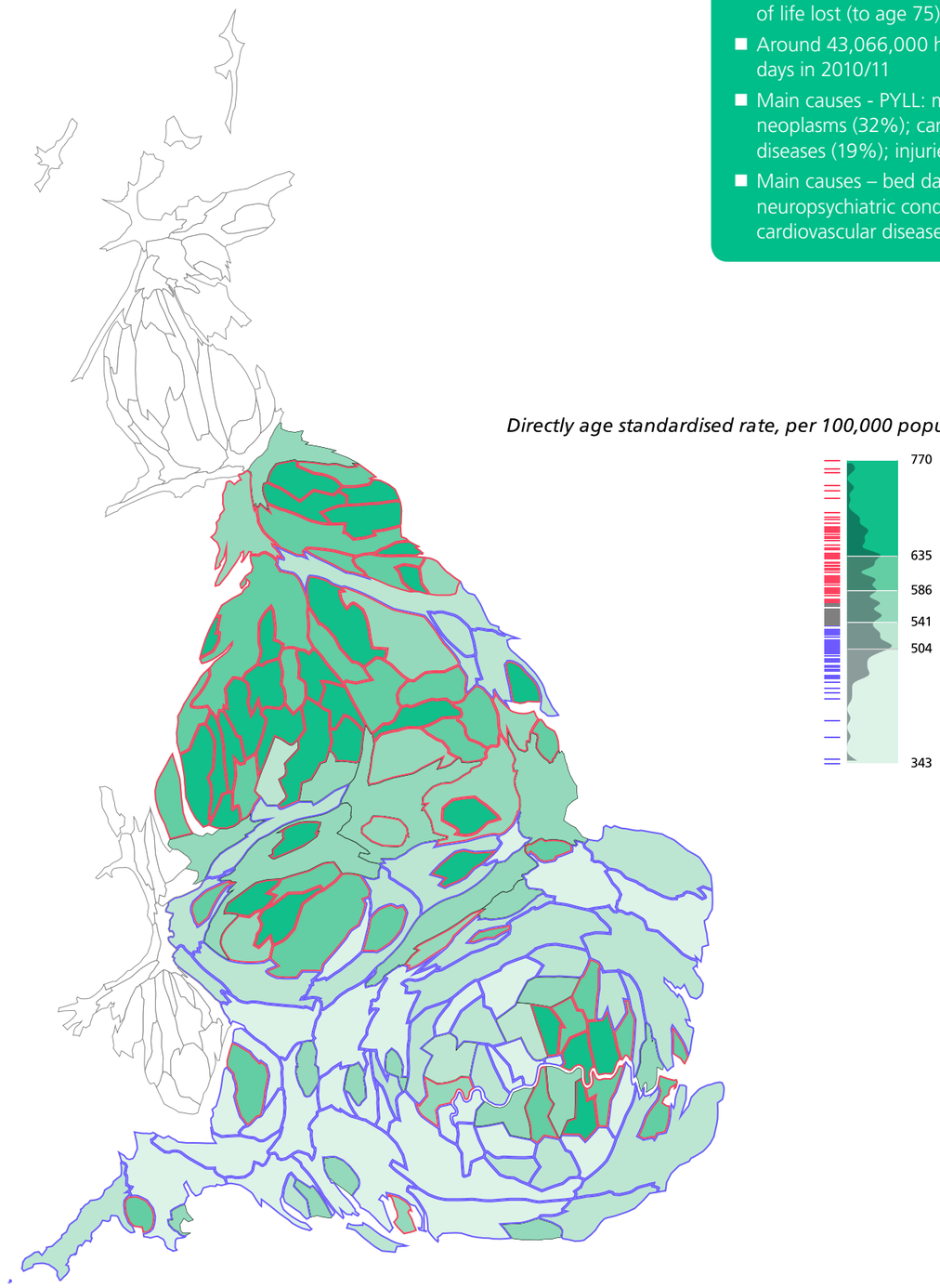
Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Mortality due to all causes (and sub-categories) by deprivation, England, 2010



Source: Death registrations and 2010 population estimates, ONS. (Analysis by DH)

Average annual mortality due to all causes by upper tier local authority, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Key facts

- Around 2,288,300 potential years of life lost (to age 75) in 2010
- Around 43,066,000 hospital bed days in 2010/11
- Main causes - PYLL: malignant neoplasms (32%); cardiovascular diseases (19%); injuries (13%)
- Main causes – bed days: neuropsychiatric conditions (14%); cardiovascular diseases (13%)

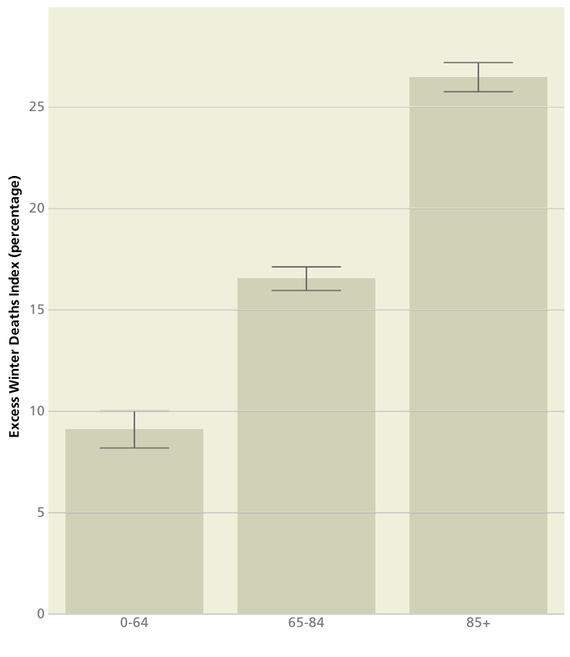
Winter weather is associated with increased illness and injury. 'Excess' winter deaths are the extra deaths that occur in winter months (December to March) compared to deaths in the four months before and after. This is often expressed by the Excess Winter Deaths Index (EWDI). Older people, the very young and people with long term conditions are particularly susceptible. Cold weather increases the risk of heart attack, stroke, lung illnesses, influenza and serious injuries due to falls.

On average, over the past four years, we have had around 20,400 excess winter deaths each year. These deaths occurred mainly in the over 85s. Over time the number of excess winter deaths has varied greatly according to the severity of the winter and the underlying level of disease (particularly influenza) in the population.

England does not compare well with other northern European countries on excess winter deaths, despite having milder winters. For example, Finland has around half England's excess winter death rate.

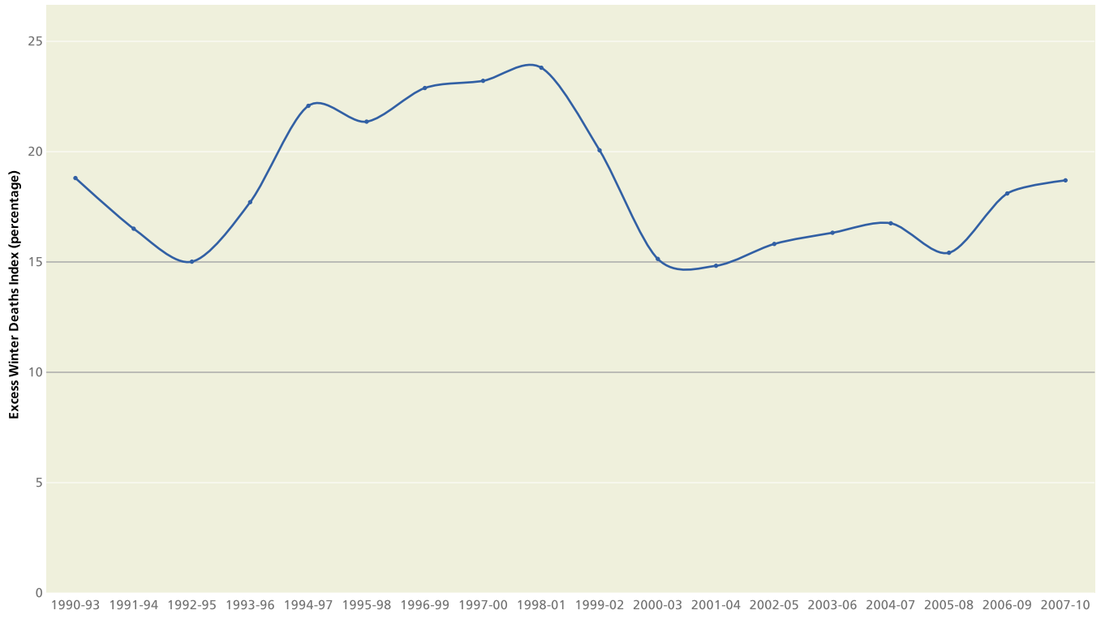
Better preventative measures in England could reduce illness and injury related to winter weather. These include better insulated, well-heated, energy efficient homes and appropriate outdoor clothing.

Excess Winter Deaths Index by age, England, 2007-10



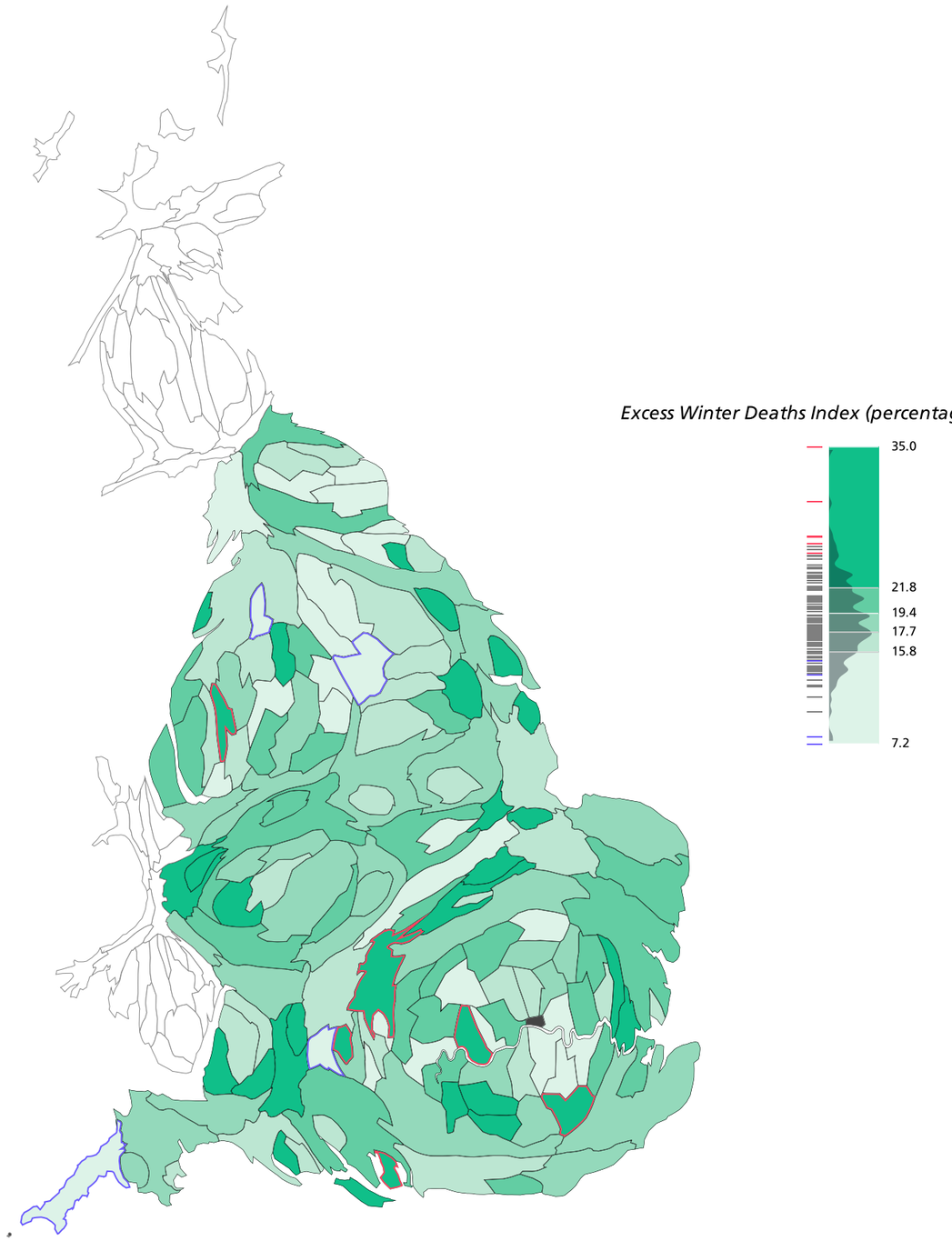
Source: WMPHO, based on death registrations, ONS. (3 year averages, eg 2007-10 based on excess of deaths in winter compared with non-winter months from August 2007 to July 2010)

Trend in Excess Winter Deaths Index, England, 1990-93 to 2007-10



Source: WMPHO, based on death registrations, ONS. (3 year averages, eg 2007-10 based on excess of deaths in winter compared with non-winter months from August 2007 to July 2010)

Excess Winter Deaths Index by upper tier local authority, England, 2007-10



Source: WMPHO, based on death registrations, ONS. (3 year averages, eg 2007-10 based on excess of deaths in winter compared with non-winter months from August 2007 to July 2010)

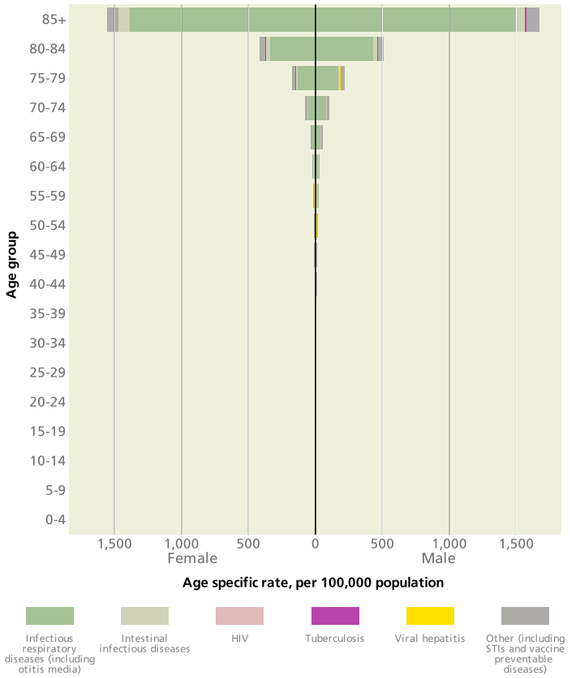
Infectious disease in England has been decreasing for several decades. Socioeconomic changes, improvements in sanitation and hygiene, mass vaccination and improvements in medical treatment have contributed to this decrease. It now accounts for a far smaller proportion of mortality than heart disease, cancer and other non-communicable diseases.

After a small peak in early life, mortality from infectious disease rises exponentially with age. Respiratory diseases including influenza and pneumonia account for a large proportion of deaths related to infectious disease, particularly in vulnerable groups. Mortality is low for most other infections, but may be higher for certain infections in particular populations.

Hospital admission rates for infectious and parasitic diseases are highest at the extremes of life, particularly in the under-fives. They are also higher for infections in males at all ages, except in early adult life.

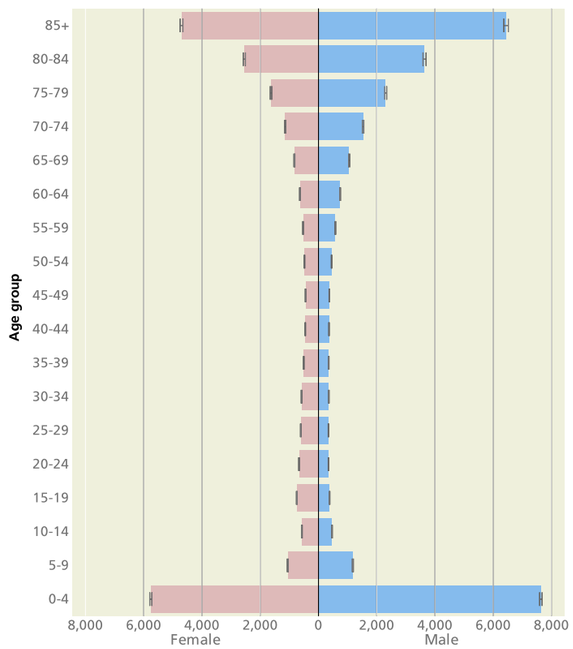
Mortality rates for infectious disease are low in England due to medical treatment and public health action. However, it remains important to monitor the risk posed by emerging or resistant pathogens. Infectious disease is a considerable cause of morbidity leading to use of health care resources.

Average annual mortality rate due to infectious and parasitic diseases (and sub-categories) by age and sex, England, 2008-10



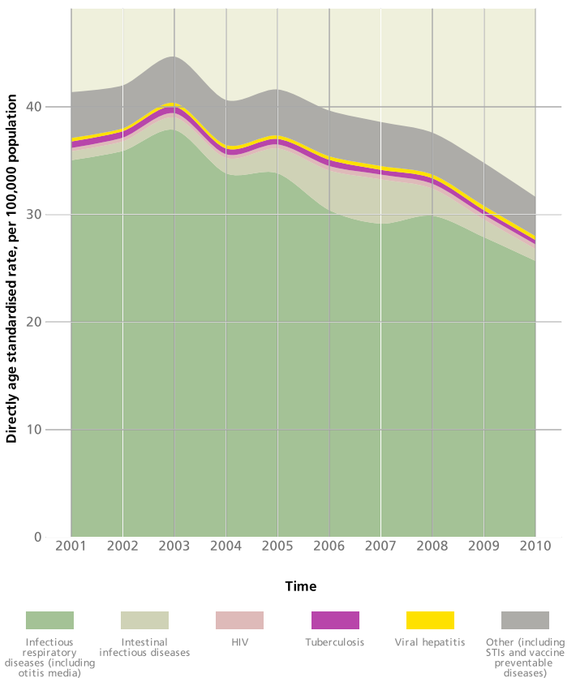
Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Hospital admission rates due to infectious and parasitic diseases by age and sex, England, 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. © Crown Copyright 2012. 2010 population estimates, ONS. (Analysis by PHOs, led by EMPHO)

Trend in mortality rate due to infectious and parasitic diseases (and sub-categories), England, 2001 to 2010

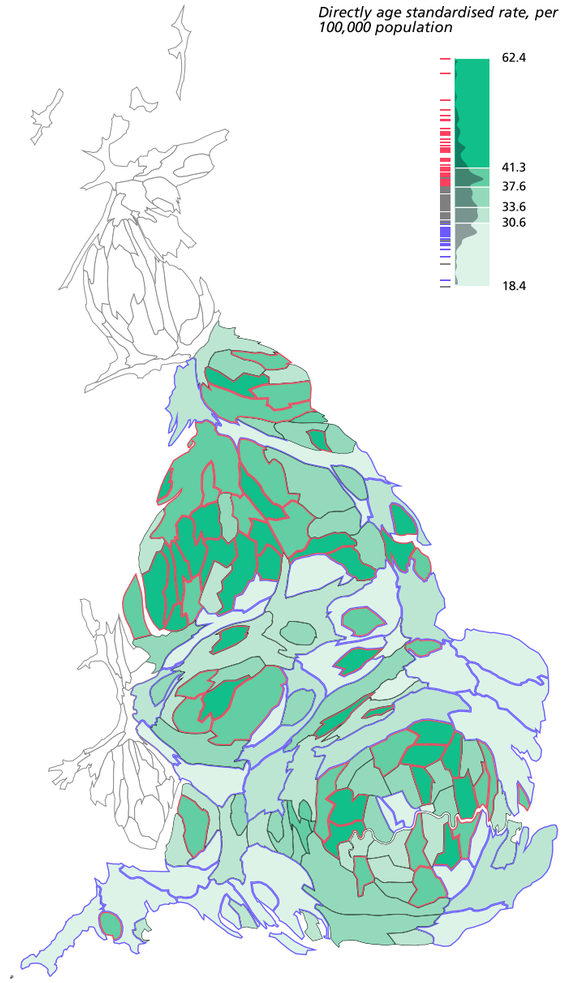


Source: Death registrations and 2001 to 2010 population estimates, ONS. (Analysis by DH)

Key facts

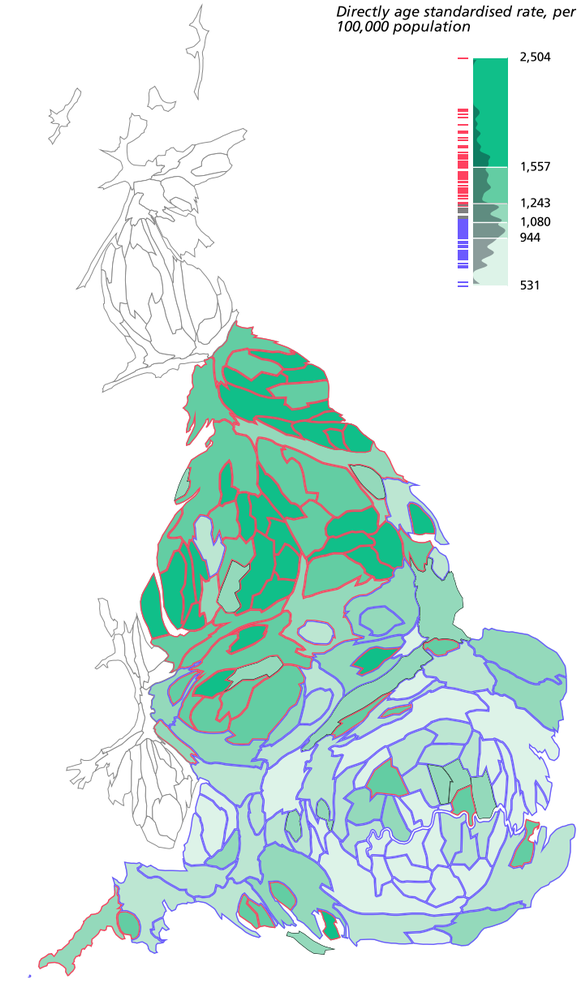
- Around 89,700 potential years of life lost (to age 75) in 2010 (4% of all PYLL)
- Around 3,417,000 hospital bed days in 2010/11 (8% of all bed days)
- Infectious respiratory diseases accounted for 57% of PYLL and 74% of bed days for communicable conditions

Average annual mortality due to infectious and parasitic diseases by upper tier local authority, England, 2008-10



Source: Death registrations and 2008 to 2010 population estimates, ONS. (Analysis by DH)

Hospital admission rates due to infectious and parasitic diseases by upper tier local authority, England, 2010/11



Source: Hospital Episode Statistics (HES), The Information Centre for Health and Social Care. © Crown Copyright 2012. 2010 population estimates suplied by ONS. (Analysis by PHOs, led by EMPHO)

Tuberculosis (TB) is an infectious bacterial disease, predominantly of the lungs. Usually curable, TB may be fatal without treatment. The current global TB pandemic is the leading cause of death due to treatable infectious disease, causing an estimated 1.4 million deaths globally in 2010[1].

In 2010 in England 7,758 cases of tuberculosis were reported, a rate of 14.9 per 100,000 population. This continues a gradual rise in recent years. The most affected regions are London and the West Midlands, with highest rates in the 15 to 44 age groups and with more men affected than women.

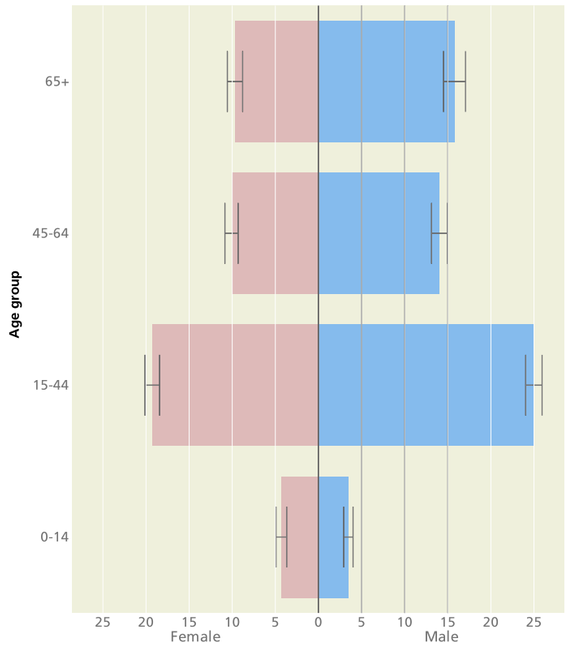
An increasing proportion of cases is found in people born outside the UK (73% in 2010). Other risk factors include homelessness, drug and alcohol use and previous imprisonment.

Multidrug resistant TB (MDR TB, resistant to two key first line TB drugs) remains low at 1.3% of cases but has gradually increased over the preceding decade. Three extensively drug resistant (XDR) TB cases were reported in 2009, with nine cases reported between 1995 and 2008. 84% of TB cases diagnosed in 2009 completed treatment within one year.

TB control efforts should continue to target high-risk groups in England, as well as contributing where possible to international efforts to combat the wider pandemic.

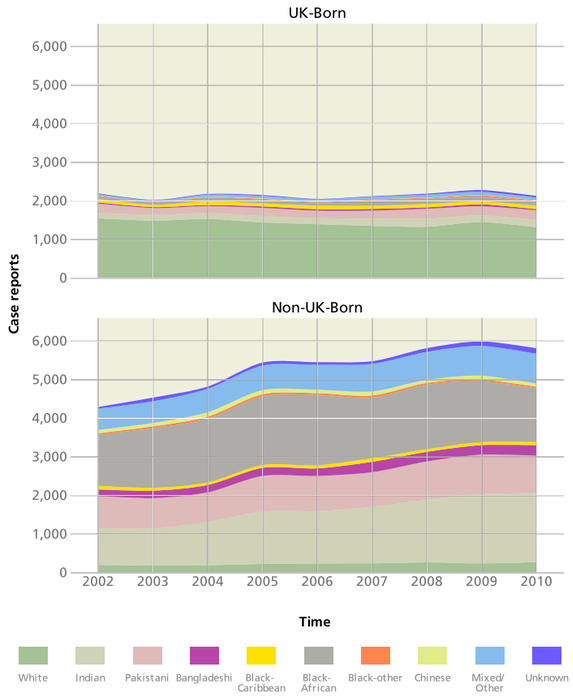
1 WHO. Global TB Control 2011.

Tuberculosis case report rates by age and sex, England, 2010



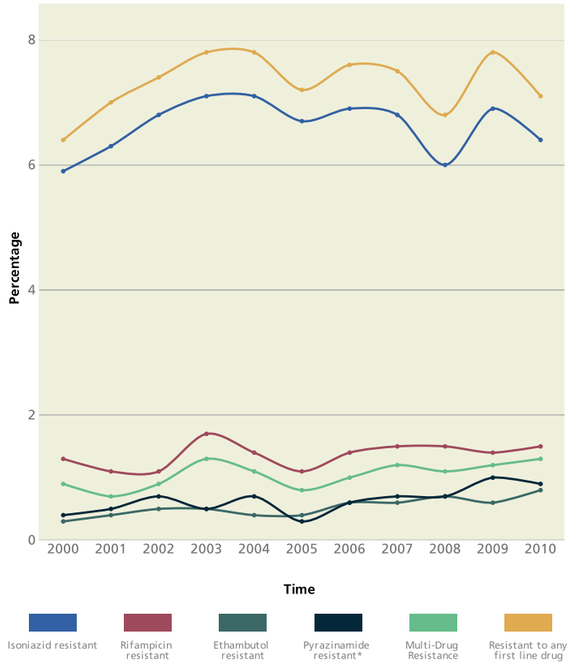
Source: Enhanced Tuberculosis Surveillance, HPA. 2009 population estimates, ONS. (Analysis by HPA)

Trend in number of tuberculosis case reports by place of birth and ethnic group, United Kingdom, 2002 to 2010



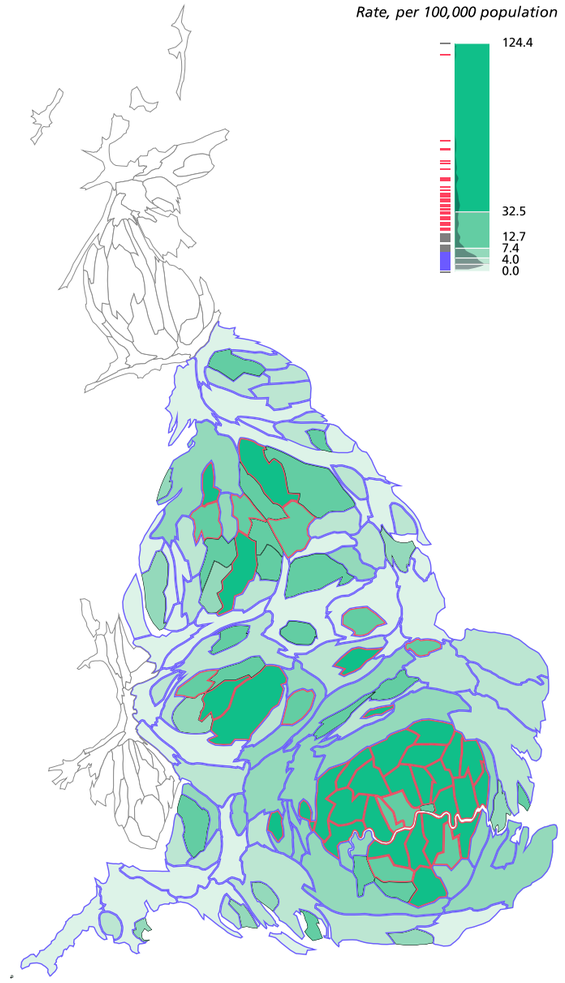
Source: Enhanced Tuberculosis Surveillance, HPA.

Trend in the proportion of tuberculosis cases with first-line drug resistance, United Kingdom, 2000 to 2010



Source: Enhanced Tuberculosis Surveillance, Enhanced Surveillance of Mycobacterial Infections, UK Mycobacterial Surveillance Network.

Average annual tuberculosis case rate by upper tier local authority, England, 2008-10

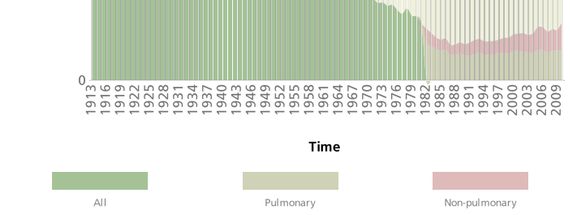


Source: Enhanced Tuberculosis Surveillance, HPA. 2009 population estimates, ONS. (Analysis by HPA)

Key facts

- Around 2,600 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 54,000 hospital bed days (<1% of all bed days)

Trend in tuberculosis notifications by site of disease (pulmonary/non-pulmonary), England and Wales, 1913 to 2010



Source: Statutory Notifications of Infectious Diseases (NOIDS), HPA.

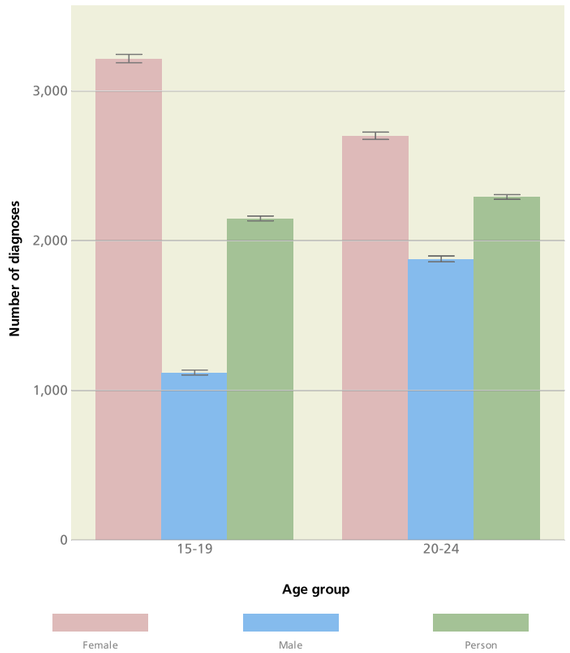
Chlamydia is caused by the bacterium *Chlamydia trachomatis* and is the most common bacterial sexually transmitted infection in England. It is most prevalent among sexually active young people. Infection is mostly asymptomatic. If untreated, chlamydia can lead to complications including pelvic inflammatory disease, ectopic pregnancy and infertility. The national programme to control chlamydia offers opportunistic screening to sexually active under-25s.

In 2010, 152,838 diagnoses were made in 15-24 year olds, a rate of 2,226 diagnoses per 100,000. Diagnosis rates are reliant on the numbers and characteristics of those screened and do not necessarily represent the underlying disease distribution: increases in screening lead to increased diagnosis rates.

Differing approaches to promoting screening uptake may contribute to different diagnosis rates between local authorities.

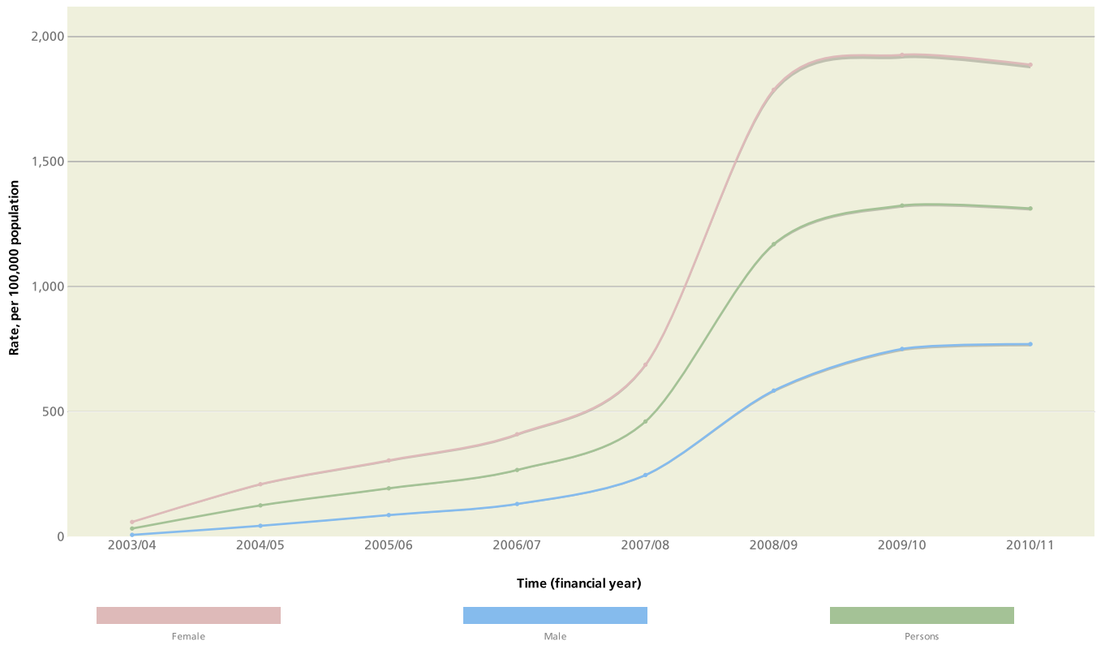
Control measures include encouraging young adults to be screened for chlamydia annually and on change of partner, facilitating access to sexual health services and effective partner notification, and promotion of consistent condom use. Local areas should aim to achieve a high diagnosis rate of at least 2,400 per 100,000 15-24 year olds in order to detect and treat chlamydia and reduce the consequences of infection.

Rate of diagnoses of chlamydia for young persons aged 15-24 years only by age and sex, England, 2010



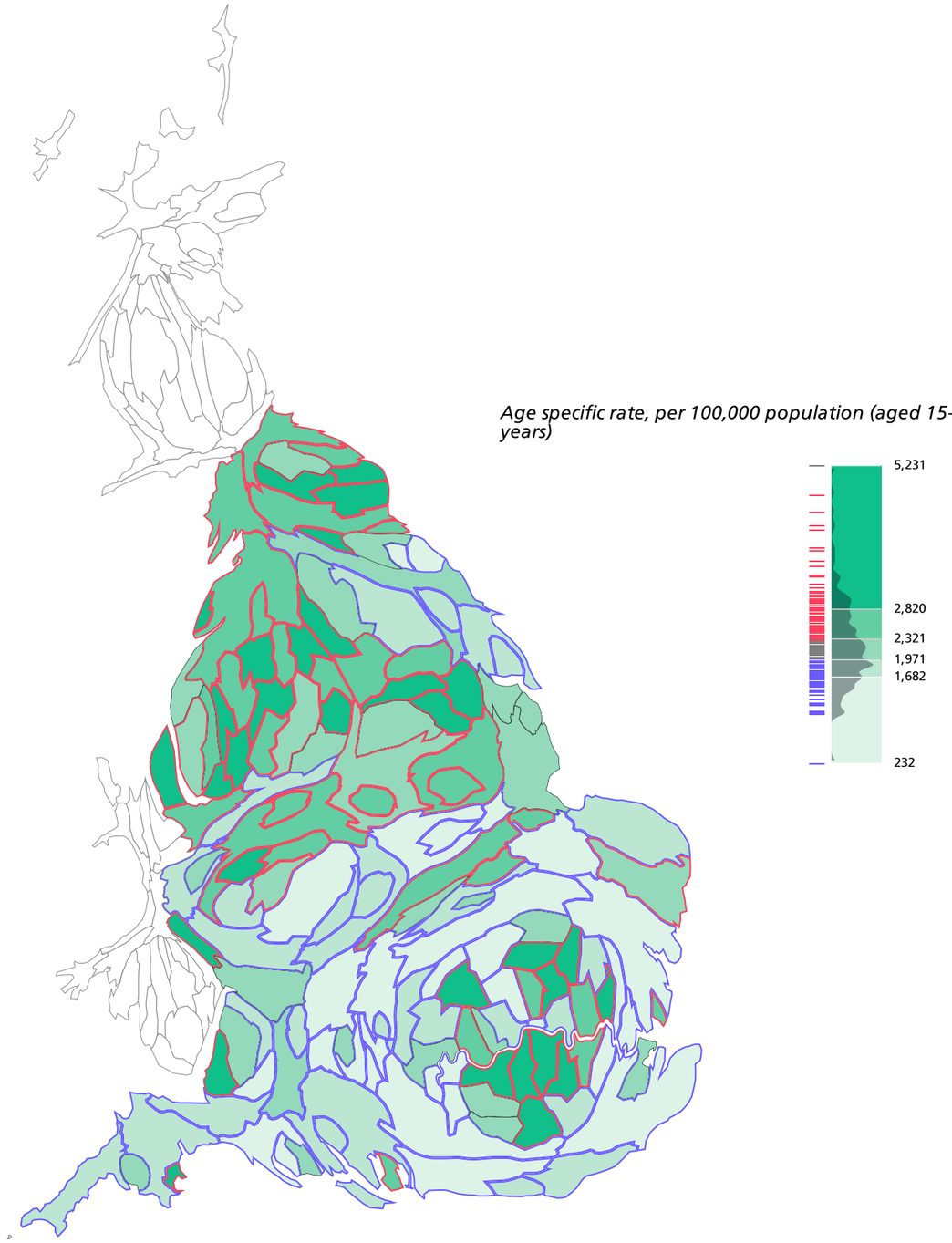
Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD) and community setting (National Chlamydia Screening Programme (NCSP) & Non-NCSP/Non-GUM), HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in rate of diagnoses of chlamydia made in community settings, by sex, England, 2003/04 to 2010/11



Source: National Chlamydia Screening Programme (NCSP) and non-NCSP non-Genito-urinary Medicine (GUM) clinic laboratory returns. 2003 to 2010 population estimates, ONS. (Analysis by HPA)

Rate of diagnoses of chlamydia in young persons aged 15-24 years by upper tier local authority, England, 2010



Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD) and community setting (National Chlamydia Screening Programme (NCSP) & Non-NCSP/Non-GUM), HPA. 2010 population estimates, ONS. (Analysis by HPA)

Gonorrhoea is a sexually transmitted infection caused by the bacterium *Neisseria gonorrhoeae*. If left untreated gonorrhoea can lead to serious complications including pelvic inflammatory disease, ectopic pregnancy and infertility.

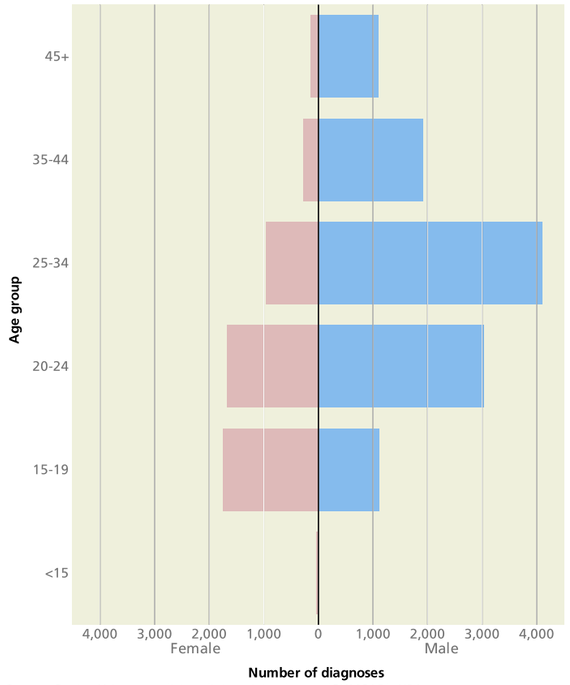
Gonorrhoea can usually be effectively treated with antibiotics but this is threatened by emerging resistance to currently recommended drugs (specifically ceftriaxone and cefixime).

After genital chlamydial infection, gonorrhoea is the second most common bacterial sexually transmitted infection. In 2010, there were over 16,500 diagnoses of gonorrhoea. The annual number of diagnoses has been increasing. This is probably due to better diagnosis although increased transmission is likely to have contributed.

The true number of cases may be considerably greater, as gonorrhoea is frequently asymptomatic. The highest rates of gonorrhoea are seen in women aged 15-19 and men aged 20-24 years. Gonorrhoea is concentrated in urban areas and those at greatest risk include young adults, certain black ethnic minorities and men who have sex with men (MSM).

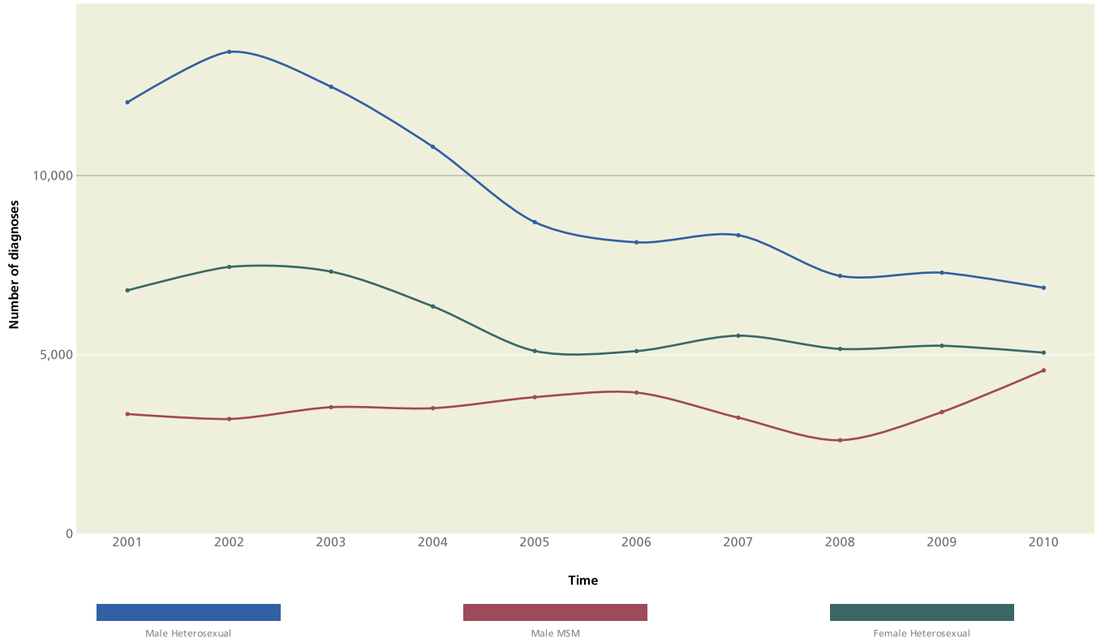
Effective control measures include providing easy access to sexual health services, effective partner notification, encouraging high risk individuals to have annual sexual health screens, and promoting consistent condom use.

Number of diagnoses of gonorrhoea made at genitourinary medicine clinics by age and sex in England, 2010



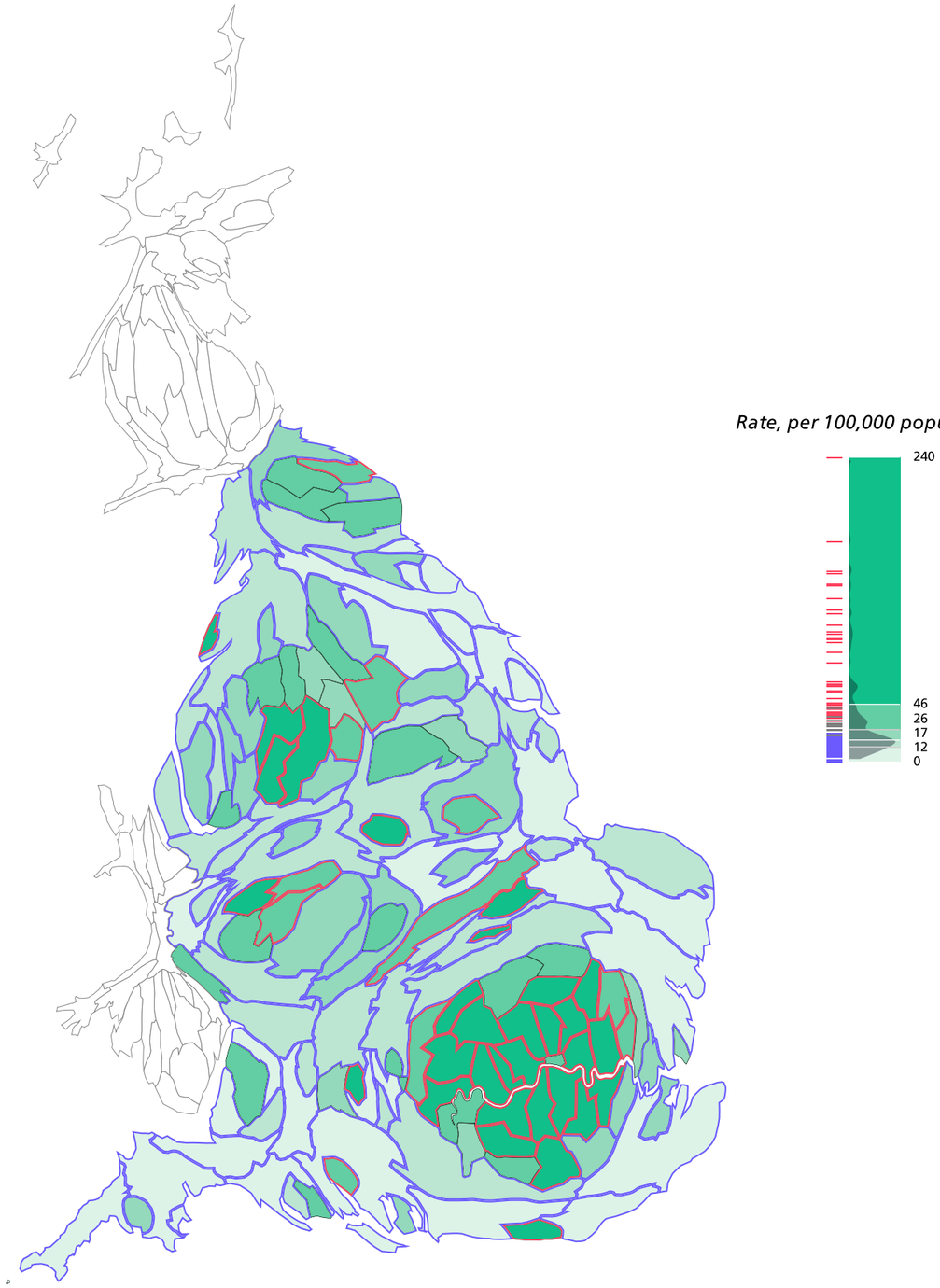
Source: Genito-Urinary medicine clinic activity dataset (GUMCAD), HPA.

Trend in the number of diagnoses of gonorrhoea made at genitourinary medicine clinics by sex and sexual orientation, England, 2001 to 2010



Source: Genito-Urinary medicine clinic activity dataset (GUMCAD), HPA.

Rate of diagnoses of gonorrhoea by upper tier local authority, England, 2010



Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD), HPA. 2010 population estimates, ONS. (Analysis by HPA)

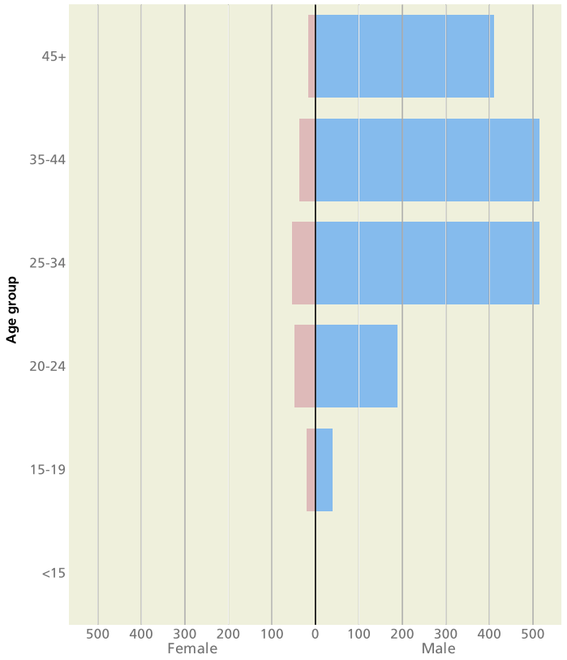
Syphilis is caused by the bacterium *Treponema pallidum*. Syphilis can be transmitted during sexual intercourse and from an infected pregnant woman across the placenta to a developing baby (congenital syphilis).

Syphilis can result in serious neurological and cardiac problems. If a woman has syphilis during pregnancy, infection may lead to stillbirth, neonatal death, or disorders such as deafness, neurological impairment, and bone deformities. Syphilis can be effectively treated using antibiotics.

The resurgence of syphilis started in the late 1990s. In 2010, there were over 2,600 diagnoses in England. Syphilis is concentrated in major urban areas, particularly London, and among MSM aged 25 to 34, many of whom are co-infected with HIV. Outbreaks among heterosexuals, including reproductive age women, have developed alongside the larger MSM epidemic indicating an increased risk of congenital syphilis.

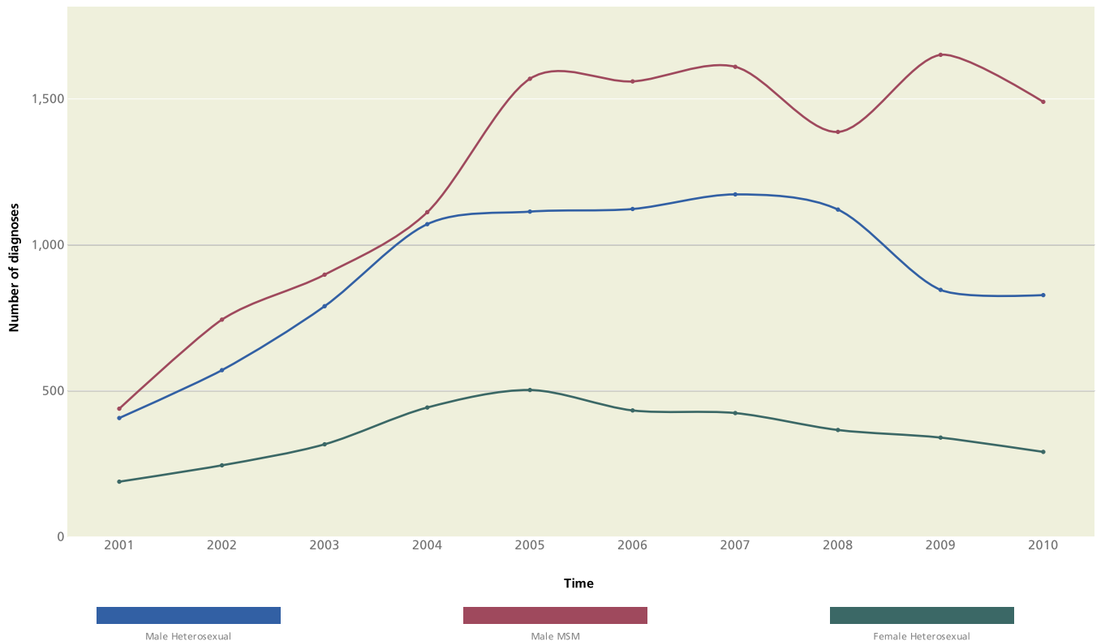
Effective control measures include general sexual health promotion including encouraging high risk individuals to have annual sexual health screens, providing easy access to sexual health services and effective partner notification, promotion of consistent condom use, and early awareness of symptoms to prompt early medical assessment.

Number of diagnoses of infectious syphilis made at genitourinary medicine clinics by age and sex in England, 2010



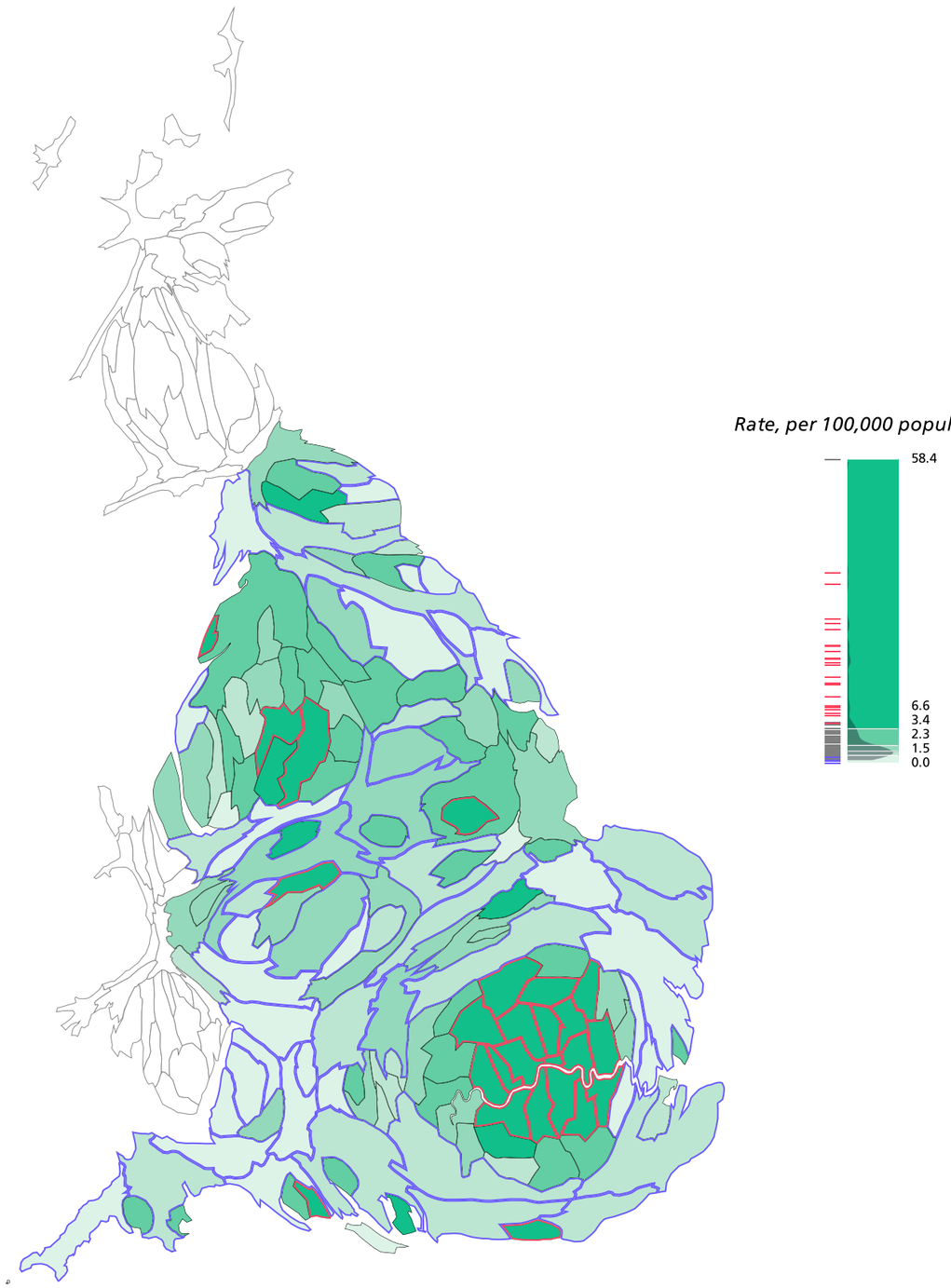
Source: Genito-Urinary medicine clinic activity dataset (GUMCAD), HPA.

Trend in the number of diagnoses of infectious syphilis made at genitourinary medicine clinics by sex and sexual orientation, England, 2001 to 2010



Source: Genito-Urinary medicine clinic activity dataset (GUMCAD), HPA.

Rate of diagnoses of infectious syphilis by upper tier local authority, England, 2010



Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD) returns, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Genital herpes is a major viral cause of poor sexual health. It can be effectively treated by antiviral drugs, though can recur frequently post treatment. In rare cases, the virus can be transmitted from mother to newborn, resulting in serious infant morbidity or death.

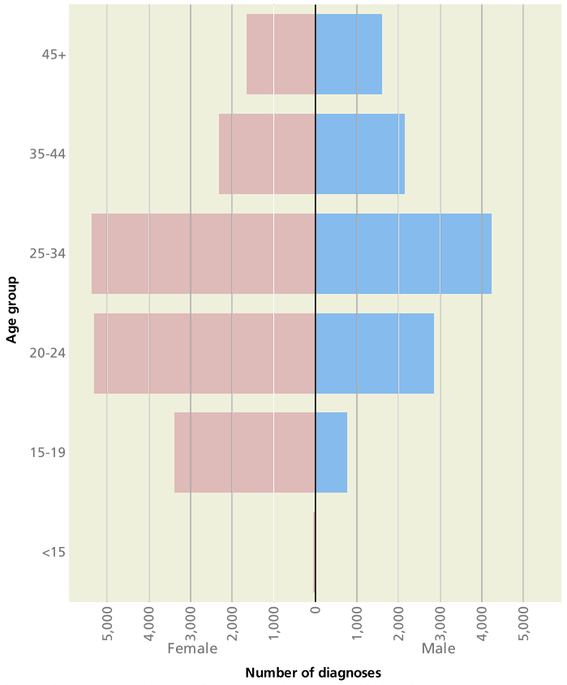
In 2010, the number of new diagnoses was almost 30,000 (60% in women). This is almost twice the number of new diagnoses in 2001. Most of this rise is due to considerable improvements in diagnostics but increased transmission may have contributed. The highest rates of diagnosis are found in young people, MSM and those living in urban areas.

Genital warts is the most commonly diagnosed sexually transmitted viral infection. It is caused by "low-risk" (referring to cancer causation) types of the human papillomavirus (HPV). It can be hard to treat and recurs frequently.

A marked increase in new diagnoses over the past decade, particularly in young adults, peaked in 2008 at over 78,000. This is probably due to increased transmission and better diagnostics. In 2008, a UK-wide HPV immunisation programme to prevent cervical cancer started, using a vaccine against "high-risk" HPV types. In 2012, a vaccine also protecting against two "low-risk" HPV types and genital warts will be introduced.

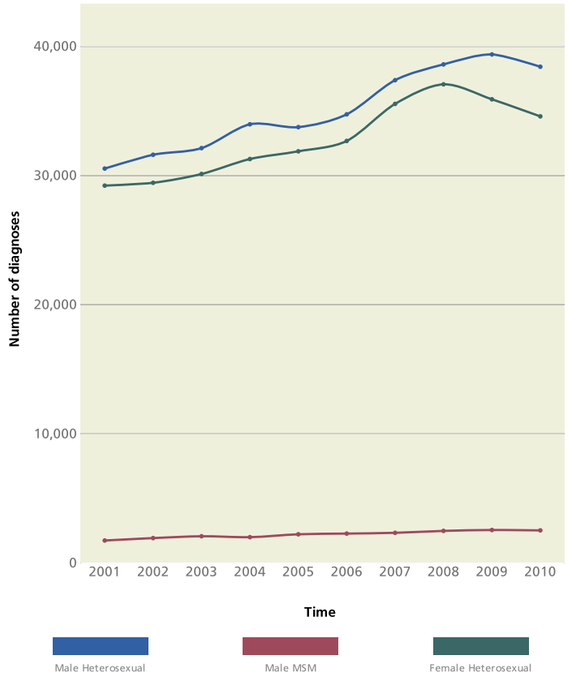
Ensuring high immunisation uptake among the eligible will help ensure a continued decline in HPV infection.

Number of diagnoses of genital herpes made at genitourinary medicine clinics by age and sex,England, 2010



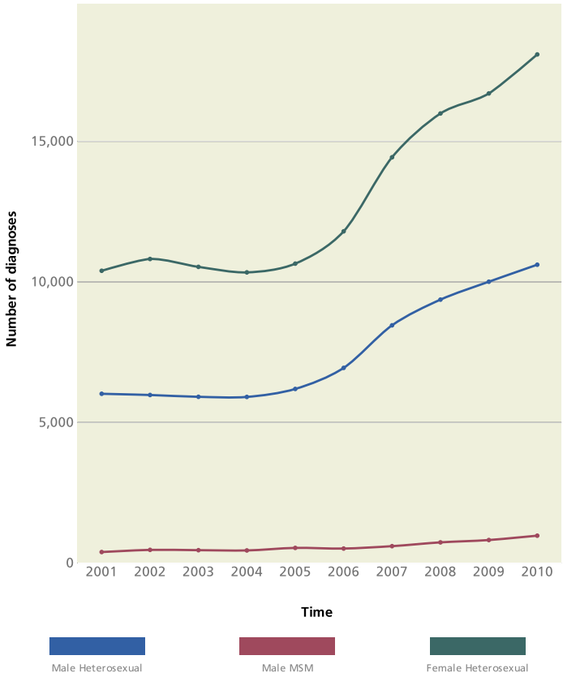
Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD), HPA.

Trend in number of diagnoses of genital warts made at genitourinary medicine clinics by sex and sexual orientation, England, 2001 to 2010



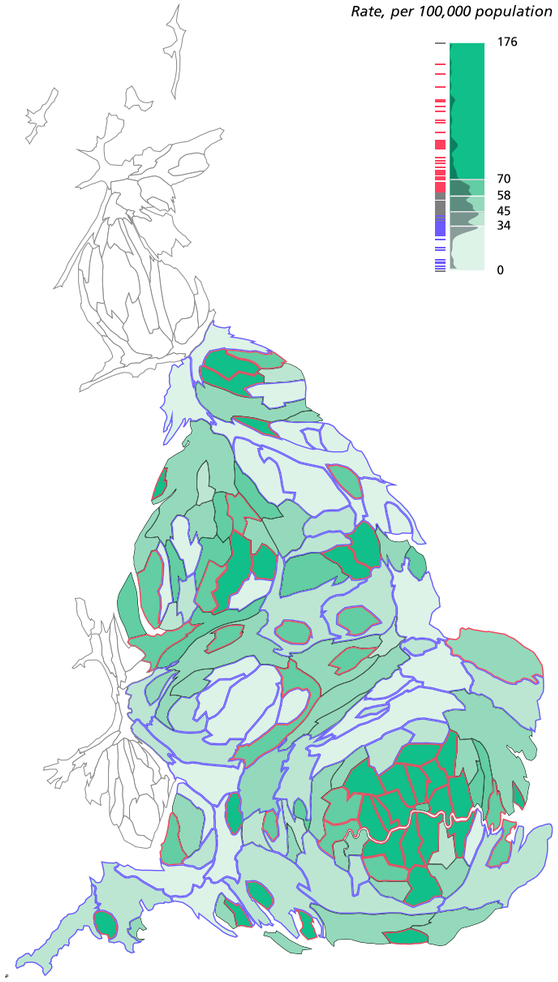
Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD), HPA.

Trend in number of diagnoses of genital herpes made at genitourinary medicine clinics by sex and sexual orientation in England, 2001 to 2010



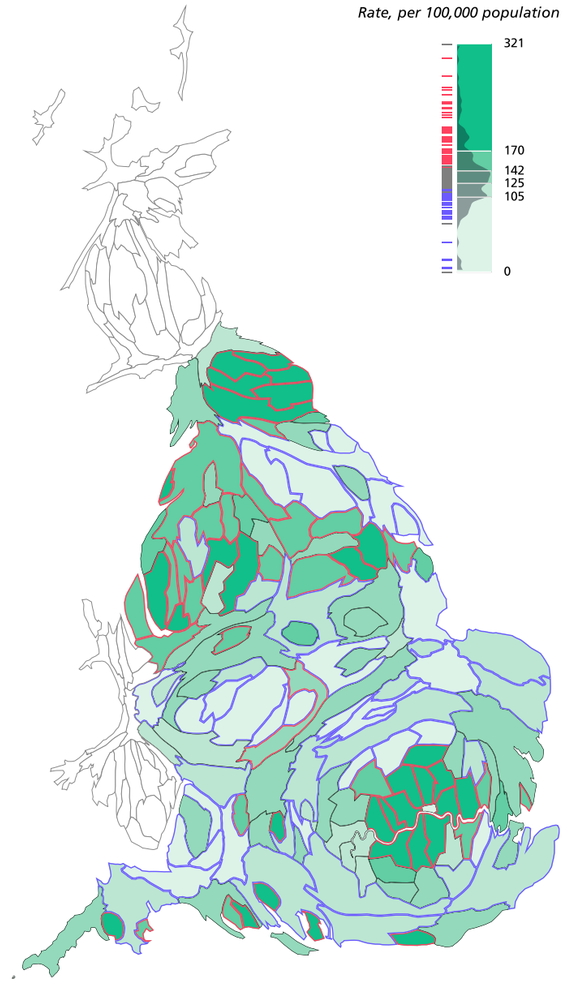
Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD), HPA.

Rate of new genital herpes diagnoses by upper tier local authority, England, 2010



Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD), HPA. 2010 population estimates, ONS. (Analysis by HPA)

Rate of first episode genital wart diagnoses by upper tier local authority, England, 2010



Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD), HPA. 2010 population estimates, ONS. (Analysis by HPA)

In 2010, an estimated 91,500 people were living with HIV in the UK. By the end of 2012 this is likely to rise to over 100,000.

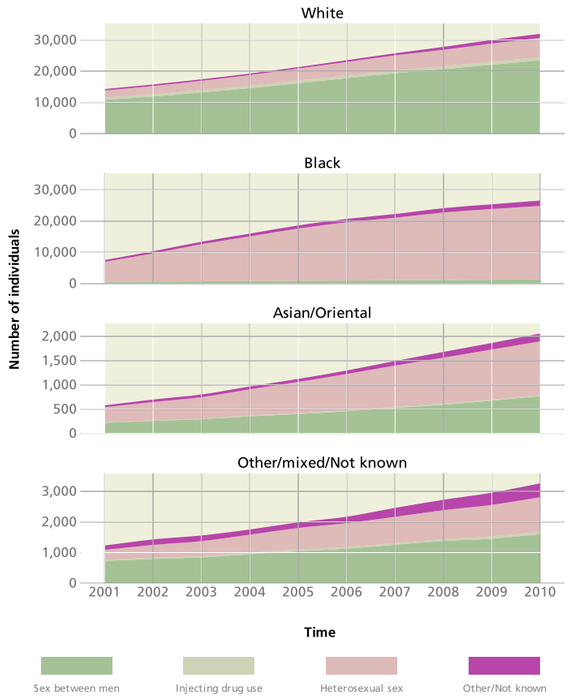
HIV treatment, introduced in the mid 1990s, transformed HIV from a fatal condition into a long term condition. People diagnosed at a late stage of progression of the infection have a ten times greater risk of death within one year than those diagnosed early. Early diagnosis also facilitates risk reduction and prompt treatment (if appropriate), which reduces infectivity.

In 2010, there were 5,900 new diagnoses, of which 50% were 'late' (CD4<350 cells/mm^3). Black-Africans/British black-Africans, particularly men, are at greater risk of late diagnosis (67% compared to 41% among white men). In 2010, the proportion of pregnant women testing positive was 0.17%[1], similar to the 2005 figure.

Effective control measures include those applicable to other bloodborne and sexually transmitted infections. Particularly important is reducing late diagnosis of HIV. Strategies to reduce late diagnosis include testing outside sexual health settings where the prevalence of diagnosed HIV infection is >2 per 1,000 population. Such strategies must also ensure clear pathways into HIV care following diagnosis.

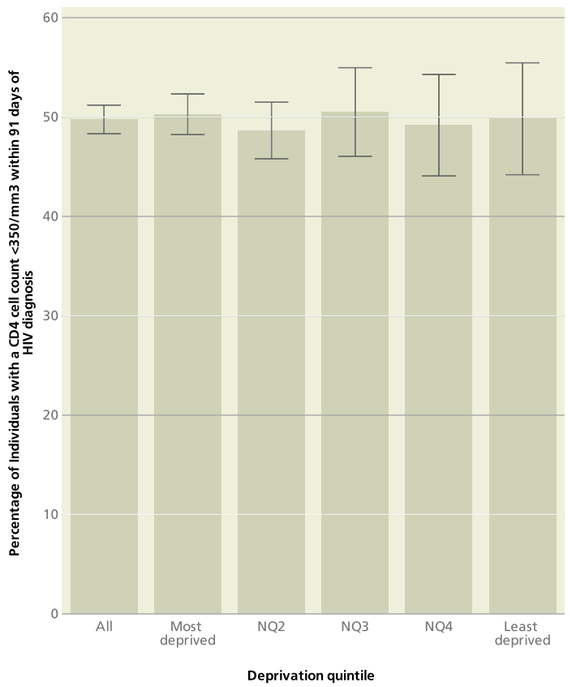
1 HPA. National Antenatal Infections Screening Monitoring (NAISM) 2005-2010.

Trend in number of individuals living with diagnosed HIV infection by risk factor and ethnicity, England, 2001 to 2010.



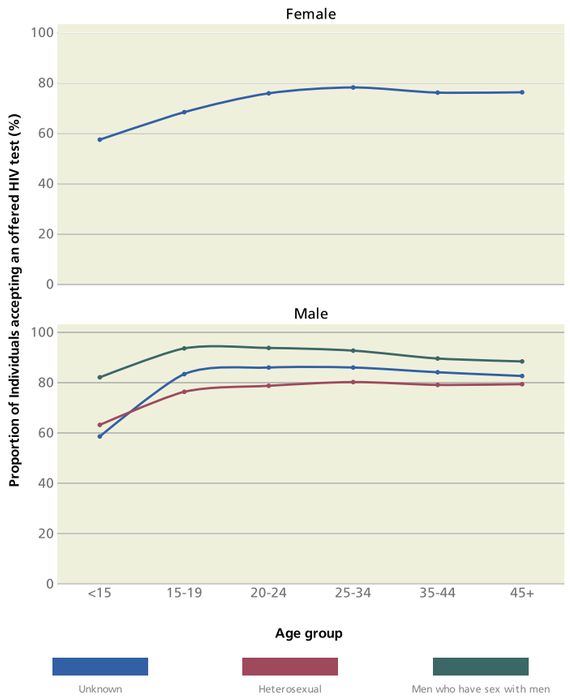
Source: HIV and AIDS Reporting System, HPA.

Proportion of late HIV diagnoses by deprivation quintile, England, 2010



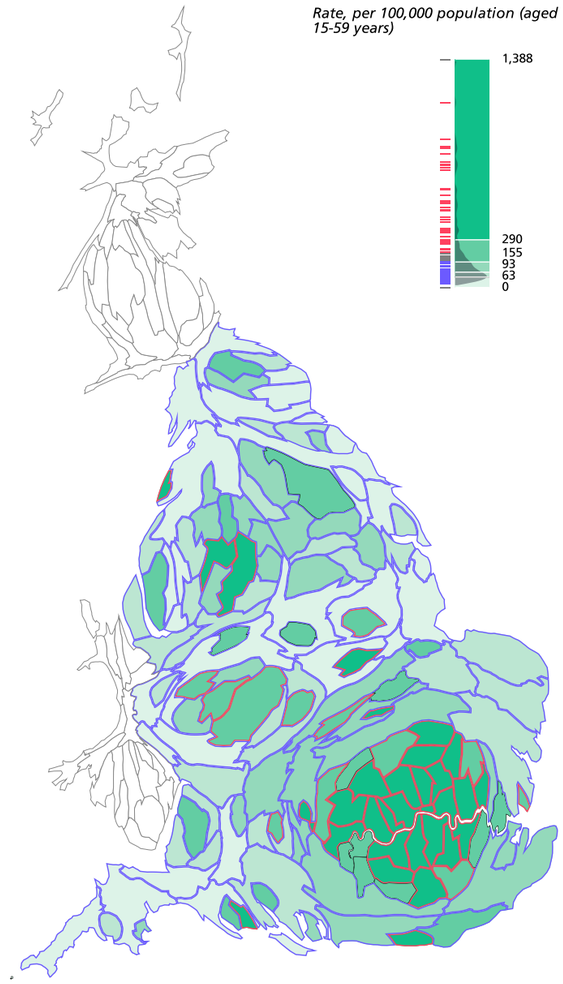
Source: HIV and AIDS Reporting System, HPA

HIV testing uptake by age, sex and sexual orientation, England, 2010



Source: Genito-Urinary Medicine Clinic Activity Dataset (GUMCAD), HPA. (Analysis by HPA)

Diagnosed HIV prevalence in persons aged 15 to 59 years by upper tier local authority, England, 2010

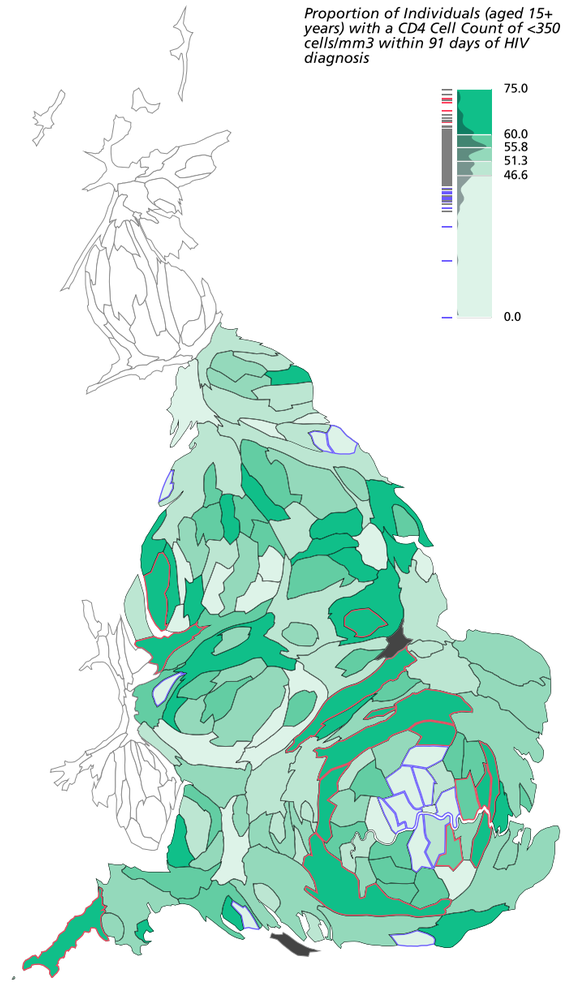


Source: Survey of Prevalent HIV Infections Diagnosed (SOPHID), HPA. 2010 population estimates, ONS. (Analysis by HPA)

Key facts

- Around 17,100 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 28,000 hospital bed days in 2010/11 (<1% of all bed days)
- Mortality data taken from the HIV and AIDS new diagnosis and death dataset, HPA, and includes all deaths of people diagnosed with HIV/AIDs. PYLL from primary cause ONS mortality statistics is around 6,500

Late HIV diagnosis rate in persons aged 15 years and over by upper tier local authority, England, 2008-10



Source: HIV and AIDS Reporting System, Survey of Prevalent HIV Infections Diagnosed (SOPHID), HPA. (Analysis by HPA)

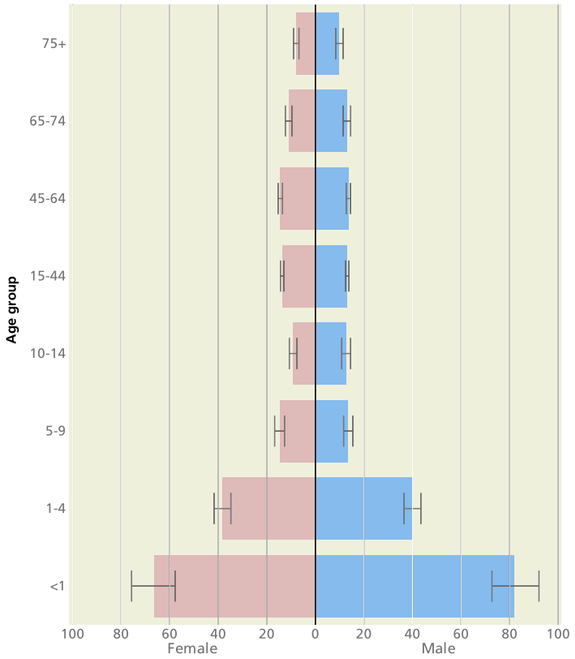
Salmonellosis is a common bacterial infection. Transmission is by contaminated food consumption or contact with infected animals or persons. It particularly affects the young, old and chronically ill, with mild to severe effects.

Diagnosis is most prevalent in the under ones and rates peak each summer, though this seasonal trend is now less pronounced. Salmonellosis notifications are decreasing, though geographic variability in rates remain.

Escherichia coli (E. coli) forms part of normal human gut bacteria but certain strains e.g. O157, often animal in origin, produce toxins that can cause severe infection. Complications include haemolytic uraemic syndrome and death. The peak age group for *E. coli* O157 infection is one to four years. Summer peaks occur, but vary yearly with no clear trend. Rates are highest in parts of the north, West Midlands and West Country.

Foodborne infection causes substantial morbidity in England, often unreported. Surveillance and outbreak investigation are key to identify outbreaks and their source. Effective preventative measures include promoting good hand hygiene; correct food storage, preparation and cooking; and prevention of contamination during food production, as well as ensuring open farms minimise risks due to animal contact.

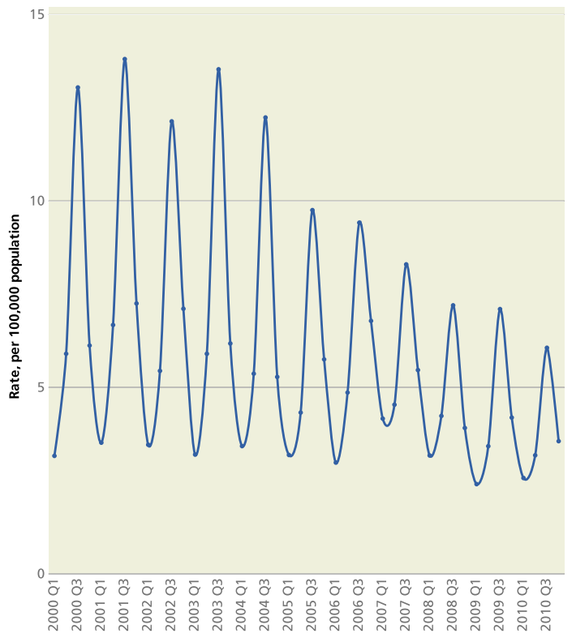
Rate of Salmonella diagnoses by age and sex, England, 2010



Age specific rate, per 100,000 population

Source: LabBase2 laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

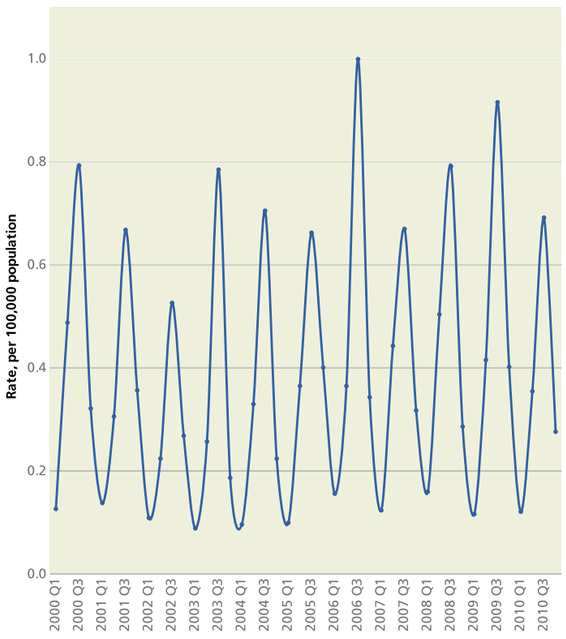
Trend in the rate of Salmonella diagnoses, England, 2000 to 2010



Time (calendar year-quarter)

Source: LabBase2 laboratory data, HPA. 2000 to 2010 population estimates, ONS. (Analysis by HPA)

Trend in the rate of Verocytotoxigenic E. coli O157 diagnoses, England, 2000 to 2010



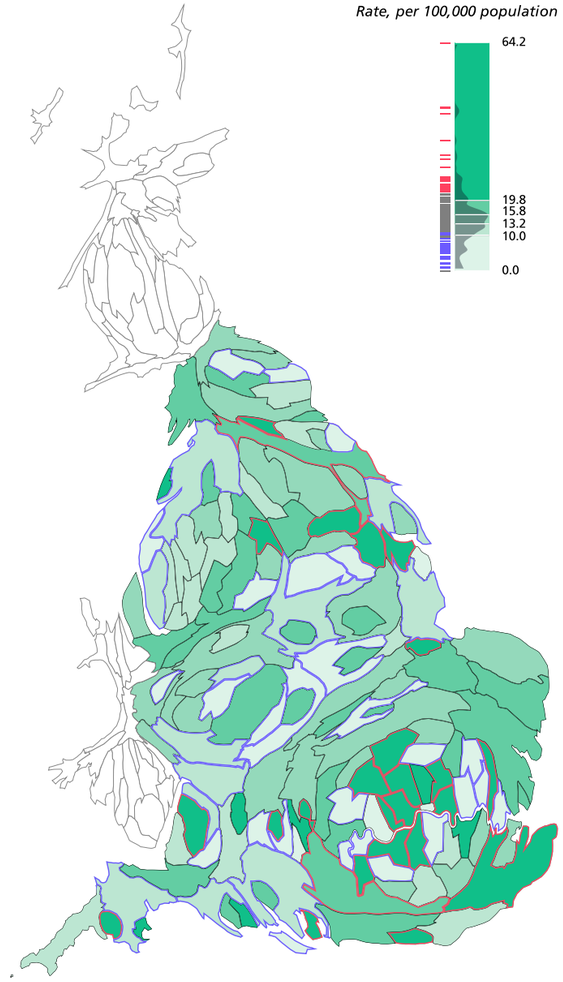
Time (calendar year - quarter)

Source: National Enhanced Surveillance System for VTEC, HPA. 2000 to 2010 population estimates, ONS. (Analysis by HPA)

Key facts

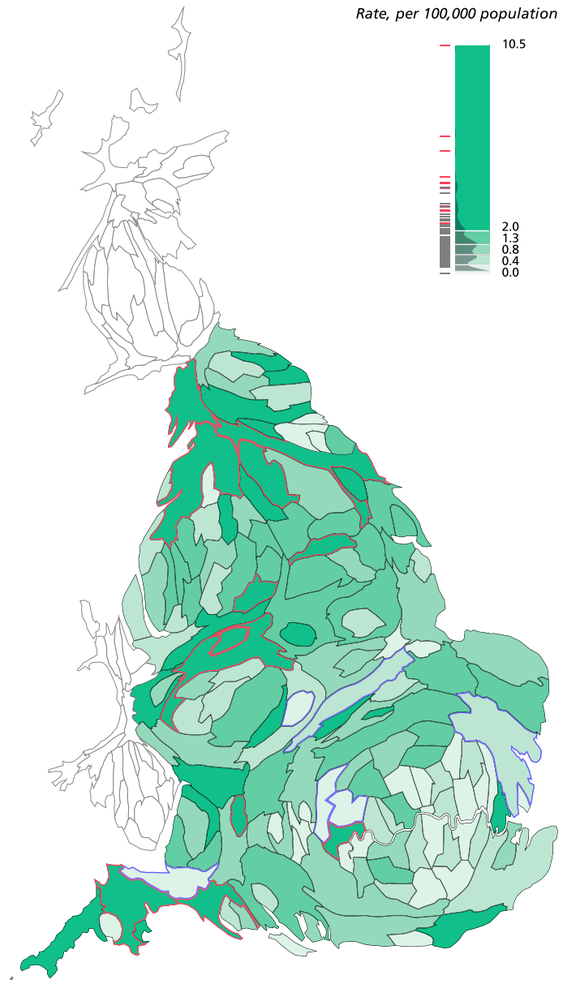
- Fewer than 300 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 5,000 hospital bed days in 2010/11 (<1% of all bed days)

Rate of Salmonella diagnoses by upper tier local authority, England, 2010



Source: LabBase2 laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Rate of Verocytotoxigenic E. coli O157 diagnoses by upper tier local authority, England, 2010



Source: National Enhanced Surveillance System for VTEC, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Campylobacter is the most common foodborne infection. It is often associated with contaminated poultry meat (in particular undercooked chicken livers). *Campylobacter* may cause severe illness.

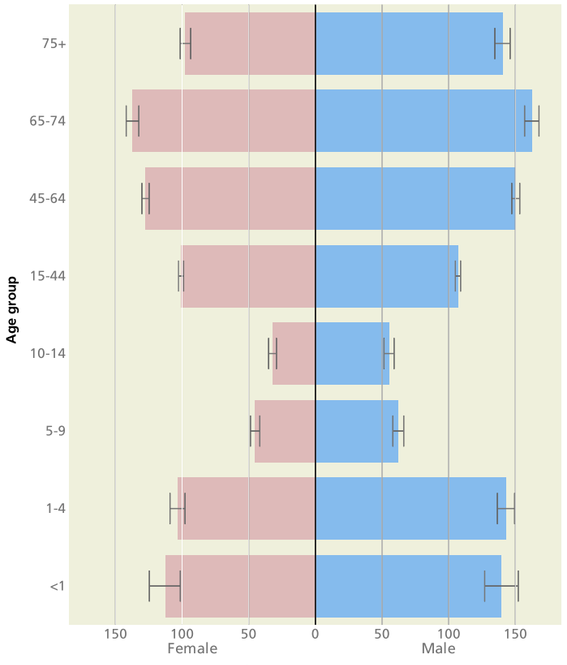
Rates of *Campylobacter* infection are higher in males at all ages, peaking in both sexes in the under fives and at 65-74 years of age. *Campylobacter* infections show marked seasonality, with late spring peaks. The overall trend in *Campylobacter* fell until 2005 and has risen thereafter, with the highest rates of infection in the North East, parts of the West Midlands and the South.

Cryptosporidium is an intestinal parasite that can cause severe diarrhoea, particular in the immunosuppressed. It may be acquired from contact with infected animals or humans, contaminated food, or contaminated water (including water in swimming pools).

Cryptosporidium infection rates peak at one to four years of age, falling to comparatively low levels in later life. *Cryptosporidium* infection rates show seasonality with variable summer or autumn peaks. The highest rates are observed in the North, West Country and West Midlands.

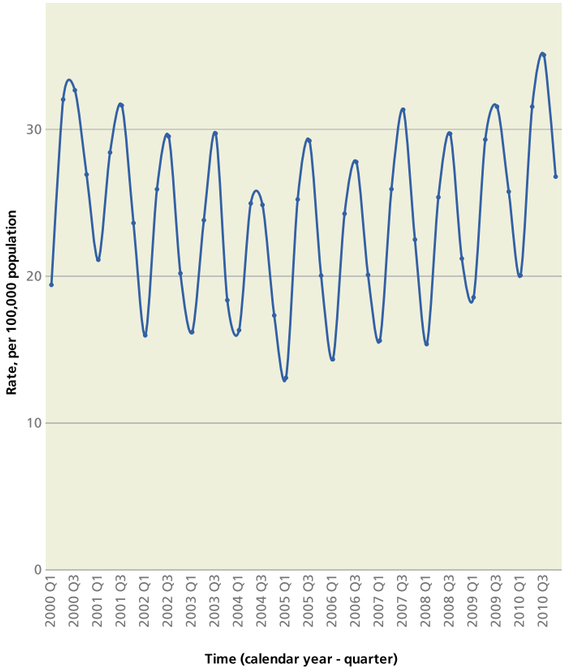
To reduce *Campylobacter* rates, the poultry industry should continue efforts to reduce contamination of poultry, alongside wider action around appropriate food handling, preparation and manufacture.

Rate of Campylobacter diagnoses, by age and sex, England, 2010



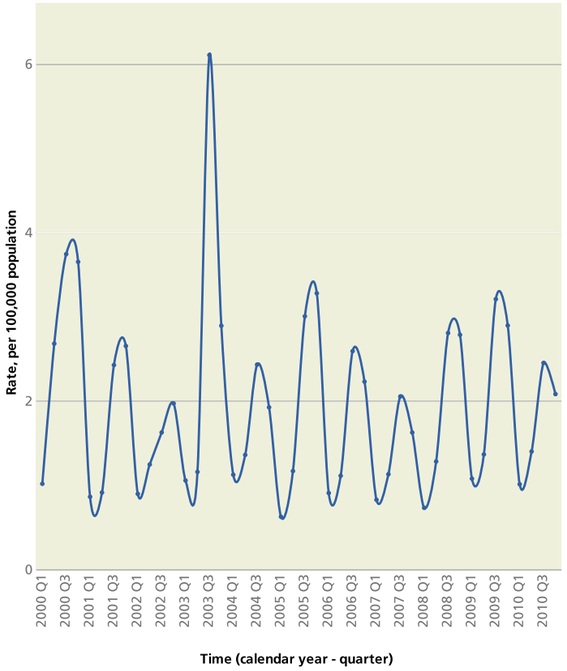
Source: LabBase2 laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in rate of Campylobacter diagnoses, England, 2000 to 2010



Source: LabBase2 laboratory data, HPA. 2000 to 2010 population estimates, ONS. (Analysis by HPA)

Trend in rate of Cryptosporidium diagnoses by quarter, England, 2000 to 2010

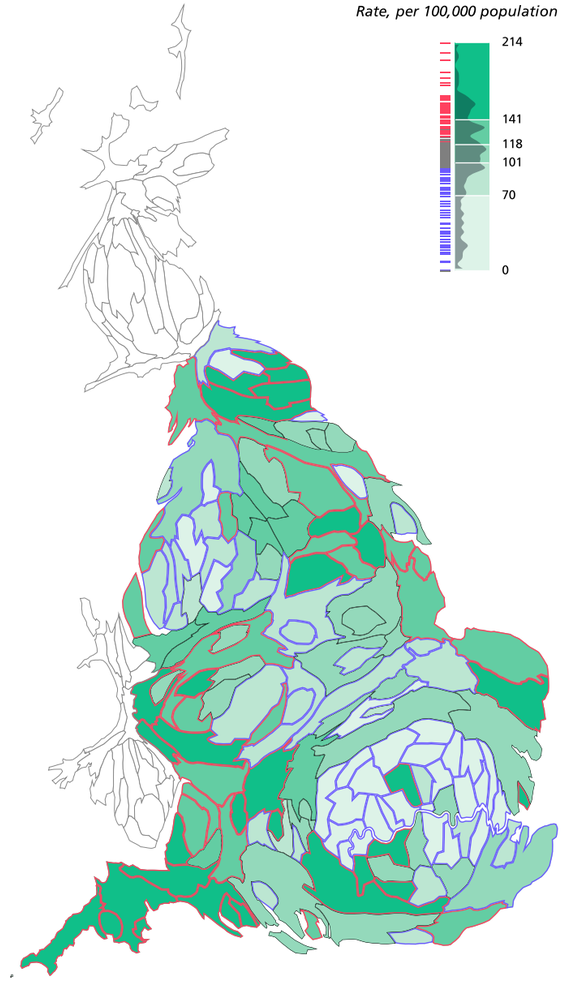


Source: LabBase2 laboratory data, HPA. 2000 to 2010 population estimates, ONS. (Analysis by HPA)

Key facts

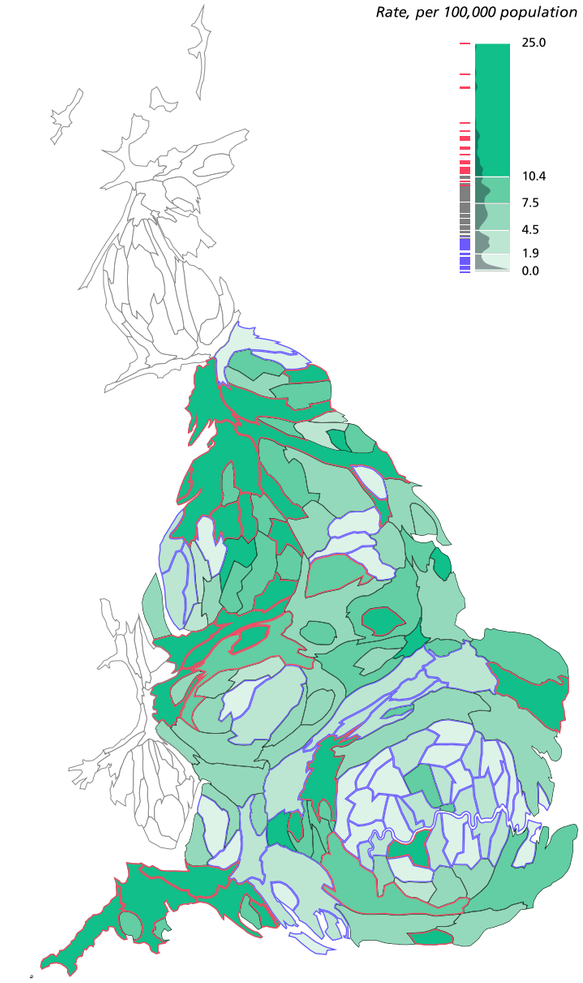
- Less than 300 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 33,000 hospital bed days in 2010/11 (<1% of all bed days)

Rate of Campylobacter diagnoses by upper tier local authority, England, 2010



Source: LabBase2 laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Rate of Cryptosporidium diagnoses by upper tier local authority, England, 2010



Source: LabBase2 laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

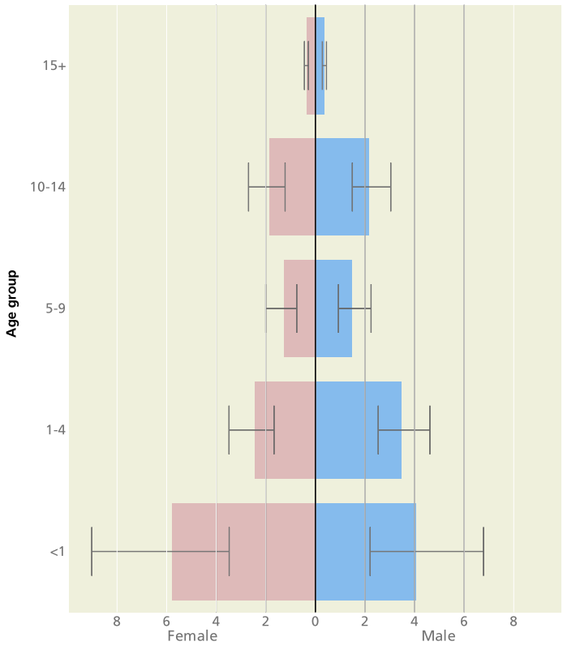
Low vaccine coverage in some populations has led to large outbreaks of measles in recent years. Measles is a highly infectious viral illness, typically causing a rash. It can result in serious complications such as pneumonia or neurological problems, particularly in those with impaired immune systems.

The measles vaccine was introduced in 1968, but was replaced by the MMR vaccine in 1988, which protects against measles, mumps and rubella. The two dose schedule of MMR vaccine was then introduced in 1996 as part of the routine vaccination schedule.

The highest rates of measles are seen in the under one age group, with a smaller second peak in the 10-14 age group. An increase in the number of confirmed cases is seen every few years, with large increases occurring since 2006. These increases have occurred across all child age groups. Quarter 3 of 2010 saw the most recent upsurge, and the highest regional rates of measles notifications in 2010 were in the South East.

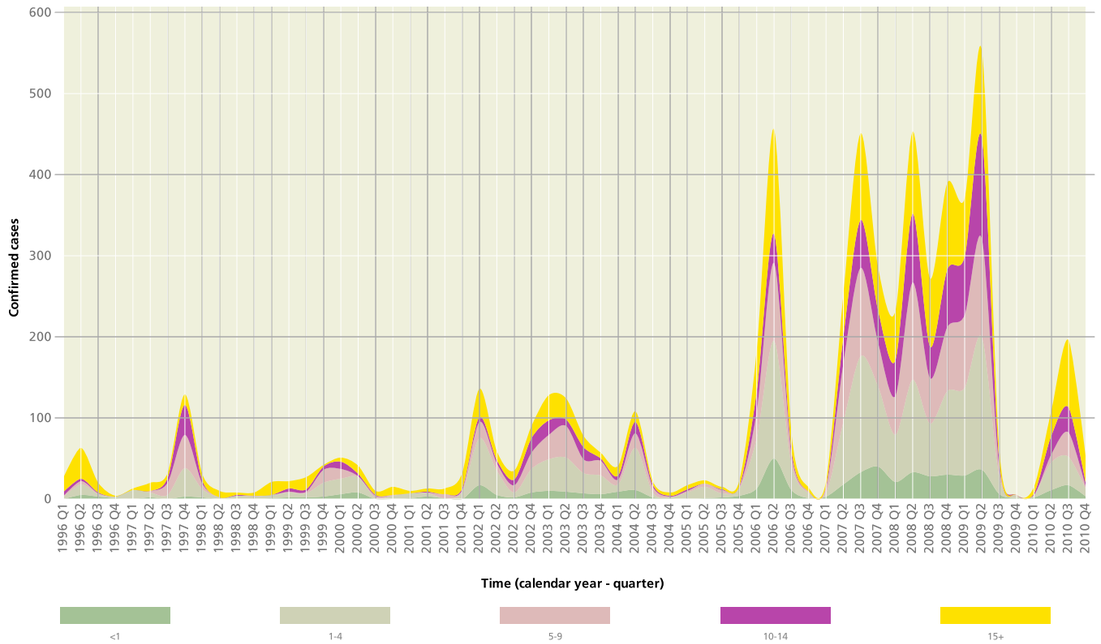
As outbreaks generally occur in populations with low vaccination coverage, efforts need to continue to try to improve vaccination coverage in these 'at risk' populations. Opportunities must also be taken by health professionals to encourage completion of the MMR course in older children and adults.

Confirmed cases of measles, rates by age and sex, England, 2010



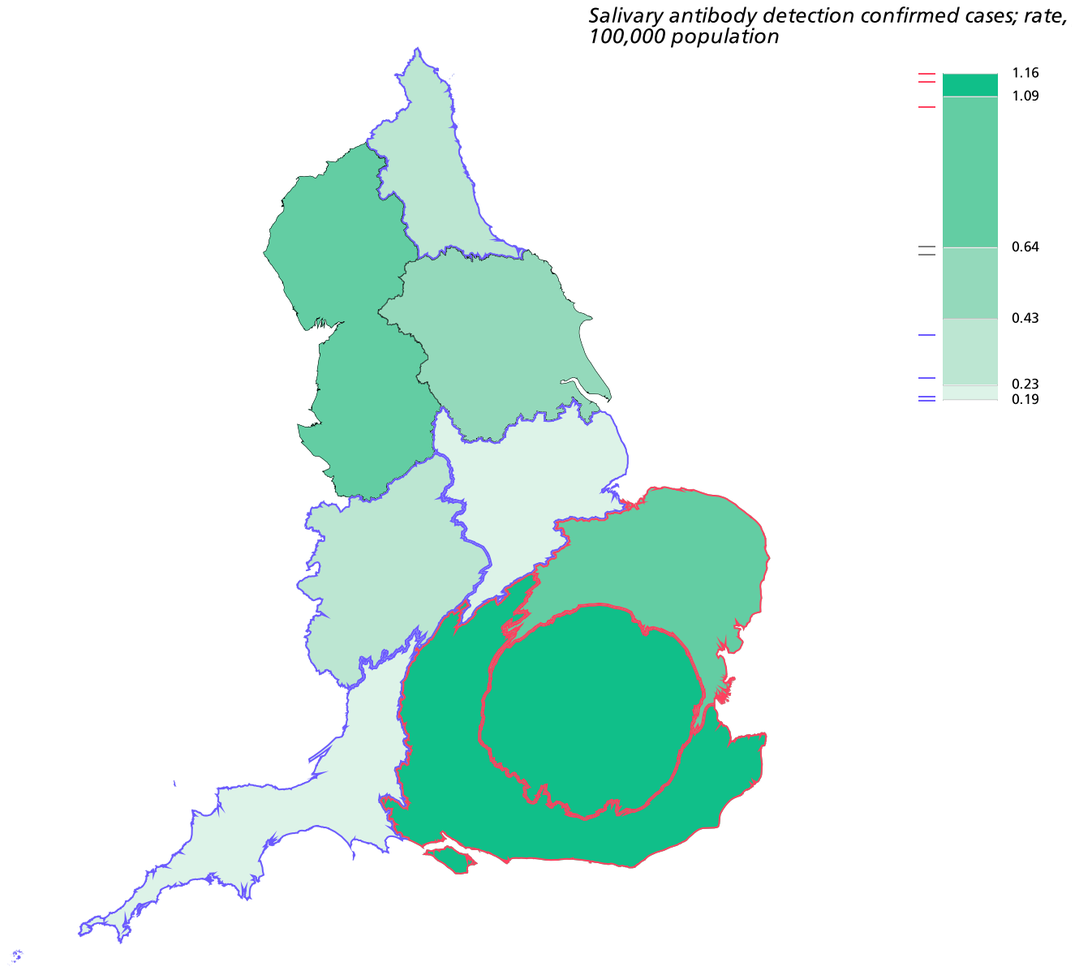
Source: Centre for Infections laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in confirmed cases of measles by age, England, 1996 to 2010



Source: Centre for Infections laboratory data, HPA.

Rate of confirmed measles cases by region, England, 2010



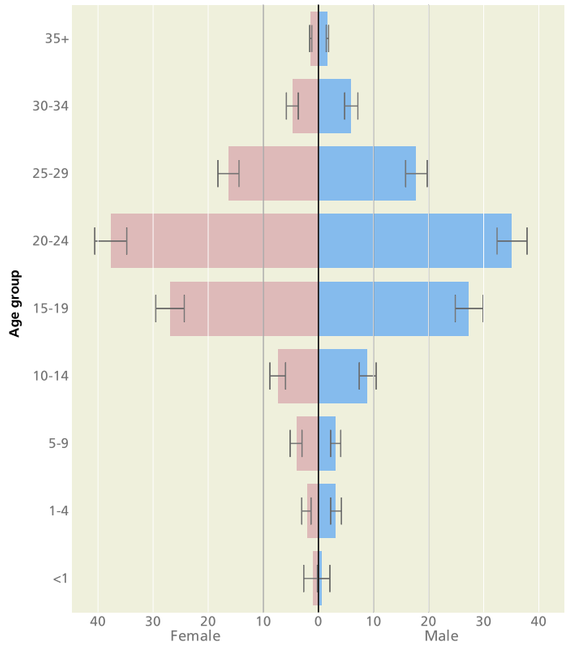
Source: Centre for Infections laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Mumps is a viral illness typically causing swelling of salivary glands. It can result in complications including meningitis and infertility. The MMR vaccine, which protects against mumps, has been part of the routine childhood vaccination schedule since 1988. Cases in adults largely occur in those born before the two dose MMR schedule became routine in 1996. In recent years, cases of mumps have been seen in those age groups not routinely vaccinated in childhood, leading to large outbreaks in universities and other similar settings.

Rates of mumps are highest in adolescents and young adults. There were large peaks in the number of confirmed cases in 2004-06 and in 2009, mostly in adolescents and young adults, falling back during 2010. The highest rates of confirmed cases of mumps in 2010 were in London and the northern regions.

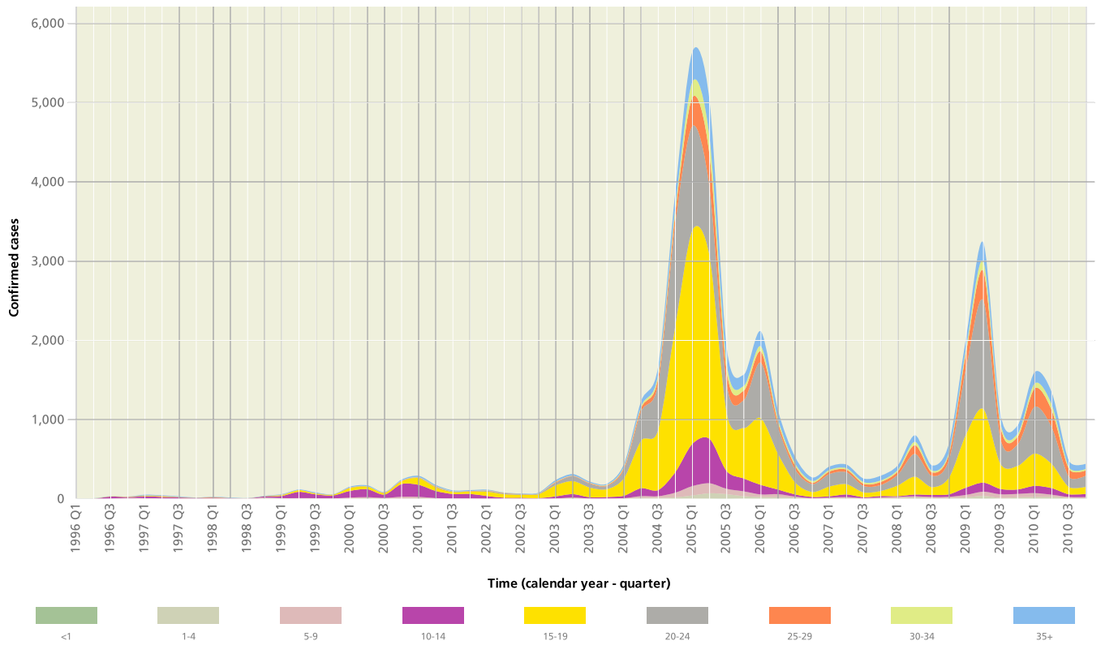
As with measles, opportunities must be taken to complete the MMR course in older children and adults.

Confirmed cases of mumps, rates by age and sex, England, 2010



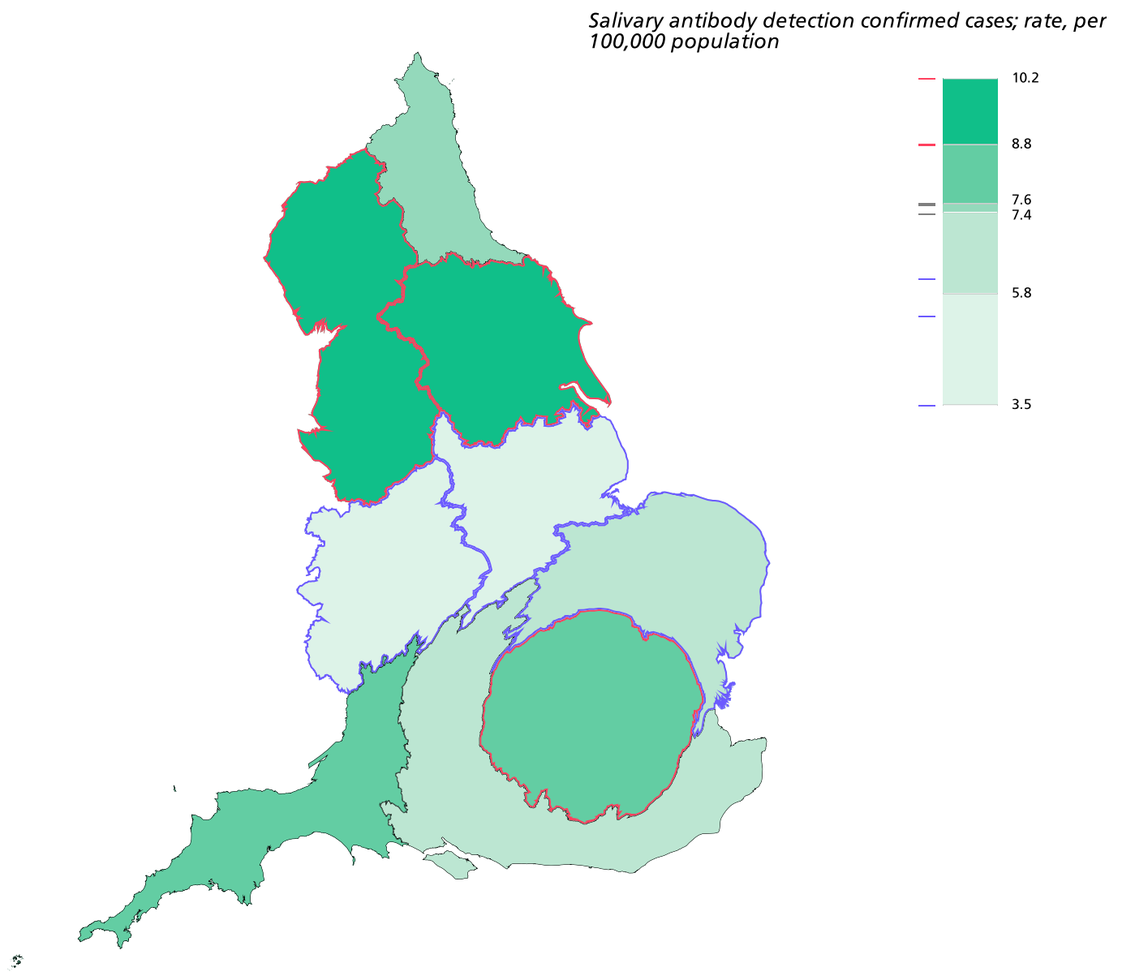
Source: Centre for infections, laboratory data HPA, 2010 population estimates, ONS. (Analysis by HPA)

Trend in confirmed cases of mumps by age, England, 1996 to 2010



Source: Centre for Infections laboratory data, HPA

Rate of confirmed mumps cases by region, England, 2010



Source: Centre for Infections laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Meningitis is a condition of infection and inflammation of the lining (meninges) of the brain, which is potentially most serious when caused by bacteria such as *Neisseria meningitidis* (meningococcal infection) or *Streptococcus pneumoniae* (pneumococcal infection). Meningitis can kill or cause lasting disability.

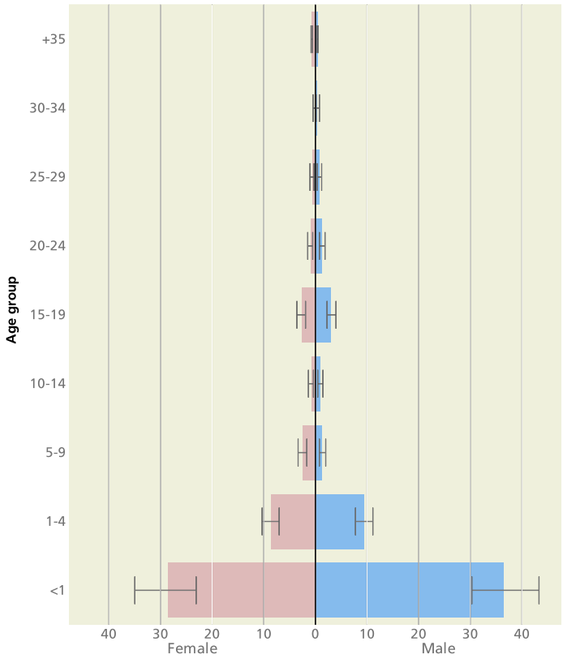
The highest rates of meningococcal infection are seen in the under fives, with a smaller secondary peak at 15-19 years. In 2010, the highest rate was in the North West and the lowest in the South East. Overall rates are falling.

There has been a substantial reduction in the proportion of meningococcal infection due to serogroup C following the addition of the serogroup C conjugate vaccine to routine UK childhood vaccination in 1999/2000. Most cases are now serogroup B, for which no vaccine is available.

Pneumococcal meningitis infection rates have decreased since the addition of the pneumococcal conjugate vaccine to the routine childhood schedule in 2006.

An effective new vaccine against serogroup B meningococcal infection would have a substantial impact on morbidity and mortality from meningitis. As prompt antibiotic treatment of cases reduces the risk of death or disability, improving the public awareness of the symptoms of meningitis will help to achieve this.

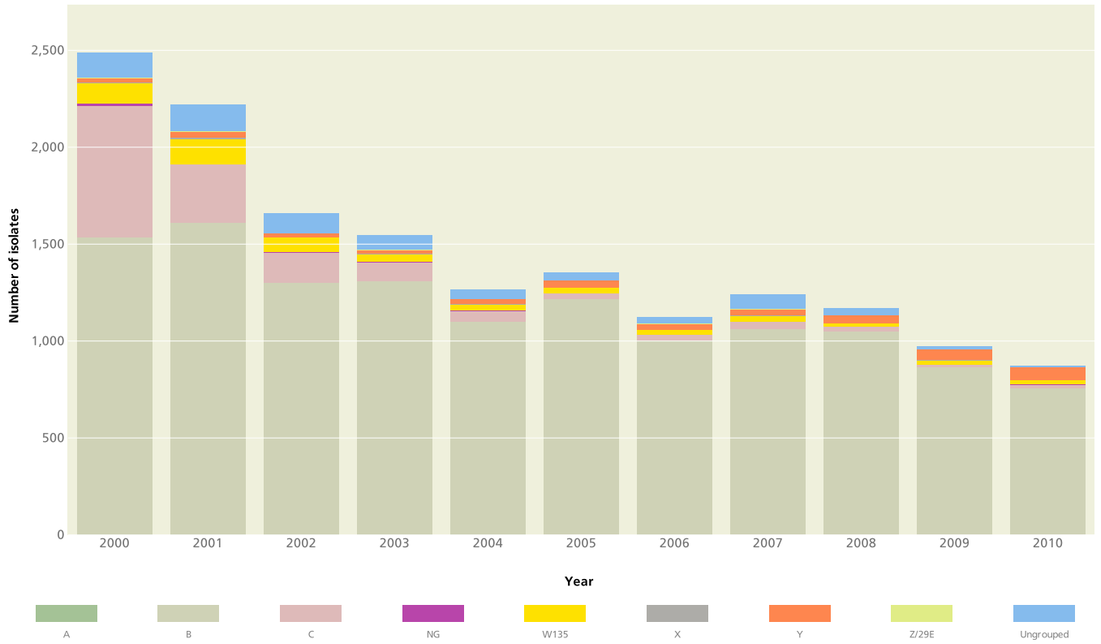
Meningococcal Reference Unit isolates of Neisseria meningitidis rates by age and sex, England, 2010



Age specific rate, per 100,000 population

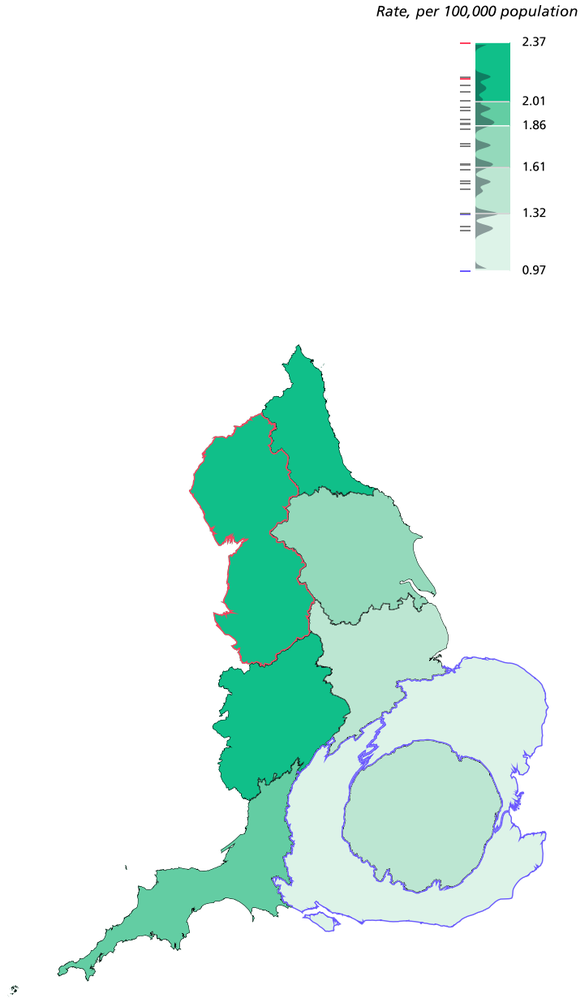
Source: Meningococcal Reference Unit, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in the number of isolates of Neisseria meningitidis by serogroup, England, 2000 to 2010.



Source: Meningococcal Reference Unit, HPA.

Meningococcal Reference Unit isolates of Neisseria meningitidis rates by region, England, 2010

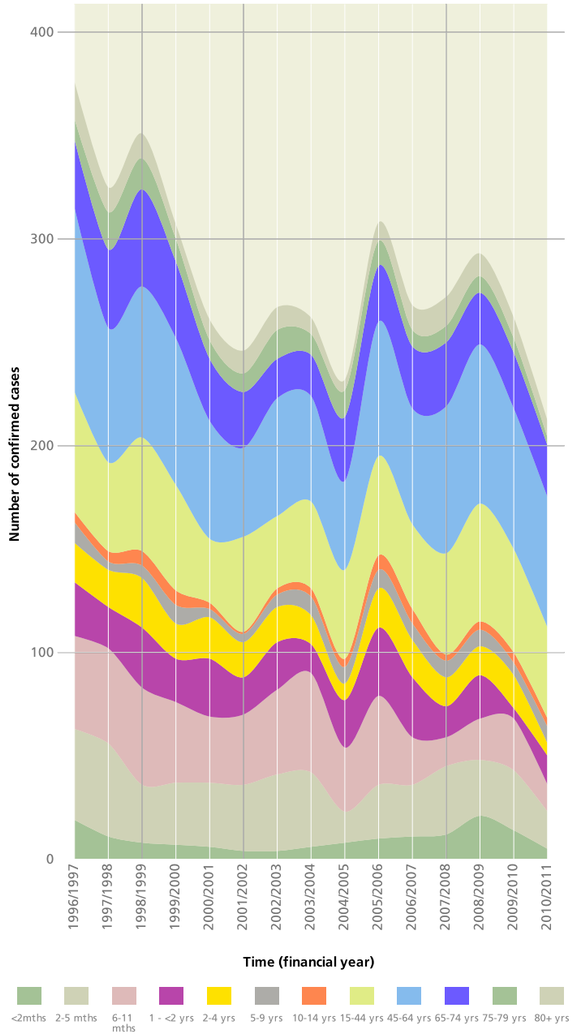


Source: Meningococcal Reference Unit, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Key facts

- Around 5,400 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 33,000 hospital bed days in 2010/11 (<1% of all bed days)

Trend in laboratory confirmed cases of pneumococcal meningitis by age group, England, 1996/1997 to 2010/2011



Source: Centre for Infections laboratory data, HPA.

Hepatitis B is a bloodborne infection which can cause chronic, often asymptomatic, liver disease, especially if acquired at birth.

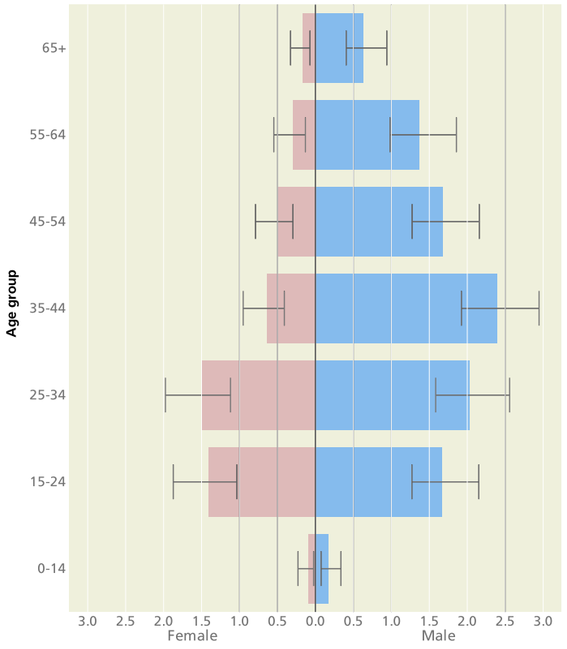
Transmission is through contact with infected blood or other body fluids e.g. needle sharing, sexual contact, or mother to child (perinatal) transmission. Although relatively uncommon in the population in England, prevalence is higher for residents born in Asia and Africa.

Annual laboratory reports of acute hepatitis B decreased from 729 in 2000 to 512 in 2010. This decrease was accompanied by a decline in injecting drug use as the main reported risk factor by cases from 46% (214) to 2% (10). However, the proportion of cases reporting heterosexual sex as their main risk factor has increased from 24% (113) to 55% (132) over the same period.

Infection rates are twice as high in males and greatest in those aged 35-44 years. The infection rate in London is significantly higher than any other region.

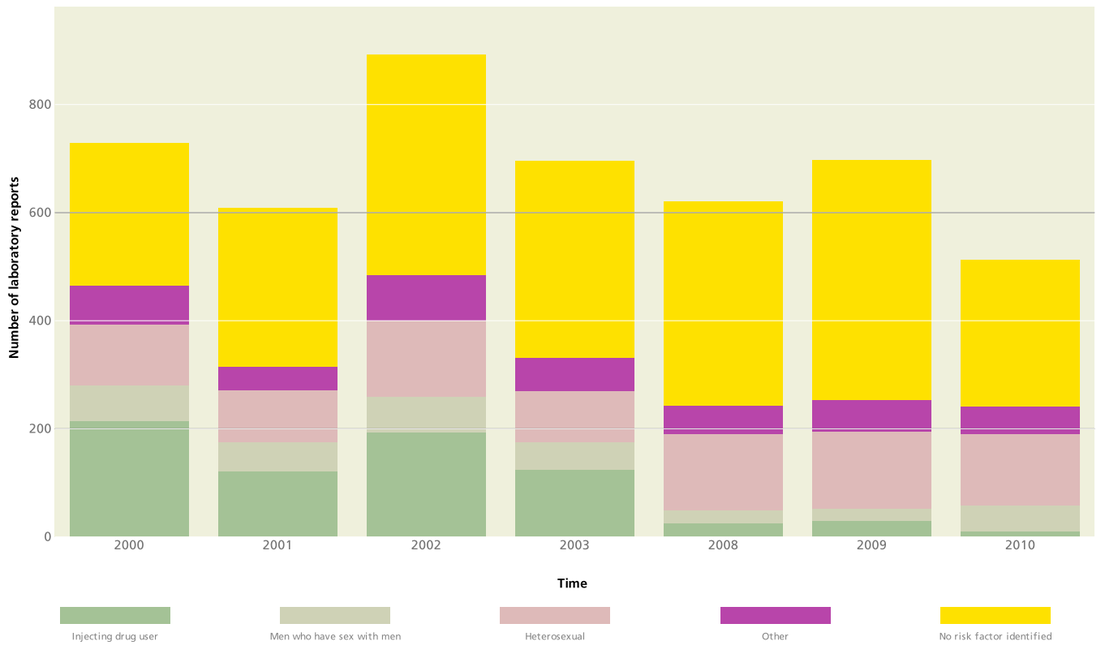
To continue to reduce infection, hepatitis B immunisation is recommended for 'at risk' groups including injecting drug users and family contacts of hepatitis B cases. Reducing injecting drug use, provide safe injecting services and ensuring babies born to hepatitis B positive mothers are fully immunised are also important.

Acute hepatitis B laboratory report rate, by age and sex, England, 2010.



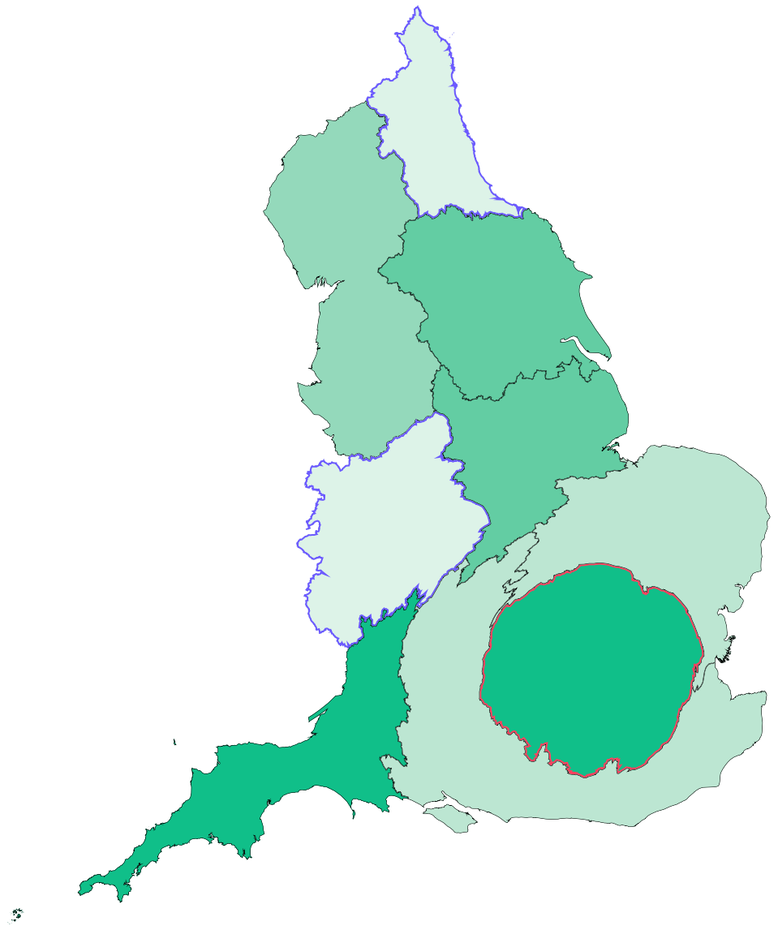
Source: Centre for Infections laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in laboratory reports of acute hepatitis B by risk factors, England, 2000 to 2010



Source: Centre for Infections laboratory data, HPA. Note data not avaliable for 2004 to 2007

Acute hepatitis B laboratory report rate by region, England, 2010



Source: Centre for Infections laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Key facts

- Hepatitis B and C - Around 3,600 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Hepatitis B and C - Around 6,000 hospital bed days in 2010/11 (<1% of all bed days)
- Main cause - PYLL: Hepatitis C (78%)
- Hospital bed days: split equally between Hepatitis B and Hepatitis C (50% each)

Hepatitis C is a bloodborne viral infection which leads to long term infection in about 75% of those who get infected. Hepatitis C can often be asymptomatic, as symptoms may not appear until the liver is severely damaged.

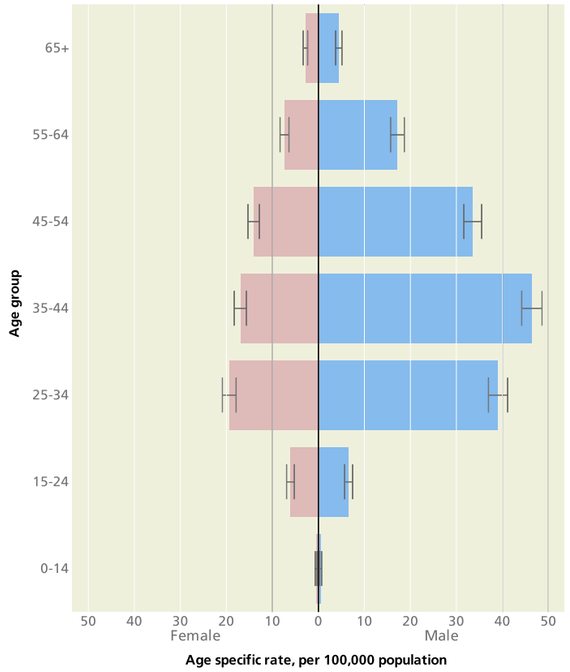
The virus is transmitted when blood from an infected person enters the bloodstream of another. Most cases occur through use of contaminated needles in a healthcare setting or contaminated drug use equipment. Alcohol consumption, older age at acquisition and being male are associated with more advanced disease. There is no vaccine against hepatitis C. Antiviral treatments are available that successfully clear the virus in many patients.

Laboratory reported notifications have risen since 2000 (4,500), peaking in 2009 (8,633). In 2010, similar to 2000, where a risk factor was reported, 93% of notifications identified injecting drug use as the main risk factor.

The male rate of diagnosis is double that of females. The highest rate of diagnosis in males is in those aged 35-44 and in females in those aged 25-34.

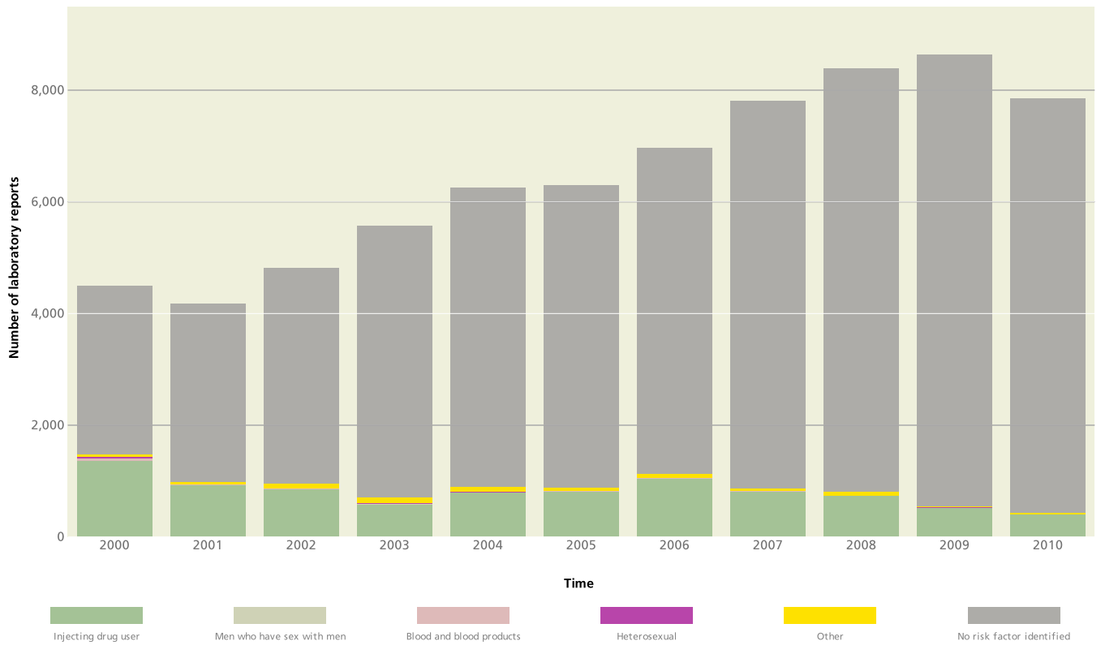
It is important that we continue to reduce injecting drug use and provide safe injecting services; increase awareness of infection in those at risk, including health professionals, and improve access to treatment for those with chronic infection.

Hepatitis C laboratory report rate, by age and sex, England, 2010.



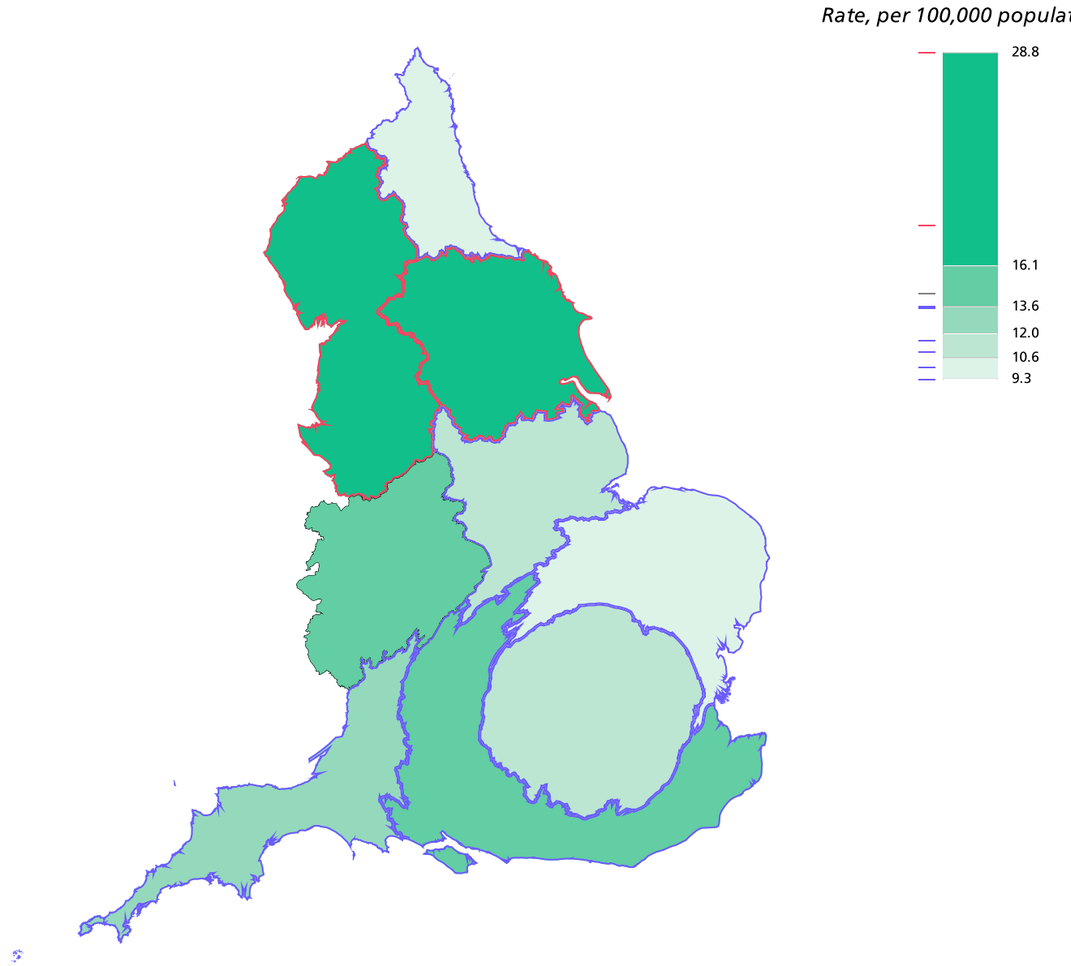
Source: Centre for Infections laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in laboratory reports of hepatitis C by risk factor, England, 2000 to 2010.



Source: Centre for Infections laboratory data, HPA.

Hepatitis C laboratory report rate by region, England, 2010



Source: Centre for Infections laboratory data, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Imported infections: malaria, typhoid, etc.

UK residents who travel abroad, and tourists and migrants to the UK, are at increased risk for certain, often avoidable, infections. Most UK international travel is to European destinations but there is increasing travel between the UK and countries where there is a greater risk of infection.

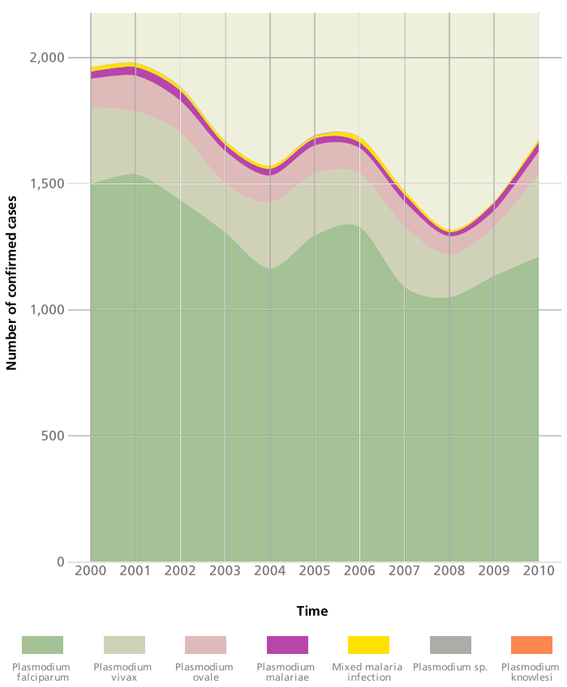
The most common travel related infections are gastrointestinal infections (GI), particularly salmonellosis, which may be acquired from contaminated food or water. There is an increased risk in countries where sanitation and safety of water supplies are suboptimal.

Malaria poses a serious risk to travellers to endemic countries (particularly falciparum in Africa, and vivax in Asia, which account for an increasing proportion of imported cases). Although the global incidence is falling, malaria cases in the UK have risen in recent years.

Cases of typhoid and paratyphoid infections are increasing and are mostly related to travel, particularly to the Indian subcontinent. There is a wide variety of other possible imported infections, but most are rare.

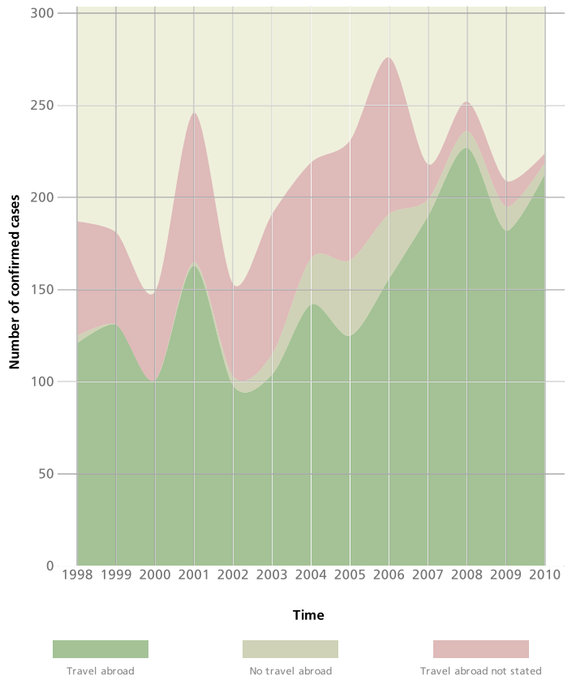
All travellers, even those who have lived abroad and are returning to visit, should continue to seek advice regarding vaccinations (e.g. rabies), malaria prevention, personal hygiene and other precautionary measures, well in advance of travelling.

Trend in number of laboratory confirmed malaria cases by type of malaria, England, 2000 to 2010



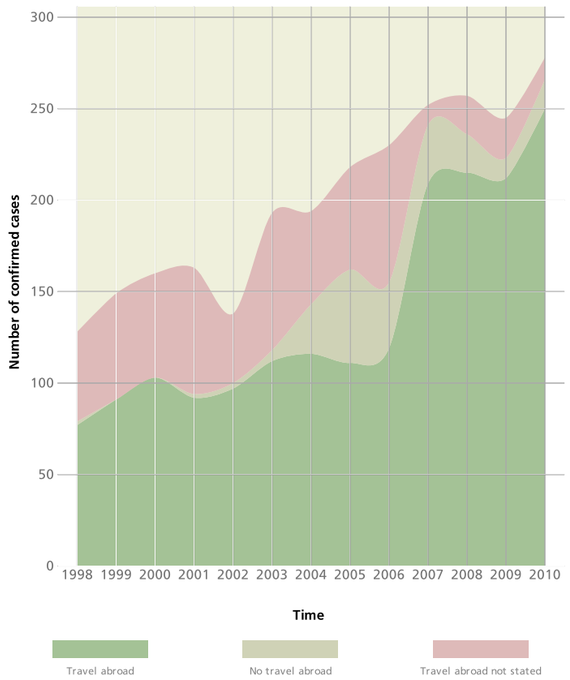
Source: Malaria reference laboratory, HPA.

Trend in number of laboratory confirmed paratyphoid cases by linked travel history, England, 1998 to 2010



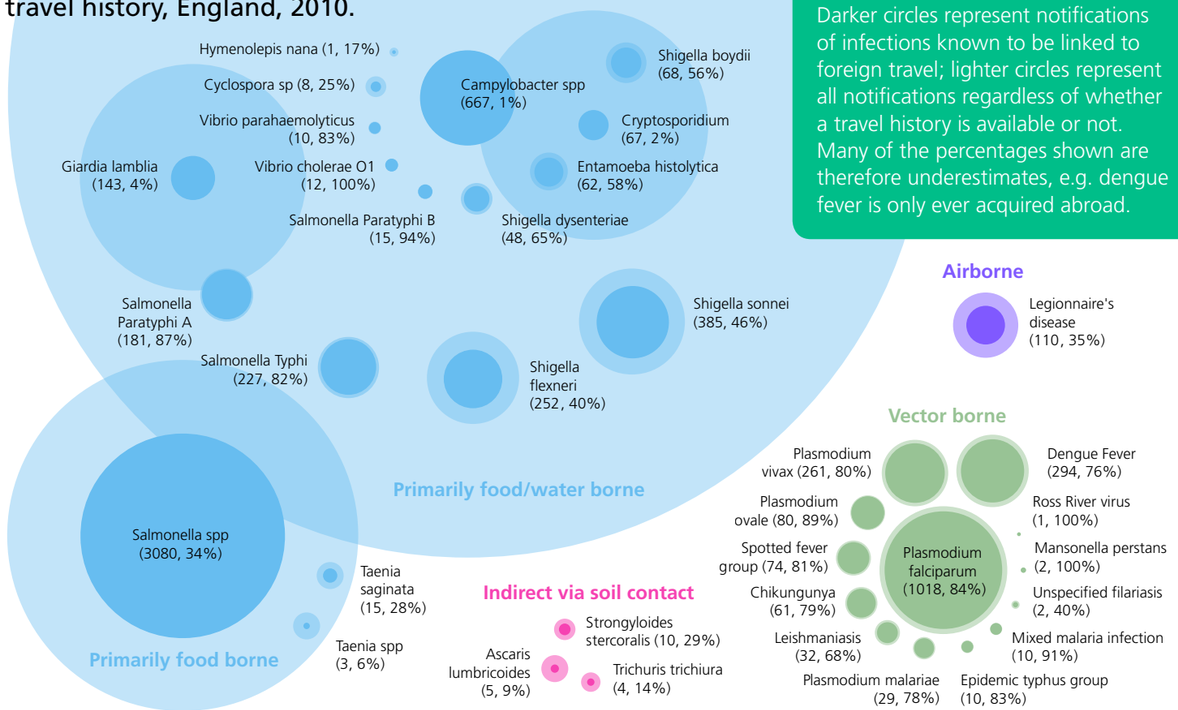
Source: LabBase 2 laboratory data and enhanced enteric fever surveillance, HPA.

Trend in number of laboratory confirmed typhoid cases by linked travel history, England, 1998 to 2010



Source: LabBase 2 laboratory data and enhanced enteric fever surveillance, HPA.

Key imported infections; notifications with linked foreign travel history, England, 2010.

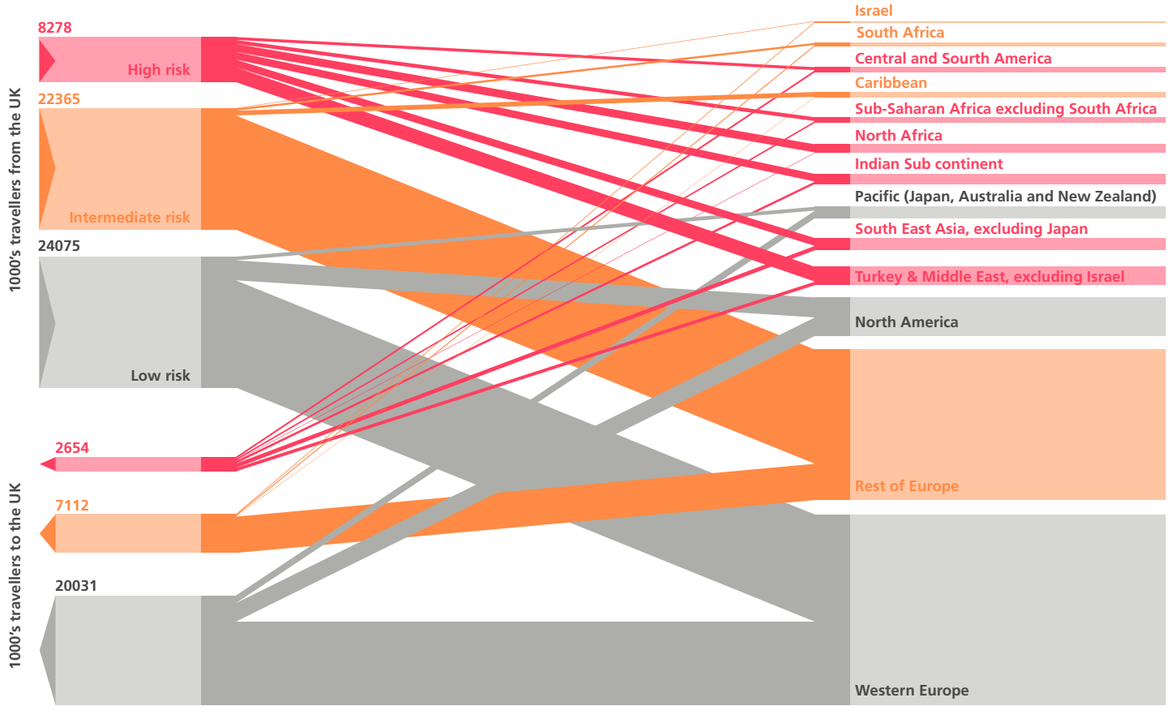


Key facts

Darker circles represent notifications of infections known to be linked to foreign travel; lighter circles represent all notifications regardless of whether a travel history is available or not. Many of the percentages shown are therefore underestimates, e.g. dengue fever is only ever acquired abroad.

Source: Laboratory data extracted from LabBase 2 and enhanced surveillance, HPA

Travel to and from the United Kingdom, by GI (travellers diarrhoea) risk area, 2008 - 2010



Source - Travel: Overseas Travel and Tourism, ONS
Source - GI risk: HPA. Foreign travel-associated illness - a focus on travellers' diarrhoea. 2010 report. London: HPA; 2010

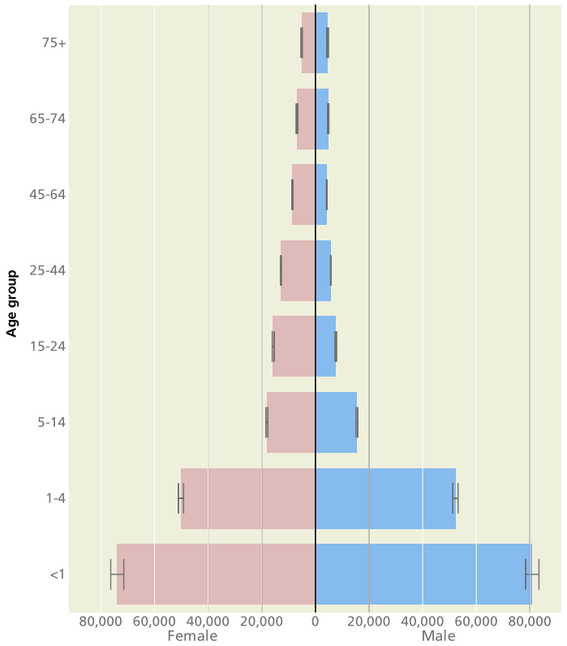
Respiratory infections are common causes of morbidity, mortality and economic costs. Upper respiratory tract infection (URTI, or "coughs and colds") usually refers to minor infections of the nasal passages, throat or tonsils caused by viruses (such as rhinoviruses) which do not usually require clinical treatment. Sometimes they have more serious complications, such as croup in infants.

Lower respiratory tract infection (LRTI) is more serious and includes acute bronchitis and bronchiolitis, and pneumonia. Pneumonia refers to inflammation and infiltration of the lungs, is most commonly caused by the bacteria *Streptococcus pneumoniae* and may be severe or fatal in the elderly or those with long term illnesses.

URTI and LRTI GP consultation rates fluctuate markedly from year to year. Pneumonia consultation rates are higher in older people. Rates have generally fallen since 2004, with a small rise in 2010. The highest consultation rates for URTI and LRTI are seen in the youngest age groups, falling to low levels in older age groups. There is a second peak for LRTI in the 75+ age group.

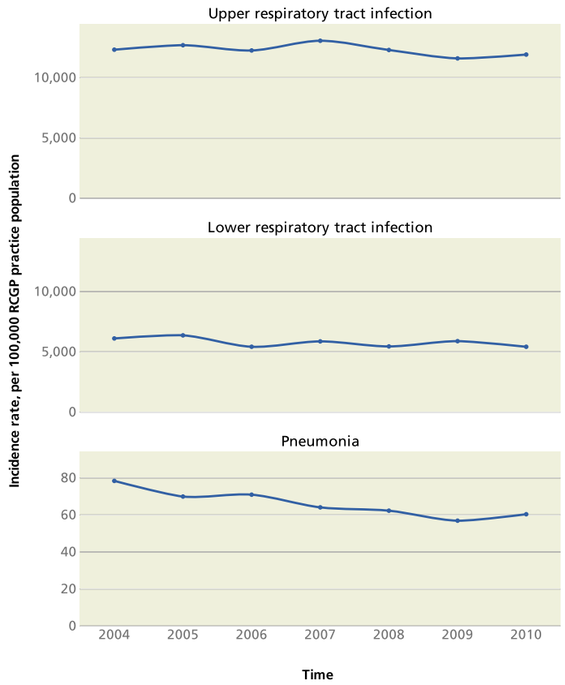
Effective control measures include regular handwashing (URTIs) and encouraging the uptake of vaccines in vulnerable groups for influenza, *Streptococcus pneumonia*, whooping cough and *Haemophilus influenzae* type B (Hib)

Upper respiratory tract infection, annual primary care first/new consultation rate by age and sex, England, 2010



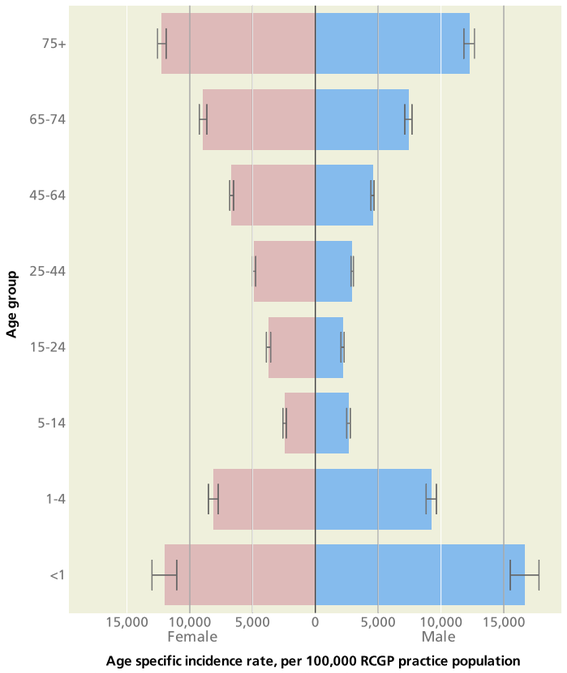
Source: Research and Surveillance Centre, Royal College of General Practitioners (RCGP). (Analysis by HPA)

Trend in respiratory infection, annual primary care first/new consultation rate by infection type, England, 2004 to 2010



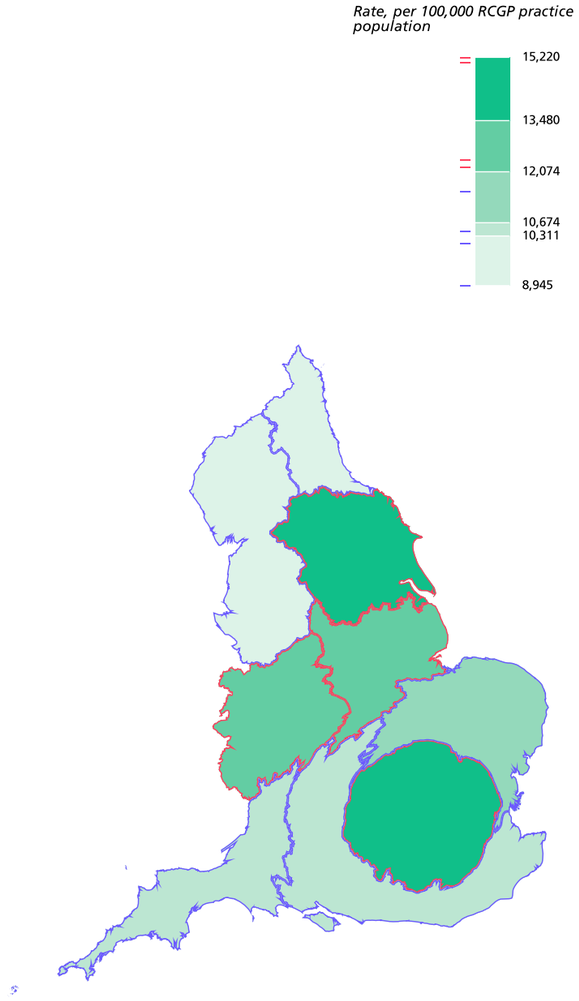
Source: Research and Surveillance Centre, Royal College of General Practitioners (RCGP). (Analysis by HPA)

Lower respiratory tract infection, annual primary care first/new consultation rate by age and sex, England, 2010



Source: Research and Surveillance Centre, Royal College of General Practitioners (RCGP). (Analysis by HPA)

Rate of primary care first/new consultations for upper respiratory tract infection by region, England, 2010

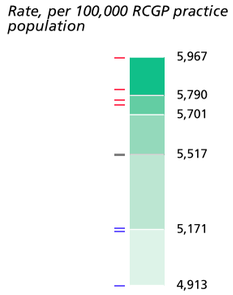


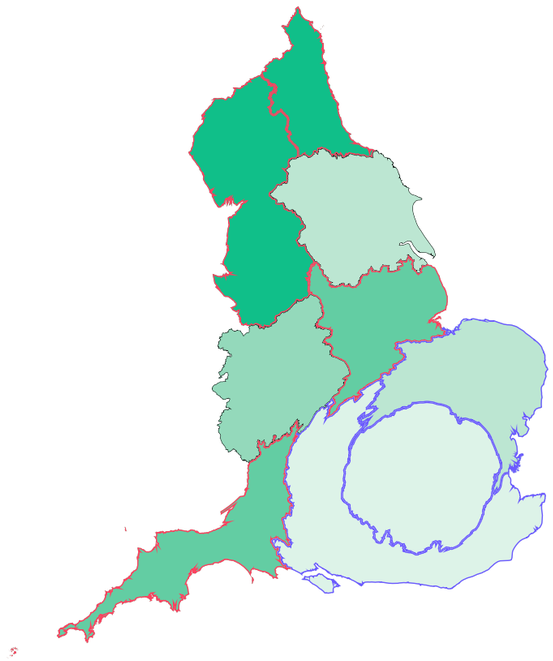
Source: Research and Surveillance Unit Weekly Returns Service, Royal College of General Practitioners (RCGP). (Analysis by RCGP)

Key facts

- Around 47,000 potential years of life lost (to age 75) in 2010 (2% of all PYLL)
- Around 2,516,000 hospital bed days in 2010/11 (6% of all bed days)
- Lower respiratory tract infections accounted for 99% of PYLL and 96% of hospital bed days for respiratory infections

Rate of primary care first/new consultations for lower respiratory tract infection by region, England, 2010





Source: Research and Surveillance Unit Weekly Returns Service, Royal College of General Practitioners (RCGP). (Analysis by RCGP)

Influenza is a highly contagious viral illness with two main types: A and B. Most influenza infections occur between December and March in the northern hemisphere and mainly affect the young, old and those with long term conditions.

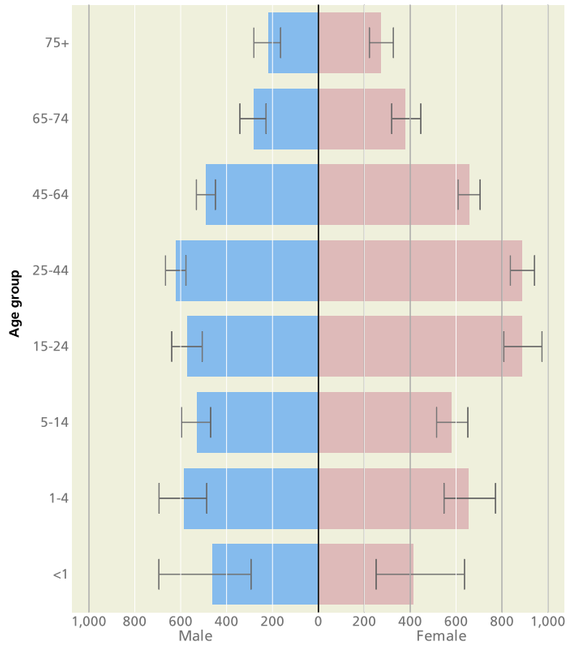
New pandemic strains of influenza may emerge with the possibility of greater general mortality. 2010 began with the end of the second wave of a "swine 'flu" (H1N1) pandemic; mostly causing mild illness, but a range of vulnerable groups including pregnant women had severe effects/complications.

Primary care consultations vary markedly each year, though overall have decreased in the last two decades. The highest rates for influenza-like illness in 2010 were seen in the 15-44 age group, females, and in the South West, London and the West Midlands.

At the end of 2010, there was a large rise in detection of H1N1 influenza (and a lesser rise of type B influenza) heralding a period of intense pressure on secondary care related to influenza.

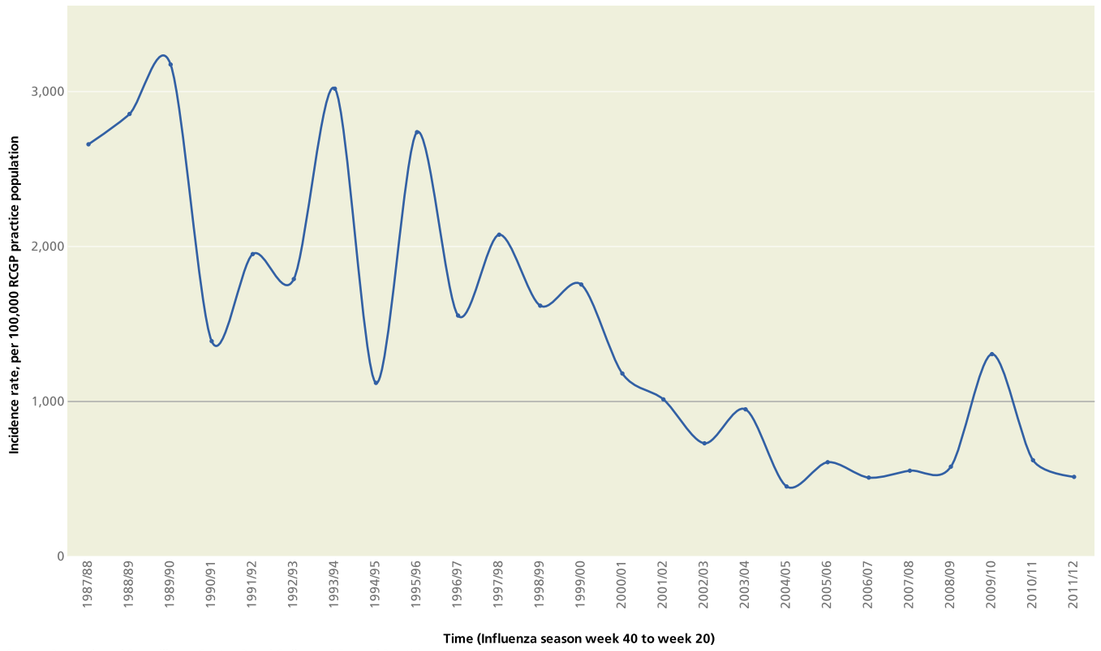
Annual vaccination against influenza is the best protection for those, including pregnant women, at risk of severe complications. It is very important that healthcare workers are vaccinated to help to protect vulnerable patients.

Influenza like illness, annual primary care first/new consultation rate by age and sex, England, 2010



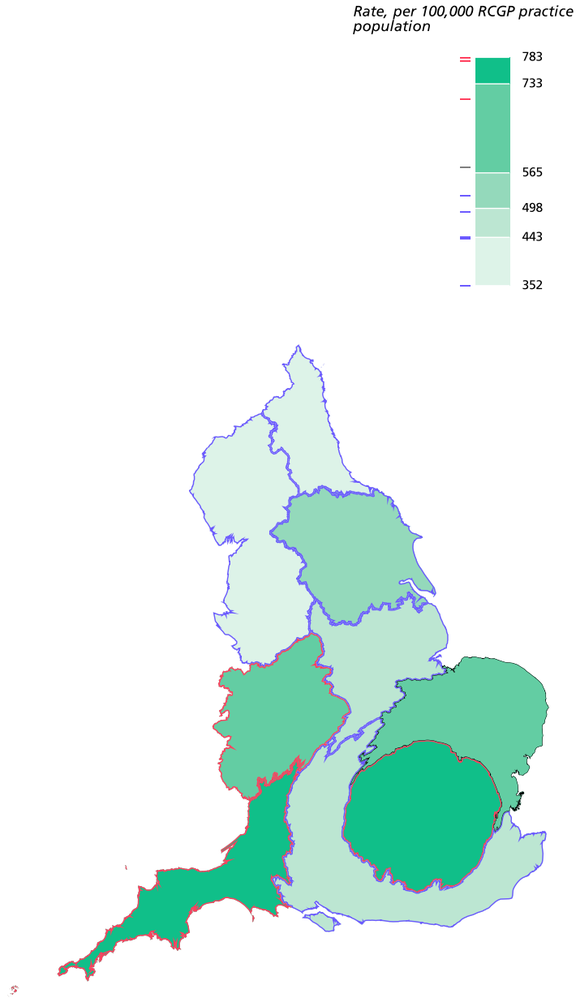
Source: Research and Surveillance Centre, Royal College of General Practitioners (RCGP). (Analysis by HPA)

Trend in influenza like illness, seasonal primary care first/new consultation rate , England, 1987/88 to 2011/12



Source: Research and Surveillance Centre, Royal College of General Practitioners (RCGP). (Analysis by HPA)

Rate of primary care first/new consultations for influenza-like illness by region, England, 2010

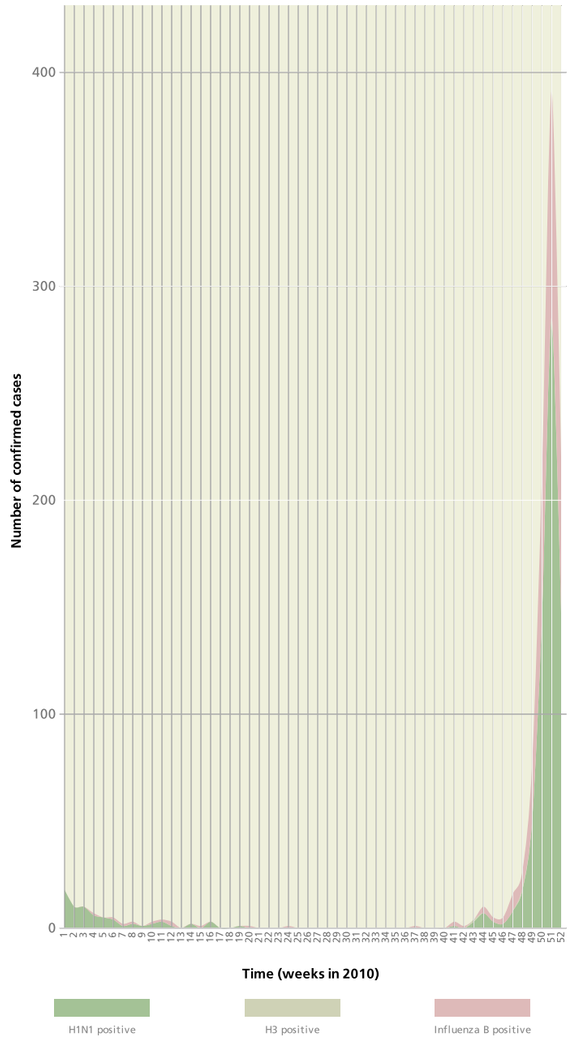


Source: Research and Surveillance Unit Weekly Returns Service, Royal College of General Practitioners (RCGP). (Analysis by RCGP)

Key facts

- Around 5,100 potential years of life lost (to age 75) in 2010 (<1% of all PYLL)
- Around 58,000 hospital bed days in 2010/11 (<1% of all bed days)

RCGP influenza virology, H1N1 Positive, H3 positive and influenza B positive by week, England, 2010



Source: Research and Surveillance Centre, Royal College of General Practitioners (RCGP).

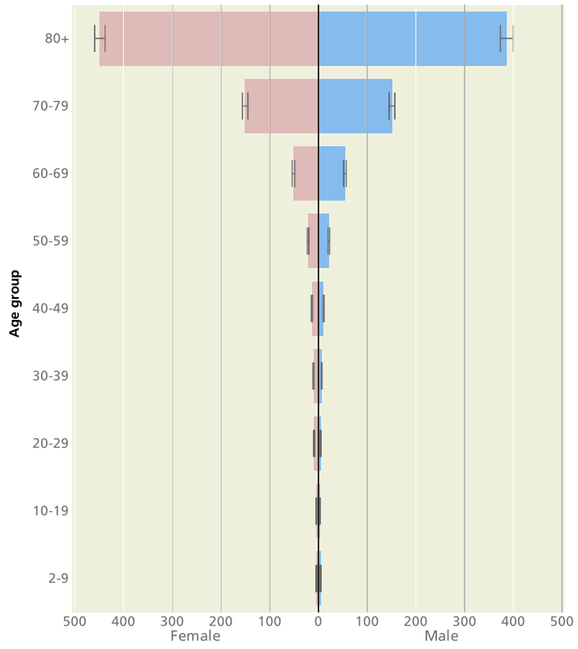
Clostridium difficile (*C. difficile*) is the most important cause of healthcare associated diarrhoea. The elderly are at greatest risk and infection can result in a range of conditions from asymptomatic colonisation to fatal inflammation of the bowel (colitis). Infection is often acquired by cross infection in the hospital environment and disease may be triggered by broad spectrum antibiotics affecting the normal bowel flora.

C. difficile rates rise exponentially with age. Rates have consistently fallen in all regions in recent years. In 2010, the regions with the highest rates were the North West, the North East and the Midlands regions.

C. difficile infection is preventable with high standards of infection control (isolation/cohort nursing, hand hygiene, barrier precautions and enhanced environmental cleaning) and minimising inappropriate antibiotic use.

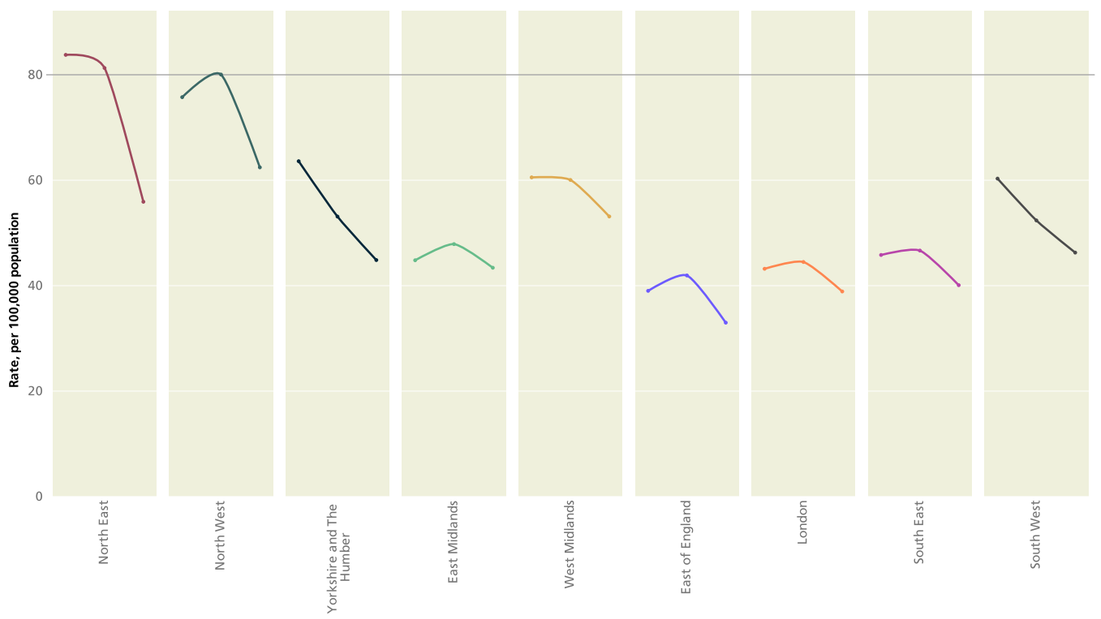
There should be a zero tolerance approach to preventable healthcare associated infections.

Rate of Clostridium difficile diagnoses by age (aged 2+ years) and sex, England, 2010



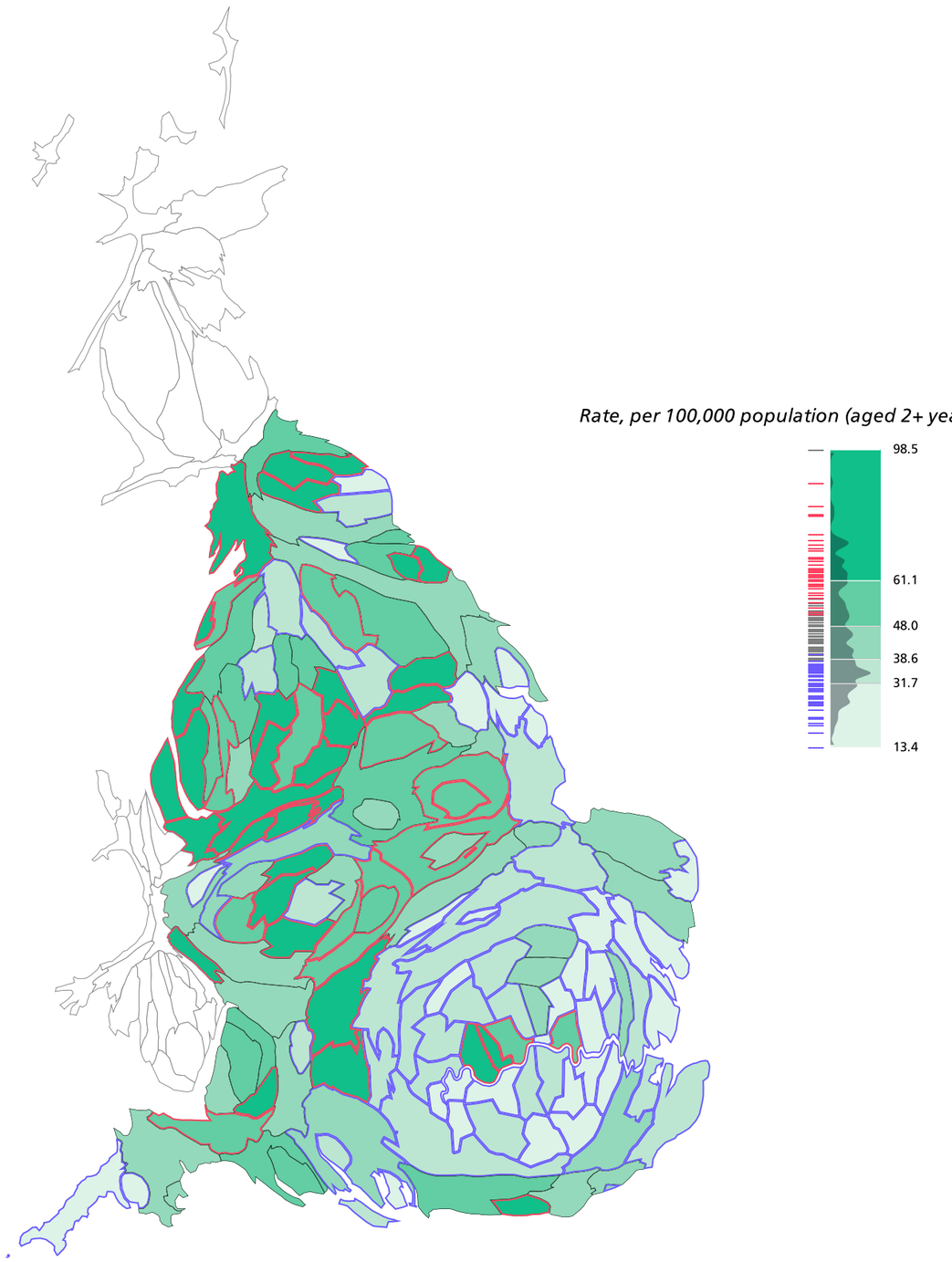
Source: Health Care Associated Infection (HCAI) Data Capture System, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in the rate of Clostridium difficile diagnoses by region, England, 2008 to 2010



Source: Health Care Associated Infection (HCAI) Data Capture System, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Rate of Clostridium difficile diagnoses by primary care trust, England, 2010



Source: Healthcare Associated Infections (HCAI) Data Capture System, HPA. 2010 population estimates, ONS. (Analysis by HPA)

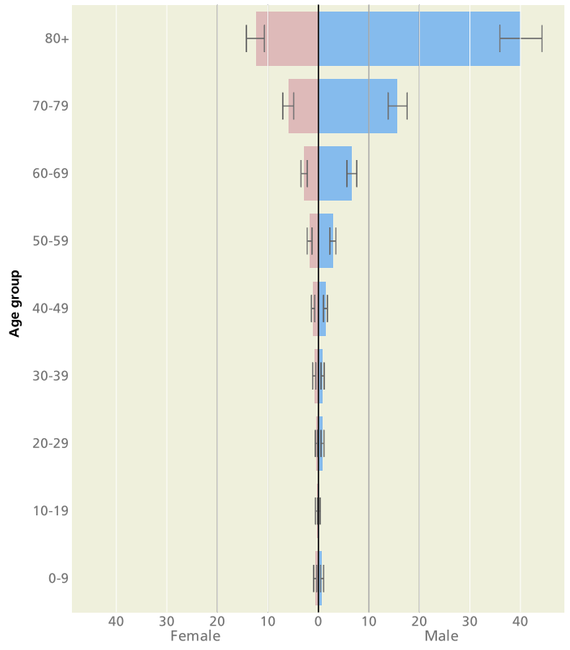
Meticillin resistant *Staphylococcus aureus* (MRSA) are bacteria resistant to a major class of antibiotics which may live harmlessly on human skin, but can cause serious invasive infections; many are associated with certain medical interventions, particularly those that cause a breach in the skin surface.

MRSA rates rise exponentially with age, though rates have fallen markedly in all regions in recent years and are now very low in many areas. In 2010, the highest rates were in London, the North West and Yorkshire & the Humber.

This reduction is due to interventions introduced in 2004, which included a 'Clean Your Hands' campaign, intravenous line care guidelines and stewardship, and an emphasis on rapid detection and decolonisation of colonized patients.

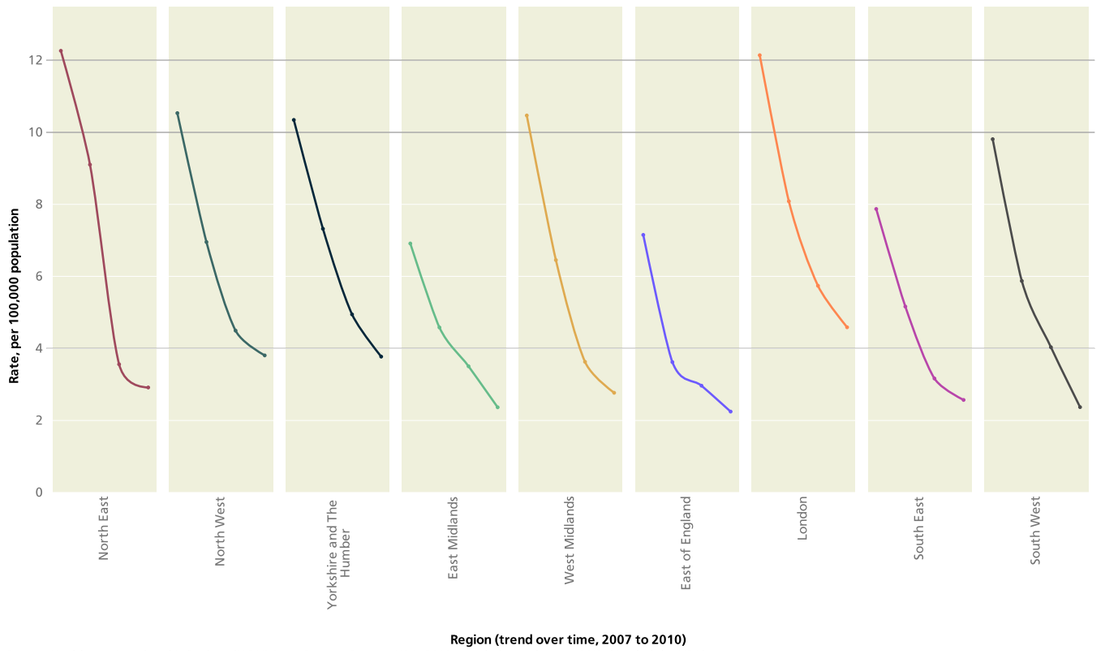
There should be a zero tolerance approach to preventable healthcare associated infections.

Rate of meticillin-resistant Staphylococcus aureus (MRSA) diagnoses, by age and sex, England, 2010



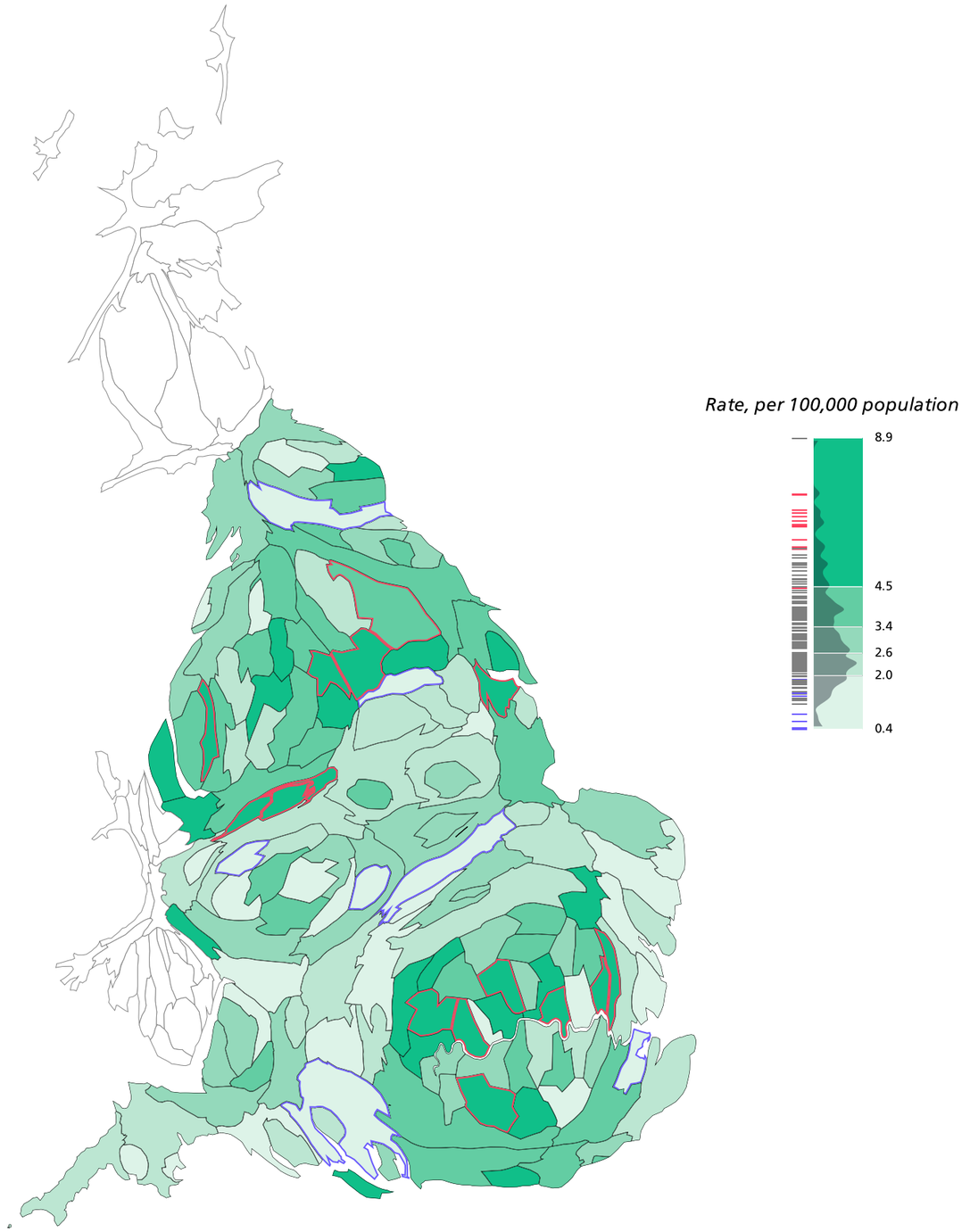
Source: Healthcare Associated Infections (HCAI) Data Capture System, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Trend in the rate of meticillin-resistant Staphylococcus aureus (MRSA) diagnoses by region, England, 2007 to 2010



Source: Healthcare Associated Infections (HCAI) Data Capture System, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Rate of meticillin-resistant Staphylococcus aureus (MRSA) diagnoses by primary care trust, England, 2010



Source: Healthcare Associated Infections (HCAI) Data Capture System, HPA. 2010 population estimates, ONS. (Analysis by HPA)

Direct maternal mortality rates are decreasing. Rates of indirect maternal mortality (from pre-existing/new conditions aggravated by pregnancy) are increasing, reflecting improved ascertainment and the development of broader inclusion criteria including domestic violence.

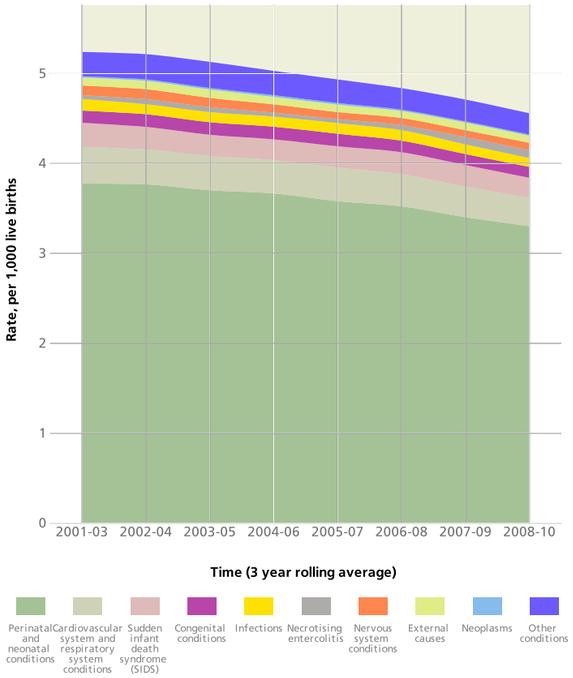
Perinatal and infant causes of mortality differ. Perinatal mortality (stillbirths and deaths within seven days of birth) reflects the overall health of the childbearing population and quality of antenatal care. Rates vary considerably geographically; the highest local authority rate is 2.7 times that of the lowest.

Infant mortality (deaths in under 1s) is influenced by wider issues, such as economic circumstances and living conditions. The infant mortality rate varies geographically within England. Although it is decreasing, it is doing so more slowly than in many other EU countries.

The category 'perinatal and neonatal conditions' (mortality due to conditions originating in the perinatal period and all neonatal deaths) accounts for the majority of deaths and has decreased most over time.

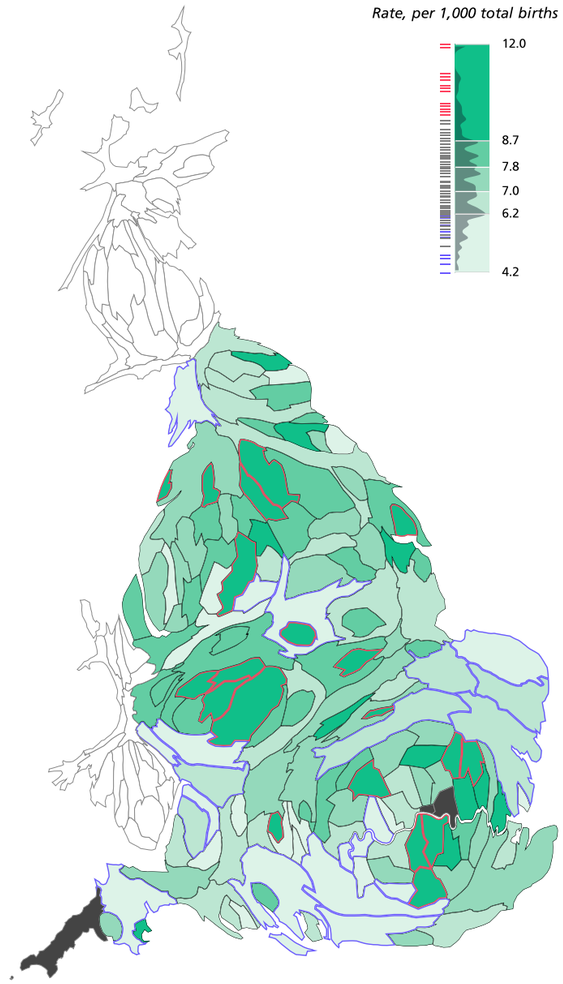
Inequalities in geographical rates of infant and perinatal mortality can be ameliorated through a focus on maternity services, maternal nutrition, smoking and substance use, teenage pregnancy and obesity.

Trend in infant mortality rates by cause of death, England, 2001-03 to 2008-10



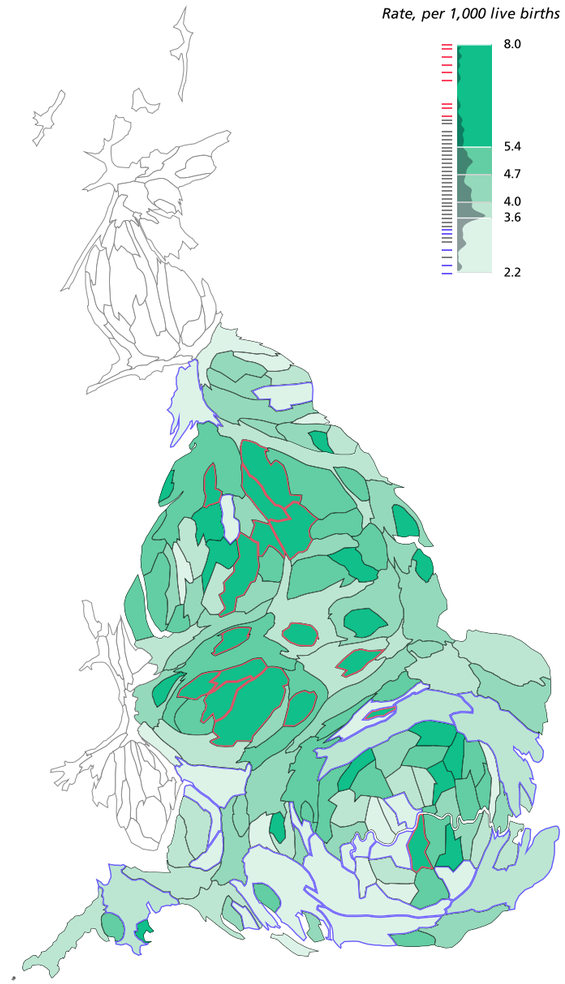
Source: Infant mortality statistics, ONS. (Provided by ChiMat)

Average annual perinatal mortality rates by upper tier local authority, England, 2008-10



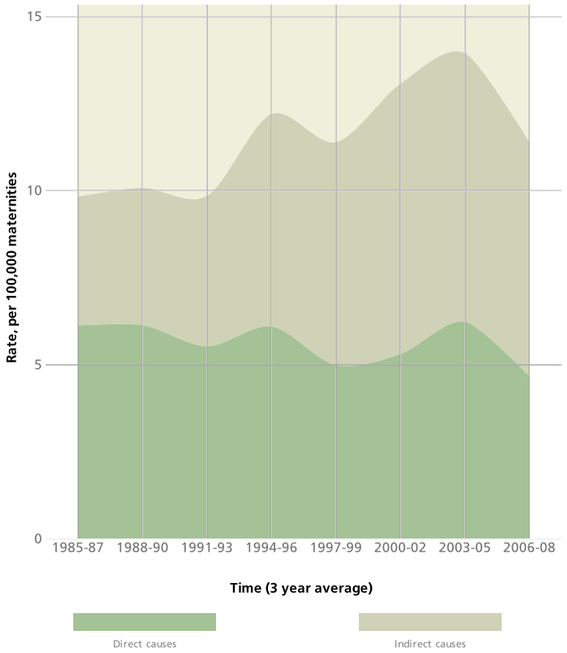
Source: Health and Social Care Information Centre Indicator Portal. (Provided by ChiMat)

Average annual infant mortality rates by upper tier local authority, England, 2008-10



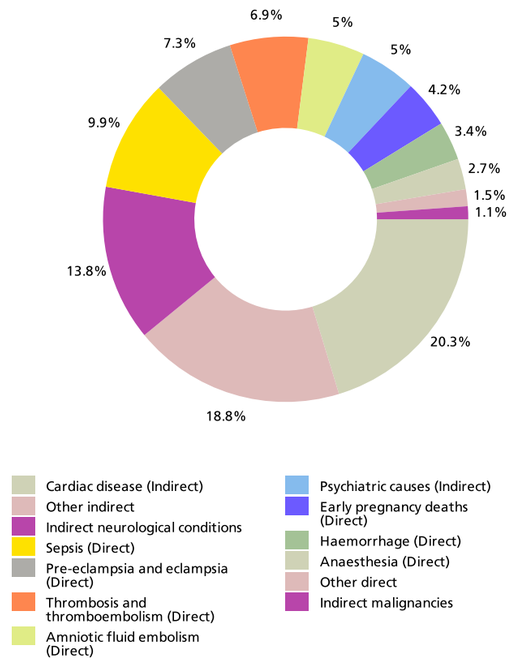
Source: Health and Social Care Information Centre Indicator Portal. (Provided by ChiMat). Note: the Isles of Scilly UA (rate per 1000 live births 19.2, 95%CI 2.7 to 123.4) is excluded from this map

Trend in maternal mortality from direct and indirect causes, United Kingdom, 1985-87 to 2006-08



Source: CMACE. Saving Mothers' Lives: reviewing maternal deaths to make motherhood safer: 2006-08. The Eighth Report on Confidential Enquiries into Maternal Deaths in the United Kingdom. BJOG 2011;118(Suppl. 1):1-203.

Maternal mortality due to different direct and indirect causes, United Kingdom, 2006-08



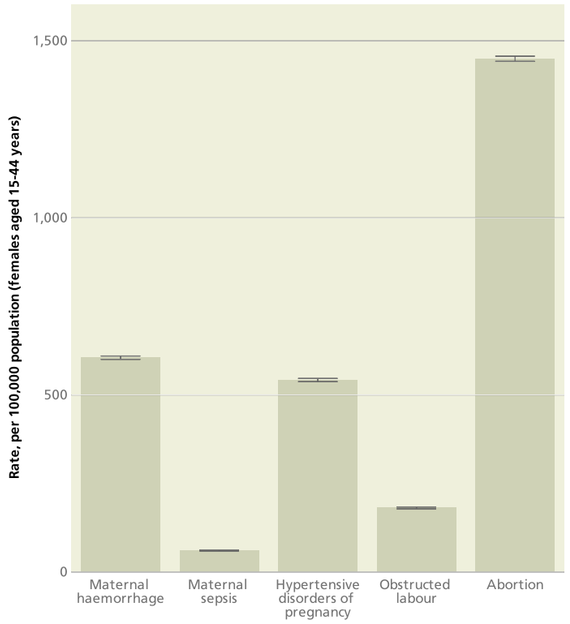
Source: CMACE. Saving Mothers' Lives: reviewing maternal deaths to make motherhood safer: 2006-08. The Eighth Report on Confidential Enquiries into Maternal Deaths in the United Kingdom. BJOG 2011;118(Suppl. 1):1-203.

Good maternal and infant health is key to the long term health of the population. The subsequent risk to a child from factors such as maternal obesity and diabetes is becoming clearer. Good antenatal care enables identification and monitoring of maternal conditions and timely referral. Early identification of perinatal conditions, particularly infection, greatly reduces the risk of negative outcomes.

The majority of pregnancy related admissions are for abortions (151,933 in 2010/11), emphasising the need for accessible and acceptable contraception. As data are for admissions, rates will underestimate conditions that arise/are identified in women already admitted for labour. In maternity care, haemorrhage and hypertensive disorders account for the highest proportion of total hospital bed days (a total of 230,605 in 2010/11).

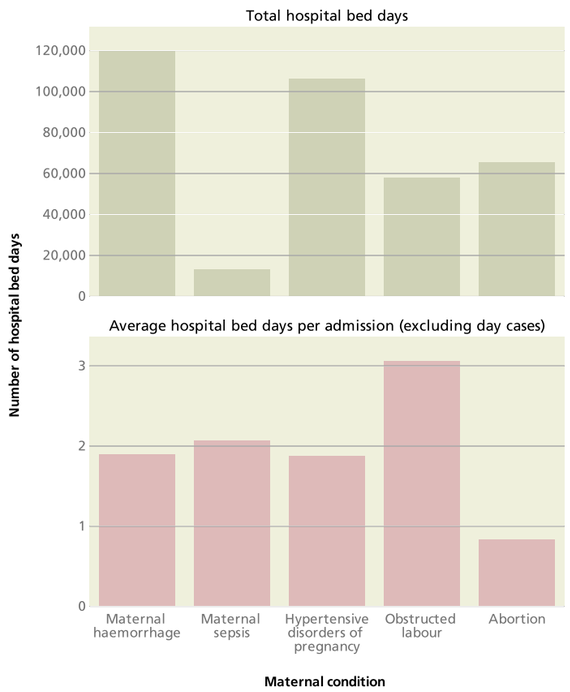
Many perinatal hospital admissions are likely to be due to infections. Such admissions have been increasing, potentially reflecting greater hospitalisation of more very premature babies. In 2010/11, there were approximately 1,003,000 hospital bed days due primarily to perinatal conditions; this accounted for 2% of all hospital bed days.

Hospital admission rates due to selected maternal conditions, England, 2010/11



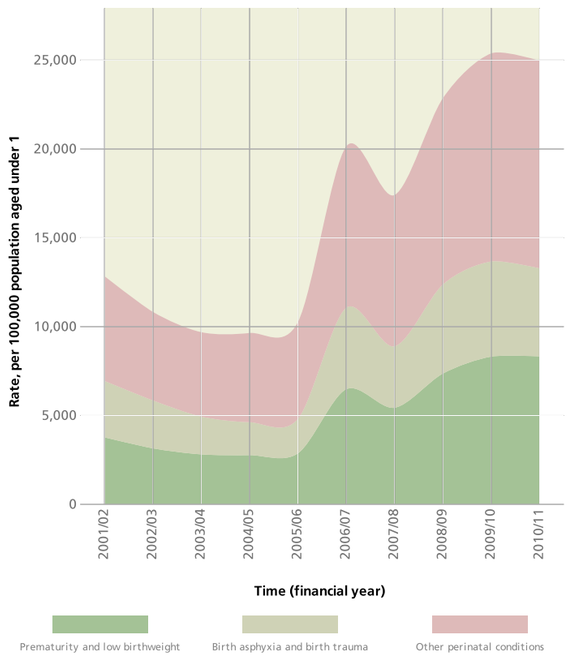
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO, and DH)

Hospital bed days due to selected maternal conditions, England, 2010/11



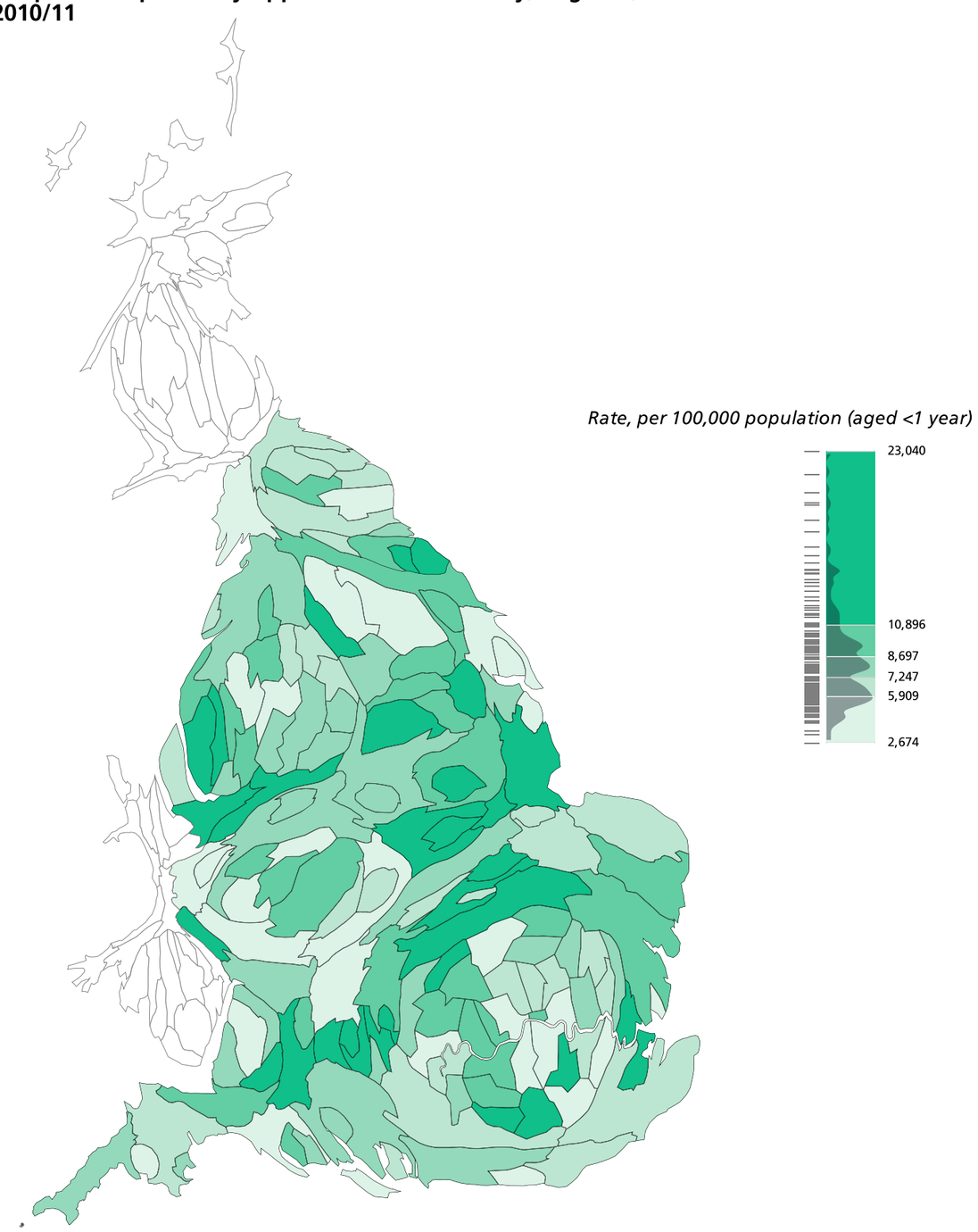
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. (Analysis by PHOs, led by EMPHO, and DH)

Trend in hospital admission rates due to conditions arising during the perinatal period, England, 2001/02 to 2010/11



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre. Crown Copyright © 2012. 2001to 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

Hospital admission rates due to conditions arising during the perinatal period by upper tier local authority, England, 2010/11



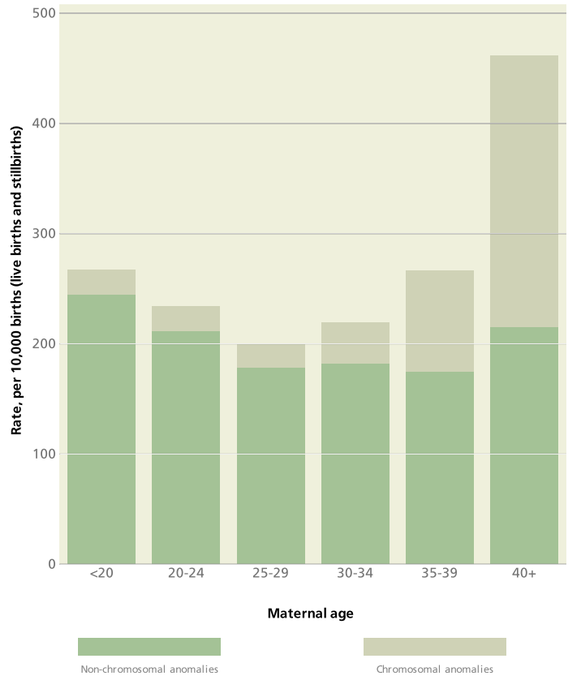
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre.Crown Copyright © 2012. 2010 population estimates supplied by ONS. (Analysis by PHOs, led by EMPHO)

Congenital anomalies are abnormalities present at birth. From 2000 to 2009 the reported prevalence of babies born with any anomaly decreased annually by an average of 1.1% (0.8%-1.4%*). From 2000 to 2009 the one year survival of live born babies with any anomaly significantly increased. All women of child bearing age can have a baby with a congenital anomaly. However, women over 40 are more likely to have a baby with an anomaly, especially a chromosomal anomaly (55% of which are Down syndrome). Women under 20 and over 40 are more likely to have a baby with non-chromosomal anomalies. Increasing maternal age and earlier prenatal diagnosis explain the upward trend of Down syndrome.

From 2000 to 2009, the prevalence of neural tube defects has decreased annually by an average of 2.4% (1.1%-3.7%*). Public health initiatives promoting peri-conceptional folic acid supplements may have contributed to this. In contrast the prevalence of gastroschisis and Down syndrome increased annually by an average of 3.0% (0.7%-5.3%*) and 1.2% (0.1%-2.2%*) respectively. The increasing trend for gastroschisis is being monitored. Understanding patterns of occurrence of specific anomalies helps to identify their causes. Public Health England must ensure nationwide coverage of the congenital anomaly register.

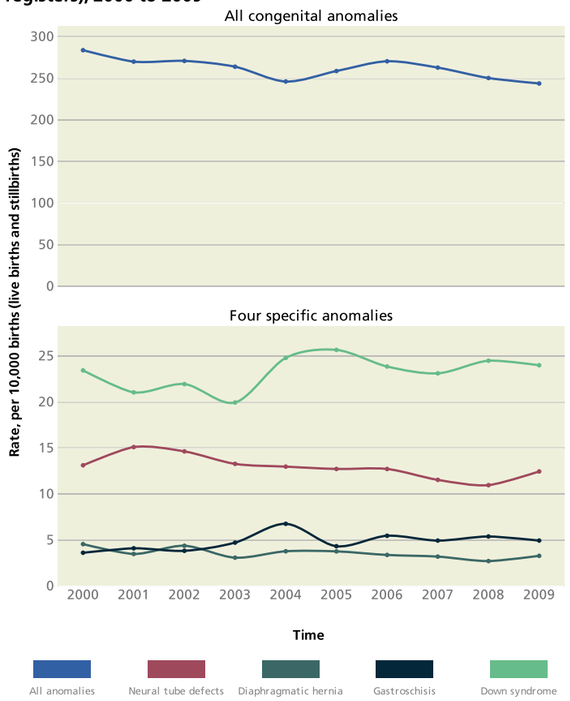
*95% CI

Prevalence of chromosomal and non-chromosomal anomalies by maternal age, England and Wales (based on selected anomaly registers), 2009



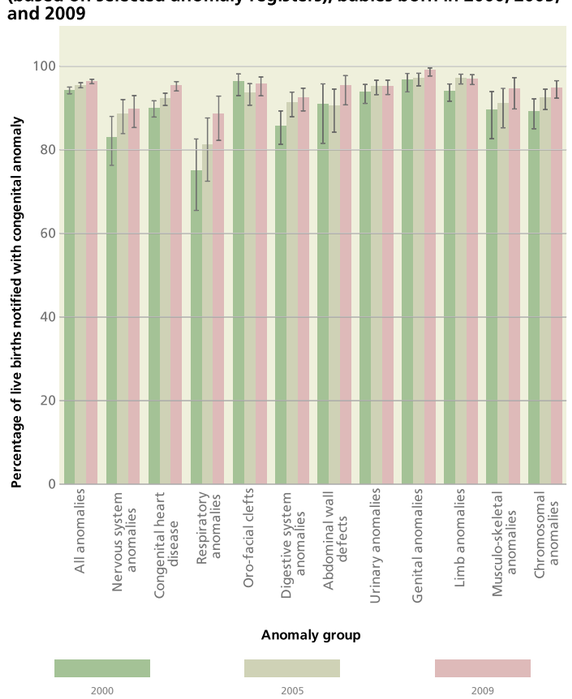
Source: British Isles Network of Congenital Anomaly Registers (BINOCAR).

Trend in prevalence of all congenital anomalies (and four specific anomalies), England and Wales (based on selected anomaly registers), 2000 to 2009



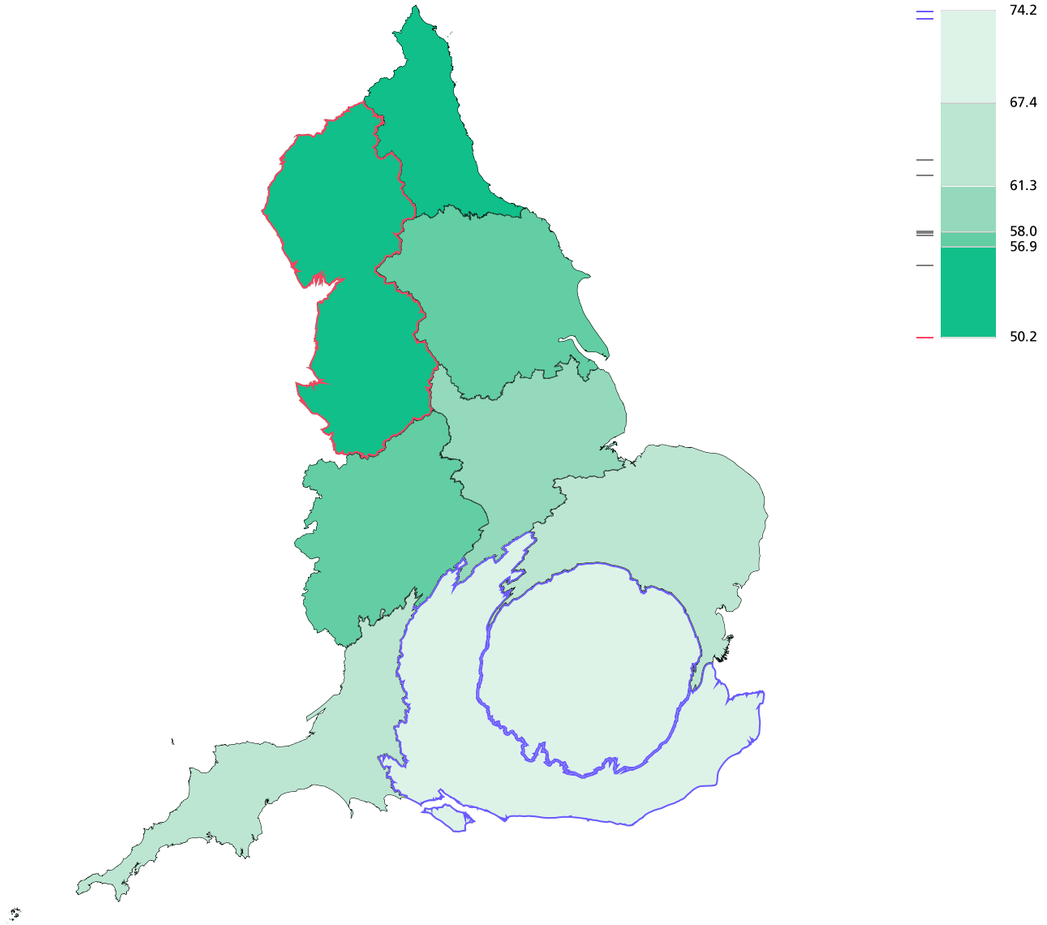
Source: British Isles Network of Congenital Anomaly Registers (BINOCAR).

Trend in the survival to one year with major congenital anomalies (all anomalies and major anomaly subgroups), England and Wales (based on selected anomaly registers), babies born in 2000, 2005, and 2009



Source: British Isles Network of Congenital Anomaly Registers (BINOCAR).

Proportion of Down syndrome notifications diagnosed prenatally by region, England, 2010



Source: National Down Syndrome Cytogenetic Register (NDSCR). (Analysis by DH)