Medway Council
Serving You

NHS Medway

Protecting Health

The Annual Public Health Report of the Director of Public Health 2011/12

Foreword

This is the last Annual Public Health Report that I will produce on behalf of NHS Medway as the Health and Social Care Act 2012 transfers the responsibility for much of the local public health function to local government from April 2013. Much has been accomplished by public health within the NHS in recent years. Achievements include the delivery of public health programmes to address issues such as smoking, obesity and sexual health; improved outcomes such as the reduced premature mortality from cardiovascular disease; providing an evidence base for the prioritisation of NHS commissioning decisions and ensuring that there are robust programmes in place for immunisation and screening.

The transfer of public health responsibilities to Medway Council brings new opportunities to build on our existing joint working arrangements to have an even greater impact on the health of the people of Medway. This year's Annual Public Health Report focuses on health protection, the branch of public health concerned with protecting the public from communicable diseases and other environmental threats to health. Medway Council will have new statutory duties to promote and protect the health of the population. This includes ensuring that plans are in place to protect the public from communicable diseases and environmental hazards. However Medway Council cannot achieve this in isolation and will need to work closely with newly forming organisations including the NHS Commissioning Board, Public Health England and Medway Commissioning Group to ensure that robust systems are in place to protect health.

The report is divided into three sections. The first section covers some important communicable diseases including childhood infections, sexually transmitted infections and human immunodeficiency virus (HIV) infection. In Medway, as elsewhere, raising awareness of these infections and what can be done to prevent their spread and complications is important.

The second deals with the prevention of communicable diseases through immunisation, one of the most important methods of protecting against infection and saving lives. In Medway, uptake rates for most routine childhood immunisations are good; indeed better than the regional and England averages. However, there is no room for complacency as uptake rates for the MMR vaccine are still below the level required to prevent an outbreak.

The final section covers environmental threats to health which have the potential to worsen health inequalities such as poor air quality, noise and poor housing and also environmental benefits such as green spaces.

I hope that the report will serve to reinforce important health protection issues for Medway and inform the plans of the organisations within the new public health system.

Dr Alison Barnett
Director of Public Health

Table of contents

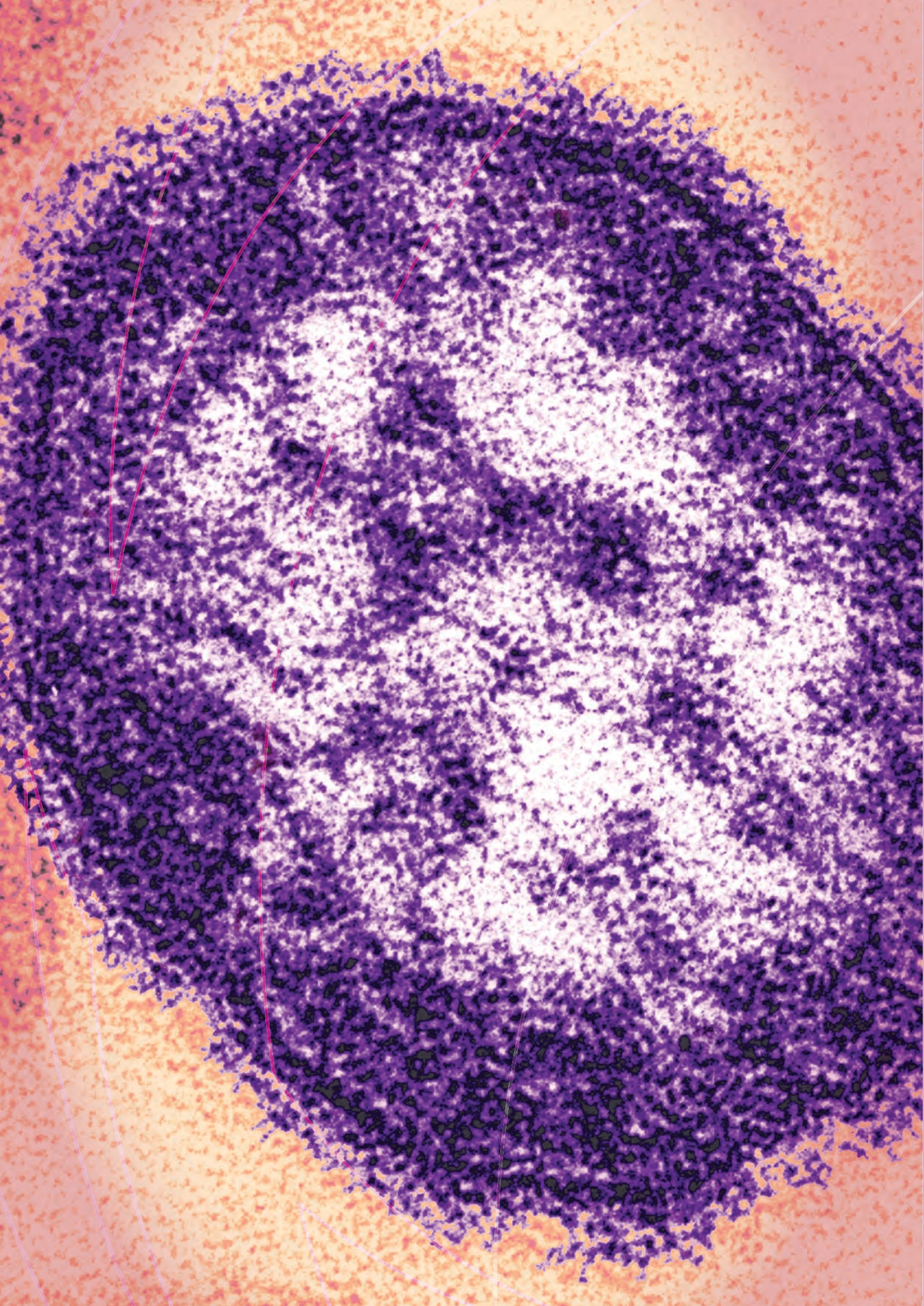
List of tables

List of figures

Acknowledgements

This report has been produced by the Public Health Directorate with support from colleagues in Medway Council, NHS Medway and the Kent Health Protection Unit. I would particularly like to thank Dr Claire Winslade, Dr Maggie Bruce, Laura Bottle and Dr David Whiting for writing and co-ordinating the production of the report.

Thanks are also due to Mark Chambers, Carley Cheeseman, Abigail Cooper, Sam Dentton, Eleanor Ennis, Nigel Freeman, Dr Shaji Geevarghese, Aeilish Geldenhuys, Del Herridge, Alan Hunter, Sally-Ann Ironmonger, Lynsey Keen, Nicky Ling, Karen MacArthur, Denise McCoy, Sue Meheux, Rachel Noxon, Kerry Oakton, Su Orms, Laura Patrick, Susan Pledger, Natasha Roberts, Jill Rutland, Chris Salt, Dr James Sedgwick, Gavin Steadman, Julia Thomas, Christine Underwood, Christopher Valdus, Fareeda Williams and Karen Yates for their valuable contributions.



1

Communicable diseases

1 Communicable diseases

Notifications of infectious diseases

Since the end of the 19th century there has been a statutory requirement to notify cases of specified infectious diseases. New regulations for notifications of infectious diseases came into force in April 2010. The new legislation adopts an 'all hazards' approach and, in addition to the specified list of infectious diseases which require notification, there is also a requirement to notify cases of other infections or contamination which could present a significant risk to human health.[1] This is the responsibility of the attending medical practitioner, who should complete a notification certificate and send it to the 'Proper Officer' in the Local Authority (LA) without waiting for laboratory confirmation of the diagnosis. The Proper Officer will then pass the notification to the local unit of the Health Protection Agency (HPA)[2]. In Kent and Medway, Consultants in Communicable Disease Control (CCDCs) in the Kent Health Protection Unit (HPU) act as Proper Officers of the local authorities and then notify the HPA offices at Colindale via HPZone (an electronic link).

Table 1: Diseases notifiable under the Health Protection (Notification) Regulations 2010

Acute encephalitis	Haemolytic uraemic syndrome (HUS)	Rabies
Acute meningitis		Rubella
Acute poliomyelitis	Infectious bloody diarrhoea	SARS
Acute infectious hepatitis	Invasive group A streptococcal disease and scarlet fever	Smallpox
Anthrax		Tetanus
Botulism	Legionnaires' Disease	Tuberculosis
Brucellosis	Leprosy	Typhus
Cholera	Malaria	Viral haemorrhagic fever (VHF)
Diphtheria	Measles	Whooping cough
Enteric fever (typhoid or paratyphoid fever)	Meningococcal septicaemia	Yellow fever
	Mumps	
Food poisoning	Plague	

Source: HPA

Diseases which are currently notifiable under the Health Protection (Notification) Regulations 2010 are shown in Table 1.

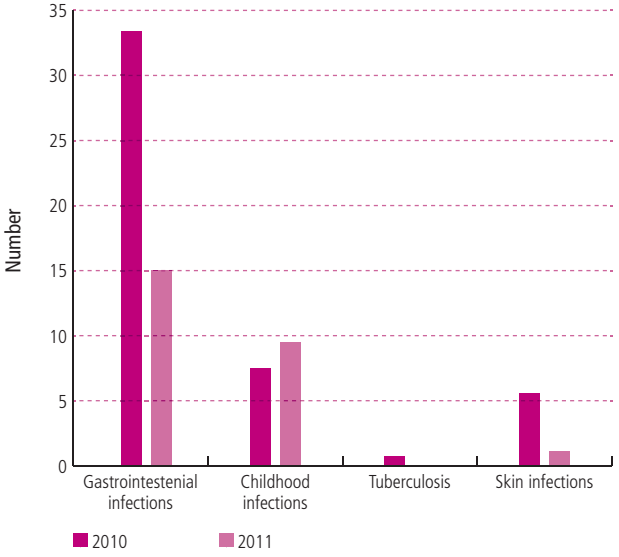
The aim of the notification process is to allow rapid detection of potential outbreaks of disease in order to enable prompt action to be taken to prevent further cases. For this reason cases of disease are notified based on clinical suspicion. Not all notified cases will subsequently prove to have the disease. For some diseases, such as measles, the proportion of people who are subsequently shown not to have the disease may be substantial. Additionally not all cases of infectious disease are notified by doctors. This may be because either the patient does not seek medical attention or the doctor fails to notify. This should be taken into account when considering the information in this section of this report.

Notifications of cases of infectious disease in Medway from 2009 to 2011, are shown in Figure 1, which shows a large increase in the number of notifications of measles, mumps and tuberculosis (TB) during this period.

Figure 2 and Figure 3 show the outbreaks and clusters and the setting which were reported to Kent HPU in 2010 and 2011. Outbreaks and clusters in this context have the following definitions:

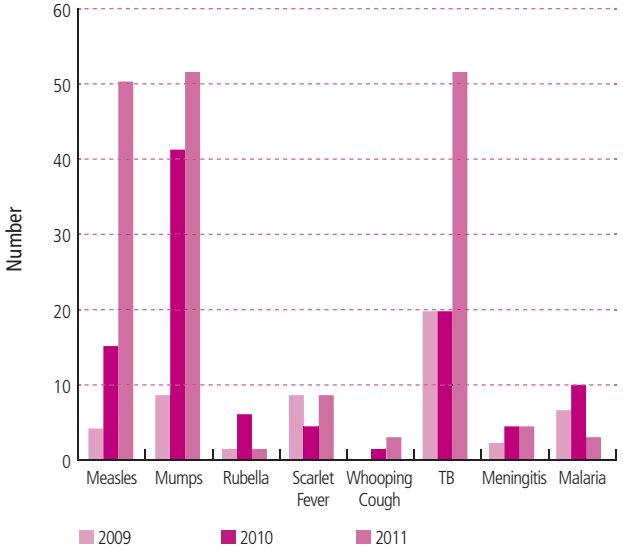
- Cluster: where a number of cases have a possible but as yet unconfirmed epidemiological link.
- Outbreak: where a number of cases have a highly probable or confirmed epidemiological link.

Figure 2: Outbreaks and clusters within Medway Local Authority, reported to the Kent HPU by disease type, 2010 and 2011



Source: Kent HPU

Figure 1: Notifications of infectious disease in Medway Local Authority, 2009 to 2011



Source: HPA, notifications of infectious disease

Figure 3: Outbreaks and clusters within Medway Local Authority, reported to Kent HPU by setting, 2010 and 2011

Source: Kent HPU

These data show that gastrointestinal infections are the commonest reason for a cluster or outbreak to be reported to Kent HPU. The most common settings were care homes and schools/nurseries.

Many infections, for example gastrointestinal infections such as norovirus and respiratory infections such as influenza, are more common during the winter.

Measles

Measles is an extremely contagious viral illness, which can be spread by coughing, sneezing, close personal contact or contact with nasal or throat secretions.[3] It has become relatively rare since the introduction of the measles, mumps and rubella (MMR) vaccine in 1998. In the 2000s, there was a fall in vaccine uptake following fears that the MMR vaccine might be linked to autism and bowel disease, fears which have subsequently been shown to be unfounded. This fall led to an increase in cases of measles and, in the period 2006 and 2007, the UK had the third highest incidence of measles in Europe.[4]

The incubation period for measles is about 10 days. Following this, symptoms such as fever, cough and runny nose develop. The characteristic measles rash tends to appear two to four days after the onset of symptoms, starting on the face and then spreading down the body. The rash lasts for about one week in total.[5]

Measles may be associated with a number of complications. Respiratory tract complications include pneumonia in one to six percent of children, and otitis media in seven to nine percent of children. Febrile convulsions occur in one in 200 children and encephalitis in one in 1,000. Measles is generally more severe in teenagers and adults than in children, with approximately three percent of adults with measles requiring hospitalisation. Measles infection in pregnancy can lead to miscarriage, premature birth and low birthweight. The most serious complication of measles is subacute sclerosing panencephalitis (SSPE), which affects about one in 25,000 people with measles. It is more common in those who contract measles under the age of one year. It has a median onset of seven years after infection and is invariably fatal.[6]

Although most people with measles make a full recovery after about seven to 10 days, approximately one child in 5,000 with measles will die from it.[7]

Mumps

Mumps is a viral infection which is spread by direct contact with saliva. Before the introduction of the MMR vaccine it was a common infection of school age children. After the introduction of the MMR vaccine, there was a significant fall in the numbers of cases of mumps. In 2005, there was a significant epidemic of mumps in England and Wales, mainly affecting young people aged 15 to 24, who had either never received the MMR vaccine, or who had only received one dose.[8]

Symptoms of mumps include swollen parotid glands, fever and headache. It can also cause orchitis in men and oophoritis in women.[9] Complications of mumps include viral meningitis and transient hearing loss. Encephalitis can develop in one in 1,000 people with mumps, which is fatal in 1.5 percent of cases. Longer term complications include reduced sperm count in men and permanent deafness – the latter may be experienced by one in 20,000.[10]

Table 2 shows the number of reports of measles, mumps and rubella received by Kent HPU from 2008 to 2011, as well as the number of confirmed cases. As mentioned previously, not all potential cases will be reported to the HPU. The majority of reports of measles, mumps and rubella are made

Table 2: Reports of measles, mumps and rubella in Medway Local Authority, received by Kent HPU and numbers of confirmed cases, 2008 to 2011

	2008	2009	2010	2011
Measles				
All cases reported	46	50	29	85
Confirmed cases	1	5	0	8
Mumps				
All cases reported	24	50	91	76
Confirmed cases	5	18	18	24
Rubella				
All cases reported	8	13	3	2
Confirmed cases	0	0	0	0

Source: KENT HPU

on clinical suspicion. Table 2 includes all cases reported, from any source, not just clinician or laboratory reports, regardless of whether testing was carried out, or a positive result was obtained from testing. Not all reported cases will have been formally notified, explaining why these figures differ from those shown under notifications of infectious disease in Figure 1. Rubella is discussed later in this report, under infectious diseases in pregnancy.

Food poisoning

Two important bacterial causes of food poisoning are Campylobacter and Salmonella. Campylobacter is the most commonly reported bacterial cause of infectious intestinal disease in England and Wales.[11] Campylobacter is found in the intestinal tract of birds and animals, especially poultry. Methods of transmission to humans include the consumption of raw or undercooked meat, unpasteurised milk and contaminated water. It may also be spread between people in cases where personal hygiene is poor. Common clinical symptoms include abdominal pain and diarrhoea.[12]

Salmonella is also found in the intestinal tracts of birds and animals. The main route of transmission is through the consumption of contaminated food, particularly meat, raw eggs and dairy products. This may occur either as a result of contamination of cooked food by raw food, or by the use of insufficiently high temperatures during cooking. Spread can also occur through close contact with infected people or animals. Symptoms include diarrhoea, vomiting and fever.[13]

Figure 4 shows the number of reported cases of Campylobacter and Salmonella received by Kent HPU from 2007 to 2011. The majority of reports are positive laboratory reports.

Figure 4: Number of reports of Campylobacter and Salmonella infection in Medway Local Authority, received by Kent HPU, 2007 to 2011

Source: Kent HPU

Human immunodeficiency virus (HIV)

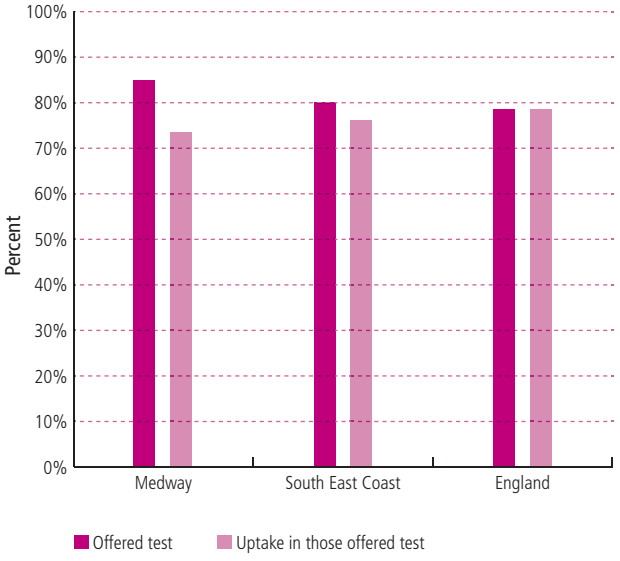
HIV remains an important communicable disease in the UK. It is associated with considerable morbidity and mortality and high treatment costs. Treatment is available with antiretroviral therapy, which has led to a reduction in the incidence of AIDS and the numbers of HIV-related deaths.[14] It is estimated that in 2009 there were 86,500 people with HIV in the UK, equivalent to 1.4 per 1,000 people; a quarter of these were unaware of their infection. It is estimated that 54 percent of those diagnosed in 2009 acquired their infection heterosexually, with over two thirds of these acquiring their infection abroad, mainly in sub-Saharan Africa. Of those diagnosed in 2009, it is estimated that 42 percent acquired their infection by sex between men, the majority of these infections (83 percent) being within the UK. Late diagnosis remains common, with half of adults diagnosed with HIV in 2009 being diagnosed at a late stage.[15]

Uptake of HIV testing in those attending a new genito-urinary medicine (GUM) appointment in 2010 is shown in Figure 5. A greater proportion of those attending a GUM clinic in Medway were offered a test than in South East Coast Strategic Health Authority (SEC SHA)[a] area or England as a whole, but the uptake of an HIV test in those who were offered one was lower.

In 2010, in the Medway local authority area, there were 170 people aged 15 to 59 accessing HIV care. This gives a prevalence of 1.08 diagnosed HIV infections per 1,000 population aged 15 to 59.[16] This is lower than the average rates of diagnosed HIV infection in the SEC SHA and England, as shown in Figure 6. These figures are based on the numbers of patients accessing HIV-related treatment or care and are collected by the Survey of Prevalent HIV Infections Diagnosed (SOPHID).[17]

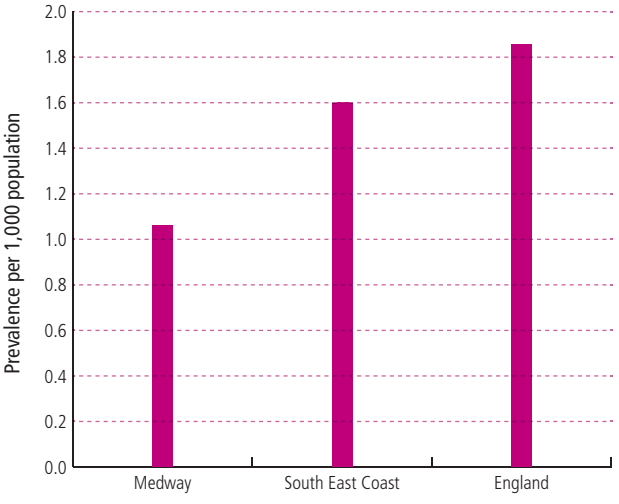
In 2010, an estimated 50 percent (3,300) of adults were diagnosed at a late stage of infection in the UK (with a CD4 cell count <350 cells/mm^3 within three months of diagnosis) including 28 percent (1,870) who were severely immuno-compromised (CD4 cell count <200 cells/mm^3) at diagnosis.[18] Delayed HIV diagnosis is associated with an

Figure 5: Uptake of HIV testing following a new GUM episode, 2010



Source: HPA, STI annual data tables, table 11

Figure 6: Prevalence of diagnosed HIV infections per 1,000 population, 2010



Source: HPA, Diagnosed HIV prevalence in Local Authorities (LAs) in England, 2010

[a] SEC SHA consists of eight primary care trusts within the LA areas of Surrey, West Sussex, East Sussex, Brighton and Hove, Kent and Medway

increased risk of AIDS and death. Reports of AIDS-defining diseases declined rapidly following the advent of antiretroviral therapy in the mid-1990s. They have, nevertheless, continued over the past decade, with 640 AIDS diagnoses reported in the UK in 2010. The majority of AIDS diagnoses are made in people who were diagnosed late. In 2010, four in every five AIDS diagnoses were reported simultaneous to or within three months of an HIV diagnosis (96 percent of whom had a CD4 <350 cells/mm^3 at diagnosis). Late diagnosis also means that a person has remained unaware of their HIV status for many years, increasing the risk of onward transmission.[18]

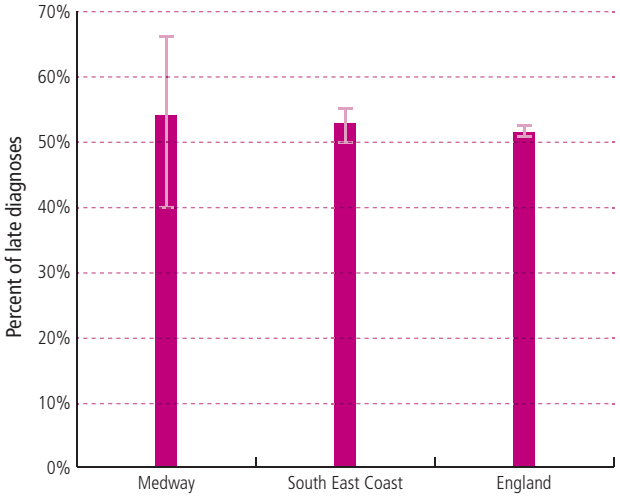
In Medway from 2008 to 2010, there were 61 diagnoses of HIV, of which 33 were late diagnoses.[19] Figure 7 shows how this percentage compares to the SEC SHA and England.

Sexually transmitted infections

Sexually transmitted infections (STIs) include a range of different infections which are transmitted between people by sexual intercourse, for example bacterial infections such as gonorrhoea and viral infections such as genital herpes. Use of condoms reduces, but does not eliminate, the likelihood of transmission of STIs. These infections do not always cause symptoms and therefore testing for both symptomatic and asymptomatic infection via a sexual health screen is appropriate at change of sexual partner and when first attending a genitourinary medicine (GUM) clinic because of symptoms. Identifying asymptomatic infection is beneficial in reducing the spread of STIs within the population.

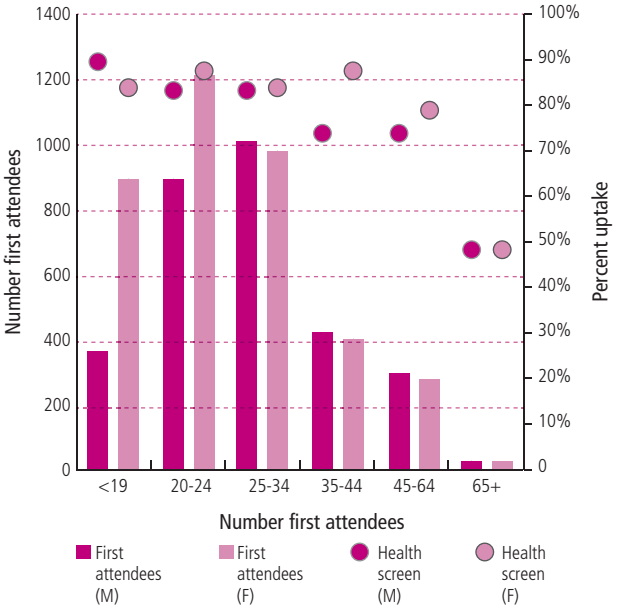
The number of Medway patients who attended any GUM clinic for the first time in 2011 and the percentage of these who had a sexual health screen, are shown in Figures 8 to 10 by age, ethnicity and sexual orientation. Where the groups are based on small numbers, the percentages should be treated with caution.

Figure 7: Late diagnoses of HIV (CD4 cell count <350 mm^3) as a percentage of all diagnoses, 2008 to 2010



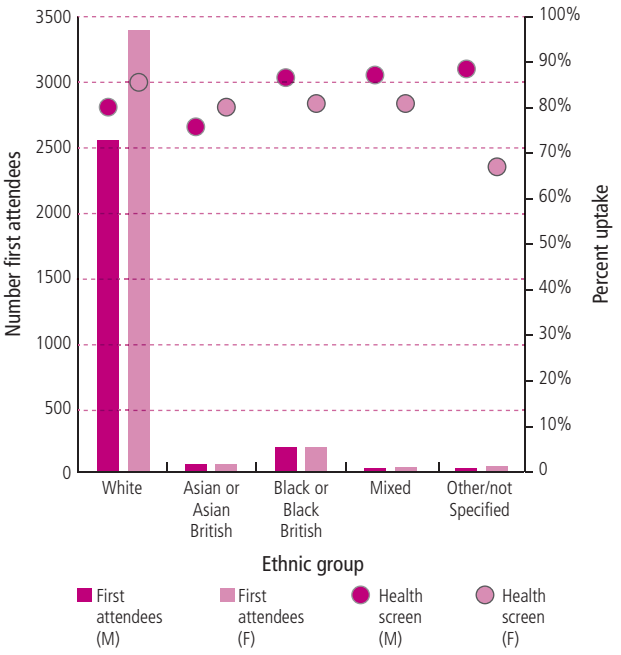
Source: HPA - HIV/AIDS Reporting Section personal communication

Figure 8: Numbers of first time attendees at a GUM clinic and the percentage of these having a sexual health screen, by age, 2011



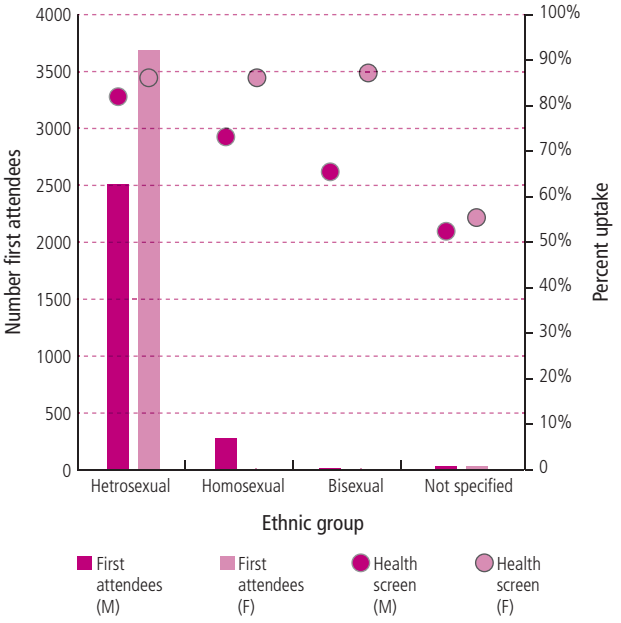
Source: HPA, Genitourinary Medicine Clinic Activity Dataset (GUMCAD) data.

Figure 9: Numbers of first-time attendees at a GUM clinic and the percentage of these having a sexual health screen, by ethnicity, 2011



Source: HPA, GUMCAD data.

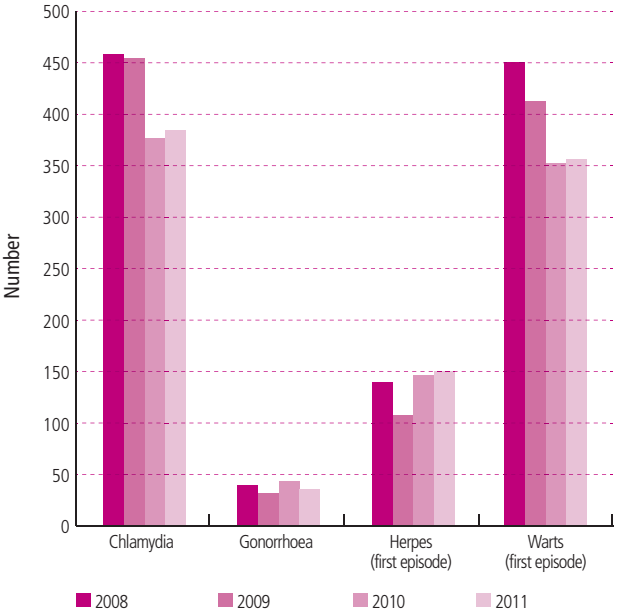
Figure 10: Numbers of first-time attendees at a GUM clinic and the percentage of these having a sexual health screen, by sexual orientation, 2011



Source: HPA, GUMCAD data.

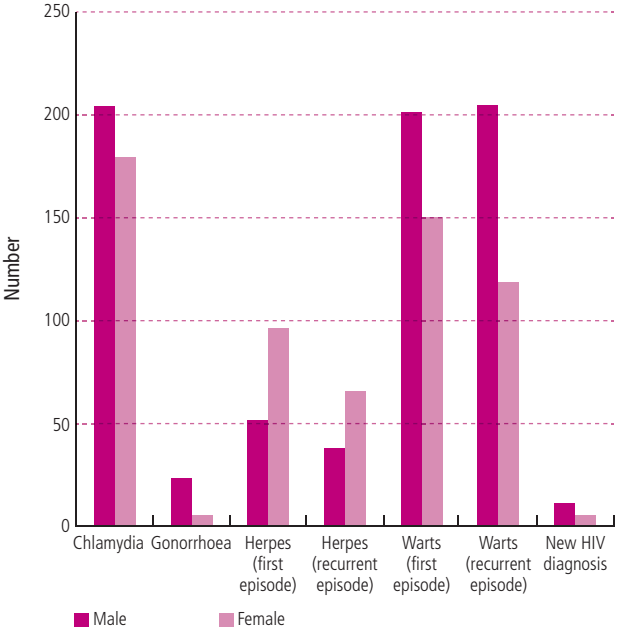
Chlamydia and warts are the most commonly diagnosed STIs among Medway patients attending any GUM clinic, but numbers in 2010 and 2011 have decreased compared with 2008 and 2009 as shown in

Figure 11: STI diagnoses for Medway residents in GUM clinics, 2008 to 2011



Source: HPA, GUMCAD data.

Figure 12: STI diagnoses for Medway residents in GUM clinics, 2011



Source: HPA, GUMCAD data.

Figure 11. Numbers of patients seen with gonorrhoea are small, with little change from 2008 to 2011.

The numbers of Medway male and female patients seen in GUM clinics in 2011,

with a range of STIs is shown in Figure 12. Greater numbers of women than men were diagnosed with chlamydia, and first or recurrent episodes of genital herpes. Genital warts and gonorrhoea were diagnosed more frequently in men.

The rates of STIs diagnosed in the Medway population in 2011 are shown in Figure 13. This shows that high rates of chlamydia are found in 15 to 24 year olds. The rate of chlamydia in 15 to 24 year olds in Medway is higher than the SEC SHA rate, but similar to the England rate. Included within the category of acute STIs are a range of other infections as well as the other STIs shown in the graph.

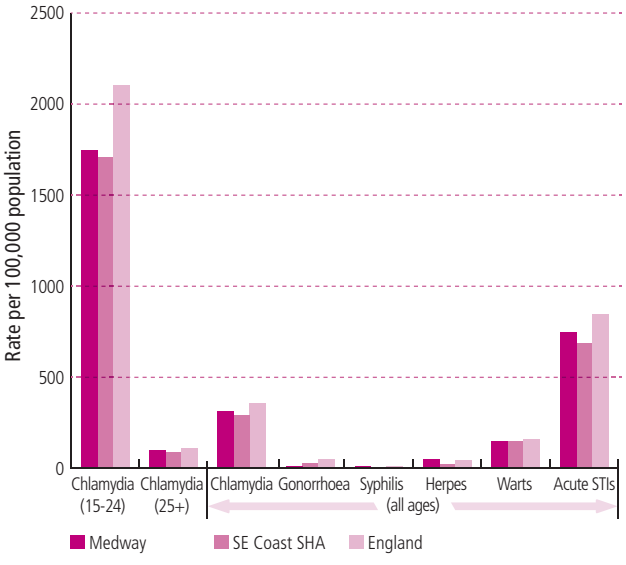
The number of syphilis and gonorrhoea diagnoses per 100,000 population respectively were 7.0 and 15.6 for Medway, 3.7 and 22.1 for SEC SHA, and 5.4 and 39.1 for England.

Chlamydia screening

Chlamydia is the most commonly diagnosed sexually transmitted infection in England, with the highest rates being seen in those under the age of 25. Many infections cause no symptoms and thus remain undiagnosed. Untreated, it can lead to pelvic inflammatory disease in women, which can result in infertility or ectopic pregnancy.[20]

The National Chlamydia Screening Programme was established in England in 2003. It aims to provide early detection of chlamydia, allowing treatment of asymptomatic infections, reducing the risk of complications and further spread of the disease. It is targeted at sexually active young people under the age of 25.[21] The target set by the Department of Health for chlamydia screening in 2010/11 was for 35 percent of the 15 to 24 year old population to be tested. In Medway in 2010/11, there were 8,395 tests carried out, equating to 24.4 percent of the 15 to 24 year old population. Of these, 5.3 percent (449) tested positive for chlamydia. From April to December 2011, chlamydia screening rates in Medway were below the England average, but above the SEC SHA average, as shown in Figure 14. The 'dots' represent the percentage with a positive test result.

Figure 13: Rates of selected STI diagnoses per 100,000 population for all ages unless otherwise stated, 2011

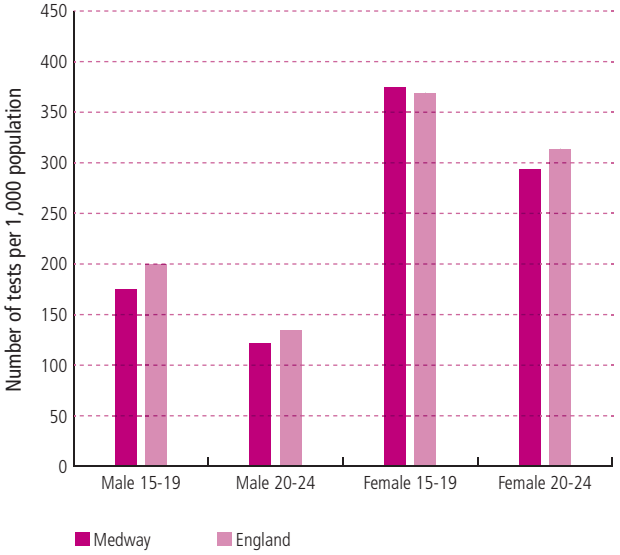


Source: HPA, STI Annual Data

Figure 14: Percentage of 15 to 24 year olds screened through the National Chlamydia Screening Programme and positive tests, April to December 2011

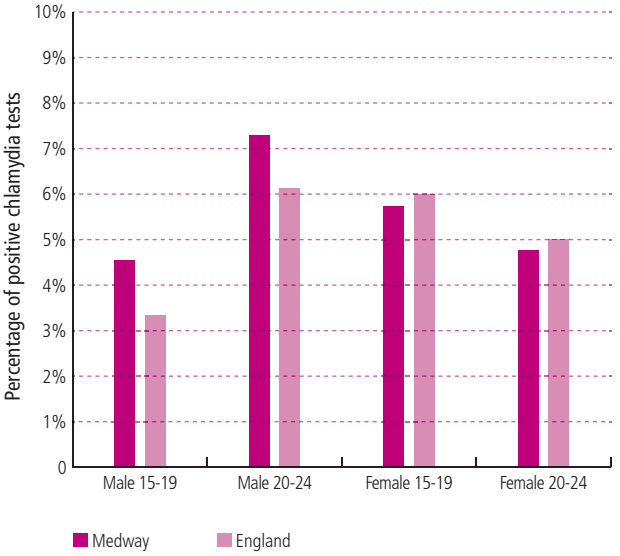
Source: NHS National Chlamydia Screening Programme

Figure 15: Number of chlamydia tests per 1,000 population, 2010/11, by age and sex



Source: NHS National Chlamydia Screening Programme

Figure 16: Percentage of positive chlamydia test results, 2010/11, by age and sex



Source: NHS National Chlamydia Screening Programme

Young women are generally more likely than young men to have a Chlamydia test, with young women aged 15 to 19 having the highest uptake rates (Figure 15). However, the group with the highest proportion of positive results in 2010/11 was young men aged 20 to 24, as shown in Figure 16.

Ethnicity was generally poorly recorded, being unknown in 52.6 percent of all tests carried out in Medway. This compares with 31.2 percent in England as a whole. Table 3 shows the ethnicity of those young people who had chlamydia testing based on National Chlamydia Screening Programme tests only. The differences between England and Medway may reflect the differences between the ethnic make up of the Medway population and the population of England as a whole. This should be interpreted with caution due to the many unknown ethnicities.

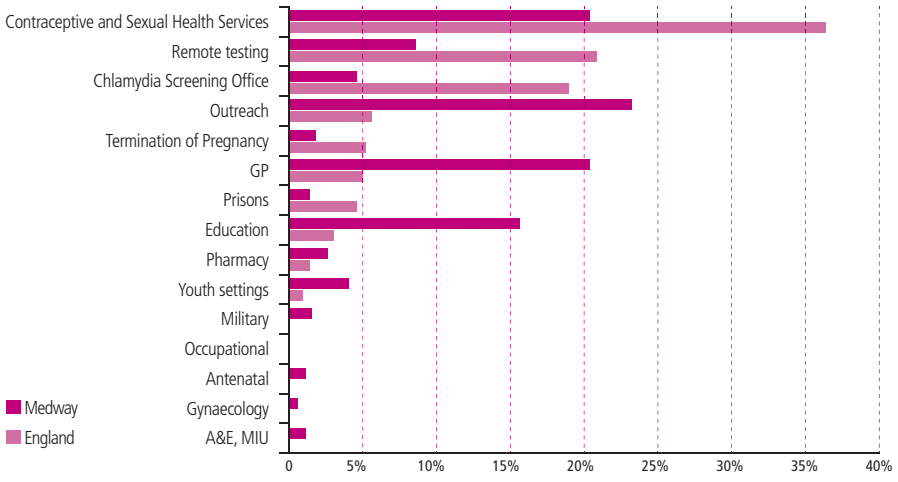
The NHS National Chlamydia Screening Programme encourages chlamydia testing in a range of different venues. Figure 17 shows the proportion of tests which were undertaken in the different venues in 2010/11. The most common venue for chlamydia testing was through contraceptive and sexual health services. Another popular option was remote testing, where young people either request the test via a website or arrange the test by phoning the Sexual Health Improvement Programme Team.

Table 3: Ethnicity of young people having chlamydia testing, 2010/11

	Medway			England		
Ethnicity	**Number of tests**	**Percentage of total with ethnicity identified**	**Percentage of this ethnicity in Medway's population**	**Number of tests**	**Percentage of total with ethnicity identified**	**Percentage of this ethnicity in England's population**
White	3,388	93.6%	90.6%	795,802	82.8%	87.5%
Black	130	3.6%	2.1%	56,986	5.9%	2.9%
Asian	43	1.2%	4.0%	63,445	6.6%	6.1%
Chinese	0	0.0%	0.9%	4,318	0.4%	0.8%
Other	6	0.2%	0.6%	6,464	0.7%	0.8%
Mixed	51	1.4%	1.7%	33,778	3.5%	1.8%
Unknown	4,011			435,021		
Total	7,629			1,395,814		

Source: NHS National Chlamydia Screening Programme

Figure 17: Venues where chlamydia tests were undertaken, 2010/11

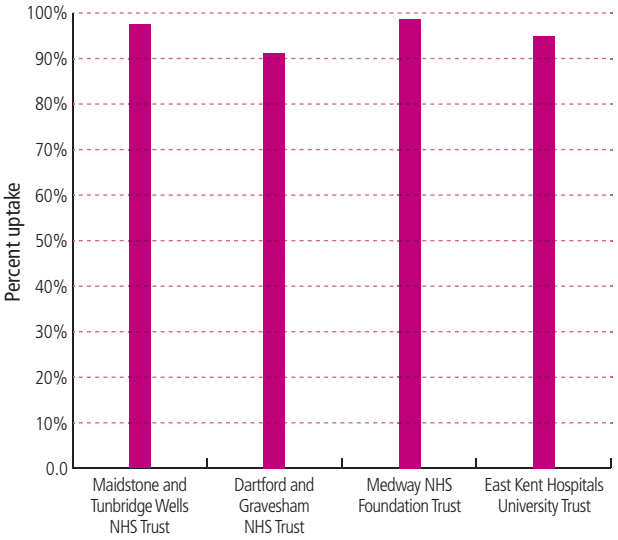


Source: NHS National Chlamydia Screening Programme

Infectious diseases in pregnancy

The NHS Infectious Diseases in Pregnancy Screening Programme aims to ensure all pregnant women receive screening for hepatitis B, HIV, and syphilis. If positive, strategies can be put in place to reduce the risk of transmission to the baby. Women are also screened for susceptibility to rubella infection within this programme. Although rubella infection is generally mild, infection in pregnancy, particularly in the first 12 weeks, can have serious consequences for the baby such as heart defects, cataracts and deafness. If the result shows a pregnant woman is non-immune to rubella, she is offered MMR vaccination following delivery. This reduces the risk of congenital rubella in subsequent pregnancies.[22] The 2003 Department of Health's Screening for Infectious Diseases in Pregnancy Standards[23] set a target of 90 percent for the uptake of antenatal screening for HIV. In 2010 the revised standards set this as a reference point for all four infections.[24] National uptake of antenatal screening for HIV was 96 percent in 2010.[25] Figure 18 shows uptake for the four hospital trusts providing maternity services in Kent and Medway.

Figure 18: Antenatal HIV screening uptake in Kent and Medway, April to December 2011



Source: Key performance indicator submissions

Table 4: Risk of infection ascertained from the Infectious Diseases in Pregnancy Screening Programme, 2008 to 2010

Year	Antenatal Screen	Dartford & Gravesham NHS Trust		East Kent Hospitals University Trust		Maidstone & Tunbridge Wells NHS Trust		Medway NHS Foundation Trust	
		Tests	Positive	Tests	Positive	Tests	Positive	Tests	Positive
2008*	HIV	1,721	8	7,425	13	5,283	7	5,467	11
	Syphilis	1,750	<5	7,420	11	5,359	<5	5,493	<5
	Rubella Negative**	1,744	65	7,387	321	5,470	109	5,491	268
	Hepatitis B	1,741	6	7,431	27	5,308	9	5,483	26
2009	HIV	3,769	<5	7,474	9	5,618	<5	5,234	11
	Syphilis	3,775	<5	7,471	19	5,684	<5	5,265	<5
	Rubella Negative**	3,805	305	7,470	399	5,780	136	5,285	498
	Hepatitis B	3,758	14	7,475	20	4,919	8	5,263	11
2010	HIV	4,207	5	8,087	7	5,858	<5	5,313	8
	Syphilis	4,220	<5	8,089	14	5,886	5	5,331	8
	Rubella Negative**	4,235	322	8,093	589	5,945	159	5,335	521
	Hepatitis B	4,212	14	8,087	16	5,878	13	5,337	22

* Data for six months only for Dartford and Gravesham NHS Trust
** The test for rubella is to confirm immunity. In this context, a positive test means non-immune.

Source: HPA

Table 4 shows the number of tests for the different infectious diseases carried out in Kent and Medway from 2008 to 2010 and the numbers of positive results. While the number of positive cases detected is accurate, the number of tests historically was not based on exact cohort data (i.e. some may have been repeats). This is being addressed and all local NHS Trusts will be submitting cohort data from 2012.

There have been 20 reports of congenital rubella in infants born in the British Isles since 1999, none of which were reported from Kent or Medway.[26]

Tuberculosis

Tuberculosis (TB) is caused by the tubercle bacillus, a spore-like bacteria which can lay dormant in the body for many years without the host showing any symptoms of infection. TB most commonly affects the lungs, but can affect other parts of the body such as the lymph glands, bones and occasionally the brain. The disease develops slowly and it is usually several months before symptoms appear. Symptoms of TB include persistent cough, possibly with blood in the sputum, fever, night sweats and weight loss. TB is spread through airborne droplets, produced when an infected person coughs or sneezes. TB is much less infectious than other respiratory infections, such as influenza. Prolonged, close contact with an infected person is generally required to spread the infection.[27]

Around 9,000 cases of TB a year occur in the UK, most in major cities, particularly London.[28] Those who are most at risk of catching TB are people in close contact with an infectious person, children, the elderly, those whose immune system is suppressed, for example, as a result of HIV or medication and those in poor health, living in overcrowded housing or dependent on drugs or alcohol.[28]

TB can be treated with medication. A prolonged course of treatment, generally for around six months, is required for successful treatment. If the full course of treatment is not taken, there is a risk of developing drug resistant TB.[28]

Table 5 shows the number of TB cases and rate per 100,000 population in Medway and England from 2000 to 2010. While

Table 5: Number of TB cases in Medway and England and the rate per 100,000, 2000 to 2010

Year	England			Medway (3 year average)		
	Number of cases	Rate per 100,000	95% CI	Number of cases	Rate per 100,000	95% CI
2000	6,081	12.4	12.0–12.7	16	6.4	3.7–10.4
2001	6,269	12.7	12.4–13.0			
2002	6,713	13.3	13.0–13.7			
2003	6,675	13.3	13.0–13.7			
2004	6,988	13.9	13.6–14.3	13	5.2	2.8–8.8
2005	7,722	15.2	14.9–15.6			
2006	7,739	15.2	14.9–15.6			
2007	7,650	14.9	14.6–15.3			
2008	7,926	15.4	15.1–15.8	21	8.2	5.1–12.6
2009	8,152	16.0	15.7–16.3			
2010	7,758	14.9	14.5–15.2			

CI - confidence intervals

Source: HPA, TB Surveillance data[29 30]

annual numbers of case and rates are published for England, these are only available at the local authority level for 2000 to 2002, 2004 to 2006 and 2008 to 2010. Although there has been a slight increase, rates in Medway are lower than those in England as a whole and the numbers are too small to determine if there has been a significant increase.

Recommendations for action

- **Immunisation is the most important intervention for preventing communicable diseases so efforts must continue to achieve high uptake rates in Medway.**
- **Chlamydia is the most commonly diagnosed STI in Medway patients, particularly in people aged under 25, and is often asymptomatic. Raising awareness among sexually active 15 to 24 year olds and ensuring continued availability of chlamydia screening in a range of different venues accessible by them, is essential.**

2

Immunisation and vaccination

2

Immunisation and vaccination

Immunity is the ability of the human body to protect itself against infectious disease. Active immunity is protection that is produced by an individual's own immune system and is usually long lasting. It can be acquired by natural disease or via vaccination. Passive immunity is protection provided from the transfer of antibodies from immune individuals, such as mothers to their babies across the placenta or via breast-feeding, or less often from the transfusion of blood or blood products including immunoglobulin. Passive immunity is temporary but provides immediate short-term protection against disease.[31]

After clean water, vaccination is the most effective public health intervention in the world for saving lives and promoting good health.[32] Vaccinations work by producing immunological memory, so that when the immune system is subsequently exposed to natural infection it is able to recognise and respond to it, therefore preventing or modifying the disease. In some cases more than one dose of the vaccine may be required initially to produce this response and one or more booster doses may be required to maintain it. Some vaccines are combined preparations which contain several substances that induce specific immune responses (antigens) – therefore protecting against several diseases without the need for multiple injections e.g. the MMR vaccine which protects against measles, mumps and rubella.

While the main aim of vaccination is to protect the individual who receives it, high levels of immunity in a population mean that those who cannot be vaccinated, for example because they are too young, are at reduced risk of being exposed to a disease. This is known as herd immunity.

When vaccine coverage is high enough, a disease may be eliminated from a community.[32] However if high coverage is not maintained, the disease may return. Vaccine coverage is evaluated against World Health Organisation (WHO) targets of 95 percent coverage annually for each antigen (except Meningitis C) by the age of two years at the national level, with at least 90 percent in each Strategic Health Authority (SHA).[33]

Routine Childhood Immunisations

The schedule for routine vaccinations in childhood is defined by the Department of Health on the advice of the Joint Committee on Vaccination and Immunisation (JCVI) and has changed over time as new vaccines have become available (Table 6).

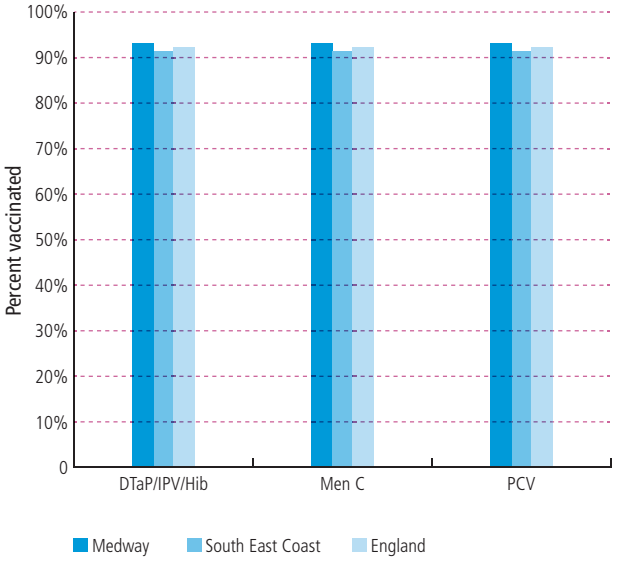
Table 6: Routine childhood immunisation schedule (from November 2010)

Age	Vaccine	Diseases protected against	Provider(s) in Medway
2 months	DTaP/IPV/Hib (Pediacel)	Diphtheria, tetanus, pertussis, polio and Haemophilus influenzae type b (Hib)	GP practices
	PCV (Prevenar 13)	Pneumococcal disease	GP practices
3 months	DTaP/IPV/Hib (Pediacel)	Diphtheria, tetanus, pertussis, polio and Hib	GP practices
	MenC (Menjugate or Neisvac C)	Meningococcal group C disease (MenC)	GP practices
4 months	DTaP/IPV/Hib (Pediacel)	Diphtheria, tetanus, pertussis, polio and Hib	GP practices
	MenC (Menjugate or Neisvac C)	MenC	GP practices
	PCV (Prevenar 13)	Pneumococcal disease	GP practices
12 to 13 months	Hib/MenC (Menitorix)	Hib/MenC	GP practices
	PCV (Prevenar 13)	Pneumococcal disease	GP practices
	MMR (Priorix or MMR VaxPRO)	Measles, mumps and rubella (German measles)	GP practices
3 years 4 months	dTaP/IPV (Repevax) or DTaP/IPV (Infanrix-IPV)	Diphtheria, tetanus, pertussis and polio	GP practices
	MMR (Priorix or MMR VaxPRO)	Measles, mumps and rubella	GP practices
12 to 13 years - girls only	Cervarix (three injections given at 0, 1–2 and 6 month intervals) changing to Gardasil September 2012	Cervical cancer caused by human papillomavirus types 16 and 18	School nursing service mainly – some by GP practices
13 to 18 years	Td/IPV (Revaxis), and check MMR status	Tetanus, diphtheria and polio	School nursing service mainly – some by GP practices

Source: Department of Health (DH) website

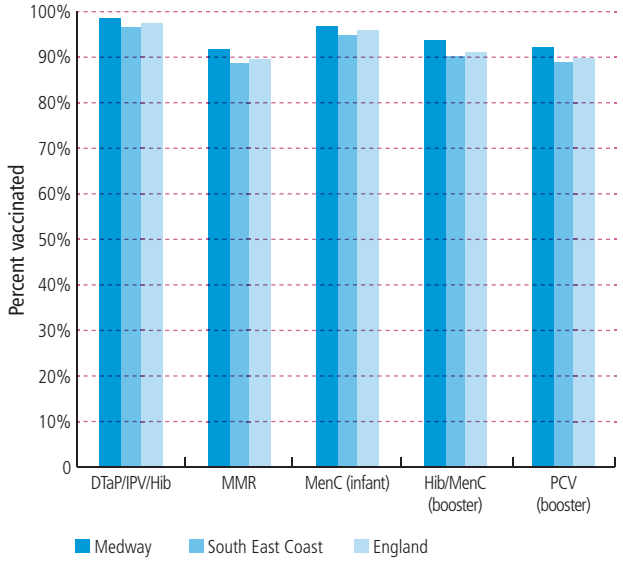
The percentages of children in Medway, who were up to date with the different immunisations by their first, second and fifth birthdays, in 2010/11, are shown in Figures 19 to 21. At all ages, coverage in Medway was higher than the SEC SHA and England averages.

Figure 19: Percentage of children vaccinated against DTaP/IPV/Hib, Men C or PCV by their first birthday, 2010/11



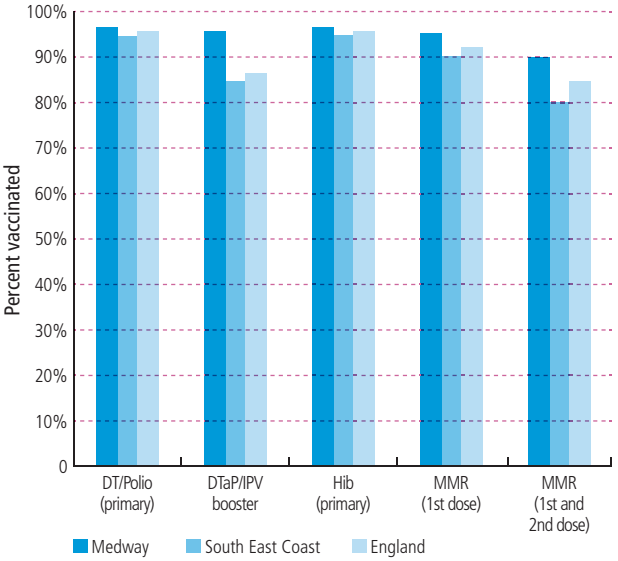
Source: Medway NHS Foundation Trust, Child Health Records Department and the Health and Social Care Information Centre

Figure 20: Percentage of children vaccinated against DTaP/IPV/Hib, MMR, Men C, Hib/Men C booster or PCV booster by their second birthday, 2010/11



Source: Medway NHS Foundation Trust, Child Health Records Department and the Health and Social Care Information Centre

Figure 21: Percentage of children vaccinated against DT/Polio, DTaP/IPV booster, Hib, first MMR or first and second MMR by their fifth birthday, 2010/11



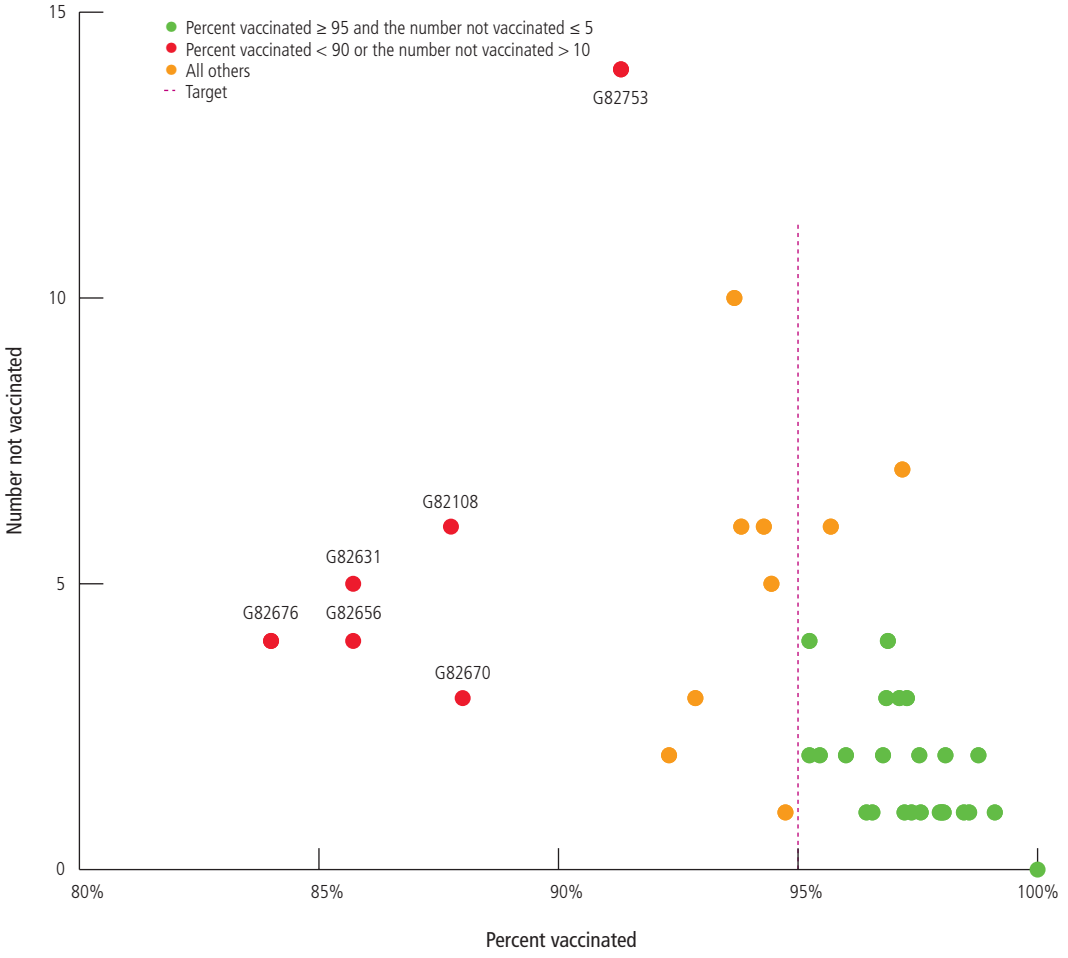
Source: Medway NHS Foundation Trust, Child Health Records Department and the Health and Social Care Information Centre

Although better than the SEC SHA and England average, the percentage of children in Medway who received two doses of MMR by the age of five was just under 90 percent in 2010/11. The WHO recommends vaccine coverage should be 95 percent in order to prevent outbreaks of disease.[34] A number of countries across Europe, including the UK, have experienced outbreaks of measles in 2011.[35]

Although coverage for childhood immunisations in Medway is generally high, there is variation between GP practices in the percentage of children receiving immunisation. The figures that follow show the uptake rates for 2011/12 for the 60 Medway practices – comparative national and regional data have not yet been published for 2011/12. Appendix 1 gives the practice names which correspond to the practice codes shown on the figures.

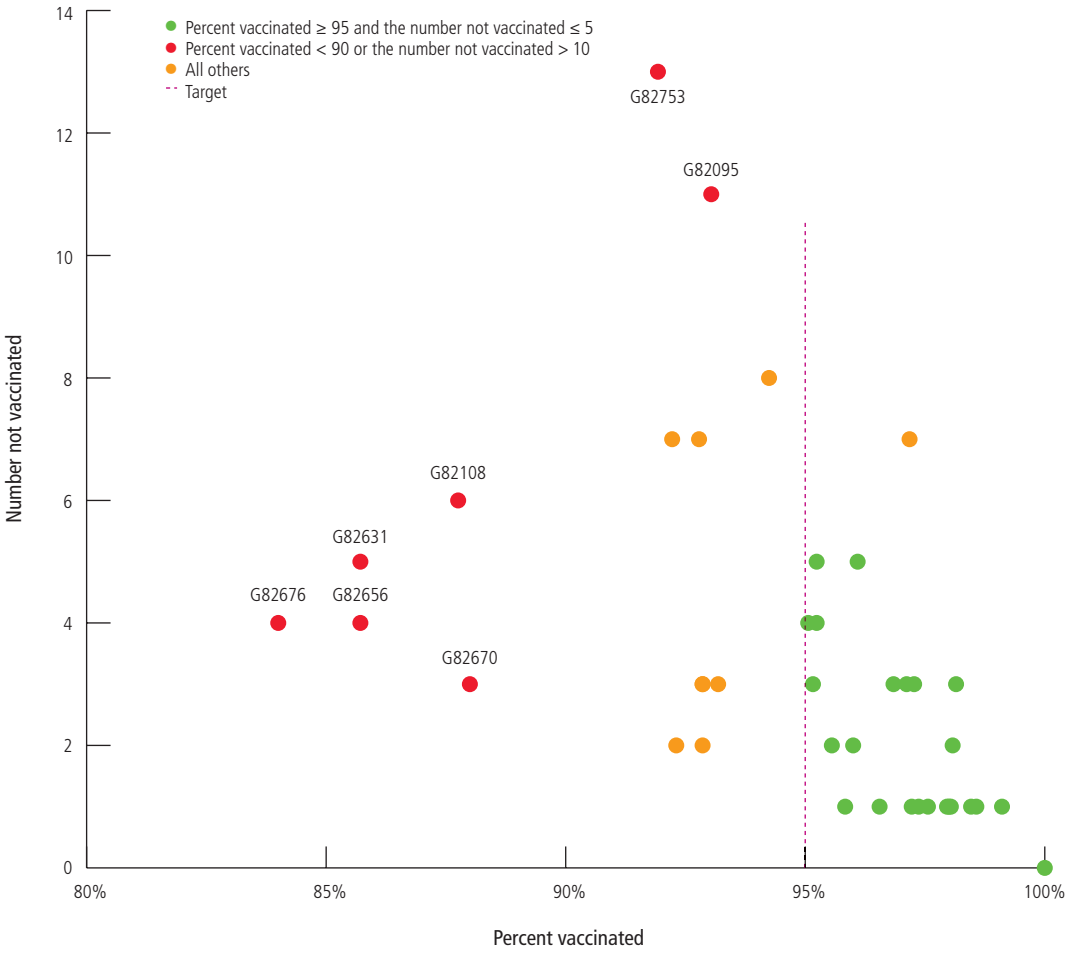
Figure 22 shows the percentage of children in Medway practices who have received a complete course of immunisation against diptheria, tetanus, pertussis, polio and Haemophilus influenzae type B (three doses of Pediacel) by their first birthday. Medway coverage was 95.8 percent (2010/11: 95.6 percent) and practice coverage ranged from 84.0 percent to 100.0 percent.

Figure 22: Percentage of children completing a primary course of DTaP/IPV/Hib vaccination by their first birthday, Medway practices, 2011/12



Source: Medway NHS Foundation Trust, Child Health Records Department

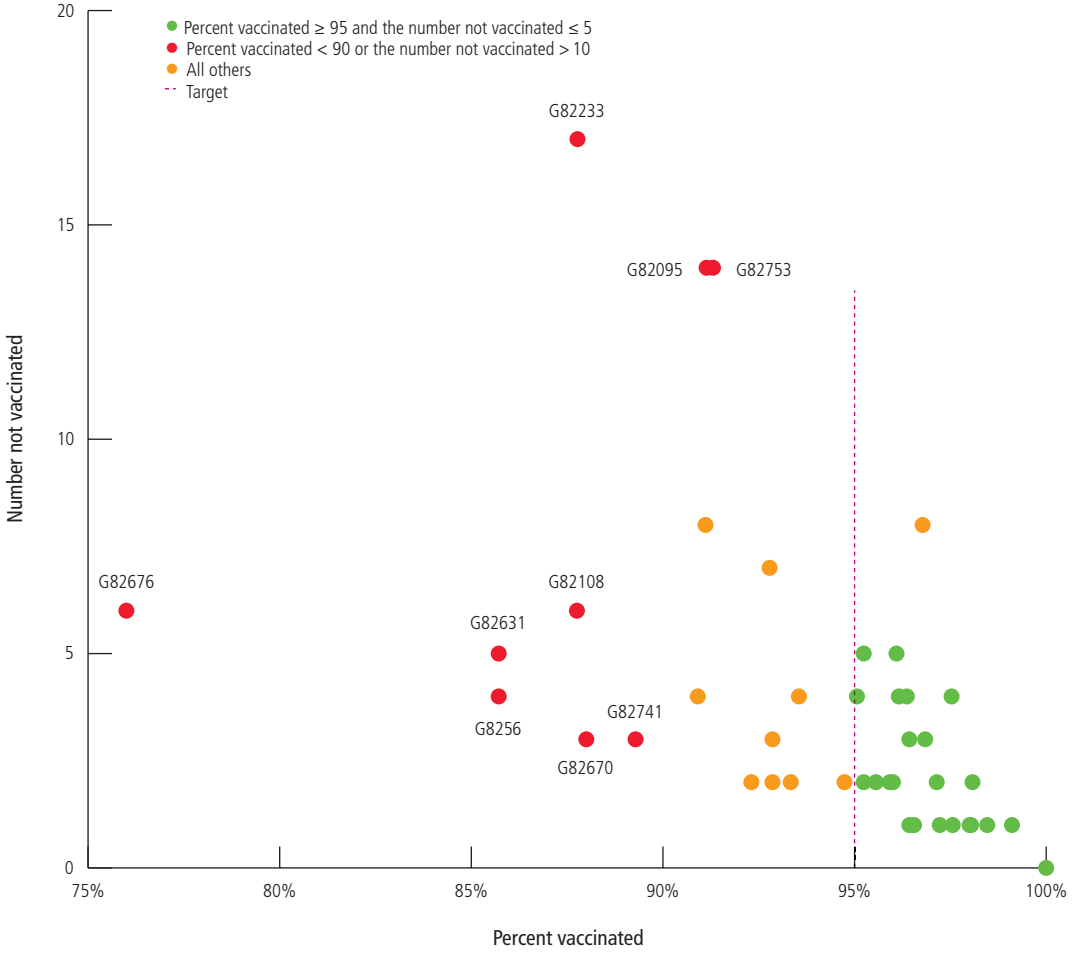
Figure 23: Percentage of children completing a primary course of MenC vaccination by their first birthday, Medway practices, 2011/12



Source: Medway NHS Foundation Trust, Child Health Records Department

Figure 23 shows the percentage of children in Medway practices who have received a complete course of immunisation against Meningitis C (two doses of Menjugate/ Neisvac C) by their first birthday. Medway coverage was 95.4 percent (2010/11: 95.2 percent) and practice coverage ranged from 84.0 percent to 100.0 percent.

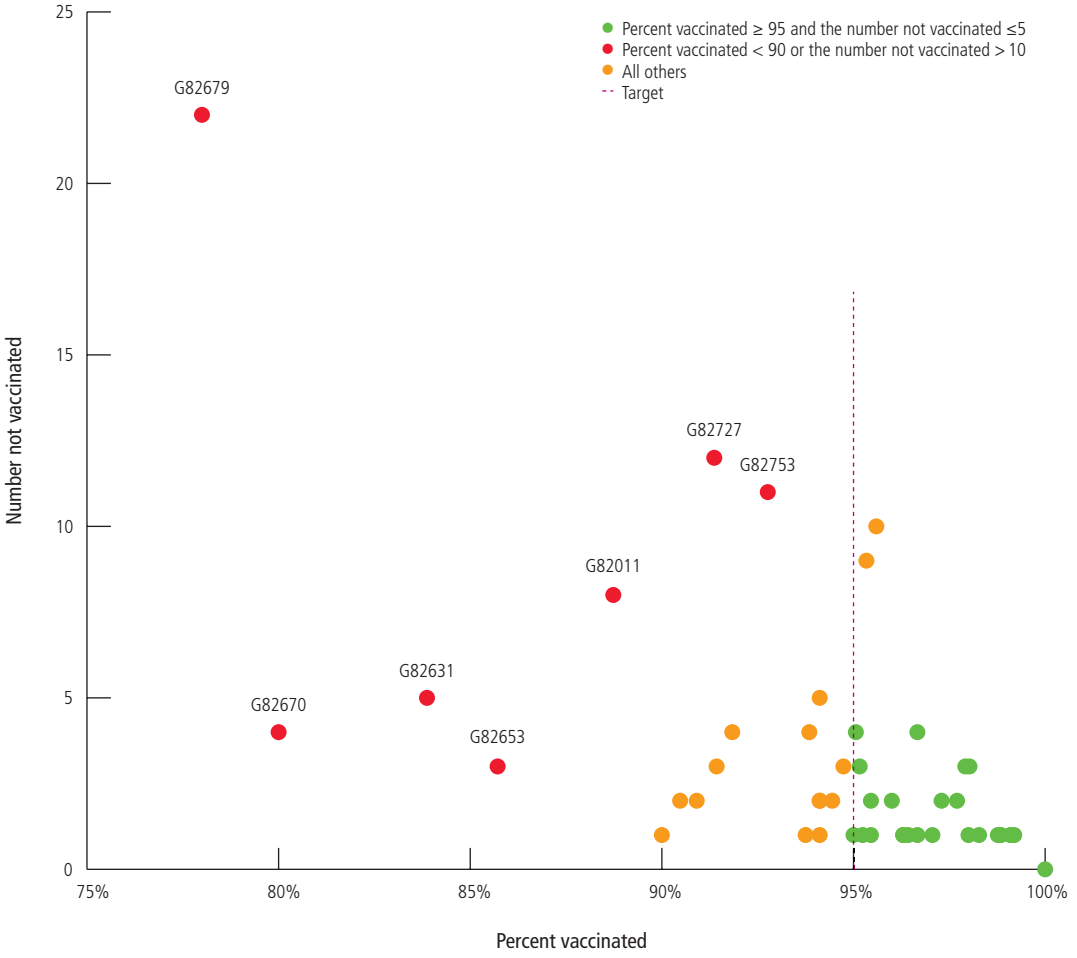
Figure 24: Percentage of children completing a primary course of PCV vaccination by their first birthday, Medway practices, 2011/12



Source: Medway NHS Foundation Trust, Child Health Records Department

Figure 24 shows the percentage of children in Medway practices who had completed a primary course of vaccination against pneumococcal disease (two doses of Prevenar 13) by their first birthday. Medway coverage was 94.6 percent (2010/11: 95.4 percent) and practice coverage ranged from 76.0 percent to 100.0 percent.

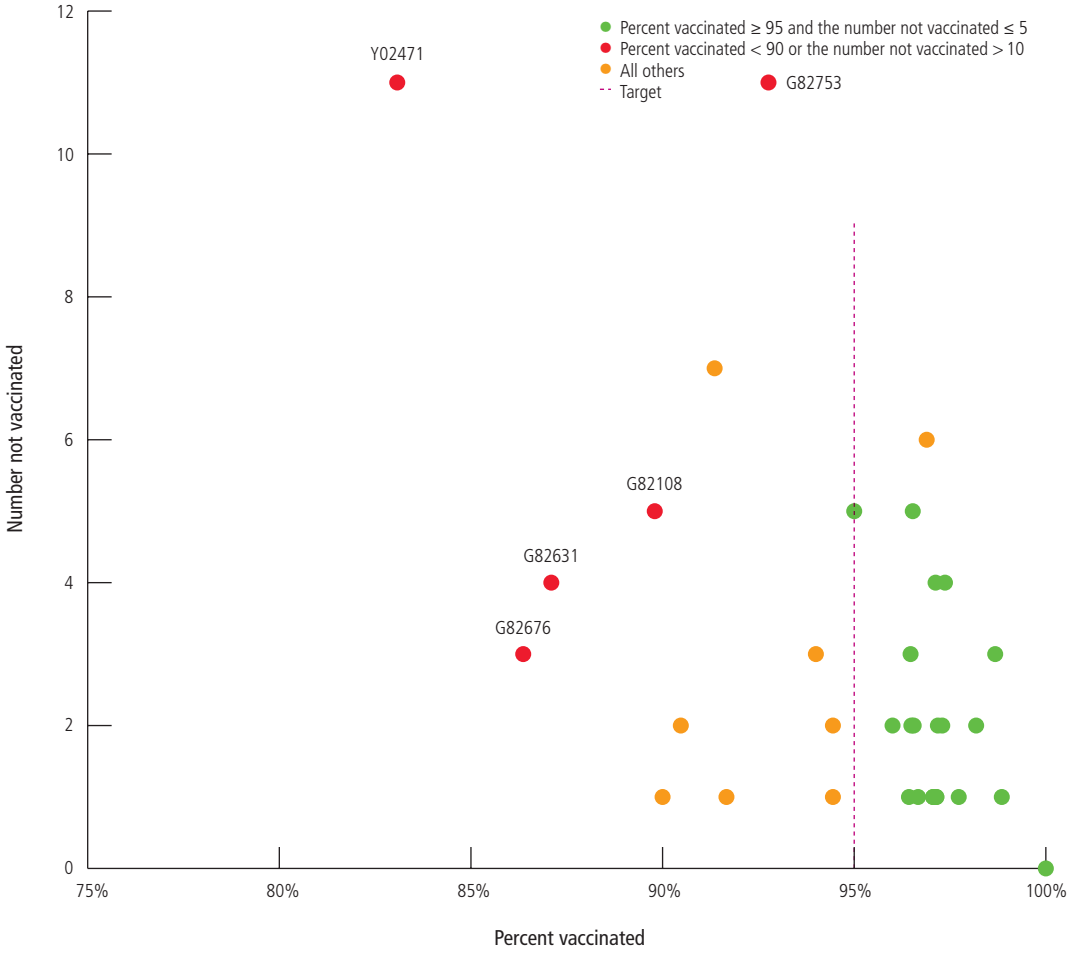
Figure 25: Percentage of children completing a primary course of MMR vaccination by their second birthday, Medway practices, 2011/12



Source: Medway NHS Foundation Trust, Child Health Records Department

Figure 25 shows the percentage of children in Medway practices who had received one vaccination against measles, mumps and rubella (Priorix or MMR VaxPRO) by their second birthday. Medway coverage was 94.7 percent (2010/11: 93.3 percent) and practice coverage ranged from 78.0 percent to 100.0 percent.

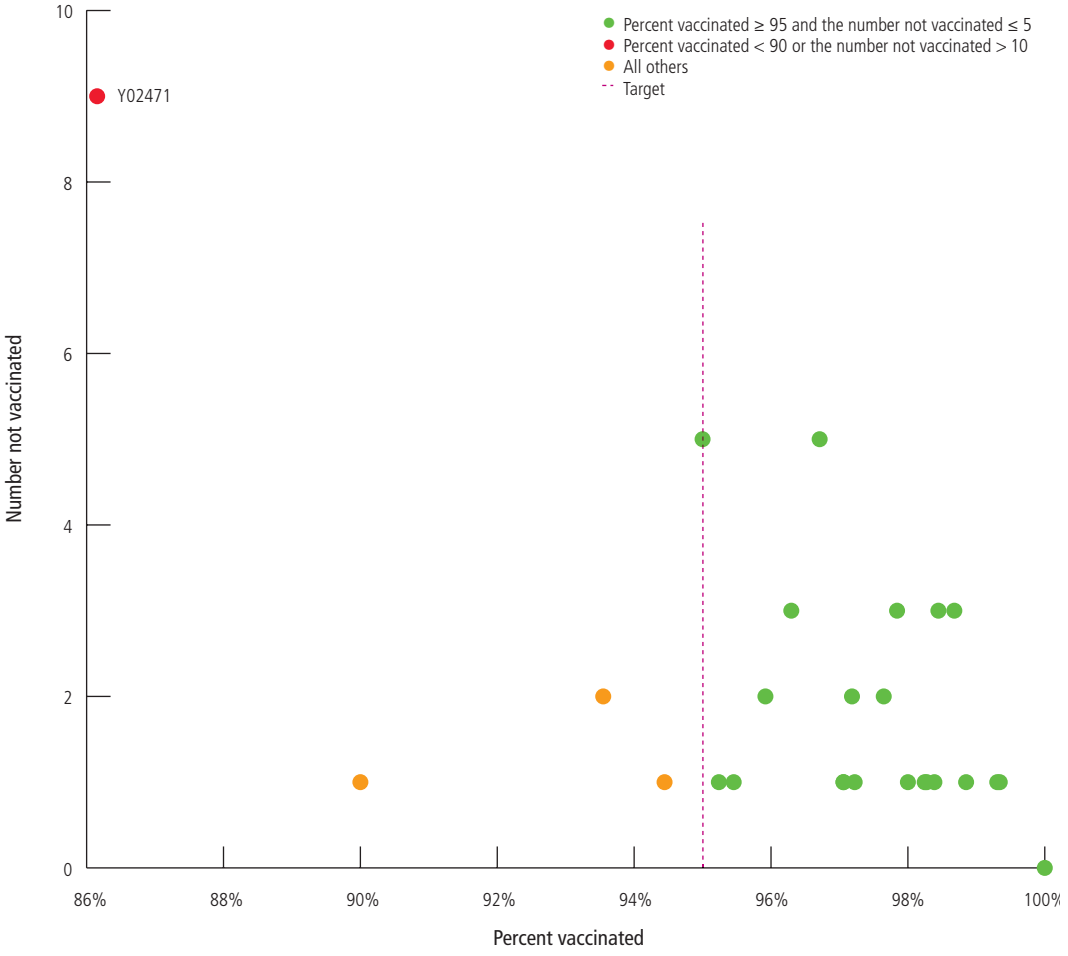
Figure 26: Percentage of children completing a primary course of Men C vaccination by their second birthday, Medway practices, 2011/12



Source: Medway NHS Foundation Trust, Child Health Records Department

Figure 26 shows the percentage of children in Medway practices who had completed a primary course of vaccination against Meningitis C (two doses) by their second birthday. Medway coverage was 96.4 percent (2010/11: 97.2 percent) and practice coverage ranged from 83.1 percent to 100.0 percent.

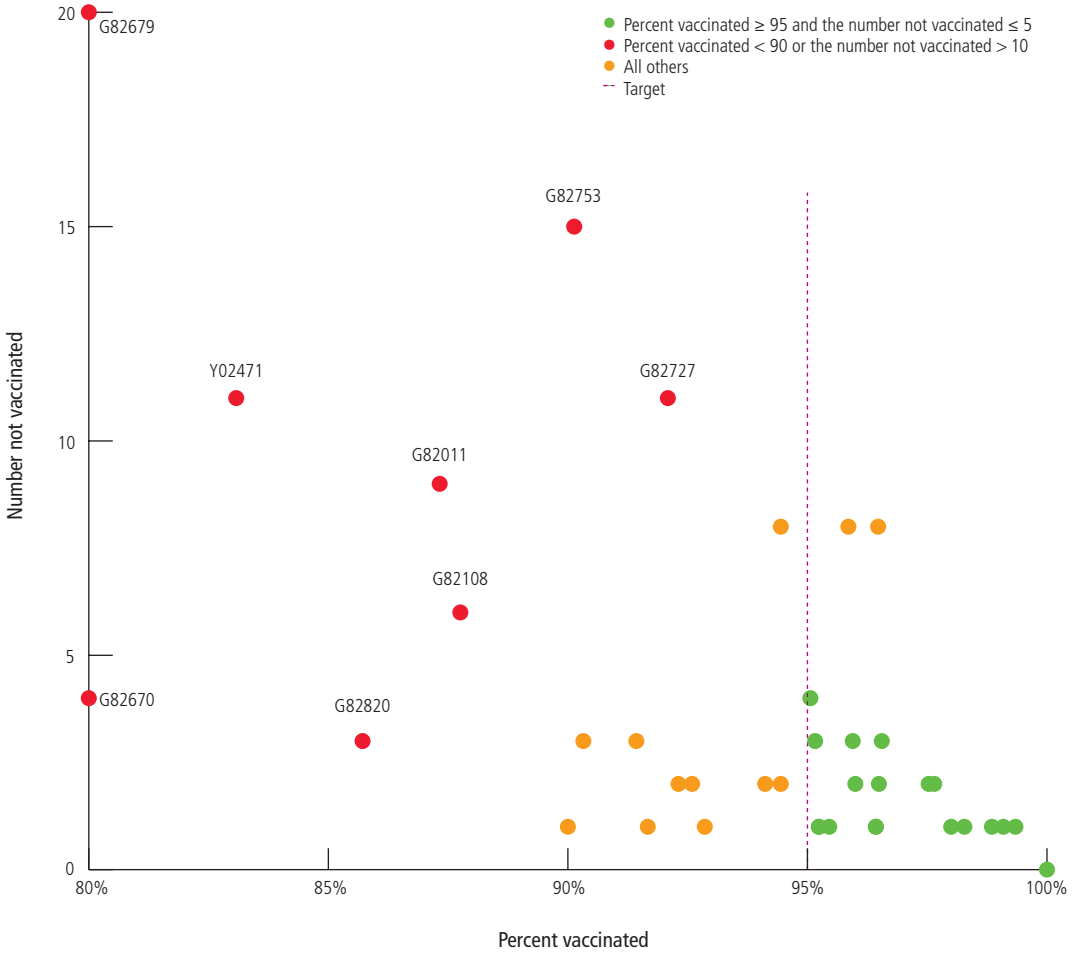
Figure 27: Percentage of children completing a primary course of DTaP/IPV/Hib vaccination by their second birthday, Medway practices, 2011/12



Source: Medway NHS Foundation Trust, Child Health Records Department

Figure 27 shows the percentage of children in Medway practices who had completed a primary course of vaccination against diptheria, tetanus, pertussis, polio and Haemophilus influenzae type B (three doses) by their second birthday. Medway coverage was 97.9 percent (2010/11: 98.1 percent) and practice coverage ranged from 86.2 percent to 100.0 percent.

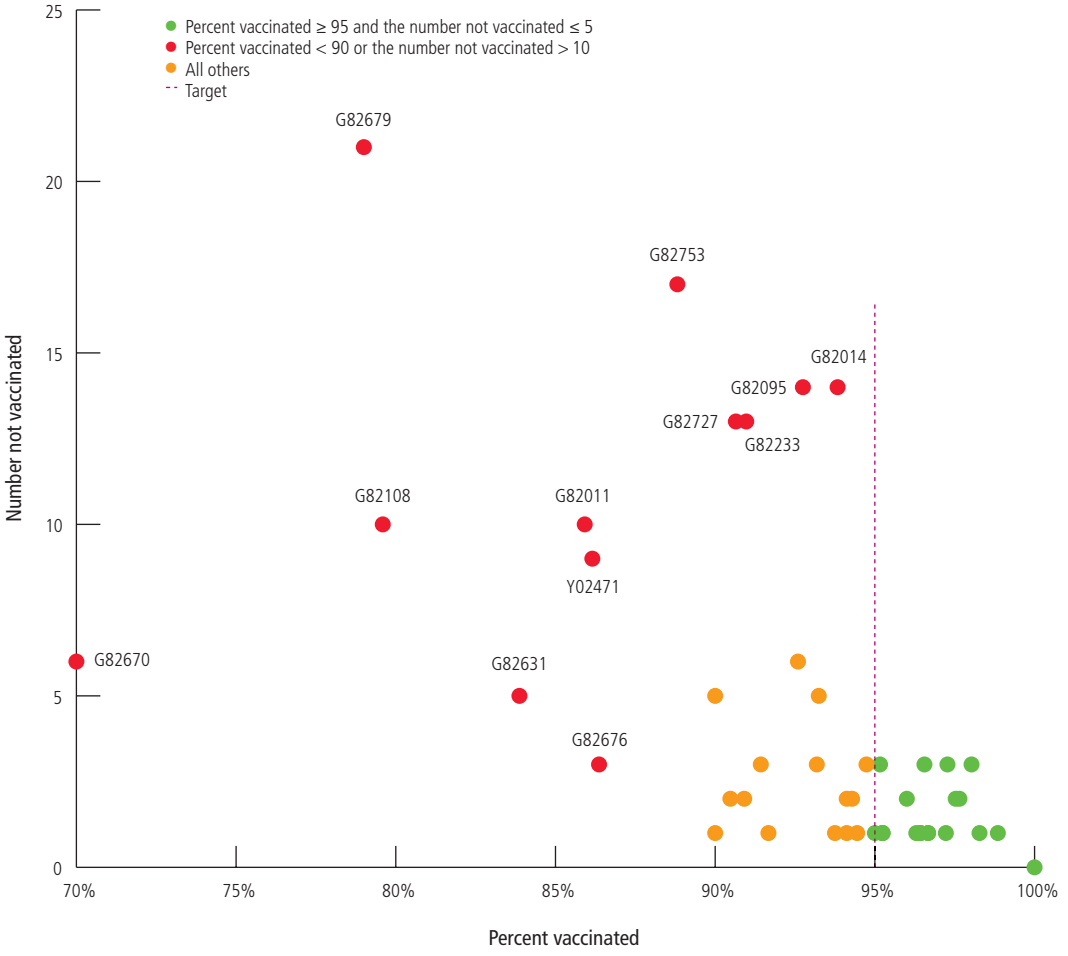
Figure 28: Percentage of children completing a booster course of Hib/MenC vaccination by their second birthday, Medway practices, 2011/12



Source: Medway NHS Foundation Trust, Child Health Records Department

Figure 28 shows the percentage of children in Medway practices who had completed a booster against Meningitis C and Haemophilus influenzae type B by their second birthday. Medway coverage was 94.9 percent (2010/11: 94.9 percent) and practice coverage ranged from 80.0 percent to 100.0 percent.

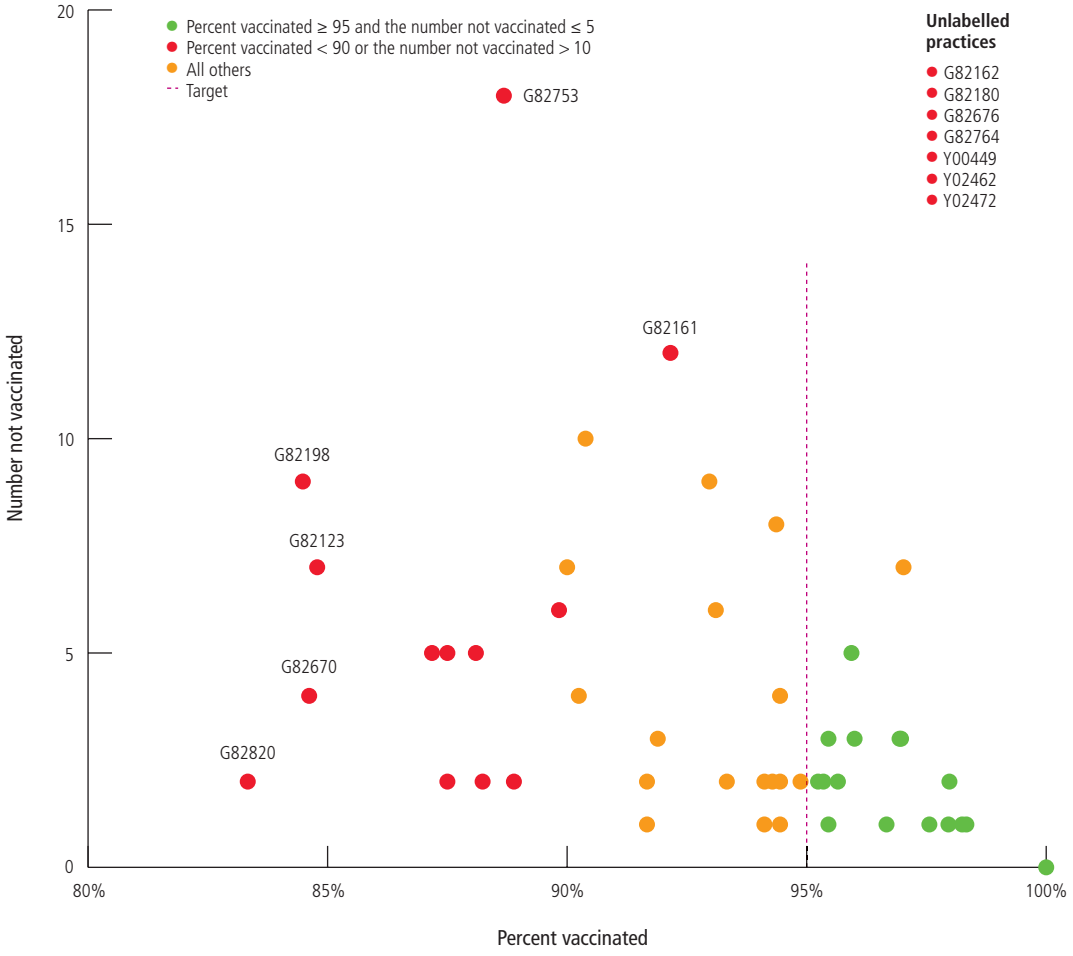
Figure 29: Percentage of children completing a booster course of PCV vaccination by their second birthday, Medway practices, 2011/12



Source: Medway NHS Foundation Trust, Child Health Records Department

Figure 29 shows the percentage of children in Medway practices who had completed a booster vaccination against pneumococcal disease by their second birthday. Medway coverage was 93.2 percent (2010/11: 93.0 percent) and practice coverage ranged from 70.0 percent to 100.0 percent.

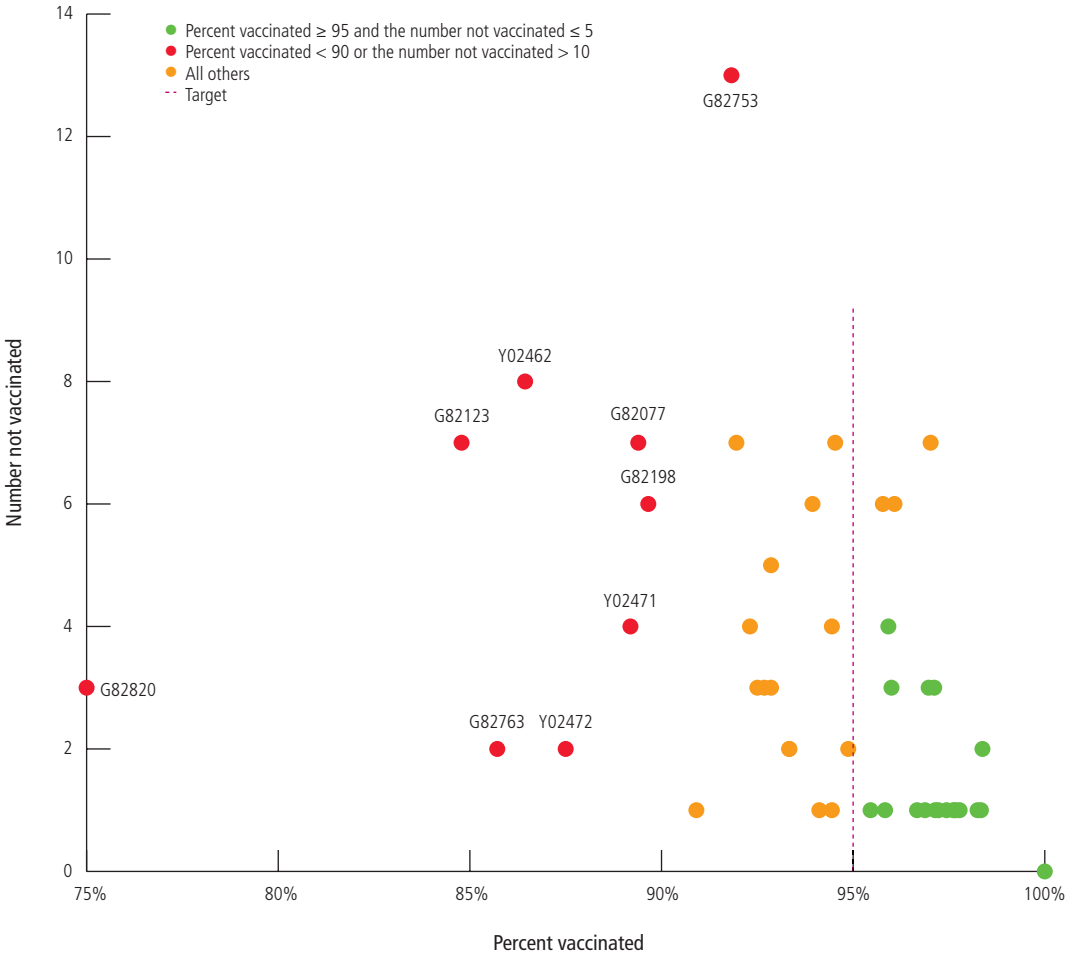
Figure 30: Percentage of children completing a primary course of MMR vaccination by their fifth birthday, Medway practices, 2011/12



Source: Medway NHS Foundation Trust, Child Health Records Department

Figure 30 shows the percentage of children in Medway practices who had received one vaccination against measles, mumps and rubella by their fifth birthday. Medway coverage was 93.4 percent (2010/11: 93.4 percent) and practice coverage ranged from 83.3 percent to 100.0 percent.

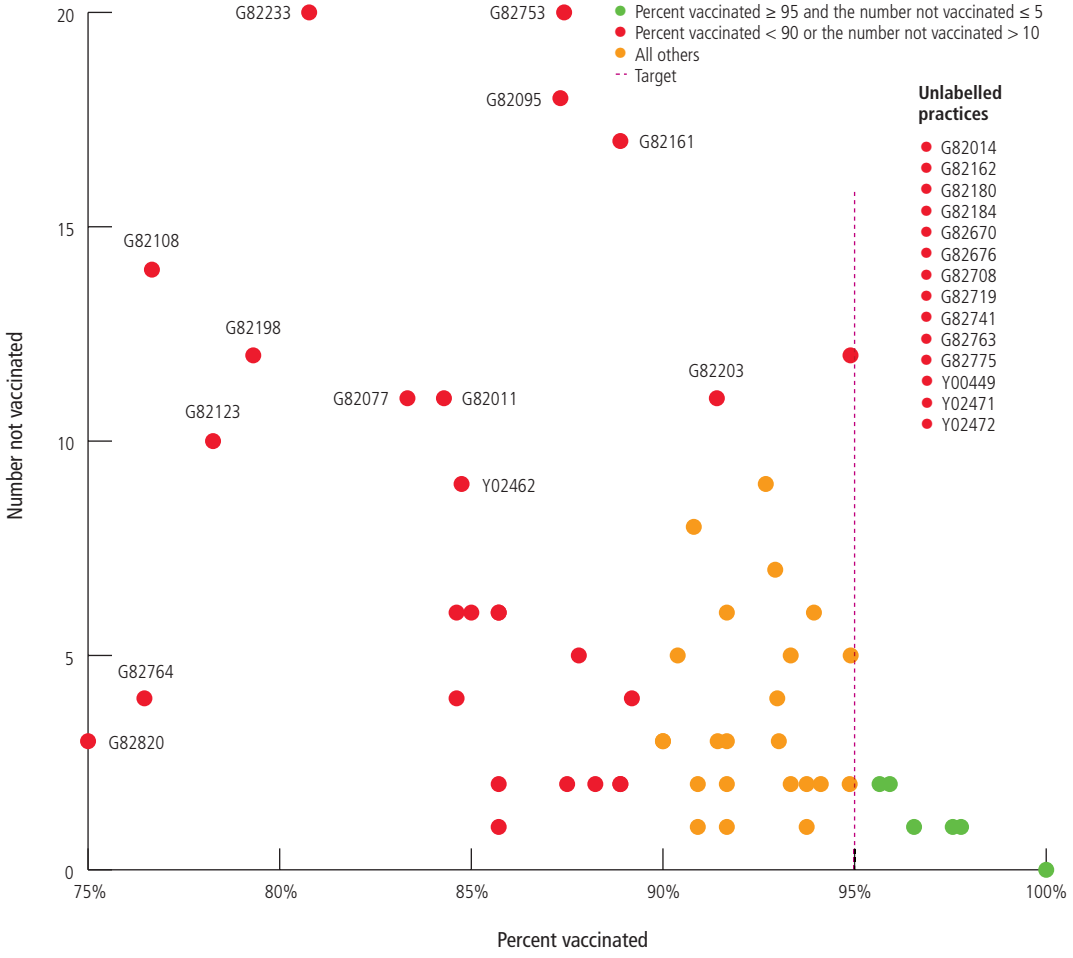
Figure 31: Percentage of children completing a booster course of DTaPP vaccination by their fifth birthday, Medway practices, 2011/12



Source: Medway NHS Foundation Trust, Child Health Records Department

Figure 31 shows the percentage of children in Medway practices who had completed a booster dose of vaccination against diptheria, tetanus, pertussis, and polio by their fifth birthday. Medway coverage was 94.0 percent (2010/11: 94.1 percent) and practice coverage ranged from 75.0 percent to 100.0 percent.

Figure 32: Percentage of children completing a booster course of MMR vaccination (two doses) by their fifth birthday, Medway practices, 2011/12



Source: Medway NHS Foundation Trust, Child Health Records Department

Figure 32 shows the percentage of children in Medway practices who had received two doses of MMR by their fifth birthday. Medway coverage was 88.9 percent (2010/11: 89.3 percent) and practice coverage ranged from 75.0 percent to 100.0 percent.

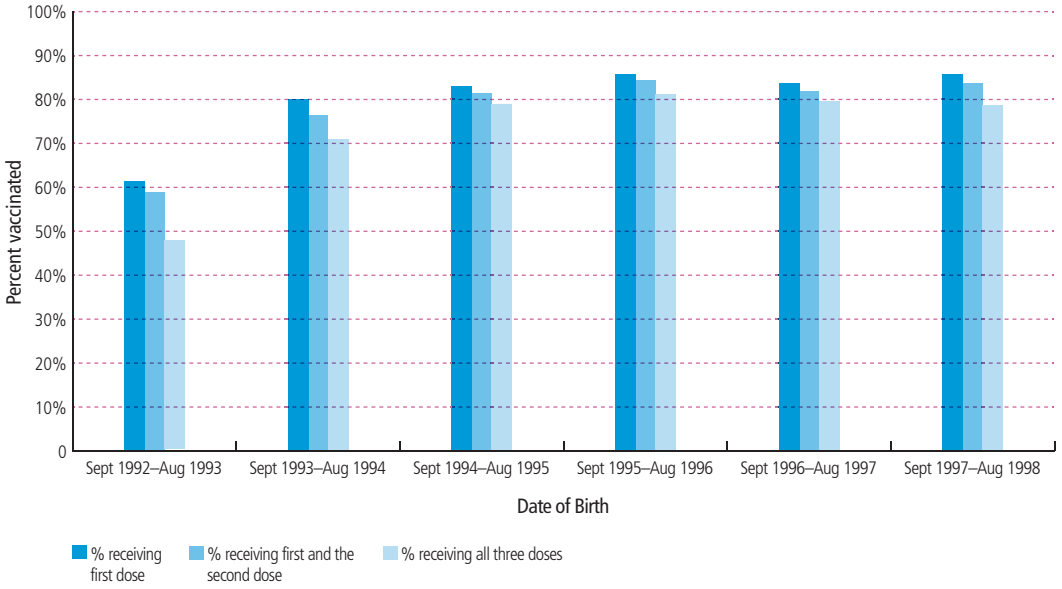
Human Papillomavirus

Human papillomavirus (HPV) is a virus which can infect the genital tract. It is primarily transmitted through sexual contact. Although many infections are short lived and cause no symptoms, some types are associated with anogenital cancers, including cervical cancer. HPV types 16 and 18 are the most likely to cause disease. In September 2008, vaccination against HPV was introduced into the childhood immunisation schedule for all girls aged 12 to 13. There was also a catch-up campaign for girls aged 14 to 18. The current vaccination schedule involves giving three doses of the HPV vaccine Cervarix, which protects against HPV types 16 and 18.[36] From September 2012, this will change to Gardasil, which protects against HPV types 6 and 11 (which cause the majority of cases of genital warts), as well as HPV types 16 and 18.[37]

As shown in Figure 33, the uptake in the cohort of girls born between September 1992 and August 1993 is lower because this cohort were older when the programme started and were offered vaccination in general practices rather than in school.

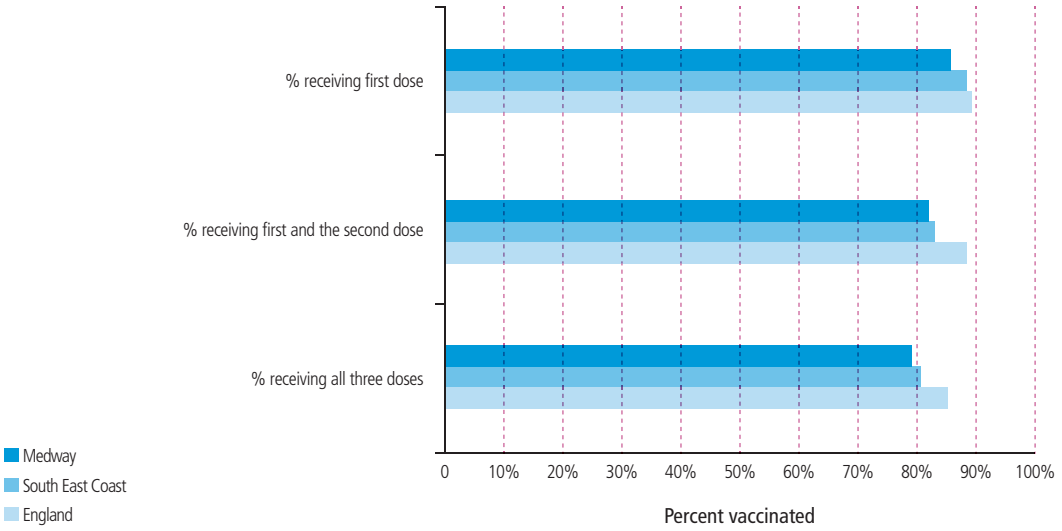
National and SEC SHA comparisons are shown in Figure 34. Despite an improvement compared to 2009/10, Medway's achievement is below both comparator areas.

Figure 33: Cumulative percentage of girls in Medway born from September 1992 to August 1998 who have received HPV vaccine, 2010/11 survey data



Source: Medway NHS Foundation Trust, Child Health Records Department

Figure 34: Percentage of Year 8 girls receiving HPV vaccination in 2010/11



Source: Department of Health (DH), Annual HPV vaccine uptake

Table 7 shows a year-on-year increase in the percentage of Year 8 girls receiving HPV vaccination in the last three survey years.

Table 7: The percentage of girls in Year 8 receiving the first, second and third doses of HPV vaccine

Survey year	Cohort number*	Date of birth	Number of girls requiring vaccination	Percentage receiving the following doses by the end of year 8		
				1	1 and 2	all 3
2008/09	1	Sep 1995–Aug 1996	1,758	79.3%	78.7%	70.9%
2009/10	7	Sep 1996–Aug 1997	1,670	84.4%	80.8%	76.7%
2010/11	8	Sep 1997–Aug 1998	1,715	85.3%	82.9%	77.7%

*Cohorts one, seven and eight are shown as they are the Year 8 survey years. Cohorts two to six were the catch up cohorts of older girls which included those born from September 1990

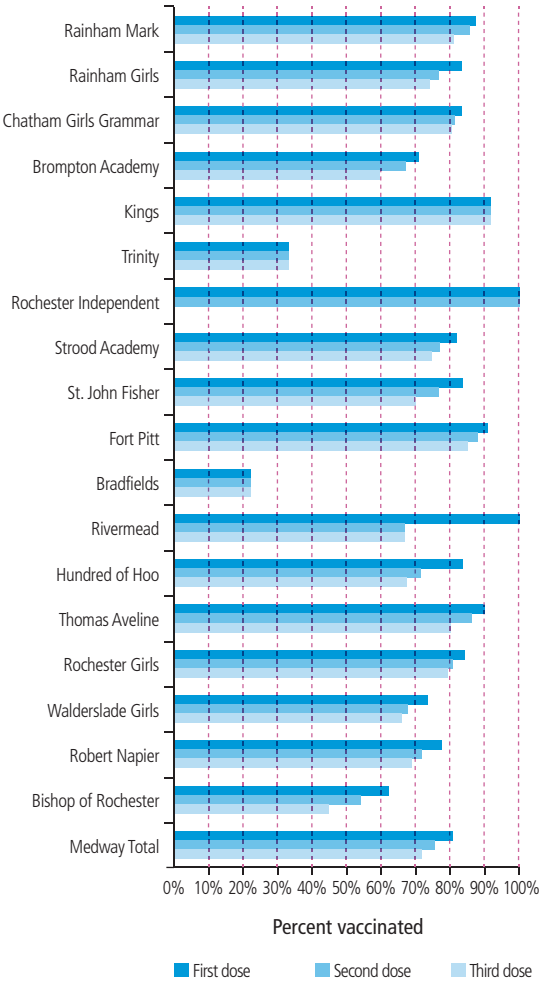
Source: DH, Annual HPV Vaccine Uptake.

HPV vaccination for Year 8 girls is carried out by school nurses working in secondary schools, although if girls miss a vaccination they are able to attend their GP to have this done. Therefore, the support of head teachers and schools is essential in ensuring high rates of HPV vaccination. There is currently considerable variation in vaccine uptake across Medway secondary schools as shown in Figure 35. Some schools had a very low number of girls eligible for the vaccine; (in several cases fewer than five) therefore, their uptake may have been disproportionately affected by a small number of girls not having the vaccine. The two schools with the lowest vaccine uptake, Trinity and Bradfields, had fewer than 10 girls eligible for the vaccine. Each year a letter from NHS Medway and Medway Council is sent to schools giving their uptake rates within the school programme and requesting ongoing support.

School leaving booster

In Medway the school leaving booster which protects against tetanus, diptheria and polio is offered routinely to young people in school in Year 10, which is the school year when they are or become 15 years of age. GP practices offer vaccination when this has been missed in school.

Figure 35: First, second and third HPV vaccine uptake in Year 8 students, by school, 2010/11



Source: Medway NHS Foundation Trust, Child Health Records Department

Selective childhood immunisation

The Bacillus Calmette – Guérin (BCG) vaccination

BCG vaccination against tuberculosis (TB) is offered at birth to all babies living in areas of the UK where the annual incidence of TB is 40 per 100,000 or greater (Medway does not fall within this category), or have a parent or grandparent who was born in a country where the annual incidence of TB is 40 per 100,000 or greater. It should also be offered to previously unvaccinated older children who were born, or have lived for at least three months, in a country where the annual incidence of TB is 40 per 100,000 or greater or who have a parent or grandparent who was born in such a country. Older children require tuberculin testing prior to vaccination.[38]

Table 8 shows the number of BCG vaccinations given per 1,000 population in Medway, SEC and England. There is a lower rate of BCG vaccination in Medway than the SEC SHA and England. This is likely to reflect differences in the proportion of the population eligible for vaccination, for example due to differences in the ethnic make-up of the population and the incidence of this disease.

Table 8: Number of BCG vaccinations given per 1,000 population, 2008/09 to 2010/11

Financial year	PCT/ SHA	All ages	Under 1 year	1 year and above
2008/09	Medway*	1.1	94.4	1.0
	South East Coast	3.0	154.5	1.1
	England	4.6	223.2	1.8
2009/10	Medway	2.2	96.9	0.9
	South East Coast	2.8	182.5	0.6
	England	4.3	174.1	1.3
2010/11	Medway	1.7	83.4	0.6
	South East Coast	1.5	104.7	0.3
	England	4.3	226.9	1.4

*Local data – required revision for accuracy since national publication.

Source: NHS Immunisation Statistics England,[39] Medway NHS Foundation Trust, Child Health Records Department

Hepatitis B vaccination

Hepatitis B is a viral infection which causes inflammation of the liver and may cause long-term liver damage.[40] The virus is found in the blood and body fluids of an infected person and may be spread through unprotected sex, sharing of needles to inject drugs and from a mother to her newborn baby. For this reason, hepatitis B vaccination at birth, one month, two months and one year of age is offered to babies born to mothers with hepatitis B infection.

Table 9 shows the number of antenatal screens for hepatitis B carried out by Medway NHS Foundation Trust from 2008 to 2011, and the numbers which were positive hepatitis B.

Table 10 shows hepatitis B vaccine coverage at 12 and 24 months in babies born to hepatitis B-infected mothers. This has improved considerably since 2010/11 and a Medway pathway which was agreed in 2012 should improve this further. Although only a small number of babies require vaccination against hepatitis B, this is an extremely important vaccination programme given the potential long-term consequences of hepatitis B infection.

Table 9: Antenatal screening for hepatitis B, carried out by Medway NHS Foundation Trust, 2008 to 2011

Year	Medway NHS Foundation Trust	
	Tests	Positive
2008	5,483	26
2009	5,263	11
2010	5,337	22
2011	5,711	16

Source: HPA and MFT

Table 10: Hepatitis B vaccine coverage among babies born to hepatitis B infected mothers resident in Medway, 2010/11 and 2011/12 at 12 months and 24 months

Year	Number requiring vaccination	% coverage at 12 months – 3 doses	Number requiring vaccination	% coverage at 24 months – 4 doses
2010/2011	16	81.3%	10	40.0%
2011/2012	21	85.7%	13	69.2%

Source: Medway NHS Foundation Trust, Child Health Records Department

Seasonal flu vaccination

Influenza is a viral infection of the respiratory tract. Symptoms include fever, dry cough, sore throat, headache, muscle pain and fatigue. Although healthy individuals usually recover within two to seven days, complications such as bronchitis or secondary bacterial pneumonia may occur. Those with underlying health problems, pregnant women and children under the age of six months, are at increased risk of serious illness as are those aged 65 and older. There are three types of influenza virus: A, B and C, with influenza A and B being responsible for most cases of clinical illness. Influenza A virus causes outbreaks most years, typically during the winter, and is the usual cause of epidemics.[41]

Seasonal influenza vaccine should be offered, ideally before the start of the influenza season, to the following patient groups:

- All those aged 65 or older
- Those aged under 65 (but over the age of 6 months) with the following clinical conditions which put them at increased risk from the effects of flu:
    - Chronic respiratory disease
    - Chronic heart disease
    - Chronic kidney disease
    - Chronic liver disease
    - Chronic neurological disease
    - Diabetes
    - Immunosuppression
- All pregnant women
- Patients living in long-stay residential or care facilities
- Carers

Pregnant women were added as an eligible group in 2010/2011 for the first time after the influenza A (H1N1) pandemic which showed them to be at increased risk of complications.

Uptake for seasonal flu vaccination is measured as those who have been vaccinated from when the vaccine becomes available in September each year until the end of January the following year. In 2011/12 uptake in NHS Medway was:

- 75.2 percent of those aged 65 and older (73.3 percent in 2010/11)
- 52.9 percent in those aged under 65 years within a clinical risk group (51.8 percent in 2010/11)
- 33.3 percent in all pregnant women (38.3 percent in 2010/11). There were some data problems with the denominator for pregnant women nationally in 2011/12 so this figure needs to be treated with caution.

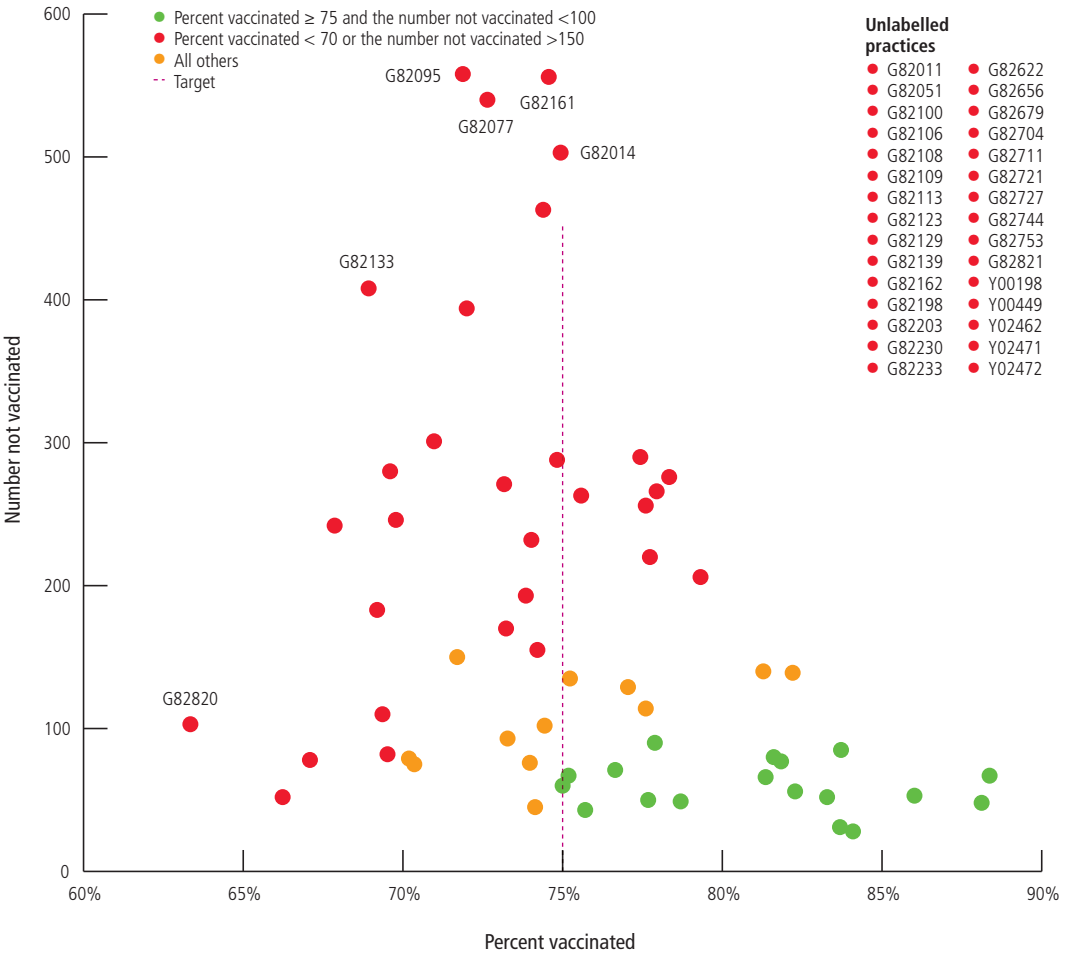
These figures compare favourably with national and SHA level uptake data (Table 11).

Table 11: Uptake for seasonal flu vaccination in Medway patients compared with SEC SHA and England, 2011/12

	≥ 65 years	< 65 years in at risk group	All pregnant women
NHS Medway	75.2%	52.9%	33.3%
South East Coast SHA	72.1%	48.3%	24.9%
England	74.0%	51.6%	27.4%

Source: DH ImmForm website: Registered Patient GP practice data.
Influenza Immunisation Vaccine Uptake Monitoring Programme. DH and HPA.

Figure 36: Seasonal flu vaccine uptake by patients aged 65 and over in Medway practices, 2011/12

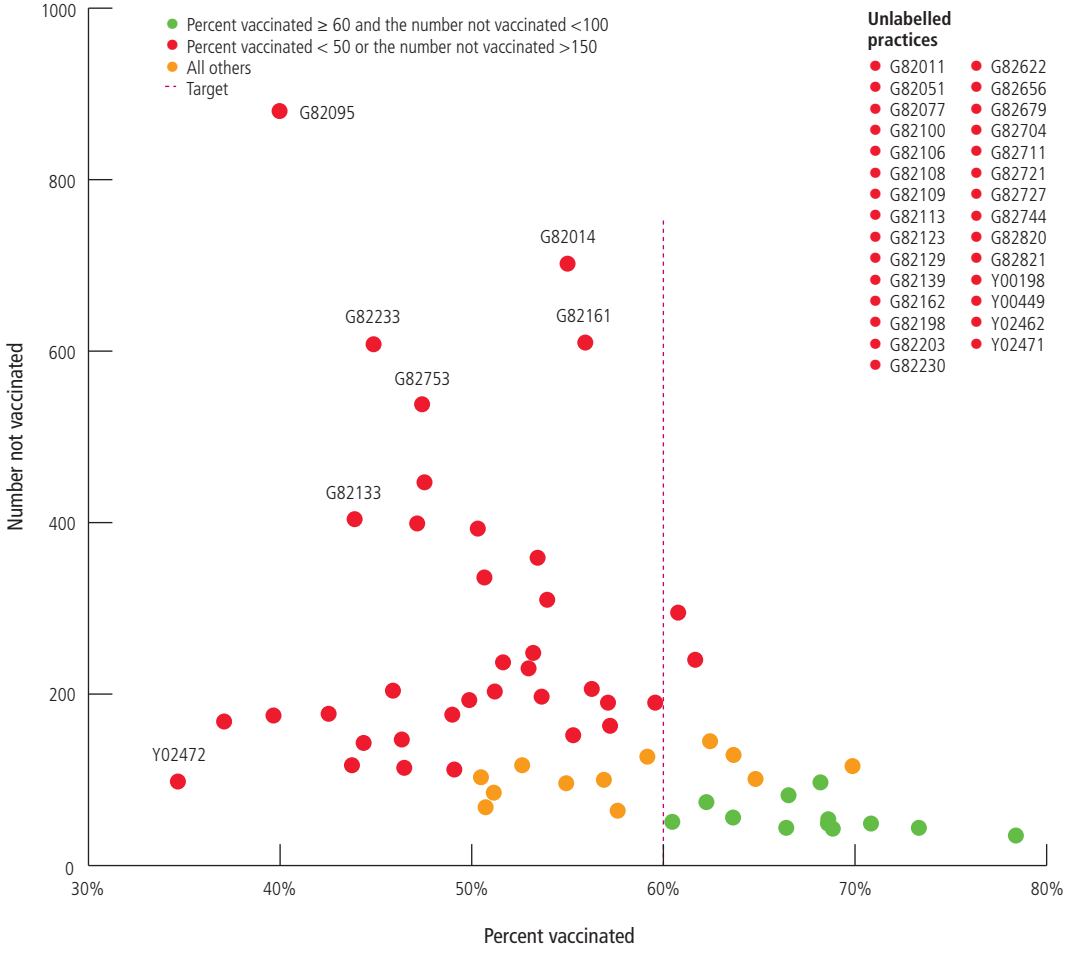


Source: DH ImmForm website: Registered Patient GP practice data

There was however a considerable variation between GP practices in Medway in terms of flu vaccine uptake. The following graphs show how vaccine uptake varied across the practices in Medway.

The target for 2011/12 for patients aged 65 and over was 75 percent (shown as red vertical line). Uptake varied from 63.3 to 88.4 percent.

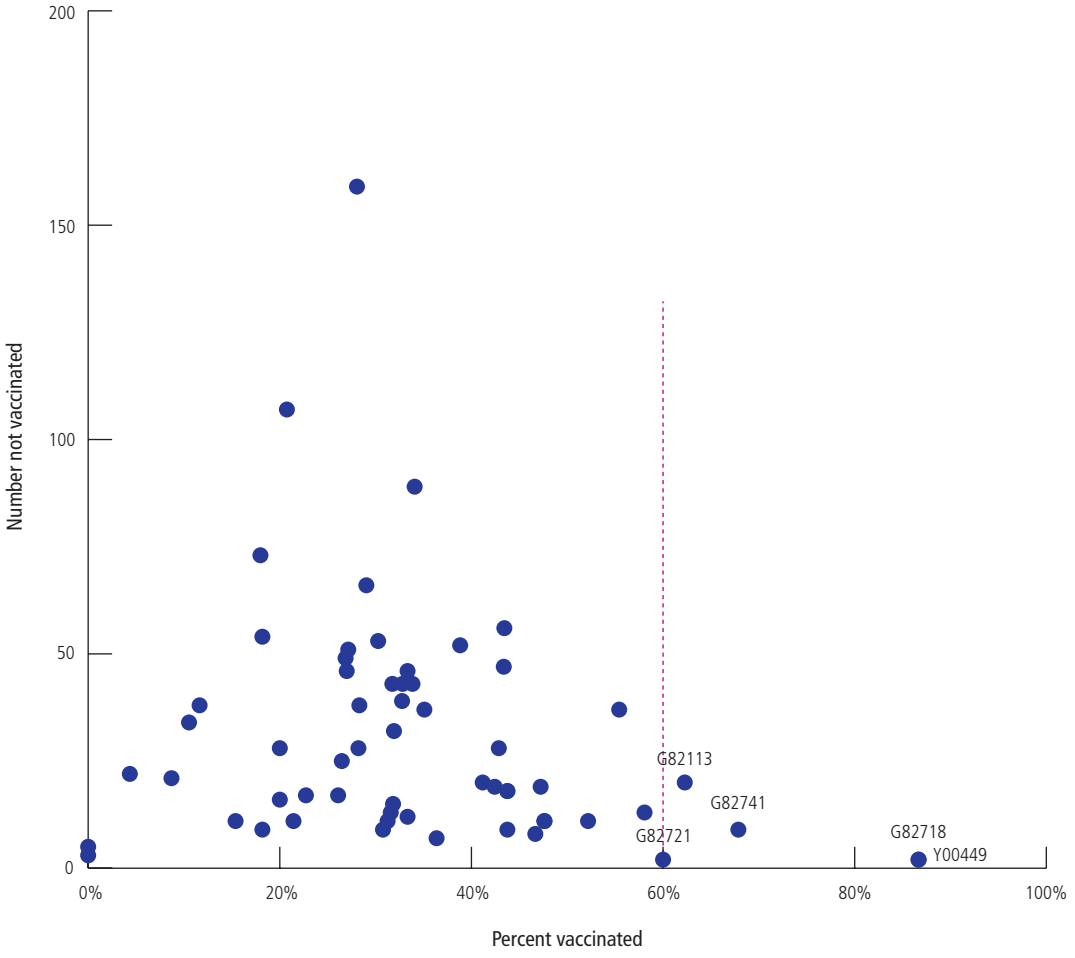
Figure 37: Seasonal flu vaccine uptake by patients under 65 and at risk in Medway practices, 2011/12



Source: DH ImmForm website: Registered Patient GP practice data

The target for 2011/12 for patients aged under 65 and in a clinical at risk group was 60 percent (shown as red vertical line). In these patients, uptake in Medway practices ranged from 34.7 to 78.4 percent. Eighteen practices met the target, but the Medway average was 52.9 percent, 7.1 percentage points below the target.

Figure 38: Seasonal flu vaccine uptake by pregnant women in Medway practices, 2011/12



Source: DH ImmForm website: Registered Patient GP practice data

The target for 2011/12 for pregnant patients was 60 percent. However in December 2011, the Department of Health (DH) notified primary care trusts that flu vaccine uptake by pregnant women may have been underestimated due to denominator inflation.[b] The practices with zero percent uptake had five or less pregnant women within the denominator respectively, so in light of the DH guidance no conclusion can reliably be made from this information and the points in this figure are not red-amber-green (RAG) rated. The practices labelled in Figure 38 met the target.

In addition to these clinical risk groups, immunisation should also be offered to health and social care staff directly involved in patient care. The aim of this is to protect those vulnerable individuals, who may not respond optimally to their own vaccination, and to reduce disruption to services.[41]

[b] The reasons given for this were appreciable delays in the updating of GP practice records following birth or loss of pregnancy and variability in how GP IT system suppliers had implemented the denominator specification. DH advised that these data should therefore be interpreted with this in mind.

Table 12: Uptake of seasonal flu vaccination in healthcare staff in Medway, 2011/12 compared to 2010/11

Year	NHS Medway – GP practice staff only	Medway Community Healthcare	Medway Foundation NHS Trust	Kent and Medway NHS and Social Care Partnership Trust
2010/11	26.2%	20.8%	38.1%	15.8%
2011/12	40.0%	39.8%	44.3%	25.0%

Source: Local Medway data and DH ImmForm website: Registered Patient GP practice data

A staff seasonal flu programme occurs every year. Uptake improved in healthcare provider organisations in Medway in 2011/12 compared to 2010/11. No specific target has been set for healthcare staff uptake since 2009/10 when an uptake of 30 percent and above was viewed by DH as successful (England uptake was 26.4 percent in 2009/10).

Guidance since then has stated that the preceding year's uptake is still too low. In 2011/12 the national uptake was 45 percent (compared to 35 percent in 2010/11). Table 12 shows that all providers in Medway had uptake below 45 percent in 2011/12 so more work is needed to increase staff uptake to a level above this in 2012/13.

Pneumococcal disease vaccination

Pneumococcal disease is caused by the bacterium Streptococcus pneumoniae. There are more than 90 different types but most disease is caused by about eight to 10 of these. It can cause a range of different illnesses such as otitis media, sinusitis, pneumonia and meningitis. Levels of disease are highest in winter. Groups most likely to be affected by pneumococcal disease are the very young, the elderly and those with an impaired immune system, for example those without a spleen. There are two types of pneumococcal vaccine. The conjugate vaccine protects against 13 types of pneumococcus and is the vaccine used in the childhood immunisation programme. The polysaccharide vaccine protects against 23 types of pneumococcus. It is ineffective in those under two years of age, so is used for those over two years of age who are in an at risk group for pneumococcal disease.[42]

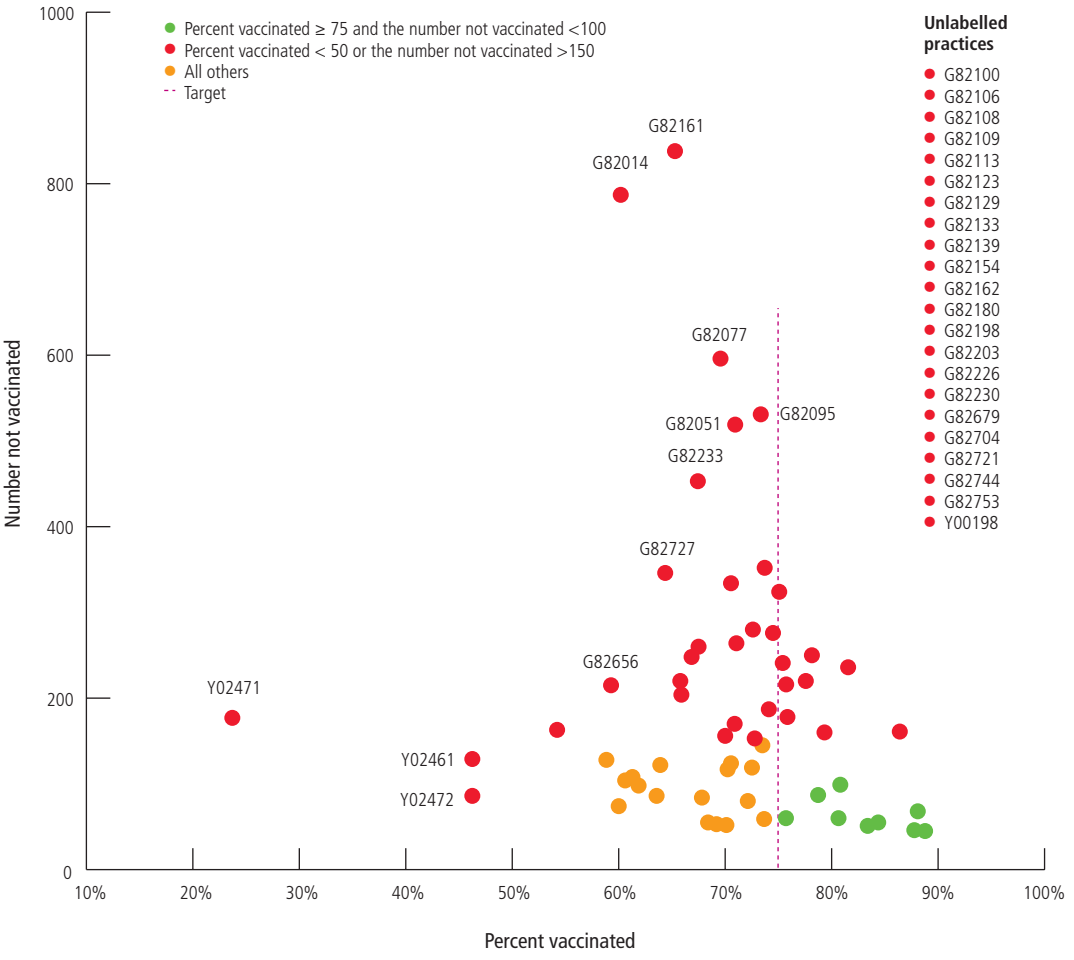
As well as being part of the childhood immunisation programme, pneumococcal vaccination is also recommended for adults aged 65 and over and for anyone aged two months and over who are in the following risk groups:

- Asplenia or dysfunction of the spleen
- Chronic respiratory disease
- Chronic heart disease
- Chronic kidney disease
- Chronic liver disease
- Diabetes
- Immunosuppression
- Individuals with cochlear implants
- Individuals with cerebrospinal fluid leaks[42]

The proportion of patients aged 65 and over who had received pneumococcal vaccination by 31 March 2012 is shown in Figure 39. As for the other vaccinations, there is considerable variation between practices. Each practice is responsible for offering eligible patients the vaccination and this is often combined with a seasonal flu vaccine invitation.

Amongst Medway practices, pneumococcal vaccine uptake in patients aged 65 and over varied from 23.7 percent to 88.8 percent.

Figure 39: Percentage of patients aged 65 and over in Medway practices who received pneumococcal vaccination by 31 March 2012

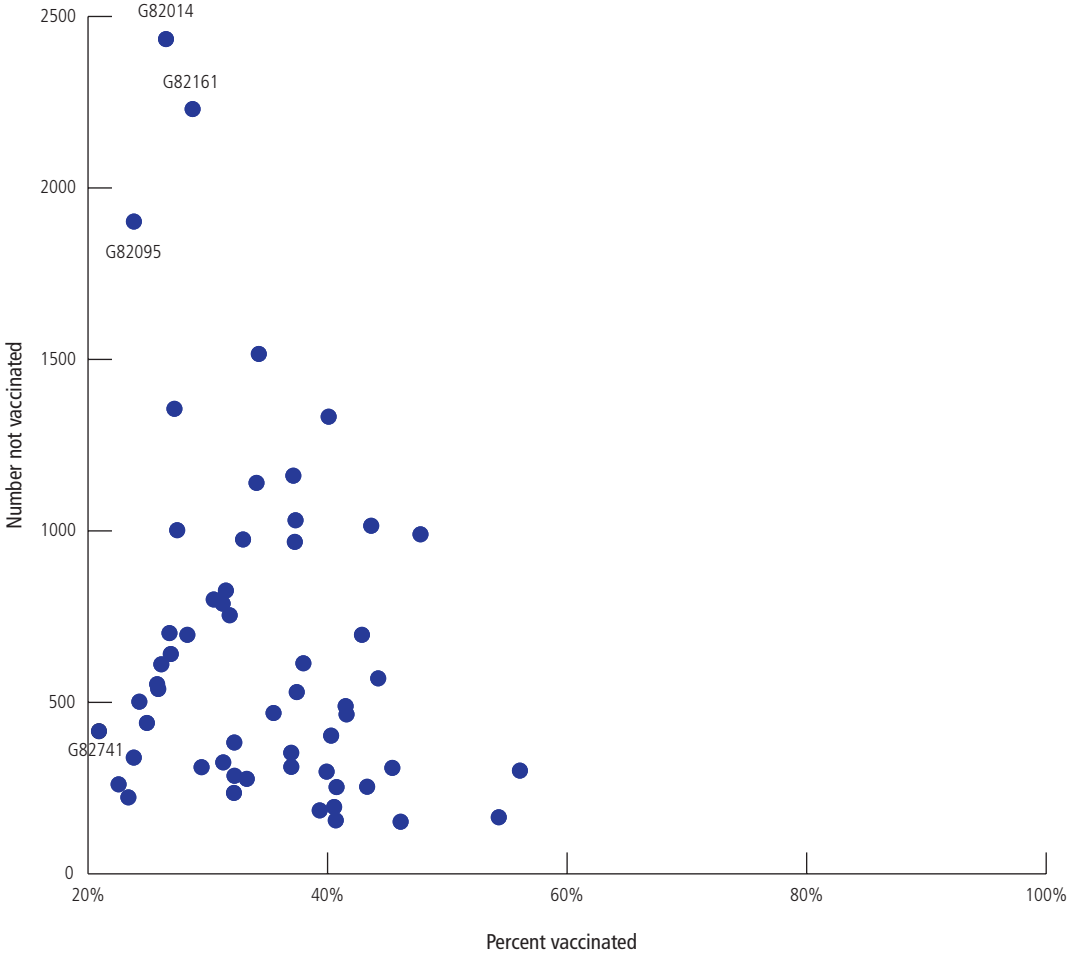


Source: DH ImmForm website: Registered Patient GP practice data

Data relating to pneumoccocal vaccine coverage of those in an 'at risk' group are only available through the Audit Plus system.[c] Out of 56,184 patients of all ages at risk, 19,051 had been vaccinated as at 31st March 2012 (33.9 percent). Patients at risk are contacted opportunistically by practices as they are made aware of health conditions which meet the criteria.

Figure 40 shows the variation across Medway practices for pneumococcal vaccine coverage in at risk patients which varied from 20.9 percent to 56.1 percent as at the end of March 2012. There is no formal target so practices have not been RAG rated, but best practice would be 100% coverage.

Figure 40: Percentage of patients at risk in Medway practices who received pneumococcal vaccination by 31 March 2012



Source: Audit Plus

[c] Audit Plus is a tool used to query GP practice systems by analysing Read Codes relating to procedures or illnesses. Five practices in Medway (G82095, Y02461, Y02462, Y02471 and Y02472) do not use a computer system which is compatible with Audit Plus, but data are available for the majority.

Recommendations for action

- The reason for the considerable variation between GP practices in vaccine uptake rates, with a number of practices having very poor levels of uptake for a range of vaccinations needs to be understood and addressed.
- Although better than the regional and England average, MMR vaccination rates in Medway are still lower than the WHO recommended levels for preventing a measles outbreak. As there have been outbreaks of measles in the UK and Europe in 2011, there is a need to increase MMR vaccination rates by better intelligence and targeted action.
- The Department of Health target for flu vaccination uptake in people under 65 years of age in at risk groups has increased from 60 percent to 70 percent for 2012/13, and the staff programme uptake needs to be above 45 percent. More work is needed to ensure that these targets are met.
- Health professionals seeing children and families should take the opportunity to review their vaccination status at each visit and encourage catch-up immunisations where these are needed.

3

Environment

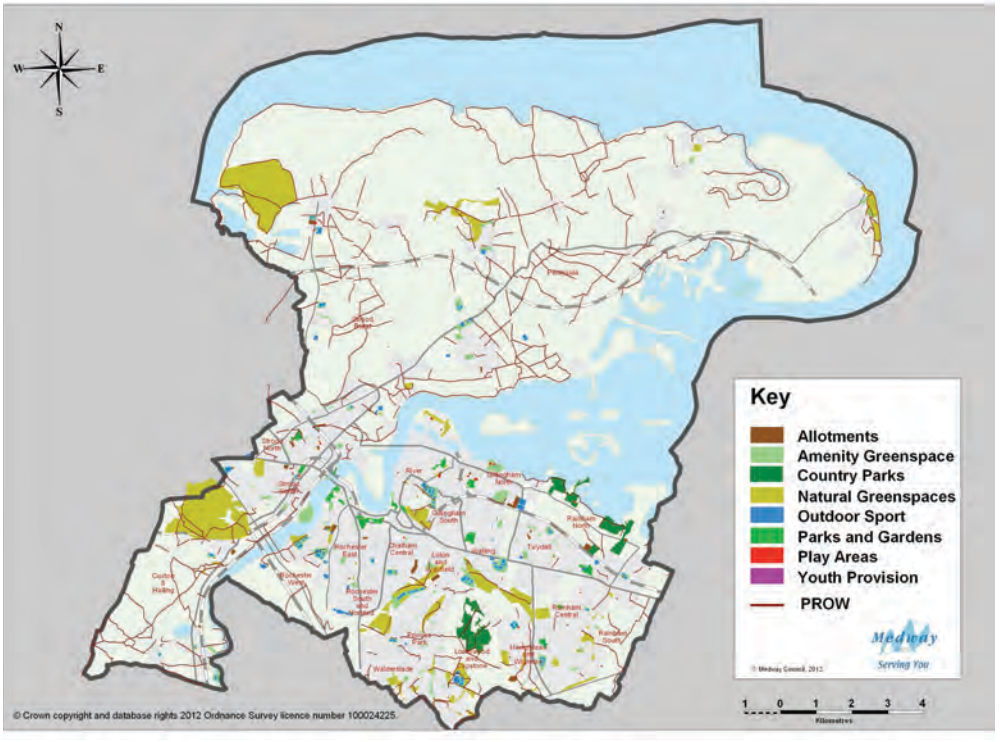
3 Environment

There are many factors related to the environment which can have positive effects on health and wellbeing, and others whose effects can be detrimental. By identifying and promoting those with beneficial effects and by minimising the risk of harm from those with potentially harmful effects, the health and wellbeing of the population of Medway can be protected.

Green Spaces

Access to green spaces is important for physical and mental health and wellbeing and evidence for this is increasingly well documented. Green spaces are associated with a reduction in both all-cause and circulatory disease mortality.[43] Prevalence rates for diseases such as diabetes, cancer, migraine/ severe headaches and depression are lower in living environments with more green space within a one kilometre radius. The survival of older people increases where there is more space for walking near their home.[44]

Figure 41: Green spaces in Medway by type.



Source: Medway Council. PROW = Public Right of Way

Having access to green spaces is also associated with increased levels of physical activity in all age groups. Access to green spaces can be beneficial in those with mental illness, for example it can reduce symptoms in children with Attention Deficit Hyperactivity Disorder (ADHD). As well as the positive effect access to green spaces has on the health of individuals, it is also beneficial at a community level, resulting in reduced levels of crime, improved air quality and reduced noise levels. Green spaces also have an important role to play in counteracting the effects of climate change, for example, by removal of greenhouse gases such as carbon dioxide from the air and helping to provide shade in hotter weather.[45]

All green spaces in Medway (Figure 41) are free to enter and most have free parking, with the option to pay to use some of the sports facilities. Accessible Natural Greenspace Standards (ANGst) are used to set objectives for access to green spaces for Medway residents with the aim of improving access to green spaces for all.

A new allotment site, with 150 plots, has been made available in Hempstead to provide opportunities for people currently waiting for a plot. Common reasons for not utilising the green spaces available are: lack of awareness, time and perceived absence of toilet facilities. The council is working to promote existing green spaces to local residents to communicate health benefits associated with using them and to combat any misconceptions people may have.

Air quality

Air pollution can have a negative impact on health. Estimates suggest that it reduces life expectancy within the UK by an average of six months. The main pollutants in the UK include particulate matter (PM), nitrogen oxides and ozone. Road transport is a key source of air pollution, which tends to be worse in more deprived areas. In terms of health effects, the most important air pollutant is PM. This consists of small particles which may be emitted from vehicle exhausts or chimneys, or they may form in the air as a result of reactions between other pollutants. Nitrogen dioxide at high concentrations can also exacerbate lung conditions such as asthma. Ozone is formed as a result of the reaction between sunlight and other pollutants and can also cause breathing difficulties.[46]

Indoor air pollution may occur as a result of pollutants which are generated inside buildings, for example from building materials and furniture, or from cooking, smoking, and use of chemical products within the home such as paints and cleaning products. Pollutants generated outside the building, such as traffic emissions, which enter through windows or other sources of ventilation, and radon which enters buildings from the ground, also contribute to indoor air pollution. Indoor air pollutants include nitrogen dioxide and carbon monoxide (from cooking and heating appliances), particulate matter, radon, environmental tobacco smoke, allergens (from moulds and house dust mite) and volatile organic compounds (from cleaning products, paints and printers).[47]

Air pollution may have an effect on children's lung function in the long term. One study that followed a cohort of children from age 10 to age 18 found that lung development is affected by levels of air pollution. This is of importance given that children experience a significant

increase in lung function during this period of life. They are also unlikely to recover from any adverse effects on lung development experienced during this period as, by age 18, lung development is generally complete in girls and only continues in boys at a much reduced rate until their early twenties.[48] Studies in younger children have also shown that air pollution affects lung development.[49, 50] The HPA estimates that up to 57 children per 1,000 aged under 16 in England and Wales may have reduced long-term lung function as a result of air pollution.[51] In 2010, there were 51,600 children aged under 16 living in Medway.[52] This could mean as many as 2,941 children living in Medway have reduced lung function as a result of air pollution.

Children, in particular those with asthma, will benefit from a reduction in levels of air pollution. It has been estimated that 30 percent of acute exacerbations of asthma may be related to environmental factors. In the UK, 36 children and 30 adults per 1,000 population may have asthma which is attributable to chemical pollution.[51] This means that as many as 1,858 children (aged under 16) and 6,156 adults (aged 16 and over), living in Medway could have asthma attributable to chemical pollution. Information from the 2011/12 Quality and Outcomes Framework indicates that there is a prevalence of 5.6 percent of people aged eight and over, registered with Medway GP practices who have been identified as having asthma, lower than the national prevalence. There is a prevalence of 1.7 percent of people registered with Medway practices who have been identified as having chronic obstructive pulmonary disease (COPD) which is similar to national prevalence.[53] Approximately 15 percent of patients with COPD will also have asthma.

As well as the association with respiratory disease, a relationship has also been shown between the number of particles in the air and admissions to hospital with cardiovascular disease. A report from the HPA suggests that a 10 µg/m^3 reduction in 24-hour average PM_{10} (particulate matter less than 10 µm in diameter) concentrations might be associated with a 0.8 percent reduction in all age, all cause cardiovascular hospital admissions.[51]

In 1992, the Kent and Medway Air Quality Partnership was set up to discuss air quality issues and provide a co-ordinated approach to tackling air quality problems, with representatives from Environmental Health, Environment Agency, Primary Care Trusts, Planning and Transport from Kent County Council, Medway Council and district councils. The major cause of air pollution in Kent and Medway is road traffic along the motorways and A roads as well as town centres. Pollutants from London, the rest of South-East England and Northern Europe can affect air quality in the county depending on weather systems.[54]

The three main air quality monitoring sites in Medway are:

- The sensor at Rochester Stoke Rural situated at Stoke Community Primary School measures nitrogen dioxide, $PM_{2.5}$, PM_{10}, ozone and sulphur dioxide.
- Chatham Roadside situated at Chatham Grammar School for Girls measures nitrogen dioxide, $PM_{2.5}$ and PM_{10}
- Chatham Luton Background situated at Luton Primary School measures nitrogen dioxide, PM_{10}, carbon monoxide, ozone and sulphur dioxide.

There are also non-automatic monitoring sites consisting of nitrogen dioxide diffusion tubes scattered among the Medway towns, a high density of which follow the line of the A2 between Chatham and Rochester.

Table 13 shows the number of times in each year the level of a particular gas has exceeded the target limit, for the three continuous measurement sites.

The carbon monoxide sensor at Chatham Luton Background has been the only one of its type in the county since January 2010. The readings from this meet the UK Air Quality Objectives,[55] as it has not yet exceeded a running eight-hour mean greater than 10 mg/m^3.

Sulphur dioxide has barely registered on any sensors in Medway throughout the year and is, therefore, far from a level of concern.

Table 13: Pollutant level for each gas by sensor site, 2005 to 2011

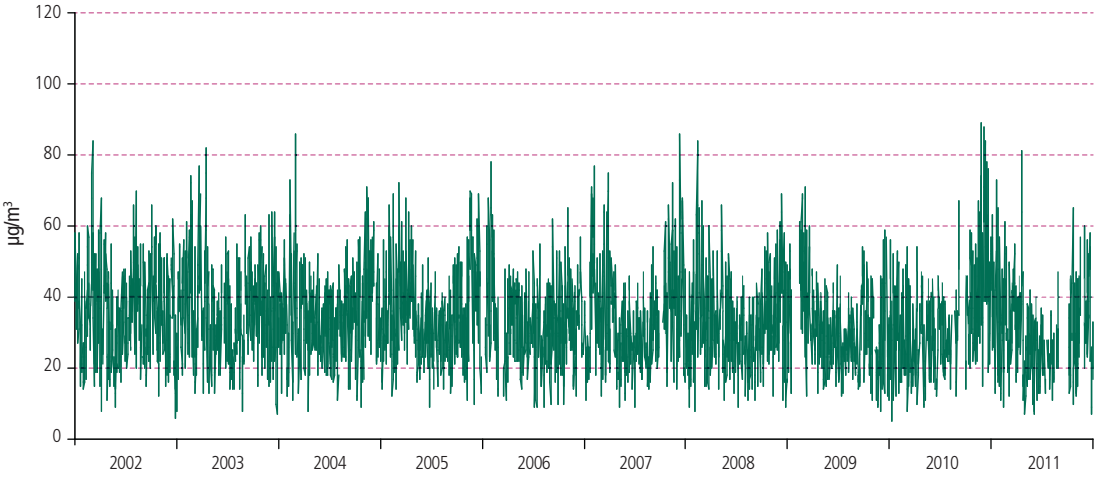
Pollutant	Ozone		Sulphur dioxide		PM_{10}	Carbon monoxide
Level	100 $\mu g/m^3$		125 $\mu g/m^3$		50 $\mu g/m^3$	10 mg/m^3
Target	Level not to be exceeded more than 10 times a year (8 hour mean)		Level not to be exceeded more than 3 times a year (24 hour mean)		Level not to be exceeded more than 35 times a year (24 hour mean)	Maximum running 8 hour mean in a day
Number of times level exceeded in each calendar year						
Location	Chatham Luton Background	Rochester Stoke	Chatham Luton Background	Rochester Stoke	Chatham Luton Background	Chatham Luton Background
2005	25	13	0	0	0	0
2006	27	30	0	0	2	0
2007	21	16	0	0	3	0
2008	28	13	0	0	1	0
2009	n/a	2	0	0	0	0
2010	21	5	0	0	0	0
2011	19	12	0	0	0	0

Source: Kent Air and Defra

Ozone levels have consistently exceeded the target limit since 2005. The nature of ozone and the way in which it is created, by reactions between pollutants and sunlight taking place over several days, mean that ozone can be carried far away from the source or gather in high concentrations. In urban areas, ozone reacts with nitric oxide from traffic pollution to create nitrogen dioxide. Due to the need for sunlight for the ozone reaction, higher levels tend to be found in the summer months.[56] Medway is one of few local authorities to measure ozone in Kent and Medway, but results are similar across the country. Ozone levels are dependent on weather conditions so it is difficult for local authorities to influence levels. Ozone also has an inverse relationship with nitrogen dioxide—whilst one rises, the other falls.

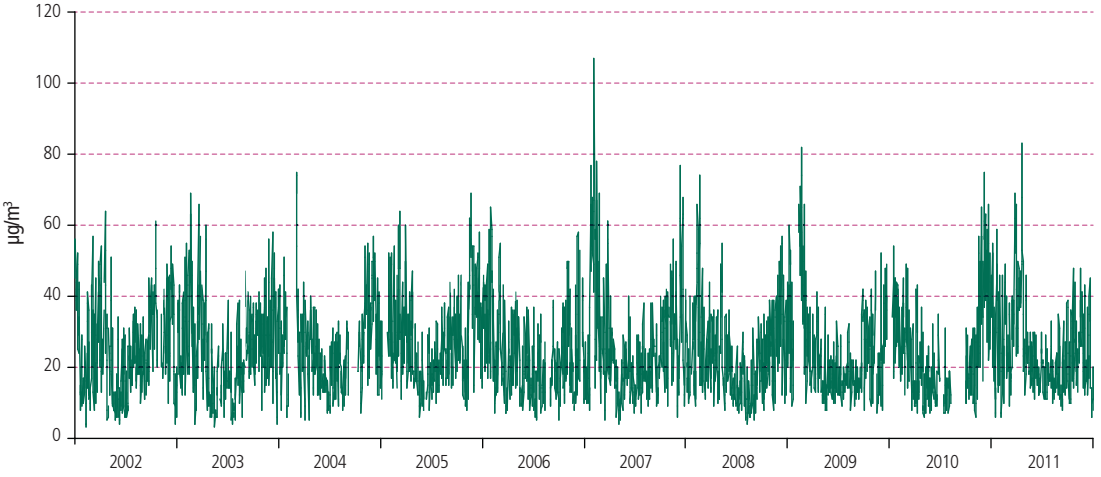
Figures 42 to 44 show the level of nitrogen dioxide at each of the measurement sites for the last nine years. They show the same trend across each of the sites, varying by season with a peak in midwinter due to the colder temperature. Missing data points on the graph indicate either a zero reading or where there was a sensor malfunction resulting in insufficient data (<75%). The national air quality objective for nitrogen dioxide is for 200 µg/m^3 not to be exceeded more than 18 times a year for a one hour mean. This is not measured in the same way locally so a comparison is not possible.

Figure 42: Chatham Roadside sensor nitrogen dioxide readings, 2002 to 2011



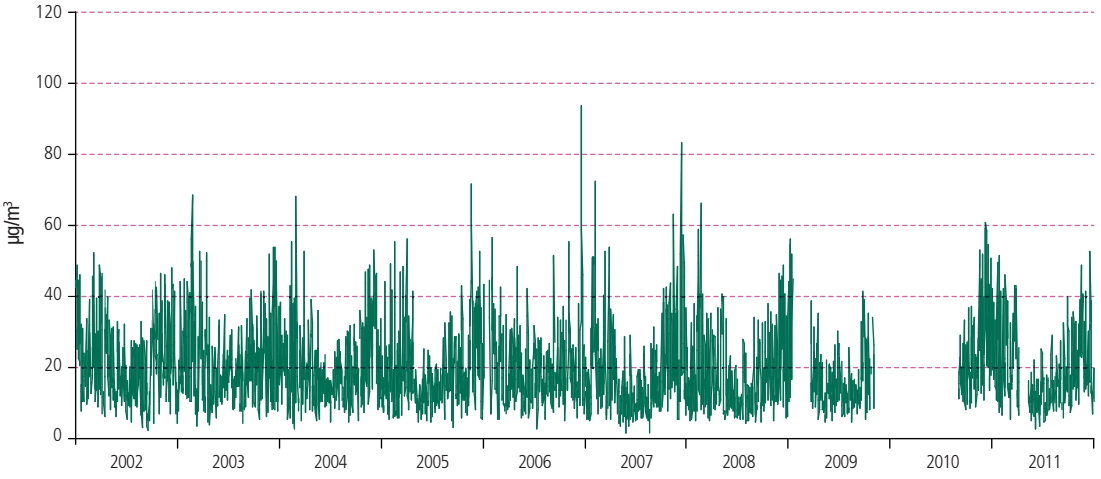
Source: KentAir

Figure 43: Chatham Luton background sensor nitrogen dioxide readings 2002 to 2011



Source: KentAir

Figure 44: Rochester Stoke sensor nitrogen dioxide readings 2002 to 2011

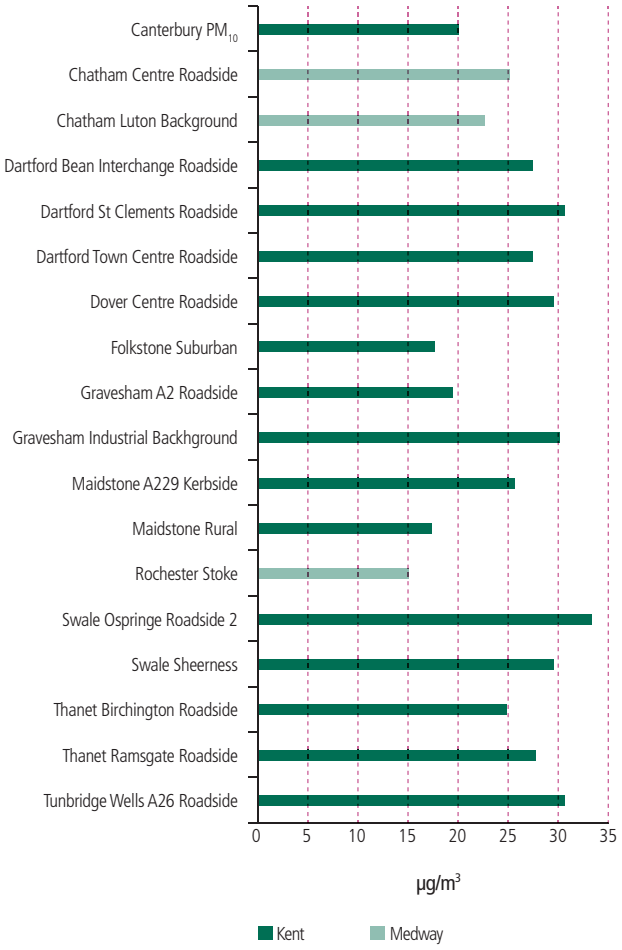


Source: KentAir

Figure 45 shows the PM_{10} 12-month mean (from September 2010 to August 2011). No sites across Kent and Medway had exceeded the 40 µg/m^3 threshold as at August 2011. Rochester Stoke recorded the lowest of all the Kent sites, at 15 µg/m^3. Both sites in Chatham recorded more than 20, which is mid-range when compared with the other sensors across Kent and Medway.

A detailed assessment of air quality in 2009 in Medway highlighted new areas where nitrogen dioxide was above the annual mean target. There are now three air quality management areas—one large area in central Medway and two smaller areas (Pier Road, Gillingham and High Street, Rainham).[57] Medway Council has an Air Quality Action Plan which forms part of the Local Transport Plan. Achievements during 2010 include an increase in the number of school and business travel plans and "walking buses".[58]

Figure 45: 12-month mean readings of PM_{10} across Kent and Medway sensor sites, September 2010 to August 2011

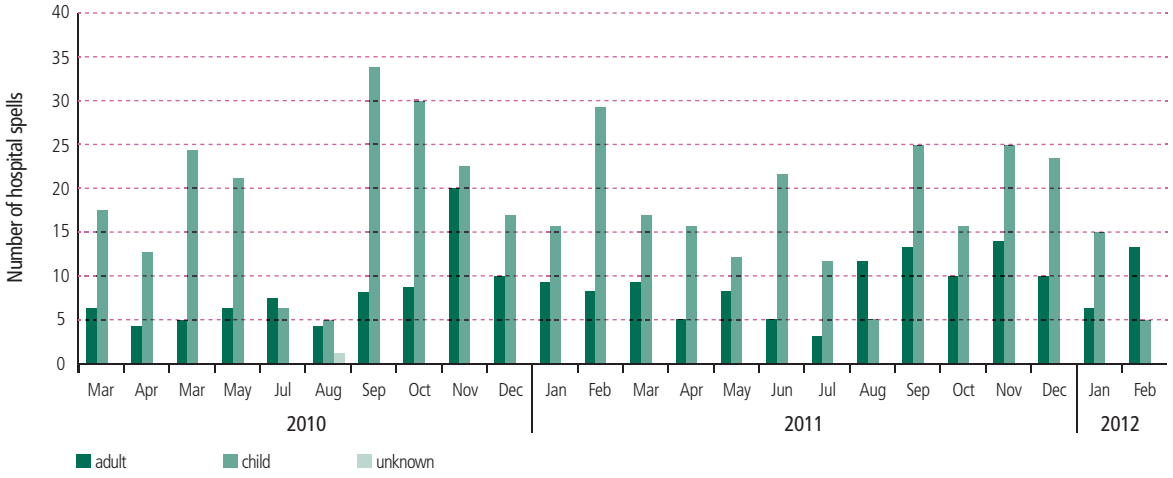


Source: KentAir

The data on non-elective inpatient hospital spells for asthma and chronic obstructive pulmonary disease (COPD) are shown in Figures 46 to 47. For asthma, the highest number of hospital spells for children occurred in September 2010, October 2010 and February 2011. For adults, this occurred in November 2010. However, particularly for children, there is considerable fluctuation in the number of spells occurring each month. During some of these months the average monthly nitrogen dioxide air content was also high, however, considerable variation between the sites makes it difficult to see a clear association between nitrogen dioxide air content and hospital spells for asthma. The picture is similar for COPD admissions.

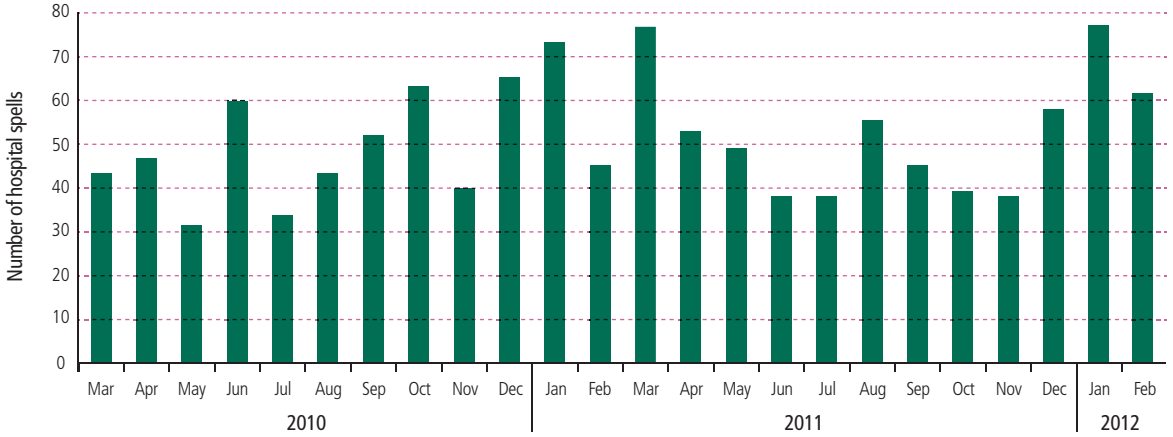
Although air pollutants have been shown to be associated with respiratory disease, this is not immediately apparent from Medway data. However, air pollution is only one factor which can affect admissions with respiratory disease. It is, therefore, likely that more detailed statistical modelling and a larger amount of data for analysis is needed to clearly demonstrate this. It should not be assumed from the data presented that air pollution does not have an impact on patients with respiratory disease in Medway.

Figure 46: Number of non-elective asthma hospital spells for Medway registered patients, March 2010 to February 2012



Source: Dr Foster Intelligence

Figure 47: Number of non-elective COPD hospital spells for Medway registered patients, March 2010 to February 2012



Source: Dr Foster Intelligence

Tobacco

Tobacco use remains an important public health problem. Currently, 21 percent of adults in England are smokers.[59] Smoking is the main cause of preventable illness and premature death in England. In 2009 it was responsible for 18 percent of all deaths in those aged 35 and over. There are more premature deaths from smoking than the next six most common causes of preventable deaths combined (drug use, road accidents, other accidents and falls, preventable diabetes, suicide and alcohol abuse).[59]

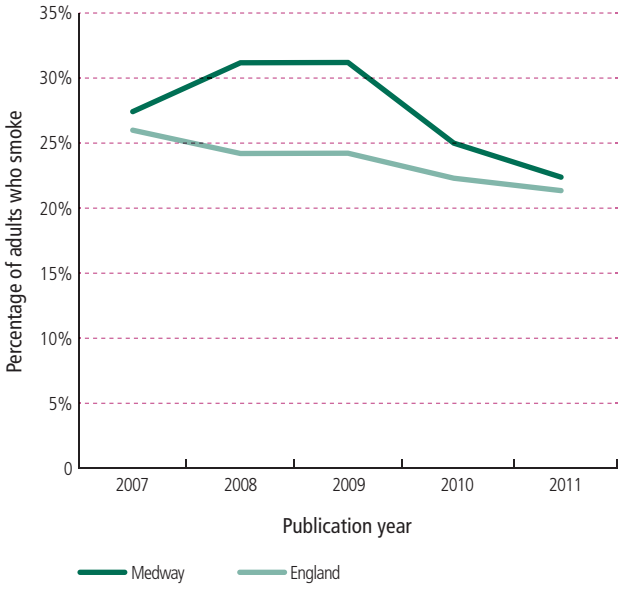
Smoking causes a range of different illnesses. The percentage of deaths attributable to smoking varies by category of illness. In England, in 2009, 35 percent of respiratory deaths, 29 percent of deaths from cancer, 14 percent of deaths from circulatory disease and 6 percent of deaths from digestive system diseases, were attributable to smoking. The treatment of smoking-related illnesses also results in considerable cost to the NHS, with 5 percent of all hospital admissions in those aged 35 and over being attributable to smoking.[59]

Smoking is also the biggest cause of the inequalities in death rates seen between the richest and poorest areas. Smoking rates are highest in the lowest earners.

Estimating the prevalence of smoking in the population is complex, and modelled estimates have been produced by the Association of Public Health Observatories. Figure 48 shows how the estimated prevalence of smoking in Medway has changed over time. While there has been an estimated decrease in Medway, it remains slightly higher than the England average.

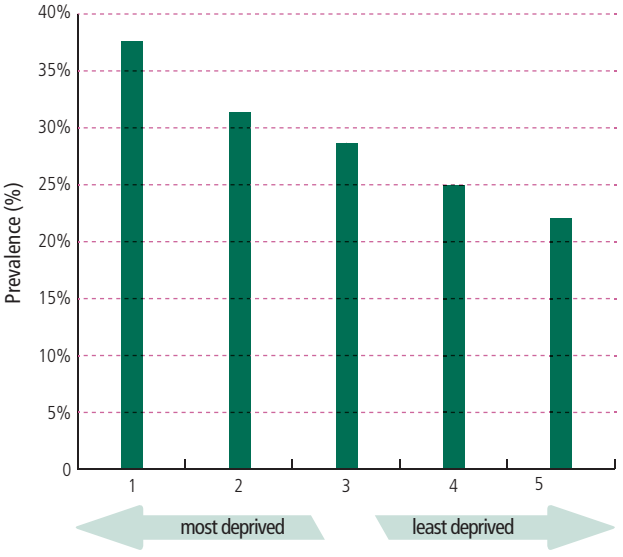
Figure 49 shows the estimated prevalence of smoking in Medway by deprivation quintile calculated from a synthetic (modelled) estimate.

Figure 48: Modelled estimates for the prevalence of smoking in Medway as published in 2007 to 2011



Source: Association of Public Health Observatories, Health Profile: Medway. Published 2007-2011

Figure 49: Prevalence of smoking in Medway by deprivation quintile, 2010



Source: ONS synthetic estimates, Index of multiple deprivation. Kent and Medway Public Health Observatory

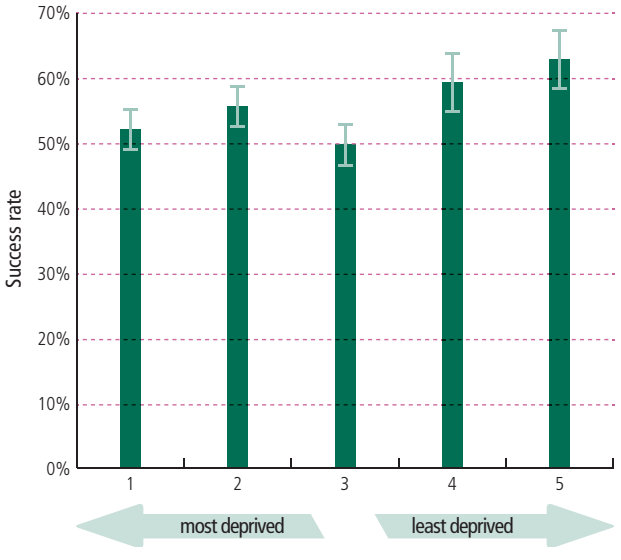
Nationally those from more affluent groups are not only less likely to smoke in the first place but, among those who do smoke, they are more likely to successfully quit smoking than those from less affluent groups.[59] A health equity audit[60] on data from the Medway Stop Smoking Service in 2011 showed a similar picture in Medway in that people living in the least deprived quintile areas of Medway had the highest success rate (62 percent; Figure 50). Those aged over 60 had the highest percent of quitters in each deprivation quintile, but in quintile 5, those aged 26 to 40 also contribute a high percent of quitters, only 0.6 percentage points below the 60 and over band.

Tobacco is not only harmful to those who smoke it, but also to those around them. Smoking during pregnancy can cause a range of health problems for both mother and baby, such as increased risk of miscarriage, complications in labour, premature birth, still birth, low birth weight and sudden unexplained death in infancy. The risk of infant mortality (death in the first year of life) is increased by 40 percent in children of smokers. Exposure to second-hand smoke as a child is associated with an increased risk of serious respiratory infections such as pneumonia, asthma and ear, nose and throat problems. Second-hand smoke is not only a risk to the health of children; in England more than 12,000 deaths a year in those aged 20 and over are attributable to second hand smoke.[59]

In 2011/12, the prevalence of smoking in pregnancy (measured at the time of delivery/giving birth) in Medway was 17.7 percent, in comparison to 13.2 percent for England.[61] Nationally, the target is to reduce smoking in pregnancy to 11 percent or less by the end of 2015.[59]

Figure 51 shows that, whilst the prevalence of pregnant women smoking at time of delivery decreased by 1.2 percentage points in Medway between 2006/07 and 2011/12, there has been a decrease of 1.9 percentage points during the same time period in England.

Figure 50: Percentage of those setting a quit date who successfully quit smoking for four weeks, by local deprivation quintile, 2011



Source: Medway Stop Smoking Service

Figure 51: Percentage of women smoking at time of delivery who are registered with a GP in Medway, compared to England, 2006/07 to 2011/12

Source: DH, Statistical Release – Smoking at delivery.

It is known that some women quit smoking spontaneously during their pregnancy and some are assisted to do this by the Medway Stop Smoking Service (97 pregnant women were treated by this service in 2010/2011 with a 62 percent success rate).[62] However this may not be fully reflected in the data. There is concern that some midwives have not routinely been asking women their smoking status at delivery and recording this, but simply transferring antenatal smoking status information usually obtained at the booking appointment.

This is being addressed and routine carbon monoxide (CO) monitoring at booking is to be gradually introduced as National Institute of Clinical Excellence (NICE) guidance PH26[63] recommends. Routine CO monitoring before asking a women if she smokes enables identification of women who are exposed to second-hand smoke as well as smokers. A study of 1,000 women in Medway identified that this is acceptable to women and also identified one woman who had been exposed to a faulty gas appliance.[62]

Smoking is often taken up in childhood and adolescence, with the majority of smokers starting before the age of 18. Children who live with a parent who smokes are much more likely to take up smoking themselves than those whose parents are non-smokers[63] as well as being exposed to the dangers of second-hand smoke. Research has shown that when children see adults smoking it normalises smoking.[64] Local research revealed the extent of this belief among children in Medway, with 66 percent of the 444 children who took part in a secondary school-based survey believing that "most adults smoke", despite the majority of adults in Medway being smoke-free.[65]

In 2011/2012, a public engagement project, culminating in the installation of signage in Medway's 80 outdoor children's play areas, represented a significant achievement in a move towards de-normalising smoking in outdoor, family-friendly venues in Medway. Restrictions on tobacco sales from vending machines came into force in October 2011. Twenty-five compliance checks were undertaken by Medway Council in 2011/12 and all premises were found to comply with the law.

The accessibility of smuggled and counterfeit tobacco products at reduced prices makes smoking more attractive for existing smokers and contributes to the uptake of smoking. Illicit tobacco is significantly more likely to be bought by less affluent smokers, exacerbating health inequalities. Illegal tobacco was revealed as a key enabler for young people's smoking in recent local research.[65] A joint operation by HM Revenue and Customs, Police, Licensing and Trading Standards in October 2011 resulted in the seizure of 363,620 cigarettes and 153.9 kilos of tobacco from retail outlets and residential addresses in Medway.

Excess winter deaths

Many countries experience a higher number of deaths during the winter than in the warmer months of the year. In England and Wales, in 2010/11, there were an estimated 25,700 excess winter deaths. Excess winter deaths are calculated by comparing the number of deaths in December to March, with the average number of deaths occurring in the preceding and subsequent four months. In 2010/11 there were a higher number of excess deaths in females than males, with the majority occurring in those aged 75 and over. Females aged 85 and over had the greatest number of excess winter deaths. However, a higher proportion of the female population than the male population are aged 75 and over (nine percent of females compared with six percent of males in 2010), which may explain why there are a higher number of excess deaths in women. The excess winter mortality index (which enables comparisons to be made between sexes, age groups and regions) was highest in Wales in 2010/11 whereas in 2008/09 and 2009/10, the South East was the region of England with the highest excess winter mortality.[66]

The number of excess deaths occurring during the winter is not solely dependent on temperature. Other factors, such as levels of disease circulating within the population, particularly influenza, also influence this.[66] However, influenza is not usually a significant cause of excess winter deaths. Around half the excess winter deaths are caused by cardiovascular disease and a further third by respiratory disease. The increase in mortality does not occur immediately upon a fall in temperature. Heart attacks tend to occur two days later, strokes after five days and respiratory disease after 12 days. Although the effects of indoor and outdoor temperatures are linked, respiratory disease seems to be related more to cold indoor temperatures and cardiovascular disease to cold outdoor temperatures.[67]

Older people, children, disabled people and those with long-term conditions are particularly vulnerable to the health effects of living in cold, damp homes. The health risks associated with living in cold homes are shown in Table 14.

Fuel poverty is defined as a household needing to spend more than 10 percent of its income on fuel to maintain an adequate level of warmth[d] and to meet its other energy needs (i.e. lighting and appliances, water heating and cooking).[68]

The current economic situation is likely to increase the risk of fuel poverty. Research suggests that interventions to reduce fuel poverty and excess winter deaths is most effectively focused on the private housing sectors—both owner occupiers and private rented accommodation. Older people living in older housing, particularly those without central heating, are at risk.[69]

[d] usually defined as 21 degrees Celsius for the main living area, and 18 degrees Celsius for other occupied rooms

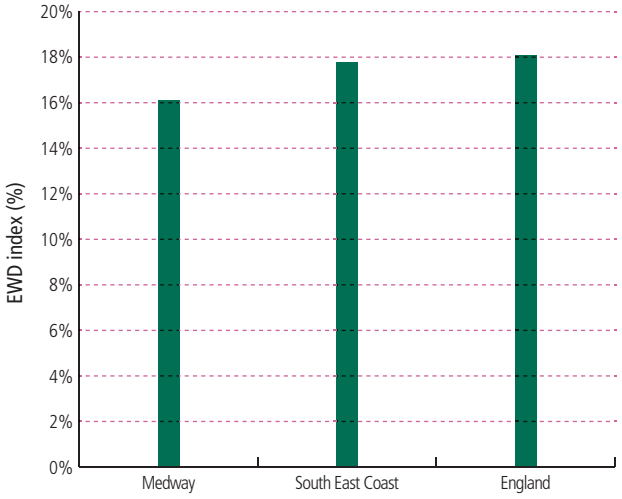
Table 14: Health risks of cold homes

Health risk	Effect
Increased respiratory illness. Worsening asthma and chronic obstructive pulmonary disease (COPD)	Temperatures below 16 °C lower resistance to respiratory infections. Damp leads to growth of moulds and fungi which can cause allergies and respiratory infections. Cold impairs lung function and can trigger broncho-constriction in asthma and COPD.
Increased blood pressure and risk of heart attacks and strokes	Blood pressure rises in older people with exposure to temperatures below 12 °C. The risk of heart attacks and strokes increases with increasing blood pressure.
Worsening arthritis	Symptoms of arthritis, particularly pain, are worse in those who live in cold, damp homes.
Increased accidents at home	Having a cold home increases the risk of falls in the elderly. Risk of accidents increased as a result of decreased manual dexterity and strength as well as presence of open or free-standing heating.
Increased social isolation	People may become more isolated because of reluctance to invite friends to a cold home. Social isolation increases the risk of depression and coronary heart disease.
Impaired mental health	Damp housing is associated with increased mental health problems.
Adverse effects on children's education	Sickness absence due to asthma or respiratory infections. Difficulties with doing homework if only one room is heated.
Adverse effects on nutrition	Poor diet may result from having to choose between spending money on heating or food.

Source: Fuel poverty and health report. National Heart Forum, 2003.

Although the excess winter death statistics are calculated for the period December to March, excess deaths as a result of the temperature do not occur solely during this period. There is a steady increase in death rates for each degree the temperature falls below 20 °C. Many of these deaths could be preventable, as countries with significantly colder winter temperatures than the UK (for example Finland) have much lower levels of excess winter mortality. Compared with those countries, at the same outdoor temperature, homes within the UK have colder living rooms and are less likely to have heated bedrooms. People are also less likely to wear warm clothing, such as hats, when going outdoors.[67]

Figure 52: Excess winter deaths (EWD) index, Medway compared to SE Coast and England 2006 to 2009



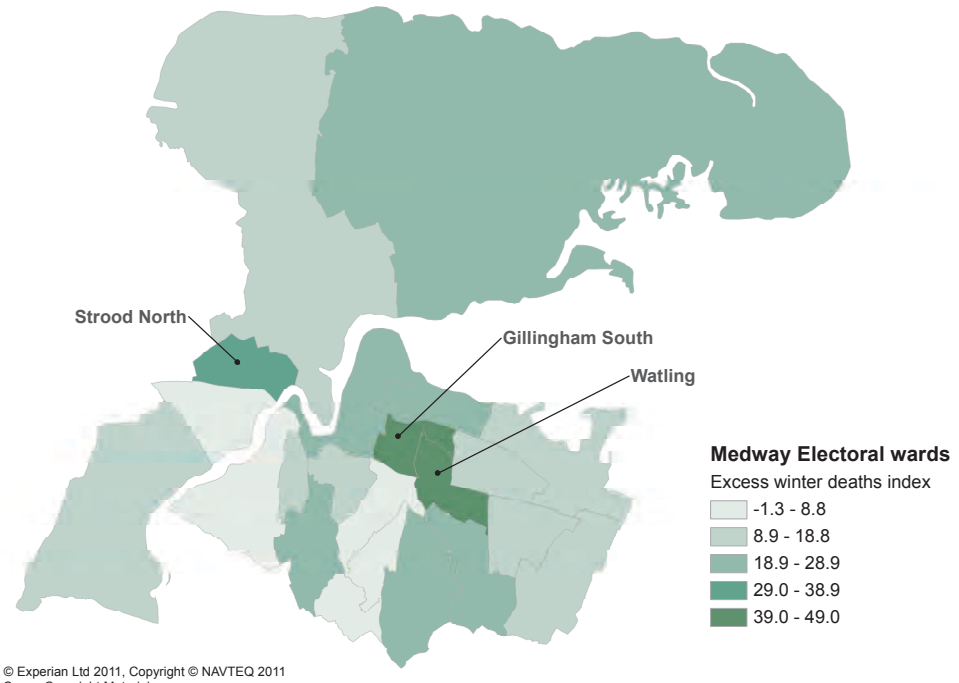
Source: West Midlands Public Health Observatory

Figure 53: Excess winter deaths (EWD) index, Kent and Medway rolling three year averages, 2002/04 to 2007/09

Source: Public Health Mortality File, ONS

The excess winter deaths (EWD) Index is the excess of deaths in winter, compared with non-winter deaths, expressed as a percentage. It indicates whether there are higher than expected deaths in winter compared with the rest of the year.[70] Small geographical areas do not generally have sufficient deaths in a single year to produce reliable estimates of excess winter mortality. Therefore, several years worth of data are combined to allow a better estimate of the excess deaths. Figure 52 shows the EWD index for the most recent period available and Figure 53 shows trend data for the PCTs in Kent and Medway.

Figure 54: Excess winter deaths (EWD) Index, Medway electoral wards, 2005 to 2009



Source: Public Health Mortality File, ONS

During this period, Medway had a lower EWD Index than SEC SHA or England.

The EWD Index in Medway electoral wards is shown in Figure 54. Gillingham South, Watling and Strood North were the areas of Medway with the most excess winter deaths from 2005 to 2009. Princes Park, Walderslade and Rochester West had the least. However even when aggregated, numbers at ward level are very small so may be subject to considerable variation, therefore the information at ward level should be treated with caution.

Fast food

The majority of adults in England in 2011 (61.3 percent) were either overweight or obese. Among children, 23.1 percent of four and five year olds, and 33.3 percent of 10 and 11 year olds, were overweight or obese. There is a clear association between health inequalities and obesity, with those from more deprived groups being more likely to be overweight or obese. Being overweight is a significant risk factor for a number of conditions, such as heart disease, cancer and Type 2 diabetes.[71] Although the cause of obesity may seem straightforward, i.e. energy intake exceeding energy expenditure over a period of time, the causes of obesity are more complex than this. While controlling calorie intake is important, obesity is a result of the interaction between human biological susceptibility to obesity and environmental factors. In the modern environment, people are much less active in the course of their daily lives than was the case in previous years. There is also increased access to cheap, energy-dense food, such as fast food.[72]

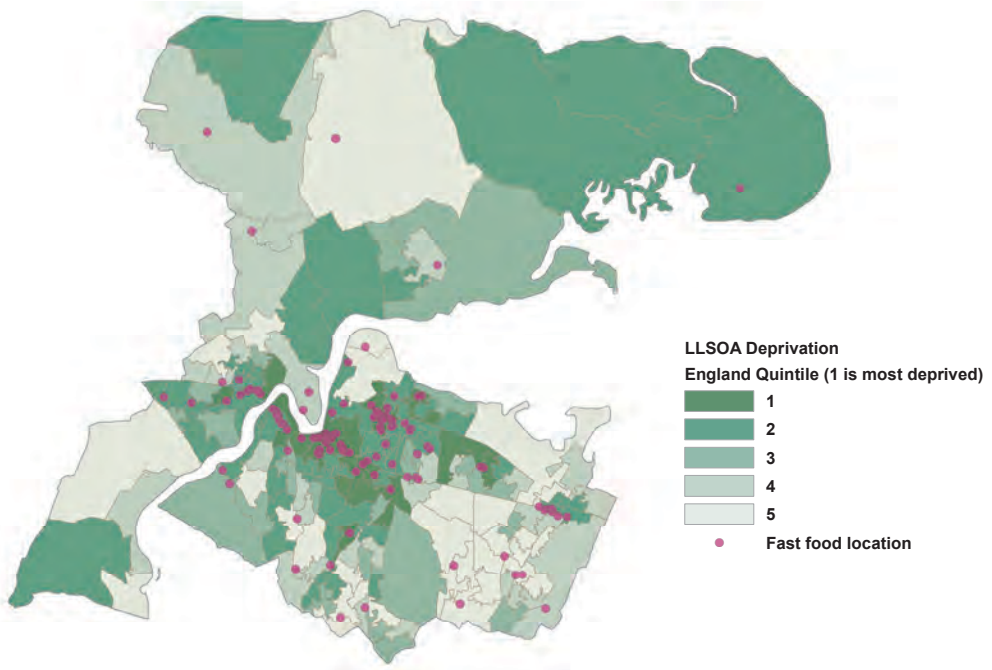
Foods purchased from fast food outlets and restaurants have a greater energy density than an average diet, with those who regularly eat this type of food being heavier than others. Fast food outlets are generally more highly concentrated in more deprived areas and this may contribute to the higher obesity rates found in those areas.[73] Greater access to fast food outlets has been shown to be associated with obesity.[74] The presence of fast food outlets close to homes is strongly correlated with the likelihood of consumption of fast food by low income men.[75] Weight gain and insulin resistance, which are the two most significant risk factors for the development of Type 2 diabetes, have been shown to be associated with frequency of visits to fast food restaurants.[76]

Figure 55 shows the location of venues selling fast food in Medway[e] and the deprivation levels of the areas in which they are located. It can be seen from this that the greatest density of fast food outlets is found in the more deprived areas of Medway.

This finding mirrors the national picture which shows a very strong correlation between the density of fast food outlets and deprivation at a local authority level.[77] Medway has a slightly lower density of fast food outlets compared to the England average and is ranked within the 40 percent most deprived local authorities.

A US study found that children's daily energy intake has increased since the 1970s. More calories are being consumed away from home and this has not been accompanied by a proportionate decrease in the number of calories consumed at home. The proportion of calories coming from fast foods has also increased during this period.[78] Consumption of fast food among adolescents is influenced by taste, convenience and a perception that fast food is good value for money. Boys may be at particular risk of over consuming these types of food as they are more likely than girls to opt for a larger size meal if available. They also consume foods from fast food outlets more frequently than adolescent girls.[79]

Figure 55: Location of food outlets providing or potentially providing hot takeaway food in Medway. Deprivation levels by Lower Level Super Output Area (LLSOA)



[e] Fast food locations are those defined by Medway Council as providing, or potentially providing, hot food takeaway.

In Medway there are 85 primary schools and 21 secondary schools of which 86 schools are within a 10-minute walk of a fast food outlet. A total of 97 schools, including all secondary schools, are within a 15-minute walk of a fast food location. The walk time has been defined by a speed of 3mph and a distance based on paths and roads, not as the crow flies.

Reducing the concentration and clustering of hot food takeaways using planning policies could reduce the consumption of foods high in fats, salts and sugars and the subsequent longer-term risks associated with cardiovascular disease, diabetes and certain cancers.

The Medway Public Health Directorate plans to undertake a detailed study of childhood obesity, deprivation and fast food outlets by bringing together all the relevant information to better understand the relationships between them to inform future planning and commissioning of services.

Local authorities can develop local planning policies to refuse consent for any new hot food takeaways in a certain, defined area. Opening hours may be controlled by a condition attached to planning consent, or takeaway services may be prohibited at certain times where the outlet also operates eat-in or delivery services. Policies should be clearly set out in local Supplementary Planning Documents.

Previously when granting planning permission, local authorities could seek a financial contribution for indirect costs associated with the development of fast food takeaways using a planning obligation known as a section 106 levy. The introduction of the Community Infrastructure Levy (CIL) Regulations in April 2010 meant that section 106 agreements must meet three statutory tests that could limit their use in the future. Agreements must be:

1. Necessary to make the development acceptable in planning terms
2. Directly related to the development
3. Fairly and reasonably related in scale and kind to the development.

The new Community Infrastructure Levy (CIL) means that local authorities in England and Wales can choose to charge every new development more than 100 square metres in their area. Medway Council is looking to become a CIL Charging Authority before April 2014. The money can be used within the local authority area to fund infrastructure that the council and local community want, such as improvements to green spaces, leisure centres or a new health centre. Although currently untested, the CIL allows a local authority to seek a contribution for infrastructure required by the cumulative impact of development, which could include the proliferation of fast food takeaways.

Alcohol

Government recommendations on alcohol consumption are that men should not regularly drink more than three to four units of alcohol a day and women no more than two to three units a day. Regular drinking means drinking on most or all days of the week.[80] In England, in 2007, 24 percent of all adults (33 percent of men and 16 percent of women) were defined as hazardous drinkers; that is a pattern of drinking which has a risk of physical or psychological harm. Harmful drinking, a subset of hazardous drinking, is a pattern of drinking which is likely to cause physical or psychological harm. This was found in six percent of men and two percent of women.[81]

There has been an increase in the amount of alcohol bought for home consumption within the UK. This peaked in 2003/04 and has fluctuated since then. Although the price of alcohol increased more than the retail price index from 1980 to 2010, a rise in household disposable income during the same period means that alcohol is more affordable now than it was 30 years ago.[81]

Those from managerial or professional backgrounds are more likely to drink on five or more days a week, and to drink more than the recommended levels of alcohol, than those from routine and manual backgrounds. Drinking at this level is also more common in those with a higher household income, and in those who are employed, compared with those who are unemployed.[81]

Amongst young people, the proportion of 11 to 15 year olds reporting that they drank at least once a week was 12 percent in 2009. This has decreased from 20 percent in 2001. Drinking alcohol within the last week was found to be associated with other risky behaviours such as smoking and drug use.[81]

In England in 2010/11 there were approximately 1,168,300 hospital admissions which were related to alcohol consumption. Alcohol-related hospital admissions are those where an estimated proportion of injuries or conditions are attributable to the consumption of alcohol. This has more than doubled since 2002/03. Males were more likely than females to be admitted for alcohol-related reasons. A quarter of all alcohol-related admissions are for diseases or injuries that are wholly attributable to alcohol, such as mental and behavioural disorders or alcoholic liver disease. The remaining three-quarters were for conditions which are partly attributable to alcohol, such as hypertension.[81]

Figure 56 shows a comparison between Medway, SEC SHA and England for alcohol-related hospital admissions. It shows that the level has been increasing in all areas since monitoring began in 2002/03. It should be noted that these figures do not include attendances at Accident and Emergency departments if the patient is discharged without being admitted.

Figure 56: Alcohol-related hospital admissions, 2002/03 to 2010/11

Source: Local Alcohol Profiles for England, derived from Hospital Episode Statistics (HES)

Although alcohol consumption is highest in the least deprived groups, hospital admission for conditions attributable to alcohol is associated with deprivation, with the highest rates in the most deprived groups. People from lower socio-economic groups are more likely to abstain from alcohol; however if they do drink they are more likely to have harmful patterns of alcohol consumption and to be dependent on alcohol, than those from higher socio-economic groups.[82] Other reasons why alcohol-related admissions may be higher in more deprived groups, in spite of lower alcohol consumption, may include under-reporting of alcohol consumption, or other factors confounding the relationship between alcohol consumption and hospital admission, for example violence, obesity or other health problems.[83]

As well as the health problems directly caused by excess alcohol consumption, alcohol misuse is also associated with violent crime, domestic violence, antisocial behaviour, divorce and lost working days.[84]

The number of outlets selling alcohol in an area has been shown to have an impact on a number of factors, such as assault rates,[85] violent crimes,[86] and alcohol-related hospital admissions.[87] A Californian study found that having alcohol outlets within walking distance of the homes of adolescents was associated with binge drinking and drink driving. The number of outlets licenced to sell alcohol was higher in lower income areas.[88]

Table 15 shows that there are higher rates of alcohol admissions from the more deprived wards and more off-licences. However, the more deprived wards are in town centres, where a greater density of off-licences might be expected when compared with a more suburban area.

In November 2005, the Licensing Act 2003 was implemented in England and Wales. This allowed licenced premises to open for longer. A study in Birmingham found no increase in the number of alcohol-related attendances at Accident and Emergency (A&E) before and after the implementation of the Act, however there was a shift in the time of presentation at A&E to the early hours of the morning.[89] However, another study in South Yorkshire, which included four A&E departments, found no consistent effect across the A&E departments in number of attendances or time of attendance.[90]

Table 15: Hospital admissions for mental and behavioural disorders due to use of alcohol/toxic effects of alcohol from April 2007 to March 2012 with the number of off-licences for the two most and least deprived wards in Medway

Ward	No. of admissions	No. per 1,000 population	No. of off-licences	Deprivation
Luton and Wayfield	387	5.5	14	most deprived
Chatham Central	375	4.7	17	second most deprived
Rainham Central	102	1.6	7	second least deprived
Hempstead and Wigmore	46	1.1	5	least deprived

Source: SUS hospital admissions and Medway Council

The end of year performance report from Medway Council includes results of underage test purchase checks undertaken in 2011/12, where a supervised underage test purchase volunteer attempts to purchase age-restricted products, to see whether they succeed or not. In total 137 premises were visited in 11 exercises (each operation can include multiple premises, the number depending on whether illegal sales are found). Seventy-eight per cent of premises did not sell age-restricted products to our test purchase volunteers; further action was taken against those that did.

The main focus and driving force for addressing alcohol-related crime, disorder and anti-social behaviour is Medway's Community Safety Partnership (CSP). Alcohol-related violence, domestic violence and alcohol related crime are key priorities for the CSP. Some measures already introduced by the partnership include accredited community safety officers with powers to confiscate alcohol from underage drinkers, multi-agency licensing enforcement and alcohol control zones (ACZ). A multi-agency partnership led by trading standards is working to launch Community Alcohol Partnerships (CAP) in Medway. Community Alcohol Partnerships aim to tackle public underage drinking through co-operation between alcohol retailers and local stakeholders, such as Trading Standards, police, local authority licensing teams, schools and health networks. CAP addresses both the demand and supply side of underage drinking through enforcement, education and public perception.

In the future NHS Medway (a primary care trust) will be a responsible authority under the licensing act and will be able to make use of alcohol related harm data with regards to licensing applications and reviews. The Health and Social Care Act 2012 included an amendment which will replace the definition of primary care trusts as a responsible authority and will define local authorities as responsible authorities. The role of responsible authority will be fulfilled by the Director of Public Health in each (upper tier or unitary) local authority area.[91]

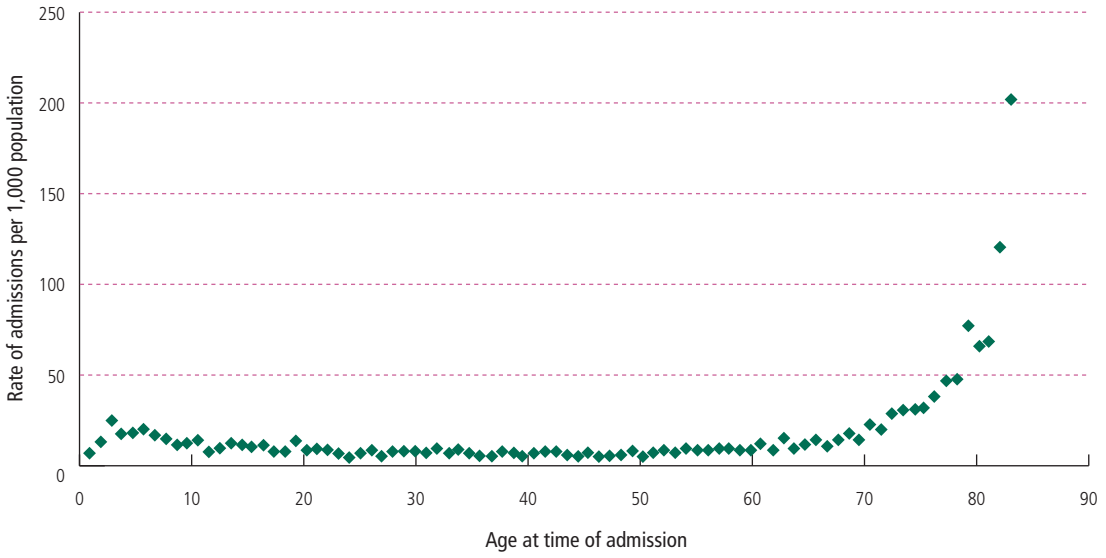
Accidents

Unintentional injury is a leading cause of death and hospital admission among children aged from birth to 14 years. In 2010, 155 children aged under 15 years died from unintentional injury in England, of which 50 were due to land transport accidents.[92] Most injuries result from accidents in the home and there are inequalities between groups in the likelihood of these occurring.[93] Many fall accidents in children are caused by pushing, shoving and wrestling.

Unintentional injury rates in under 16 year olds are higher in lower socio-economic groups. Inequalities also exist in relation to sex, age, ethnicity and geographical region. Home safety schemes are not universally available and are often confined to more deprived neighbourhoods. Of concern is that there may be people not getting help they need from projects like Sure Start Children's Centres because, while they live in a less deprived area, they are themselves in a more deprived group.

In 2010/11, 96 children aged under 5 years in Medway were taken to A&E for 'other accidents' occurring in the home; 60 boys and 36 girls. Of these, 17 have no diagnosis code. The most common primary diagnosis was head injury, with 14 children attending for this; seven children attended with a dislocation/sprain/fracture or joint injury and fewer than five attended with burns, a foreign body in their throat or following electrocution.[94]

Figure 57: The rate per 1,000 population of hospital admissions for patients registered with Medway practices for accidents with ICD-10 codes W00–X59, by age at time of admission, 2010/11



Source: SUS hospital admissions

Within the national curriculum there is a requirement to teach children about hazards, risks and controls, as well as road safety.[95] Sure Start Children's Centres also offers a range of services. Staff at the centres mainly act as role models and signpost to other services, but there are also dedicated child safety weeks, during which talks are conducted and pieces of safety equipment are given out such as electric socket covers.[96] There are 19 Sure Start Children's Centres across Medway.

The majority of accidents involving older people are falls, with almost three-quarters of falls in people 65 years and over resulting in injuries to arms, legs and shoulders. One in every five falls in women aged 55 and over results in a fracture. Once a person has fallen, there is the risk of being unable to get up and the complications that can arise from this, for example hypothermia.[97]

The most serious accidents involving older people often occur on stairs or in the kitchen while the most common places for all accidents are the bedroom and living room. There are a number of different factors which contribute to the risk of a fall including physical ability, medication and environmental hazards.[98]

'Other accidents' (ICD 10 codes W00–X59) are accidents which are not 'road traffic accidents' (dealt with later on in this chapter), 'assault', 'deliberate self harm', 'sports injury', 'firework injury' or 'brought in dead'.

Figure 57 shows the number of hospital admissions for patients registered with a GP practice in Medway for accidents which were given ICD10 codes W00–X59 by age. These codes include falls, exposure to mechanical forces, drowning, exposure to extreme temperatures and electric current, exposure to smoke and fire, contact with heat, contact with venomous animals or plants and poisoning. This shows a peak in numbers of admissions in childhood and old age.

In 2010/11, there were 3,968 admissions for people registered with a Medway GP in relation to an accident. Records not containing an NHS number totalled 78, but of those remaining, 426 people were admitted more than once within these 12 months. Table 16 shows the main reasons for admissions for accidents.

Table 16: Main admission codes relating to accidents in 2010/11, from ICD-10 codes W00–X59

Type of accident	Number of admissions
Unspecified fall	1,219
Fall on same level from slipping, tripping and stumbling	351
Fall on and from stairs and steps	225
Other fall on same level	171
Falls involving a bed	119
Falls involving a chair	57
Other fall	397
Fall subtotal	**2,539**
Exposure to inanimate mechanical forces	**490**
Transport	**291**
Accidental poisoning by and exposure to noxious substances	**206**
Exposure to animate mechanical forces	**103**

Source: SUS

Figure 58 shows the number of hospital admissions for patients registered in Medway for accidents with ICD-10 codes W00–X59 from April 2006 to March 2011. There has been an increase during the last five years but, in 2010/11, there was a decrease from the previous year.

Figure 58: The age standardised hospital admission rate per 100,000 patients registered in Medway for accidents with ICD-10 codes W00–X59, 2006/07 to 2010/11

Source: SUS

Road traffic collisions

In 1987 a national target was set to reduce road casualties by a third by the year 2000, compared with the 1981 to 1985 average. This was achieved and, in 2000, further national targets were set for completion by 2010, using 1994 to 1998 average data as a benchmark.[99]

The number of casualties from collisions on Medway's roads has reduced, from 1,253 in 1998 to 692 in 2010, of which 59 people were either killed or seriously injured (KSI). Figure 59 shows the trend in casualties as a result of collisions occurring in Medway. Serious injury includes fractures, severe lacerations, paralysis and extended stay in hospital. Slight injury includes whiplash, sprain and minor lacerations.[100]

Figure 59: The number of casualties as a result of collisions on roads in Medway, 1998 to 2010

Source: Medway Council (original data from Kent Police).[93]

Of all the drivers involved in a collision in Medway from 2006 to 2010, 77 percent had Medway as their home district. All but 9.6 percent of the remaining drivers lived in a Kent district.

Postcodes of drivers involved in a collision in Medway who also live within Kent and Medway were analysed using a social segmentation tool called Mosaic which gives insight into the likely background of an individual based on their postcode and places them into groups. The most common group was 'E - middle income families living in moderate suburban semis' (21 percent) followed by 'I – lower income workers in urban terraces in often diverse areas' (16 percent). The lowest group was 'C – wealthy people living in the most sought after neighbourhoods'.

Table 17 shows the rate of KSI casualties in Medway compared to Kent and England as at 2010. Medway has achieved the greatest reduction since the 1994 to 1998 average and is performing better than England.

Medway Council works closely with Kent Police to gain information on any collisions which occur in Medway. As a picture is built up over time, sites with multiple crashes (cluster sites) are investigated by road safety engineers who look at the factors leading up to a collision, visit the site and gain insight from residents and the local community.[100] This informs road improvement initiatives such as speed limit reduction, changes to road markings or restructuring junctions.

Medway Council also has a 'Safer Journeys' Team which covers tailored education to meet school requirements, giving resources to schools, encouraging a modal shift to get children walking to school instead of being driven, overseeing the speed awareness course which is an education initiative linked to speed cameras, preparing signs relating to seatbelts, mobile phones etc and boards with casualty statistics. They are also linked to cycling proficiency and work very closely with the police and Kent County Council. Age, gender and location target groups are highlighted to focus campaigns.

Table 17: Killed or seriously injured (KSI) casualty rate per billion vehicle miles, 2010

	2010	% change on 1994-98 average
Medway	67	-66
Kent	61	-60
England	80	-54

Source: Department for Transport

Table 18: The rate and reduction of killed or seriously injured (KSI) and slightly injured casualties in 2010 for Medway Council's local authority family

	Rate per 1,000 residents in 2010		Reduction in 2010 compared to 2001	
	KSI	Slight	KSI	Slight
Medway	0.23	2.47	-44%	-25%
Bracknell Forest	0.21	2.27	-57%	-41%
Darlington	0.33	3.00	-18%	-30%
Derby	0.37	4.11	-32%	7%
Halton	0.34	3.55	-41%	-34%
Luton	0.31	3.19	-2%	-5%
Milton Keynes	0.31	3.74	-43%	-23%
Peterborough	0.55	5.21	-26%	-13%
Redcar & Cleveland	0.30	2.10	-7%	-21%
South Gloucestershire	0.32	2.68	-33%	-28%
Stockton on Tees	0.23	2.14	-40%	-32%
Swindon	0.31	2.15	-41%	-57%
Telford & Wrekin	0.23	2.55	-59%	-11%
Thurrock	0.44	3.07	-46%	-41%
Warrington	0.52	4.20	-39%	-28%

Source: Medway Council, DfT

Table 18 shows that in 2010, Medway had the joint second lowest rate per 1,000 residents for KSI casualties and fifth lowest rate for slightly injured casualties in its LA family. Medway also has the fourth greatest KSI reduction in 2010 compared to 2001.

Figure 60 shows that those living in the least deprived quintile in Medway have a lower rate of hospital admissions following a road traffic collision than those living in the most deprived, but not statistically significantly so. It is of note that these data do not include those that attend A&E and are able to leave again or those that die in A&E.

Figure 60: The rate of hospital admissions following a road traffic accident in Medway per 1,000 resident population (ICD10 codes V01–V89), by Medway deprivation quintile pooled three year data 2006 to 2011

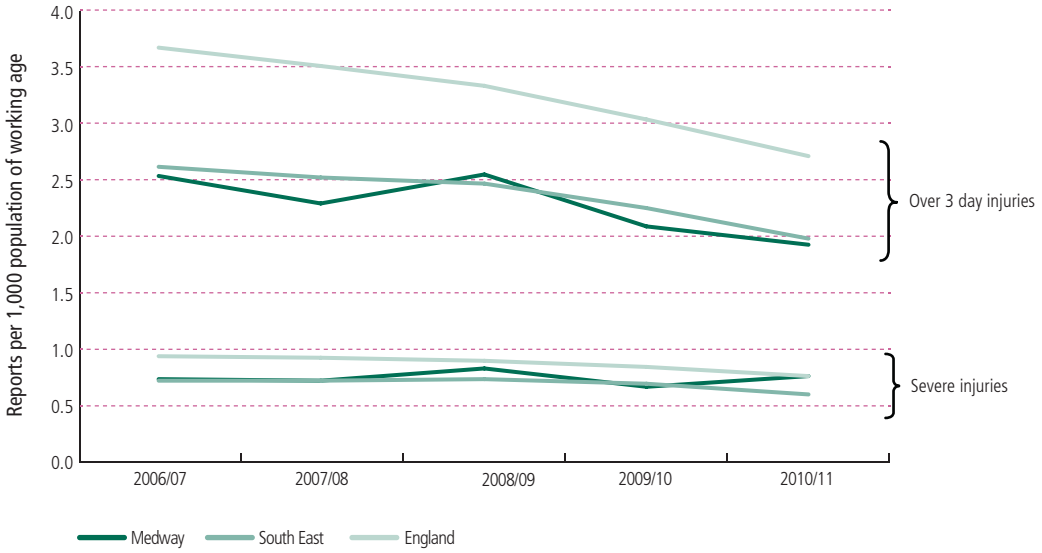
Source: SUS data

Work-related accidents

In 2010/11 1.2 million people suffered from work-related accidents, 171 people were killed at work and 115,000 injuries were reported under 'Report Injuries, Diseases and Dangerous Occurrences' (RIDDOR) in Great Britain.[101]

Figure 61 shows trends in the rate of injuries sustained by workers in Medway. In 2010, there were 130 major injuries and 326 injuries where symptoms lasted more than three days. There has been a decrease in the number of 'more than three day' injuries in the last five years. Medway has a lower rate of reported injuries than the South East and England,

Figure 61: Rate of injuries to workers employed and self-employed in Medway compared to the South East and England, per 1,000 population of working age* by injury severity, 2006/07 to 2010/11



Source: ONS, Health and Safety Executive[103]
*working age refers to men and women aged 16-64, but prior to 2010, 59 was taken as the maximum age for women

for both severe and more than three day injuries, but this is very much reliant on people coming forward to report incidents. The rate of fatal injuries is either 0.00 or 0.01 for each of the areas across the five years analysed because of the low numbers involved. The highest number of injuries occurred in the services sector. The 'services' category includes a wide range of industries, such as education, scientific research and development, accommodation and air transport.[102]

In 2008, the Health and Safety (Offences) Act was introduced, which applied to offences committed on or after 16 January 2009, under the Health and Safety at Work Act 1974. It has provided courts with the power to give greater sentences and higher fines for violations.[104] This in turn may have had an effect on the way in which employers view health and safety regulations, and could explain the decline in injuries we have seen in the last two years.

Noise

Sound is a mechanical vibration transmitted through the air, which is audible to persons with normal hearing. Most sound is either neutral or beneficial in its effects. Sound only becomes noise (often defined as 'unwanted sound') when it exists in the wrong place or at the wrong time and contributes to some harmful or otherwise unwanted effect, such as annoyance.[105]

Noise can be classified into:

- occupational noise, which is experienced in the workplace
- neighbour or neighbourhood noise caused by individuals or small groups of people in or around their homes
- environmental noise which is generated by transport, industry and general recreational activities.

While 'sound' can be quantified objectively according to international standards, assessing noise and quantifying its effects is a complex process.

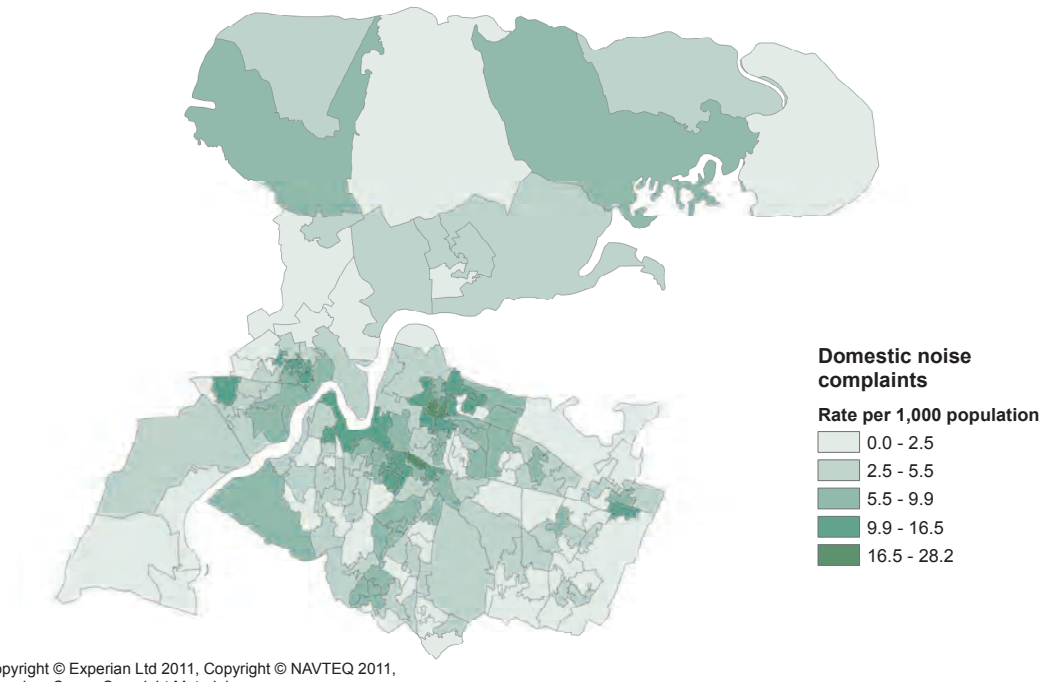
The assessment of environmental noise depends upon two major factors. First, some measure of the extent of exposure, for example the number of people exposed to sound of a certain level, or the percentage of the population 'highly annoyed' by a particular noise source, is required. In addition to this, some judgment as to the acceptable level of the noise under consideration must be made. This judgment is usually based upon the results of social and noise surveys or, less frequently, laboratory studies. In all cases a person's subjective or physical response to a noise, such as 'highly annoyed' or 'somewhat disturbed' is compared with the measured sound level.[105]

The Health Protection Agency (HPA) published a review of the available evidence relating to the effects of environmental noise on health in 2010.[105]

This concluded that:

- Environmental levels of sound do not reach the intensities needed for damage to hearing
- There is increasing evidence that environmental noise, from both aircraft and road traffic, is associated with raised blood pressure and with a small increased risk of coronary heart disease. (Long-term exposure to high levels of noise in the occupational setting has been shown to be related to the likelihood of individuals developing cardiovascular disease)
- Evidence that environmental noise damages mental health is inconclusive
- Exposure to environmental noise has been shown to be linked with impairment of cognitive performance amongst children exposed to high sound levels whilst at school. Further work is required to establish whether this effect is short or long term
- A wide range of legislation applies to the control of environmental noise in the UK and there may be some confusion as to who regulates environmental noise and who can be expected to take action in specific circumstances
- There are many important, unanswered questions relating to the effects of environmental noise on health and a programme of research is needed.

Figure 62: The number of domestic noise complaints per 1,000 population by LLSOA, 2011



Source: Medway Council, ONS

A method of quantifying annoyance caused by noise is by monitoring complaints. The Chartered Institute of Environmental Health publishes annual statistics on the numbers of people who complain to local authorities about noise from domestic, industrial and commercial premises and from road works and construction. However, these are not mandatory collections so may not necessarily be a true reflection of the situation in the country as whole. In addition there are many reasons, not necessarily related to sound levels, why changes in numbers of complaints may occur, for example councils promoting how and where to complain and there is evidence from surveys that show that people are probably becoming less tolerant of noise.[105]

Figure 62 shows that in 2011 in Medway, higher rates of domestic (neighbourhood) noise complaints occurred in parts of Chatham and Gillingham. Domestic noise is taken to be noise complaints that affect dwellings but are not caused by a commercial activity. Figure 62 only shows the complaints received by Medway Council and not those justified and actioned. The highest rates can be seen in the built up areas of Medway and are reflective of the density and type of housing in these areas.

Table 19: LLSOAs with the highest number of commercial noise complaints, 2011

LLSOA	Ward	Number of complaints
E01016130	Rochester West	16
E01016110	River	11
E01016117	Rochester East	7
E01016071	Peninsula	6
E01016086	Rainham Central	5

Source: Medway Council

Table 19 shows the Lower Level Super Output Areas (LLSOA) which generated the highest number of complaints about commercial noise.

A variety of policy approaches have been taken to tackle noise. These include:

- Limits on the noise emissions from certain sources, such as vehicles
- Restrictions on aircraft and traffic movements
- Schemes to provide sound insulation grants to properties subjected to high noise levels, for example from aircraft
- Planning conditions or limiting residential development in noisy areas
- Regulation of some noise sources through nuisance legislation.[105]

Housing

Housing is an important determinant of health. Inadequate housing can have a negative impact on both physical and mental health. While housing is required by everyone in the population, certain groups such as young children, the elderly and those who are unwell, spend a greater proportion of their time at home and may be disproportionately affected by poor quality housing.[106]

Dampness and mould in homes has been shown to be associated with respiratory symptoms such as cough, wheeze and asthma, as well as with skin and other general symptoms. The association between asthma and dampness and mould in the home has been shown in infants, children and adults. Exposure to a wide range of organisms and chemicals may be responsible for the health symptoms which have been linked to dampness and mould. For example, algae, fungi and bacteria, as well as their spores, may be found in damp and poorly ventilated housing. Dampness may also result in increased emission of chemicals from building materials.[106]

Studies have found that in European countries with a moderate/warm climate such as the UK problems with dampness and/or mould are reported in six percent to 29 percent of all dwellings. Dampness in buildings may be caused by problems in building design, construction use or maintenance, as well as incidents such as floods or burst pipes. Adequate ventilation is also important in controlling levels of moisture. Remediation work to resolve problems with dampness and mould in buildings has been shown to be associated with a reduction of symptoms in those affected.[106]

It is estimated that 9.3 percent of dwellings in Medway have condensation or dampness problems to varying degrees. This is most prevalent in houses built pre-1919, with one in three households being affected. One in six households built inter-war are affected.[107]

Tables 20 to 22 show the percentage of households in Medway with a condensation or damp problem by date of construction, building type and tenure in 2006/07.[f]

Table 20: Percentage of households in Medway with a condensation problem by date of construction, 2006/07

Construction date	% within construction period with a problem	% of total with a problem
Pre 1850	25.00%	1.96%
1850–1899	12.71%	14.71%
1900–1918	16.67%	16.67%
1919–1944	8.85%	16.67%
1945–1964	7.32%	20.59%
1965–1975	11.59%	15.69%
1976–1981	5.97%	3.92%
Post 1982	5.43%	9.80%
Total	9.30%	100%

Table 21: Percentage of households in Medway with a condensation problem by building type, 2006/07

Building type	% within build type with a problem	% of total with a problem
Terrace	11.90%	55.88%
Semi-detached	6.43%	21.57%
Detached	6.52%	8.82%
Purpose built flat	11.88%	11.76%
Non-residential & flat*	22.22%	1.96%
Total	9.30%	100%

*small sample size

[f] Most recent data available from Medway Council.

Table 22: Percentage of households in Medway with a condensation problem by tenure, 2006/07

Tenure type	% within tenure type with a problem	% of total with a problem
Owner occupier	5.80%	45.09%
RSL and mhs	13.70%	23.52%
Private rented	25.00%	31.37%
Total	9.30%	100%

RSL = Registered Social Landlord, mhs = largest independent landlord managing 8,000 homes in Medway

Source: Medway Council, Housing Stock Survey

Injuries within the home represent an important health burden, particularly in children. Home injury deaths in Europe are highest in children under the age of five. Housing-related injuries are those related to characteristics within the home which could have been improved through a different building design, construction or maintenance. For example, excessively steep stairs or those without a safety rail, rather than simply the presence of stairs. Other examples would include deaths or injuries from fires, where there is no smoke detector, or falls from windows on the second floor or above, without a window guard.[106]

A number of priority areas have been identified which are important in reducing childhood injuries in the home. These are smoke and carbon monoxide detectors, fencing of water, window catches and restrictors, cupboard door restrictors, handrails, thermostat mixers, socket protectors, fixing steps and stairs, automatic garage doors, safe kitchen design and ensuring safe doorsteps, thresholds and balconies.[108]

Accidents have been covered in more detail elsewhere in this report.

Overcrowded housing may also be a factor which increases the spread of infectious diseases, such as tuberculosis. Tuberculosis is spread through small respiratory droplets. Close contact between cases and household contacts within a confined space facilitates spread. Therefore, transmission of tuberculosis is likely to be higher when living conditions are crowded. Overcrowded housing may also contribute to the spread of other infections, for example, respiratory infections such as influenza, gastro-intestinal infections and infections spread through direct skin contact.[106] Infectious diseases have been covered elsewhere in this report.

Cold homes are associated with a range of health problems. This is covered in more detail in the Excess Winter Deaths part of this report. Cold homes may be caused by factors within the home such as inefficiencies in the design of the building or heating system, or other factors such as low household income or high fuel costs. Installing insulation in homes has been shown to lead to improved self-reported health, fewer GP visits and hospital admissions for respiratory conditions, as well as warmer, drier homes.[106]

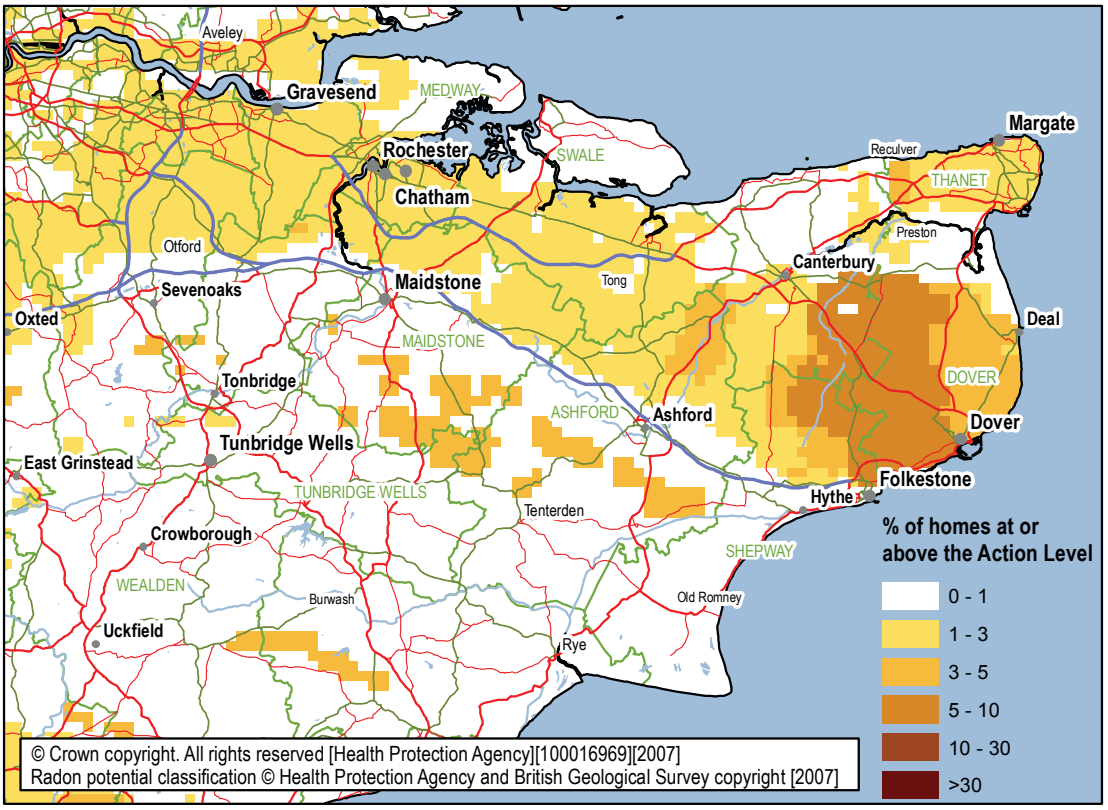
The number of houses in Medway rated as 'non decent' as they fail to provide a reasonable level of thermal comfort was 15,285 (total number of households was 106,460 in 2007 according to Communities and Local Government). Of these, 6,820 have neither cavity wall insulation nor 50 mm of loft/roof insulation. Households without central heating or appropriate insulation numbered 3,057.

Radon is a gas formed from radium, which is a decay product of uranium. It is an important source of natural ionising radiation and forms a significant proportion of the ionising radiation dose received by the general population. It has been shown to be a cause of lung cancer. Between five percent and 10 percent of all lung cancers can be attributed to radon, the exact figure will vary depending on local levels of radon in the home and may be higher or lower than this. Both radium and uranium are naturally occurring in soils and rocks. Radon tends to accumulate in enclosed spaces such as houses. The actual concentration of radon in a house varies with geographical area (as it is dependent on the geological conditions within the area), structure of the building and ventilation.[106]

The percentage of homes potentially affected by radon varies widely across England. In some areas, including parts of Medway, only zero to one percent of homes are at or above the Health Protection Agency's Action Level (of 200 Becquerels per cubic meter), whereas there are other areas, for example parts of South West England, where more than 30 percent of homes are affected.[109] Figure 63 shows that parts of Medway fall within a radon affected area where one to three percent of homes may be at or above the Health Protection Agency's Action Level. Medway Council advises residents whose homes have been identified as potentially affected (usually via land or environmental search when moving house) to check with the Council's Building Control Department to ascertain whether radon protection measures have been installed in the property, and directs them to the Health Protection Agency's (HPA) website.

The HPA has a free radon gas information pack available on their website. They also offer a Radon Risk Report service which gives the estimated probability that an address is above the Action Level for radon and will conduct a Radon survey for private householders in the UK for a charge. The latter involves measuring radon levels within the home over a period of three months, using a radon detector. If radon levels are high, they can be reduced by fitting a 'radon sump'. This ensures that radon is extracted from the house and expelled into the atmosphere.[110]

Figure 63: The percentage of homes with a radon level at or above the action level within a one km grid



Source: UKradon[111]

Carbon monoxide is a colourless, odourless gas. It binds preferentially to haemoglobin in the blood, displacing oxygen and therefore affecting the supply of oxygen to tissues. Young children, pregnant women, older people and those with cardio-respiratory problems are more susceptible to raised carbon monoxide levels. Carbon monoxide is produced by incomplete combustion of carbon based fuels. Unintentional carbon monoxide poisoning within the home may occur as a result of inappropriate or faulty cooking or heating appliances. People living in inadequate housing, with older and poorly maintained heating systems, are at greater risk of carbon monoxide poisoning. Carbon monoxide poisoning is more likely to occur in autumn and winter months when heating systems are most likely to be used.[106]

Health effects of carbon monoxide vary, depending on the levels. Carbon monoxide poisoning may be the result of sudden high levels of carbon monoxide or prolonged exposure to lower levels. Exposure to high levels of carbon monoxide results in seizures, coma and death. Prolonged exposure to lower levels leads to symptoms such as headache, nausea and, in those with coronary heart disease, development of angina symptoms after less time than usual. It can also cause long-term neurological damage.[106]

Carbon monoxide poisoning can be prevented by ensuring safe installation and regular servicing of appliances which use fossil fuels, for example gas fires and boilers, and by the use of carbon monoxide detectors.[112] Table 23 shows the number of admissions to hospital of Medway residents as a result of the toxic effects of carbon monoxide from 2007/08 to 2010/11.

Inadequate quality housing is also associated with mental health problems. Reasons for this may include social isolation, worries about hazards within the home, difficulties with maintenance of the home and lack of control over many of the features of poor quality housing. Studies have shown there is a reduction in psychological symptoms in those relocated to better quality housing.[106]

Table 23: The number of admissions of Medway residents for the toxic effect of carbon monoxide from all sources (ICD 10 code T58X)

Year	Number of admissions
2007/08	*
2008/09	*
2009/10	5
2010/11	5

*Numbers fewer than five suppressed
Source: SUS hospital admissions

Recommendation for action

The Council will have new statutory public health duties from April 2013. It is clear that there are many opportunities for the Council to improve and protect health using its current and new powers and responsibilities. These include planning and licensing, use of the Community Infrastructure Levy, commissioning of services and leadership of partnerships. It is recommended that Medway Council, in developing its vision and strategy for public health, considers how it can ensure that public health benefits are realised across the breadth of the Council's responsibilities.

Glossary

Term	Definition	Description
Acute STI	Acute sexually transmitted infection	• Chlamydial infection (uncomplicated and complicated) • Gonorrhoea (uncomplicated and complicated) • Primary, secondary and early latent syphilis • Genital herpes simplex (first episode) • Genital warts (first episode) • Non-specific genital infection (uncomplicated and complicated) • Chancroid/lymphogranuloma venerum (LGV)/Donovanosis • Molluscum contagiosum • Trichomoniasis • Scabies • Pediculus pubis
ADHD	Attention deficit hyperactivity disorder	A group of behavioural symptoms that include inattentiveness, hyperactivity and impulsiveness.
Confidence interval	Otherwise known as margin of error	Defines the reliability of a result and shows what margins you would expect the result to be between.
Coverage	The number of persons immunised as a proportion of the eligible population	Total number of eligible persons immunised/ total number of eligible persons in the population x100.
Encephalitis	Inflammation of the brain tissue	May be caused by infection, usually viral, or autoimmune conditions (where the immune system malfunctions and attacks healthy tissues).
GUM	Genitourinary Medicine, otherwise known as sexual health	Clinics can offer a number of services including testing and treatment for STIs, advice about sexual health, abortion and emergency contraception and free condoms.

Term	Definition	Description
GUMCAD	Genitourinary Medicine Clinic Activity Dataset	Used to monitor trends in new diagnoses of sexually transmitted infections (STI) and other sexual health problems and to determine which specific groups are at particular risk
Hospital spell	The total continuous stay of a patient using a hospital bed	Patients may be under the care of one or more consultants during this time.
HPA	Health Protection Agency	An independent UK organisation that was set up by the government in 2003 to protect the public from threats to their health from infectious diseases and environmental hazards.
ICD-10	International Statistical Classification of Diseases and Related Health Problems 10th Revision	The ICD is the international standard diagnostic classification for all general epidemiological, many health management purposes and clinical use.
Kent HPU	Kent Health Protection Unit	Local health protection units lead the HPA response to all health protection related incidents.
LLSOA	Lower Layer Super Output Area	Level of geography with an average population of 1,500 and minimum of 1,000
ONS	Office for National Statistics	Aim is to improve understanding of life in the United Kingdom and enable informed decisions through trusted, relevant, and independent statistics and analysis.
Oophoritis		Inflammation of the ovary, which may be caused by infection.

Term	Definition	Description
Orchitis		Inflammation of the testicle, usually caused by infection.
Otitis media		Infection of the middle ear.
Parotid glands		Salivary glands, which are found in each cheek, over the jaw, in front of the ears.
QOF	Quality Outcomes Framework	The annual reward and incentive programme detailing GP practice achievement results. QOF is a voluntary process for all surgeries in England and was introduced as part of the GP contract in 2004.
Read code		A coded thesaurus of clinical terms. Read Codes have two versions: Version 2 (v2) and version 3 (CTV3 or v3), which are the basic means by which clinicians record patient findings and procedures in health and social care IT systems across primary and secondary care.
SSPE	Subacute sclerosing panencephalitis	Serious progressive brain disorder which is a rare complication of measles infection. Symptoms include behaviour changes, dementia and fits.
Sure Start Children's Centres		There are more then 3,600 children's centres in England, bringing together a range of support services in one place to help both parents and children.

Appendix 1: GP Practices In Medway

G82011	Sunlight Centre Surgery
G82014	Woodlands Family Practice
G82051	City Way Surgery
G82077	Elms Medical Practice
G82095	Dame Sybil Thorndike Healthcare
G82100	Highcliffe Medical Practice
G82106	Riverside Medical Centre
G82108	King George Surgery
G82109	Railside Surgery
G82113	Stonecross and West Drive Surgery
G82123	Balmoral Gardens
G82129	Glebe Family Practice
G82133	St Marys Medical Centre
G82139	Maidstone Road Surgery
G82154	Thames Avenue Surgery
G82161	Walderslade Village Surgery
G82162	Rainham Healthy Living Centre
G82180	The Surgery
G82184	Medical Centre, Waltham Road
G82198	Medical Centre, Gun Lane
G82203	Court View Surgery
G82226	Wigmore Medical Centre
G82230	Lordswood Healthy Living Centre
G82233	Hoo St Werburgh
G82600	Eastcourt Surgery
G82622	The Surgery
G82631	Medical Centre
G82635	Pump Lane Surgery
G82644	Wyvill Surgery
G82653	Rochester Community Healthy Living Centre
G82656	Tunbury Avenue Surgery
G82670	Rochester Community Healthy Living Centre
G82676	Bryant Street Surgery
G82679	Apex Medical Centre
G82697	Churchill Clinic
G82704	Church View Practice
G82706	Brompton Medical Centre
G82708	Marlowe Park
G82711	Borstal Village Surgery
G82718	Broadway Practice
G82719	Matrix Medical Practice
G82721	Parkwood Family Practice
G82727	Malling Health
G82737	Parkwood Health Centre
G82739	Walderslade Medical Centre
G82741	Princes Park Medical Centre
G82744	Halfway Surgery
G82753	Kings Family Practice
G82762	Upper Canterbury Street Surgery
G82763	Napier Road Surgery
G82764	Esplanade Healthcare
G82766	Rochester Community Healthy Living Centre
G82775	Medway Medical Centre
G82820	Wayfield Road Surgery
G82821	Bryant Street Surgery
Y00198	Parks Medical Practice
Y00449	St Mary's Island Surgery
Y02461	DMC Walderslade Surgery
Y02462	DMC Health Centre - Canterbury Street
Y02471	College Health - Boots
Y02472	College Health - Sterling House

References

1 Health Protection Agency. Notifications of infectious diseases (NOIDs). http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/NotificationsOfInfectiousDiseases/ (Accessed 5 Oct 2011)

2 Health Protection Agency. Reporting procedures. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/NotificationsOfInfectiousDiseases/ReportingProcedures/ (Accessed 5 Oct 2011)

3 NHS Evidence. Clinical knowledge summaries. Measles-background information. What is it? http://www.cks.nhs.uk/measles#-399797 (Accessed 7 Oct 2011)

4 NHS Evidence. Clinical knowledge summaries. Measles-background information. How common is it? http://www.cks.nhs.uk/measles/background_information/prognosis#-399801 (Accessed 7 Oct 2011)

5 NHS Evidence. Clinical knowledge summaries. Measles-management. http://www.cks.nhs.uk/measles/management/scenario_diagnosis#399724006 (Accessed 7 Oct 2011)

6 NHS Evidence. Clinical knowledge summaries. Measles-background information. What are the complications? http://www.cks.nhs.uk/measles#-399813 (Accessed 7 Oct 2011)

7 NHS Evidence. Clinical knowledge summaries. Measles-background information. What is the Prognosis? http://www.cks.nhs.uk/measles#-399812 (Accessed 7 Oct 2011)

8 NHS Evidence. Clinical knowledge summaries. Mumps-background information. How common is it? http://www.cks.nhs.uk/mumps/management/scenario_diagnosis/diagnosis_of_mumps#-399970 (Accessed 7 Oct 2011)

9 NHS Evidence. Clinical knowledge summaries. Mumps-background information. What is it? http://www.cks.nhs.uk/mumps/management/scenario_diagnosis/diagnosis_of_mumps#-399966 (Accessed 7 Oct 2011)

10 NHS Evidence. Clinical knowledge summaries. Mumps-background information. What are the complications? http://www.cks.nhs.uk/mumps/management/scenario_diagnosis/diagnosis_of_mumps#-399986 (Accessed 7 Oct 2011)

11 Health Protection Agency. Campylobacter. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/Campylobacter/ (Accessed 13 Jan 2012)

12 Health Protection Agency. Campylobacter-clinical information. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/Campylobacter/GeneralInformation/campyCampylobacterClinicalinformation/ (Accessed 13 Jan 2012)

13 Health Protection Agency. Salmonella-clinical information. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/Salmonella/GeneralInformation/salmClinicalinformation/ (Accessed 13 Jan 2012)

14 Health Protection Agency. HIV. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/HIV/ (Accessed 30 Sept 2011)

15 Health Protection Agency. HIV in the United Kingdom: 2010 report. http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1287145367237 (Accessed 30 Sept 2011)

16 Health Protection Agency. Diagnosed HIV prevalence in local authorities (LAs) in England, 2010. http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1228207184991 (Accessed 4 Oct 2011)

17 Health Protection Agency. Numbers receiving HIV care. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/HIV/AccessingHIVCare/ (Accessed 5 Jan 2012)

18 Health Protection Agency, HIV in the United Kingdom: 2011 Report, 2011, http://www.hpa.org.uk/hivuk2011 (Accessed 22 May 2012)

19 Health Protection Agency, Sexual Health Profiles Performance, http://profiles.hpa.org.uk/IAS/dataviews/report/fullpage?viewId=42&reportId=40&indicator=i426&date=2008-2010 (Accessed 22 May 2012)

20 National Chlamydia Screening Programme. Chlamydia trachomatis. http://www.chlamydiascreening.nhs.uk/ps/ct/index.html (Accessed 30 Sept 2011)

21 National Chlamydia Screening Programme. What is the NCSP? http://www.chlamydiascreening.nhs.uk/ps/what_is/index.html (Accessed 30 Sept 2011)

22 NHS Infectious Diseases in Pregnancy Screening Programme. About us. http://infectiousdiseases.screening.nhs.uk/aboutus (Accessed 30 Sept 2011)

23 Department of Health. Screening for infectious diseases in pregnancy: Standards to support the UK antenatal screening programme, 2003. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4050934. (Accessed 30 Sept 2011)

24 Health Protection Agency, Antenatal Screening for Infectious Diseases in England : 2010 update News Archives Volume 5 No 34; 26 August 2011 http://www.hpa.org.uk/hpr/archives/2011/news3411.htm#ans10 (accessed 15 May 2012)

25 Health Protection Agency, National Antenatal Infections Screening Monitoring (NAISM), http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1245581538007 (Accessed 18 Oct 2011)

26 Personal Communication, P Tookey, National Congenital Rubella Surveillance Programme, UCL Institute of Child Health

27 Health Protection Agency. TB—frequently asked questions. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/Tuberculosis/GeneralInformation/TBgen01FAQ/ (Accessed 6 Jan 2012)

28 Health Protection Agency. Tuberculosis (TB). http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/Tuberculosis/ (Accessed 6 Jan 2012)

29 Health Protection Agency, Geography - TB data by UK country, http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1287147446115 (accessed 22 June 2012)

30 Health Protection Agency, Geography - TB data by UK local area, http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/Tuberculosis/TBUKSurveillanceData/EnhancedTuberculosisSurveillance/TBEnhanced03localarea/ (accessed 22 June 2012)

31 Department of Health. Immunity and how vaccines work. Immunisation against infectious disease Chapter 1 http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_063589.pdf (accessed 14 Dec 2011)

32 Health Protection Agency. Vaccination, immunisation. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/VaccinationImmunisation/ (accessed 14 Dec 2011)

33 Health Protection Agency. Cover methods. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/VaccineCoverageAndCOVER/COVERMethods/ (Accessed 27 Sept 2011)

34 Health Protection Agency. MMR general information. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/MMR/GeneralInformation/ (Accessed 30 Sept 2011)

35 European Centre for Disease Prevention and Control. European monthly measles monitoring. August 2011 http://www.ecdc.europa.eu/en/publications/Publications/1109_European_monthly_measles_monitoring_August_2011.pdf (Accessed 30 Sept 2011)

36 Department of Health. Human papillomavirus (HPV). In: Immunisation against infectious disease.3rd edition. London: The Stationery Office; 2006. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_130255.pdf (Accessed 27 Sept 2011)

37 Health Protection Agency. Human papillomavirus (HPV)-cervical cancer and genital warts. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/GenitalWarts/ (Accessed 4 January 2012)

38 Department of Health. Immunisation against infectious disease. Update to chapter 32. Tuberculosis. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_128077.pdf (Accessed 26 Sept 2011)

39 The Health and Social Care Information Centre. NHS immunisation statistics, England 2008-09. http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles/immunisation/nhs-immunisation-statistics-england-2008-09 (Accessed 28 Dec 2011)

40 Health Protection Agency. General information on Hepatitis B. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/HepatitisB/GeneralInformationHepatitisB/hepbGeneralInfo/ (Accessed 12 Jan 2012)

41 Department of Health. Influenza. In: Immunisation against infectious disease.3rd edition. London: The Stationery Office; 2006. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_130255.pdf (Accessed 27 Sept 2011)

42 Department of Health. Pneumococcal. In: Immunisation against infectious disease.3rd edition. London: The Stationery Office; 2006. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_130255.pdf (Accessed 28 Sept 2011)

43 Mitchell R and Popham F (2008) Effect of exposure to natural environment on health inequalities: An observational population study. The Lancet 372 (9650): 1655–1660

44 Maas J, Verheij RA, de Vries S, Spreeuwenberg P, Schellevis FG and Groenewegen PP (2009) Morbidity is related to a green living environment. Journal of Epidemiology and Community Health 63: 967–97

45 Faculty of Public Health. Great outdoors: how our natural health service uses green space to improve wellbeing. http://www.fph.org.uk/uploads/r_great_outdoors.pdf (Accessed 4 Oct 2011)

46 Department for Environment, Food and Rural Affairs. Sources and impacts of air pollution. http://www.defra.gov.uk/environment/quality/air/air-quality/impacts/ (Accessed 6 Oct 2011)

47 Parliamentary Office of Science and Technology. UK Indoor Air Quality. POST Note 366, November 2010. http://www.parliament.uk/briefing-papers/POST-PN-366 (Accessed 14 June 2012)

48 Gauderman WJ, Avol E, Gilliland F, Vora H, Thomas D, Berhane K et al. The Effect of Air Pollution on Lung Development from 10 to 18 Years of Age. N Engl J Med 2004; 351(11): 1057-67

49 Horak Jr F, Studnicka M, Gartner C, Spengler JD, Tauber E, Urbanek R et al. Particulate matter and lung function growth in children: a 3-yr follow-up study in Austrian school children. Eur Respir J 2002; 19: 838–845

50 Jerychowski W, Flak E, Mroz E. The Adverse Effect of Low Levels of Ambient Air Pollutants on Lung Function Growth in Preadolescent Children. Environ Health Perspect 1999; 107 (8): 669-74

51 Health Protection Agency. Health protection in the 21st century. http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947403055 (Accessed 7 Oct 2011)

52 Office for National Statistics, Population Estimates by Age and Sex, http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Population+Estimates+by+Age+and+Sex, (Accessed 14 Oct 2011)

53 Quality Outcomes Framework, http://www.ic.nhs.uk/statistics-and-data-collections/audits-and-performance/the-quality-and-outcomes-framework (Accessed between 1 Oct 2011 and 31st May 2012)

54 Kent and Medway Air Quality Partnership, Air Quality and Planning Technical Guidance, July 2011

55 Department for Environment, Food and Rural Affairs. National objectives. http://aqma.defra.gov.uk/objectives.php (Accessed 14 Oct 2011)

56 Committee on the Medical Effects of Air Pollutants. Ozone. http://www.comeap.org.uk/introduction-to-air-pollution/103-ozone.html (Accessed 14 Oct 2011)

57 Medway Council, Area Quality Management Areas, http://www.medway.gov.uk/environmentandplanning/environmentalhealth/airquality/airqualitymanagementareas.aspx, (Accessed 23 May 2012)

58 Medway Council, 2010 Air Quality Progress Report http://www.medway.gov.uk/pdf/Medway%20Progress%20Report%202010%20A.pdf

59 Department of Health. Healthy lives, healthy people. A tobacco control plan for England. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_124960.pdf (Accessed 7 Oct 2011)

60 Spencer S, Jolley J Health Equity Audit: Stop Smoking Service Medway 2011 http://www.kmpho.nhs.uk/easysiteweb/getresource.axd?assetid=216973&type=0&servicetype=1 (Accessed May 2012)

61 Department of Health, Publications, Statistical Release – Smoking at Delivery http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsStatistics/DH_130858, (Accessed 17 Oct 2011)

62 Medway Stop Smoking Service, Directorate of Public Health, NHS Medway/Medway Council

63 National Institute for Health and Clinical Excellence, Quitting smoking in pregnancy and following childbirth (PH26). http://guidance.nice.org.uk/PH26 (accessed 17 Oct 2011)

64 Thomson G, Wilson N, Edwards R. Should smoking in outside public spaces be banned? Yes. BMJ 2009;338:76

65 Explain Market Research Ltd. Insight Research into Tobacco Control in Medway. Newcastle upon Tyne: Explain Market Research Ltd; May 2010. (Unpublished Research)

66 Office for National Statistics. Excess winter mortality in England and Wales, 2010/11 (provisional) and 2009/10 (final). http://www.ons.gov.uk/ons/dcp171778_241947.pdf (Accessed 12 Jun 2012)

67 National Heart Forum, Eaga Partnership Charitable Trust, Faculty of Public Health Medicine, Help the Aged and the Met Office. Fuel poverty and health. A guide for primary care organizations, and public health and primary care professionals. http://www.fph.org.uk/uploads/toolkit_fuel_poverty.pdf (Accessed 10 Oct 2011)

68 UK National Statistics Publication Hub, Topic guide to: Fuel Poverty, http://www.statistics.gov.uk/hub/business-energy/energy/fuel-poverty (Accessed 22 June 2012)

69 Dinsdale H et al. Technical Report: Excess Winter Mortality. South East public Health Observatory. February 2006. ISBN 0-9542971-5-6 http://www.sepho.org.uk/Download/Public/10098/1/excessWinterMortality.pdf

70 West Midlands Public Health Observatory. Excess winter deaths (EWD) trend, 1990-2009. http://www.wmpho.org.uk/excesswinterdeathsinEnglandatlas/J/atlas.html (Accessed 12 Oct 2011)

71 Department of Health. Healthy lives, healthy people. A call to action on obesity in England. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_130487.pdf (Accessed 14 Oct 2011)

72 Department for Business Innovation and Skills. Foresight. Tackling obesities: Future choices project report. 2nd edition. http://www.bis.gov.uk/assets/bispartners/foresight/docs/obesity/17.pdf (Accessed 14 Oct 2011)

73 Department for Business Innovation and Skills. Foresight. Tackling obesities: Future choice-obesogenic environments-evidence review. http://www.bis.gov.uk/assets/bispartners/foresight/docs/obesity/03.pdf (Accessed 14 Oct 2011)

74 Bodor JN, Rice JC, Farley TA, Swalm CM, Rose D. The Association between obesity and urban food environments. J Urban Health 2010; 87(5): 771-781

75 Boone-Heinonen J, Gordon-Larsen P, Kiefe CI, Shikany JM, Lewis CE, Popkin BM. Fast food restaurants and food stores. Longitudinal associations with diet in young to middle-aged adults: the CARDIA study. Arch Intern Med 2011; 171(13): 1162-1170

76 Pereira MA, Kartashov AI, Ebbeling CB, Van Horn L, Slattery ML, Jacobs DR, Ludwig DS. Fast-food habits, weight gain, and insulin resistance (the CARDIA study): 15-year prospective analysis. The Lancet 2005; 365: 36-42

77 Fast Food Outlet Map by Local Authority, National Obesity Observatory, http://www.noo.org.uk/uploads/doc/vid_15683_FastFoodOutletMap2.pdf (accessed 21 June 2012)

78 Poti JM, Popkin BM. Trends in energy intake among US children by eating location and food source, 1977-2006. J Am Diet Assoc 2011; 111: 1156-1164

79 Denney-Wilson E, Crawford D, Dobbins T, Hardy L, Okely AD. Influences on consumption of soft drinks and fast foods in adolescents. Asia Pac J Clin Nutr 2009; 18(3): 447-452

80 Department of Health. Alcohol advice. http://www.dh.gov.uk/en/Publichealth/Alcoholmisuse/DH_125368 (Accessed 26 Oct 2011)

81 The Health and Social Care Information Centre. Statistics on alcohol: England 2011. http://www.ic.nhs.uk/webfiles/publications/003_Health_Lifestyles/Alcohol_2011/NHSIC_Statistics_on_Alcohol_England_2011.pdf (Accessed 26 Oct 2011)

82 The Marmot Review. Fair Society, Healthy Lives London: 2010. http://www.instituteofhealthequity.org/projects/fair-society-healthy-lives-the-marmot-review/fair-society-healthy-lives-full-report (Accessed 10 May 2012)

83 Morleo M, Spalding J, Carlin H, Deacon L, Cook PA, Tocque K et al. Alcohol pen portraits: segmentation series report 4. North West Public Health Observatory. http://www.cph.org.uk/showPublication.aspx?pubid=641 (Accessed 10 May 2012)

84 Cabinet Office. Alcohol harm reduction strategy for England. March 2004. http://webarchive.nationalarchives.gov.uk/+/http://www.cabinetoffice.gov.uk/media/cabinetoffice/strategy/assets/caboffce%20alcoholhar.pdf (Accessed 26 Oct 2011)

85 Livingston M, Alcohol outlet density and assault: a spatial analysis. Addiction 2008; 103:619-628

86 Zhu L, Gorman DM, Horel S. Alcohol outlet density and violence: a geospatial analysis. Alcohol Alcohol 2004;39(4): 369-375

87 Tatlow JR, Clapp JD, Hohman MM. The relationship between the geographic density of alcohol outlets and alcohol-related hospital admissions in San Diego County. J Community Health 2000;25(1):79-88

88 Truong KD, Sturm R. Alcohol environments and disparities in exposure associated with adolescent drinking in California. Am J Public Health 2009;99:264–270

89 Durnford AJ, Perkins TJ, Perry JM. An evaluation of attendances to an inner city emergency department before and after the introduction of the UK Licensing Act 2003. BMC Public Health 2008; 8:379. http://www.biomedcentral.com/1471-2458/8/379 (Accessed 26 Oct 2011)

90 Jones LA, Goodacre S. Effect of 24-h alcohol licensing on emergency departments: the South Yorkshire experience. Emerg Med J 2010;27:688-691

91 Home Office, Additional guidance for health bodies on exercising new functions under the Licensing Act 2003, http://www.homeoffice.gov.uk/publications/alcohol-drugs/alcohol/alcohol-supporting-guidance/health-responsible-authority?view=Binary (Accessed 28 June 2012)

92 Office for National Statistics, Vital statistics tables, 2010

93 Health Protection Agency, Development of a UK Children's Environment and Health Strategy, Regional Priority Goal 2: Accidents, Injuries, Obesity and Physical Activity, September 2007, http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947330118 (Accessed 11 Jan 2012)

94 Secondary Uses Service Payment by Results tables via Kent and Medway Health Informatics Service Data Warehouse

95 Royal Society for the Prevention of Accidents, Safety and Risk Education in the Curriculum, http://www.rospa.com/safetyeducation/adviceandinformation/health-and-safety-at-school/curriculum/default.aspx (Accessed 27 Oct 2011)

96 Cheeseman, C. Medway Council, 2012. Personal communication.

97 Royal Society for the Prevention of Accidents, Accidents to older people www.rospa.com (Accessed 2011)

98 Royal Society for the Protection of Accidents, www.rospa.com, (Accessed 2011)

99 Department for the Environment, Transport and the Regions, Tomorrow's Roads—Safer for Everyone, published 1st March 2000

100 Medway Council, Road crash (and casualty) data collection, http://www.medway.gov.uk/transportandstreets/roadshighwaysandpavements/roadsafety/roadsafetyengineering/roadcrashdatacollection.aspx (Accessed 13 Jan 2012)

101 Health and Safety Executive, Health and safety statistics, http://www.hse.gov.uk/statistics/index.htm (Accessed 12 Jan 2012)

102 Health and Safety Executive, Workplace injury http://www.hse.gov.uk/statistics/causinj/index.htm (Accessed 12 Jan 2012)

103 Health and Safety Executive, Health and Safety Online, https://handson.hse.gov.uk/hse/public/home.aspx, (Accessed 12 Dec 2011)

104 Health and Safety Executive, Model Examples http://www.hse.gov.uk/enforce/enforcementguide/court/sentencing-examples.htm (Accessed 12 Jan 2012)

105 Health Protection Agency, Environmental noise and health in the UK. Didcot: Health Protection Agency; 2010. http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1279888026747 (Accessed 30 May 2012)

106 World Health Organization. Environmental burden of disease associated with inadequate housing. Bonn: World Health Organization; 2011. http://www.euro.who.int/__data/assets/pdf_file/0003/142077/e95004.pdf (Accessed 20 Dec 2011)

107 Medway Council, Housing Stock Condition Survey 2006/07 http://www.medway.gov.uk/pdf/Stock%20condition%20survey%201.pdf (Accessed 25 Jan 2012)

108 World Health Organization. Preventing children accidents and improving home safety in the European region. Identifying means to make dwellings safer. Bonn: World Health Organization; 2005. http://www.euro.who.int/__data/assets/pdf_file/0008/98666/Bonn_accident_rep.pdf (Accessed 21 December 2011)

109 Miles JCH, Appleton JD, Rees DM, Green BMR, Adlam KAM and Myers AH. Indicative atlas of radon in England and Wales. Health Protection Agency and British Geological Survey. November 2007. http://www.ukradon.org/downloads/Reports/Eng_Wales_Placenames.pdf (Accessed 19 June 2012)

110 Health Protection Agency. Radon. http://www.hpa.org.uk/Topics/Radiation/UnderstandingRadiation/UnderstandingRadiationTopics/Radon/ (Accessed 30 May 2012)

111 Health Protection Agency, Indicative Atlas of Radon in England and Wales, HPA-RPD-033, available at www.hpa.org.uk

112 Health Protection Agency. Carbon monoxide. London: Health Protection Agency; 2011. http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947421806 (Accessed 22 Dec 2011)

Medway Council
Serving You

NHS Medway

NHS Kent and Medway
50 Pembroke Court
Chatham Maritime
Chatham
Kent ME4 4EL
Tel: 01634 335 020
Email: info@medway.gov.uk

Medway Council
Gun Wharf
Dock Road
Chatham
Kent ME4 4TR
Tel: 01634 306 000
Email: info@medway.gov.uk

Design and print by Cherry: www.cherrycommunications.co.uk