

## 7. ADULTS

### 7.4. Communicable Diseases

Communicable diseases are diseases that are transmissible from one person, or animal, to another. They spread either directly from person to person or through another species (e.g. mosquitoes) or through the environment (e.g. water). The spread of disease in the community is determined by a number of factors such as environmental, social conditions that favour the germ, and the relative protection of the population.

Public Health England (PHE) provides local health protection services and also leads the public health response to communicable disease outbreaks and emergencies that need specialist expertise. PHE provides specialised advice and support to local government Directors of Public Health to improve the health and wellbeing of their population.

This chapter considers communicable diseases as a broad topic and provides local information on few major communicable diseases. Sexual Health, Childhood immunisations, vaccine preventable diseases, influenza are covered in greater detail in separate JSNA sections.

#### *7.4.1. The importance of Communicable diseases*

Communicable diseases are still a major health problem globally and in the UK. Human infectious diseases in England, including costs to the health service, labour market and the individual, are estimated at £30 billion per year.

In the UK,

- the number of reported diagnoses of gonorrhoea<sup>1</sup> increased 25% from 2010 to 2011;
- in 2012, there were 8,741 cases of Tuberculosis (TB), which is high compared to most Western European countries<sup>2</sup>;
- an estimated 25% of the population is affected by gastrointestinal infection each year, leading to approximately one million GP visits and nearly 29 million days lost from school or work; and
- in 2011, 21% of all days of work were lost because of coughs, cold and flu.<sup>3</sup>

#### *7.4.2. Communicable disease Information in Buckinghamshire*

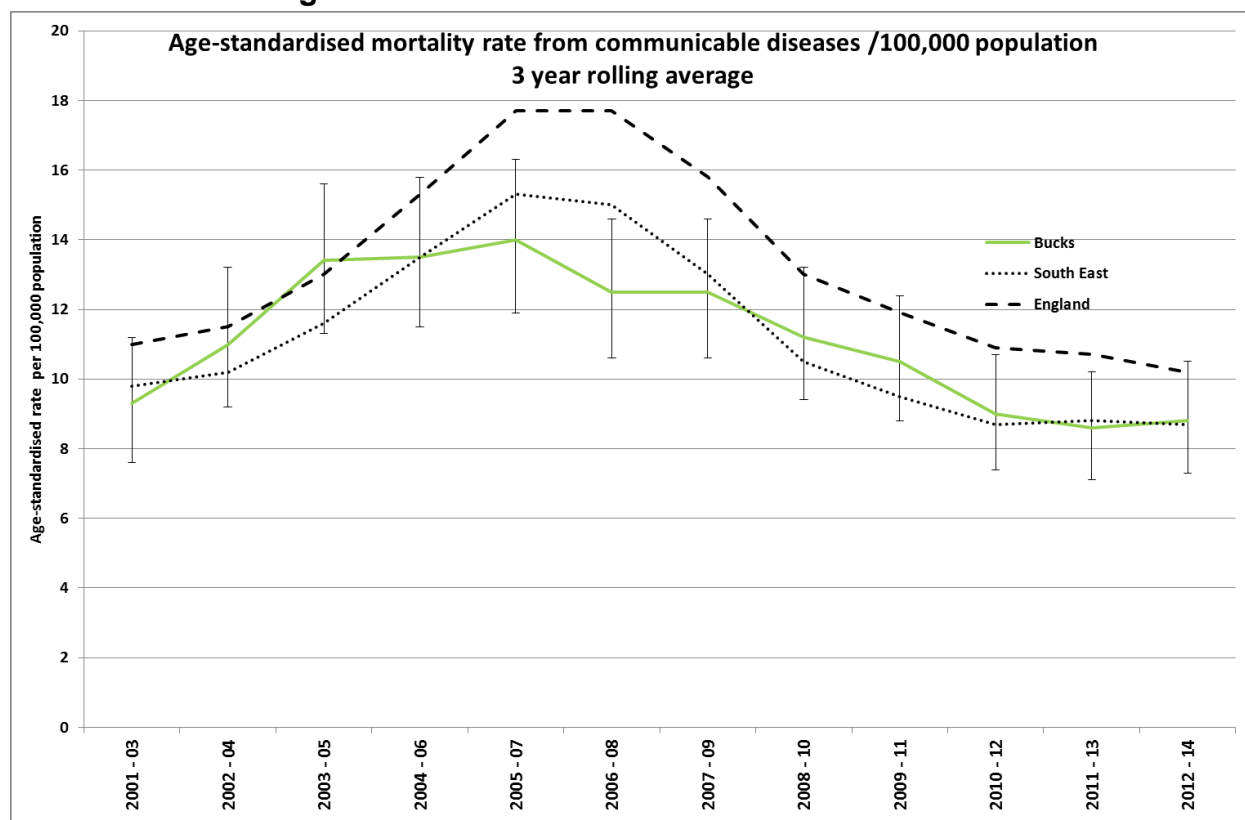
##### 7.4.2.1. Mortality

On average, 106 people died per year from communicable diseases in 2001/03 (9.3 deaths per 100,000 people), which increased to 167 (14 deaths per 100,000 people)

in 2005/07 and fallen to 126 (8.8 deaths per 100,000 people) in 2012/14. Age-standardised mortality rate (three year rolling average) from communicable diseases per 100,000 population in Buckinghamshire compared to the South East and England between 2001/03 and 2012/14 is shown in figure 1.

The number of deaths from certain infectious and parasitic diseases is classified by the underlying cause of death recorded as ICD-10 codes A00-B99, and J09-J11 for influenza registered in the respective calendar years.

**Figure 1. Age-standardised mortality rate (three year rolling average) from communicable diseases /100,000 populations in Buckinghamshire compared to South East & England. 2001/03 – 2012/14**



Source: ONS 2011 Census based mid-year population estimates. Note: deaths from certain infectious and parasitic diseases (classified by underlying cause of death recorded as ICD-10 codes A00-B99), influenza (J09-J11)

#### 7.4.2.2. Morbidity

The total number of communicable diseases cases by type is shown in table 1.

**Table 1. Total number of communicable diseases cases by type in Buckinghamshire, 2010-2014.**

<b>Communicable diseases</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
Tuberculosis	48	52	54	45	37
TB rate / 100,000 population	9.5	10.3	10.6	8.7	7.2
<b>Blood Borne Viruses</b>					
Hepatitis B all (acute & chronic)	57	55	29	38	33
Hepatitis C confirmed	57	64	63	69	74
Legionella	6	0	*	*	*
<b>Vaccine Preventable Diseases</b>					
Measles (confirmed)	*	*	*	*	0
Mumps (confirmed)	21	26	7	16	16
Rubella	0	0	*	*	*
Pertussis	9	12	53	9	6
Meningococcal Disease	7	6	6	7	9
<b>Gastrointestinal Diseases</b>					
Campylobacter	542	646	684	608	644
Cryptosporidiosis	51	37	64	35	74
E. coli O157 confirmed	9	6	*	8	7
Giardia lamblia	25	23	20	11	12
Hepatitis A	*	7	6	6	*
Hepatitis E	*	*	*	5	16
Salmonella (typhi & paratyphi)	5	7	6	*	*
Salmonella (excl. enteric)	74	62	56	47	45
Shigella	23	10	18	16	12
<b>Group A Streptococcal Disease</b>					
Scarlet Fever	37	43	57	46	167
Invasive Group A Streptococcus (iGAS)	9	11	16	17	31

*\*Small numbers less than 5. Source: NOIDS database, Thames Valley Health Protection Unit 2014, Public Health England*

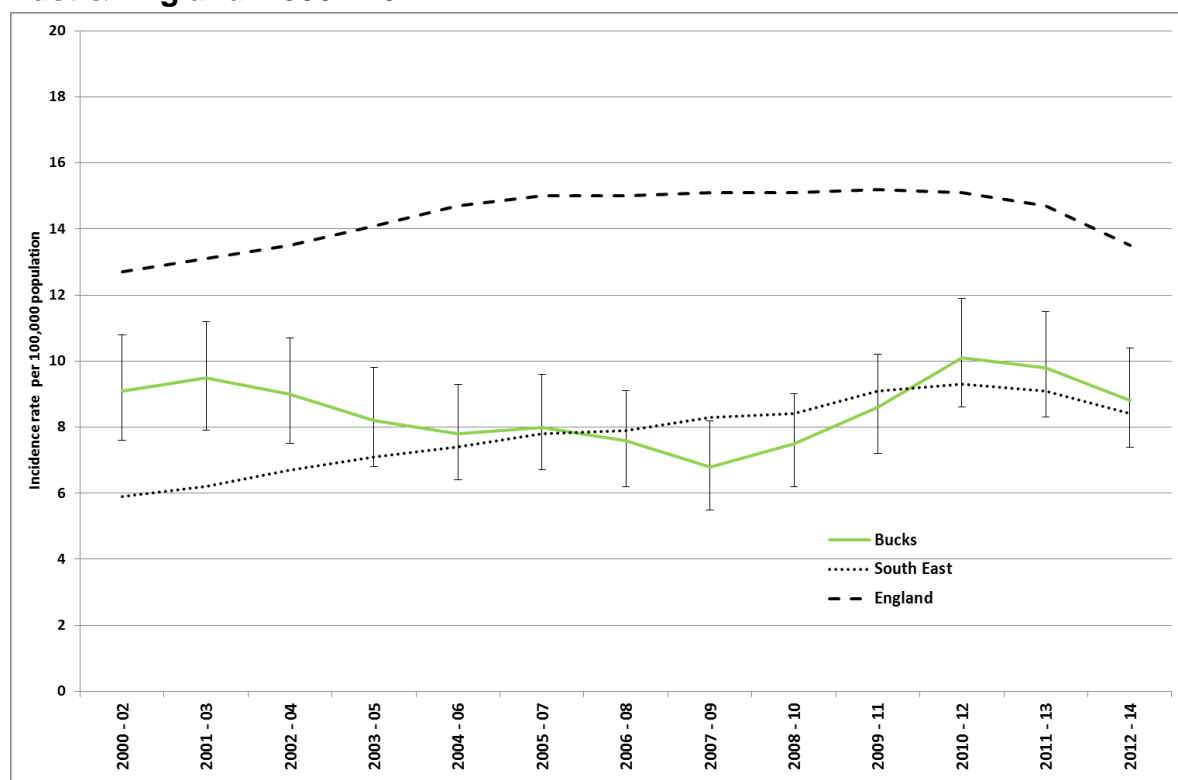
#### **i. Tuberculosis**

TB re-emerged as a serious public health problem in the UK over the last two decades, with TB incidence rising above the European average. It is important to monitor TB treatment completion (Public Health Outcomes Framework indicator 3.05i), but in many local authorities areas it will not be possible to publish data for this indicator because there are low numbers of cases. TB incidence rate is a supplementary indicator to help local authorities understand why treatment completion data may not be published for their area, and also to give local authorities information about levels of TB in their area and surrounding areas. Information about

TB incidence will inform policy decisions around local and national approaches to TB.

The three-year average number of reported new cases per year (based on case notification) per 100,000 populations between 2000 and 2014 is shown in figure 2 below. The annual rate (three year average) of reported new cases of TB per 100,000 populations in Buckinghamshire was 8.8 (2012/14), which is comparable with South East (8.4) and significantly lower than England average (13.5) during the same period.

**Figure 2. Incidence Rate (three year rolling average) of reported new cases of TB per year per 100,000 populations in Buckinghamshire compared to South East & England. 2000 - 2014**



Source: Public Health England

The annual number of drug sensitive TB cases notified to Enhanced Tuberculosis Surveillance System (ETS) who had completed a full course of treatment within 12 months of treatment start date is shown in Figure 3 for Buckinghamshire (exclusions: cases with rifampicin resistance or multi-drug resistant TB, and cases with central nervous system, spinal, miliary or disseminated TB who may require longer than the standard six month treatment course). The percentage of drug sensitive TB cases completing treatment for TB within 12 months in Bucks was 81.1% (2013), which is statistically comparable to both South East (85.1%) and England average (84.8%) during the same period.

**Figure 3. Percentage of drug sensitive TB cases completing treatment within 12 months in Bucks compared to South East & England, 2003 – 13.**



Source: Public Health England

## ii. Vaccine Preventable Diseases

Vaccination coverage in Buckinghamshire is dealt in detail in childhood immunisation chapter. This section gives the number of cases notified or confirmed of various vaccine preventable diseases.

- **Measles:** The number of measles cases in Buckinghamshire is small (< five) and is in line with the decreasing incidence of measles in England since the MMR catch-up campaign in 2013.
- **Mumps:** There were 16 mumps cases each year in 2013 and 2014 in Buckinghamshire. The majority of cases in Thames Valley occurred in young adults (16-30), which is consistent with the national picture.
- **Pertussis:** Number of notified (and confirmed) pertussis cases peaked in 2012 (98 notified 53 confirmed) during the national outbreak and dropped to 28 notified cases (six confirmed) in 2014.
- **Meningitis:** The number of notified cases of meningococcal disease is small in Buckinghamshire. However, notification of cases of confirmed meningococcal meningitis showed an increase in Thames Valley in 2014, which is partially attributable to the increase in incidence of serogroup W135 nationally. As a result, the national vaccination programme was introduced to offer the Men ACWY vaccination in schools and University starters.

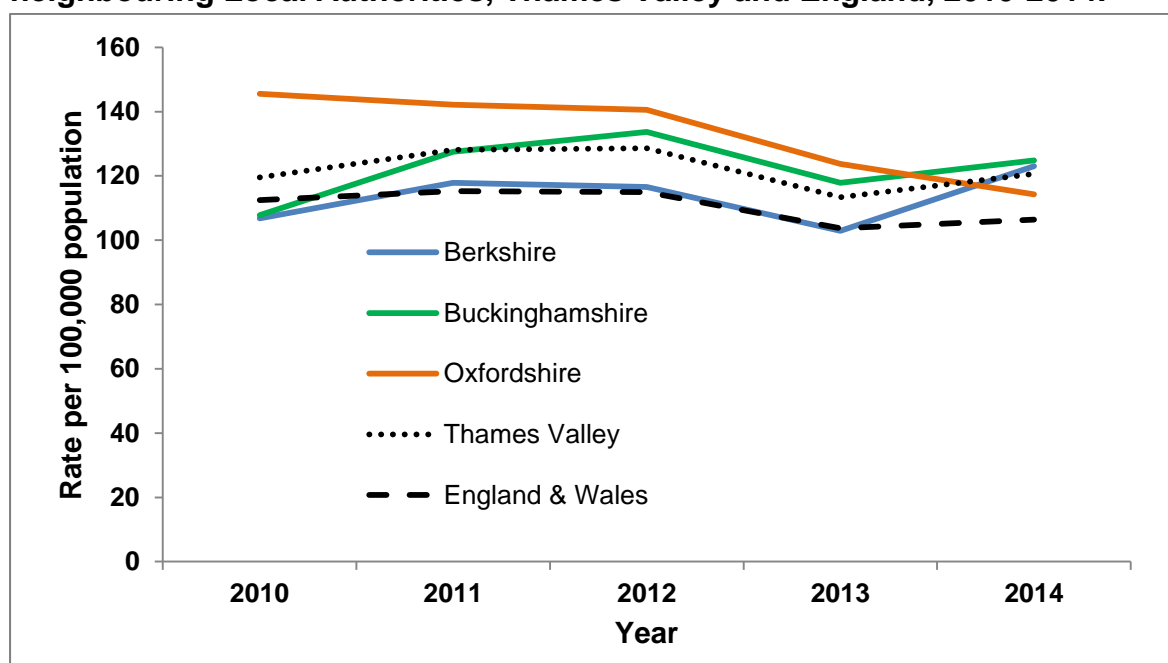
### iii. Gastrointestinal Diseases

The most commonly reported gastrointestinal infection was Campylobacter (2014) in England and Wales and the Thames Valley, followed by Norovirus, Salmonella nationally, and Salmonella, Giardia lamblia, and Cryptosporidium in the Thames Valley. Many people with gastrointestinal infections do not present to their GP or to secondary care and so will not be tested; therefore confirmed cases of gastrointestinal diseases are likely to underestimate the actual incidence.

#### a. Campylobacter

The number of confirmed campylobacter notifications increased in 2014, but still remains lower than was seen in 2011 and 2012. The figure below (figure 4) shows the trends in confirmed campylobacter notifications between 2010 and 2014 in Buckinghamshire compared to South East and national averages.

**Figure 41. Rate (per 100,000 ) of *Campylobacter* cases in Bucks compared to neighbouring Local Authorities, Thames Valley and England, 2010-2014.**

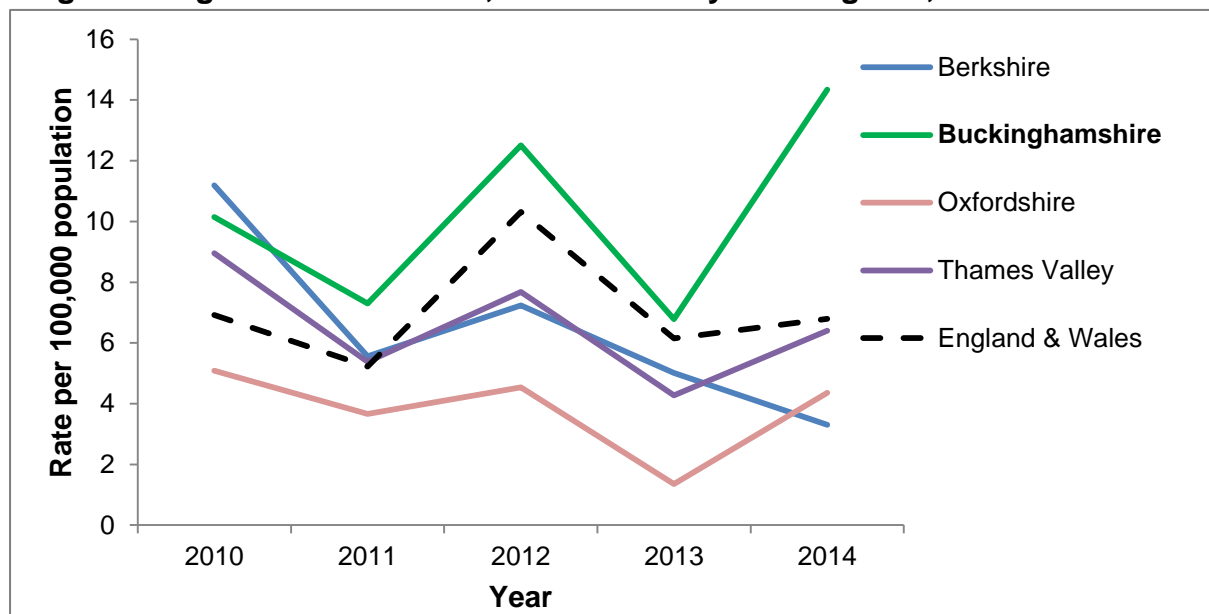


Source: NOIDS database, TVPHEC. HPA National surveillance system for gastrointestinal and zoonotic infections (2010-2012), PHE Labbase2 (2013-November 2014) and SGSS (December 2014)

#### b. Cryptosporidiosis

Cryptosporidiosis cases tend to vary seasonally (with higher incidences in the spring and autumn) and geographically. Outbreaks are typically waterborne and tend to occur at swimming pools which, combined with poorer hygiene in young children, explains the age distribution of cryptosporidiosis among children. The figure below (Figure 5) shows the rate (per 100,000 populations) of cryptosporidiosis cases in Buckinghamshire compared to Thames Valley and England averages between 2010 and 2014. The increase in the number of notified confirmed cases in Buckinghamshire (2014) was largely due to the outbreak of *Cryptosporidium* in the first quarter of 2014 in Aylesbury.

**Figure 5. Rate (per 100,000) of cryptosporidiosis cases in Buckinghamshire, neighbouring Local Authorities, Thames Valley and England, 2010-2014.**

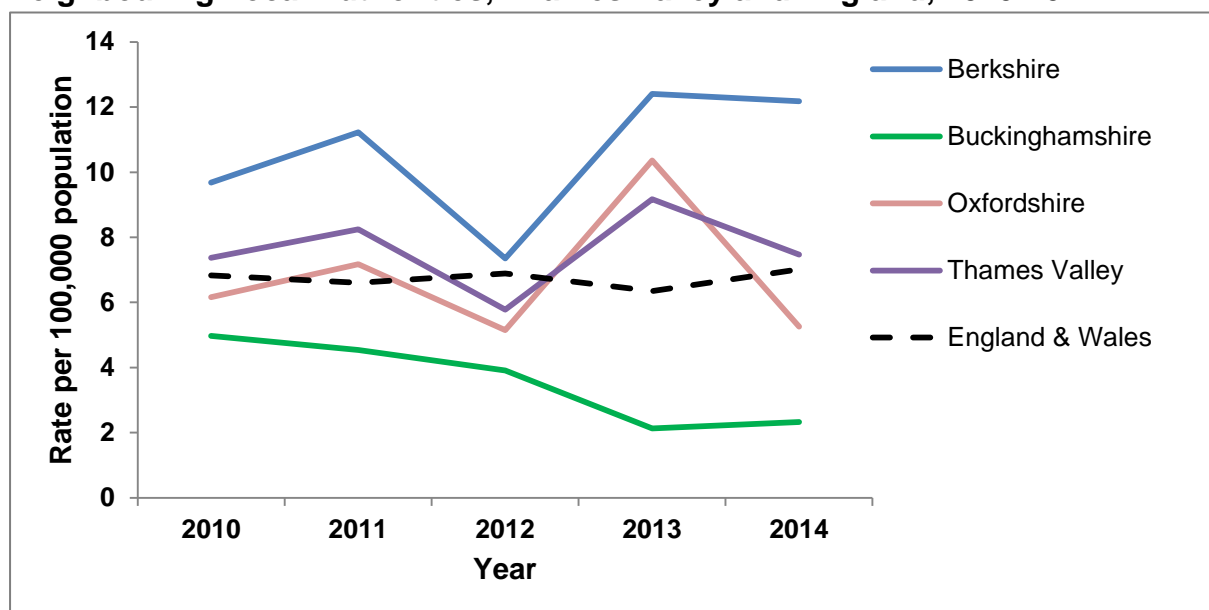


Source: NOIDS database, TVPHEC, HPA National surveillance system for gastrointestinal and zoonotic infections (2010-2011), PHE Labbase2 (2012-November 2014) and SGSS (Dec 2014)

c. Giardia

The rate of notified confirmed *Giardia lamblia* cases (per 100,000 populations) remains lower in Buckinghamshire compared to the other counties, Thames Valley and England averages between 2010 and 2014 (figure 6).

**Figure 6. Rate of Giardia lamblia cases in Buckinghamshire, compared to neighbouring Local Authorities, Thames Valley and England, 2010-2014.**



Source: NOIDS database, TVPHEC, HPA National surveillance system for gastrointestinal and zoonotic infections (2010-2012), PHE Labbase2 (2013-November 2014) and SGSS (December 2014)

d. E. coli O157 confirmed

Vero cytotoxin-producing *Escherichia coli* (VTEC) are a group of bacteria that cause infectious gastroenteritis. *E. coli* O157 is the most frequently reported VTEC strain to cause illness in England and Wales. VTEC is relatively rare compared to other causes of gastrointestinal diseases, but can cause serious disease and complications.

In the Thames Valley, the number of confirmed VTEC cases has increased over the preceding five years. The rate of diagnosed infections per 100,000 population in England and Wales for 2014 was 1.47, similar to the Thames Valley rate of 1.46 notifications per population. The highest rate in Thames Valley for 2014 was in Berkshire (2.28), with rates below one notification per 100,000 population in Buckinghamshire and Oxfordshire. This is a reversal from previous years where higher rates of *E. coli* O157 were typically higher in Oxfordshire and Buckinghamshire, and is likely due to the use of polymerase chain reaction (PCR) testing at Wexham Park.

e. Hepatitis (A, E)

Number of hepatitis A cases in Buckinghamshire remained low, but increased in 2014 across the Thames Valley due to a cluster of less than five cases in Wokingham, with the infection likely having been acquired from travel to Zimbabwe.

The number of hepatitis E cases has increased significantly from one in 2010 to 16 in 2014, which is similar to Thames Valley and throughout the UK over the last few years. This increase was attributed to the increase in awareness of indigenous cases and increased testing across the UK. This increase is seen across age groups and sex. Consumption of pork products has been found in a case control study to be significantly associated with indigenous cases in the UK. Most cases in Thames Valley appear in men, particularly those who are middle-aged to elderly, in keeping with national trends.

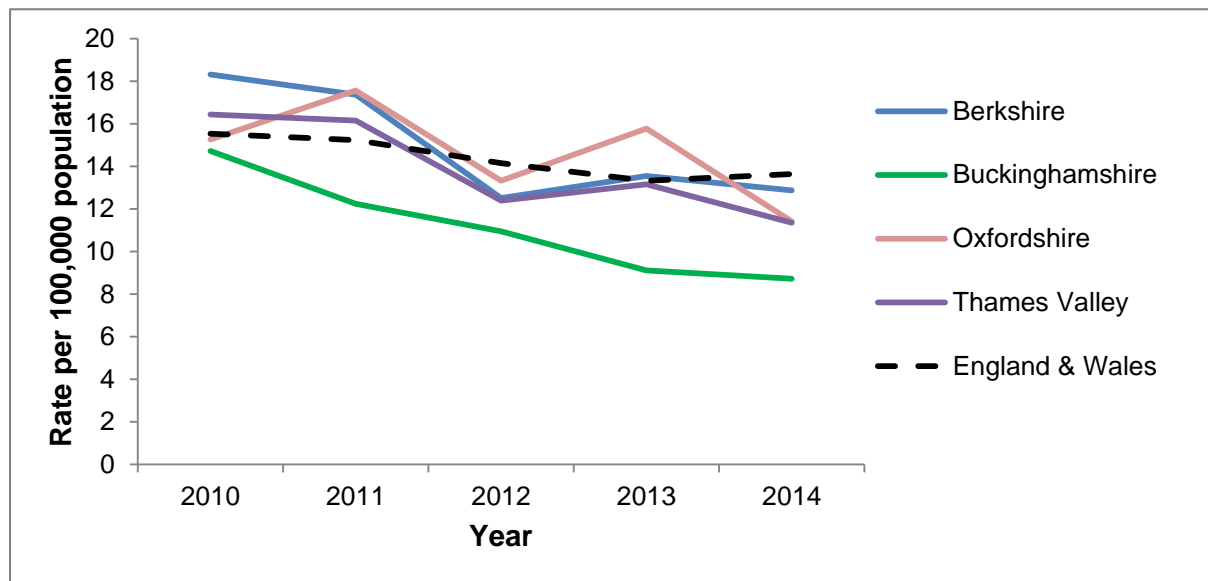
f. Salmonella (typhi and paratyphi) (excl. enteric)

Cases of *Salmonella* typhi and para typhi are very small in Buckinghamshire and have remained at similar numbers, despite being higher than the England and Wales rate. All cases in 2014 were considered travel related by PHE, with most cases having travelled to South Asia.

The number and rate of *Salmonella* (non – enteric) cases has dropped in Buckinghamshire from 74 in 2010 to 45 in 2014 (Figure 7). This is similar to decreasing trends seen throughout Thames Valley and the lowest number of *Salmonella* cases in the last five years. *Salmonella* varies seasonally with late-summer peaks, a national trend which is mirrored in Thames Valley and Buckinghamshire.



**Figure 7. Rate (per 100,000) of Salmonella cases in Buckinghamshire, compared to neighbouring Local Authorities, Thames Valley and England, 2010-2014.**



Source: NOIDS database, TVPHEC. HPA National surveillance system for gastrointestinal and zoonotic infections (2010-2012), PHE Labbase2 (2013-November 2014) and SGSS (December 2014)

#### g. Shigella

*Shigella* which causes bacillary dysentery is due to the infection of four species: *Shigella sonnei*, *flexneri*, *boydii*, and *dysenteriae*. It is mainly associated with travel, but is readily transmitted between children in the home or nursery setting and outbreaks have been linked to person to person transmission in men who have sex with men. In the Thames Valley the numbers of shigellosis cases have remained relatively constant.

In Buckinghamshire, the number of cases has come down from 23 in 2010 to 12 in 2014. In England and Wales the rate of diagnosis per 100,000 population was 4.0, slightly higher than the Thames Valley rate of 3.8 notifications per 100,000 population.

#### iv. **Group A Streptococcal Disease**

The new cases of streptococcus related illness has increased over the past five years; particularly notifications of scarlet fever (caused by Group A streptococcus). Scarlet fever is seasonal with a higher incidence during winter. The highest rate of cases occur in those under 15, and while there has been an increase in 2014 in the rate of notifications in other age groups, the increase seen is mainly attributable to an increase in children. The increase in publicity has likely raised awareness and may have artificially inflated notifications of scarlet fever, in addition to the real increase we are currently seeing in the UK.

In Buckinghamshire, the number of new cases of scarlet fever notified increased from 37 in 2010 to 167 in 2014. This is in line with the national outbreak of scarlet

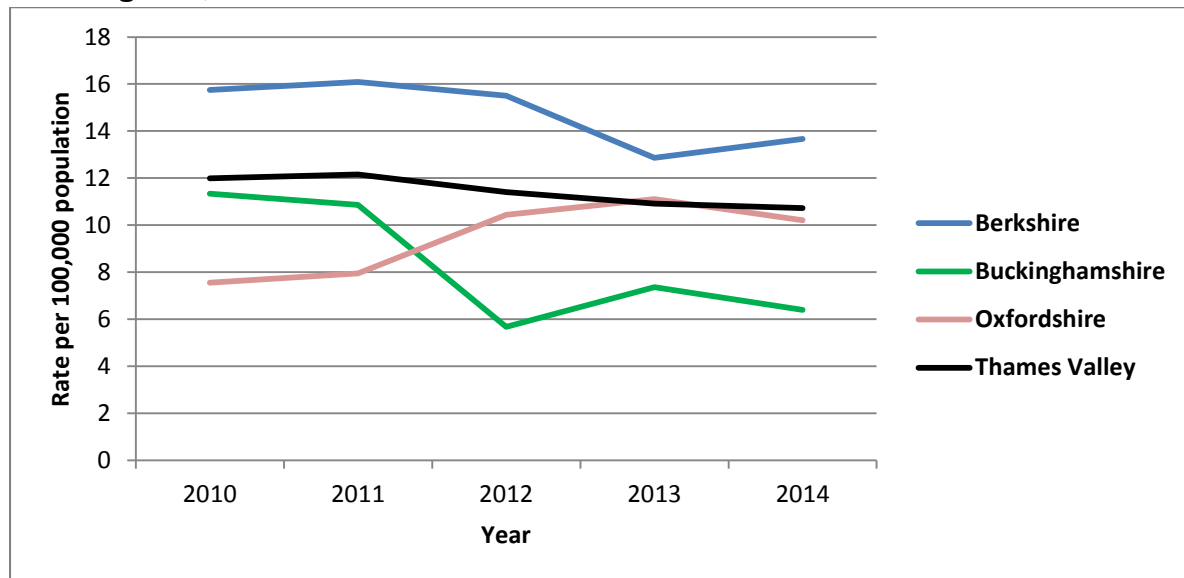
fever which began in February and peaked in March-April, and continued on into 2015. The number of Invasive Group A Streptococcus (iGAS) in Buckinghamshire has also increased from nine to 31 during the same period. In Thames Valley, the numbers of invasive Group A streptococcal infections have also tripled since 2010. Nationally figures have remained at the upper threshold of expected numbers.

**v. Blood Borne Viruses**

**a. Hepatitis B**

The number and rate of chronic hepatitis B cases has slowly decreased in Buckinghamshire (57 in 2010 to 33 in 2014) in the last four years in line with the Thames Valley average. Figure 8 below shows the rate in Buckinghamshire compared to other Counties and the Thames Valley average.

**Figure 8. Rate (per 100,000) of hepatitis B cases (acute and chronic) in Buckinghamshire, compared to neighbouring Local Authorities, Thames Valley and England, 2010-2014.**

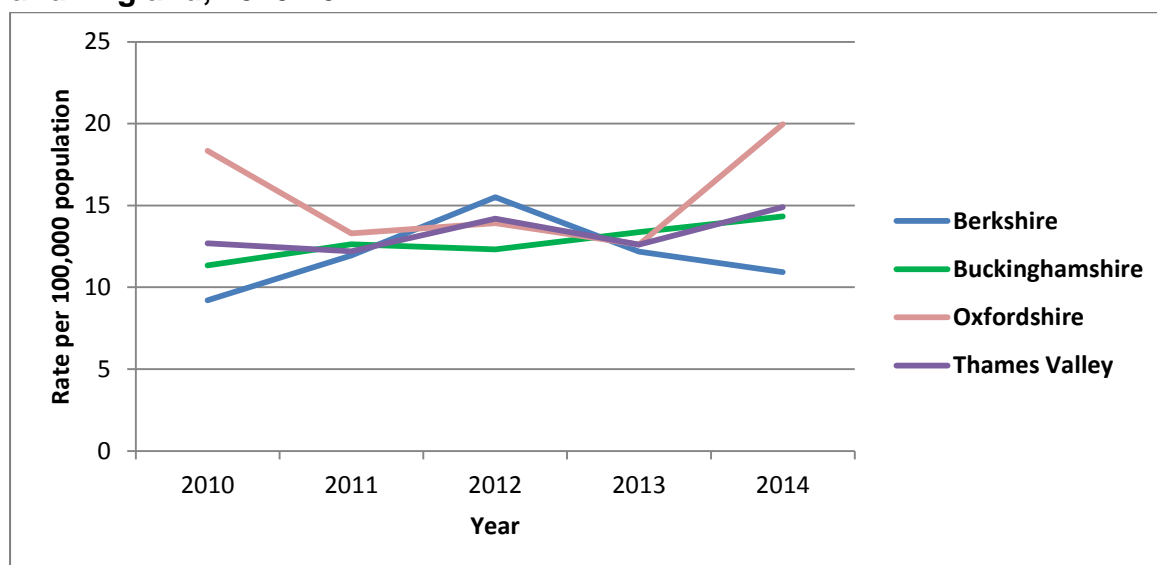


Source: HPZone, TVPHEC

**b. Hepatitis C**

The number of hepatitis C cases in Buckinghamshire has increased from 57 in 2010 to 74 in 2014. A similar increase is seen in Oxfordshire and also in the Thames Valley. This may be due to better case detection. Approximately three in four hepatitis C cases report having used intravenous drugs, a common transmission route. This is similar to the national picture. Figure 9 below shows the rate in Buckinghamshire compared to other Counties and the Thames Valley average.

**Figure 9. Rate (per 100,000) of hepatitis C cases (acute and chronic) in Buckinghamshire, compared to neighbouring Local Authorities, Thames Valley and England, 2010-2014.**



Source: NOIDS database, TVPHEC

#### vi. Legionnaires' disease

In Buckinghamshire, the number of reported cases of legionellosis has dropped from six in 2010 to less than five in 2014. However, the number of cases of legionellosis has remained stable in the last three years across Thames Valley, with no known linked cases in 2014. Most cases in the Thames Valley occur in middle-aged and elderly men, in keeping with national epidemiology. Almost half the number of cases were travel associated cases and has increased in the previous three years, the other cases being community-acquired.

#### vii. Health Care Associated Infections (HCAIs)

Infection prevention and control (IPC) is a fundamental component of maintaining the safety of patients and providing high quality care. Organisms such as Methicillin-resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile* are used to measure IPC standards but should not be the only measure. Compliance with policies, hand hygiene practice and environmental issues should also all be taken in account.

##### a. MRSA

There is an annual limit of zero cases of MRSA bacteraemia for all CCGs and Acute Trusts. The table below shows the post infection review (PIR) assigned cases by CCGs and Acute Trust in Buckinghamshire against the expected limits. All MRSA bacteraemia are investigated, potential causes identified and the information gained is used to plan the implementation of improvements to care in order to reduce the

incidence of future cases. This zero aspiration is expected to continue in future years.

**Table 2. HCAI (Health Care Associated Infections) in Buckinghamshire by CCGs and Acute Trust, 2014/15 and 2015/16.**

HCAI (Health Care Associated Infections)	2014/15		2015/16	
	Target Limits	Actual numbers	Target Limits	Actual numbers
<b>Clostridium difficile</b>				
Aylesbury Vale CCG	50	55	49	50
Chiltern CCG	57	70	61	71
Buckinghamshire Healthcare Trust	33	44	32	38
<b>MRSA</b> (methicillin-resistant staphylococcus aureus)		PIR assigned cases		PIR assigned cases
Aylesbury Vale CCG	0	0	0	0
Chiltern CCG	0	3	0	3
Buckinghamshire Healthcare Trust	0	3	0	1

Source: <https://www.gov.uk/government/statistics/mrsa-bacteraemia-annual-data> Accessed on 1 Mar 2017. PIR: Post Infection Review.

#### b. C. difficile

Every year, the *C. difficile* objective (limit) is revised by the national team to include both a numerical objective, calculated from a baseline set of data from December 2012 to November 2013, and also a new requirement to assess each individual case and identify if any lapses in care had occurred. For acute providers only cases where a lapse in care was identified were to be counted against the target in relation to financial penalties. This is so that providers are not penalised for cases which they have not contributed towards or caused.

Table 2 shows the PIR assigned cases by CCGs and Acute Trust in Buckinghamshire against the expected limits. Learning from reviews are collated and analysed on a six monthly basis and any learning shared across primary care. No trends have been identified in *C. difficile* reviews and there has been a slight increase in cases across the whole country, the reason for this is unknown but consequently the trajectories for 2016/17 have been kept at the 2015/16 levels.

#### viii. **Outbreaks**

Moderate levels of influenza activity were seen in the community in the last few years during winter months. However, this was associated with high morbidity and mortality, particularly among the elderly. In Buckinghamshire, there were three influenza-like outbreaks in care homes in 2014-15, one of which was confirmed influenza A. Two of these outbreaks had a high attack rate with high numbers of hospitalisations and deaths. It is likely that the morbidity and mortality of this season

was exacerbated by a poor match between the vaccine strains and circulating flu viruses.

In 2014, there were 21 outbreaks consistent with viral gastroenteritis in care homes, six in child-care/educational settings, and five in restaurant/dining events. In addition, there were two incidents of smear positive pulmonary TB which required extended TB screening beyond the household setting. In 2015/16, there was one TB incident among homeless population with extensive screening of this vulnerable group.

#### *7.4.3. Demand*

Overall in the UK and in Buckinghamshire, communicable diseases have declined because of improved hygiene, vaccination and antimicrobial drugs. However, globalisation, biological variability and changes in both climate and human behaviour, in migration of people from within the UK and from outside mean there is a constant risk of communicable disease in Buckinghamshire.

Life expectancy in Buckinghamshire is higher and is increasing year on year<sup>4</sup>. In Buckinghamshire, people are living longer and the decline in immune function due to aging, increase the risk of communicable diseases in the community.

#### *7.4.4. Horizon scanning*

Notification of specified infectious diseases by healthcare professionals to a local Health Protection Unit is a legal requirement in the UK. The list comprises 31 diseases such as TB, measles, meningitis and malaria. In England in 2010, legislation was updated to include notification of any infection that presents a significant risk to human health. Public Health England runs many of the surveillance systems in England. It also co-ordinates health protection across the UK in collaboration with its equivalents in Scotland, Wales and Northern Ireland and contributes to European and international surveillance networks. A current focus of surveillance is monitoring the spread of antimicrobial resistance to identify new threats and changing patterns of infection to inform treatment. In the UK, most surveillance data comes from mandatory notification of disease by health professionals or laboratories.

Vaccination programmes are commissioned by NHS England and are delivered predominantly through General Practices, school nurses and pharmacies. Clinicians in primary care and hospitals manage the infectious disease patients and are commissioned by NHS England/CCGs. The role of local Public Health is to monitor and scrutinise the delivery of these. Local Authority Public Health also gives assurance to the Health and Wellbeing Board on how these programmes are being delivered to the local communities.

#### *7.4.5. Conclusions*

Overall the burden of communicable diseases in Buckinghamshire is relatively small compared to other areas or national averages. The declining rates of many of the childhood infections covered by currently available vaccines are a reflection of the success of these programmes. While many of these infections can be mild and self-limiting they also have the potential to cause serious illness, disability or death, and it is crucial to continue comprehensive immunisation programmes to ensure that current and future generations are protected.

Public Health England continue to provide an integrated surveillance system to detect changes in disease patterns, a specialist outbreak investigation of communicable diseases, chemical, radiological or other environmental hazards, ensure effective emergency preparedness, evaluation of effectiveness of vaccination programmes and act as a lead in the UK International Health Regulations. All health and social care commissioners should ensure the application of infection control frameworks to address prevention, treatment and surveillance of infection relevant to the services they are commissioning and all providers adhere to expected national guidelines and good practices.

Ravi Balakrishnan  
Public Health Consultant  
June 2017

#### *References*

- 
- <sup>1</sup>Gonococcal Resistance to Antimicrobial Surveillance Programme. Action Plan for England and Wales: informing the Public Health Response, HPA, 2013
- <sup>2</sup>Tuberculosis in the UK: Annual report on tuberculosis surveillance in the UK 2013, PHE, 2013
- <sup>3</sup>Sickness Absence in the labour market 2011, Office for National Statistics, 2012
- <sup>4</sup>Public Health Outcomes Framework, Life expectancy