



Health Protection Report

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Cryptosporidiosis associated with swimming pools

Outbreaks of cryptosporidiosis have been frequently associated with swimming pools in recent years and these tend to be more common in the second half of the year [1]. This appears to have been the pattern of incidence in England and Wales this year to date, with a number of clusters or outbreaks having been reported associated with pools in recent weeks. Besides swimming pool use, circumstantial evidence suggests that foreign travel – implicated in two of the clusters/outbreaks, listed below – may also be a risk factor associated with increased incidence in the second half of the year.

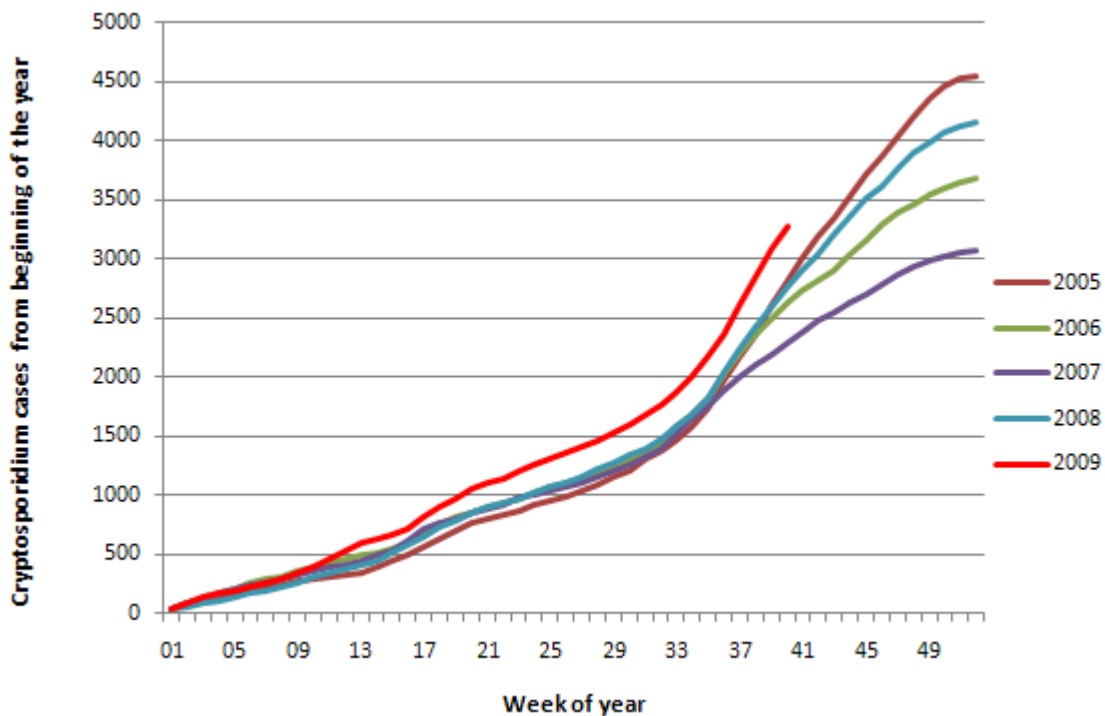
Recently reported clusters/outbreaks include the following:

- ▶ a large outbreak at a leisure centre in Merthyr Tydfil involving more than 100 cases [2];
- ▶ seven cases in Greater Manchester associated with a swimming pool used predominantly by mothers and babies;
- ▶ five cases linked to a swimming pool at a caravan park in Yorkshire;
- ▶ four cases linked to a holiday park in the East Midlands that was visited during August Bank Holiday;
- ▶ a cluster of five cases among individuals who had swum at the same pool in the Thames Valley area (and other travel-related cases in the same area) that are currently under investigation; and
- ▶ 32 cases in West Yorkshire, where the source of infection remains unclear, of which 21 had recently been in a swimming or paddling pool and 15 had recently returned from abroad.

In addition to the above, other clusters of cases have been reported that have yet to be attributed to a source. As many of the clusters involve low numbers of cases, providing clear evidence of an association with a swimming pool can be difficult. Outbreaks related to pools can occur across a number of pools within an area [3].

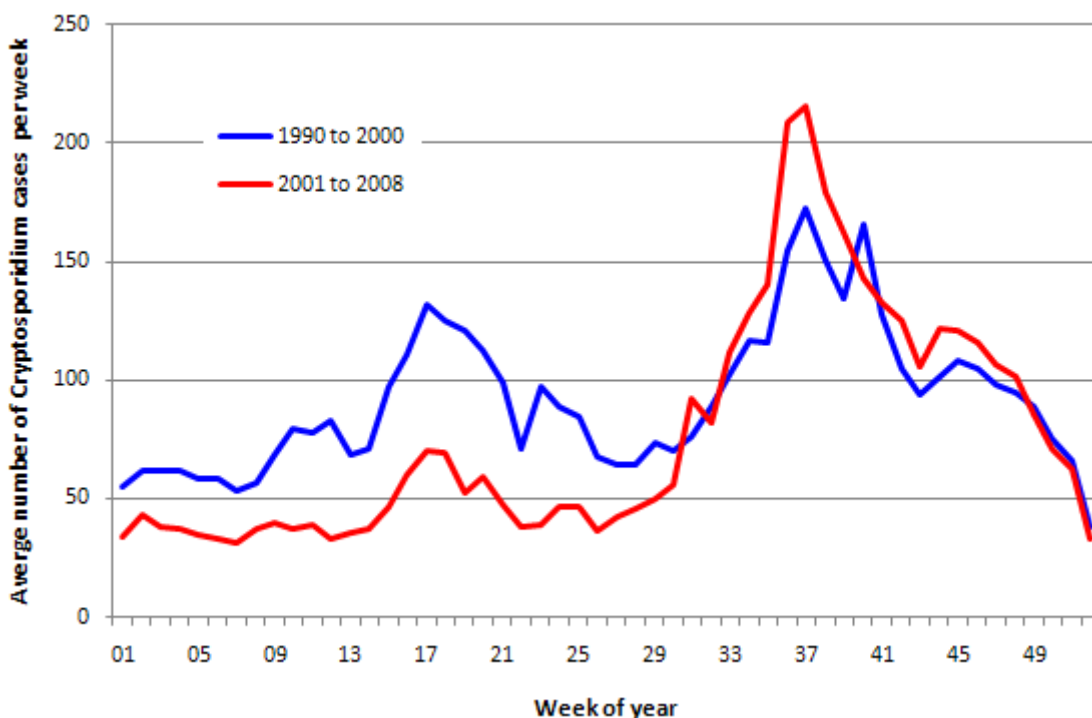
Incidence of cryptosporidium infections in the first half of the year (mostly *Cryptosporidium parvum*) has declined since 2000 while incidence in the second half has remained broadly similar (predominantly *Cryptosporidium hominis*) [4]. However, the cumulative total of cases in England and Wales in 2009, to week 40, exceeded the number for the same period of 2008 by 500 (figure 1).

Figure 1. Cumulative number of cases of *Cryptosporidium* spp infection per week in England and Wales 2004 to 2009



The significant decrease in cryptosporidiosis cases in the first half of the year between the periods pre- and post-2001 (figure 2) is thought to reflect improvements in drinking water treatment [5,6] and this emphasises that effective targeted intervention can result in dramatic reductions in disease. Nevertheless, intervening to prevent outbreaks linked to pools can be difficult [3], particularly where the pool is located in a holiday resort in another country. In 2003, for example, a large, late-summer outbreak of cryptosporidiosis occurred as a result of contaminated swimming pools in Majorca [7].

Figure 2. Average number of cases of *Cryptosporidium* spp infection per week in England and Wales 1990 to 2008



There is no regulation of the microbiological quality of swimming pools and monitoring pool standards has relied on microbiological indicators (*E. coli*, coliforms, *Pseudomonas aeruginosa* and aerobic plate count) that have no value as predictors of cryptosporidium contamination. Within England and Wales, most testing for cryptosporidium has been associated with outbreaks. A study in the US found 8% of 160 randomly chosen pools were positive for *Giardia* or cryptosporidium or both with 1.8 % containing cryptosporidium, or cryptosporidium and giardia and 6.2% with giardia only [8]. Posters can be used to advise parents not to take their children swimming when they have diarrhoea or for two weeks after but this is an area that relies on parental responsibility and is difficult to monitor the effectiveness of such advice. Showering pre-swim is thought to reduce contamination of pool water. Local Authorities are responsible for ensuring that pools operate in a safe manner.

Outbreaks associated with pools may occur less frequently if industry best practice, as outlined in recently published guidance produced by the Pool Water Treatment Advisory Group [9], is followed. The guidance is an expanded and updated version of that first published in 1999 and covers the design, treatment, management, monitoring and outbreak management of pools of all sorts.

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Seventh HPA annual report on infections in injecting drug users

The seventh HPA report on infections among injecting drugs users (IDUs), *Shooting Up* [1], summarises surveillance data for 2008 derived from a range of systems used to monitor bacterial and viral infections in the UK. These systems include the Unlinked Anonymous Prevalence Monitoring Programme (UAPMP) survey of IDUs in contact with specialist services in England, Wales and Northern Ireland.

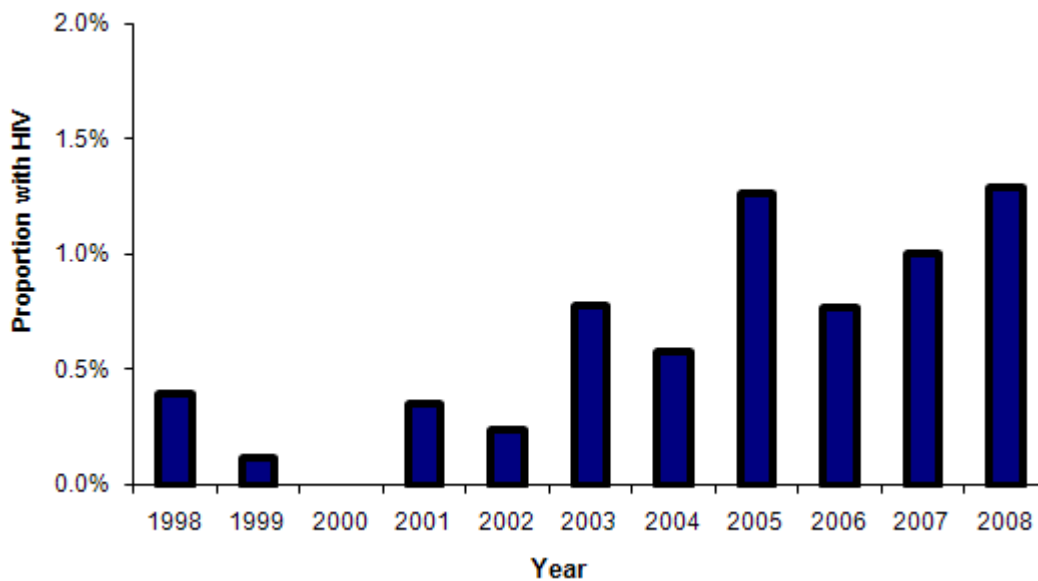
The report focuses in particular on the infections to which IDUs are vulnerable and that can cause significant morbidity and mortality, ie viruses – such as HIV, hepatitis C (HCV) and hepatitis B (HBV) – and bacterial infections – such as *Clostridium botulinum* and group A streptococci.

The main findings from the UAPMP survey* are that:

- ▶ transmission of HIV and HCV infection through injecting drug use remains higher than a decade ago, with around a fifth (22%, 87 of 391) of recent initiates (ie those who started injecting drugs during the three years prior to participating in the survey) having antibodies to hepatitis C and one in 77 (1.3% of 391) having HIV in 2008 (see figure 1). Overall in 2008, 40% (1,274 of 3,209) injecting drug users were infected with hepatitis C and 1.6% (51 of 3,209) with HIV;
- ▶ around one third (31%, 654 of 2,138) of IDUs reported having had an abscess, sore or open wound at an injecting site in the last year. These infections may place considerable burden on the NHS;
- ▶ uptake of testing for HCV among IDUs in contact with drug services, after increasing markedly, now appears to be levelling off. In England only 23% of IDUs (643 of 2,757) reported never having had a voluntary confidential testing (VCT) for HCV in 2008 compared with 51% (1,532 of 2,998) in 2000. Of participants from Wales 35% (159 of 456) reported never having a VCT for hepatitis C in 2007/08, whilst less than one in ten (7.6%, 23 of 302) of the participants from Northern Ireland in 2007/08 reported not having had a VCT for hepatitis C;
- ▶ most IDUs in contact with services report having had a VCT for HIV at some point with 28% of IDUs (863 of 3,087) reporting never having had such test in 2008;
- ▶ the transmission of hepatitis B continues among IDUs. However, this may have declined in recent years. Around one in six IDUs (13%, 425 of 3,207) had been infected with hepatitis B in 2008. There has been a marked increase in the number of IDUs receiving the hepatitis B vaccine, with almost three-quarters (72%, 2,259 of 3,140) now reporting uptake of the vaccine; and
- ▶ levels of reported needle and syringe sharing have declined in recent years following an increase in the late 1990s. In 2008, almost a fifth (19%, 343 of 1,798) of current injectors reported sharing injecting equipment in the previous month (see figure 2).

* UAPMP survey collects Oral Fluid samples. The sensitivity of the Oral Fluid test used for HCV is approximately 92%, and that for hepatitis B core antigen around 75%.

Figure 1. The prevalence of HIV infection among recently* initiated injecting drug users England, Wales & Northern Ireland^: 1998 to 2008

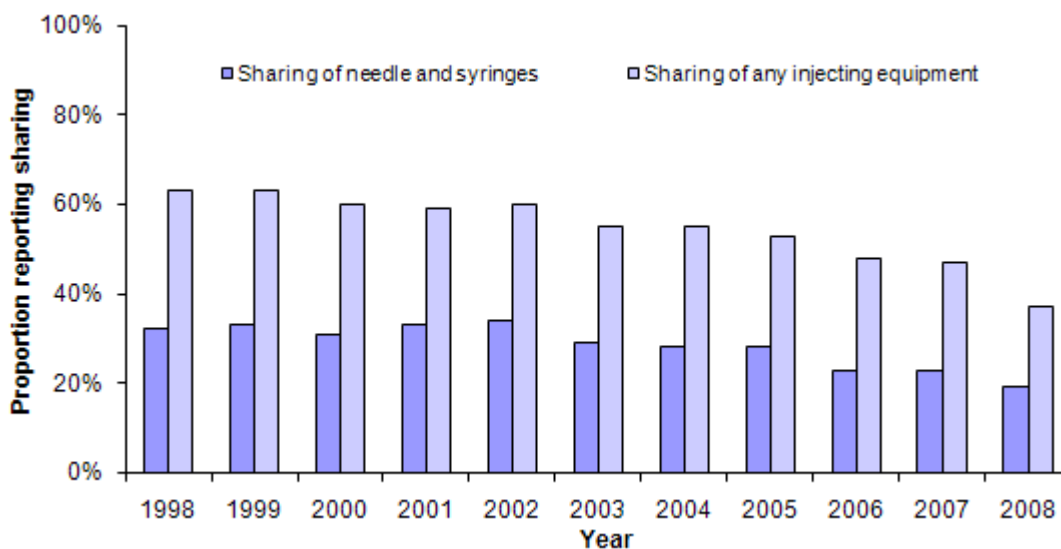


* Those who started injecting drugs during the three years prior to participating in the survey.

^ Includes Northern Ireland from 2002.

Data from Unlinked Anonymous Prevalence Monitoring Programme survey of injectors in contact with drug agencies.

Figure 2. The sharing of needles and syringes & any injecting equipment* among current injectors in England, Wales & Northern Ireland^: 1998 to 2008**



* Needles, syringes, filters, mixing containers, or water.

** Those who injected drugs during the four weeks prior to participating in the survey.

^ Includes Northern Ireland from 2002.

Data Source: Unlinked Anonymous Prevalence Monitoring Programme survey of injectors in contact with drug agencies.

The report's findings indicate a continuing need to develop services to reduce injection-related harms and to support those who want to stop injecting, in line with published guidelines [2,3,4,5,6,7]. They also underline the continuing importance of public health surveillance of diseases and behaviours associated with the injection of drugs as a means developing policies and services to reduce infections among IDUs.

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Fifth annual report on infections in blood and tissue donors and transfusion recipients in the UK

The NHS Blood and Transplant (NHSBT)/Health Protection Agency (HPA) Centre for Infections Epidemiology Unit runs a series of national schemes which provide epidemiological information about bloodborne infections in blood, tissue and cell donors in the UK and the associated risk of transmission via transfusion or transplantation, in order to inform donor practices and public health.

The NHSBT/CfI Epidemiology Unit's fifth annual report [1] presents national data for 2008 from all the schemes within the NHSBT/HPA programme, and aims to describe the data collected and any trends observed. The report also details some of the applications of the data including the estimated risks of current donation testing strategies not identifying an infectious donation. Information about antenatal samples tested by NHSBT is also presented.

Key information in the 2008 report includes:

- ▶ Syphilis was the most frequently detected infection in blood donations in 2008. An increasing proportion of new blood donors probably have recently-acquired syphilis infections.
- ▶ The frequency of HIV infection has been slowly increasing since 1996, while HIV seroconversions have also increased in recent years. In 2008, almost half of HIV-infected donors should not have donated according to current donor selection guidelines, if their risk exposure had been declared when they donated.
- ▶ The proportion of antenatal samples tested by NHSBT that was positive for HBsAg increased again in 2008 to 0.35%. Susceptibility to rubella also increased to 3.2% of all samples tested.
- ▶ The overall frequency of infection in tissue and cord blood donors tested by NHSBT was lower in 2008 (121.9 infections per 100,000 donors tested) as compared to 2007 (273 infections per 100,000 donors tested), although this is still higher as compared to first-time blood donors.
- ▶ There were four confirmed reports of bacterial transfusion transmitted infection (TTI) in 2008, involving the transmission of infection to a total of six recipients. There have been no confirmed reports of viral TTI for the third consecutive year.
- ▶ Up to date estimates for the residual risk of a viral infection entering the blood and tissue supply, despite donor testing, are included and show that the probability of acquiring hepatitis B, hepatitis C, HIV or HTLV via blood transfusion was very low between 2006 and 2008.

Additional data (available in slide set and pdf format) [2] and information about the unit's data sources and collection methods [3] are available from the [Bloodborne Infections in Blood Donors \(BIBD\)](#) pages of the HPA website and surveillance data are published periodically in the *Health Protection Report*.

Data from the transfusion-transmitted infection surveillance scheme form part of the haemovigilance collaboration known as SHOT ("serious hazards of transfusion", <http://www.shotuk.org>) which aims to build an evidence base on transfusion hazards.

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Pandemic influenza: UK situation at 29 October 2009

The Health Protection Agency's Weekly National Influenza Report of 29 October (week 44) [1] further described the UK (and international) situation as follows:

- ▶ Pandemic influenza activity increased across the UK, the main burden of disease remaining in school-aged children and young adults;
- ▶ In week 43 (week-ending 25 October), the weekly influenza/ILI consultation rates increased, and were above the winter baseline thresholds in England, Scotland and Northern Ireland;
- ▶ The National Pandemic Flu Service (NPFS) continued to issue antiviral drugs to people in England with an influenza-like illness who called or logged on to the internet site. The number of assessments and anti-viral collections has continued to increase gradually over the past week;
- ▶ Forty-two schools throughout England, and 12 in Northern Ireland, reported outbreaks of ILI in week 43;
- ▶ Interpretation of data to produce estimates on the number of new cases continued to be subject to a considerable amount of uncertainty with the move to NPFS. HPA modelling gave an estimate of 78,000 (range 39,000 – 169,000) new cases in England in week 43. The estimated number of new cases increased in all regions and age groups;
- ▶ The main influenza virus circulating in the UK continued to be the pandemic (H1N1) 2009 strain, with few influenza H1 (non-pandemic), H3 and B viruses detected. Three of 2050 pandemic viruses tested have been confirmed to carry a mutation which confers resistance to the antiviral drugs oseltamivir; all three are phenotypically resistant to the drug but retain sensitivity to zanamivir;
- ▶ The majority of pandemic influenza cases continued to be mild. The cumulative number of deaths reported due to pandemic (H1N1) 2009 in the UK was 135. There was a total of 1200 new patients hospitalised with suspected pandemic influenza in the week 22 to 28 October, an increase from 884 in the previous week. The highest hospitalisation rates have consistently been in the under-5-year age group and have increased in all age groups recently;
- ▶ According to the European Centre for Disease Prevention and Control (ECDC), by 28 October, 5938 deaths due to pandemic influenza had been reported globally;
- ▶ According to the World Health Organisation (23 October), influenza activity is low in temperate southern hemisphere regions, is increasing in the temperate northern hemisphere regions and has declined in most tropical areas.

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Infection reports

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STIs

▶ Genital chlamydial infection in the United Kingdom: 1999-2008

Genital chlamydial infection in the United Kingdom: 1999-2008

Genital chlamydial infection (*Chlamydia trachomatis*) is the most common bacterial sexually transmitted infection (STI) seen in the UK. Chlamydia is often asymptomatic, with approximately 70% of infected females and up to 50% of infected males thought to be asymptomatic [1]. Complications of chlamydia infection include pelvic inflammatory disease (PID), tubal damage (which can lead to infertility and ectopic pregnancy), chronic pelvic pain, and sexually acquired reactive arthritis [1]. Once diagnosed, infections can usually be successfully treated with antibiotics.

To gain a more accurate view of chlamydial infections diagnosed in the UK, the data presented here includes information from all settings where chlamydia diagnoses are made, including primary care. In contrast to previous reports which focused on chlamydia diagnoses made by genitourinary medicine (GUM) clinics, the data are now compiled from a number of different sources: national mandatory reporting from GUM clinics, voluntary reporting of chlamydia diagnoses by laboratories and, in England, reports from the National Chlamydia Screening Programme (NCSP) [2].

Trends in diagnoses

In 2008, there were an estimated 200,959 diagnoses of genital chlamydia infection made across all clinical settings in the UK [2]. Over the past 10 years, diagnoses have risen steadily in men and women across all age groups but the rise was most pronounced in women aged under 25 years and men aged 20-24 (figures 1a and 1b). Overall, numbers of diagnoses were much lower in men than in women.

Figure 1a. Number of genital chlamydia diagnoses by sex and age group, and number of laboratories using nucleic acid amplification tests (NAATs): 1999-2008 (males)

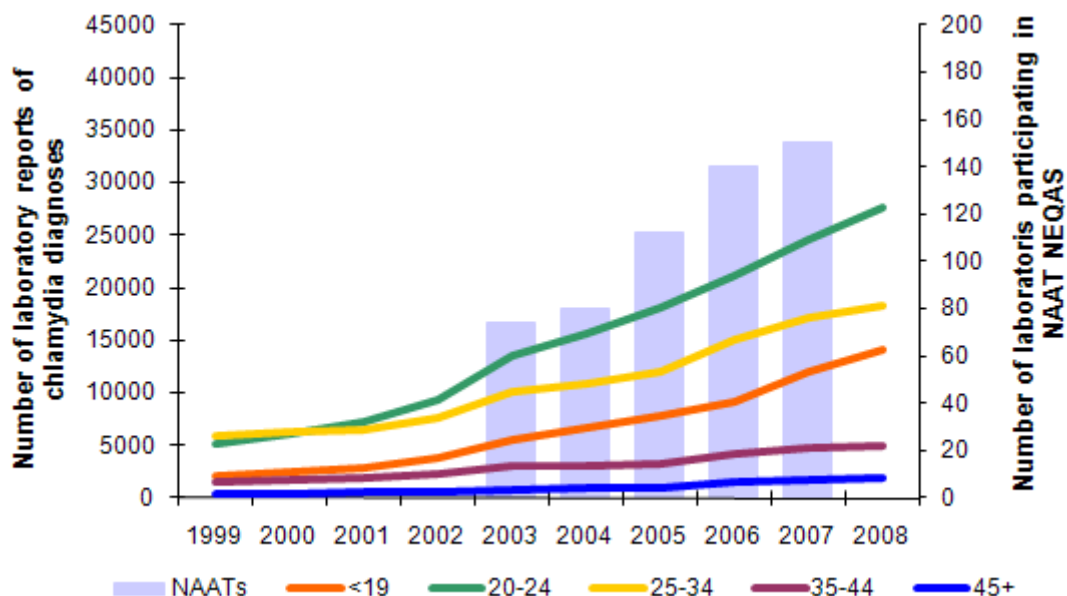
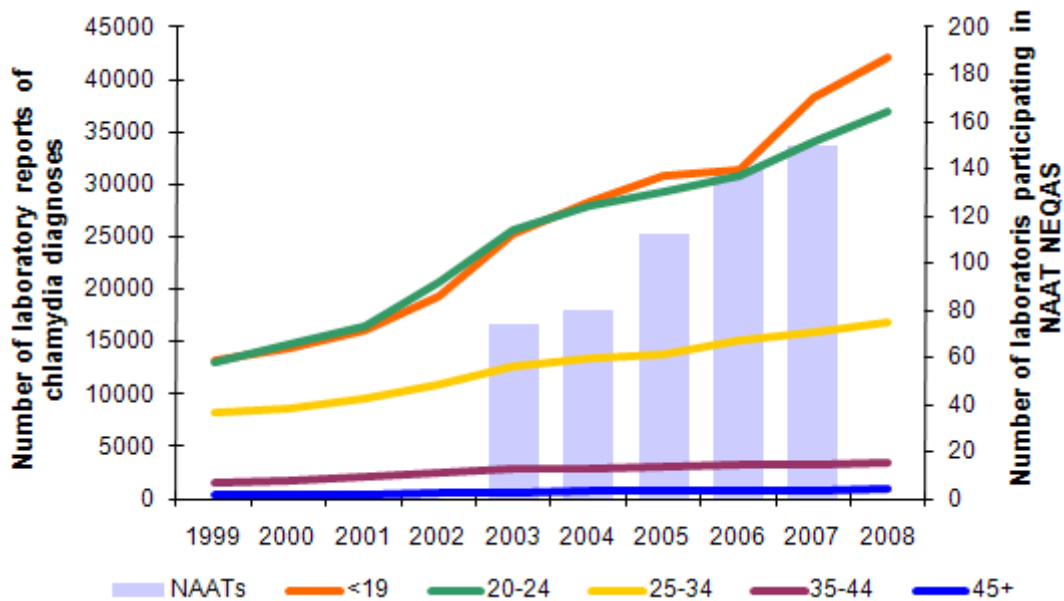


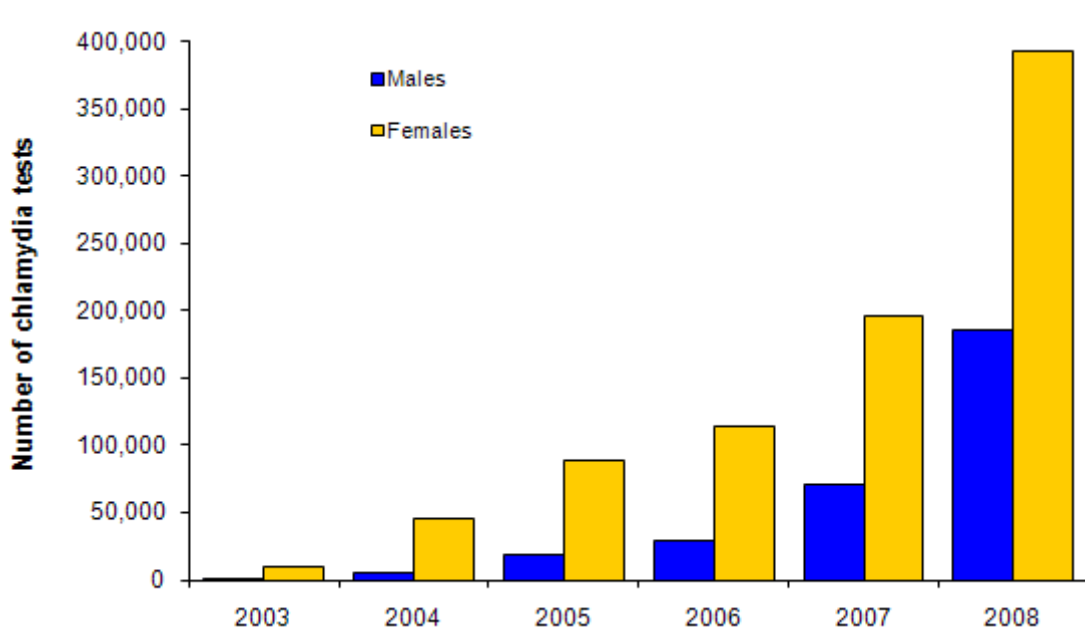
Figure 1b. Number of genital chlamydia diagnoses by sex and age group, and number of laboratories using nucleic acid amplification tests (NAATs): 1999-2008 (females)



STI data from laboratory reports in England, Wales and Scotland and chlamydia nucleic acid amplification test (NAAT) data from the UK National External Quality Assurance Scheme (NEQAS).

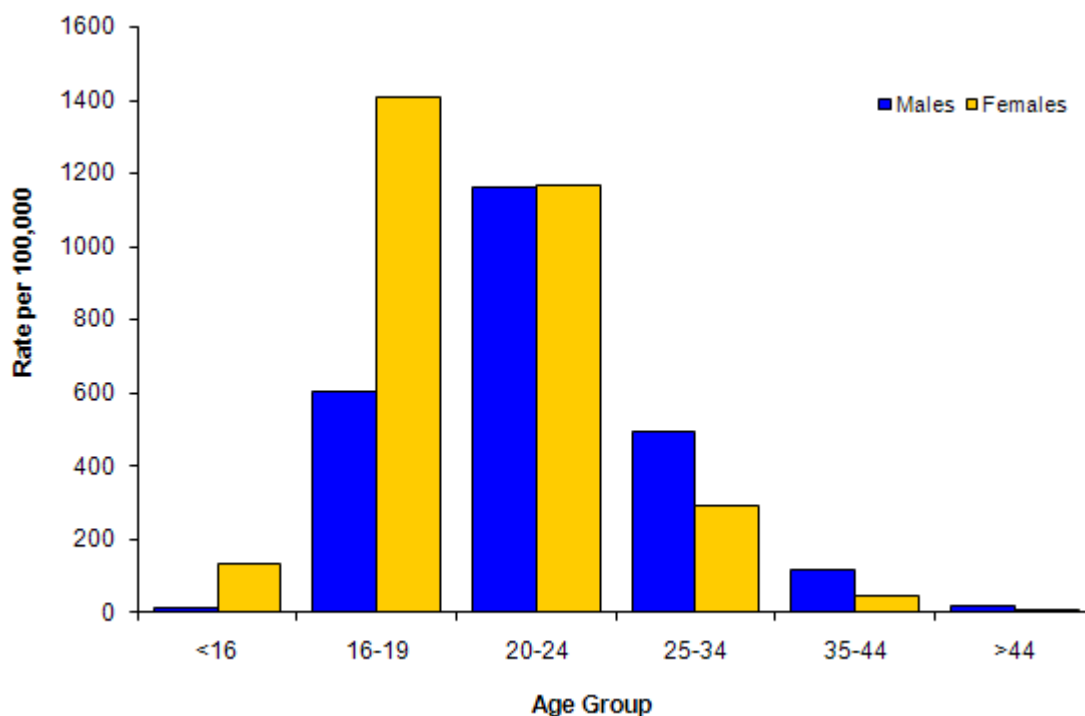
Although some of the rise in diagnoses may be due to changes in sexual behaviour resulting in more people becoming infected, the use of highly sensitive diagnostic tests (Nucleic Acid Amplification Tests, NAATs) have also contributed to the rise in diagnoses (figures 1a and 1b), as well as increased rates of testing across the UK [3]. In England, the National Chlamydia Screening Programme was established in 2003 to provide opportunistic screening to asymptomatic young people under 25 years in settings outside of GUM clinics [4]. Roll-out of the programme over the past six years has resulted in a substantial rise in the numbers of people tested (figure 2) [5].

Figure 2. Number of tests among 15-24 year old males and females screened within the NCSP, England: 2003-2008



The highest rates of chlamydia diagnosis are seen in 16-19 year old women and 20-24 year old men (figure 3). Guidelines for chlamydia screening and testing vary across the UK, but most target those aged under 25 as they experience the highest rates of infection. In England, opportunistic screening is proactively offered through the NCSP, mainly targeting those aged 15-24 [6], and a similar approach is planned in Northern Ireland [7]. There is no formal screening programme in place in other parts of the UK, but opportunistic chlamydia testing is recommended for those with highest prevalence, including those aged under 25 years, in primary care and community settings [8,9].

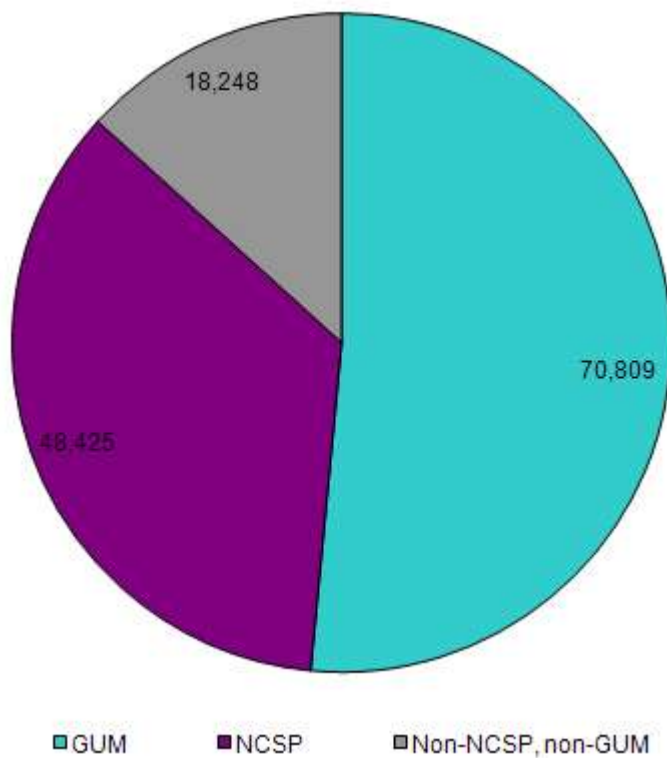
Figure 3. Rates of genital chlamydia diagnoses by sex and age group in the UK: 2008



STI data from mandatory GUM clinic returns

As a result, across the UK the proportion of chlamydia diagnoses made outside the GUM clinic setting has been rising steadily and is substantial [5]. In 2008, in England, 52% (70,809/137,482) of all chlamydia diagnoses in those aged under 25 years were made in GUM clinics, 35% (48,425/137,482) were made through the NCSP, and 13% (18,248/137,482) were made in non-GUM clinic settings not reporting to the NCSP (figure 4). In Scotland, around half of chlamydia diagnoses (of all ages) in 2006 were made outside GUM clinic settings [10].

Figure 4. Number of chlamydia diagnoses by source of report for ages 15-24, England: 2008



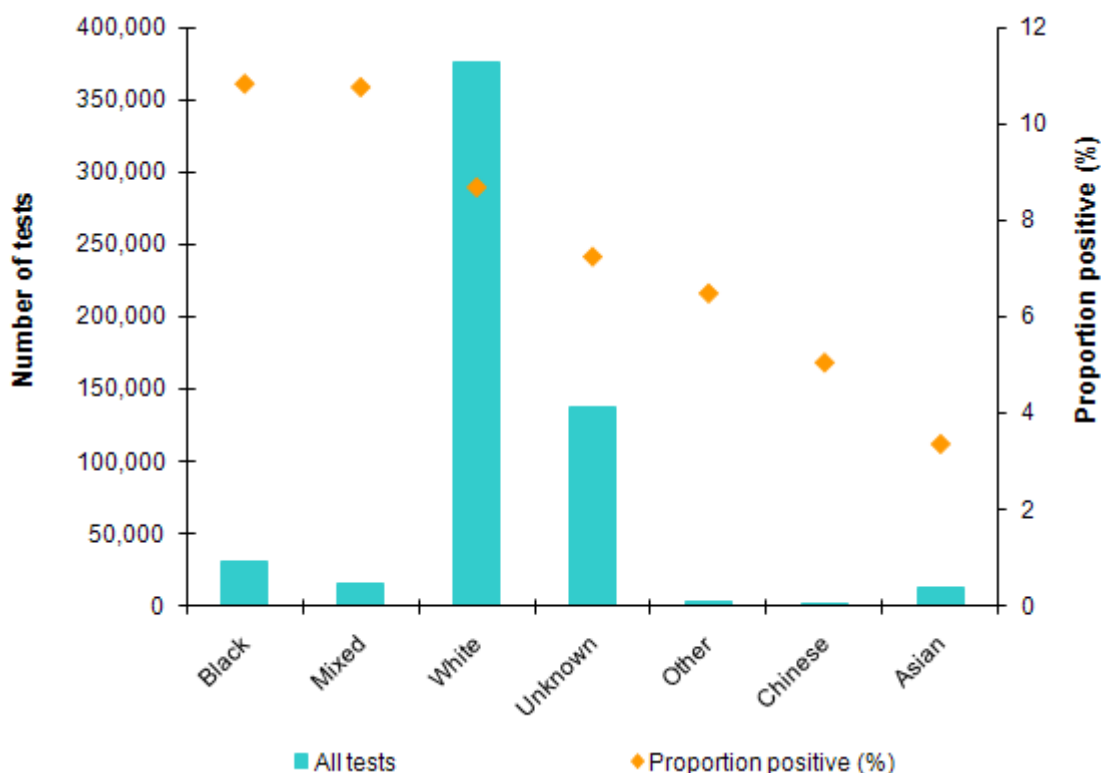
STI data from mandatory GUM clinic returns. NCSP and non-NCSP and non-GUM data from NCSP.

The National Chlamydia Screening Programme in England

In 2008, the NCSP performed 579,434 screens for chlamydia on those aged 15-24 in England, a substantial increase which is associated with the expansion of the programme since its launch in 2003 (figure 2). Testing rates were considerably higher in women than in men (figure 2). In 2008, positivity (the number of positive tests as a percentage of the total number of tests done) was 7.7% among men and 8.7% among women, highlighting the high rates of asymptomatic infection among young adults.

The majority (65%) of those screened by the NCSP in 2008 were white (figure 5). Overall chlamydia positivity was 8.4% (95% confidence interval 8.3%-8.4%) and was highest in those of black (10.8%, 95% CI 10.5%-11.2%) and mixed (10.7%, 95% CI 10.3%-11.2%) ethnicity, and lowest in Asians (3.4%, 95% CI 3.1%-3.7%).

Figure 5. Positivity by ethnicity in 15-24 year olds screened for NCSP, England: 2008



Overall, 35% of those screened through the NCSP in 2008 reported two or more partners in the previous 12 months. Chlamydia positivity was higher in those reporting two or more partners in the previous year (11.1%) than in those reporting fewer partners (6.5%). Similarly, 10.7% of those screened who reported a new sexual partner in the previous three months were diagnosed with chlamydia compared with 7.1% of those reporting no new partners.

Key messages

- ▶ Chlamydia is a common infection in young adults in the UK .
- ▶ There were over 200,000 chlamydia diagnoses in the UK in 2008.
- ▶ The recent rapid rise in diagnoses is associated with more people being testing and the use of more sensitive diagnostic tests; changes in sexual behavioural may also have played a role.
- ▶ Many chlamydial infections are asymptomatic. Screening can help ensure that asymptomatic infections are identified and treated, thereby reducing the likelihood of transmission and the development of complications.

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