Pneumococcal Disease

Pneumococcal disease is caused by *Streptococcus pneumoniae* (or pneumococcus). *Strep. pneumoniae* is an important cause of illness, hospitalization, and death world wide especially among the elderly and those with chronic underlying medical conditions or compromised immune systems. It is the most common bacterial cause of community acquired pneumonia in children and adults and can also cause meningitis, septicaemia, sinusitis and ear infections. Infection rates are highest in winter and spring. It may be found in the upper respiratory tract of healthy persons and is spread by droplets. The pneumococcus is surrounded by a capsule, made up of polysaccharides predominantly. There are over 90 different capsular types of which a minority (8-10) cause the majority of infections.

In Ireland, during 2004, 171 cases of Invasive Pneumococcal Disease (*Strep. pneumoniae* isolated from blood, CSF or other normally sterile site) were notified to the Health Protection Surveillance Centre compared to 251 cases in 2005, 293 in 2006 (HPSC Annual Infectious Disease Figures 2004-2006) and 257 for the first half of 2007 (HPSC Weekly Infectious Disease Report Week 26 2007). In the Mid West there were 23 cases of laboratory confirmed Invasive Pneumococcal Disease reported in 2004, 31 in 2005, 24 in 2006 and 6 so far in 2007. In the Mid West, to date in 2007, there have been two deaths attributed to Pneumococcal Meningitis.

Pneumococcal Vaccination

Vaccination can reduce the incidence of invasive pneumococcal disease and is recommended for persons with the following risk factors:

- Asplenia or severe dysfunction of spleen including surgical splenectomy and coeliac syndrome
- Chronic renal disease or nephrotic syndrome
- Chronic heart, lung or liver disease, including cirrhosis
- Diabetes mellitus
- Sickle cell disease
- Immunodeficiency or immunosuppression due to disease or treatment including HIV infection at all stages
- Patients with CSF leaks either congenital or complicating skull fracture or neurosurgery
- Individuals who have received, or are about to receive, cochlear implants
- Elderly (65 years of age and older)
- Child < 5 years of age with history of invasive pneumococcal disease.

Currently two types of pneumococcal vaccine are available in Ireland

- 23-valent pneumococcal polysaccharide vaccine (Pneumovax® II) suitable for persons aged 24 months or older,
- 7-valent pneumococcal conjugate vaccine (Prevenar®), recommended for at risk children under 5 years of age.

National Immunisation Advisory Committee (NIAC) pneumococcal vaccination recommendations

Individuals at increased risk, regardless of age, should be vaccinated with the appropriate pneumococcal vaccines(s) for their age group;

- All at risk children aged less than 60 months should receive pneumococcal conjugate vaccine. The number of doses is age dependent (NIAC update October 2006).
- At risk children between the ages of 24 and 59 months should also receive a single dose of polysaccharide vaccine, at least two months after the final dose of conjugate vaccine.
- At risk children over the age of 5 years and adults should receive a single dose of pneumococcal polysaccharide vaccine.

Booster doses

- After completion of the age appropriate vaccination schedule additional booster doses are not currently recommended, unless an individual's antibody levels are likely to decline more rapidly e.g. those with no spleen, with splenic dysfunction, immunosuppression, nephrotic syndrome or chronic renal disease. In these circumstances re-immunisation with polysaccharide vaccine should be given five years after the first dose.
- Adults 65 years or older should receive a second dose of polysaccharide vaccine if they received vaccine more than 5 years before and were less than 65 years of age at the time of the first dose.
- The need and benefit for repeated booster doses among high risk individuals is unclear and is not routinely indicated. RF

Diary Dates

Meningitis Research Foundation's Two-day International Conference
Meningitis and Septicaemia in Children and Adults
7th and 8th November 2007
Royal Society of Medicine, London, UK
www.meningitis.org/conference

2007 European Scientific Conference on Applied Infectious Disease Epidemiology (ESCAIDE)
18th- 20th October 2007
Stockholm, Sweden
www.escaide.eu/

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Some data are provisional and are subject to amendment.

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Bacterial Meningitis / Invasive Meningococcal Disease (IMD)

Since 2000, 20-30 cases of bacterial meningitis were notified to the Mid-West Public Health Department, annually. Invasive meningococcal disease (IMD) is the most common type of bacterial meningitis seen in Ireland. IMD is caused by *Neisseria meningitidis*. Bacteria may be present in the bloodstream (septicaemia) and/or the cerebrospinal fluid (meningitis) of infected cases. Laboratory confirmation of disease is now more often by means of sensitive molecular polymerase chain reaction (PCR) methods on EDTA samples than by positive culture methods. There are different groups of *N. meningitidis* (A, B C, Y and W135). Table 1 illustrates the decrease in the incidence of IMD since 1999 – the main reason for the drop in cases was the introduction of a safe effective vaccine against *N. meningitidis,* Group C (Men C). This vaccine, given as part of the primary childhood immunisation programme in Ireland, prevents Group C IMD only.

Table 1: Cases of all bacterial meningitis (IMD only) in HSE West (Clare, Limerick, Tipperary North), January 1998 – July 2007.

Year	Clare	Limerick	Tipperary	HSE West*
1998	6 (3)	14 (14)	4 (4)	24 (21)
1999	18 (15)	8 (8)	22 (16)	48 (39)
2000	18 (11)	10 (7)	13 (12)	41 (30)
2001	10 (9)	18 (14)	4 (4)	32 (27)
2002	10 (6)	17 (14)	5 (3)	32 (23)
2003	13 (12)	13 (10)	2 (1)	28 (23)
2004	6 (5)	14 (8)	2 (2)	22 (15)
2005	7 (6)	7 (6)	6 (3)	20 (15)
2006	6 (6)	15 (13)	1 (1)	22 (20)
To July 2007	4 (4)	5 (5)	1 (1)	10 (10)

Uptake of the MenC vaccine is good and since January 2001 there were three cases of IMD due to Group C in the Mid-West – two in 2001, one in 2002 and none since. However, cases of IMD Group B still occur and the incidence of disease (per 100,000 population) is similar to the crude rate nationally (see Figure 1). Cases are spread out throughout the year but IMD is more common in the months October – April.

Bacterial meningitis and IMD is a serious and life-threatening illness and unfortunately children and adults die from the disease. Successful management of meningococcal disease depends on parents being aware of certain symptoms in very young children and young adults. IMD may be classically characterised by rash, neck stiffness, photophobia but in many cases symptoms are less specific – poor feeding, irritability and headache. Doctors should have a high index of suspicion. Early treatment of suspected cases with penicillin may be life saving. It is recommended that GP's carry supplies in their emergency bag. It is best given intravenously but may also be given by the intramuscular route in shocked patients although not as effective by this route. The bacterium *N. meningitidis* often lives harmlessly in the throat area but may spread by droplets when in close contact (family/crèches). The incidence of IMD can increase in particular locations for many reasons (e.g. an outbreak) but timely public health follow-up on contacts can help to prevent further cases. This may take the form of offering antimicrobials or vaccination where appropriate.

Up to July 2007, ten cases of definite IMD were notified – five from Limerick, four from Clare and one from Tipperary North – seven in males and three in females.

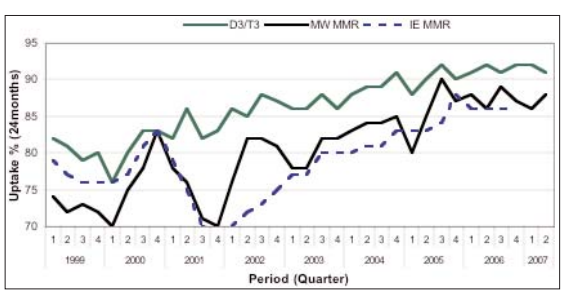
Each year, a small number of cases of bacterial meningitis are caused by other organisms *E. coli* in neonates, *S. pneumoniae* in young children and older people and rarely *M. tuberculosis*. Meningitis due to *H. influenzae* b is now very rare because of childhood Hib vaccination. DW

Vaccination Uptake

Measles Mumps Rubella (MMR) vaccination uptake for children in Clare, Limerick and North Tipperary is at 88% in the second quarter of 2007 (fig 3). This is well below the 95% level required for population immunity.

Uptake of the '5-in-1' vaccination at 24 months in the childhood cohort is down one percent from 92% in Q1 of 2007 to 91% in Q2. (fig 3). This vaccination protects children from diphtheria, tetanus, pertussis (whooping cough), polio and Hib. Bacillus Calmette-Guerin (BCG) uptake in the area is at 97%. OH

Figure 3: Percentage uptake of DT and MMR at 24mths in HSE MWA and MMR in Ireland. (D3-Diphtheria T3-Tetanus MMR=Mumps Measles Rubella)



Measles outbreaks in Irish Travellers in England & Norway

The Health Protection Agency (HPA) in England has been investigating an outbreak of measles in the Irish Traveller community in England and Norway. Since the end of March 92 cases have been reported in the outbreak. In Norway since 27th April, 15 measles cases have been reported among Irish Travellers from the UK. The outbreaks are thought to be associated with a gathering of Irish Travellers in London on 3 April 2007. At least one of the Norwegian cases visited the gathering and the Norwegian outbreak strain closely matches the UK one.

Thirteen Norwegian cases are children, two less than one year, and four aged 1-3 years, all unvaccinated. UK cases are aged between two months and 21 years, mostly between one and 14 years old, with six cases under one year. Of 38 confirmed cases for whom information was available, 36 (95%) were unvaccinated and 2 had received one dose of MMR. Local health authorities in the UK and Norway have offered MMR vaccination to Irish Traveller communities. RF

Gastroenteritis

Verotoxigenic *E. coli* (VTEC): Up to July 2007, there were six notifications of VTEC O157, of which five were symptomatic. All cases were linked – four males and two females were affected (three adults and three children).

Salmonella: Since 2002, in the Mid-West, there have only been a couple of occasions when no cases of salmonellosis were notified in two consecutive months. During the period February – June there were no laboratory-confirmed cases of salmonellosis notified. In February 2007, one case (travel-associated) was notified by a general practitioner. In July 2007, six confirmed cases of salmonellosis were notified by the Mid-Western Regional Hospital Microbiology Department. One was S. Java, one was S, Enteriditis and four were S. Typhimurium. Over the months of summer and autumn it is likely more cases will be detected, often in travellers returned from abroad.

Campylobacter: In the first seven months of 2007 there were 101 cases of campylobacteriosis notified (compared to 84 in 2006). Cases were distributed widely within Clare, Limerick and Tipperary North and the crude incidence rate (per 100,000 population) was similar in all three areas. Campylobacter continues to be the most common bacterial pathogen causing gastroenteritis in humans.

Cryptosporidium: From January to July 2007, there were 45 notifications of cryptosporidium in the Mid-West (compared to 41 in 2006). The crude incidence was similar in Clare, Limerick and Tipperary North. It is generally understood that this parasite has a seasonal peak, specifically a high incidence from February to June. It is shed in the faeces of farm and some domestic animals. It may occasionally contaminate drinking water and resists chlorination disinfection. Outbreaks have also been associated with swimming pools at home and abroad. With the eventual return of warm summer weather, children will play in recreational water facilities – but they should avoid such activities when ill with gastroenteritis. The implications of acquiring cryptosporidium are serious in the elderly and anyone immunocompromised.

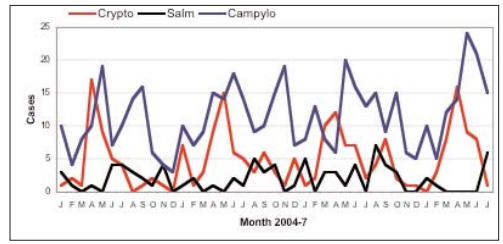


Figure 2: Monthly cases of laboratory confirmed campylobacter, cryptosporidium and salmonella notified in the Mid-West, January 2004 – July 2007.

The number of cases of campylobacteriosis, cryptosporidiosis and salmonellosis from 2004-2007 in the region is shown in Figure 2.

Norovirus activity has been moderate in the Mid-West. Occasional outbreaks continue in some healthcare facilities although cases have been confirmed in the community setting as well. In the first six months of 2007 there were 106 cases confirmed (compared to 92 over the same period in 2006). The virus is very contagious and can be spread across a wide area if the infected person vomits.

It is advisable to cook fresh meats thoroughly. Special attention should be given to barbecue cooking over the summer period. Raw poultry meat often harbours pathogenic bacteria like campylobacter and sometimes salmonella and raw red meat may be contaminated with VTEC. Proper cooking will kill the bacteria. Great care must be taken to avoid cross-infection in households and institutions where someone is ill with gastroenteritis. Hand hygiene must be enhanced and the person, in so far as is practicable, must avoid food preparation for others while ill. DW

Pertussis (whooping cough)

In Ireland, the number of pertussis (whooping cough) cases reported each year is decreasing as a result of childhood immunisation. In Limerick, Clare and North Tipperary, there were 23 cases in 2004, ten in 2005 and five in 2006. So far in 2007 there have been three reported cases.
Many reported cases occured among infants, some of whom were too young to have received the three primary doses of vaccine necessary to provide protection (as was the case in two of the cases above in 2007).

Symptoms usually appear after 7-10 days of infection, but may also appear up to 21 days later. Initially, symptoms resemble those of a common cold. In young infants the typical 'whoop' may never develop and coughing spasms may be followed by periods of cessation of breathing.

Once infected, an individual with pertussis can be infectious for four to five weeks from the onset of the illness. Greatest infectivity occurs early on in the illness, even before the cough has developed.

Treatment of cases with certain antibiotics such as erythromycin for two weeks can shorten the contagious period by stopping the risk of infection to other susceptible people. However, it does nothing to shorten the length of the illness and the cough.
If a clinically suspected or confirmed case of pertussis is identified who is also in household contact with someone susceptible to pertussis - young infants, particularly neonates - then erythromycin chemoprophylaxis should be considered.

Immunisation (as part of '5 in 1' vaccine at 2,4, and 6 months and a fourth dose is recommended at 4/5 years) is the most effective way to prevent infection and limit the spread of pertussis. MM