Clinical features
Features of pneumococcal infection include septicaemia, pneumonia, meningitis, ear infections, sinusitis and bronchitis.

Vaccine schedule in Ireland
Two vaccines are available in Ireland to prevent pneumococcal infection. A polysaccharide vaccine that provides protection against 23 serotypes of pneumococcal infection (23-valent polysaccharide vaccine) has been in use in Ireland for several years. However, it does not provide good protection in children under 2 years of age.

More recently a conjugate vaccine has been recommended for infants and young children at increased risk of infection. This vaccine protects against seven serotypes of pneumococcal infection (7-valent vaccine).

Following a review of the epidemiology of pneumococcal infection in Ireland and a pharmacoeconomic evaluation, NIAC in 2007 recommended that pneumococcal conjugate vaccination be included in the primary childhood immunisation schedule, at 2 and 6 months with a booster dose at 12 months. Following the introduction of pneumococcal vaccine to the primary childhood immunisation schedule a catch-up campaign will be introduced.

4.2.9 Polio
Epidemiology of disease and impact of vaccination
Polio is a viral infection that enters the body through the mouth and multiplies in the intestine with subsequent spread to the lymph nodes and, in a minority of cases, to the central nervous system.

One in 200 infections leads to irreversible flaccid paralysis (usually in the legs). The use of one or both arms or legs may be lost and breathing may not be possible without help of a respirator. The degree of recovery varies from person to person. Among those paralysed, 5%-10% die when their breathing muscles become immobilised.

Prior to the introduction of vaccine, wide spread polio epidemics occurred each year. As a result of successful vaccination programmes and surveillance, cases of natural polio no longer occur in Ireland (Figure 4.9).

In 1988, the World Health Organisation (WHO) launched a Global Polio Eradication Initiative. In 2006, there were only four countries in the world (Nigeria, India, Afghanistan and Pakistan) where polio is endemic and mass vaccination programmes are underway in these countries.

Ireland participates in a WHO European acute flaccid paralysis (AFP) surveillance system in order to ensure that Ireland remains polio free. All cases of AFP in children under 15 years of age should be reported to the Medical Officer of Health (MOH) and rapidly investigated to outrule polio as a cause of AFP. Two stool samples from each AFP patient should be sent to the National Virus Reference Laboratory for virology testing. More information on polio and AFP surveillance can be found on the HPSC website at http://www.ndsc.ie/hpsc/A-Z/VaccinePreventable/Polio/.

Transmission
Transmission occurs through contact with the faeces or pharyngeal secretions of an infected person.

Incubation period
The incubation period ranges from 6-20 days (range 3-35 days).
Period of infectivity
Persons infected with poliovirus are most infectious from seven to ten days before and after onset of symptoms, but polio virus may be present in the stool from 3 to 6 weeks.

Clinical features
Initial symptoms are fever, fatigue, loose stools, sore throat, stomach upset, headache, vomiting, stiffness in the neck and pain in the limbs although most infected are initially asymptomatic (up to 95% of all infections). The virus can then enter the blood stream and may infect cells of central nervous system causing aseptic meningitis. More rarely the virus replicates in and destroys the motor neurons which activate the muscles.

Vaccine schedule in Ireland
Polio vaccine is administered at 2, 4 and 6 months with diphtheria, tetanus, pertussis, hepatitis B, and Hib vaccine (referred to as the “6-in-1” vaccine). A booster dose is given at 4-5 years. Oral polio vaccine is no longer recommended as part of the primary childhood immunisation programme, as the risks of “vaccine-associated paralytic polio” (VAPP) are greater than the risks of wild virus poliomyelitis. Inactivated polio vaccine (IPV), which contains polioviruses inactivated by formaldehyde, is now recommended for primary immunisation.

4.2.10 Rubella
Epidemiology of disease and impact of vaccination
Rubella (also known as German measles) is a viral infection caused by a Toga virus. Before immunisation for rubella was available, epidemics occurred at 6-year intervals affecting mainly children in primary school and some adults. During epidemics up to 5% of susceptible pregnant women caught the disease leading to congenital rubella syndrome and rubella associated terminations of pregnancy. Rubella vaccine was first introduced in Ireland in 1971 for pre-pubertal girls (Figure 4.10). As virus continued to circulate and affect pregnant women the vaccination policy was changed in 1988 and both boys and girls were vaccinated with the MMR vaccine resulting in a significant decline in incidence of rubella.