

14

Mumps

Mumps vaccine introduced in 1988 as part of MMR

NOTIFIABLE

Mumps
September 2016

In some circumstances, advice in these guidelines may differ from that in the Summary of Product Characteristics of the vaccines. When this occurs, the recommendations in these guidelines, which are based on current expert advice from NIAC, should be followed.

Introduction

Mumps is an acute viral illness caused by a paramyxovirus. Humans are the only known host. It is characterised by swelling of one or more of the salivary glands, usually the parotid. The virus can be isolated from 2-7 days before to 9 days after onset of symptoms. Approximately 10 secondary infections will result from each index case in a fully susceptible population. Humans are the only known natural hosts. It is highly infectious to nonimmune individuals and is the only cause of epidemic parotitis.

Epidemiology

Although mumps cases occur at any time of year, an increase in cases is noted during late winter and early spring. Transmission is from person to person via respiratory droplets and saliva, direct contact, or fomites.

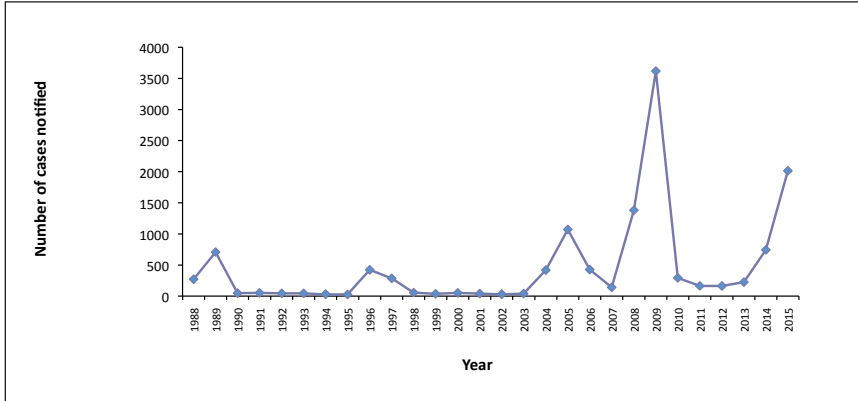
The incubation period is approximately 17 days (range 14-25). Cases are infectious from about 6 days before to 10 days after onset of symptoms, although maximum infectivity is from 2 days before to 5 days after onset of symptoms. High-risk groups are those in a close-contact environment such as pre-school, school and third-level colleges, health-care workers, and international travellers.

Mumps became a notifiable disease in 1988. MMR vaccine was first introduced in 1988.

In recent years major national mumps outbreaks have occurred (2004/2005, 2008/2009, 2014/2015) (Figure 14.1). In these outbreaks the age groups most affected were teenagers and young adults.

Figure 14.1 Annual numbers of mumps notifications in Ireland, 1988-2015.

Source: HPSC



Effects of mumps

Up to 40% of mumps infections may be asymptomatic, particularly in children, and up to 50% will have non-specific or primarily respiratory symptoms.

Prodromal symptoms are non-specific, last 3 to 5 days and include myalgia, low-grade fever, anorexia, and headache. Salivary gland inflammation, particularly of the parotid gland (unilateral or bilateral), occurs in 30-40% of all patients, and in over 90% of symptomatic patients.

Central nervous system (CNS) involvement is the most common extrasalivary complication of mumps. It presents most often as aseptic meningitis rather than as encephalitis. It occurs up to 3 times more often in males when compared with females, and is more common in adults than children. It usually presents within the first week after parotid swelling. Aseptic meningitis has been seen in up to 10% of patients with history of parotitis. This percentage increases to 50% in those patients without parotid gland swelling. Clinical findings include headache, fever, nausea, vomiting, and neck stiffness. Encephalitis is rare, occurring in 0.1% of cases. Marked

changes in sensorium, convulsions, paresis, and/ or paralysis present in patients with encephalitis, not typically in aseptic meningitis.

Other CNS manifestations include encephalitis, ataxia, transverse myelitis, and sensorineural deafness. Meningoencephalitis occurs more frequently in adults than children and in boys more than girls.

CNS involvement carries a good prognosis and is usually associated with a complete recovery.

Other complications include pancreatitis (4%), orchitis (approximately 25% of post-pubertal men, rarely causing sterility), oophoritis and mastitis in post-pubertal females, and nephritis. Rarer complications include arthralgia, arthritis and cardiac abnormalities. Death is exceedingly rare.

Mumps vaccine

Mumps vaccine is only available as MMR (Measles, Mumps and Rubella vaccine). The vaccine contains live attenuated measles, mumps and rubella which are cultured separately and mixed before lyophilisation.

Studies of the protective effect of a single dose of mumps-containing vaccine varies between 61% and 91%. Vaccine effectiveness after 2 doses is estimated to be up to 88%. Lower rates of seroconversion occur in those under 12 months of age, because of maternal antibodies. In the past decade a number of outbreaks in highly vaccinated populations have been reported in Ireland.

Laboratory investigation to determine vaccine response is not routinely recommended.

An up-to-date list of licensed vaccines can be accessed on the HPRA website www.hpra.ie

A list of the vaccines currently available from the National Cold Chain Service can be found at www.immunisation.ie

MMR does not contain thiomersal or any other preservatives.

MMR must be kept refrigerated at +2 to +8°C, and protected from light. It should be used within 1 hour of reconstitution. Failure to adhere to these recommendations can result in loss of vaccine potency and diminished effectiveness.

If a vaccine has been frozen it should not be used.

There is no evidence to recommend or support the use of single vaccines against measles, mumps and rubella instead of the combination MMR vaccine.

Dose and route of administration

The dose is 0.5 ml by intramuscular injection into the deltoid or the anterolateral thigh.

Alcohol swabbing of the injection site should be avoided as alcohol can inactivate the MMR vaccine. If an alcohol swab is used injection should be delayed for 30 seconds to ensure the alcohol will have evaporated.

MMR vaccine may be given at the same time as any other vaccine (except yellow fever vaccine).

There must be an interval of 4 weeks between the administration of MMR and varicella or zoster vaccines if they are not given at the same time.

Indications

1. All children at 12 months of age, with a second dose at 4-5 years of age. Where protection against mumps is urgently required the second dose can be given 1 month after the first. If children aged under 18 months are given the second dose less than 3 months after the first dose, they need a third dose at 4-5 years to maximise the response and to ensure full protection.

MMR vaccine can be given to those who have a history of measles, mumps or rubella infection.

Children receiving their first dose of MMR vaccine at 4-5 years should be given a second dose one month later.

Older unvaccinated children should be given MMR vaccine as soon as possible and a second dose one month later.

2. Children and adults of migrant or ethnic minority groups or coming from low-resource countries are less likely to have been vaccinated with MMR.

Without documented evidence of mumps vaccination they should be offered 2 doses of MMR vaccine one month apart.

3. Health-Care Workers (HCWs) born in Ireland since 1978 or born outside Ireland in the following situations should be vaccinated (see Chapter 4).
 - Those who do not have documented evidence of 2 doses of MMR vaccine should be given 1 or 2 doses of MMR as required separated by at least 1 month so that a total of 2 doses are received.
 - If an outbreak occurs in an institution or an area served by an institution, all HCWs without evidence of mumps infection or 2 doses of MMR vaccine should be given 1 or 2 doses of MMR vaccine as required.

Protection is important both for themselves and in the context of their ability to transmit mumps to vulnerable groups.

4. Most individuals born before 1978 are likely to have had mumps infection. MMR vaccine should be offered to such individuals on request if they are considered at high risk of exposure.

Serological testing after routine vaccination is not recommended.

Antibody response to the mumps component of the MMR vaccine does not develop quickly enough to provide effective prophylaxis after exposure to suspected mumps. However, the vaccine can provide protection against future infection. Therefore, contact with suspected mumps provides a good opportunity to offer MMR to previously unvaccinated individuals. If the individual is already incubating mumps, MMR vaccination will not exacerbate the symptoms.

Human normal immunoglobulin is not recommended for post-exposure protection from mumps.

Contraindications

1. Anaphylaxis to any of the vaccine constituents.
2. Significantly immunocompromised persons, such as those with untreated malignant disease and immunodeficiency states other than HIV infection, and those receiving immunosuppressive therapy, high-dose x-ray therapy and current high-dose systemic corticosteroids (see Chapter 3).
3. Pregnancy. Furthermore, pregnancy should be avoided for 1 month after MMR.

4. MMR should not be administered on the same day as yellow fever vaccine as co-administration of these two vaccines can lead to suboptimal antibody responses to yellow fever, mumps and rubella antigens. If rapid protection is required then the vaccines should be given on the same day or at any interval and an additional dose of MMR should be given.

The following are NOT contraindications to MMR vaccine

1. Allergy to egg including anaphylaxis following egg. Currently-used measles, mumps and rubella vaccines do not contain significant amounts of egg cross-reacting proteins and recent data suggest that anaphylaxis following MMR is not associated with hypersensitivity to egg antigens but to other vaccine components (Gelatin or Neomycin).
2. Breast-feeding.
3. HIV-positive patients who are not severely immunocompromised (see Chapter 3).
4. Personal or family history of convulsions.
5. Immunodeficiency in a family member or household contact.
6. Uncertainty as to whether a person has had 2 previous MMR vaccines.
7. If women have received anti-RhD immunoglobulin it is not necessary to defer MMR vaccination as the response to the vaccine is not affected.
8. Those with hereditary fructose intolerance should be offered MMR vaccine.

Precautions

1. Acute severe febrile illness, defer until recovery.
2. Injection with another live vaccine within the previous 4 weeks
3. Recent administration of blood or blood products.

Blood and blood products may contain significant levels of virus-specific antibody, which could prevent vaccine virus replication. MMR should be deferred for at least 5 months after receipt of low-dose HNIG, 6 months after packed red-cell or whole-blood transfusion and 11 months after high-dose HNIG (as for Kawasaki Disease) see Chapter 2 Table 2.4. If the MMR vaccine is administered within these timeframes, a further 1 or 2 doses as required should be given outside these times.

4. Tuberculin skin testing should be deferred for at least 4 weeks after MMR vaccine as the vaccine can reduce the tuberculin response and could give a false negative result.

5. Patients who developed thrombocytopenia within 6 weeks of their first dose of MMR should undergo serological testing to decide whether a second dose is necessary. The second dose is recommended if the patient is not fully immune to the 3 component viruses.
6. Topical tacrolimus and other topical immunomodulators should be discontinued for 28 days before and not restarted until 28 days after the administration of MMR vaccine.

Adverse reactions

Local: Soreness and erythema may occur at the injection site (3-8%).

General: Fever (6%), rash (7%), headache, vomiting and salivary gland swelling may occur. A febrile convulsion occurs in 1 in 1,000 children.

'Mini-measles' may occur 6-10 days after immunisation and consists of mild pyrexia and an erythematous rash. 'Mini-mumps' with salivary gland swelling may rarely occur during the third week after immunisation. Very rarely, anaphylaxis, erythema multiforme, thrombocytopenia and nerve deafness have been reported.

The rubella component may occasionally produce a rash, mild arthralgia, and lymph-node swelling 2-4 weeks post-vaccination, particularly in post-pubertal females (up to 25% of recipients). The incidence is lower than after natural disease.

There is no evidence of congenital rubella syndrome or increase in other teratogenic effects in women inadvertently given rubella vaccine during pregnancy, but pregnancy remains a contraindication.

Adverse reactions are considerably less common (under 1%) after a second dose of MMR.

Scientific evidence confirms no association between the MMR vaccine and autism or inflammatory bowel disease.

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