

# Measles, Mumps, Rubella (MMR) Vaccine discussion pack

an information guide for health professionals and parents



The Health Boards Executive  
*Working Together for Health*



# The MMR discussion pack

## an information guide for health professionals and parents

Published by the Health Boards Executive, 2002.  
ISBN 0 9542449 1 5

Produced by the National Disease Surveillance Centre and the Department of Public Health, Southern Health Board.



**Southern Health Board**  
Bord Sláinte An Deiscirt



The publisher gratefully acknowledges permission to use and adapt material originally published in the following:

- The MMR discussion pack produced by the Health Education Board for Scotland, Woodburn House, Canaan Lane, Edinburgh, EH10 4SG in collaboration with the Scottish Executive and the Scottish Centre for Infection and Environmental Health (SCIEH) 2001.
- The MMR Story: Mythbuster written by Dr Richard Roberts, Mr David Morgan, Dr Marko Petrovic and Ms Claire Williams and published by North Wales Health Authority, 1999.
- Measles, Mumps and Rubella Vaccine published by Health Promotion England, 2001.

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Further copies of the leaflet *MMR your questions answered* may be obtained from local health board health promotion departments. Further copies of the pack contents may be downloaded from the Health Boards Executive, Health Boards, or NDSC websites. Website addresses are given at the back of the pack.

This information pack has been endorsed by the following organisations:  
Royal College of Physicians of Ireland, Irish College of General Practitioners, Department of Health and Children.



## Introduction

Some parents may feel that the issues around immunisation, in general, and MMR in particular pose a real dilemma for them about what is best for their child. The sustained negative media coverage and high-profile public debates over the last few years have also left many health professionals asking searching questions about MMR. These concerns have contributed to a decrease in the uptake of MMR vaccine and the re-emergence of these diseases in our population.

*The MMR discussion pack* will help professionals and parents review the evidence around MMR and will help to provide the basis for informed decision-making. It sets out the facts about the most common concerns about MMR vaccine in a way that helps health professionals and parents to explore these concerns together.

Nine main questions are covered and each question outlines the basic facts plus *Key Notes* for parents, together with *Additional Notes* for health professionals, which are fully referenced. Whilst the *Additional Notes* are essentially for health professionals, the information is presented in such a way as to allow full discussion between health professionals and parents, on each issue.

The format allows for exploration of all the issues in any order and as much, or as little, of the information can be photocopied to take away, as desired.

How serious are measles,  
mumps and rubella?



# How serious are measles, mumps and rubella?

## Question 1

### Complications of measles:

- ear infection (1 in 20)
- pneumonia / bronchitis (1 in 25)
- convulsions (1 in 200)
- diarrhoea (1 in 6)
- meningitis / encephalitis (1 in 1000)
- conditions affecting blood clotting (1 in 6000)
- late onset subacute sclerosing panencephalitis (SSPE) (1 in 8000 children who get measles under 2 years)
- deaths (1–2 deaths in 1000 reported cases in recent years).

### Complications of mumps:

- viral meningitis (1 in 20)
- encephalitis (1 in 1000)
- inflammation of testicles (4 in 10 adult males)
- permanent hearing loss (1 in 20 000).

### Complications of rubella (German measles):

- encephalitis (1 in 6000)
- birth defects (90% chance baby will have birth defects if mother catches rubella early in pregnancy). Birth defects include blindness, deafness, learning difficulties and heart disease
- conditions affecting blood clotting (1 in 3000).

### Measles

- 1 Measles accounts for one million deaths every year worldwide in children under five years old.
- 2 Measles is difficult to diagnose accurately, as other viral infections can be mistaken for measles.
- 3 Measles is transmitted by coughs and sneezes and it is extremely infectious. Cases are highly infectious even before the appearance of a rash. Cases have a high temperature, cough, conjunctivitis and generally feel miserable for days.
- 4 Serious complications have been reported in 1 in 15 notified cases in the UK.
- 5 Conditions affecting blood clotting can occur in 1 in 6000 cases.
- 6 Complications are more common and severe in chronically ill children.
- 7 In recent years, 1-2 people in every 1000 with reported measles infection died from it. Death from measles is highest in children under one year - a group too young to receive the MMR vaccine- and in those who are immunosuppressed due to disease (e.g. leukaemia) or treatment (e.g. organ transplantation). These children can only be protected through the 'population protection' of high vaccine uptake.
- 8 The serious risks associated with measles are not always appreciated.

## Mumps

- 1 Cases will have fever, headache, swelling of one or both cheeks or sides of the jaw and swollen glands, which can last up to 7-10 days.
- 2 4-6% of people with mumps will have viral meningitis.
- 3 1 in 1000 cases will have encephalitis.
- 4 4 in 10 adult males with mumps will have inflammation of the testicles.
- 5 Hearing loss, which may be permanent, may occur.
- 6 Death is very rare.

## Rubella

- 1 This is generally a mild disease that causes a rash and fever for 2-3 days.
- 2 1 in 6000 cases will have encephalitis.
- 3 Major birth defects are highly likely to occur to the foetus of a pregnant woman who has the disease just before conception or early in pregnancy. These birth defects include blindness, deafness, learning difficulties and heart disease.

### Measles

- 1 Measles causes 10% of all deaths worldwide amongst children aged five years and under, which is the equivalent of one million deaths annually.<sup>1</sup>
- 2 The incidence of measles has fallen since the introduction of MMR. Although the uptake of vaccine has not been sufficient to eliminate measles, the size of epidemics has reduced and the interval between epidemics increased. In non-epidemic circumstances measles is difficult to diagnose accurately. Therefore, mild viral illnesses causing a rash may be labelled as measles.
- 3 Measles is an acute viral illness transmitted by respiratory droplets, and is extremely infectious. Clinical features include conjunctivitis, bronchiolitis, Koplik spots, rash and fever. The incubation period is about 10 days, with a further 2-4 days before the rash appears. Measles is highly infectious before, and up to four days after, the appearance of the rash.
- 4 Serious complications have been reported for 1 in 15 notified cases.<sup>2</sup>
- 5 Complications are more common and severe in chronically ill children. It is therefore particularly important that children with chronic conditions (such as cystic fibrosis, congenital heart or kidney disease and failure to thrive) and with Down's Syndrome are fully immunised, including vaccinations against measles, mumps and rubella. A serious complication of measles in children is subacute sclerosing panencephalitis (SSPE).<sup>3</sup> This is a rare degenerative neurological condition that can develop some years after natural measles infection and causes gradual loss of function and death within a few years. The risk is greatest in those who were infected at a young age. The average interval from measles infection to the onset of SSPE is around eight years. Measles vaccine directly protects against SSPE.

- 6 Case fatality rates for measles are age related and so rates vary depending on the particular age at infection. On average, between 1 in 2500 and 1 in 5000 cases die from measles.<sup>2,4</sup> However, in recent years, deaths from measles have been reported as approximately 1-2 per 1000 reported cases in the United States.<sup>5</sup> This has also been the experience in several recent outbreaks in Europe due to low vaccine uptake, where there have been fatal cases of measles. There were three deaths in over 1600 reported cases in Ireland and three deaths in 2961 reported cases (1 in 1000) in The Netherlands.<sup>6,7</sup> Eight deaths from measles were reported to the Central Statistics Office in Ireland for the ten year period 1990 to 1999 (Source CSO).

The risk of death is significantly higher in children under one year of age (this group are not offered the vaccine as they are too young and can only be protected through the 'population protection' of high vaccine uptake). The figures are lowest in children aged 1-9 years and then rise again with increasing age.

In children receiving immunosuppressive treatment, e.g. for leukaemia or after organ transplantation, measles was a major cause of morbidity and mortality. Between 1970 and 1983, 19 children with acute lymphatic leukaemia died from measles in England and Wales.<sup>4</sup> A study conducted at four UK hospitals between 1974 and 1984 identified 1043 children with acute lymphoblastic leukaemia. Fifty one of these children died while in first remission and 15 of these deaths were due to measles or its complications (10 deaths from pneumonia and 5 from encephalitis) The study recommended that 'population protection' through high vaccine uptake in the community is vital to protect immunosuppressed children against measles with severe complications and possible death.<sup>8</sup>

- 7 Younger parents tend to have less knowledge and experience of measles.<sup>9</sup> Some view illnesses such as measles and mumps as mild diseases that benefit the child in the long run. This view ignores the complications and risks associated with measles in particular. Older people may have had personal experience of measles and may know a lot more about the risks associated with it.

## Mumps

- 1 Mumps is an acute viral disease transmitted by respiratory droplets. Clinical features include parotitis, fever and headache. The incubation period is about 12-25 days, with the fever usually lasting 1-6 days, and parotitis for up to 10 days or more.
- 2 Mumps can have serious complications, including viral (aseptic) meningitis, encephalitis, inflammation of the testes (orchitis), pancreatitis and permanent deafness.<sup>10</sup> Neurological involvement occurs in 10-20% of cases and may precede or follow parotitis, and can also occur in its absence.
- 3 Inflammation of the testes is the most common complication of mumps in adult males (4 out of 10 cases).<sup>11</sup> Approximately half of these cases may have some testicular atrophy. Reports of sterility are rare, but increased risk of testicular cancer has been reported.
- 4 Mumps can cause permanent deafness, usually unilateral, at any age and is one of the main causes of acquired sensorineural deafness in childhood. The incidence is estimated at 1 in 20 000 cases.<sup>12</sup>
- 5 Fulminant encephalitis is a rare, but potentially fatal complication of mumps. In the years 1971-1981, 13 deaths from mumps encephalitis were registered in England and Wales.<sup>10</sup>
- 6 Death is a rare outcome of mumps. A total of 93 deaths from mumps were registered for 1962-1981 in England and Wales, an average of five per year.<sup>10</sup> Inspection of death certificates of the 38 deaths registered in 1971-1981 showed that 16 were indeed probably due to mumps; in 13 the diagnosis was mumps encephalitis. There have been no recorded deaths from Mumps in Ireland in the years 1980-2000 (Source CSO).

## Rubella

- 1 Rubella is generally a mild illness with a rash developing after a 14 to 21-day incubation period. Complications of arthritis and arthralgia can occur in adults especially women. Encephalitis occurs in approximately 1 in 6000 cases and can be fatal. Clinical diagnosis of rubella is often inaccurate.
- 2 Rubella if acquired by mothers in early pregnancy, can have devastating effects on unborn children.<sup>13</sup> The virus affects all fetal organs and can lead to serious birth defects. These include learning difficulties, cataracts, deafness, cardiac abnormalities, retardation of intrauterine growth and inflammatory lesions of the brain, liver, lungs and bone marrow. Any combination of these defects may occur and when relatively mild, or a single organ is affected, the link with rubella may not be recognised.
- 3 The likely outcome of infection in pregnancy is related to the time of gestation.<sup>13</sup> Maternal rubella infection in the first 10 weeks of pregnancy results in foetal damage in up to 90% of infants and multiple defects are common (Congenital Rubella Syndrome). The risk of damage declines to about 10-20% by 16 weeks. Rubella between 16 and 20 weeks carries a minimal risk of deafness only.<sup>14</sup> Rubella after 20 weeks carries no documented risk.