

## Continuing professional development

# Measles, mumps and rubella

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### Measles

The rubeola virus is highly contagious and is spread by droplets from the nose and throat, through coughing or sneezing. Symptoms appear about 10 days after infection, and give the impression that the sufferer has a cold. Grey-white Koplik's spots appear in the mouth, and the eyes become red and sensitive to light. A reddish-brown rash appears about 14 days after the initial infection; it begins behind the ears and spreads across the body. There is no treatment for measles infection.

Children, especially the very young, are particularly susceptible to measles infection. Those living in developed countries will usually be protected from the disease by early vaccination. However, outbreaks of the disease can occur. For example, in 2011, several EU states reported a dramatic rise in the number of cases, which occurred mainly among older children who had not been vaccinated (World Health Organization, 2011).

Children who are already suffering from the effects of malnutrition, and whose families or carers live in poverty, particularly in countries with under-developed healthcare systems, may not be so fortunate. Complications of measles include blindness, diarrhoea, encephalitis and pneumonia. These complications are responsible for an estimated 158 000 deaths among young children worldwide every year (World Health Organization, 2013). Millennium Development Goal 4 focuses on reducing mortality among children under 5 years of age. Preventing deaths from measles infection by promoting vaccination is an important factor in achieving this goal.

#### REFERENCES

- World Health Organization (2011) *Weekly epidemiological record*, 2 December 2011. [www.who.int/wer/2011/wer8649.pdf](http://www.who.int/wer/2011/wer8649.pdf)
- World Health Organization (2013) *Measles. Fact sheet No. 286*. [www.who.int/mediacentre/factsheets/fs286/en/index.html](http://www.who.int/mediacentre/factsheets/fs286/en/index.html)

### Rubella (German measles)

Like measles, the rubella virus is a contagious infection that spreads through droplets from the nose and throat to cause a sore head, runny nose, some swollen glands and a reddish-pink rash. The illness is usually quite mild. Children and young adults are most likely to be affected, and recover fairly quickly.

Pregnant women, particularly those in the first trimester, are most at risk from infection, as the virus can be passed to the fetus. The virus affects several aspects of fetal development, causing congenital rubella syndrome (brain damage, deafness, blindness and cardiovascular defects). Women in developing countries are particularly at risk.

There is no treatment for rubella infection, but the illness is preventable by vaccination. The vaccine should not be given to women who are or who suspect they may be pregnant.

### World Health Organization's Global Measles and Rubella Strategic Plan 2012–2020

The aims of this plan are as follows:

- the achievement of high levels of immunity through vaccination
- disease surveillance and evaluation of the effectiveness of vaccination programmes
- readiness to deal with disease outbreaks
- communicating the importance of vaccination to the public
- research to improve diagnosis and vaccination.

#### REFERENCE

- World Health Organization (2012) *Global Measles and Rubella Strategic Plan 2012–2020*. [www.who.int/immunization/newsroom/Measles\\_Rubella\\_StrategicPlan\\_2012\\_2020.pdf](http://www.who.int/immunization/newsroom/Measles_Rubella_StrategicPlan_2012_2020.pdf)

## Mumps

The mumps virus is a contagious viral infection characterised by swelling of the parotid glands, headaches, a dry mouth, and some difficulty in swallowing. Children of school age are most likely to be infected, although adults can also be affected; most people will recover without difficulty.

However, complications can occur, especially in adults. The virus may spread to the meninges, causing viral meningitis, or to other glands. The testicles and ovaries may swell, causing pain, and male fertility may be affected in some cases.

There is no treatment for mumps, but the illness is preventable by vaccination.

## Vaccination issues

The measles vaccine can cause side-effects. Around 2% of individuals may develop a rash, 5% may experience a slight rise in temperature, and, rarely, febrile convulsions or thrombocytopenic purpura may occur. The triple vaccine against measles, mumps and rubella (MMR) is reported to be safe. It is normally given at around 1 year after birth, and should be followed by a booster dose at between 3 and 5 years of age. It is not yet known whether immunity is permanent.

MMR should not be given to anyone who is acutely ill, or who is allergic to neomycin or gelatin, or who has received blood products in the previous 3 months. A booster dose should not be given if the previous one provoked a severe reaction.

MMR may occasionally cause febrile convulsions. There is no evidence that MMR causes autism or any damage to the brain or the gastrointestinal system (World Health Organization, 2009).

### REFERENCES

World Health Organization (2009) *Weekly epidemiological record*, 28 August 2009. [www.who.int/wer/2009/wer8435.pdf](http://www.who.int/wer/2009/wer8435.pdf)

For further information see *MMR: frequently asked questions* at [www.nhs.uk/Conditions/vaccinations/Pages/mmr-questions-answers.aspx](http://www.nhs.uk/Conditions/vaccinations/Pages/mmr-questions-answers.aspx)

## What is the problem with MMR?

Wakefield AJ, Murch SH, Anthony A *et al* (1998) Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and

pervasive developmental disorder in children. *Lancet* 351:637–41.

The authors of this paper claimed to have studied 11 boys and 1 girl, aged between 3 and 10 years, who had developed normally and then shown signs of deterioration, including gastrointestinal problems, and loss of language and other important skills. Nine of the children showed signs of autism. These changes were said to be associated with the MMR vaccine.

The publication of this paper caused widespread concern, and it was later retracted following reports that the research by Wakefield *et al* was fraudulent.

The General Medical Council reviewed the case and removed Wakefield from the medical register ([www.gmcuk.org/Wakefield\\_SPM\\_and\\_SANCTION.pdf\\_32595267.pdf](http://www.gmcuk.org/Wakefield_SPM_and_SANCTION.pdf_32595267.pdf)).

Nevertheless, the case created a crisis of confidence among parents, and distrust of health professionals' advice (Brown *et al*, 2010). Items in the press or other media and the activities of certain pressure groups have contributed to parental uncertainty (Hobson-West, 2007). Consequently, parents may find it difficult to decide whether to accept a perceived risk and allow their child to have the MMR vaccine.

A study undertaken in the UK of children born between 2000 and 2002, as part of the Millennium Cohort Study (Samad *et al*, 2006), related maternal factors to infants' immunisation status (as reported by the mother); a higher proportion of mothers of unimmunised infants were of black Caribbean ethnicity. Baker *et al*, 2011 found that white infants in Manchester UK, born between 2002 and 2007, were least likely to be vaccinated with triple and MMR vaccines, and that lower rates of immunisation were significantly associated with living in a deprived area. For black or black British infants, and Pakistani infants, there was no significant association between deprivation and immunisation.

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Baker D, Garrow A and Shiels C (2011) Inequalities in immunisation and breast feeding in an ethnically diverse urban area: cross-sectional study in Manchester, UK. *Journal of Epidemiology and Community Health* 65:346–52.

Brown KF, Kroll JS, Hudson MJ *et al* (2010) Factors underlying parental decisions about combination childhood vaccinations including MMR: a systematic review. *Vaccine* 28:4235–48.

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Samad L, Tate AR, Dezateux C *et al* (2006) Differences in risk factors for partial and no immunisation in the first year of

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