



July 2008

Rubella

[Introduction](#)

[Epidemiology](#)

[Risk for overseas travellers](#)

[Transmission](#)

[Signs and symptoms](#)

[Treatment](#)

[Prevention](#)

[Vaccine information](#)

[References](#)

[Reading list](#)

[Links](#)

Introduction

Rubella is a viral illness caused by a single stranded RNA togavirus, with its own genus, *Rubivirus*. It is the only togavirus known to be transmitted via the respiratory route [1]. It generally results in a mild, self limiting illness often known as “German Measles”, as it was first described in Germany.

If rubella is contracted during pregnancy (Congenital Rubella Syndrome), it can cause miscarriage, stillbirth or the risk of multiple birth defects in up to 90% of children [2, 3]. Rubella can be prevented by vaccination.

Epidemiology

Global epidemiology

Rubella has worldwide distribution [4, 5]. Before the introduction of large scale rubella vaccination programmes, the usual age range of infection was between 6 to 12 years in high income countries, and between 2 to 8 years in urban areas of low income countries.

The incidence of rubella, including maternal infection, has decreased in countries where rubella vaccination has been introduced into routine immunisation schedules and coverage is high (<80%). However, in countries without effective vaccination programmes, including many low income countries, maternal infection is common and Congenital Rubella Syndrome (CRS) remains a major cause of development anomalies [2].

The World Health Organization (WHO) estimates that there are 700,000 deaths due to CRS every year [6]. The highest risk of CRS is in regions with high susceptibility rates among women of child-bearing age [5].

Rubella in England and Wales associated with overseas travel



In 2004 and 2005, there were 42 confirmed cases of rubella reported in England and Wales [7]. These included eight pregnant women, three of whom were infected abroad: Russia, the Philippines and Mauritius. A further six cases were associated with travel to Russia, Greece, Spain, Romania, Switzerland, and Bangladesh.

Risk for overseas travellers

All unvaccinated and non-immune travellers are at risk from rubella when visiting countries where rubella continues to occur. While rubella infection is usually a mild illness, there are serious implications for infection during pregnancy.

Any decline in the uptake of the combined measles-mumps-rubella (MMR) vaccine is likely to increase the number of susceptible individuals and therefore cases of rubella. All travellers to epidemic or endemic areas should be up to date with the UK schedule of vaccinations.

See [Vaccine information](#) section for indications for the use of vaccine.

Transmission

Infection is by airborne droplet infection or direct contact with respiratory secretions of infected individuals [1, 8].

Signs and symptoms

Rubella has an incubation period of approximately 14 days (with a range of 12 to 23 days) before the onset of the characteristic maculopapular rash [3]. Other symptoms include fever, lymphadenopathy (usually in the cervical and posterior auricular regions), anorexia, headache, malaise and mild conjunctivitis [1, 8].

Asymptomatic infection is common. Compared to measles, rubella is usually a milder illness, with a shorter duration. Complications include thrombocytopenia in about 1 in 3,000 cases and encephalitis in about 1 in 6,000 cases. Arthritis and arthralgias may affect up to 70% of adult females who become infected.

The highest risk for CRS is during the first trimester of pregnancy; the syndrome is unusual after 16 weeks. CRS is characterised by foetal death or premature delivery, cataracts, deafness, microcephaly and cardiac defects.

Treatment

There is no specific anti-viral treatment for rubella. Treatment consists of supportive care [4].

Prevention

Rubella vaccination makes CRS a preventable disease [2] and WHO describes the primary purpose of rubella vaccination as the prevention of congenital rubella infection [5]. Vaccine should be offered to all unvaccinated and non-immune individuals who are travelling, provided there are no contraindications to the vaccine. Individuals born before 1970 are likely to have had rubella disease and acquired natural immunity.



Rubella vaccine information

Single antigen vaccines are not licensed for use in the UK. Rubella vaccine is given as part of the combined MMR vaccine. This is a freeze dried preparation containing live, attenuated strains of the three viruses, which have been cultured separately and mixed prior to being lyophilised. It does not contain thiomersal or any other preservatives [8]. MMR is recommended where protection against mumps, measles and rubella is recommended. It can be given irrespective of a history of measles, mumps or rubella infection. There is no upper age limit to MMR vaccination [8].

Indications for use of vaccine

The aim of the MMR vaccination programme is to ensure that all susceptible persons receive two doses of MMR vaccine.

- Children under ten years of age:

MMR vaccine should be offered to infants shortly after their first birthday, usually at 13 months of age. A second dose is then given before school entry.

- Children over ten years and adults:

MMR vaccine can be given at any age, and a travel health consultation is an opportunity to ensure that individuals have received two doses of each component of the vaccine.

Adults born in the UK before 1970 are likely to have developed immunity through natural infection. Vaccination would not normally be given.

- Overseas travellers:

All travellers should ensure that they are fully immunised according to the UK schedule. MMR vaccine can be considered for infants from 6 months of age, if they are visiting a rubella endemic area. However, as a sub-optimum response may occur in infants under 12 months of age because of interference from maternal antibodies, two further doses, one at 13 months of age and another before school entry, should be given.

Availability of vaccine

There are two MMR vaccines available in the UK. Details of these can be found in the table.

The Summary of Product Characteristics (SmPC) should be consulted prior to the administration of any vaccine [9, 10].

Vaccine schedules

Vaccine	Manufacturer	Schedule	Length of protection	Age range
M-M-R II™	Sanofi Pasteur MSD	Children under 10 years: 2 doses, given at least 3 months apart. Children over 10 years	Lifelong protection following 2 doses.	From 12 months of age.



		and adults: 2 doses at least 1 month apart.		
Priorix™	GlaxoSmithKline	Children under 10 years: 2 doses, given at least 3 months apart. Children over 10 years and adults: 2 doses at least 1 month apart.	Lifelong protection following 2 doses.	From 12 months of age.

Interrupted courses

There is no evidence to suggest that the MMR vaccine course needs to be repeated, regardless of the interval between the two doses.

Contraindications

MMR vaccine should not be given to:

- Immunosuppressed individuals. HIV-positive individuals can receive MMR vaccine depending on their CD4 count and clinical status. Specialist advice should be sought in these cases. See Chapter 28, Rubella, in the Department of Health's [Immunisation against infectious disease \('The Green Book'\)](#).
- Individuals who have experienced a confirmed anaphylactic reaction to a previous dose of a MMR vaccine.
- Individuals who have experienced a confirmed anaphylactic reaction to neomycin or gelatin [8].
- Pregnant women.

Precautions

MMR vaccine should be given with caution in the following individuals and specialist advice sought as appropriate prior to vaccinating. Further guidance can be found in the Department of Health's [Immunisation against infectious disease \('The Green Book'\)](#).

- Individuals with a history of idiopathic thrombocytopenic purpura (ITP) following previous MMR vaccine.
- Individuals with egg allergy.
- Breastfeeding women.
- HIV positive individuals. HIV-positive individuals can receive MMR vaccine depending on their CD4 count and clinical status. Specialist advice should be sought in these cases.

Adverse events

Most adverse events (except allergic reaction) following MMR vaccine are due to replication of vaccine viruses. They are seen in individuals who are not immune to one or more of the viruses in the vaccine. Events due to the measles component occur six to 11 days after vaccination, and to the mumps or rubella component two to three weeks following vaccination, but can occur up to six weeks later.



Adverse events include:

- Common: fever, and/or rash.
- Rare: febrile seizures, idiopathic thrombocytopenic purpura, arthralgias, or arthritis.

References

1. Heymann DL, editor. Control of Communicable Diseases Manual. 18th Edition. Rubella and Congenital Rubella. American Public Health Association. Washington. 2004:464-8.
2. Banatvala JE, Brown D. Rubella. Lancet 2003;363:1127-37.
3. Best JM. Rubella. Seminars in Fetal and Neonatal Medicine 2007;12:182-92.
4. US Centers for Disease Control and Prevention. Health Information for International Travel 2008. Rubella. Elsevier: Atlanta: 2008:293-6.
5. World Health Organization. Weekly Epidemiological Record. Outbreak News; Rubella vaccines. WHO position paper. WHO: Geneva: 2000: 161-9.
6. World Health Organization. Rubella. WHO. 2008. [Accessed 19 May 2008]. Available at: <http://www.who.int/immunization/topics/rubella/en/print.html>
7. Health Protection Agency. Foreign travel-associated illness, England, Wales, and Northern Ireland - 2007 report. London: HPA; 2007. Available at http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1204186178825
8. Department of Health. Immunisation against infectious disease. Chapter 28 – Rubella. TSO: London 2006.343-64.
9. Sanofi Pasteur MSD Limited. Summary of Product Characteristics: MMR II. Maidenhead. April 2007. [Accessed 19 May 2008]. Available at: <http://emc.medicines.org.uk/emc/assets/c/html/DisplayDoc.asp?DocumentID=1445>
10. GlaxoSmithKline UK. Summary of Product Characteristics: Priorix. Uxbridge. September 2004. [Accessed 19 May 2008]. Available at: <http://emc.medicines.org.uk/emc/assets/c/html/DisplayDoc.asp?DocumentID=2054>

Reading list

Chapter 26. Rubella Vaccine. Plotkin SA. Rubella Vaccine. In Plotkin SA, Orenstein WA (eds.) Vaccines' 4th Edition Edition. 2004 Saunders/Elsevier, Philadelphia.707 – 743.

Links

Rubella. Health Protection Agency
http://www.hpa.org.uk/infections/topics_az/rubella/menu.htm

MMR. The Facts. NHS Immunisation Information
<http://www.mmrthefacts.nhs.uk>

Rubella. Department of Health
<http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/Rubella/index>

