CONGENITAL RUBELLA

Rubella is a separate protocol

Based on the MoH Communicable Diseases Control Manual 2012[1]

Associated Documents

Case report Form:
K:\CFS\ProtectionTeam\FinalDocs\NotifiableConditions\Rubella\FormsStdLettersQuest\CaseReportFormMMRJun2015.pdf

Fact Sheet:
K:\CFS\Quality\ApprovedDocuments\ProtectionTeam\FactSheets\RubellaAndCongenitalRubellaFactSheet.pdf

The Illness[2,3]

Rubella is a viral infection of humans that is usually mild but can cause congenital abnormalities if a pregnant woman develops the disease before 16 weeks. Asymptomatic infection is common. Prior to the vaccination era rubella was a very common illness particularly in children of early school age and over 80% of adults had immunity. Extensive outbreaks of rubella occurred every 6–9 years. Immunisation has been very successful in reducing the incidence of congenital rubella syndrome. Clinical features may include:

- a transient erythematous rash and lymphadenopathy
- arthritis or arthralgia in adults
- a more severe measles-like illness
- encephalitis (approximately 1 in 6000 cases)

However clinical diagnosis is unreliable because the symptoms and rash are not specific for rubella and a history of rubella should never be accepted without confirmation by positive serology.

Rubella infection during pregnancy can result in foetal infection, causing CRS in a high proportion of cases. Rubella infection in the first eight weeks of pregnancy results in foetal damage in up to 85 percent of infants, and multiple defects are common. The risk of damage declines to 10–20 percent by about 16 weeks' gestation, and after this stage of pregnancy foetal abnormalities are rare.

Infants born with CRS may have cataracts, nerve deafness, cardiac malformations, microcephaly, mental retardation and behavioural problems. Inflammatory changes may also be found in the liver, lungs and bone marrow. Some infected infants may appear normal at birth, but have nerve deafness detected later.

Rubella infection can occur (very rarely) in individuals with either naturally acquired or vaccine-induced antibody. Rare cases of CRS have been reported after reinfection during pregnancy.

As with measles, public health measures of accurately diagnosing potential cases of rubella with notification and contact tracing are critical.

Epidemiology in New Zealand

Rubella immunisation was introduced in 1970, and rubella has been a notifiable disease since 1996. The last large rubella outbreak in 1995–1996 mostly involved young adult males, who would not have been offered immunisation. This emphasises the need to immunise both boys and girls to reduce the risk of exposure in pregnant women, as well as to reduce illness in men. A cohort of women born in the years 1965 to 1967 may be less likely to have been immunised as children than women born before or later.

Three cases of rubella were notified in 2016, with no notifications in 2015 and four in 2014. All of the 2016 and 2014 cases were imported from overseas (ESR, 14 March 2017).

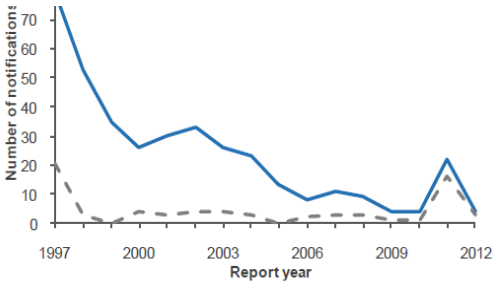
There have been no reported cases of CRS in New Zealand since 1998.

CASE DEFINITION

Clinical description

An illness with a generalised maculopapular rash, fever and one or more of the following: arthralgia or arthritis, lymphadenopathy, conjunctivitis. Rubella often presents atypically and is difficult to diagnose clinically with certainty. Up to 50 percent of rubella infections are subclinical. If accurate diagnosis is important, it must be laboratory confirmed.

NZ mumps notifications and laboratory reported cases year by year, 1997-2015



Incubation period: 14–23 days, commonly 16–18 days.

Mode of transmission: Children and adults transmit the virus in their nasopharyngeal secretions by droplet spread or direct contact.

Period of communicability: From about 1 week before to 1 week after the onset of the rash.

Prevention: The goal of rubella vaccination is to prevent congenitally acquired rubella. Immunisation of all young children (as opposed to only girls) is required to reduce rates of congenital rubella syndrome (CRS).

Notification Procedure

Cases of rubella and congenital rubella syndrome (see separate protocol) must be or notified on suspicion. Notification should not await confirmation. (Since recent immunisation with the MMR vaccine may also result in detectable anti-rubella IgM or a significant increase in anti-rubella IgG and since laboratories do not necessarily have access to this information, all results consistent with possible rubella infection should be notified.)

Under investigation: A case that has been notified, but information is not yet available to classify it as probable or confirmed.
Probable: A clinically compatible illness that is either epidemiologically linked to a confirmed case or has had contact with the same common source – that is, is part of a common-source outbreak.
Confirmed: A clinically compatible illness that is laboratory confirmed.
Not a case: A case that has been investigated and subsequently found not to meet the case definition.

Laboratory Testing

- If the case **received a vaccine** containing the rubella virus in the 6 weeks prior to symptom onset then **laboratory confirmation requires**:
  - evidence of infection with a wild-type virus strain obtained through genetic characterisation (in New Zealand, genetic characterisation is generally only performed for measles virus).
- If the case **did not receive a vaccine** containing the rubella virus in the 6 weeks prior to symptom onset, then **laboratory confirmation requires** at least one of the following:
  - detection of IgM antibody specific to the virus IgG seroconversion
  - a significant rise (four-fold or greater) in antibody level for the virus between paired sera tested in parallel where the convalescent serum was collected 10 to 14 days after the acute serum
  - isolation of rubella virus by culture
  - detection of rubella virus nucleic acid (swabs for rubella PCR will be positive at rash onset. Virus can be isolated from the nasopharynx for up to 2 weeks after the onset of the rash).

Management of Case

Investigation

In **South Canterbury** and **West Coast**, the Public Health Nurses follow up these notifications.

- Action on the day of notification and ensure that case's details are obtained promptly.
- Fax the Case Report Form to the notifying doctor for completion. Discuss with the parent/guardian to complete all details.
- Check that the following information is obtained:
  - the date of onset (important to establish duration of communicability)
  - history of prior MMR vaccination (the vaccine may cause a fever and non-infectious rash around 6-12 days after immunisation)
  - history of travel
  - identify possible contacts, including travellers from overseas.
- Ensure laboratory confirmation by serology or detection of virus in clinical specimens has been attempted. Nasal, throat, urine, blood and cerebrospinal fluid specimens can yield the virus. Discuss testing with an infectious diseases physician or a microbiologist.

Restriction

- In health care facilities, apply droplet and contact precautions until at least 7 days after onset of a rash in postnatal rubella. Non-immune pregnant women, in particular, should not have contact with an infectious case.
- Exclude from any early childhood service, school, institution or work until fully recovered and for 7 days after onset of rash. Cases should avoid contact with women of childbearing age.

Treatment

Nil specific.

Counselling

- Advise the case and their caregivers of the nature of the infection and its mode of transmission.
- MMR vaccination is given at 15 months and 4 years of age as part of the National Childhood Immunisation Schedule.
- A fact sheet is available; K:\CFS\Quality\ApprovedDocuments\ProtectionTeam\FactSheets\RubellaAndCongenitalRubellaFactSheet.pdf

Management of Contacts

Identify contacts for investigation, immunoglobulin and counselling where appropriate.

Definition

- All people with close unprotected contact (eg household, school, workplace, military camp) with the case during the week before onset of illness to seven days after the onset of the rash.

Investigation

- Check immunisation status of contacts.
- Advise any pregnant contact to get in touch with her lead maternity carer (LMC) to check her rubella status.
- Pregnant contacts with confirmed immunity can be reassured that the likelihood of rubella infection is remote. This applies if:
  - a previous antibody screening test has detected a protective level of antibodies, and this has been documented, OR
  - she has received at least two documented doses of rubella vaccine, OR
  - one dose of vaccine followed by a rubella antibody screening test showing a protective level of antibodies has been documented.
- Pregnant contacts whose immunity to rubella has not been confirmed must be investigated serologically as soon as possible in liaison with their LMC and primary health care doctor

as the rash is not diagnostic and infection can occur without clinical symptoms.
  - Discuss testing with an infectious diseases physician or a microbiologist
  - The laboratory should test for rubella IgM and IgG (no pregnant woman under 20 weeks' gestation should have rubella diagnosed on IgM alone)
  - The laboratory should store (frozen) an aliquot of serum for later testing in tandem with a follow-up sample. If the sample is IgM positive, regardless of IgG, then a full assessment of the serological status is needed
  - Results must be interpreted in conjunction with the time lapse since exposure to determine whether or not acute infection has occurred
  - Consider further serum samples and/or testing in a reference laboratory.

  ⇒ If the sample is negative for both IgM and IgG, then the woman is susceptible, and if she remains asymptomatic then a second blood specimen should be obtained 28 days after last exposure to the case. If, however, the woman develops clinical symptoms suggestive of rubella, a second blood specimen should be obtained as soon as possible. A third blood specimen may be necessary 7 days after the onset of symptoms.

  ⇒ If IgG is detected and IgM is not detected, and the IgG is less than 15 IU/mL and there is a history of onset of rash in the previous 10 days, request further serum.

- Diagnosis and management based on any the above tests should be discussed with an obstetrician or infectious diseases physician. Management of primary rubella or secondary re-infection depends on the gestation of the pregnancy and when the infecting occurred.
- Pregnant contacts who are not immune should also be offered MMR vaccination after delivery.

Restriction
Nil.

Prophylaxis
- Immunisation is contraindicated during pregnancy
- The routine use of immunoglobulin (IG) for post-exposure prophylaxis of rubella in early pregnancy is not recommended. It may be considered if termination of the pregnancy is not an option. Although IG has been shown to reduce clinically apparent infection in the mother, there is no guarantee that it will prevent foetal infection.
- Post-exposure immunisation of non-pregnant women is recommended, especially if given within 3 days of exposure.
- All women of childbearing age should be screened for rubella antibody and immunised if necessary.
- Pregnant women should be screened antenatally. Those with a rubella antibody level below 15 IU/mL should be counselled to avoid contact with cases of rubella while pregnant, and should be offered MMR vaccination after delivery. See the *Immunisation Handbook* (Ministry of Health 2017) for further information.

  (Note: Immunisation of a person who is incubating natural rubella or who is already immune is not associated with an increased risk of adverse effects.)

Counselling
- Advise all contacts of the incubation period and typical symptoms of rubella.
- Encourage them to seek early medical attention if symptoms develop.
- Pregnant contacts may require additional advice; refer to an appropriate specialist.
- Advise MMR vaccination of susceptible women of child bearing age and that children's vaccinations be up to date.
- If the case attends a preschool/school or an institution, advise that others attending be informed of a possible risk
- A fact sheet is available: K:\CFS\Quality\ApprovedDocuments\ProtectionTeam\FactSheets\RubellaAndCongenitalRubellaFactSheet.pdf

Other Control Measures

In a cluster of cases or an outbreak, women of child bearing age and children who are unvaccinated should be advised to have MMR vaccination (this is funded).

Identification of source

If recent travel, check if possible outbreaks in areas visited.

Disinfection

Generally not needed. Clean and disinfect surfaces and articles soiled with upper respiratory tract secretions, urine or other infectious bodily fluids. For more details, refer to NZ Communicable Diseases Control Manual 2012, Appendix 1: Disinfection[4] [http://www.health.govt.nz/publication/communicable-disease-control-manual-2012].

Health education

- Medical officers of health are responsible for health education of the public.
- Advise complete childhood vaccination with MMR vaccine. This involves two doses before school entry, the first at 12–15 months of age and the second at 4 years.
- Advise early childhood services to keep up-to-date immunisation records.

Reporting

- Ensure complete case information is entered into EpiSurv.
- If a cluster of cases occurs, contact the Ministry of Health Communicable Diseases Team and outbreak liaison staff at ESR, and complete the Outbreak Report Form.
- If an outbreak, write report for Outbreak Report File
- File.

References and further information

1. Ministry of Health, Communicable Diseases Control Manual 2012, Rubella http://www.health.govt.nz/publication /communicable-disease-control-manual-2012
2. Ministry of Health, Immunisation Handbook 2017 http://www.health.govt.nz/system/files/documents/publications/imm-handbook-18-rubella-may17_1.pdf
3. ESR, Notifiable And Other diseases in New Zealand: Annual Surveillance Report 2015 https://surv.esr.cri.nz/PDF_surveillance/AnnualRpt/AnnualSurv/2015/2015AnnualReportFinal.pdf
4. NZ Communicable Diseases Control Manual 2012, Appendix 1: Disinfection[8] [http://www.health.govt.nz/publication/communicable-disease-control-manual-2012].

Further information

UpToDate, Rubella
https://www.uptodate.com/contents/rubella?source=machineLearning&search=rubella&selectedTitle=1~150&sectionRank=1&anchor=H7#H7