RUBELLA IN PREGNANCY

**Keywords:** Rubella, German measles, congenital rubella syndrome, MMR, rubella antibody

**AIMS**

- Assess the rubella status of all women in pregnancy, and offer screening to women who have not been tested.
- Provide information and management to women who have been exposed to rubella in pregnancy.
- Offer vaccination for measles, mumps and rubella (MMR) for non-immune women postnatally.

**BACKGROUND**

Rubella (initially known as German measles) is associated with a 80% risk of usually multiple congenital abnormalities if acquired in the first 12 weeks of pregnancy, especially the first 6-10 weeks, and leads to fetal growth problems or stillbirth. It is transmitted via respiratory airborne droplets. The virus initially replicates in the nasopharyngeal mucosa and local lymph nodes, and in pregnancy infects the placenta and developing fetus. Infants with congenital rubella may continue to excrete the virus via pharyngeal secretions and urine for a year or more. If maternal infection occurs after the first trimester, the frequency and severity of fetal damage decreases significantly. Fetal defects are rare after the 16th week of pregnancy although sensorineural hearing deficit may occur up to the 20th week, but following this period the incidence of rubella-induced defects is reduced, with deafness and retinopathy often being the only manifestations of congenital infection at this time. The incubation period (prior to appearance of symptoms) is 12-23 days, with an average of 18 days. The infectious period commences 7 days prior to the onset of symptoms and continues until 4 days after the onset of the rash. In the second week following exposure symptoms of fever (usually mild and <39.0°C), malaise and mild conjunctivitis may be present, and a characteristic lymphadenopathy is typically found in the neck and behind the ears (sub occipital and post auricular). These symptoms generally precede a maculopapular, erythematous, and pruritic rash by about 5-10 days. The rash occurs in 50-80% of infected people and usually lasts 1-3 days, commencing on the face and neck before spreading down the body. A clinical diagnosis of rubella infection based on rash appearance is extremely unreliable. Joint symptoms (usually arthralgia but in some arthritis) may occur in up to 70% of women, however they tend not to last long. Occasionally, transient abnormalities in LFT’s (elevated ALT) and thrombocytopenia can occur. Up to 50% of rubella infections are subclinical or asymptomatic.

The range of congenital rubella syndrome (CRS) defects include ophthalmic (e.g. cataracts, glaucoma, pigmentary retinopathy), auditory (e.g. sensorineural deafness), cardiac (e.g. peripheral pulmonary artery stenosis, patient ductus arteriosus, or ventricular septal defects), craniofacial (e.g. microcephaly), microcephaly and developmental delay, and lung, liver and spleen damage.

**KEY POINTS**

1. Pregnant women who are not immune to rubella should be advised to avoid contact with any person who has rubella for at least 7 days after the onset of their rash.
2. It is recommended pregnant women should restrict contact with people with confirmed, probable or suspected rubella for 6 weeks (2 incubation periods).
3. All women who are not immune to rubella (Rubella IgG antibody level <10 IU/mL) should be offered the measles, mumps, rubella (MMR) vaccination following birth and prior to discharge from KEMH.
4. All women with low level rubella immunity (Rubella IgG 10-30 IU/mL) should be offered MMR vaccination following birth and prior to discharge from KEMH. A rubella IgG level >10 IU/mL is usually considered to have a minimal risk of reinfection but rubella IgG antibody levels may wane to non-protective levels prior to a subsequent pregnancy.
5. Pregnant women who are not immune to rubella and who are exposed to, or develop a non-vesicular rash should be investigated for both rubella and Parvovirus B19. They should see their GP as soon as possible to arrange testing.
ANTENATAL SCREENING

At the booking visit confirm the woman’s rubella antibody status. Evidence indicates rubella antibody levels may decline over time and low levels (Rubella IgG 10-30 IU/mL) may fall below a protective range. Women born outside of Australia, Aboriginal and Torres Strait Islander women from rural/remote communities, and women >35 years are at particular risk of being rubella non-immune.

IMMUNE WOMEN

Inform women they are immune to rubella (Rubella IgG >10 IU/mL) and that they are unlikely to be reinfected, however their immunity may decline over time.

Women with low level rubella immunity (Rubella IgG 10-30 IU/mL) may rarely develop rubella reinfection if exposed to a confirmed rubella case. Such maternal reinfection in immune women carries a risk of fetal damage of less than 5%.

Baseline and follow up serological testing for rubella IgG and IgM testing at 4 weeks post exposure to detect rubella reinfection is recommended. Should any rubella compatible symptoms occur in the interim, earlier serological testing and throat swab for rubella PCR is recommended.

It is recommended that rubella antibodies be performed shortly before every pregnancy, or early in pregnancy, or if pregnancy is contemplated regardless of a previous result, as antibodies wane with time and may no longer be protective in subsequent pregnancies.

NON-IMMUNE WOMEN

- Advise women to avoid contact with people who have rubella for at least 7 days after their onset of a rubella rash.
- Offer MMR vaccination prior to postnatal discharge.
- If a woman declines vaccination discuss the risk of infection in subsequent pregnancies, and recommend if she has vaccination at a later date she should take precautions to avoid falling pregnant within 28 days of vaccination.

MANAGEMENT OF NON-IMMUNE WOMEN EXPOSED TO RUBELLA

Non-immune women (either unknown rubella antibody level or rubella IgG <10 IU/mL or no history of having received a rubella vaccine) who contact KEMH after exposure to any person with rash, including rubella (suspected or proven), or if they develop a generalised rash should be advised to see their GP as soon as possible. Blood tests should be taken for rubella and parvovirus IgG and IgM, and a throat swab for rubella and parvovirus PCR testing. The rubella and parvovirus IgG and IgM blood tests should be repeated 14-21 (minimum 7) days later. Parvovirus testing is recommended as it can cause a similar clinical presentation in women together with adverse fetal consequences and is far more common in the WA community than rubella infection.

Post exposure prophylaxis with normal human immunoglobulin (NHIG) is not recommended as it does not prevent infection in non-immune contacts, however it may prolong the incubation period and marginally reduce fetal risk and maternal clinical symptoms. Its use may be considered in rare situations (within 72 hours of exposure), or in outbreak situations as a pre-exposure prophylactic for non-immune pregnant women in high risk occupations. Serological follow-up is required for up to 2 months.

A positive rubella IgM result +/- rubella IgG, or detection of rubella RNA by PCR is strongly suggestive of rubella.

MANAGEMENT OF WOMEN DIAGNOSED RUBELLA POSITIVE IN PREGNANCY

1. A woman diagnosed with rubella in pregnancy should have a management plan documented on the MR004. Management will be influenced by gestation.
2. Notify the on-call Clinical Microbiologist when a woman is admitted with a suspected or proven rubella infection to assist in appropriate specimen collection and advise on inpatient isolation requirements.
3. Notify the Infection Control Nurse Consultant in hours when a women is admitted who has a positive rubella test result indicating active infection (rubella IgM detected +/- rubella RNA detected by PCR).
4. Where possible a woman admitted with a rubella infection should be nursed in a single isolation room. A negative pressure room is not required. Pregnant staff members (irrespective of their rubella IgG antibody level) and known non-rubella-immune staff members should not have contact with the woman. Additionally, contact and droplet precautions / isolation is required for neonates infected with rubella (IgM+ve / PCR +ve), as they are infectious for >12months after birth.

5. Complete a ‘Health Department of Western Australia Notification Form’ for notifiable infectious diseases.

6. Arrange a paediatric Consultation referral when a woman presents in pregnancy with diagnosed rubella infection.

INADVERTENT RUBELLA OR MMR VACCINATION IN THE PRE-CONCEPTUAL PERIOD / FIRST TRIMESTER

Vaccination for MMR is contraindicated in pregnancy. Whilst vaccination should be avoided in early pregnancy, some women may conceive in the 4 weeks following vaccination where there is a possibility of being exposed to the live vaccine virus. Alternatively, they may inadvertently receive rubella containing vaccines in the first trimester of pregnancy. Active international surveillance of these cases now numbering in excess of 600 pregnancies that went to term has not documented a single case of CRS. Based on these findings the rubella vaccine cannot be considered tetratogenic and termination of pregnancy is not indicated, nor chorionic villus sampling or amniocentesis to detect fetal rubella vaccine strain infection.

MMR VACCINATION

• Advise women to attend their GP to arrange follow-up testing for seroconversion 6-8 weeks following MMR vaccination. If levels at follow-up testing remain negative or low, the woman is offered revaccination. If still low after the second documented dose, further vaccinations are unlikely to improve this.

• Provide the woman with the KEMH MMR vaccination letter.

• Advise women to avoid pregnancy for at least 28 days after MMR vaccination.

• Possible mild adverse events following MMR vaccination include fever, sore throat, lymphadenopathy, rash, arthralgia, and arthritis. Symptoms often are transient and occur 1-3 weeks following vaccination.

• Breastfeeding is not a contraindication to MMR vaccination.

• Avoid the use of MMR for 3 months after red cell transfusion and 7 months after plasma or platelet transfusion. Recommendations for MMR delay after the administration of various IV and IM immunoglobulins vary between 3 – 11 months (refer to the Australian Immunisation Handbook for specifics). There is NO requirement for MMR delay after the administration of Anti-D immunoglobulin

• See also KEMH Clinical Guideline: Obstetrics & Midwifery: Postpartum Care, Routine: Care of the Mother on the Postnatal Ward: Subsequent Care: Administration of MMR Vaccine

FAILURE TO SEROCONVERT FOLLOWING MMR VACCINATION

Some women will fail to develop protective rubella IgG levels (ie rubella IgG > 10 IU/mL) following MMR vaccination. This may arise from either a true failure to develop anti-rubella IgG against a particular manufacturer’s rubella vaccine strain, or development of rubella IgG antibodies which are not detected by the particular laboratory assay being used for rubella IgG detection.

If they have only received one dose of MMR, the dose should be repeated and repeat serological testing at 8 weeks post administration is undertaken to check for rubella IgG seroconversion and IgG level.

If after having received 2 doses of MMR, rubella IgG is still not detected, monovalent rubella vaccine (currently MeruvaxII CSL Biotherapies/Merck & Co Inc in Australia) can be trialled with repeat rubella IgG testing 8 weeks post administration. This is manufactured by a different manufacturer to the currently available MMR (Priorix – GlaxoSmithKline) in Australia and may generate a different repertoire of IgG antibodies. If protective levels are again not detected, confirmation of the absence of rubella IgG antibodies should be done by referral of the serum to a reference laboratory and if
confirmed, the woman should be managed as if she is non-immune. Referral for immunological function workup is rarely indicated.

Management advice for subsequent pregnancies in such non rubella vaccine responders is unclear. Options include ensuring all close contacts, especially children, are rubella immune; minimising all contacts with people having a rash illness, together with regular monthly antenatal blood tests for rubella IgG and IgM in the first 20 weeks to detect asymptomatic rubella infection. Alternatively, investigate episodes of contact with rash illness, or rubella compatible illness in the mother. Knowledge of local rubella epidemiology can assist in risk assessment and selection of a management plan. Specialist consultation is advised for such cases.

REFERENCES / STANDARDS

National Standards – 1- Care provided by the clinical workforce is guided by current best practice
Legislation - Health Act 1911
Related Policies - KEMH Clinical Guideline: Obstetrics & Midwifery: Perinatal Care, Routine: Care of the Mother on the Postnatal Ward: Subsequent Care: Administration of MMR Vaccine

Other related documents –
- Department of Health WA: Rubella (fact sheets, notification data, reports)
- AHMAC. (2012), Clinical practice guidelines: Antenatal care- Module 1 (p. 119-22)
- Department of Health WA: Procedure for Notification of Communicable Diseases
- KEMH Infection Control Manual: Pregnant Health Care Workers (HCW): Infection Control Precautions

RESPONSIBILITY
Policy Sponsor: Nursing & Midwifery Director OGCCU
Initial Endorsement: November 2001
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