Respiratory and Direct Contact

Congenital Rubella Syndrome/Infection (CRS/CRI)

Notification Timeline:

From Lab/Practitioner to Public Health: Within 48 hours.
From Public Health to Ministry of Health: Within 72 hours.

Public Health Follow-up Timeline: Initiate within 72 hrs.

Information

Case Definition (Public Health Agency of Canada May 2008**)**

Table 1. National Case Definition for Congenital Rubella Syndrome (CRS)	
Confirmed Case	*Live birth*: two clinically compatible manifestations (any combination from Table 3, Columns A and B) with laboratory confirmation of infection: • isolation of rubella virus from an appropriate clinical specimen **OR** • detection of rubella virus RNA **OR** • positive serologic test for IgM antibody in the absence of recent immunization with rubella-containing vaccine **OR** • rubella IgG persisting for longer than would be expected (approximately six months after birth) from passive transfer of maternal antibody, or in the absence of recent immunization. *Still birth*: two clinically compatible manifestations with isolation of rubella virus from an appropriate clinical specimen.
Probable Case	In the absence of appropriate laboratory tests, a case that has at least: • any two clinically compatible manifestations listed in Table 3, Column A **OR** • one manifestation listed in Table 3, Column A, plus one listed in Table 3, Column B.
Not a Case	• rubella antibody titre absent in the infant **OR** • rubella antibody titre absent in the mother **OR** • rubella antibody titre declining in the infant consistent with the normal decline after birth of passively transferred maternal antibody.

Case Definition (Public Health Agency of Canada, May 2008**)**

Table 2. National Case Definition for Congenital Rubella Infection (CRI)	
Confirmed Case	Laboratory confirmation of infection but with no clinically compatible manifestations: • isolation of rubella virus from an appropriate clinical specimen **OR** • detection of rubella virus RNA **OR** • positive serologic test for rubella IgM antibody in the absence of recent immunization with rubella-containing vaccine **OR** • rubella IgG persisting for longer than would be expected (approximately six months after birth) from passive transfer of maternal antibody, or in the absence of recent immunization.

Table 3. Congenital Rubella Syndrome: Clinically Compatible Manifestations (Public Health Agency of Canada, May 2008)	
Column A	**Column B**
1. Cataracts or congenital glaucoma (either one or both count as one). 2. Congenital heart defect. 3. Sensorineural hearing loss. 4. Pigmentary retinopathy.	1. Purpura. 2. Hepatosplenomegaly. 3. Microcephaly. 4. Micro ophthalmia. 5. Mental retardation. 6. Meningoencephalitis. 7. Radiolucent bone disease. 8. Developmental or late onset conditions such as diabetes and progressive panencephalitis and any other conditions possibly caused by rubella virus.

Causative Agent
Rubella virus, an RNA virus of the genus *Rubivirus*.

Symptoms
In addition to the manifestations identified in Table 3, the following may also be seen (American Academy of Pediatrics, 2009):

- growth retardation;
- interstitial pneumonitis;
- thrombocytopenia;
- dermal erythropoesis ("blueberry muffin" lesions).

Moderate to severe cases of CRS are usually recognizable at birth. Mild cases that involve slight cardiac involvement or deafness may not be detected for months or even years. A frequent late manifestation of CRS is insulin-dependent diabetes mellitus (Heymann, 2008).

Fetal infections during the 1st trimester are at the greatest risk of intrauterine death, spontaneous abortion and congenital malformations of major organ systems. Infection in the first 20 weeks of gestation is most often associated with CRS and birth defects. Infections after the first 20 weeks of gestation are most often associated with CRI (Alberta Health & Wellness, 2005).

Incubation Period
Not applicable.

Reservoir/Source
Humans.

Mode of Transmission

- From an infected mother to her developing fetus.
- The occurrence of congenital defects is up to 85% if infection associated with maternal rash occurs during the first 12 weeks of gestation, 54% during 13-16 weeks, and 25% during the end of the second trimester (American Academy of Pediatrics, 2009).

Period of Communicability
Infants with CRS/CRI can shed virus in their pharyngeal secretions and urine for up to a year or more.

Specimen Collection and Transport
Laboratory confirmation of CRS/CRI is done by:

- detection of IgM in cord blood or serum of the infant
  OR
- detection of persistent rubella IgG in the infant (beyond approximately 6 months at which time maternally acquired antibodies usually wane)
  OR
- detection of rubella virus in samples (e.g., respiratory specimens collected during the first few months of life) (Alberta Health & Wellness, 2005).

Contact Saskatchewan Disease Control Laboratory (SDCL) Virology Section for additional information about specimen collection.

Methods of Control/Role of Investigator

Prevention and Education
Refer to the Respiratory and Direct Contact Introduction and General Considerations section of the manual that highlights topics for client education that should be considered as well as provides information on high-risk groups and activities.

Immunization

- Immunize infants, children and adults according to the recommended schedule. Refer to Saskatchewan Immunization Manual.[1]
- Special attention must be paid to the immune status of women in their preconception, prenatal and postnatal period. If necessary, immunizations should be offered in accordance with the Saskatchewan Immunization Manual.[1]
- Postpartum women who are non-immune should be given rubella-containing vaccine before discharge from the hospital. Refer to the Saskatchewan Immunization Manual.[1]

[1] http://www.ehealthsask.ca/services/manuals/Pages/SIM.aspx.

Education

- Educate the public about the disease and the need for active immunization with a rubella-containing vaccine. Immunization information fact sheets can be used to guide discussion.

Management

I. Case

History

Confirm the diagnosis.

Treatment/Supportive Therapy

There is no specific treatment for CRS.

Exclusion

- The infant should be isolated after birth. Routine practices, as well as droplet and contact precautions should be strictly enforced.
- Health care workers who are susceptible must not work with patients suspected or confirmed to have rubella. These workers can become infected and subsequently become a source for transmission (Health Canada, 2002).
- Once discharged from hospital, only persons that are immune to rubella should have contact with and care for the infected newborn.
- Children with CRS/CRI should be presumed infectious at least through to age one year, unless nasopharyngeal and urine cultures are negative for virus after three months of age. The Medical Health Officer (MHO) should determine a schedule of nasopharyngeal swabs and urine cultures for the first year of life in consultation with the physician and SDCL.
- Viral isolation is not always successful and repeated attempts at viral isolation testing may be necessary – the pediatrician may consult with MHO who is to consult with SDCL for guidance in this regard.

Referrals

- The family physician may make referrals to specialists for infants with CRS/CRI, as appropriate (ophthalmologists, audiologists, heart specialists, etc.).
- The infant should continue to be monitored for clinical manifestations by their physician.

II. Contacts/Contact Investigation

Susceptible (non-immune) persons should avoid contact with the infant until they are immunized. This is particularly relevant for non-immune pregnant women and children less than 12 months of age.

III. Environment

<u>Child Care Centres/Institutional Control Measures</u>

- Contact and droplet isolation precautions should be implemented in hospitals to infants with CRS/CRI who are under 12 months, unless urine and pharyngeal virus cultures are negative for rubella virus after 3 months of age.
- Investigate immune status of health care/daycare workers and immunize all who are non-immune, except in the case of pregnancy or immunosuppression.

References

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