Rubella (German measles)

CHAPTER CONTENT

1. CASE DEFINITION

Confirmed Case

- Laboratory confirmation

  Laboratory confirmation* of infection in the absence of recent immunization** with a rubella-containing vaccine with:

  - Isolation of rubella virus from an appropriate clinical specimen (i.e., urine, nasopharyngeal swab [NP], throat swab, cerebrospinal fluid [CSF]), ***OR***
  - Detection of rubella virus ribonucleic acid (RNA) (i.e., polymerase chain reaction [PCR]) in an appropriate clinical sample (i.e., urine, NP, throat swab, viral isolate), ***OR***
  - Seroconversion or a significant (e.g. fourfold or greater) rise in rubella IgG antibody level by any standard serologic assay between acute and convalescent sera, ***OR***
  - Positive serologic test for rubella IgM antibody using a recommended assay in a person who is either epidemiologically linked to a laboratory-confirmed case or has recently travelled to an area of known rubella activity

- Epidemiological Confirmation
  - Clinical illness*** in a person with an epidemiologic link to a laboratory-confirmed case

Probable Case

- Clinical illness***:
  - In the absence of appropriate laboratory tests, ***OR***
  - In the absence of an epidemiologic link to a laboratory-confirmed case, ***OR***
  - In a person who has recently travelled to an area of known measles activity

*Laboratory note

IgM serology has the potential for false-positive findings. If the clinical presentation is inconsistent with a diagnosis of rubella or in the absence of recent travel/exposure history, IgM results must be confirmed by the other listed confirmatory methods. Rubella avidity serology is recommended for IgM positive results in pregnant women.

Most acute rubella cases develop IgM after five days post rash onset. Therefore, a suspected rubella case in which serum collected < 5 days after rash onset initially tests IgM negative should have a second serum collected > 5 days after onset for retesting for IgM.

**The most frequent reaction to a rubella-containing vaccine is malaise and fever (with or without rash) occurring 7-12 days after immunization. However, this should be determined for each case, as these reactions and time frames can vary.

*** Clinical illness is characterized by fever, rash, ***AND*** at least one of the following:

- Arthralgia/arthritis
- Lymphadenopathy
- Conjunctivitis

2. DIAGNOSIS

- Laboratory diagnosis of rubella is required since clinical diagnosis is often inaccurate
- Clinically, rubella is indistinguishable from many other febrile rashes
- Laboratory testing should be attempted for all probable cases
- For more information, refer to the Alberta Provincial Laboratory Guide to Services

3. REPORTING

As set out in the *NWT Public Health Act, Reportable Disease Control Regulations (Section 4) and Disease Surveillance Regulations (Sections 6-10 and Schedule 3)* health care professionals and laboratories are legally required to report a diagnosis or formed opinion of a reportable disease to the Chief Public Health Officer (CPHO) or designate **within the timeframe identified in the regulations**.

Health Care Professionals

- Confirmed or probable cases are to be reported to the Office of the Chief Public Health Officer (OCPHO) by telephone (867) 920-8646 or fax (867) 873-0442 within **24 hours** after diagnosis is made or opinion is formed, ***AND***
- Complete and fax (867) 873-0442 the NWT Communicable Disease Reporting Form to the OCPHO within **24 hours**
- **Immediately** report all outbreaks or suspect outbreaks by telephone to the OCPHO

Laboratories

- Report all positive results to the OCPHO by fax (867) 873-0442 within **24 hours**

4. OVERVIEW

- For more information about Rubella:
- The Government of Canada: Canada/Rubella
- Centers for Disease Control and Prevention: CDC/Rubella
- World Health Organization: WHO/Rubella

Causative Agent

- Rubella virus family is in the *Togaviridae*, genus *Rubivirus*
- Also known as "German Measles"

Clinical Presentation

- Usually, a mild febrile disease characterized by a maculopapular discrete rash in about half of the cases, slight fever
- Postauricular, occipital and posterior cervical lymphadenopathy may start 5-10 days before rash onset and is the most characteristic sign
- Children usually will have few or no prodromal symptoms; rash is often the first noticeable symptom
- The rash is often itchy, starts on the face and becomes generalized within 24 hours and lasts approximately 3-5 days
- Adults may experience a 1-5 day low-grade fever, headache and malaise in the prodromal period
- Arthritis and arthralgia may accompany symptoms in about 70% of female adults
- Approximately 50% of cases are asymptomatic

Major Complications

- Symptomatic or asymptomatic rubella infection in pregnancy may lead to miscarriage, stillbirth, premature delivery, growth retardation or Congenital Rubella Syndrome (CRS)
- CRS may occur in up to 90% of infants born to women who are infected with rubella during pregnancy
- Clinical manifestations of CRS include; hearing impairment, cataracts, microphthalmia, congenital glaucoma, microcephaly, meningoencephalitis, developmental delays, congenital heart defects, purpura, hepatosplenomegaly, jaundice, diabetes, and bone disease
- Defects are rare if the infection occurs after the twentieth week of gestation

- Moderate to severe CRS is usually recognizable at birth but mild CRS may not be detected for months or years after birth
- Rare complications include thrombocytopenia purpura and encephalitis

Transmission

- Rubella is spread through direct or droplet contact from nasopharyngeal secretions from someone with the infection
- CRS occurs through transplacental infection of the fetus when the mother is infected
- Infants with CRS may shed large quantities of virus in their pharyngeal secretions and urine for a prolonged time and may be a source of infection to their contacts
- Infants with congenital rubella may shed the virus for up to a year after birth
- Rubella is highly communicable and is transmitted from 7 days before the onset of the rash until 7 days after, but is most contagious when the rash is erupting

Incubation Period

- Usually 14-21 days, typically 16-18 days

Clinical Guidance

- For patient-specific clinical management consult your local healthcare professional, paediatrician or infectious disease specialist

5. PUBLIC HEALTH MEASURES

Key investigation:

- Confirm diagnosis
- Assess immunization history including number of doses and date of last rubella-containing vaccine
- Identify possible sources of infection including; recent travel (30 days prior to the onset of symptoms), contact with others who may have travelled or recently immigrated
- Determine occupation and place of employment
- Identify contacts, especially pregnant women (as a priority) with no proof of immunity*
- Assess contacts for susceptibility including the history of previous disease or past vaccination with a rubella-containing vaccine

*Evidence of immunity to rubella includes:

- Documented evidence of immunization with a rubella-containing vaccine on or after the first birthday, ***OR***
- History of laboratory-confirmed rubella infection, ***OR***
- Laboratory evidence of immunity

Management of Cases

- Exclude person from non-household contacts, school, daycare, work and sporting events for seven days from the onset of the rash
- Hospitalized cases should be placed on routine and droplet precautions and isolated for seven days after rash onset
- For hospitalized clients, follow the guidance in the NWT Infection, Prevention and Control Manual and notify the hospital infection control practitioner
- Advise the infected individual to avoid contact with pregnant females

Management of Contacts

- As a priority, identify pregnant female contacts especially those in the first trimester and counsel and test regarding the following:
  - Assess records for previous prenatal rubella IgG results
  - Counsel pregnant women to follow-up with their physician
  - If no serology results on record, test serologically for IgG antibody and IgM antibody for early detection of infection in the following order:
    - Repeat test in 3-4 weeks if IgG is negative
    - If IgG is present in the second but not the first blood test, infection is assumed to have occurred

    - » If the initial test and repeat test at 3-4 weeks is negative, repeat test again at six weeks post exposure, and if both are negative, then no infection has occurred
    - » If the 6 week post exposure test is positive, this indicates seroconversion and recent infection
  - › Pregnant women should avoid any further contacts with confirmed and probable cases of rubella for a minimum of 6 weeks (2 incubation periods) after the onset of the rash in the last identified individual
  - › Upon consultation with the CPHO or designate, Immune globulin (IG) may be considered in a susceptible pregnant woman who is exposed
  - › IG is not used as often as it may suppress the symptoms, and it does not necessarily prevent viremia
- Other susceptible (unimmunized) contacts should be offered vaccination with a rubella-containing vaccine promptly without prior serologic testing
- Vaccination is not likely to prevent illness from the current exposure but will prevent illness in future exposures

Prevention

- Rubella is a vaccine-preventable disease
- Vaccine for rubella is publicly funded in the NWT and offered according to the NWT Immunization Schedule
- Primary vaccination occurs in early childhood but can be offered to susceptible adults born on or after 1970
- For more information on rubella vaccination refer to the Canadian Immunization Guide/ Rubella
- Immunization with a rubella-containing vaccine provides approximately 95% protection against rubella
- Screen antibody status of all pregnant women and if found to be susceptible should be vaccinated with a rubella-containing vaccine in the immediate postpartum period

6. PUBLIC & HEALTH PROFESSIONAL EDUCATION

- Government of Canada: Canada/Rubella
- Government of the Northwest Territories: NWT/Immunization

7. EPIDEMIOLOGY

- For more information on the epidemiology of rubella in the Northwest Territories (NWT) see: Epidemiological Summary of Communicable Diseases

8. REFERENCES

1. Alberta Health Public Health Notifiable Disease Management Guidelines Rubella: https://www.alberta.ca/notifiable-disease-guidelines.aspx
2. Alberta Provincial Laboratory Guide to Services: https://www.albertahealthservices.ca/lab/page3317.aspx
3. Canadian Immunization Guide: https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-20-rubella-vaccine.html
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8. NWT Immunization Schedule for Health Professional Use: https://www.hss.gov.nt.ca/professionals/content/nwt-immunization-schedule

9. NWT Infection Prevention and Control Manual: https://www.hss.gov.nt.ca/professionals/sites/default/files/infection-control-manual.pdf
10. *NWT Public Health Act:* https://www.hss.gov.nt.ca/en/about/legislation-and-policies
11. Public Health Agency of Canada Pathogen Safety Data Sheets and Risk Assessment: https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/rubella-virus.html
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