

Respiratory Syncytial Virus Infection (RSV)



Case Definition

- Isolation of respiratory syncytial virus from respiratory tract secretions.

Reporting Requirements

- RSV is not reportable in Manitoba, except in outbreak situations.

Clinical Presentation/Natural History

Respiratory syncytial virus (RSV) causes acute respiratory illness in persons of any age. In infants and young children, it is the most important cause of bronchiolitis and pneumonia. During the first few weeks of life, particularly in pre-term infants, respiratory signs can be minimal. Lethargy, irritability, and poor feeding may be the major manifestations. Apnea may also occur. However, most previously healthy infants infected with RSV do not require hospitalization.

Conditions that increase the risk of severe or fatal RSV infection are complicated, congenital heart disease; underlying pulmonary disease; prematurity; and immunodeficiency disease or therapy causing immunosuppression. Long term sequelae of RSV infection are difficult to assess. There is evidence both for and against long-term effects on pulmonary function.

Infection in older children and adults usually manifests as an upper respiratory tract illness, occasionally with bronchitis. Exacerbation of asthma or other chronic lung conditions, and pneumonia are also common, particularly among the elderly. Outbreaks may occur in personal care homes.

Etiology

The causative RNA virus is a paramyxovirus.

Epidemiology

Reservoir: Humans

Transmission: By direct or close contact with contaminated respiratory secretions, which may involve droplets or fomites. The virus can persist on surfaces for many hours, and for over half an hour on skin. RSV is a common cause of nosocomially acquired infection. The risk for nosocomial transmission increases during community outbreaks. Infection among hospital personnel can occur by self-inoculation with contaminated secretions. It is commonly spread among household and child-care contacts, including adults.

Occurrence:

General: RSV usually occurs in annual epidemics during the winter and early spring in Canada. It infects essentially all children during the first three years of life. The annual outbreaks result in an estimated 90,000 hospitalizations and 4,500 deaths each year from lower respiratory tract disease among infants and young children in the United States.

Manitoba: Approximately 400 to 700 RSV isolations (by culture) are made each year by the Cadham Provincial Laboratory, mainly from infants hospitalized with RSV-related disease.

Incubation Period: From two to eight days: four to six days is most common.

Susceptibility and Resistance: Hospital-acquired infections are frequent among hospital personnel and infants, and have a significant impact on morbidity, mortality and duration of hospitalization. Initial infection occurs most commonly during the first year of life. Reinfection throughout life is common. The most severe manifestations RSV infection (e.g., pneumonia and bronchiolitis) occur in infants aged two to six months. However, children of any age who have underlying cardiac or pulmonary disease or are immunocompromised are at risk for serious complications from this infection. As natural infection provides limited protective immunity, RSV can cause repeated symptomatic infections throughout life.

Period of Communicability: The period of viral shedding is usually three to eight days, but may be longer, especially in young infants with pneumonia, in whom shedding may continue for as long as three to four weeks.

Diagnosis

Viral isolation from nasopharyngeal secretions in cell culture takes three to five days. RSV is a relatively labile virus. Infectivity decreases rapidly at room temperature and after freeze-thawing. The Cadham Provincial Laboratory should be consulted for optimal methods of collection and transport of specimens. Less commonly, a four-fold rise in RSV antibody may be used to make the diagnosis.

Key Investigations

- Identify and report outbreaks.

Control

Management of Cases:

- The first line of therapy for RSV infection is to correct hypoxemia by giving supplemental oxygen and to ensure that hydration is adequate by intravenous fluid replacement, if necessary.
- Antibiotics are generally not indicated. Ribavirin may be used to treat hospitalized infants and young children who have or are at high risk for severe RSV infection, but is not routinely recommended. Ribavirin treatment for RSV infections has been controversial because of the cost, aerosol route of administration, concern for potential toxicity for exposed persons, and concerns as to the clinical significance and long-term importance of any apparent clinical benefits of therapy.
- In previously healthy infants with RSV bronchiolitis, corticosteroids are not helpful and are not indicated.

Day Care and School Situations

Infection with RSV alone does not require exclusion from day care or school. The

existing policies in day-care centres and schools that apply to illness should be followed. Generally children should be kept at home if:

- the illness prevents the child from participating in program activities;
- the illness results in greater need for care than the staff can provide without compromising the care of other children.

Management of Contacts:

- No public health follow up required.

Management of Outbreaks:

- Outbreaks should be reported by public health professionals to Manitoba Health on the Public Health Branch's *Outbreak Report Form*.

Preventive Measures:

- RSV intravenous immune globulin as immunoprophylaxis is recommended for prevention of RSV disease in children less than 24 months of age with bronchopulmonary dysplasia, or any infants under six months of age with a history of premature birth (gestational age under 36 weeks).
- An important aspect of RSV prevention in high-risk infants is education of parents and other caregivers about the importance of reducing exposure to and transmission of RSV. This includes emphasis on handwashing, particularly during periods when contacts of high-risk children have respiratory infections. Basic hygiene measures such as covering the mouth when coughing and sneezing, sanitary disposal of discharges from the mouth and nose, and frequent, thorough handwashing are important in the prevention of transmission. Where possible, crowded living and sleeping conditions should be avoided.

Additional Resources

For the public:

Fact Sheet on Respiratory Syncytial Virus (RSV). Available from Audiovisual and Publications Department, Manitoba Health, telephone (204) 786-7112, fax (204) 772-7213.