

18a

Respiratory Syncytial Virus

In some circumstances, advice in these guidelines may differ from that in the Summary of Product Characteristics of a product. When this occurs, the recommendations in these guidelines, which are based on current expert advice from NIAC, should be followed.

Introduction

Respiratory Syncytial Virus (RSV) is a common cause of infection in infancy, with almost all children affected by 2 years of age. While most infections are mild, premature infants, infants with chronic heart or lung diseases, older adults, and immunocompromised individuals are at a higher risk of developing severe and potentially life threatening disease. Worldwide, RSV is the second largest cause of death in children under one year of age (second only to malaria). The majority of RSV-related childhood mortality occurs in low resource countries. Treatment is supportive. Palivizumab, a monoclonal antibody, provides passive immunity in infants against RSV.

Epidemiology

RSV is an RNA pneumovirus of the family *Paramyxoviridae*. Humans are the only natural host. One of the two major antigenic subgroups of RSV, A or B, usually predominates each season. Most infants experience at least one RSV infection by the age of 2 years with up to 30% of RSV infections occurring in infants aged <6 weeks. While most infections cause only mild symptoms, RSV is the most important cause of viral Lower Respiratory Tract Infection (LRTI) in infants and children globally and is responsible for one-third of deaths resulting from acute LRTI in the first year of life. In medium and high resource countries, RSV mortality rate in infants is almost nine times that of influenza.

RSV infections typically occur in a seasonal pattern in temperate climates like Ireland, with epidemics from October to April, peaking in December

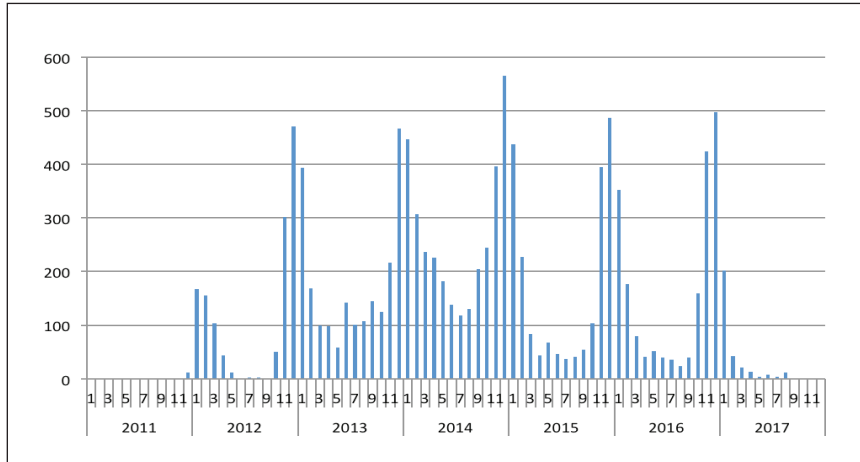
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(Fig. 18a.1). RSV notifications are monitored by the Health Protection Surveillance Centre as part of the Influenza Surveillance Scheme.

Previous infection with RSV provides only partial immunity, and the potential for multiple reinfections throughout life exists.

Figure 18a.1. Monthly RSV detections 2011-2017

(Source: National Virus Reference Laboratory)



Transmission

RSV is highly contagious. Transmission occurs through contact with aerosolised viral particles generated through sneezing and coughing, or from contaminated surfaces or fomites. Large-particle droplets can survive on contaminated surfaces for up to 6 hours, making handwashing the most effective infection control procedure. Infected individuals shed RSV for 3 to 8 days but immunocompromised patients with severe infection may shed virus for up to 4 weeks. The frequent occurrence of mild or asymptomatic infection in otherwise healthy individuals makes infection control challenging.

Young children avoiding direct contact with other children and adults with upper respiratory tract infections, especially during RSV season, can help prevent RSV hospitalisation

Effects of RSV infection

Following an incubation period of between 2 and 8 days, RSV typically causes a self-limiting upper RTI with rhinorrhea, pharyngitis, nasal congestion, coughing, sneezing, tachypnoea, and decreased appetite. LRTI occurs as bronchiolitis or pneumonia, with fever in

<50% of infections, increased work of breathing, hyperinflation, croup (laryngotracheobronchitis), and wheeze. Typically, only between 1% and 3% of infected infants require hospitalisation. Treatment is supportive (supplemental oxygen and feeding support).

Diagnosis

RSV can be detected in nasopharyngeal aspirate, bronchoalveolar lavage, sputum, or swabs from the nose and throat by using real-time PCR, immunofluorescence, ELISA and growth in cell culture. PCR is the most sensitive test, and the current gold standard. Detection of viable virus by cell culture and immunofluorescence remain useful to inform infection control measures. Commercially available, easy to perform, point-of-care or near-patient rapid antigen detection tests demonstrate high positive predictive value in an RSV season, and are particularly useful to facilitate appropriate isolation precautions and nosocomial outbreak prevention.

Vaccine

No vaccine against RSV is currently available,

Passive Immunisation

Palivizumab, a humanized mouse monoclonal antibody specific for the F protein of RSV, provides passive immunity against RSV. It inhibits RSV binding to host cells and prevents fusion of infected cells with adjacent cells.

Palivizumab prophylaxis reduces the absolute risk of RSV hospitalisation from about 10% to about 5% for infants born prematurely, for infants with chronic lung disease (CLD), and for infants with haemodynamically significant congenital heart disease (CHD), particularly when complicated by large left-to-right shunts and pulmonary hypertension. It does not reduce the incidence of the need for ventilation, or reduce mortality.

Authorised indications: prevention of serious lower respiratory tract disease requiring hospitalisation caused by respiratory syncytial virus (RSV) in children at high risk for RSV disease:

- Children born at 35 weeks of gestation or less and less than 6 months of age at the onset of the RSV season.
- Children less than 2 years of age and requiring treatment for bronchopulmonary dysplasia within the last 6 months.
- Children less than 2 years of age and with haemodynamically significant congenital heart disease.

Palivizumab should be stored at +2 to +8°C. If it has been frozen it should not be used.

Guidelines for use

Differences in epidemiology, practice setting, health care systems and drug cost have resulted in variability in palivizumab recommendations and use nationally and internationally. The following guidance is adapted from the American Academy of Pediatrics. Local Guidelines may be used.

Guidance for Palivizumab prophylaxis:

1. In the first year of life, palivizumab prophylaxis is recommended for:

- infants born before 30 weeks, 0 days' gestation.
- preterm infants with Chronic Lung Disease (CLD) of prematurity (defined as birth at <32 weeks gestation and a requirement for >21% oxygen for at least 28 days after birth).
- certain infants with hemodynamically significant heart disease, specifically those with acyanotic heart disease requiring medication for congestive cardiac failure and/ or moderate to severe pulmonary hypertension, and infants with cyanotic heart disease (in consultation with cardiology specialist).

Infants with a pulmonary abnormality or neuromuscular disease that impairs their ability to clear upper airways secretions may be considered for prophylaxis

Children younger than 1 year who will be profoundly immunocompromised during the RSV season may be considered for prophylaxis.

Note: As the risk of acquiring RSV infection in a neonatal unit is extremely low, infants who qualify for prophylaxis should only receive the first dose of palivizumab 24 to 48 hours before discharge. Infants that have begun a course of palivizumab and are subsequently hospitalised should continue to receive prophylaxis whilst in hospital. If a course has been interrupted, doses should be restarted and administered monthly for the remainder of the RSV season.

2. In the second year of life, palivizumab prophylaxis is recommended for

- children with CLD (defined as those who required at least 28 days of supplemental oxygen after birth) and who continue to require medical intervention (supplemental oxygen, chronic corticosteroid, or diuretic therapy) for 6 months preceding the RSV season.

Children who will be profoundly immunocompromised during the RSV season may be considered for prophylaxis.

Dose and Route of Administration

The recommended dose is 15mg/kg once a month (maximum of 5 doses) during the RSV season. Ideally, the first dose should be administered before the RSV season starts. In Ireland, the RSV season is defined as starting in early October (calendar week 40) and ending at the end of February (calendar week eight).

A final dose administered in February provides protection for most infants through March. It can be given at the same time as vaccines administered as part of the routine childhood immunisation programme.

Contraindications

Anaphylaxis to Palivizumab or any component within the product, or to other humanised monoclonal antibodies.

Precautions

Use with caution to patients with thrombocytopaenia or any coagulation disorder.

Adverse reactions

Very common (>1/10): rash, pyrexia

Common (>1/10 - 1/100): injection site reactions, apnoea.

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