

# Respiratory Syncytial Virus in Blood and Marrow Transplant Recipients

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**R**espiratory syncytial virus (RSV) is a common community-acquired respiratory infection characterized by symptoms similar to those of the common cold. Most children have been infected with RSV by age two; as with the common cold, reinfection occurs because immunity is not persistent (Centers for Disease Control and Prevention [CDC], 2000). The significant difference between RSV and a cold is RSV's propensity to cause lower airway respiratory infections and its considerable morbidity in immunocompromised patients. Scattered documented cases of RSV outbreaks in blood and marrow transplant recipients have reported mortality ranging from 0%–82% (Bowden, 1997; Ghosh et al., 2001; Harrington et al., 1992). These studies have conveyed lessons that can guide creation of clinical practice protocols aimed at preventing exposure and managing infection. This article reviews the clinical risks of RSV, transmission modes, its signs and symptoms, diagnosis, treatment options, and impact on transplant recipients. Nursing care issues are described as well.

## What Is Respiratory Syncytial Virus and How Does It Spread?

RSV is an RNA-enveloped virus that incubates from two to eight days and replicates in the nasopharyngeal epithelium. In immunocompromised patients, upper respiratory symptoms alone are relatively uncommon but connote a better prognosis than lower airway

Nurses caring for blood and bone marrow transplant recipients need to understand the effects that respiratory syncytial virus (RSV) infection can have on transplant recipients, family members, and healthcare providers. With knowledge about the virulence and transmission of RSV, nurses are in a position to educate patients and family, reduce nosocomial spread of the infection, and influence clinical practice. By recognizing specific risk factors for infection, nurses can act as gatekeepers who identify candidates to screen and enhance early detection of infection. Nurses need to possess knowledge of early detection, implement clinical management strategies and precautions, and optimize delivery of appropriate therapy while maintaining a safe environment for all people involved. This article reviews RSV's clinical risk factors, transmission, signs and symptoms, diagnosis, treatment options, and impact on transplant recipients and candidates.

**Key Words:** respiratory syncytial virus, infection control, ribavirin

disease (Bowden, 1997; Ghosh et al., 2001; Harrington et al., 1992). Infection usually spreads to the lower respiratory tract in one to three days, causing a viral pneumonic process similar to other viral pneumonias. Lower respiratory tract infection with RSV causes airway inflammation, necrosis, and sloughing of the small airway epithelium. Edema and increased mucous production lead to pulmonary congestion and productive cough. Complete healing takes four to six weeks, although transmission risk in immunocompetent individuals usually is limited to 10–16 days (Harrington et al.). Immunocompromised patients have been shown to shed the

virus for as long as 17–22 days, producing a prolonged transmission risk for all who come in contact with them (Harrington et al.). Transmission may be shortened to 10 days in those who have limited upper respiratory infection (URI), although studies supporting this conclusion are limited (Harrington et al.). Healthcare providers must recognize this discrepancy in time of contagiousness and consider that blood and marrow transplant recipients with RSV disease may shed the virus longer. Therefore, isolation precautions may be required for longer periods of time. Symptoms of protracted disease include a prolonged cough, wheezing, and altered pulmonary function (Hall & McCarthy, 2000).

RSV primarily is transmitted via respiratory secretion droplets and is considered a contact infection. Contact with contaminated secretions, such as those produced by coughing, sneezing, or tearing, is a potential method of transmission. The viral organism

survives only a few hours on inanimate surfaces and is inactivated easily with soap and water or disinfectants (CDC, 2000). Transmission of RSV has been documented in circumstances of close contact with respiratory secretions from infected people or surfaces

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