

# Ribavirin: The Need for Exposure Precautions

Kathy Mooney, MSN, RN, OCN<sup>®</sup>, BMTCN<sup>™</sup>, Mary Melvin, BSN, RN, and Tracy Douglas, MSN, RN



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Ribavirin is used in the treatment of respiratory syncytial virus (RSV) in high-risk patients, including patients who have undergone hematopoietic stem cell transplantation, to reduce mortality from RSV pneumonia. It is classified as a hazardous drug with potential for carcinogenicity and teratogenicity. Very few recent studies have examined the risk of exposure, and recommendations for exposure precautions are lacking. Administration should include the use of personal protective equipment and terminal cleaning of the patient room after each administration. This article examines ribavirin use among patients who have undergone hematopoietic stem cell transplantation and have RSV-related pneumonia and explores safety considerations for staff. Nursing leaders on a hematopoietic stem cell transplantation unit addressed gaps in knowledge about ribavirin therapy, and completed a review of the hospital's ribavirin policy, which led to policy revisions, increased knowledge about the safe administration of ribavirin, and improvements in staff and patient education.

Kathy Mooney, MSN, RN, OCN<sup>®</sup>, BMTCN<sup>™</sup>, is a clinical nurse specialist, Mary Melvin, BSN, RN, is a nurse clinician III, and Tracy Douglas, MSN, RN, is a blood and marrow transplantation nurse manager, all at the Johns Hopkins Sidney Kimmel Comprehensive Cancer Center in Baltimore, MD. The authors take full responsibility for the content of the article. The authors did not receive honoraria for this work. The content of this article has been reviewed by independent peer reviewers to ensure that it is balanced, objective, and free from commercial bias. No financial relationships relevant to the content of this article have been disclosed by the authors, planners, independent peer reviewers, or editorial staff. Mooney can be reached at kmooney3@jhmi.edu, with copy to editor at CJONEditor@ons.org. (Submitted August 2013. Revision submitted November 2013. Accepted for publication November 17, 2013.)

Key words: quality improvement; stem cell/marrow transplantation; hazardous handling

Digital Object Identifier: 10.1188/14.CJON.E93-E96

**R**espiratory syncytial virus (RSV) is a common, community-acquired respiratory virus that causes acute respiratory tract infections (Avetisyan, Mattsson, Sparrelid, & Ljungman, 2009). RSV infections typically occur in the fall, winter, and spring, with the season lasting about four months (Centers for Disease Control and Prevention [CDC], 2013). RSV can affect individuals of all ages, and almost all children by the age of two years have been infected with RSV (CDC, 2013). In the general population, RSV causes mild upper respiratory infections. Typically, only a small percentage of individuals develop severe disease (CDC, 2013). Those at highest risk include premature infants and those with compromised immune systems (CDC, 2013). The virus can cause severe lower respiratory tract infections or pneumonia that is associated with significant morbidity and mortality in those who are immunocompromised (Avetisyan et al., 2009).

In the hematopoietic stem cell transplantation population, RSV can occur in 3.5%–35% of patients during RSV season (Avetisyan et al., 2009). Patients undergoing transplantation have impaired T-cell immunity, which increases their risk of acquiring RSV and also decreases their ability to clear the virus, leading to more severe infections and longer duration of infections (Shah & Chemaly, 2011). Risk factors for RSV in the

transplantation population include male gender, allogeneic transplantation, myeloablative conditioning, cytomegalovirus seropositivity, lymphopenia, and those who have not yet engrafted (Hynicka & Ensor, 2012). RSV-related lower respiratory tract infections are associated with airway inflammation, necrosis, edema, and increased mucus production leading to pulmonary congestion and productive cough (Latchford & Shelton, 2003). RSV infections in this population also can cause delayed engraftment or graft failure (Hynicka & Ensor, 2012). Because of the nonspecific symptoms that occur with RSV, diagnosis can be difficult and often delayed. Diagnosis is established using laboratory testing, with viral culture being the gold standard for detection (Hynicka & Ensor, 2012).

## Prevention

RSV is spread through large droplet aerosols (Hynicka & Ensor, 2012), and the virus can shed for up to 22 days, increasing the risk of transmission (Latchford & Shelton, 2003). Prevention includes avoiding exposure, with hand washing being the best way to minimize transmission to others (Hynicka & Ensor, 2012). Other prevention strategies include strict isolation policies and the use of prophylactic medications to prevent infections.