



Body System: Respiratory		
Session Topic: Bronchiolitis and Respiratory Syncytial Virus (RSV)		
Educational Format		Faculty Expertise Required
REQUIRED	Interactive Lecture	Expertise in the field of study. Experience teaching in the field of study is desired. Preferred experience with audience response systems (ARS). Utilizing polling questions and engaging the learners in Q&A during the final 15 minutes of the session are required.
OPTIONAL	Problem-Based Learning (PBL)	Expertise teaching highly interactive, small group learning environments. Case-based, with experience developing and teaching case scenarios for simulation labs preferred. Other workshop-oriented designs may be accommodated. A typical PBL room is set for 50-100 participants, with 7-8 each per round table. <u>Please describe your interest and plan for teaching a PBL on your proposal form.</u>
Professional Practice Gap	Learning Objective(s) that will close the gap and meet the need	Outcome Being Measured
<ul style="list-style-type: none"> • Family physicians should monitor patients who have weakened immune systems in order to mitigate their risk factors for developing RSV. • Family physicians should be able to identify infants and children who have indications for RSV prophylaxis and administer palivizumab as indicated. • Family physicians should be able to identify patients who have RSV who should be hospitalized based on the child's age, severity of the disease and other risk factors. • Family physicians should be able to provide parents and caregivers with a list of symptoms that require them to contact their physician. • Family physicians should be able to provide 	<ol style="list-style-type: none"> 1. Identify the risk factors for bronchiolitis and the indications for aggressive treatment including hospitalization. 2. Utilize comprehensive, evidence-based, and cost effective strategies for the evaluation of bronchiolitis. 3. Prescribe appropriate prevention strategies for children who are at increased risk for bronchiolitis. 4. Counsel patients regarding appropriate supportive care for patients who have bronchiolitis. 	Learners will submit written commitment to change statements on the session evaluation, indicating how they plan to implement presented practice recommendations.



supportive care to patients who have RSV. <ul style="list-style-type: none"> Physicians need to be kept up to date on new AAP clinical practice guidelines for the diagnosis, management, and prevention of bronchiolitis. 			
ACGME Core Competencies Addressed (select all that apply)			
X	Medical Knowledge		Patient Care
X	Interpersonal and Communication Skills		Practice-Based Learning and Improvement
	Professionalism		Systems-Based Practice
Faculty Instructional Goals			
<p>Faculty play a vital role in assisting the AAFP to achieve its mission by providing high-quality, innovative education for physicians, residents and medical students that will encompass the art, science, evidence and socio-economics of family medicine and to support the pursuit of lifelong learning. By achieving the instructional goals provided, faculty will facilitate the application of new knowledge and skills gained by learners to practice, so that they may optimize care provided to their patients.</p> <ul style="list-style-type: none"> Provide up to 3 evidence-based recommended practice changes that can be immediately implemented, at the conclusion of the session; including SORT taxonomy & reference citations Facilitate learner engagement during the session Address related practice barriers to foster optimal patient management Provide recommended journal resources and tools, during the session, from the American Family Physician (AFP), Family Practice Management (FPM), and Familydoctor.org patient resources; those listed in the <u>References</u> section below are a good place to start <ul style="list-style-type: none"> Visit http://www.aafp.org/journals for additional resources Visit http://familydoctor.org for patient education and resources Provide tools, resources, and strategies to foster the implementation of evidence-based bronchiolitis management guidelines into practice Provide case-based examples illustrating the diagnosis of RSV, including recommendations for determining when hospitalization is appropriate 			

Needs Assessment

Respiratory syncytial virus (RSV) is the most common cause of pneumonia and bronchiolitis in children under one year of age in the U.S. Annual outbreaks typically occur between October and May and peak in January and February. Peak incidence of RSV is in children younger than 12 months, and three months is the mean age of infants hospitalized with RSV. Almost all children will have had an RSV infection by their second birthday. Specific groups of American Indian/Alaska Native children in certain geographic regions may experience more severe RSV disease and a longer RSV season. People of any age can be infected with RSV, but later



infections generally are less severe. The elderly and adults with chronic heart disease, chronic lung disease or immune systems weakened by medical conditions or treatments are at high risk for developing severe RSV disease if re-infected.¹⁻³

Children who have mild to moderate symptoms can be treated at home. In previously healthy children, an RSV infection is usually self-limited and can be managed through supportive care.^{4,5} However, these patients should be closely monitored by their physician and care-givers should be provided education to manage symptoms and monitor at home. Physicians should instruct parents or caregivers to contact them if they observe the following:²

- Increasing respiratory, or breathing rate (especially more than 60 breaths per minute)
- Onset of labored, or difficult breathing indicated by use of accessory muscles (e.g. neck muscles), retractions (chest going in between the ribs), cyanosis (turning blue) or flared nostrils
- Fewer wet diapers, indicating inadequate hydration, or getting too dry
- Overall worsening appearance, or child looking very ill or sick

CME outcomes data from 2011-2014 American Academy of Family Physicians (AAFP) FMX (formerly Assembly): *Bronchiolitis / Respiratory Syncytial Virus* sessions suggest that physicians have knowledge and practice gaps with regard to determining the appropriate use of rapid testing for patient education; appropriate utilization of chest x-rays; appropriate use of supportive care (e.g. antibiotics, bronchodilators, and/or steroids); and awareness of evidence-based treatment strategies.⁶⁻⁹

Family physicians need to remain current on evidence-based guidelines for the management of bronchiolitis, and be given strategies to help them consistently apply these guidelines to their practice setting. The AAFP endorses the AAP guidelines for the diagnosis and management of bronchiolitis.^{10,11} Key Recommendations are as follows:

- The diagnosis of bronchiolitis and assessment of disease severity should be based on history and physical examination. Laboratory and radiologic studies should not be routinely ordered for diagnosis.
- Risk factors for severe disease such as age < 12 weeks, premature birth, underlying cardiopulmonary disease, or immunodeficiency should be assessed when making decisions about evaluation and management of children with bronchiolitis.
- Bronchodilators (albuterol, salbutamol), epinephrine, and corticosteroids should not be administered to infants and children with the diagnosis of bronchiolitis.
- Nebulized hypertonic saline should not be administered to infants with the diagnosis of bronchiolitis in the emergency department. Nebulized hypertonic saline may be administered to infants and children hospitalized for bronchiolitis.
- Antibiotics should not be used in children with bronchiolitis unless there is a concomitant bacterial infection.
- Supplemental oxygen is not necessary in children and infants with a diagnosis of bronchiolitis if SpO₂ (*pulse ox) exceeds 90%.
- Continuous pulse oximetry is optional for infants and children with bronchiolitis.
- Chest physiotherapy should not be used in the management of bronchiolitis.



- Palivizumab prophylaxis should be administered during the first year of life to infants with hemodynamically significant heart disease or chronic lung disease of prematurity (<32 weeks gestation who require >21% O₂ for the first 28 days of life).
- To prevent spread of respiratory syncytial virus (RSV), hands should be decontaminated before and after direct contact with patients, after contact with inanimate objects in vicinity of patient, and after removing gloves. Alcohol rubs are the preferred method for hand decontamination. Clinicians should educate personnel and family on hand sanitation.
- Infants should not be exposed to tobacco smoke.
- Exclusive breastfeeding for at least 6 months is recommended to decrease the morbidity of respiratory infections.

Physicians are encouraged to conduct risk stratification of children with bronchiolitis to predict the need for hospitalization.⁵ In particular, physicians should be able to identify those patients at higher risk for complications due to RSV bronchiolitis; such as, patients younger than two months; oxygen saturation less than 94 to 95 percent; dehydration or poor oral intake; and tachypnea or increased work of breathing; or previous hospitalization and intubation.⁵

Administration of palivizumab for the prevention of RSV infections is recommended for the following infants and children. Physicians are highly encouraged to strictly follow the AAP guidelines to avoid improper and ineffective dosing:^{3,12}

- Infants who have chronic lung disease of prematurity who are younger than 24 months and receive medical therapy for chronic lung disease within six months before the start of RSV season
- Infants born before 32 weeks' gestation
 - Infants born at 28 weeks' gestation or earlier may benefit from prophylaxis during the RSV season that occurs in the first 12 months of life
 - Infants born at 29 to 32 weeks' gestation may benefit most from prophylaxis up to 6 months of age
- Infants born at 32 to less than 35 weeks' gestation who are born less than 3 months before the onset or during RSV season and for whom at least one of the two following risk factors is present:
 - Attendance at a child care facility
 - One or more siblings younger than 5 years of age
- Infants who have congenital abnormalities of the airway or neuromuscular disease
- Infants and children who have congenital heart disease who are younger than 24 months and fit the following criteria:
 - Receiving medication to control congestive heart failure
 - Have moderate-to-severe pulmonary hypertension
 - Have cyanotic heart disease

When patients who have RSV present to a primary care physicians or other clinicians, it is imperative that the severity of their condition is assessed to determine whether they require hospitalization. Indications for hospitalization include the following:²

- Age less than 3 months
- Infants born at less than 34 weeks' gestation



- Cardiopulmonary disease or immunodeficiencies
- Respiratory rate higher than 70 breaths per minute
- Lethargic appearance
- Wheezing and respiratory distress associated with oxygen saturation below 92% on room air
- Hypercarbia
- Atelectasis or consolidation on chest x-ray

Treatment for bronchiolitis varies across practices, there continues to be overuse of medications, and unnecessary laboratory tests and chest radiography continue to be ordered, adding excessive cost with no additional improvement in health outcomes.^{4,13,14} In fact, a Cochrane review indicates that Albuterol does not improve any clinical outcomes in the outpatient or inpatient setting and should not be used in the treatment of bronchiolitis in a child 24 months or younger.¹⁵ Additionally, some studies suggest that behavioral interventions may decrease inappropriate antibiotic prescribing for upper respiratory tract infections.¹⁶

Physicians may improve their care of patients with RSV bronchiolitis by engaging in continuing medical education that provides practical integration of current evidence-based guidelines and recommendations into their standards of care, including, but not limited to the following:¹⁷

- Routine viral testing and chest imaging are not recommended for patients with presumed RSV bronchiolitis.
- Bronchodilators, systemic or inhaled corticosteroids, and epinephrine should not be administered to infants and children with bronchiolitis.
- Antibiotics should not be administered to children with RSV bronchiolitis unless a bacterial infection is confirmed or suspected.
- Palivizumab (Synagis) should be given in the first year of life to infants born before 29 weeks' gestation or to infants born before 32 weeks' gestation who have chronic lung disease.

These recommendations are provided only as assistance for physicians making clinical decisions regarding the care of their patients. As such, they cannot substitute for the individual judgment brought to each clinical situation by the patient's family physician. As with all clinical reference resources, they reflect the best understanding of the science of medicine at the time of publication, but they should be used with the clear understanding that continued research may result in new knowledge and recommendations. These recommendations are only one element in the complex process of improving the health of America. To be effective, the recommendations must be implemented. As such, physicians require continuing medical education to assist them with making decisions about specific clinical considerations.

Resources: Evidence-Based Practice Recommendations/Guidelines/Performance Measures

- Treating Acute Bronchiolitis Associated with RSV²
- Respiratory Syncytial Virus Bronchiolitis in Children¹⁷
- Respiratory syncytial virus infection in children⁴
- Risk stratification of children with bronchiolitis⁵
- AAP Diagnosis, Management, and Prevention of Bronchiolitis¹¹



- AAP Committee on Infectious Diseases – Modifications for use of palivizumab for prevention of respiratory syncytial virus infection¹⁸
- FamilyDoctor.org. Bronchiolitis | Overview (patient resource)¹⁹

References

1. National Center for Immunization and Respiratory Diseases (NCIRD). Respiratory Syncytial Virus Infection (RSV). 2013;
2. Steiner RW. Treating acute bronchiolitis associated with RSV. *American family physician*. 2004;69(2):325-330.
3. American Academy of Pediatrics, Committee on Infectious Diseases. From the American Academy of Pediatrics: Policy statements--Modified recommendations for use of palivizumab for prevention of respiratory syncytial virus infections. *Pediatrics*. 2009;124(6):1694-1701.
4. Dawson-Caswell M, Muncie HL, Jr. Respiratory syncytial virus infection in children. *American family physician*. 2011;83(2):141-146.
5. Ebell MH. Risk stratification of children with bronchiolitis. *American family physician*. 2012;86(3):275, 279.
6. American Academy of Family Physicians (AAFP). 2012 AAFP Scientific Assembly: CME Outcomes Report. Leawood KS: AAFP; 2012.
7. American Academy of Family Physicians (AAFP). 2011 AAFP Scientific Assembly: CME Outcomes Report. Leawood KS: AAFP; 2011.
8. American Academy of Family Physicians (AAFP). 2013 AAFP Scientific Assembly: CME Outcomes Report. Leawood KS: AAFP; 2013.
9. American Academy of Family Physicians (AAFP). AAFP Assembly CME Outcomes Report. Leawood KS: AAFP; 2014.
10. American Academy of Family Physicians (AAFP). Bronchiolitis. *Clinical Practice Guideline* 2014;
11. Ralston SL, Lieberthal AS, Meissner HC, et al. Clinical Practice Guideline: The Diagnosis, Management, and Prevention of Bronchiolitis. *Pediatrics*. 2014;134(5):e1474-e1502.
12. Perrin KM, Begue RE. Use of palivizumab in primary practice. *Pediatrics*. 2012;129(1):55-61.
13. Muething S, Schoettker PJ, Gerhardt WE, Atherton HD, Britto MT, Kotagal UR. Decreasing overuse of therapies in the treatment of bronchiolitis by incorporating evidence at the point of care. *The Journal of pediatrics*. 2004;144(6):703-710.
14. Kotagal UR, Robbins JM, Kini NM, Schoettker PJ, Atherton HD, Kirschbaum MS. Impact of a bronchiolitis guideline: a multisite demonstration project. *Chest*. 2002;121(6):1789-1797.
15. Fogleman CD. Putting Evidence Into Practice: Bronchodilators for Bronchiolitis. *American family physician*. 2014;90(9):622-623.
16. Meeker D, Linder JA, Fox CR, et al. Effect of Behavioral Interventions on Inappropriate Antibiotic Prescribing Among Primary Care Practices: A Randomized Clinical Trial. *JAMA : the journal of the American Medical Association*. 2016;315(6):562-570.



17. Smith DK, Seales S, Budzik C. Respiratory Syncytial Virus Bronchiolitis in Children. *American family physician*. 2017;95(2):94-99.
18. Committee on Infectious D. From the American Academy of Pediatrics: Policy statements--Modified recommendations for use of palivizumab for prevention of respiratory syncytial virus infections. *Pediatrics*. 2009;124(6):1694-1701.
19. FamilyDoctor.org. Bronchiolitis | Overview. 2009;