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This month's contents

Surviving Winter:

RSV and Synagis®: Things You Should Know

Written by: Ashley H. Cribb, PharmD Candidate 2012

Human respiratory syncytial virus or RSV is a common virus that causes lower respiratory tract infections, pneumonia and bronchiolitis among infants and young children. Although most children {and adults} are carriers of the virus, these infections may lead to hospitalization during infancy and childhood. Almost all children will be infected with RSV by the age of 2 years.

Symptoms vary with age, but infants under 6 months of age generally have the most severe symptoms and often require hospitalization. This especially applies to premature infants born before 37 weeks gestation, or born at least one month early. Symptoms of RSV in these infants include irritability, increased drowsiness, and poor feeding. Some infants may also develop difficulty breathing and wheezing. Symptoms commonly seen in toddlers and children under the age of 2 years include fever, wheezing and cough.

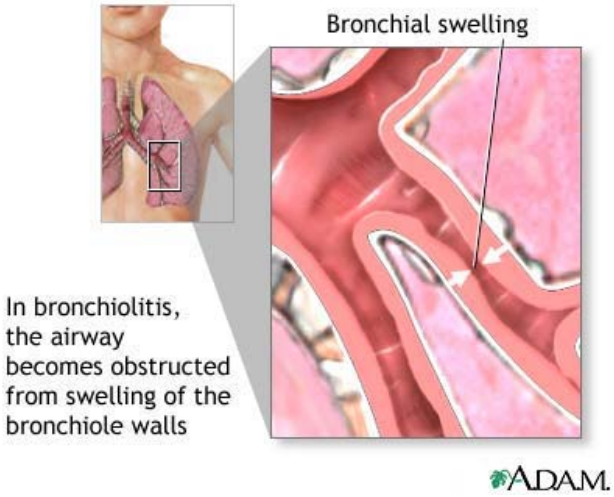

Image: http://health.allrefer.com/health/respiratory-syncytial-virus-rsv-bronchiolitis.html

RSV is transmitted via airborne droplets or direct contact with oral or nasal secretions. Patients are the most contagious during the first 2-4 days of the infection. The severity of infection typically peaks around day 5, and symptomatic improvements {and hospital discharge} typically occur shortly after[1]. Re-infection can occur throughout life, but in older children and healthy adults, cold symptoms are more typical. RSV infections in this population are of minimal risk for developing into serious respiratory tract infections.

RSV AND SYNAGIS®: WHAT YOU NEED TO KNOW (CONT.)

RSV season in Georgia occurs during the fall and winter months (approximately November through April), with the exact start and duration changing yearly. The duration of RSV season is determined by the Center for Disease Control via monitoring of RSV lab tests across the state[2]. Yearly RSV season is determined by the timing of two consecutive weeks of RSV lab tests ≥ 10% positive[2].

Treatment for RSV is primarily supportive care. Hospitalized children are treated with saline nasal spray, nasal suction, supplemental oxygen, and/or a bronchodilator such as albuterol if the child is wheezing[1]. In rare, but severe cases in young infants, a respirator and/or intravenous fluids may be indicated.

"PROPHYLAXIS IS INDICATED IN CERTAIN HIGH-RISK POPULATIONS, SUCH AS PREMATURE INFANTS AT RISK OF SERIOUS COMPLICATIONS FROM RSV INFECTION."

Evidence-based risk factors for severe RSV disease to be considered when evaluating premature infants[4]

- School aged siblings
- Daycare attendance
- Young chronological age (≤ 12 weeks at start of RSV season
- Crowded living conditions
- Exposure to environmental tobacco smoke
- Low birth weight (<2500g)
- Multiple birth
- Family history of asthma or wheezing
- Congenital abnormalities of the airways
- Severe neuromuscular disease

High-Risk Infants[4]

- Premature infants ≤ 35 weeks gestational age
- Infants with chronic lung disease
- Infants with hemodynamically significant congenital heart disease

Outpatient management of RSV includes maintaining hydration through adequate fluid intake, treatment of fever with acetaminophen or ibuprofen, and possible use of a bronchodilator if the child is wheezing

Synagis® (palivizumab) is a monoclonal antibody indicated for the prevention of serious lower respiratory tract infections caused by RSV. According to the American Academy if Pediatrics, prophylaxis should be considered in certain high-risk patient populations[3].

These include premature infants who are at risk of serious infection or complications from RSV. Patients who should be considered for prophylaxis include those with a history of premature birth (≤ 35 weeks gestational age), age less than 2 years with significant cyanotic or complicated congenital heart disease and/or chronic lung disease, such as bronchopulmonary dysplasia, and premature infants with either congenital airway abnormalities or neuromuscular disease compromising their handling of respiratory secretions[3].

RSV and Synagis®: What You Need to Know (cont.)

Palivizumab is administered by intramuscular injection at a dose of 15 mg/kg of actual body weight. The first dose should be given prior to RSV season, and doses are continued once monthly throughout RSV season[4]. Injections should be continued monthly even in patients who develop an RSV infection[4]. Common adverse reactions to palivizumab include upper respiratory infection, otitis media, fever, and rhinitis[4].

Screening patients for symptoms and recognizing high-risk patients that would benefit from palivizumab prophylaxis are well within the scope of pharmacy practice. RSV prophylaxis in high-risk patients and treatment of RSV infection are potential significant interventions for pharmacists in both the inpatient and outpatient settings, especially as we move through RSV season into spring.

References:
1. http://www.healthychildren.org/health-issues/conditions/chest-lungs/Pages/Respiratory-Syncytial-Virus-RSV.aspx
2. http://health.state.ga.us/epi/rsv/
3. American Academy of Pediatrics. Respiratory Syncytial Virus. In: Pickering LK, Baker CJ, Kimberlin DW, Long SS, eds. *Red Book: 2009 Report of the Committee on Infectious Diseases*. 28th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2009
4. MedImmune. Palivizumab Prescribing information, April 2011. https://www.synagis.com/hcp/

Making Pediatric Cough & Cold Recommendations

Written by: Shayla N. Rose, PharmD Candidate 2013

Choosing an appropriate medication for the treatment of cold symptoms can be difficult, especially with the added challenge of selecting a product approved for use in children. During the cough and cold season, large numbers of children are seen in the emergency room, where they receive treatment for accidental overdoses of commonly used cough and cold preparations. The pharmacist can play an important role in educating parents on appropriate selection and usage of over the counter medications.

When making recommendations to the parent of a sick child, it is important to consider the age of the child, as well as the presenting symptoms of the child. The majority of child overdoses come from the use of combination products, and this recommendation should be avoided. Providing the parent with information on reading OTC labels, including where to find the active ingredients, is also a vital part of counseling on product selection.

The majority of over-the-counter cough and cold preparations are only recommended for use in children ages four and older.

Making Pediatric Cough & Cold Recommendations (Cont.)

Symptom	Non-Pharmacological[1] Treatment	OTC Treatment[2]	Dosing[2] Ages 4-6	Dosing[2] Ages 6-12
Fever/Pain		Acetaminophen*	**See Below**	
		Ibuprofen*	**See Below**	
		Naproxen	**Not recommended**	
Sore Throat	The CDC recommends the use of ice chips, sore throat spray, or lozenges. Increasing humidity with a cool mist humidifier may also help to relieve sore throat.	Acetaminophen	10-15 mg/kg every 4-6 hours **Max 90mg/kg day or 4g/day**	10-15 mg/kg every 4-6 hours **Max 90mg/kg day or 4g/day**
		Ibuprofen **(6 month of age and older)**	5-10 mg/kg every 6-8 hours **Max 40 mg/kg/day 10 days max**	5-10mg/kg every 6-8 hours **Max 40 mg/kg/day 10 days max**
Cough	Ask parents to try a cool mist humidifier or steam from a hot shower to reduce coughing.	Dextromethorphan	Ages 4-6: 2.5-5mg by mouth every 4 hours or 7.5 mg every 6-8hrs, **max 30mg/day**	5-10mg by mouth every 4 hours or 15mg every 6-8 hrs, **max 60mg/day**
Chest Congestion	Ask parents to try a cool mist humidifier or steam from a hot shower to reduce congestion. Increase fluid intake.	Guaifenesin	50-100mg by mouth every 4 hours, **max 600mg/day**	100-200mg by mouth every 4 hours or extended release 600 mg every 12 hours **max 1,200 mg/day**
Nasal Congestion	Suggest use of topical saline sprays, rubber suction bulb, or cool mist humidifier.	Phenylephrine	2.5 every 4 hours	5-10mg every 4 hours
		Pseudoephedrine	15 mg every 4-6 hrs **max 60mg/day**	30mg every 4-6 hrs **max 120 mg/day**

*OTC products available for children under 4 years of age

The majority of over-the-counter cough and cold preparations are only recommended for use in children ages four and older.

Making Pediatric Cough & Cold Recommendations: What is Reye's Syndrome?

Reye's Syndrome is a disease that causes serious damage to the brain, liver, and other organs. It most commonly occurs during the period in which a person is recovering from a viral illness (usually the flu, upper respiratory infection, or chicken pox). The disease, which most commonly occurs in children, causes fatty deposits in the liver and rapidly progressing swelling in the brain, resulting in irreversible damage to these organ systems. While this condition is rare, it can be fatal within three days of onset.

Symptoms of Reye's Syndrome include vomiting, listlessness, personality changes, disorientation, delirium, confusion, and loss of consciousness, and are classified by a number of different staging systems. There are also a number of abnormal lab values associated with the condition, such as hypoglycemia and elevated liver enzymes. Below is a table containing the Hurwitz classification[3] of Reye's syndrome, with stage 6 being a category added by the CDC.

Making Pediatric Cough & Cold Recommendations: What is Reye's Syndrome? (Cont.)

Hurwitz Classification:[3]

Stage 0:
Alert, abnormal history and laboratory findings consistent with Reye syndrome, no clinical manifestations

Stage 1:
Vomiting, sleepiness, and lethargy

Stage 2:
Restlessness, irritability, combativeness, disorientation, delirium, tachycardia, hyperventilation, dilated pupils with sluggish response, hyperreflexia, positive Babinski sign, and appropriate response to noxious stimuli

Stage 3:
Obtunded, comatose, decorticate rigidity, and inappropriate response to noxious stimuli

Stage 4:
Deep coma, decerebrate rigidity, fixed and dilated pupils, loss of oculovestibular reflexes, and dysconjugate gaze with caloric stimulation

Stage 5:
Seizures, flaccid paralysis, absent deep tendon reflexes (DTRs), no pupillary response, and respiratory arrest

Stage 6:
Patients who cannot be classified because they have been treated with curare or other medication that alters level of consciousness

Treatment of Reye's Syndrome includes the use of corticosteroids, diuretics, glucose and insulin, barbiturates, anti-nausea agents such as ondansetron, and specific treatments based on blood ammonia levels. Some patients may also require the use of a ventilator for breathing assistance. While these treatments are successful in managing Reye's syndrome, they are only effective if the disease is diagnosed in its early stages. Even in the early stages (the first 1-2 days after suspected onset), laboratory tests are able to detect abnormalities. If you suspect a child has Reye's syndrome, immediately refer the child to a physician's office or emergency room.

Why is this important? Although the etiology of Reye's Syndrome is unknown, aspirin use is thought to be the most likely precipitating factor of this condition in the pediatric population. When a patient comes into the pharmacy, it can be difficult to explicitly identify the symptoms of the previously mentioned viral conditions, and aspirin administration is thought to mask, or even trigger, the symptoms of Reye's syndrome. For this reason, the Food and Drug Administration, Center for Disease control, and American Academy of Pediatrics all recommend against the over-the-counter use of aspirin and other salicylates in the pediatric population unless it is done under the direct supervision of a physician[4].

Promoting safe and effective pediatric medication therapy through advocacy, education & volunteerism.

References:

1. Centers for Disease Control and Prevention, National Center for Immunization and Respiratory Diseases, Division of Bacterial Diseases.(2012). "Get Smart: Know When Antibiotics Work: Symptom Relief". February 23, 2012. http://www.cdc.gov/GetSmart/antibiotic-use/symptom-relief.html.
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3. Hurwitz ES: Reyes syndrome, Epidemiol Rev 11:249-253, 1989
4. "Choosing Over-the-Counter Medicines for Your Child." *HealthyChildren.org*. American Academy of Pediatrics. Web. 23 Feb. 2012 http://www.healthychildren.org/English/health-issues/conditions/treatments/pages/Choosing-Over-the-Counter-Medicines-for-Your-Child.aspx

Student Society of Pediatric Advocates

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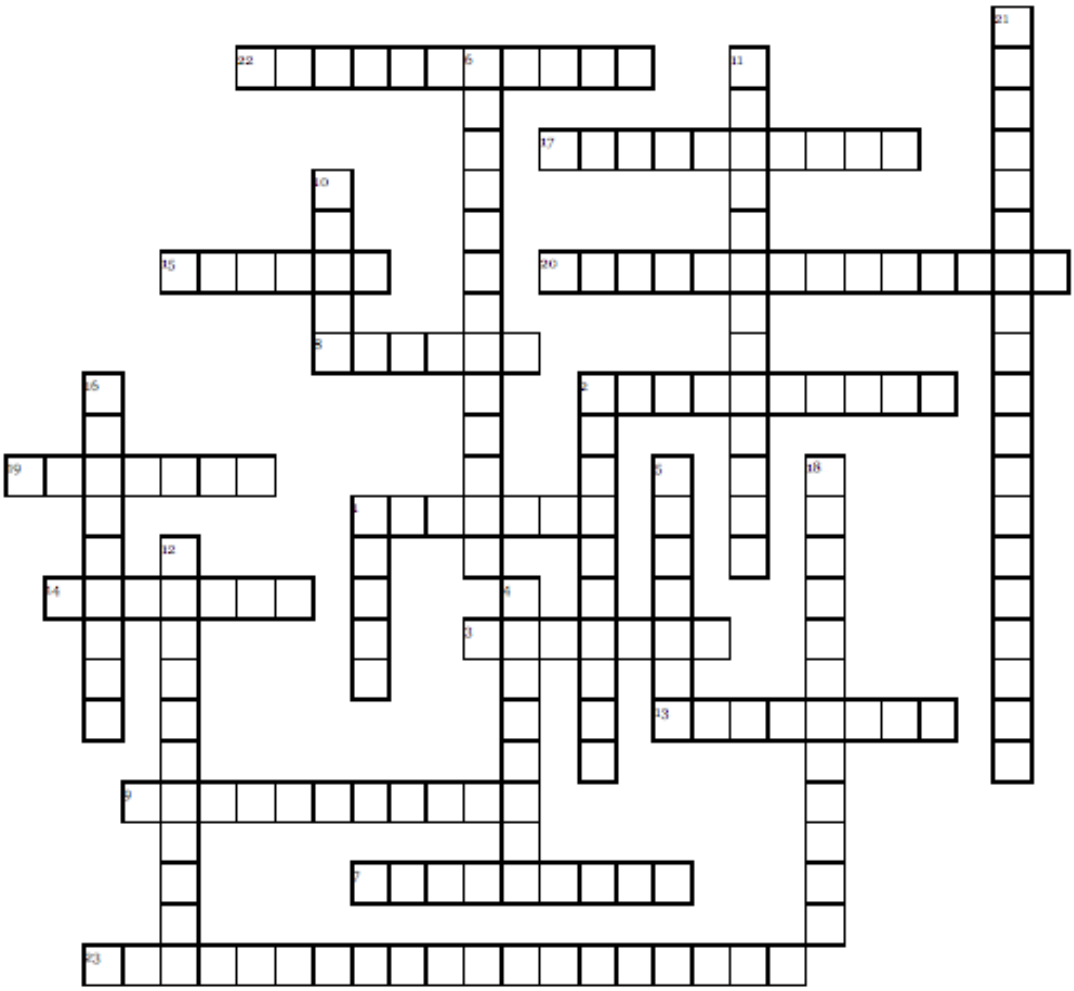
UPCOMING EVENTS:

- UGA Dance Marathon
- Camp volunteer opportunities

Kid's Corner: Time to have some fun!

RSV and the Respiratory system



Across:

1. Tiny sacs where gases are exchanged
2. What seals the opening into the respiratory tract during swallowing and prevents the passage of food into the lungs
3. Palivizuman injections are given _____
7. Not indicated in patients under 6 months of age
8. The part of the respiratory system where the vocal cords are found

Down:

1. absence of breathing
2. The ribs and diaphragm return to their former relaxed position in _____
4. Approximate beginning of RSV season in Georgia
5. The part of the brain which controls the rate of respiration
6. Common ingredient in OTC cough and cold products
10. Approximate end of RSV season in Georgia

QuickTime™ and a
decompressor
are needed to see this picture.