

CONTAGIOUS COMMENTS

Department of Epidemiology

Respiratory Season 2011 – 2012

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While we all plan for the upcoming holiday season, we need to also prepare for the inevitable viral respiratory season that fills our clinics and our inpatient beds with sick children. Specifics for influenza were covered in the October edition of Contagious Comments; therefore this edition will highlight management of other respiratory viruses.

Each year, a multidisciplinary group of Children's Hospital clinicians meet to review virus epidemiology data from years past and also what viruses we expect we will see circulating this season. Preventative strategies are discussed to determine what should be implemented this year to minimize the spread of these infections at Children's. Although our influenza vaccination campaign has been in full swing for several weeks, that alone is not enough.

This edition will provide you with reminders about basic principles as well as new information on virus testing, patient management, visitation practices and prevention. Throughout the season, be sure to monitor "[Bug Watch](#)" so you can see what viruses we are detecting in our lab from patients seen throughout our Children's Hospital system.

Important information for this season:

Visitation Restrictions: December 15, 2011 – April 30, 2012

Inpatient Visitor Screening and Restrictions

On December 15, 2011 we will implement our respiratory season visitation restrictions on the inpatient units to help protect these patients from ill visitors. Our visitation hours are 9a – 9p. The visitation restrictions program includes the following:

- 1) All visitors (including siblings) must be at least 13 years of age to visit. Please advise your patient's family of our visitation restrictions when referring them to Children's to prevent any confusion when they arrive at our facility. This really helps!
- 2) Only 4 visitors (this number includes the parents) at a patient bedside at a given time.
- 3) No ill visitors.
- 4) ALL parents and visitors will be screened daily before entry into the inpatient units. Each unit has a screening station located at the entry to the unit. All visitors who

meet criteria and are not ill will be given an apple sticker to wear indicating they have been screened.

- 5) Visitors must adhere to any isolation precautions noted on the patient room door sign and are to wash hands before leaving the room. *Exception: Parents may refrain from wearing isolation apparel, but need to wash hands each time upon entering and before leaving the room.*
- 6) In the event the primary caretaker (parent/guardian) has a respiratory illness, he / she is requested to wear a mask and wash hands when outside the room and to limit activity (and wear a mask) during the following:
 - a. Obtaining food in cafeteria (should return to patient room to eat, if possible).
 - b. Avoid crowded areas in hospital (e.g., gift shop).
 - c. Avoid high-risk patient visitation (if possible); if unavoidable (primary caregiver only), must wear a mask, gown and gloves. Discourage "close" patient contact.
- 7) Some of our higher risk units (ICUs, BMT) have more stringent visitor restrictions that may affect the number of people allowed at the bedside or may include an approved visitor list for each patient.
- 8) Decreasing the number of people visiting a single patient will decrease exposure risks and also provide an opportunity to educate a select group of visitors on the important steps to prevent transmitting infectious illnesses to our patients.

Outpatient Clinic /Therapy & Surgery/Procedure Visits:

Due to an increase in respiratory illnesses in the community during these months, we discourage bringing siblings or friends who are under 13 years of age, especially when ill, to your child's scheduled visits to these areas.

Respiratory Infection Tips & Tools

Mode of Transmission of Most Respiratory Agents



Transmitted in large droplets by:

- Direct or close contact with secretions (e.g., close face to face contact), or
- Touching contaminated objects in the environment and inoculating self or others (e.g. hand-to-eye, hand-to-mouth)

Remember...

RSV Persists:

- Up to 30 minutes for secretions in facial tissues.
- 30 minutes or more on hands.
- Up to 6 hours on surfaces (some viruses can be even longer).

Incubation Period is 2 - 8 days (4 - 6 days most common).

Epidemiology



Organism	Illnesses	Season
Adenovirus	<ul style="list-style-type: none"> • Pharyngitis • Tonsillitis • Croup • Bronchiolitis • Pneumonia • Keratoconjunctivitis • Common cold 	Year-round with peak late winter-spring
Coronavirus	<ul style="list-style-type: none"> • Common cold • Croup • Pneumonia 	Fall-winter
Human meta-pneumovirus (HMPV)	<ul style="list-style-type: none"> • Bronchiolitis • Croup • Pneumonia 	Year round, but mostly late winter - spring.
Influenza (seasonal)	<ul style="list-style-type: none"> • Flu • Bronchitis • Croup • Pneumonia • Secondary bacterial infections 	<ul style="list-style-type: none"> • Late Dec/Jan/Feb • Spring when influenza B or another strain of influenza A often circulates.
Parainfluenza	<ul style="list-style-type: none"> • Croup • Bronchiolitis • Bronchitis • Pneumonia • Common cold 	<ul style="list-style-type: none"> • Type 1 - fall • Type 2 - year round • Type 3 - spring
RSV	<ul style="list-style-type: none"> • Bronchiolitis • Pneumonia • Croup 	December through April
Rhinovirus	Common cold	Year- round with peaks in fall and spring

Isolation

Basic Infection Control



For patients with symptoms of a “suspected” or a “proven respiratory” illness.

Droplet Precautions

1. **PLEASE do not tell patients in isolation that they can walk in halls or go to playground, cafeteria, etc.**
2. Gown, glove and mask or face shield are needed whenever coming into contact with the patient or anything in the environment. **ALSO, REMEMBER TO USE EYE PROTECTION WHEN SUCTIONING OR IF IN CLOSE CONTACT WITH A COUGHING PATIENT.** If no such contact occurs, and you are not within a few feet of the patient, you are exempt as long as you are healthy and do not touch any items in the room!
3. **N95 masks should be used by staff performing cough inducing and aerosol generating procedures such as nasal suctioning.**
4. Hospital staff with respiratory illnesses should report to Employee Health Services (EHS) for evaluation to help determine if they should be working with patients or are too ill to be at work. Employee Health is open Mon - Fri 0700am-4:00pm including the lunch hour. After hours you should call the on call EHS nurse at 303-520-7517.
5. Use good handwashing / hand hygiene after removing gloves (prior to leaving the patient room).
6. Don't forget to disinfect your stethoscope and any other equipment that is used between patients.
7. Patients in isolation are not allowed to leave their room unless they are going to another department for a procedure that cannot be performed in their room. Isolation precautions are to be used during transport and the receiving department should be notified in advance of the need for isolation precautions for the patient.

DISCONTINUING ISOLATION

FOR PATIENTS WITH VIRAL RESPIRATORY ILLNESS*

(This does not apply to patients with Pertussis.)

May discontinue isolation if **ALL** of the following conditions are met:

- A. Patient is currently asymptomatic.
- B. It has been at least 7 days from first positive specimen.
- C. Patient will be hospitalized at least 2 more weeks.
- D. No underlying immunodeficiency or chronic respiratory condition.¹
- E. If repeat PCR for the virus involved is negative.

¹ If immunocompromised or with a chronic respiratory condition, then the individualized decision requires Epidemiology evaluation and consensus recommendation (at least 2 members of the Infection Control Executive Committee). Epidemiology will document recommendation in the patient record (progress notes). For BMT patients refer to "BMT Respiratory and Enteric Disease Isolation Guidelines" P&P ([ONC-001-A](#)) in the IC manual on Planet TCH

*Children's Infection Control Policy: ["Isolation and Standard Precautions \(IC-008\)."](#)

Sick Employees



Many viruses exhibit themselves in adults as a slight cold; however, large amounts of virus can be shed by sneezing/coughing, etc, and when transmitted can cause severe disease in our patients. If you have mild URI symptoms (minus fever), you may work if you wear a mask (changed frequently throughout the day), wear gloves with patient contact, and wash hands frequently or use alcohol based hand rub.

Exceptions:

1. You should not care for high-risk patients (e.g. BMT, organ transplant, and immunocompromised).
2. No ill employees allowed in the BMT unit.
3. WASH YOUR HANDS after removing gloves.

Avoid contact with high-risk patients if you are ill.

Diagnosis

Specimens:

A nasopharyngeal wash or aspirate is the best specimen to submit for respiratory virus detection in most patients. Please collect these specimens by following the standardized Microbiology [Nasopharyngeal Wash Procedure](#) posted on the Laboratory Test Directory. The Test Directory can be accessed on the Children's Hospital Intranet (Lab Test Dir Icon on Planet TCH Quick Links) or the Children's Hospital public website (<http://www.childrenscolorado.org/> "Clinical Resources, Lab and Microbiology Test Directory"). Lower respiratory tract specimens can also be tested and may provide maximum sensitivity in immunocompromised patients.

New Respiratory Virus Protocol this Winter:

As of November 15, all testing for respiratory viruses will be performed by molecular methods. Two such tests will be available, the respiratory virus PCR (RVP) and Influenza A/B PCR.

Respiratory Virus Direct Stain (DFA) is being discontinued because molecular tests are more sensitive and specific, and RVP detects more virus types than DFA. Eliminating DFA also reduces costs, decreases turnaround time of a full respiratory virus workup, and simplifies ordering.

CMV/HSV culture will no longer be performed automatically and must now be separately ordered when it is relevant, e.g. for lower respiratory tract specimens and transplant patients.

RVP detects RSV, HMPV, adenovirus, parainfluenza virus types 1-4, the four human coronaviruses (229E, OC43, NL63, and HKU1), the rhinovirus/enterovirus "group," influenza A, and influenza B. All subtypes of influenza A are identified, but only H3N2 is separately reported. RVP can be performed on many specimen types, including nasopharyngeal aspirates/washes, tracheal aspirates, bronchoalveolar lavage, and lung tissue. It is performed daily. There is a new RVP test schedule - specimens received by 6 am will now be resulted by 3 pm.

Influenza A/B PCR detects any influenza A, influenza B, and separately reports the 2009 H1N1 subtype of influenza A if it is present. The test will be available once influenza is circulating in Colorado. Results will be available 24/7 within 5 hours or less once specimens are received at the Main Campus laboratory. Nasopharyngeal aspirates or washes are the only suitable specimen for this test.

The table below compares these two tests.

Virus Detected	Test & Relative Value	
	Resp. Viral PCR (RVP)	Influenza Virus PCR
Influenza A, B	++++	++++
Influenza A Subtype	++++ Reports H3(N2). Reports 2009 H1(N1) as non-sub-typeable	++++ Reports H1(N1) 2009.
RSV	++++	0
Parainfluenza Virus	++++ Reports all 4 known types	0
HMPV	++++	0
Adenovirus	+++	0
Rhinovirus	++++ Cannot be differentiated from enteroviruses	0
Coronavirus	+++ Reports the 4 common types	0
Acceptable Specimens	Nasal wash tracheal aspirate, BAL, lung tissue	Nasal wash
Turnaround Time	10 – 34 hrs	5 hours (in season)
Relative Cost	\$\$\$\$	\$\$

Who should be tested?

Tests for respiratory viruses should only be ordered if the results will affect patient management. The algorithm at right depicts our latest recommendations for ordering respiratory virus tests.

Tests for respiratory viruses are expensive and consume valuable hospital resources. We therefore recommend that such tests be ordered only if the results will affect clinical management. To better understand why **respiratory viral** tests are being ordered and how results are affecting patient care, we **are** conducting a quality improvement study. At the time **a respiratory viral PCR test is ordered**, you will be asked to answer **one** question **regarding the most important** reason for placing the order. Answers will be compared to clinical management of the patient and to **a** follow-up question about the final value of the results. Please help us by accurately answering the initial question and the final question which will appear in your EPIC Inbox.

RESPIRATORY VIRUS TEST ALGORITHM

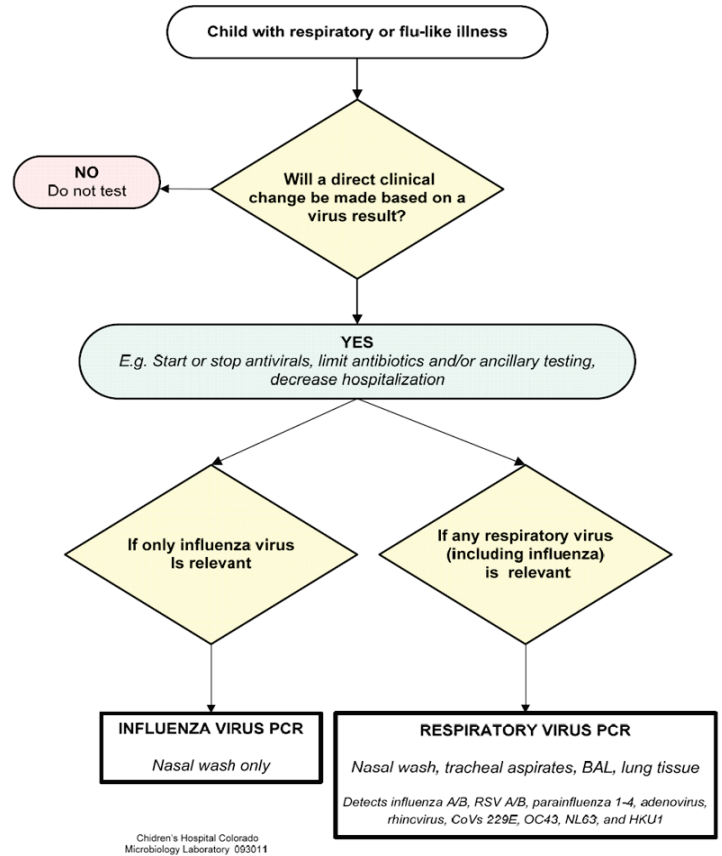
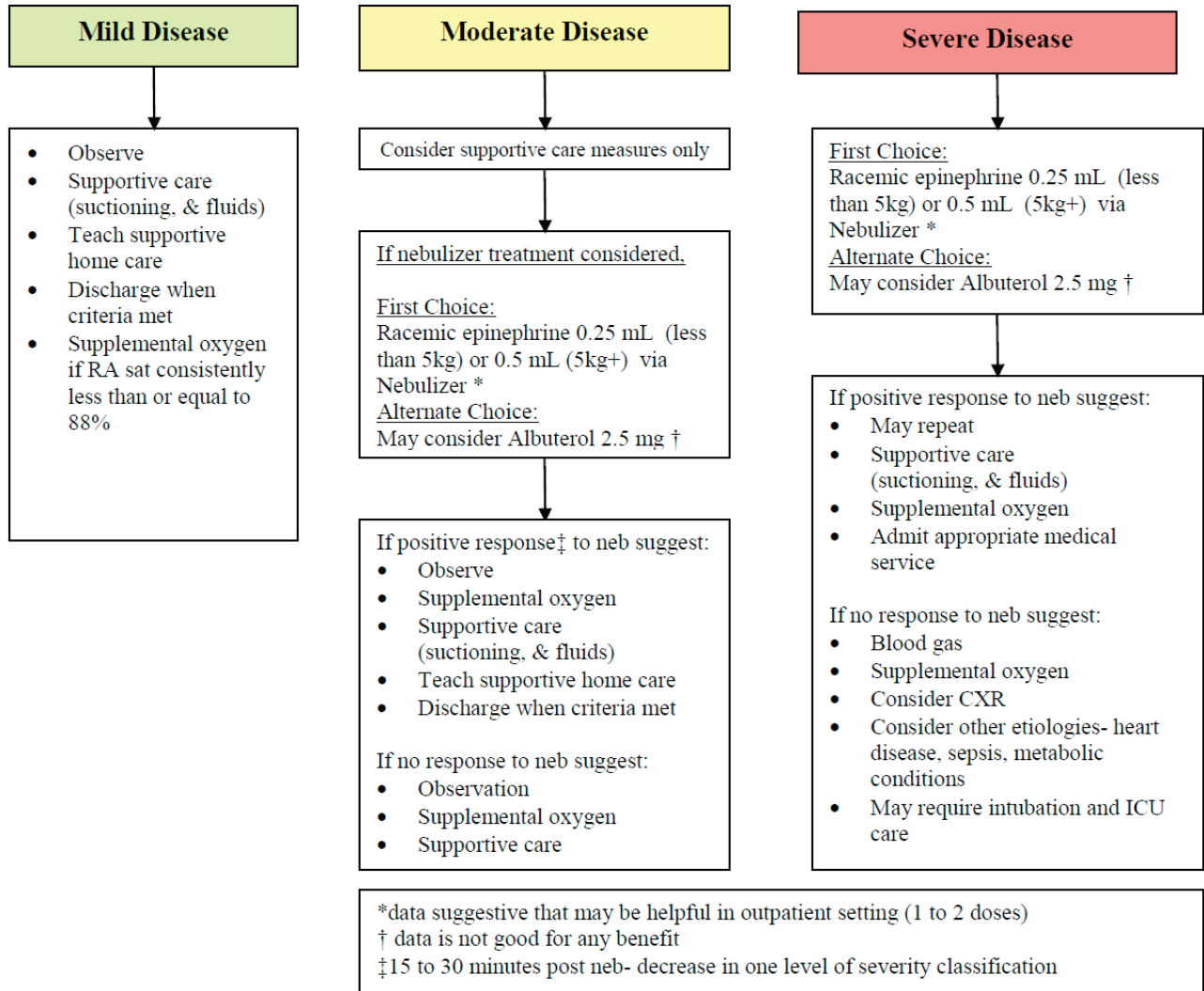


Figure 2

Bronchiolitis Care Algorithm

All Patients should receive upper airway suctioning prior to classification of disease severity.
Do not use treatment algorithm in the toxic appearing patient.



Bronchiolitis Severity Classification

<u>Mild Disease</u>	<ul style="list-style-type: none"> • Alert, active, feeding well • None to minimal retractions • RR normal to mildly elevated (less than 50)
<u>Moderate Disease</u>	<ul style="list-style-type: none"> • Alert, consoles, feeding decreased • Minimal to moderate retractions • RR is mildly to moderately elevated (50-70)
<u>Severe Disease</u>	<ul style="list-style-type: none"> • Fussy, difficult to console, poor feeding • Moderate to severe retractions, • RR is moderately to severely elevated (greater than 70)

*Always check intranet for latest version:
<http://planetech/policiesfitz/general/pdf/538.pdf>

Therapies



Supportive Therapy: Adequate hydration, upper airway suctioning, and oxygenation are the mainstays of treatment for most infants with viral pneumonia and bronchiolitis.

Bronchodilators: Consider these if Severity Classification is moderate or severe. First Choice: Racemic Epinephrine. Alternate Choice: Albuterol via nebulizer. (See Clinical Care Guidelines <http://planetmedia.thechildrenshospital.org/policiesfitz/general/pdf/538.pdf>.)

Evaluating Clinical Status and Response to Treatment:

1. On initial assessment, determine Severity Classification
2. Decide on intervention (based on Care Algorithm (Figure. 3))
3. Repeat severity classification to determine if intervention was helpful

Respiratory Severity Classification:

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Supportive Care - Routinely Indicated:

Oxygen is probably the most effective therapy in infants and children with bronchiolitis and/or viral pneumonia.

- Oxygen to achieve SaO₂ at or above 90%
- P.O. / I.V. fluids as needed
- Suction upper airway (use saline PRN):
 - Prior to feeding
 - Prior to clinical assessment
 - PRN evidence of upper airway obstruction

RSV Prophylaxis



In 2009, the American Academy of Pediatrics Committee on Infectious Diseases (Redbook) updated their recommendations

on prophylaxis for RSV in an effort to ensure optimal balance of benefit and cost of this intervention. The recommendations were based on additional data regarding seasonality of RSV disease as well as limitations in available data on risk factors for identifying children at increase risk of serious RSV lower respiratory tract disease.

To view these new recommendations please use the following link:

<http://www.cdc.gov/rsv/clinical/prophylaxis.html>

Some Final Thoughts



Finally, remember to adhere to infection prevention practices and isolation procedures. Avoid inappropriate use of antibiotics for viral illness, continue vaccination for influenza and now that you are knowledgeable about the management of patients with viral bronchiolitis etc., you can help to dispel the many widely prevalent myths regarding ineffective therapies and patient management.

Bug Watch

Up-to-date information on currently circulating respiratory and enteric viruses detected by the Children's Microbiology/Virology Laboratory can be provided to you weekly during the wintertime or twice a month spring-fall. It is also posted on the TCH Internet at: <http://www.childrenscolorado.org/news/publications/bug.aspx> or you may receive it by email. Contact Carolyn Brock by email carolyn.brock@childrenscolorado.org or phone (720-777-6412) to begin receiving your personal copy.

VISITATION REMINDER!

12/15/2011 – 4/30/2012

Inpatient Units:

All visitors (including siblings) must be at least 13 years of age to visit.

Only 4 visitors (this # includes parents) at the bedside at a given time

No ill visitors.

ALL parents and visitors will be screened daily before entry into the inpatient units.

Outpatient clinics/Network of Care sites:

Due to an increase in respiratory illnesses in the community during these months, we discourage bringing siblings or friends who are under 13 years of age to your child's scheduled visits to these areas.

Thank You!



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<http://www.childrenscolorado.org/news/publications/index.aspx>

Please return your E-mail address to: Carolyn Brock, The Children's Hospital, Epidemiology – Box B276, 13123 E. 16th Avenue, Aurora, CO 80045 or E-mail address: carolyn.brock@childrenscolorado.org.

Thank you for your interest in our publication.

CONTAGIOUS COMMENTS
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