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Children's Hospital Colorado

CONTAGIOUS COMMENTS

Department of Epidemiology

Respiratory Season 2024-25

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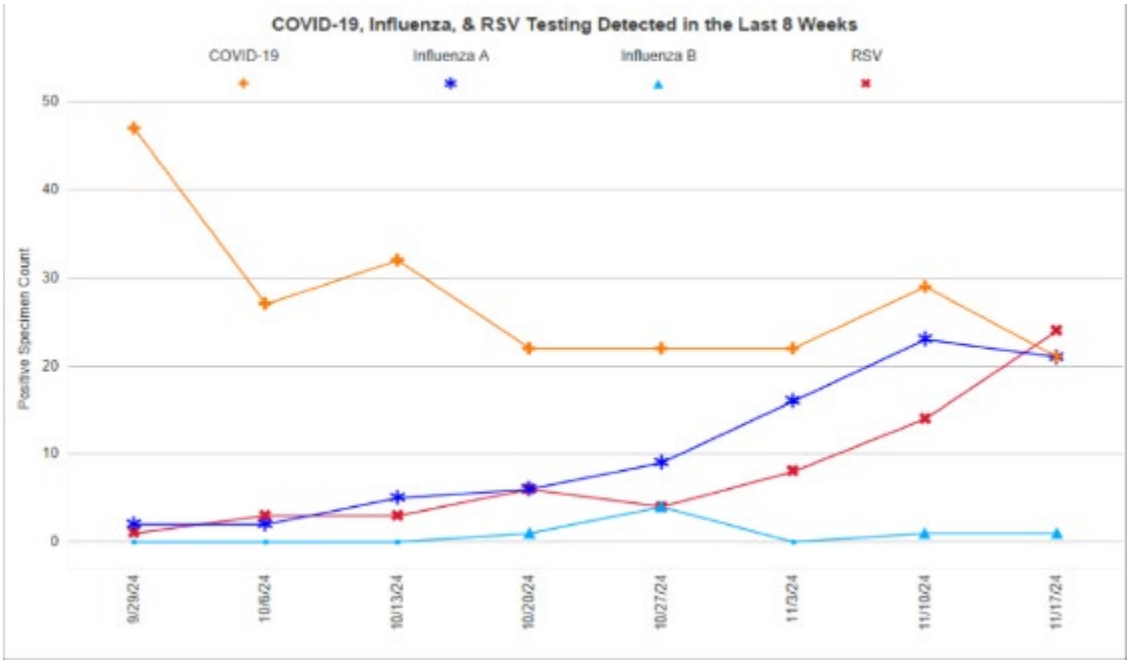
What respiratory pathogens are we seeing now and what should we expect this respiratory season?

Respiratory season is nearly here, with low levels of influenza and RSV indications. It is difficult to determine the start of the respiratory season each year, but based on national and local forecasting, we anticipate that we will have a more typical season compared to the previous two seasons. Prediction of the burden of RSV is more challenging now, due to two new prevention strategies – maternal RSV immunization and RSV monoclonal antibodies for infants. The degree to which these measures impact RSV hospitalizations will likely depend on uptake throughout the season. Further, we continue to see high rates of *Mycoplasma pneumoniae*, which will likely continue throughout this year's respiratory season.

To keep track of community circulation patterns of these respiratory pathogens during and outside of the respiratory season, please subscribe to CHCO's Bug Watch by contacting Maggie Bay. During respiratory season, this publication is distributed weekly and provides positive specimen counts for respiratory and gastrointestinal pathogens detected in our microbiology laboratory each week (Figure 1).

Individuals with access to the CHCO intranet can also view and filter these data using Bug Watch 2.0, available on the Infection Prevention page. Team members can access this feature on the "Infection Prevention and Control" home page via QuickLinks on MyChildrensColorado. Individual dashboards enable users to visualize the number and types of respiratory, gastrointestinal, or meningitis-encephalitis viruses and bacteria identified by PCR in a stacked graph with user-selected axes to display data for pathogens detected during specific time periods and by individual pathogen.

Figure 1. Bug Watch data demonstrating COVID-19, influenza and RSV test positive counts, November, 2024



What are the main modes of respiratory viral transmission?

The primary mode of transmission of influenza, SARS-CoV-2, RSV and most other respiratory viruses is typically by large droplets during direct or close contact with secretions (e.g., close face to face contact). SARS-CoV-2, influenza and other viruses may also be transmitted in aerosol form, which in the healthcare setting primarily includes during aerosol-generating procedures (e.g., sputum induction, manual ventilation, open suctioning of artificial airway).

Another mode of transmission includes touching contaminated objects in the environment and inoculating self or others (e.g. hand-to-eye, hand-to-mouth), which is an important mode of transmission particularly for enteroviruses and rhinoviruses. Respiratory viruses can remain on surfaces (e.g. hands, countertops, tissues) for several minutes to hours.

What are the most effective forms of hand hygiene in the healthcare setting?

Regardless of the time of year, hand hygiene is imperative for decreasing transmission of infectious organisms in and outside the healthcare setting. Alcohol-based hand sanitizer is preferred for use in healthcare settings when hands are not visibly soiled due to its ability to kill more infectious organisms, ease of use, and is gentler on hands than detergents and soaps so is more likely to be used consistently. Glove use is recommended as part of contact and standard precautions; however, glove use is not a substitute for hand hygiene. Alcohol-based hand sanitizer should be used on non-soiled hands after removal of gloves. Hands should always be washed with soap and water for *at least* 20 seconds if visibly soiled.

What is the difference between standard and transmission-based precautions?

Standard precautions requires performing hand hygiene, using personal protective equipment (PPE) when there is potential for exposure to infectious organisms (e.g., if doing a nasal swab, need to wear a mask and use eye protection), and proper disinfection and handling of patient care devices.

If a patient has symptoms of upper respiratory illness, he/she should be properly isolated and/or be asked to wear a mask. The decision to use transmission-based precautions (e.g. droplet isolation) should be based on symptoms and should not rely on respiratory test results, since not all children undergo testing and not all respiratory viruses can be detected with multiplex PCRs, and the viruses that are tested for may not be detected due to sampling or testing issues. For suspected or confirmed SARS-CoV-2, the CDC recommends use of a NIOSH-approved N95 respirator or PAPR during any aerosol-generating procedure, surgical procedures that may be more likely to transmit virus (e.g., surgery on regions of the body that may have higher viral loads such as the respiratory tract), or if the room is poorly ventilated and the patient is unable to use source control (e.g., wear a mask).

What should I do if I am sick with a respiratory illness?

Many respiratory illnesses present in adults as mild cold symptoms or a persistent cough; however, organisms can often be transmitted even when mild symptoms are present. When transmitted, these organisms have the potential to cause severe disease in our pediatric patients. Guidance should be in place within a practice or facility for reporting illness to best determine whether it is safe for team members to report to work. Individuals experiencing minimal symptoms should wear a mask and ensure consistent and frequent hand hygiene practices.

At CHCO, team members experiencing illness should complete the team member screening survey and follow instructions provided. Team members experiencing respiratory illness should wear a mask for 10 days after onset of symptoms for any respiratory illness and may return to work if they are fever-free and symptoms are improving.

What types of respiratory testing is available at CHCO?

Two types of respiratory testing are available at CHCO: SARS-CoV-2/influenza/RSV PCR (FLUVID) and Respiratory pathogen panel (RPP). As of November 6, 2024, the stand-alone SARS-CoV-2 PCR is no longer available at CHCO. FLUVID and the RPP will be the tests available for influenza testing. Refer to Table 2 for a full list of organisms that the RPP detects.

Testing at the CHCO Microbiology Laboratory and at the Memorial North Laboratory (for CHCO-Colorado Springs (CSH)) is performed 24 hours a day, 7 days a week. Sample collection for these tests will be available at all CHCO locations. The turnaround time for these tests is 6 hours from receipt of specimen in the laboratory.

Further, with the increase in cases of *Mycoplasma pneumoniae* and pertussis, CHCO now has stand-alone PCRs for these organisms. If there is a clinical concern for Mycoplasma or pertussis *and testing will impact clinical care*, dedicated PCRs can be sent for these organisms. For *Mycoplasma pneumoniae*, a PCR-based test can be done on NP swabs, which is sent to ARUP with a 2-day turnaround time depending on when the specimen is collected (run Monday through Friday). Pertussis PCR is currently a send-out at CHCO, but will be available in-house in the coming months. Once in-house, turnaround time is anticipated to be 1-2 days (run Monday through Friday).

Which patients should we be testing?

At CHCO, patients being admitted to the hospital with a compatible illness are tested with the FLUVID PCR (SARS-CoV-2/influenza/RSV PCR). For children evaluated in the ED/UC and outpatient setting, the FLUVID PCR should be reserved for those situations when it will impact clinical care (e.g. help with decisions about starting an antiviral, avoid antibiotic use, or other diagnostic evaluation) and in general does not need to be ordered for children who are being sent home without risk factors outlined in Table 1.

Of importance this respiratory season, respiratory pathogen PCR (RPP) testing (which includes SARS-CoV-2) is not routinely recommended but *may* be considered for clinically complex scenarios

(such as evaluation for FUO, evaluation for Kawasaki disease), in immunocompromised children, patients with CF exacerbations, or those who are critically ill. Consider FLUVID only for hospitalized patients with respiratory illness per the respiratory testing algorithm in Figure 2. Information regarding test platforms is summarized in Table 2.

Testing Considerations for Children presenting to Children's Hospital Colorado (ED/UC/ambulatory/inpatient setting) during the 2023-24 season are shown in Figure 2.

What are the specimen types for these tests?

Nasopharyngeal swabs are acceptable for any of the respiratory virus testing listed. Mid-turbinate swabs will no longer be accepted. In the outpatient and ED setting, if FLUVID testing is being done, naris (anterior nares) swabs are acceptable, though have lower sensitivity than nasopharyngeal specimens. Please note: anterior nasal swabs are not an acceptable source for the respiratory pathogen panel (RPP). At CHCO-Anschutz, a nasal wash or tracheal aspirate may be accepted in certain clinical scenarios, but a swab is the preferred method of testing. At CSH, NP swabs are the preferred specimen type; other sample types will be re-directed to Anschutz for testing, which will lengthen turnaround time.

What are the best ways we can protecting our patients and ourselves this respiratory season?

- *Influenza vaccination:* All individuals ≥ 6 months of age are recommended to receive an annual influenza vaccine to protect against serious disease associated with influenza infection and other complications. This includes healthcare workers, our patients, and the families of our patients. This is particularly important for our patients with risk factors for severe disease. There is no longer a recommendation for additional safety measures for patients with egg allergy receiving influenza vaccines. The only contraindication to the inactivated influenza vaccine is life-threatening allergy to any component of the vaccine or people who have had severe allergic reaction to a dose of influenza vaccine. Of note, this year's influenza vaccines are trivalent, rather than quadrivalent. The influenza B Yamagata lineage has been removed, as this virus lineage has not been detected since March 2020. Click here for more information about the CDC Advisory Committee on Immunization Practices (ACIP) recommendations for the seasonal influenza vaccine for 2024-25. Note that annual influenza vaccination of healthcare workers is mandatory at CHCO.
- *COVID-19 vaccination:* COVID-19 vaccines have been updated for 2024-25 and are available for individuals who are ≥6 months old. Recommendations below are based on the October 23, 2024 recommendations made by the ACIP and as of October 31, have been published in the CDC's Interim Clinical Considerations for Use of COVID-19 Vaccines in the United States.

  For children 6 months old through 5 years old, either of the available mRNA vaccines can be used. In this age group, children should complete a multidose initial series from the ***same*** manufacturer. For patients of all ages, a table in the Interim Clinical Considerations for COVID-19 Vaccines is available here to determine the appropriate schedule for your patient. At least one dose of the 2024-25 mRNA vaccine is recommended this season, whether included in the initial series (for unvaccinated patients) or as a booster for patients already vaccinated.

  Patients who are moderately or severely immunocompromised should also complete a three-dose initial series with at least one dose including the 2024-25 vaccine. Those who have already completed the initial series should have a single 2024-25 vaccine administered followed by an additional dose of the vaccine 6 months later. The link above also includes schedules and recommendations for immunocompromised patients.

- *RSV prophylaxis:* Nirsevimab is a new monoclonal antibody product for providing passive RSV immunity to prevent RSV-associated lower respiratory tract disease in infants whose mothers were not vaccinated with the maternal RSV vaccine. Please see the CDC MMWR from August 25, 2023 for full details on groups of patients eligible for this product. Further information is available on the CDC RSV Immunization Guidance for Infants and Young Children resource page. At CHCO, nirsevimab is available for eligible patients in CHCO Anschutz inpatient and outpatient settings, Health Pavilion, Special Care Clinic, and CHCO Colorado Springs. Orders can be placed in Epic, but ordering is restricted to certain units, outpatient settings, and to transplant patients and is based on CDC guidance.

  Palivizumab is not available at CHCO this season, as a shortage of nirsevimab is not anticipated. However, in cases of a shortage of nirsevimab, the AAP has issued guidance on administration of palivizumab, which are also referenced in this season's CDC RSV Immunization Guidance for Infants and Young Children.

- *Routine Childhood Immunizations:* Please refer to last month's Contagious Comments on Vaccine Preventable Diseases update for additional information on routine childhood immunization. It is important to keep these immunizations up to date throughout the respiratory season, in addition to the vaccines listed above.

What are the main points to convey to families regarding these infection control practices this respiratory season?

Clear, simple communication with families is imperative to their understanding of recommended infection prevention practices. The messages to emphasize to parents are to:

- Get themselves and their children vaccinated against influenza and COVID-19, as well as staying up to date with routine immunizations. If a child is too young to receive these vaccines, getting older family members vaccinated can provide cocooning and protect that younger child.
- Try to minimize the spread of influenza, RSV and COVID by frequent hand hygiene (washing or hand sanitizer), staying home from work, school, or daycare if sick, wearing a mask in crowded spaces indoors, and getting tested for COVID and flu in higher risk scenarios (sicker patients or those with medical complexity). CDPHE advises that children or staff at childcare centers who are ill with acute respiratory illness remain home until they are fever free for at least 24 hours without the use of fever-reducing medications AND other symptoms have been improving for 24 hours.
- If their child does get sick, educate them about some of the warning signs that require emergency care. These signs include: breathing faster than usual, trouble getting air in, using accessory muscles to help them breathe, unable to drink enough fluids to stay properly hydrated, or appearing excessively fatigued or drowsy.

What treatments are available for respiratory pathogens?

Influenza

There are 4 antiviral medications currently available for the treatment of influenza. These include oseltamivir, peramivir, baloxavir and zanamivir. Antiviral treatment is recommended for all hospitalized children and should be considered for those outpatients with high-risk medical conditions, outlined in Table 1. For dosing information, refer to the CDC page on Influenza Antiviral Medications: Summary for Clinicians, "Table 2: Recommended Dosage and Duration of Influenza Antiviral Medications for Treatment or Chemoprophylaxis". Of these medications, oseltamivir is the only antiviral currently on formulary at CHCO.

COVID-19

The current antiviral agents approved for outpatient use in children with mild to moderate disease who are at high risk for progression to severe disease are ritonavir-boosted nirmatrelvir (Paxlovid™; for patients ≥12 years old and ≥ 88lb) and remdesivir (3-day course; see remdesivir package insert for age and weight recommendations and dosing). For certain inpatients, a 5-day course of remdesivir and up to 10-day course of steroids (dexamethasone) are recommended. The care of patients with SARS-CoV-2 including treatment considerations is available as an AgileMD pathway on the CHCO Clinical Pathways page (last updated 2022). The latest information regarding SARS-CoV-2 antivirals is available on the IDSA website: https://www.idsociety.org/practice-guideline/covid-19-guideline-treatment-and-management/

How should we handle questions about antibiotics for these illnesses?

We should continue to have discussions with families regarding the lack of benefit of antibiotics for routine respiratory illnesses, while endorsing vaccination. You can play an important role in helping to dispel the many prevalent myths regarding ineffective therapies.

Final Notes

Please remember that upholding basic infection prevention principles of using good hand hygiene throughout the day and using appropriate PPE will help protect our colleagues, patients, and their caregivers.

Table 1. Risk factors associated with complications or more severe disease from influenza

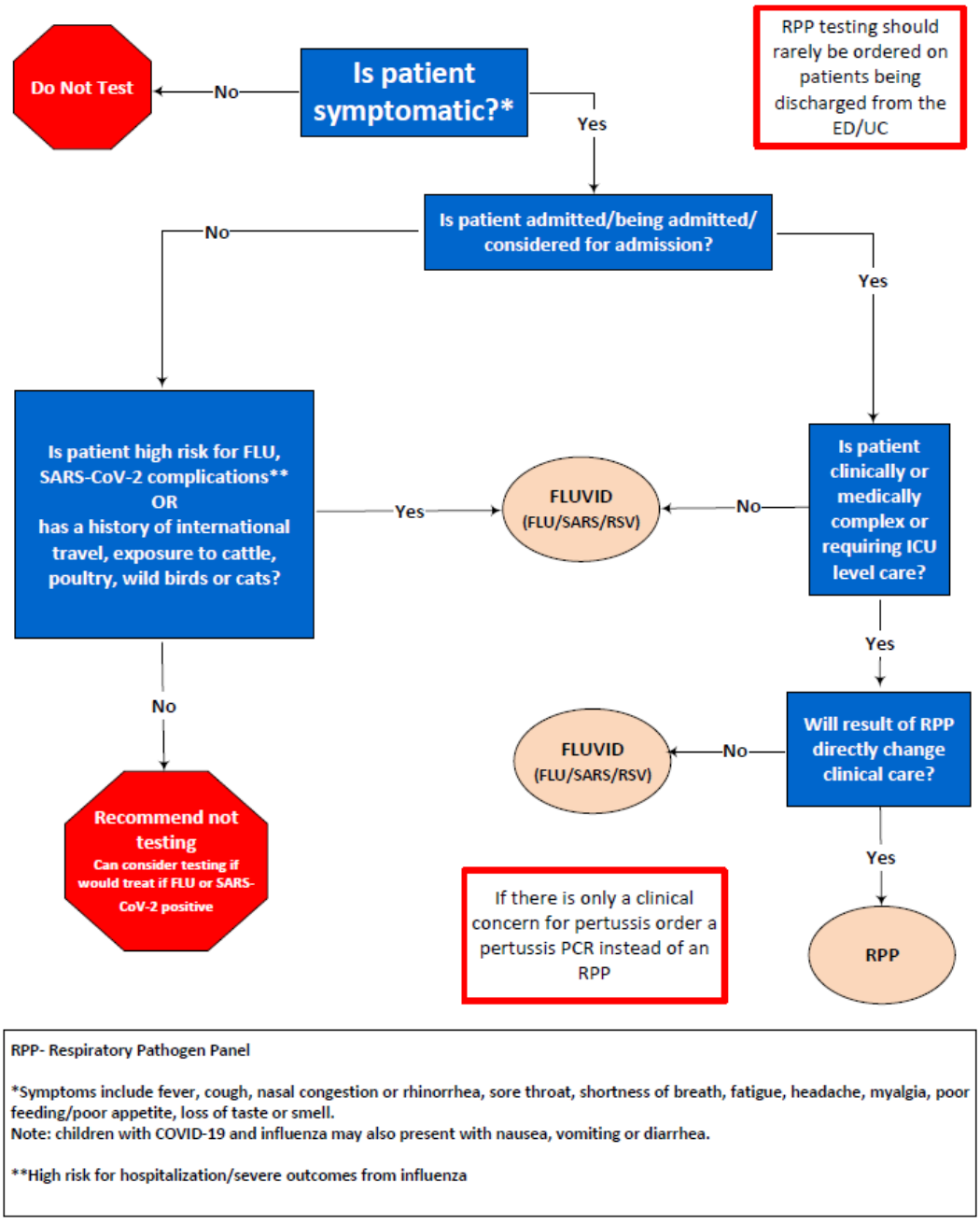
- Children aged <2 years
- Individuals <19 years receiving long-term aspirin
- Adults aged >65 years
- Persons of all ages with chronic pulmonary (including asthma), cardiovascular, renal, hepatic, metabolic (including diabetes) hematologic, neurologic and neurodevelopment conditions (including seizure disorders, developmental delay, muscular dystrophy, or spinal cord injury)
- Persons with immunosuppression
- Pregnant or recently post-partum women
- American Indians/Alaska Natives
- Persons who are morbidly obese (BMI >40)

Table 2. Respiratory Pathogen Testing Information at CHCO

	SARS-CoV-2/Flu/RSV PCR (FLuVID)	Respiratory pathogen panel (RPP)	*Mycoplasma pneumonia* PCR	*Bordetella pertussis* PCR
Tests for	SARS-CoV-2, influenza A, influenza B, RSV	SARS-CoV-2, adenovirus, coronaviruses HKU1, NL63, 229E and OC43, human metapneumovirus, rhinovirus/enterovirus, RSV, influenza A, A/H1-2009, A/H3, B, parainfluenza virus 1, 2, 3, and 4, *Bordetella pertussis*, *B. parapertussis*, *Chlamydophila pneumoniae* and *Mycoplasma pneumoniae*	*Mycoplasma pneumoniae*	*Bordetella pertussis* and *Bordetella parapertussis*
Charge for 2024-25	$355	$645	$310	$151
Procedure code	LAB 9373	LAB 5595	LAB 10329	LAB 10236
Turnaround time (from specimen arrival in the Microbiology Laboratory at Anschutz campus)	6 hours	6 hours	1-2 days Mon-Fri (send out lab)	1-2 days Mon-Fri (send out lab)
Sample types*	NARIS swabs NP swabs TA BAL	NP swabs TA BAL	NP swabs TA BAL Pleural fluid	NP swabs
Other considerations	Will only report flu A or B, does not provide subtype information	Only send if will change management	Only send if will change management	

***NP = nasopharyngeal, TA = tracheal aspirate, BAL = bronchoalveolar lavage; at CSH non-swab samples will be sent to Anschutz for testing**

Figure 2. Respiratory testing recommendations at CHCO during the 2024-25 respiratory season



RPP- Respiratory Pathogen Panel

*Symptoms include fever, cough, nasal congestion or rhinorrhea, sore throat, shortness of breath, fatigue, headache, myalgia, poor feeding/poor appetite, loss of taste or smell.
Note: children with COVID-19 and influenza may also present with nausea, vomiting or diarrhea.

**High risk for hospitalization/severe outcomes from influenza

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Please return your e-mail address to: Maggie Bay, Children's Hospital Colorado, Epidemiology – Box B276, 13123 E. 16th Avenue, Aurora, CO 80045 or e-mail address: maggie.bay@childrenscolorado.org

Thank you for your interest in our publication.