

CONTAGIOUS COMMENTS

Department of Epidemiology

FAQs for 2009 H1N1 Influenza and Seasonal Influenza

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Due to the current increase in 2009 H1N1 influenza in the community and as part of our annual planning for the 2009-10 influenza season this issue of contagious comments provides some answers to common questions about novel and seasonal influenza. Key references for the FAQs that are updated regularly include the Centers for Disease Control and Prevention (CDC), the Colorado Department of Public Health and Environment (CDPHE) and the Immunization Action Coalition (IAC). We hope that this Contagious Comments is helpful to you and your staff. H1N1 information and recommendations are changing frequently so access the references at the end of this publication for the most current information. Some of these questions that pertain to Children's Hospital staff and internal hospital policies are referenced and are only accessible on the hospital intranet.

TESTING FOR INFLUENZA

Should all children with flu-like symptoms be tested for the virus?

No. At the present time, most children infected with 2009 H1N1 influenza A will have a relatively mild illness and recover uneventfully at home with good supportive care. A specific diagnosis and antiviral therapy are unnecessary.

Children with symptoms severe enough to warrant hospitalization (e.g. serious acute febrile respiratory illness or sepsis syndrome) are different. They will usually benefit from an etiologic diagnosis and treatment. Empiric antiviral therapy is usually warranted while awaiting test results.

Symptomatic children who are at high risk of complications from influenza but are not hospitalized are in an intermediate category. These individuals may benefit from testing if results will impact their management. We consider a "high-risk" child as one who is less than two years old (some experts include ages 2-5 as "high risk") ; children with any of the following medical conditions: chronic pulmonary (including asthma); cardiovascular (except hypertension); renal, hepatic, hematological (including sickle cell disease); neurologic neuromuscular, or metabolic disorder (including diabetes mellitus); immunosuppression including that caused by medications or by HIV; pregnant women; persons receiving long-term aspirin therapy; and residents of chronic care facilities.

What is the best specimen for laboratory testing?

A nasopharyngeal aspirate is usually adequate. If the patient is intubated, a tracheal aspirate is suitable. In severe lower respiratory tract disease (e.g. viral pneumonia), upper airway specimens can be virus negative but tracheal aspirates or bronchoalveolar lavage can yield virus.

As a reminder, personnel should wear appropriate PPE (including but not limited to an N95 mask) to avoid infecting themselves when performing cough-inducing procedures in patients with suspected or confirmed influenza.

How are specimens tested for influenza virus at TCH?

Specimens from symptomatic hospitalized children are first tested by a direct stain for influenza and other respiratory viruses. This test detects influenza A in about 80% of PCR-confirmed 2009 H1N1 influenza cases in less than a day. Specimens are also tested by respiratory virus PCR. This test determines if the patient's influenza A virus is the 2009 H1 strain or a seasonal strain, which will be especially useful if seasonal H1 influenza A viruses appear (see "Antivirals" below). The PCR also detects influenza B, RSV A and B, parainfluenza 1-4, adenovirus, human metapneumovirus, four coronaviruses, and the enterovirus/rhinovirus group. This latter group of viruses sometimes causes influenza-like symptoms.

Specimens from high-risk symptomatic children who are not ill enough to be hospitalized are tested first by a "rapid" influenza A+B immunoassay (IA). This test can quickly identify 50-60% of pediatric patients infected with the 2009 H1 virus. Respiratory virus PCR is then performed on IA-negative specimens to detect additional cases.

Treatment of hospitalized children should not be delayed awaiting laboratory confirmation of infection! The respiratory virus PCR, which is the most sensitive assay, can take several days for results. A negative rapid test or direct stain for influenza does not rule out the presence of the virus.

This testing scheme applies while influenza virus predominates. These recommendations may change when other significant respiratory viruses (e.g. RSV) appear.

TREATMENT OF INFLUENZA

What antivirals should be used to treat these infections?

Oseltamivir (Tamiflu®) is currently the best antiviral choice for children because it is effective against the vast majority of circulating 2009 H1 influenza A virus strains. Amantadine and rimantidine are ineffective. A handful of cases of 2009 H1 influenza A resistant to oseltamivir have been recently identified in the U.S. The degree to which these resistant viruses will spread is unknown.

In contrast, seasonal H1 influenza A is almost universally oseltamivir-resistant and is sensitive to amantadine and rimantidine. If co-circulation occurs, treating with oseltamivir and amantadine or rimantidine may be indicated until the patient's influenza A H-subtype is determined or if it is unknown.

For hospitalized patients with severe influenza-associated pneumonia requiring intensive care unit admission, methicillin-resistant *Staphylococcus aureus* (MRSA) or other bacteria should also be suspected and treated empirically, especially if necrotizing or cavitary infiltrates or empyema is present.

Table 1. 2009 H1N1 influenza oseltamivir dosing recommendations taken from IDSA guidelines

Agent, group		Treatment	Chemoprophylaxis
Adults		75-mg capsule twice per day for 5 days	75-mg capsule once per day
Children (age, 12 months or older), weight:	15 kg or less	60 mg per day divided into 2 doses	30 mg once per day
	16-23 kg	90 mg per day divided into 2 doses	45 mg once per day
	24-40 kg	120 mg per day divided into 2 doses	60 mg once per day
	>40 kg	150 mg per day divided into 2 doses	75 mg once per day

Table 2. Dosing recommendations for antiviral treatment of children younger than 1 year using oseltamivir.

Age	Recommended treatment dose for 5 days
<3 months	12 mg twice daily
3-5 months	20 mg twice daily
6-11 months	25 mg twice daily

How long after onset of symptoms can effective antiviral treatment be initiated?

The conventional teaching is that antiviral treatment is effective only if initiated within the first 48 hours of symptoms. This timing, however, was derived mostly from studies of otherwise healthy individuals. More recent assessments of adults hospitalized with seasonal influenza suggest there are benefits (e.g. reductions in mortality or length of hospitalization) even if treatment is initiated later.

How can oseltamivir be compounded when the oral suspension is not available?

Since stockpiles and commercial supplies of oseltamivir oral suspension are limited, the FDA has posted a statement on their website at <http://www.fda.gov/Drugs/DrugSafety/InformationbyDrugClass/ucm100228.htm> to remind health care providers and pharmacists of the FDA approved instructions for the emergency compounding of an oral suspension from oseltamivir 75mg capsules as described in the FDA approved manufacturer package insert for oseltamivir

Compounding an oral suspension from oseltamivir 75mg capsules provides an alternative oral suspension when commercially manufactured oral suspension formulation is not readily available. Alternatively, for children who may not be able to swallow capsules, oseltamivir 30mg and 45mg capsules also may be opened and mixed with sweetened liquids, such as regular or sugar-free chocolate syrup, if oral suspension is not available.

Important note: It is important that physicians and pharmacists ensure that the units of measure on the dosing dispenser and the doing instructions on the Tamiflu ® oral suspension syringe match. An oral dosing dispenser with 30mg, 45, mg, and 60mg graduations of Tamiflu ® is provided in the packaging for the manufacturer’s product rather than graduations in milliliters (mL) or teaspoons (tsp). This can lead to patient or caregiver confusion and dosing errors. For more information from the FDA on this important Public Health Alert see <http://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicalProducts/ucm183714.htm>

GENERAL H1N1 VACCINE QUESTIONS

When is it expected that the 2009 H1N1 vaccine will be available?

CDC estimates that approximately 45 million doses of H1N1 influenza vaccine will be available in mid-October. CDC anticipates that approximately 20 million additional doses will be released in each subsequent week. Once vaccine is available, vaccination should begin immediately. TCH is working closely with the Colorado Department of Public Health and Environment and with Tri-County Health department on H1N1 vaccination logistics.

Is the 2009 H1N1 influenza vaccine experimental?

No. H1N1 influenza vaccine will be available in an inactivated, injectable (TIV) formulation and a nasal-spray, live attenuated (LAIV) formulation. Neither is an experimental vaccine. The 2009 H1N1 influenza vaccines are made employing the same methods and facilities used annually to produce seasonal influenza vaccine. The vaccines are undergoing additional clinical trials at this time to determine the size of the dose and the

number of doses that will be needed for protection.

Will the seasonal flu vaccine also protect against the 2009 H1N1 flu?

No. The seasonal flu vaccine is not expected to protect against the 2009 H1N1 flu.

Can the seasonal vaccine and the 2009 H1N1 vaccine be given at the same time?

In most cases the seasonal flu and 2009 H1N1 vaccines may be administered on the same day. However, we expect the seasonal vaccine to be available earlier than the H1N1 vaccine. The usual seasonal influenza viruses are still expected to cause illness in late fall and winter. Individuals are encouraged to get their seasonal flu vaccine as soon as it is available. The H1N1 and seasonal vaccines will be available in the trivalent inactivated vaccine (TIV) and the live attenuated LAIV) intranasal formulation.

- You can administer both the inactivated seasonal and the inactivated H1N1 influenza vaccines at the same visit (using separate syringes and sites).
- You can administer a seasonal inactivated (TIV) and a live (LAIV) H1N1 influenza vaccine together or vice versa.
- CDC recommends you should NOT administer both the live attenuated seasonal and the live attenuated H1N1 influenza vaccines at the same visit because of concerns about competition between the two vaccine viruses. You should separate the doses of the two live vaccines by at least 4 weeks.

Who is eligible for intranasal live attenuated seasonal or H1N1 vaccine?

LAIV (FluMist™) is approved for use in persons aged 2–49 years of age. It should NOT be given to pregnant women. LAIV is an

intranasally administered, trivalent, cold-adapted, live attenuated influenza vaccine. TCH will have some FluMist™ available for eligible patients and staff. FluMist is not recommended for TCH staff who have close contact with severely immunosuppressed patients. Specifically, FluMist™ is not recommended for healthcare workers caring for patients in BMT, Hematology/Oncology, and solid organ transplant services. If a healthcare worker receives LAIV, the healthcare worker should refrain from contact with these severely immunosuppressed patients for 7 days after vaccine receipt.

Who will be recommended to receive the 2009 H1N1 vaccine?

CDC's Advisory Committee on Immunization Practices (ACIP) has recommended that certain groups of the population receive the 2009 H1N1 vaccine when it first becomes available. These target groups include:

- pregnant women (inactivated vaccine only)
- people who live with or care for children younger than 6 months of age
- healthcare and emergency medical services personnel
- persons between the ages of 6 months and 24 years old
- people ages of 25 through 64 years of age who are at higher risk for 2009 H1N1 because of chronic health disorders or compromised immune systems.

If the initial H1N1 vaccine supply is limited, CDC recommends that the following groups receive the vaccine before others:

- pregnant women, people who live with or care for children younger than 6 months of age

- health care and emergency medical services personnel with direct patient contact,
- children 6 months through 4 years of age,
- children 5 through 18 years of age who have chronic medical conditions.

Once the demand for vaccine for these target groups has been met at the local level, programs and providers should begin vaccinating everyone from ages 25 through 64 years. Current studies indicate the risk for infection among persons age 65 or older is less than the risk for younger age groups. Therefore, as vaccine supply and demand for vaccine among younger age groups is being met, providers should offer vaccination to people over the age of 65.

Do those that have been previously vaccinated against the 1976 swine influenza need to get vaccinated against the 2009 H1N1 influenza?

The 1976 swine flu virus and the 2009 H1N1 virus are different enough that it's unlikely a person vaccinated in 1976 will have full protection from the 2009 H1N1. People vaccinated in 1976 should still be given the 2009 H1N1 vaccine.

Where will the 2009 H1N1 influenza vaccine be available?

Every state is developing a vaccine delivery plan. Vaccine will be available in a combination of settings such as vaccination clinics organized by local health departments, healthcare provider offices, schools, and other private settings, such as pharmacies and workplaces. For more information, see http://www.cdc.gov/h1n1flu/vaccination/stat_econtacts.htm. We anticipate that The Children's Hospital will receive and provide H1N1 vaccines for our at risk patients and for our staff with amount and availability of vaccine yet to be determined by CDPHE.

Once H1N1 influenza vaccine becomes available, should we stop administering seasonal influenza vaccine?

No. Providers should start administering seasonal influenza vaccine as soon as it is available and continue to administer it throughout influenza season, including during the winter and spring months.

Are there other ways to prevent the spread of illness?

Take everyday actions to stay healthy.

- Cover your nose and mouth with a tissue when you cough or sneeze. Throw the tissue in the trash after you use it.
- Wash your hands often with soap and water, especially after you cough or sneeze. Alcohol-based hands cleaners are also effective.
- Avoid touching your eyes, nose or mouth. Germs spread that way.
- Stay home if you get sick. CDC recommends that you stay home from work or school and limit contact with others to keep from infecting them.

EMPLOYEE HEALTH/ HOSPITAL STAFF RELATED QUESTIONS

(Hyperlinks are to TCH internal website)

Are influenza vaccinations mandatory at TCH?

Staff that work at TCH should get vaccinated this year for seasonal influenza. Employees and staff that refuse vaccine must sign a declination form. All staff who do not receive influenza vaccine will be required to wear masks for patient care beginning December 15th. Epidemiology will monitor the prevalence of seasonal influenza to determine if this date would need to change. Please refer to the

[Employee Health document](#) located on the internal influenza webpage.

How long do I need to stay home from work if I am sick with H1N1?

Any employee/staff member who is ill should check in with Employee Health for evaluation. Based on your symptoms you may be tested for flu and provided instructions for how long you need to be off work. Employees/staff who become sick with H1N1 are to stay home for at least 7 days or until symptoms resolve (whichever is longer). Please refer to the [employee algorithm](#).

I am a healthcare worker and I am pregnant or might get pregnant. What should I do?

Make sure that you receive your seasonal influenza vaccination and the H1N1 vaccine when it is available. There are no specific restrictions on patient care other than the current TCH policies. Use [Standard Precautions](#) when having contact with body fluids and perform hand hygiene before and after patient contact. Whenever a patient is on isolation precautions, you should wear the appropriate PPE and wash your hands after removing gloves. If performing a cough inducing procedure for a patient on Droplet Precautions, you should be wearing a fit-tested N95 mask.

INFECTION CONTROL RELATED QUESTIONS

Many of the infection control practices are similar to what is done to manage regular seasonal influenza. Patients who have respiratory symptoms and those with influenza should be placed on **droplet precautions**. A N95 mask should be worn by staff for all aerosolizing/ cough inducing procedures for patients on Droplet Precautions regardless of the confirmation of H1N1 in a patient.

Does a room need to be terminally cleaned after an H1N1 patient has been in the room?

The room is to be cleaned per the Environmental Services isolation cleaning procedure at the time of discharge. All instruments and equipment are to be disinfected before leaving the room (e.g. stethoscope, blood pressure cuffs, electronic thermometers). For more information on droplet precautions and cleaning practices see policy [IC-008](#)

Is there a policy related to wiping down PCDs, phones, and computer keyboards?

Yes, and this should happen year round. The information can be found in policy [IC-008](#) and [IC-042](#).

Is hand washing with alcohol based solution adequate to prevent the spread of H1N1?

Yes. Using the alcohol based hand product appropriately or washing with soap and water are both effective ways to prevent the spread of H1N1. Staff should always wash their hands before and after patient contact, after removing gloves, after using the restroom, before eating, and when ever hands are visibly soiled. For the CDC recommendations on hand hygiene visit <http://www.cdc.gov/handhygiene/>

How should a patient who has H1N1 be transported through the hospital?

A patient who has H1N1 or seasonal influenza should be on droplet precautions. As with any patient who is on isolation precautions, limiting their movement around the hospital is best.

- Inform the consulting department that the patient is on isolation precautions.
- Cover the wheelchair, cart, or wagon with a sheet.
- Cover patient with a sheet or clean blanket, keeping the outside clean.

- Mask patient if old enough to keep mask on
- Transport the patient in and out of the consulting department as quickly as possible.
- After use, wipe off the transportation vehicle with a disinfectant.
- Transportation staff must wear gown, mask and gloves and maintain droplet precautions during transport.
- Patient is not to wait in patient waiting area.

For more information on the transportation of patients on isolation precautions see IC-008

What visitation restrictions does the Children's Hospital anticipate will be associated with the influx of patients?

Beginning October 1, 2009 the visitation restrictions for the Children's Hospital and the Network of Care locations will be as follows.

Inpatient Units

- No ill visitors
- No children 12 years old or younger, including siblings.
- Only 4 adult visitors (including parents/guardians) at the bedside at one time.
- All visitors, including parents/guardians, will be screened for contagious diseases each day (9a – 9p) before entering the unit. If they pass screening and are visiting a child not in isolation they get the **red apple sticker**. If they pass and are visiting a child that is in isolation then they get the **green apple sticker**.
- Ill visitors will not be allowed to visit and should leave the hospital. They will be offered a handout to explain the purpose of this process.
- Ill parents will be discouraged from visiting but if they choose to still visit their child, they will be given a handout at the screening desk which gives them tips to prevent spreading their illness to their child and others here at TCH. They are also

being given a **yellow apple sticker** that just says "Screened".

- Some units like ICUs and BMT have additional restrictions.

Outpatient and NOC clinics/therapy areas, surgery centers, Radiology, OP lab, etc.

- Advise families in advance to not bring additional family or friends to these visits. (e.g. clinic visit reminder calls, pre-surgery calls, etc).
- Staff at the clinic desks will advise all parents and patients to perform hand hygiene upon arrival.
- Those with respiratory / flu-like symptoms (e.g. fever, cold, cough, runny nose, sore throat) are to put on a mask.
- Staff will attempt to separate ill from well patients in the waiting area.

ED/urgent care centers

- We will not limit the number of people who come with the patient to these sites as there is no consistent way to inform them in advance of our restrictions.
- Everyone entering these sites is to perform hand hygiene.
- Those with respiratory/flu-like symptoms (e.g. fever, cold, cough, runny nose, sore throat) to put on a mask

These visitation restrictions may change at any time. For more information: [Influenza Information](#)

SURVEILLANCE FOR 2009 H1N1 INFLUENZA AND SEASONAL INFLUENZA

Where can I find local and national information on seasonal and H1N1 influenza surveillance?

Information specific to Colorado surveillance for influenza activity can be found at <http://www.cdphe.state.co.us/dc/Influenza/index.html>. National influenza surveillance is being done by CDC and the most recent surveillance statistics and graphs can be found at <http://www.cdc.gov/flu/weekly/>

How can I access the Children's hospital surveillance publication Bug Watch?

BUG WATCH is a passive surveillance system provided as a service to the medical community by The Children's Hospital Epidemiology Department and Microbiology/Virology Laboratory. It displays the number of selected microorganisms detected by our Laboratory in specimens from hospitalized and outpatient children throughout the TCH system during the indicated weeks. Due to physician referral and test ordering patterns and the time required to detect some microorganisms, BUG WATCH results represent only an estimate of true disease incidence. BUG WATCH can be accessed on Planet TCH under the quick link that states BUG WATCH. If you are a provider outside of the Children's Hospital and would like to be on the BUG WATCH distribution list, please contact Carolyn Brock at brock.carolyn@tchden.org. Bug Watch can also be accessed on the external website

<http://www.thechildrenshospital.org/pro/news/index.aspx>

ADDITIONAL RESOURCES FOR UP TO DATE INFLUENZA AND 2009 H1N1 INFLUENZA INFORMATION

- Centers for Disease Control and Prevention www.cdc.gov/H1N1
- Colorado Department of Public Health and Environment
www.cdphe.state.co.us
- The Children's Hospital
www.thechildrenshospital.org
- www.flu.gov
- Food and Drug Administration
www.fda.gov
- Colorado Influenza Vaccination Clinic Locator www.immunizecolorado.com