City Health Information

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Avian and Pandemic Influenza Preparedness for Primary Care Providers

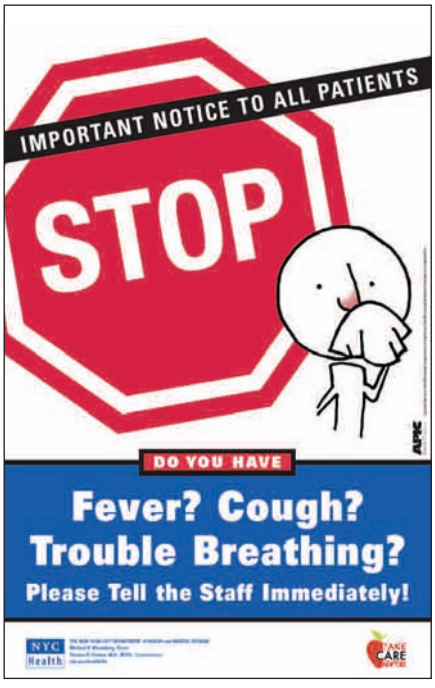
- **Implement routine screening and isolation protocols to ensure prompt recognition of any potentially contagious diseases, including H5N1 avian influenza.**
- **Routinely promote and actively monitor staff adherence to infection control precautions.**
- **Plan for increased demands on staffing and medical supplies, and plan to potentially modify patient scheduling during a pandemic.**
- **Develop a pandemic-specific employee health plan.**
- **Register for the New York City Health Alert Network (HAN) to stay informed and remain connected to the Department of Health and Mental Hygiene.**

No one can predict if or when the next influenza pandemic will occur, but once a novel influenza strain develops the capacity for efficient human-to-human transmission anywhere in the world, it would be only a matter of time before the pandemic arrives in New York City (NYC). An outbreak on the scale of the 1918 pandemic has the potential to cause immense illness and death in NYC, with up to 340,000 hospitalizations and 100,000 deaths during the initial wave (calculation based on FluSurge 2.0).[1] Up to 30% of the population may become infected during a pandemic; among those infected, approximately 50% may require outpatient medical care.[2]

The H5N1 avian influenza strain that is currently causing human illness in Asia, Africa, and the Middle East has been primarily transmitted by direct contact with infected poultry, with very few instances of person-to-person spread. While there is currently no imminent threat of a pandemic due to H5N1 avian influenza or any other novel influenza strain, we need to be prepared.

Primary care providers and staff will serve a critical role in NYC's response to a pandemic, by providing care to patients not requiring hospitalization and educating their patients and patients' families about how to protect themselves against infection.

Although some recommendations for general emergency and pandemic preparedness are more feasible for clinics or larger group practices, most are applicable to all primary care settings.



Free copies of NYC Department of Health and Mental Hygiene (DOHMH) infection control materials and posters are available through the Provider Literature Distribution Service by calling the DOHMH Call Center at 212-720-7136. See examples of materials at www.nyc.gov/html/doh/html/cd/cdmaterials.shtml

GENERAL PREPAREDNESS FOR ANY COMMUNICABLE DISEASE EMERGENCY

Protocols for Managing Potentially Contagious Patients

Screening and isolation protocols should be *routinely* in place at all primary care settings at all times to rapidly identify and isolate any potentially contagious patient—regardless of whether there is a currently recognized communicable disease outbreak locally or overseas (**Box 1**). Focus protocols on:

- Recognizing *any* potentially infectious patients upon arrival, based on clinical syndromes.
- Decreasing the risk of disease transmission to staff and other patients by rapidly implementing isolation measures and infection control precautions.
- Notifying key internal staff, the NYC Department of Health and Mental Hygiene (DOHMH), and the hospital to which a patient may be referred if a communicable disease of public health concern (e.g., H5N1 avian influenza or measles) is suspected after an initial medical evaluation.

To more rapidly identify and isolate persons with fever and respiratory or rash symptoms, which might represent a more highly contagious disease such as measles, chickenpox, or H5N1 avian influenza, screening questions should be asked of all patients, including regularly scheduled patients, those who call for an emergency appointment, and walk-ins (**Box 2**).

Staff should receive at least annual training on these procedures as well as infection control precautions (**Box 3**). Templates for clinics to use to develop their own screening and isolation protocols are available from the DOHMH (**Resources**).

Stay connected to the DOHMH via the Health Alert Network

The primary method for urgent communication with health care providers is the DOHMH's Health Alert Network (HAN). The HAN is used to deliver up-to-date information on current public health emergencies directly to your e-mail inbox.

All NYC health care workers are urged to register with the HAN. NYCMED is the single point of entry for providers to access all DOHMH online applications, including the HAN. If you are not currently a NYCMED member, please register at: www.nyc.gov/health/nycmed. If you have problems accessing NYCMED, please email nycmed@health.nyc.gov or call 1-888-NYCMED9.

RECOGNITION AND MANAGEMENT OF SUSPECTED H5N1 AVIAN INFLUENZA CASES

Detection and Reporting of Suspected H5N1 Avian Influenza Cases

With the ongoing outbreaks of H5N1 avian influenza overseas and the high volume of international travel into NYC, primary care providers need to be alert for ill travelers who may potentially be infected with H5N1 avian influenza. Always take a travel and risk exposure history from patients presenting with a febrile respiratory syndrome (**Box 2**). If patients meet clinical and epidemiologic criteria for H5N1 avian influenza (**Table 1**), they should be reported to the DOHMH immediately (**Resources**). A DOHMH physician will review the case with you to determine if H5N1 avian influenza testing is indicated. If H5N1 avian influenza is suspected, guidance will be provided on laboratory diagnosis, antiviral treatment and management of contacts (including staff and other patients), as well as assisting with transferring the patient to a hospital for further evaluation and treatment.

Infection Control Precautions if H5N1 Avian Influenza is Suspected

Once a patient is suspected of having H5N1 avian influenza based on travel or other risk exposure history, ensure that staff members adhere to infection control precautions (**Box 4**) until the patient is transported to a hospital for further evaluation.

Laboratory Testing for H5N1 Avian Influenza

Testing for H5N1 avian influenza should be conducted only at the NYC or New York State (NYS) public health reference laboratories. The preferred method of H5N1 avian influenza diagnosis is reverse-transcriptase polymerase chain reaction (RT-PCR) testing on respiratory samples. Viral culture for suspected H5N1 avian influenza should be performed only in a Biosafety Level 3+ laboratory.

DOHMH physicians will be available to provide consultation or to assist with specimen collection for H5N1 avian influenza testing for patients who meet the clinical and epidemiologic criteria in Table 1. Recommended clinical specimens include oropharyngeal swabs, nasopharyngeal swabs or aspirates, and lower respiratory tract specimens (bronchoalveolar lavage or tracheal aspirates).

Table 1. Clinical and Epidemiologic Criteria for H5N1 Avian Influenza[3]

(NOTE: These criteria are interim and may change based on the clinical and epidemiologic characteristics of the ongoing H5N1 avian influenza outbreak.)

1) Patients who require hospitalization with a documented temperature of ≥38°C (≥100.4°F) AND radiographically confirmed pneumonia, acute respiratory distress syndrome (ARDS), or other severe respiratory illness for which an alternate diagnosis has not been established; **AND** at least one of the following exposures within the 10 days before symptom onset:

   A) History of travel to a country with documentation of H5N1 avian influenza in poultry (e.g., chicken, turkey), wild birds, and/or humans*, **AND** one or more of the following potential risk exposures during travel:

   - Direct contact (e.g., touching) with sick or dead domestic poultry.
   - Consumption of raw or incompletely cooked poultry or poultry products (including blood).
   - Direct contact with surfaces contaminated with poultry feces.
   - Direct contact with sick or dead wild birds suspected or confirmed to be infected with H5N1 avian influenza virus; **OR**

   B) Close contact (within 3 feet) with an ill patient who was confirmed or suspected to have H5N1 avian influenza; **OR**

   C) Work with live H5N1 avian influenza virus in a laboratory.

2) Hospitalized or ambulatory patients who meet risk exposure criteria A, B, or C above **AND** have either:

   - Mild or atypical disease†; **OR**
   - Severe or fatal respiratory disease and for whom epidemiologic information is uncertain, unavailable, or otherwise suspicious but do not fully meet the criteria above (e.g., a traveler from an H5N1 avian influenza-affected country who had contact with well-appearing poultry or whose exposures are unclear).

*Updates on countries affected by H5N1 avian influenza are available at the following Web sites:
World Health Organization: www.who.int/csr/disease/avian_influenza/country/en/index.html
World Organization for Animal Health: www.oie.int/eng/en_index.htm

†For example, a patient with respiratory illness and fever who does not require hospitalization, or a patient with significant neurologic or gastrointestinal symptoms in the absence of respiratory disease.

Infection control precautions during specimen collection should include the use of gloves, gown, goggles or face shield, and a fit-tested National Institute of Occupational Safety and Health (NIOSH)-approved N95 (or higher) respirator with a disposable, filtering facepiece.

Specimens should be collected in viral transport media, kept refrigerated at 4ºC, and rapidly transported within 48 hours to the DOHMH Public Health Laboratory for RT-PCR and viral culture testing. Specimens collected within the first 3 days of illness onset have the highest likelihood of testing positive if the patient is infected. Guidance on specimen collection methods is available through the DOHMH (**Resources**). Commercially available rapid influenza A antigen tests should not be used to diagnose H5N1 avian influenza.

PANDEMIC PREPAREDNESS AND RESPONSE

Based on anticipated clinical and epidemiologic characteristics (**Table 2**), an influenza pandemic would result in significant public health, societal, and economic adversity worldwide. Should a pandemic arrive in NYC, one of the greatest public health challenges would be to expand health care capacity to handle an extremely large number of ill patients. It is essential to plan now for steps that will need to be taken to increase health care surge capacity at the time of a pandemic. It may also be necessary to prioritize hospital care, especially ventilator care, for those patients most likely to survive.[4, 5, 6] This will necessitate a multi-pronged approach, including:

- Screening to appropriately triage patients to either hospital or home care settings.
- Requiring hospitals to enhance bed capacity for pandemic-related patients (e.g., canceling elective surgery and opening up closed wards).
- Developing stockpiles of essential medical supplies and equipment—the NYC and NYS Departments of Health are creating stockpiles of ventilators and masks.
- Altering usual standards of care and regulatory requirements.

During a severe pandemic, the practice of primary care will be drastically altered by unprecedented numbers of

Table 2. Pandemic Influenza Overview

General Characteristics of Pandemic Influenza Viruses:

- Major change in the genetic subtype, usually involving a new hemagglutinin antigen derived from bird or animal influenza strains.
- Most humans will have no pre-existing immunity.
- Will present as a febrile respiratory outbreak, characterized by sustained and efficient human-to-human transmission, high attack, illness and death rates, and global spread within a matter of months.
- May recur in multiple waves, each of which may last approximately 8 to12 weeks in duration, separated by many weeks or months of relative inactivity.

Routes of Transmission of Seasonal and Pandemic Influenza:

- Seasonal human influenza viruses are primarily transmitted through large respiratory droplet spread (coughing or sneezing), and to a lesser degree, direct and indirect contact.[7]
- Large droplet transmission usually requires close contact, as large droplets do not remain suspended in the air and generally only travel short distances (3 to 6 feet).[8]
- Fine droplet inhalational transmission (airborne transmission) is most likely to occur during procedures that generate aerosols, such as bronchoscopy or intubation.[9]
- Infected people may be contagious for at least 1 day before illness onset and about 5 days after the first symptoms. Children may shed virus for up to 10 days, and immunocompromised people may be contagious longer.
- Pandemic influenza strains will likely have similar transmission characteristics as seasonal influenza. However, it may not be possible to rule out the potential role, if any, of airborne transmission during the early pandemic period, when viral transmission characteristics are not yet established.

Infection Control Precautions:

- When caring for patients with suspected or confirmed avian or pandemic influenza infection, the CDC's current interim recommendations for personal protective equipment call for enhanced precautions compared to seasonal influenza.*
  - Always use fit-tested National Institute of Occupational Safety and Health (NIOSH)-approved N95 or higher level respirators, gloves, gowns and eye protection for activities that are likely to generate aerosols (such as intubation or sputum induction).
  - If supplies allow, N95 respirators are also recommended for other direct patient care activities. In the absence of sufficient supplies of N95 respirators, use surgical masks for all direct patient care.

Clinical Presentation:

- May range from typical flu-like symptoms (fever, cough, sore throat, and muscle aches) to pneumonia, severe respiratory disease, gastrointestinal symptoms, or other life-threatening complications, including central nervous system involvement.
- Unlike seasonal influenza, which is most threatening to people 65 years and older and those with underlying medical conditions, a pandemic strain may cause more severe illness among otherwise healthy adults or children.
- Case fatality rates in a severe pandemic may be >2%.

*Based on interim guidance from the CDC available at http://www.pandemicflu.gov/plan/healthcare/maskguidancehc.html#recommendations. These recommendations may change based on transmission characteristics of the avian or pandemic strain. For example, it may be determined that droplet precautions and a standard, surgical mask, which are currently recommended for seasonal influenza, are sufficient for health care worker protection.

people seeking medical care over a 2- to 3-month period. Vaccine will not be available at the start of the pandemic, and there may be limited therapeutic options beyond palliative and supportive measures if antivirals are not effective against the specific pandemic strain, or supplies are insufficient. Strict attention to infection control, environmental cleaning, and personal protection will be crucial to prevent transmission in medical and community settings. Physicians working in solo or private group practices should establish formal agreements to coordinate preparedness planning with affiliated or nearby practices or clinics before a pandemic or other public health emergency.

The DOHMH will place a strong emphasis on the need for both personal and community preparedness (**Resources**). During the first wave of a more severe pandemic (case fatality rate >1%), more stringent community control measures may be recommended to minimize transmission until vaccine is available.[10]

These measures may include:

- Closure of schools and day care centers, cancellation of large public gatherings, and other social distancing measures.
- Voluntary home isolation for patients not requiring hospital care.
- Voluntary home quarantine and antiviral prophylaxis of household contacts.

The DOHMH will prioritize the use of effective risk communication strategies to gain the public's cooperation with and trust in these measures. Emphasis will also be placed on the need for most ill persons to be cared for at home so that hospitals and intensive care resources can be prioritized for those critically ill patients most likely to survive.

STEPS YOU CAN TAKE NOW TO PREPARE FOR A PANDEMIC:

1) Plan for increasing surge capacity.

In addition to a marked influx of patients, primary care practices and acute care hospitals will likely face staff absenteeism and dwindling supplies during a pandemic. Primary care offices and clinics will have fewer resources than hospitals for preparedness planning and response. Primary care practices should consider planning now for enhancing surge capacity (**Table 3**).

2) Coordinate surge capacity planning with referral hospitals in your area.

To coordinate patient care during a pandemic or other major disease outbreak, establish relationships now with affiliated or nearby hospitals. Pre-determine what roles your practice can serve. These may include:

- Acting as a triage and referral site for patients who can be managed on an outpatient basis (including patients with milder illness and those at lower risk for complications).
- Providing home care guidance and advice for family members to minimize the risk of transmission in the household.
- Referring acutely ill patients who are most likely to need and benefit from hospital care (e.g., patients requiring ventilatory support for acute respiratory distress).
- Volunteering at affiliated or nearby hospitals (in an emergency, hospitals should have rapid credentialing and privileging protocols in place for providers not already on staff).
- Providing medical care for non-pandemic-related patients (e.g., diabetes care).

3) Develop a contingency plan for employee health.

The plan should be put in place at the start of a pandemic and should focus on sick leave policies, screening staff for symptoms, telecommuting, and family support (**Table 4**).

4) Provide information for your patients and community.

Plan to obtain or develop language- and reading level-appropriate materials using templates that will be made available from the DOHMH and other sources (**Resources**).

Table 3. Surge Capacity Planning

- Establish and maintain an up-to-date emergency communications plan for your facility.
  - Develop notification protocols for staff and include 24-hour contact information.
  - Prepare a list of emergency contact numbers for all key suppliers and referral hospitals.
- Determine the minimum number of personnel needed to keep the office open, and develop contingency plans for a staffing shortage (potentially up to 30% during the peak of the pandemic).
  - Cross-train administrative staff to support clinical activities (e.g., registration).
  - Consider recruiting temporary personnel or volunteers (e.g., retired physicians, nurses, or allied health professionals) to assist with both clinical and administrative tasks.
- Anticipate needs and plan to stockpile essential medical materials (e.g., NIOSH-approved N95 respirators and surgical masks, eye protection/face shields, gloves, gowns, soap, hand hygiene products, tissues, cleaning supplies, critical medications, and other essential consumable medical supplies).
  - Have contingency agreements in place with more than one supplier to ensure delivery.
- Develop strategies to increase patient care capacity at the height of the pandemic. For example, plan to:
  - Increase hours of operation and stagger shifts.
  - Coordinate schedules with other practices based on pre-arranged emergency affiliations.
  - Cancel non-essential visits (e.g., annual physicals or routine check-ups). If possible, conduct routine follow-up by telephone and e-mail.
  - Set up a system for patient triage by telephone and e-mail so that office visits are limited to those medically necessary to treat either influenza or other acute conditions. Consider adding a recorded message to your practice's main telephone number to help provide general guidance for patients regarding where they should seek care.
- Consider how to provide uninterrupted care for patients who have chronic illnesses, or who are undergoing treatment regimens that cannot be halted. You will also need to minimize risk of exposure for these patients when they are at your clinics.
  - Designate separate blocks of time for non-influenza and influenza-related patient care.
  - Consult with patients by telephone and e-mail.
  - Use home nursing and social service agencies.
  - Arrange for pharmacy refills by telephone and, if available, request home delivery.
- Prepare security procedures to control access to your facility if overwhelming numbers of patients present for care.

GUIDE TO SCREENING AND INFECTION CONTROL FOR COMMUNICABLE DISEASES

Box 1: Guidelines for Rapid Identification and Isolation of Potentially Contagious Patients (To be Used Routinely in All Primary Care Settings)

Step 1: Stop disease transmission at the door and in waiting areas.

- Identify staff who are the first contacts when patients arrive at the clinic/office (e.g., security guard, receptionist).
  - Train these individuals to be alert for patients with fever and cough (or rash) symptoms and to employ appropriate infection control precautions.
  - Staff should provide symptomatic patients with surgical masks, and instruct patients to cover their cough, as well as perform hand hygiene.
- Routinely screen all patients to identify those with potentially communicable diseases of greater public health concern.
  - Incorporate screening questions for fever and respiratory or rash symptoms into your center's paper or electronic intake form used at triage or registration (**Box 2**).
  - Create a stamp with screening questions for use on patient charts; use a computer prompt (e.g., pop-up box) with electronic systems.
  - Post signs to remind reception staff, including those scheduling emergency appointments for ill patients, to ask screening questions.
- Post signs in appropriate languages for patients at the entrance to the office. For free posters, contact the Provider Literature Distribution Service through the DOHMH Call Center at: 212-720–7136.
  Key messages include:
  - How and when to perform hand hygiene, including use of alcohol-based hand sanitizers.
  - Covering your cough and how to put on a surgical mask.
  - Notifying reception staff on arrival if patients have fever and respiratory or rash symptoms.
- Have tissues and/or surgical masks accessible for patient use and provide no-touch waste receptacles throughout the waiting area.
- Provide alcohol-based hand sanitizer dispensers/wipes close to the entry and in waiting areas. Make sure that all sinks function properly and have adequate supplies of soap and paper towels.

Step 2: Rapidly isolate any patients suspected of having a communicable disease of greater public health concern (e.g., measles, H5N1 avian influenza) and adhere to infection control precautions.

- Place patient in a private room with a door that can be closed to the hallway. If available at your facility, use an airborne infection isolation room (AIIR) (**Box 3**).[11]
- Ensure that staff strictly follow standard and transmission-based infection control precautions[12] , and the proper procedures for hand hygiene (www.cdc.gov/handhygiene)[13] and respiratory etiquette (www.cdc.gov/flu/professionals/infectioncontrol/resphygiene.htm).
- Emphasize the importance of adhering to the appropriate order of donning, removing, and safe disposal of used personal protective equipment (PPE) (www.cdc.gov/ncidod/dhqp/ppe.html) to avoid self-contamination.
- Conduct regular drills and provide feedback on whether staff adhere to the appropriate methods for using PPE. (Template drill materials for primary care clinics are available at: www.nyc.gov/html/doh/html/bhpp/bhpp-train.shtml#8.)

Step 3: Notify the appropriate people/agencies if you determine that a patient has a potential communicable disease of public health concern (e.g., H5N1 avian influenza, measles). These people/agencies should include:

- Clinic/office administrative or medical director.
- NYC DOHMH (Call the Provider Access Line at 1-866-NYC-DOH1).
- Emergency Medical Services, if ambulance transport required.
- Key hospital staff (e.g., Infection Control, Emergency Department, or if being directly admitted, the admitting physician), if the patient is being referred to a hospital for evaluation or admission.

Box 2: Screening Procedures to Identify Patients with Communicable Diseases of Public Health Concern

Routinely screen <u>all</u> patients to identify those who may be infected with communicable diseases of public health concern.

Ask patients whether in the past 2 weeks they have had any of the following symptoms:

- Fever
- Cough and difficulty breathing
- Rash

If patient answers yes to having fever and cough/difficulty breathing, assess whether the following risk factors were present in the two weeks before symptoms began:

- Has the patient traveled to a country currently experiencing a known communicable disease outbreak of public health concern, such as H5N1 avian influenza (**Table 1, p. 39**).
- Is the patient a health care worker who has cared for individuals with an unexplained respiratory illness.
- Has the patient had close contact with one or more individuals who have had similar, recent symptoms.

If the patient reports (a) fever and rash or (b) fever and respiratory symptoms, plus one of the previous risk factors:

Place a mask on the patient and isolate them immediately in a private room, using droplet and standard precautions (**Box 3**), pending evaluation by a physician.

If a communicable disease of public health concern (such as H5N1 avian influenza or measles) is suspected based on further history and physical examination:

Notify the DOHMH's Provider Access Line at 1-866-NYC-DOH1 immediately.

If, based on epidemiologic evidence, the patient is suspected of being infected with a novel influenza virus such as H5N1 avian influenza:

See additional infection control recommendations (**Box 4**).

If the patient answers no to all of the questions:

They can remain in the waiting area, and be managed using standard precautions and respiratory hygiene measures (e.g., patients with cough should be provided with a face mask).

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Box 3: Overview of Standard and Transmission-Based Infection Control Precautions for Primary Care Settings[12]

Standard Precautions (Apply to all patients, in all healthcare settings. Precautions are based on the principle that mucous membranes, non-intact skin, blood, and moist body substances, except sweat, may contain infectious organisms):

- Perform hand hygiene before and after all patient contact or contact with items potentially contaminated with blood or body fluids.
- Gloves, gowns, masks and eye and/or facial protection should be worn to prevent contact with mucous membranes, non-intact skin, blood, and other moist body substances as determined by the nature and extent of the anticipated exposure.
- Remove all personal protective equipment (PPE) and discard immediately after completing a task; perform hand hygiene.

Contact Precautions (for infections spread by direct or indirect contact with patients or patient-care environment):

- Place patient in an examination room as soon as possible and separate from others by >3 feet until this can be done.
- Wear disposable gloves and gown when entering the patient's room, and for all contact with the patient and with surfaces or equipment contaminated by the patient. Discard gown and gloves inside the patient's room.
- Use dedicated equipment such as stethoscopes, disposable blood pressure cuffs, and disposable thermometers, if possible. Equipment that cannot be dedicated to a single patient must be disinfected with a hospital-grade disinfectant following the disinfectant manufacturer's instructions before reuse on another patient.
- Disinfect surfaces regularly. Pay attention to frequently touched surfaces in the examination and waiting rooms (e.g., doorknobs, examination tables).

Droplet Precautions (for infections spread by large droplets generated by coughs, sneezes, etc.):

- Place a surgical mask on symptomatic patients at the point of initial encounter, during transport, or whenever exposure to other people is anticipated.
- Wear a surgical mask, and goggles or a face shield when within 3 feet of potentially infectious (not masked) patients.
- Place the patient in an examination room or cubicle as soon as possible. Instruct the patient to follow recommendations for respiratory hygiene/cough etiquette **(Resources)**.
- Separate possibly infectious (masked) patients from others by at least 3 feet, or group with other patients with the same infectious status.

Airborne Precautions (for infections spread by particles that remain suspended in the air)

- Place a surgical mask on symptomatic patients at the point of initial encounter, during transport, or whenever exposure to other people is anticipated.
- The patient should wear a mask until placed in an airborne infection isolation room (AIIR).* If an AIIR is not available, use a private examination room with a closed door; instruct the patient to remain masked and follow recommendations for respiratory hygiene/cough etiquette (**Resources**).
- Use a fit-tested National Institute of Occupational Safety and Health (NIOSH)-approved N95 or higher level respirator when entering the room.
- Strict attention to airborne precautions is most essential when performing procedures likely to generate small particle aerosols, such as intubation, bronchoscopy, or sputum induction. This includes wearing appropriate PPE, including eye and facial protection (goggles, face shields), and fit-tested NIOSH-approved N95 or higher level respirator masks, gloves,and gowns.

*AIIRs should have a minimum of 6 to 12 air changes per hour. Air should be exhausted directly to the outside and must be discharged at least 25 feet from an air intake vent, open windows, and areas where people or animals may pass. Recirculated air must be filtered by a high efficiency particulate air filter. Test these rooms at least monthly (daily when in use) to verify negative airflow.

Box 4: Enhanced Infection Control Precautions for Patients With Suspected H5N1 Avian Influenza Infection

(Adapted from www.cdc.gov/flu/avian/professional/infect-control.htm)

The following precautions should be employed for patients with suspected H5N1 avian influenza:

- Place a surgical mask on symptomatic patients at the point of initial encounter, during transport, or whenever exposure to other people is anticipated. Health care personnel transporting masked patients do not need to wear a mask or respirator.
- Place the patient in an isolation room. If available at your facility, use an airborne infection isolation room (AIIR) (**Box 3**). If your facility does not have an AIIR, use an enclosed, private examination room with a door closed to the hallway.
- Health care workers providing direct patient care should wear a fit-tested NIOSH-approved N95, or higher, respirator**.**
- Pay strict attention to hand hygiene measures before and after all patient contact, and contact with items potentially contaminated with respiratory secretions.
- Wear gowns and gloves for all patient contact. Use eye and face protection (goggles or face shield) when within 3 feet of the patient.
- Limit the number of staff and family with direct patient contact.
- Use disposable examination equipment or dedicated equipment to reduce the chances of infecting other patients. Non-disposable equipment (e.g., blood pressure cuffs) that cannot be dedicated to a single patient must be disinfected with a hospital-grade disinfectant according to the manufacturer's recommendations before reuse on another patient.

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Table 4. Contingency Plan for Employee Health During a Pandemic

- Offer a liberal/non-punitive sick leave policy to ensure that ill staff and staff with ill household members stay home. Consider offering pay advances or additional sick leave days.
- Instruct employees to call in sick if they develop fever and/or respiratory symptoms. In addition, assign a staff member(s) to screen other staff for symptoms as they arrive each day, before they begin work.
- Evaluate any ill staff and, if indicated, send them home or refer them for antiviral treatment and/or hospitalization.
- Establish a time frame for when ill personnel may return to work (plan for 7-10 days after illness onset; although this may need to be modified based on the contagious period of the pandemic strain).
- Identify personnel at increased risk for influenza complications (e.g., pregnant or immunocompromised staff). Consider placing them on administrative leave or altering their work location or duties to avoid direct patient contact.
- Protect employees whenever possible by using physical barriers (e.g., clear plastic sneeze guards).
- Allow non-clinical, administrative staff (e.g., bookkeepers) to telecommute from home.
- Support family emergency care plans, especially if school and group daycare closures are recommended to decrease community transmission.[10] See **Resources** for materials on both personal and family preparedness planning from the Office of Emergency Management's Ready New York campaign.
- Direct staff to mental health and family support services, including child care. The DOHMH's 1-800-LIFENET (1-800-543-3638) hotline will be available to provide information on mental health referrals.

STEPS THAT SHOULD BE TAKEN IF A PANDEMIC ARRIVES IN NEW YORK CITY:

1) Enhance Screening, Isolation and Triage Protocols during the Pandemic.

If a pandemic arrives in NYC, screening protocols should focus on identifying patients with fever and/or respiratory symptoms and separating them from other patients as soon as possible. Ensure that signs are posted at entrances and in waiting areas to alert patients to report to the reception area immediately if they are having fever or respiratory symptoms (e.g., cough).

- Patients with fever and/or respiratory symptoms should be given a surgical mask and placed in a private examination room as soon as possible.
- If all examination rooms are full, patients with fever and respiratory symptoms should be isolated together in a separate or cordoned-off area in the waiting room. Ensure that waiting areas have sufficient supplies of hand hygiene materials, tissues, and face masks.
- Practices that have more than one location may consider designating one or more sites to receive symptomatic individuals while reserving the other sites for non-pandemic related visits.

Infection control refresher ("just in time") training and active oversight of staff should be enhanced during a pandemic. Online infection control trainings are being developed by the DOHMH and will be posted on our NYC Healthcare Prepares Web site: www.nyc.gov/health/bhpp, when available. If resources allow, assign a dedicated staff person to monitor other staff's compliance with infection control measures and proper use of personal protective equipment, and provide immediate feedback on lapses in protocol.

Clinical evaluation should be geared toward triaging patients for either home care or hospitalization. Criteria for hospitalization will be based on the clinical characteristics of the pandemic virus, and will likely include severe respiratory distress or secondary bacterial pneumonias requiring intravenous antibiotics. Based on clinical and epidemiologic characteristics of the initial cases, the DOHMH will provide specific guidance at the start of the pandemic to assist physicians in triage decisions.

2) Diagnosis and Reporting of Suspected Pandemic Influenza Cases.

Confirmatory laboratory testing may not be readily available for the pandemic strain. Therefore, providers will likely need to rely on nonspecific clinical criteria (e.g., fever >38ºC and cough or dyspnea) to diagnose patients with pandemic influenza. Currently available commercial rapid antigen tests for influenza A may not be sensitive for a pandemic strain, and risk exposure history will be less useful once transmission is widespread. Due to limited capacity, testing for the pandemic strain will not be widely available at the NYC Public Health Laboratory once a pandemic is established in NYC.

Once a pandemic has been confirmed in NYC, primary care providers will not be required to report individual *outpatient* pandemic-related cases to the DOHMH. Instead, surveillance for non-hospitalized patients will focus on detecting cases with unusual characteristics, such as suspected cases of antiviral resistance or, once a vaccine is available, suspected cases of vaccine failure. Confirmatory testing at the Public Health Laboratory will be restricted to these unusual cases. Specific reporting and reference labora-

tory testing criteria will be distributed on the HAN at the start of a pandemic.

3) Follow National Guidelines on Use of Therapeutic and Preventive Measures.

Pandemic Influenza Vaccine

Vaccine against a pandemic strain will probably not be available until after the first wave of the pandemic for two reasons. First, it currently takes approximately 6 to 9 months for influenza vaccine manufacturers to produce an initial supply of new vaccine. Second, due to the unpredictable antigenic characteristics of a future influenza pandemic strain (e.g., the H5N1 avian influenza virus has already evolved into several different genetic clades[14, 15]), manufacturers cannot produce sufficient quantities of vaccine in advance.

Once available, initial vaccine supplies will likely be limited and distributed incrementally over many months. Based on studies of the immunogenicity of the recently licensed H5N1 avian influenza vaccine,[16] a 2-dose regimen of this vaccine administered 30 days apart is needed to achieve an optimal antigenic response. A pandemic vaccine will be distributed based on prioritization recommendations from the US Department of Health and Human Services. (See www.pandemicflu.gov for current interim guidance.) Health care workers with direct patient care responsibilities will be among the first to be vaccinated along with those essential to ensuring that societal infrastructure continues to function (e.g., first responders and utility workers), and those at greatest risk of death (e.g., patients with underlying medical conditions, such as cardiac or respiratory disease).

The methods of vaccine distribution will depend on the quantity available and will change over the course of the pandemic. Early supplies will be distributed to priority groups via hospitals, larger primary care clinics, and employee health clinics (e.g., police and firefighters). Health care providers will likely be vaccinated at their affiliated hospitals or at larger primary care clinics. Once adequate supplies are available for the general public, vaccine will be distributed through private providers, other health care facilities, and city-run mass vaccination clinics. At that time, private providers and clinics will receive vaccine for their patients either directly from the DOHMH, or through vaccine distributors or pharmaceutical companies.

Antiviral Use

There are currently 2 classes of antiviral medications: the adamantanes (amantadine, rimantadine), and the neuraminidase inhibitors (oseltamivir, zanamivir). For seasonal influenza, if treatment is started within 48 hours of illness onset, neuraminidase inhibitors may decrease severe complications, such as pneumonia and bronchitis, reduce hospitalizations, and may decrease the duration of illness and viral shedding.[17]

If the pandemic strain is susceptible, appropriate use of neuraminidase inhibitors during an influenza pandemic may reduce illness and death and diminish demands on the health care system. The federal and state governments plan to stockpile a quantity of neuraminidase inhibitors sufficient to treat 25% of the US population (81 million treatment courses) by December 2008. As manufacturing capacity for oseltamivir continues to increase worldwide, decisions on whether or not to prioritize use of antiviral stockpiles for treatment and/or prophylaxis of specific target groups will depend on whether sufficient supplies exist at the time of the pandemic. In the event of a pandemic, the DOHMH will provide more detailed guidance to health care providers on the appropriate use of antivirals. ◆

Do Not Prescribe Personal Stockpiles of Antivirals

Personal stockpiling of antivirals (e.g., oseltamivir) for later use during a pandemic is not recommended. Physicians are advised not to write prescriptions for oseltamivir for their patients to stockpile now in the event of a future pandemic for the following reasons:

- Efficacy of antivirals for a future pandemic strain is unknown at this time.
- Inappropriate or inconsistent use of antivirals may increase risk of drug resistance.
- Use of antivirals without the guidance of a physician may increase the risk of adverse effects or drug interactions.
  - Oseltamivir is considered Category C risk for pregnant patients.
- Poorly timed and/or inappropriate use of antivirals may leave individuals without medication when needed.
- Antivirals have a limited shelf life (<5 years) and medications may be wasted if they expire before a pandemic.

Resource Directory

NYC Department of Health and Mental Hygiene (DOHMH)

- To report suspected cases of novel influenza strains such as H5N1 avian influenza call:
  - Business hours: Bureau of Communicable Disease 212-788-9830
  - Non-business hours: NYC Poison Control Center 1-800-222-1222 or 212-764-7667
- Provider Information on H5N1 Avian Influenza http://home2.nyc.gov/html/doh/html/cd/cd-hcp-h5n1.shtml
- Guidance on H5N1 avian influenza specimen collection methods www.nyc.gov/html/doh/downloads/pdf/cd/asophar-specimen-guide.pdf
- NYC DOHMH Pandemic Influenza Preparedness and Response Plan www.nyc.gov/html/doh/html/cd/cd-panflu-plan.shtml
- Primary Care Preparedness www.nyc.gov/html/doh/html/bhpp/bhpp-pcc.shtml
- General Health Care Preparedness (trainings and drills) www.nyc.gov/html/doh/html/bhpp/bhpp.shtml
- Screening and isolation protocols and drill materials for primary care settings www.nyc.gov/html/doh/html/bhpp/bhpp-train-emergency.shtml
- Provider Literature Distribution Service
  To request copies of free educational materials and posters for patient triage, infection control, and respiratory/hand hygiene, please call the DOHMH Call Center at: 212-720-7136. Examples of available materials can be seen at www.nyc.gov/html/doh/html/cd/cdmaterials.shtml
- Health Alert Network (HAN)
  Register via NYCMED at www.nyc.gov/health/nycmed. If you have problems accessing NYCMED, please email nycmed@health.nyc.gov or call: 1-888-NYCMED9.

NYC Office of Emergency Management

- Ready New York Guides on personal and family emergency preparedness are available in multiple languages at: www.nyc.gov/html/oem/html/ready/ready.shtml

Other Useful links:

- Centers for Disease Control and Prevention www.cdc.gov/flu/avian/index.htm
  - Hand Hygiene www.cdc.gov/handhygiene
  - Respiratory Hygiene/Cough Etiquette in Healthcare Setting www.cdc.gov/flu/professionals/infectioncontrol/resphygiene.htm
- Center for Infectious Disease Research and Policy (University of Minnesota) www.cidrap.umn.edu/cidrap/content/influenza/avianflu/index.html
- Infectious Disease Society of America www.idsociety.org/Content/NavigationMenu/Resources/Avian_Pandemic_Flu/Avian_Pandemic_Flu.htm
- New York State Department of Health www.health.state.ny.us/diseases/communicable/influenza/pandemic/
- NYS Department of Health Environmental Control Measures for Airborne Infection Isolation Surge Capacity Planning in Health Care Facilities www.nyhealth.gov/nysdoh/sars/preparedness_guidance/pdf/2i_surge_capacity_planning.pdf
- Occupational Safety and Health Administration www.osha.gov
- US Department of Health and Human Services www.pandemicflu.gov
- World Health Organization www.who.int/csr/disease/avian_influenza/en/index.html
- World Organization for Animal Health (OIE) www.oie.int/eng/en_index.htm

References Available Online: www.nyc.gov/html/doh/downloads/pdf/chi/chi26-6-ref.pdf

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DOHMH JOB OPENINGS: We seek doctors, nurses, administrators, social workers, and other public health professionals. Visit www.nyc.gov/health/careers to view openings.

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AVIAN AND PANDEMIC INFLUENZA PREPAREDNESS FOR PRIMARY CARE PROVIDERS

REFERENCES

1. Zhang X, Meltzer MI, Wortley P. FluSurge 2.0: A manual to assist state and local public health officials and hospital administrators in estimating the impact of an influenza pandemic on hospital surge capacity (Beta test version). CDC. US Department of Health and Human Services. 2005.

2. NYC DOHMH Pandemic Influenza Preparedness and Response Plan. Available at: www.nyc.gov/html/doh/html/cd/cd-panflu-plan.shtml

3. Centers for Disease Control and Prevention, Updated Interim Guidance for Laboratory Testing of Persons with Suspected Infection with Avian Influenza A (H5N1) Virus in the United States, http://www2a.cdc.gov/han/ArchiveSys/ViewMsgV.asp?AlertNum=00246

4. Christian MD, Hawryluck L, Wax RS, et al. Development of a triage protocol for critical care during an influenza pandemic. *CMAJ* 2006;175(11):1377–1381.

5. Hick JL, O'Laughlin DT. Concept of operations for triage of mechanical ventilation in an epidemic. *Acad Emerg Med* 2006;13(2):223–9.

6. New York State (NYS) Workgroup on Ventilator Allocation in a Pandemic. NYS Task Force of Life and Law. "Allocation of Ventilators in an Influenza Pandemic: Planning Document." Available at http://www.upmc-biosecurity.org/website/biosecurity_briefing/archive/avian_pandemic_flu/content/2007/2007-05-04-nystatedepthealthproposalventilatorrationflu.html

7. Brankston G, Gitterman L, Hirji Z, Lemieux C, Gardam M. Transmission of influenza A in human beings. *Lancet Infect Dis* 2007;7(4):257–265.

8. Bridges CB, Kuehnert MJ, Hall CB. Transmission of influenza: Implications for control in health care settings. *Clin Infect Dis* 2003;37(8):1094–1101.

9. Tellier R. Review of aerosol transmission of influenza A. *Emerg Infect Dis* 2006;12(11):1657–1662.

10. Centers for Disease Control and Prevention (CDC). Interim Pre-Pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States – Early Targeted Layered Use of Nonpharmaceutical Interventions. February 2007. Available at www.pandemicflu.gov.

11. NYS Department of Health, Environmental Control Measures for Airborne Infection Isolation Surge Capacity Planning in Health Care Facilities for Smallpox, SARS, or other Infections Potentially Transmitted via Airborne Droplet Nuclei, December 2003 Available at: http://www.nyhealth.gov/nysdoh/sars/preparedness_guidance/pdf/2i_surge_capacity_planning.pdf

12. Siegel JD, Rhinehart E, Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee. 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings. CDC, June 2007, Available at: http://www.cdc.gov/ncidod/dhqp/gl_isolation.html

13. Widmer AF, Conzelmann M, Tomic M, Frei R, Stranden AM. Introducing alcohol-based hand rubs for hand hygiene: the critical need for training. *Infect Control Hosp Epidemiol* 2007;28(1):50–54.

14. World Health Organization Global Influenza Program Surveillance Network. Evolution of H5N1 avian influenza viruses in Asia. *Emerg Infect Dis 2005*; 11(1):1515–1521.

15. Webster RG, Govorkova EA. H5N1 Influenza – Continuing evolution and spread. *N Engl J Med* 2006;355(21):2174–2177.

16. Treanor J, Campbell JD, Zangwill KM, Rowe T, Wolff M. Safety and Immunogenicity of an Inactivated Subvirion Influenza A (H5N1) Vaccine. *N Engl J Med* 2006;354(13):1343–1351.

17. Moscona A. Neuraminadase inhibitors for influenza. *N Engl J Med* 2005;353(13):1363–1373.

CME/CNE Activity Avian and Pandemic Influenza Preparedness for Primary Care Providers

1. Which of the following statements about pandemic influenza is FALSE?

A. Routes of transmission of pandemic influenza strains will likely be similar to those of seasonal influenza strains.
B. Most humans will not have pre-existing immunity.
C. Surgical masks should be worn when performing procedures such as bronchoscopy, intubation or sputum induction for patients suspected to have pandemic influenza infections.
D. Clinical presentation of pandemic influenza may range from typical flu-like symptoms and gastrointestinal symptoms to pneumonia, severe respiratory disease, or other life-threatening conditions.

2. Which of the following procedures should be part of pandemic preparedness planning?

A. Develop enhanced patient screening, isolation and triage protocols.
B. Develop strategies to increase surge capacity by deferring non-acute medical appointments and increasing the number of consultations provided by telephone and/or electronic mail.
C. Develop a contingency plan for employee health that addresses screening criteria for ill employees, sick leave policies, alternative work plans, and family support plans.
D. Coordinate with affiliated hospitals and other primary care clinics in your patient catchment area regarding referral of patients for hospital vs outpatient care.
E. All of the above.

3. Mr. W, a 68 year old male, is at his primary care physician's office. He reports to the intake receptionist that he has a fever, cough, breathing difficulties, and sore throat. What is the most appropriate action for the receptionist to take FIRST?

A. Immediately provide Mr. W with a surgical mask, explain respiratory etiquette precautions and place him in a private room, if available, until his physician can evaluate him further.
B. Ask Mr. W if he traveled to a foreign country within 10 days prior to onset of his symptoms, or if he had recent close contact with someone who is experiencing similar symptoms.
C. Don gloves and surgical mask.
D. Call 911 and send Mr. W to hospital.
E. Immediately notify the Department of Health and Mental Hygiene that Mr. W is a suspected case of avian influenza.

4. The recommended specimens and methods of testing for patients meeting the clinical and epidemiologic criteria for H5N1 avian influenza are:

A. Respiratory specimens for viral culture at your referral laboratory.
B. Serologic specimens for evaluation of acute and convalescent antibody titers.
C. Respiratory specimens for rapid influenza A antigen tests.
D. Respiratory specimens for reverse-transcriptase polymerase chain reaction (RT-PCR) testing by designated NYC or New York State public health laboratories.

5. When a novel influenza strain anywhere in the world develops the capacity for efficient human-to-human transmission, it would be only a matter of time before the virus arrives in NYC. Communication among the NYC medical and public health communities will be critical. The NYC DOHMH's primary method for urgent communication with health care providers is:

A. By oral presentations at NYC hospitals..
B. By a Health Alert sent via e-mail or fax from the *NYC Health Alert Network* (HAN) which is accessed through NYCMED, at www.nyc.gov/health/nycmed.
C. By telephone at 311.
D. By telephone at 911.

6. How well did this continuing education activity achieve its educational objectives?

❑ A. Very well ❑ B. Adequately ❑ C. Poorly

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Read this issue of *City Health Information* for the correct answers to questions. To receive continuing education credit, you must answer 4 of the first 5 questions correctly.

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CME/CNE Administrator, NYC Dept. of Health and Mental Hygiene,
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Avian and Pandemic Influenza Preparedness for Primary Care Providers

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CITY HEALTH INFORMATION
JULY/AUGUST 2007 VOL. 26(6):37-46

Objectives

At the conclusion of the activity, the participants should be able to:

1. Describe *routine* screening and isolation protocols for patients with communicable diseases of potential public health concern.
2. Define the clinical and epidemiologic criteria for identifying patients who may potentially be infected with H5N1 avian influenza.
3. List protocols that need to be developed for a pandemic influenza preparedness plan.
4. Identify the best method for health care providers to routinely obtain urgent updates from the NYC DOHMH.

Accreditation

New York City Department of Health and Mental Hygiene (NYC DOHMH) is accredited by the Medical Society of the State of New York to sponsor continuing medical education for physicians. The NYC DOHMH designates this continuing medical education activity for a maximum of 2.00 AMA PRA Category 1 credit(s). Each physician should only claim credit commensurate with the extent of his/her participation in the activity.

The New York City Department of Health and Mental Hygiene is an approved provider of continuing nursing education by the New York State Nurses Association, an accredited approver of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.
Contact hours: 2.00. Code: 6WXLFX-PRV-073.

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Participants must submit the accompanying exam by August 31, 2008.

CME/CNE Activity Faculty:
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