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Your Life Your Health
Pandemic IV: World Health Organization (WHO) Recommendations
Infection Control and Personal Protection for Healthcare Workers
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While the focus of this discussion by the WHO is healthcare workers and healthcare facilities, the information and recommendations have important significance for the general population.

Normally, AI viruses do not infect humans because of host barriers to infection. However, AI strains occasionally cross the species barrier and directly infect humans, including highly pathogenic strains that have caused fatal disease in humans. In 1997, AI A (H5N1) caused an outbreak in domestic poultry in China, Hong Kong Special Administrative Region (SAR) and also infected humans, hospitalizing 18 people and causing six deaths, Since then, other AI outbreaks (e.g. H9N2 in 1999, H7N2 in 2002, and H7N7 in 2003) have resulted in human infections.

Risk of A Pandemic

Since the last pandemic in 1968–1969, the risk of an influenza pandemic has never been considered greater than at the present time. At this date, AI A (H5N1) is endemic in birds in many parts of the world. The widespread persistence of H5N1 in bird populations poses two main risks to human health. The first is the risk of infection when the virus spreads directly from birds to humans. The second risk, which is of even greater concern, is that there will be increased possibilities for the widely circulating virus to infect humans and possibly re-assort into a strain that is both highly infectious for humans and spreads easily from human to human. Such a change could mark the start of a pandemic.

In an era of emerging and re-emerging communicable diseases, basic infection control precautions are the cornerstone of the approach to prevent transmission of communicable diseases in health-care facilities. The basic level of infection control precautions (standard precautions), when used as recommended, will be effective in preventing transmission of most communicable diseases in health-care facilities. Facilitating compliance with these basic precautions should be emphasized in all health-care facilities at all times.

The World Health Organization (WHO) regards every case of transmission of an AI virus to humans as a cause for concern, heightened vigilance, and increased surveillance. During the 1997 human AI A (H5N1) outbreak in Hong Kong SAR, no nosocomial (hospital or healthcare provider) spread was observed when droplet and contact precautions were used, and there is no evidence to suggest that airborne human-to-human transmission of AI A (H5N1) has occurred thus far. However, it is of concern that recent publications have disclosed that health-care workers (HCWs) have been exposed to AI-infected patients without any specific protection. This could have resulted in transmission

of AI A (H5N1) infection to HCWs with consequences for the health of individual HCWs, as well as for public health. HCWs are first responders, and it is of utmost importance to provide them with protection against the hazards associated with the provision of health care.

Available evidence suggests that transmission of human influenza viruses occurs through multiple routes including large droplets, direct and indirect contact, and droplet nuclei, However, observational studies conducted in health-care facilities suggest that droplet transmission is the major mode of transmission in that setting and standard Avian influenza, including influenza A (H5N1), in humans: WHO interim infection control guidelines for health-care facilities precautions plus droplet precautions are recommended for the care of patients infected with human influenza. As of this date, no sustained efficient human-to-human transmission of avian
Influenza A is known to have occurred, and there is no evidence to suggest airborne transmission from humans to humans.

Summary of WHO recommendations

Standard and droplet precautions should be the minimum level of precautions to be used in all health-care facilities when providing care for patients with acute febrile respiratory illness, regardless of whether AI infection is suspected. The most critical elements of these precautions include facial protection (nose, mouth, and eyes if sprays/splashes of secretions are anticipated) and hand hygiene and these precautions should be prioritized.

Therefore Standard plus Contact plus Droplet Precautions should be applied for routine patient care of suspected or confirmed AI-infected patients, which comprise of adequate hand hygiene, use of gowns, clean gloves, medical mask and eye protection if splashes are anticipated. If aerosol-generating procedures are performed, personal protection equipment (PPE) should include particulate respirator instead of medical mask.

The use of PPE is mandatory if direct close contact with the patient is anticipated and when entering the room where aerosol-producing procedures in AI-infected patients are being performed.

- Medical mask (surgical or procedure mask)
- Particulate respirators that are at least as protective as NIOSH-certified N95, EU FFP2, or equivalent should be used when performing aerosol-generating procedures. Appropriate procedures should be used to select a particulate respirator that fits well and a user seal check should be performed each time a disposable particulate respirator is worn. Surgical and procedure masks do not provide protection against small-particle aerosols (droplet nuclei) and aerosol-generating procedures should not be avoided as much as possible performed if a particulate respirator is not available.
- Eye protection (face shield, visor, or goggles) if sprays/splashes of secretions are anticipated and for all aerosol-generating procedures. When providing care, in

close contact with a patient with respiratory symptoms (e.g. coughing/sneezing), sprays of secretions may occur and eye protection should be used.
- Clean, non-sterile ambidextrous gloves, which should cover the cuffs of the gown.
- Clean, non-sterile long-sleeved gowns (fluid-resistant, if available); If cloth gowns are used, a waterproof apron should also be used if splashing of blood, body fluids, excretions, or secretions is anticipated. Avian influenza, including influenza A (H5N1), in humans.

WHO interim infection control guidelines for health-care facilities

PPE is an integral part of routine infection control practice and is an important component of prevention and control activities that are intended to reduce the risk of health care-associated infections, including avian influenza, in health-care facilities. However, use of PPE on its own does not prevent acquisition of any pathogen associated with the process of care. Compliance with the use of recommended infection control precautions is critical to prevent the possible transmission of AI and other infections to HCWs, patients, and visitors.

- HCWs should receive training on the use of recommended infection control precautions as well as on the underlying concepts that form the basis for these recommendations.
- Hand hygiene is an important component of infection control precautions.
- HCWs must also be trained to use PPE correctly. Incorrect use of PPE may fail to protect HCWs against the acquisition of health care-associated infections and may also lead to self-contamination and inoculation with infectious agents.
- PPE placement should be carefully done before entering the isolation room or area and careful removal of PPE is critical to avoid self-contamination. Recommended procedures for PPE placement and removal should be followed. Infection control precautions and PPE are just some of the components of an overall program of infection prevention and control in health-care facilities. All health-care facilities should establish an infection control program and it is also important that there is an infection control program at the national level to support these activities in health-care facilities.
- Avian influenza, including influenza A (H5N1), in humans: WHO interim infection control guidelines for health-care facilities

Infection Control Recommendations:

1. Standard infection control precautions for all health-care facilities Standard precautions include:

    a. Hand hygiene

        1) Before and after any patient contact.
        2) After removing gloves or any other PPE item.

3) Routine hand hygiene is performed either by using an alcohol-based hand rub (preferably) or by washing hands with soap and water and using a single-use towel for drying hands.
4) If hands are visibly dirty or soiled with blood or other body fluids or if broken skin might have been exposed to potentially infectious material, hands should be washed thoroughly with soap and water.
5) Hands should also be washed after using the lavatory.

b. PPE based on risk assessment and to avoid contact with blood, body fluids, excretions, and secretions.

c. Appropriate handling of patient-care equipment and soiled linen.

d. Prevention of needlestick/sharp injuries.

e. Appropriate environmental cleaning and spills-management.

f. Appropriate handling of waste.

Rationale

The SARS outbreak illustrated the critical importance of basic infection control precautions in health-care facilities. Nosocomial transmission of SARS was often associated with noncompliance with the basic level of infection control precautions (standard precautions). Standard precautions include the use of facial protection (nose, mouth, and eye protection if sprays/splashes of secretions are anticipated) by HCWs providing care, in close contact, to coughing/sneezing patients. However, it has not been the routine practice of HCWs in many health-care facilities worldwide to use this protection or to ask patients with acute respiratory symptoms and fever to wear masks.

In addition, numerous studies have documented the lack of compliance with hand hygiene, a major component of standard precautions. The use of alcohol-based hand rubs in health-care facilities has been implemented in recent years in an attempt to increase compliance with hand hygiene. Standard precautions, including hand hygiene and appropriate use of facial protection when caring for patients with acute febrile respiratory illnesses, should be a priority in all health-care facilities.

2. Respiratory hygiene/cough etiquette for all health-care facilities

a. Persons with respiratory infection should be educated to:

- cover their mouth and nose with a tissue when coughing and dispose of used tissue in waste containers;
- use a mask if coughing, when a mask is available and can be tolerated;
- perform hand hygiene (use an alcohol-based hand rub or wash hands with soap and water) after contact with respiratory secretions; and
- stand or sit at least 1 meter (3 feet) from other persons, if possible.

b. Health-care facilities should promote respiratory hygiene/cough etiquette by:

- Educating HCWs, patients, family members, and visitors on the importance of containing respiratory aerosols and secretions to help prevent the transmission of influenza and other respiratory viruses.
- Posting signs requesting that patients and family members with acute febrile respiratory illness use respiratory hygiene/cough etiquette.
- Posting signs requesting that persons with acute febrile respiratory illness refrain from visiting the health-care facility.
- Considering making tissues and masks available so that source control measures can be used in common areas and areas used for the evaluation of patients with acute febrile respiratory illnesses. Areas of gathering, such as waiting rooms, should be prioritized.
- Providing resources for hand hygiene (e.g. dispensers of alcohol-based hand rubs, hand-washing supplies) in common areas. Areas of gathering, such as waiting rooms, should be prioritized.

Rationale

Respiratory hygiene/cough etiquette procedures should be used by all patients with respiratory symptoms (e.g. coughing, sneezing). The impact of covering coughs and sneezes and/or placing a mask on a coughing/sneezing patient on the containment of respiratory droplets and secretions or on the transmission of respiratory infections has not been systematically studied. In theory, however, any measure that limits the dispersal of respiratory aerosols should reduce the opportunity for transmission. Masking of some patients may be difficult, in which case the emphasis should be on cough etiquette.

3. Early recognition, isolation, and reporting of possible AI cases

a. Health-care facilities should:

- Make it a facility priority to establish methods to ensure early recognition and investigation of possible AI cases.
- Initiate infection control precautions promptly when AI infection is suspected.
- Link the hospital-based surveillance system to the public health surveillance system and report immediately all available essential information regarding possible AI cases to public health authorities via the local surveillance system.

b. In countries with known AI infections in animals or humans, consider the diagnosis of AI:

- In all patients who present with severe acute febrile respiratory illness (e.g. fever > 38 °C, cough, shortness of breath) or other severe unexplained illness (e.g. encephalopathy or diarrhea), particularly in patients with a history of bird exposure, exposure to known or

suspected AI-infected patients, or exposure to other severely ill people within the two weeks prior to symptom onset.

- Family members who accompany suspected AI-infected patients to the health-care facility can be assumed to have been potentially exposed to AI and should also be evaluated for AI infection.
- If symptoms and exposure history support the possibility of AI infection, such patients should be put under isolation precautions and should be moved away from other persons and evaluated as soon as possible.

c. In countries without known AI infections in animals or humans:

- Query patients with severe acute febrile respiratory illness (e.g. fever > 38 °C, cough, shortness of breath) or other severe unexplained illness (e.g. encephalopathy or diarrhea), about travel to AI affected countries within the two weeks prior to symptom onset.
- Consider the diagnosis of AI in patients with severe acute febrile respiratory illness who have traveled to an AI affected country within the two weeks prior to symptom onset and who have had bird exposure, exposure to known or suspected AI-infected patients, or exposure to other severely ill people while in an AI affected country during this time period.
- If symptoms, travel, and exposure history support the possibility of AI infection, such patients should be put under isolation precautions and should be moved away from other persons and evaluated as soon as possible.

Rationale

Prompt identification and isolation of patients, HCWs, or visitors who may be infected with AI is critical to minimize the risk of nosocomial transmission and to enable an efficient public health response.