Ocupational Health for Health Care Workers - A Practical Guide
H.-M. Hasselhorn, A. Toomingas and M. Lagerström (Editors)
1999 Elsevier Science B.V.

Influenza

Feroza Daroowalla

The influenza virus continues to infect humans and to cause epidemics because the virus strains have the ability to mutate resulting in frequent changes in the antigenic profile (called antigenic drift). Less often, a novel virus subtype, to which humans are not immune, appears due to antigenic shift and can result in worldwide pandemics.

The influenza virus is spread through infected aerosol or secretions generated during sneezing, coughing or talking. Incubation time ranges from 18-36 hours and even persons with mild symptoms or sub-clinical infection may transmit virus.

Health care workers (HCW) who have close and prolonged exposure to infected secretions and droplets released during talking, coughing or sneezing by infected persons are at highest risk for becoming infected. HCW can serve as vectors for the person-to-person transmission of influenza virus in the workplace. Furthermore, HCW who are not vaccinated are likely to transmit virus to patients who may be susceptible to severe infection and even fatal outcomes after nosocomial transmission of influenza.

Symptoms and signs

Illness is characterized by an abrupt onset of fever, myalgias, sore throat, non-productive cough and severe malaise for several days. More severe illness results if primary influenza pneumonia or secondary bacterial pneumonia occur or if there are other lower respiratory tract complications.

Diagnosis

Rapid "point-of-care" diagnostic tests (available within one hour on throat swab or naso-pharyngeal aspirate specimens) for virus antigen of types A and B are available and should be used for identification of infected patients. These tests should be used in conjunction with confirmatory viral cultures.

Prevention

Existing strategies for prevention and treatment include immunization with inactivated vaccine, and treatment and chemo-prophylaxis with anti-viral drugs. In addition, the spread of virus in health care settings can be prevented by isolating infected patients,

restricting visitors with respiratory illness, limiting elective surgery during community outbreaks and limiting contact with secretions of infected persons with the use of masks and hand-washing.

Vaccination

Vaccination is recommended to reduce staff illness and absenteeism as well as to reduce nosocomial spread. HCW, including nurses, physicians, aides, and home care workers, who have direct prolonged contact with "high-risk patients", should receive annual vaccine to reduce the chance of transmission to those in their care. Patients who are at high-risk for complications and increased morbidity due to influenza include those in medical/surgical units and chronic care facilities; persons with pulmonary, cardiovascular, metabolic or immune system disorders; persons on aspirin therapy; women in the last two trimesters of pregnancy during the influenza season; and persons aged 65 and older. In addition, HCW who fit into any of the above categories are themselves at increased risk for morbidity due to influenza and should receive the vaccine regardless of their contact with patients. These recommendations are based primarily on those distributed in the USA and recommendations in different countries vary.

Type of vaccine

The vaccine is made of purified, egg-grown inactivated virus and is usually configured to contain the virus strains that match the circulating viruses for that season. The vaccine recipient develops antibody titers that will prevent influenza.

Effectiveness and impact of vaccine in HCW

The effectiveness of the vaccine depends on the age and immuno-competence of the recipient. In addition, when a good match exists between vaccine and circulating virus, the vaccine has been shown to prevent illness in 70-90% of healthy recipients less than 65 years of age. Although the vaccine is less effective in preventing illness in older individuals (50% of recipients), it does reduce the severity of illness in this group. The optimal time for vaccination is October to mid-November in the Northern Hemisphere and from May to June in the Southern Hemisphere. HCW should continue to get vaccinated even after disease activity has occurred in the community. If illness due to influenza does develop, the vaccine may still be effective in preventing lower respiratory tract involvement and other secondary complications.

Vaccination of HCW employed in geriatric long-term care facilities has been associated with a reduced rate of mortality and influenza-like illness among patients [3, 4].

Contraindications and adverse reactions to the vaccine

Contra-indications to vaccine include allergy to egg or egg products, allergy to other vaccine components, or acute febrile illness. The vaccine is considered safe in pregnancy and should be given in the first trimester (this refers to USA recommendations; third trimester vaccination is listed in British documents [6]). The vaccine cannot cause

influenza and serious side effects are rare. Most often, the recipient experiences soreness at the vaccination site. Systemic reactions include: fever, malaise, myalgia in persons who have had no prior exposure to the virus antigens (usually occurs in young children) and immediate, allergic reactions (hives, angioedema, asthma, anaphylaxis) on rare occasions in persons with hypersensitivity to some vaccine component or residual egg protein. Development of Guillain-Barré syndrome (GBS) may be associated with the vaccine and studies have shown an excess of 1-2 cases of GBS per million persons vaccinated. Persons who have developed GBS within six weeks of influenza vaccine may consider avoiding subsequent influenza vaccine.

Use of anti-viral drugs

Amantadine and rimantadine interfere with the replication of type A virus and can be used for prophylaxis of healthy persons to prevent illness. They do not prevent sub-clinical infection and the accompanying immune response. Prophylaxis with these drugs is not a feasible or recommended substitute for vaccination. These antivirals can also be used within two days of onset of illness to reduce the severity and duration of the illness. New antiviral drugs include neuraminidase inhibitors which stop viral replication of both influenza A and B and can be used as a prophylactic agent as well as treatment to decrease severity of illness.

Restrictions for infected HCW

A high index of suspicion for influenza infection should be maintained for upper respiratory symptoms during influenza season. In some countries it is recommended that HCW with acute symptoms of influenza should not have contact with patients or others at the workplace who have not received vaccination prophylaxis, especially those over the age of 65 or under the age of two years and immuno-compromised individuals, until acute symptoms resolve. Because workers with sub-clinical or unrecognized infection may not take the appropriate precautions, the best strategy for preventing outbreaks in a health care setting is to achieve high rates of vaccination among staff. The vaccination campaign should include education about the rarity of severe adverse effects and should make the vaccination easily available on-site and at convenient hours.

References

1 World Health Organization Page: http://www.who.int/emc/diseases/flu/index.html (contains general information and surveillance results)

2 Centers for Disease Control and Prevention Page: http://wonder.cdc.gov (contains the gateway to search CDC guidelines and Morbidity and Mortality Weekly Reports as well as other CDC reports pertaining to influenza)

3 Potter J, Stott DJ, Roberts MA, Elder AG, O'Donnell B, Knight PV, Carman WF. Influenza vaccination of health care workers in long-term-care hospitals reduces the mortality of elderly patients. J Infect Dis. 1997 Jan;175:1-6

4 Wilde JA, McMillan JA, Serwint J, Butta J, O'Riordan MA, Steinhoff MC. Effectiveness of Influenza Vaccine in health care professionals: A Randomized Trial. JAMA .1999;281:908-913
5 Sepkowitz KA. Occupationally acquired Infections in Health Care Workers. Ann Intern Med. 1996; 125: 826-834
6 UK Department of Health page: http://www.doh.gov.uk/publich.htm (contains influenza pandemic document)

Title:	Occupational Health for Health Care Workers
Pub Date:	08/1999
Publisher:	Elsevier Science
Contributor:	Hans M. Hasselhorn
Contributor:	Allan Toomingas
Contributor:	Monica Lagerstrom
ISBN LEVEL FIELDS-	
Binding Code:	Trade Cloth
ISBN:	0-444-50335-8
LCCN:	99-040681
Avail:	JA Majors
Pages:	248
ISBN status:	Active
PRICE FIELDS-	
Currency Code:	$
Price:	45.00
Price Source:	Publisher
SUBJECTS-	
LC Call#:	RC965.M39O245
Dewey #:	363.15
Database:	BP