

Influenza vaccination guidelines: A special case for Saudi Arabia

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Guidelines developed by medical discipline-specific groups are becoming the norm in today's medical practice. Reviews of clinical guidelines emphasized the benefits and potential drawbacks of providing medical care based on guidelines, with the conclusion that they enhance medical care in updating diagnostic and treatment modalities, quality of care assessment, cost effectiveness, and research.^[1] Some potential drawbacks include guidelines that do not have enough flexibility to allow for physician judgment in a particular patient, and guidelines that advise management that is not supportable by local health care facilities.

In this issue of the Journal,^[2] the Saudi Thoracic Society (STS) has published its guidelines for influenza immunization. Influenza is one of the most common respiratory viral infections. In an epidemic season, it is responsible for significant morbidity and mortality, depending on the level of natural or vaccine-induced immunity on the population. Influenza is estimated to cause 3-5 million cases of the severe disease worldwide each year, and to directly or indirectly cause 250,000-500,000 deaths.^[3] The most widespread illness occurs when the viral surface antigens, the hemagglutinin (H), and neuraminidase (N) antigens undergo changes based on random mutations (antigenic drift) or re-assortment of antigens by two different strains infecting the same host and mixing their viral RNA, resulting in unique progeny to which the human population has had no previous immunologic exposure (antigenic shift). Current influenza vaccines continue to contain the viral H and N antigens, and each year the vaccine may need to be changed if these antigens change. A selection of vaccine components is determined by influenza subtype prevalence in different parts of the world and yearly analysis by expert committees under World Health Organization (WHO).

As outlined in the STS guidelines, most severely affected are young children and elderly persons, pregnant women, and persons with chronic illnesses whose immunity is not yet fully developed, or is waning by age, chronic illness,

or immunosuppressive drugs. Outbreaks in temperate zone climates are seasonal, and because of this they can be more easily identified and managed, whereas in tropical zones the disease occurs year round and is sporadic, which may impede public health authorities' recognition and intervention.

What can we do to abrogate the adverse effects of influenza? The transmission of the virus from person to person is by respiratory droplets coughed or sneezed or manually deposited on a person's respiratory or ocular mucosa. Infection rates vary depending on population density, human behavior, and the characteristics of the prevalent virus. In Saudi Arabia, at the time of Hajj and at Umrah, hundreds of thousands of pilgrims arrive at Mecca, many from foreign countries as well as the Middle East. It is estimated that roughly 24,000 persons acquire influenza during each Hajj in addition to individuals who acquire influenza from the Hajj pilgrims when they return home. As an example of the problem of influenza immunization, none of a group of pilgrims arriving back in France from Hajj with influenza illness had received influenza vaccine, the reason being that it was not the influenza season in France, so no vaccine was available.^[4]

Influenza communicability can be described by the basic reproductive number, called R_0 . Influenza in the 2009 pandemic had an R_0 of 1.7, meaning 1.7 nonimmune persons in contact with an infectious person will be infected. When R_0 is >1 the infection will spread, and the closer the contact of unimmunized persons with an early

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case of influenza, the higher the R_0 . This latter scenario exactly describes the situation at Hajj. Aside from protective equipment (personal protective equipment) such as masks, vaccination with the WHO-recommended vaccine is the only realistic intervention. This is the current recommendation of the Saudi Ministry of Health.^[5] Antiviral drug prophylaxis for the Hajj pilgrims may be far too costly, and carries the risk of antiviral drug resistance.^[6]

The STS is to be commended in developing these guidelines for physicians, hospital and public health workers, and community nursing in Saudi Arabia. They can be updated each year if influenza viruses change. The implementation of the guidelines in such a large transient population as at Hajj will require intense collaboration with public health agencies in other countries, influenza vaccine stores and administration availability in many countries before The Hajj, strict vaccination requirements for entry into Saudi Arabia, and a massive awareness campaign on the health risks of influenza infection. Awareness of risk can be publicized to health care workers and the public at large by the wide distribution of guidelines such as the STS has created. This in turn has the potential to significantly decrease morbidity and mortality from influenza

in Saudi Arabia and in the Hajj pilgrims. Until we develop a type-specific universal influenza vaccine that provides enduring immunity, we must face the challenge of influenza vaccination every year.

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