

Biotechnology, Biomarkers & Systems Biology 2019: Importance of influenza vaccination in children for disease control in Pakistan 2009-2017- Nadia N- University of Arid Agriculture Pakistan

Nadia N, Bashir U and Badar N

University of Arid Agriculture, Pakistan NUST Islamabad, Pakistan Quaid-i-Azam, Pakistan

Background: Influenza is a common illness of childhood and the burden of disease is higher among pre-school children with attack rates up to 20%-30%. Limited information about burden of influenza in children is available in Pakistan, therefore the present study was designed to estimate incidence rate of influenza in both outpatient and hospitalized children with underlying risk factors and clinical features.

Methods: During 2009-17, throat and nasopharyngeal swabs collected from children ≤ 12 years of age were processed for detection of influenza viruses by Real-Time PCR protocol of CDC. SPSS 22.0 was used for statistical analysis presented in this study.

Results: A total of 13,081 influenza-associated outpatients and hospitalized children were enrolled during 2009 to 2017. Influenza virus detection rate was 72% (9418) in the outpatients and 28% (3663) in the hospitalized patients. Of these 54% children (7064) were aged ≥ 12 years. Influenza viruses were detected in 17% (1216) children, of whom 845 (69%) were positive for Inf A and 371 (31%) as Inf B viruses respectively. The detection of influenza B strain was higher in both groups of children, 29% and 35% respectively following the A/H1N1pdm09 strain. The high frequency of influenza viruses were reported in year 2011 and A/ H1N1pdm09 was dominant strain as well. The mean \pm SD of children age ≥ 6 and ≥ 12 years was 2.4 ± 1.7 and 9.2 ± 2.4 respectively. The gender ratio amongst both groups was equal. Cross sectional analysis showed that fever 1120 (96%), cough 1204 (99%) and sore throat 1021 (84%) was significant factors for influenza infections ($p=0.001$), however no significant differences were observed with respect to respiratory, liver and metabolic diseases between these groups. Influenza vaccination status was record only in 1% cases. The incidence rate of influenza outpatient and hospitalized was 27/1000 and 13/1000 persons years respectively. The average annual rate of influenza was higher (180 cases/1000) among ≥ 6 years of age than ≥ 12 years old children (145 cases/1000).

Conclusions: Higher influenza incidence rate was observed particularly among six year old children, which might contribute to increase in the hospitalization. We believe that vaccination of children will reduce the hospitalization rate and socio-economic burden of influenza in the community if included in national extended program of immunization.

Furthermore improvements in existing influenza virus surveillance system are required to estimate the actual burden of influenza in children.

Who Should Get Vaccinated? Everyone 6 months of age and older should get an influenza (flu) vaccine every season with rare exception. Vaccination to avoid flu is particularly important for people who are at high risk of developing serious flu complications. See People at High Risk of Developing Flu-Related Complications for a full list of age and health factors that confer increased risk. More information is available at Who Should Get Vaccinated against Influenza. What are the influenza vaccine options this season? Yes. There are different influenza vaccine manufacturers and multiple influenza vaccine products licensed and recommended for use in the United States. When should I get vaccinated?: You should get a flu vaccine before flu viruses begins spreading in your community, since it takes about two weeks after vaccination for antibodies to develop in the body and provide protection against flu. Make plans to get vaccinated early in fall, before flu season begins. People get a flu vaccine by the end of October. Getting vaccinated later, however, can still be beneficial and vaccination should continue to be offered throughout the flu season, even into January or later. Getting vaccinated early (for example, in July or August) is likely to be associated with reduced protection against flu infection later in the flu season, particularly among older adults. Children who need two doses of vaccine to be protected should start the vaccination process sooner, because the two doses must be given at least four weeks apart.

Vaccination for Children: Different influenza vaccines are approved for use in different age groups. In addition, some vaccines are not recommended for certain groups of people. Factors that can determine a person's suitability for vaccination, or vaccination with a particular vaccine, include a person's age, health (current and past) and any allergies to influenza vaccine or its components. People who cannot get influenza shot. People who should talk to their doctor before getting the influenza shot. **Vaccination for Adults:** Everyone 6 months of age and older are recommended to get the flu vaccine, including even the healthiest adults. Vaccination is especially important for people at high risk of serious influenza complications or people who live with or care for people at higher risk for serious complications. Persons working in health care settings also should be vaccinated annually against influenza.

Vaccination of health care professionals has been associated with reduced work absenteeism and with fewer deaths among nursing home patients.

People Who Should Not Be Vaccinated: People who have had a severe reaction to an influenza vaccination, and children younger than 6 months of age should not be vaccinated. People who are moderately or severely ill with or without fever should usually wait until they recover before getting flu vaccine. A history of Guillain-Barré Syndrome (GBS) within 6 weeks following receipt of influenza vaccine is a precaution for the use of influenza vaccine. Such individuals have a risk of recurrence of GBS with subsequent vaccination, and if not at high risk of severe influenza complications should generally not be vaccinated. However, while data are limited, the established benefits of influenza vaccination might outweigh the risks for many people who have a history of GBS and who also are at high risk for severe complications from influenza.