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Influenza vaccination of medical residents and nurses at the three major teaching hospitals in Iran: cross-sectional survey

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Objectives: Health care workers (HCWs) who are unimmunized against influenza put through patients to unnecessary risk of infection.

Objectives: The aim of this study was to evaluate the vaccination status of HCWs, knowledge of and attitudes towards influenza vaccination.

Study design: A cross-sectional survey.

Methods: This cross-sectional study was performed in 459 HCWs of three hospitals between October 2006 and February 2007. They received a username and password to enter in the “queries.tums.ac.ir” website and filled self-administered online questionnaire.

Results: The influenza vaccination coverage for the 2006-2007 seasons was 14.4% (range, 11.2% to 17.6%). In logistic regression model of variables, only taking the vaccine in the future year (OR=2.44, CI 95%: 1.21-4.89) was significantly associated with influenza vaccination uptake. The mean knowledge score of residents were 24.0 ± 4.4 (range, 9-34) and nurses were 24.1 ± 4.9 (range, 10-33; P=0.9). Resident and nurses who taking the vaccine in the future year, residents who recommend the vaccine to coworkers or family and nurses who having children less than 16 years at home had significantly higher knowledge scores (P-value<0.0001).

Conclusion: Our data showed that influenza vaccination coverage is low. We will need education and communication strategies to overcome the lack of knowledge and interest.

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The neuraminidase universal epitope of influenza A virus induces a protective immune response in mice

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Human infection with influenza A virus is associated with a high mortality and morbidity and causes worldwide pandemics. There is essential to improve a universal vaccine against influenza pandemic. We identified a total of 12 conserved epitopes in viral neuraminidase proteins containing human T-cell epitopes for N1 & N2 subtypes. In this study, we use the epitope-based vaccine designed by immunoinformatics tools to predict the binding of B-cell and T-cell epitopes (class I and class II human leukocyte antigens [HLA]). BCPREDS was used to predict the B-cell epitopes. Propred, Propred I, netMHCpan and netMHCIIpan were used to predict the T-cell epitopes. The 3D molecular model was constructed by Swiss Model server and N-Glycosylation sites excluded from estimated regions. Important parameters like antigenicity and hydrophobicity analyzed by Protean program. This sequence was cloned into the prokaryotic expression vector Pet-41b(+). BALB/c mice were immunized with different dosages of recombinant protein and the immune responses were determined in the form of protective response against influenza virus, antibodies titers, spleen cells lymphocyte proliferation and the levels of interferon- γ and interleukin-4 cytokines. We observed an increase in the number of influenza virus-specific IFN γ -secreting splenocytes, composed of populations marked by CD4+ and CD8+ T cells producing IFN γ or TNF α . Upon challenge with influenza virus, the vaccinated mice exhibited decreased viral load in the lungs and a delay in mortality. T-cells recognizing conserved epitopes were significant contributor to decreasing viral load and controlling disease severity during heterosubtypic infection in animal models.

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