Original Article

Rate of Influenza Vaccination and Its Adverse Reactions Seen in Health Care Personnel in a Single Tertiary Hospital in Korea

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SUMMARY: To determine the vaccination rate and its adverse reactions after influenza vaccination, we administered an anonymous questionnaire survey during the last three influenza seasons from 2005-2006 to 2007-2008. In total, the rate of influenza vaccination was 82.3% in health-care personnel. Dividing the subjects into four groups by work category, the vaccine coverage rates were as follows: physicians 67.9%; nurses and nursing assistants 91.2%; technicians, pharmacists, therapists, and administrative personnel 80.2%; and other personnel not directly involved in patient care but having the potential of being exposed to infectious agents 89%. The most frequent adverse reaction after vaccination was soreness at the injection site in 33.4%, followed by skin redness in 18.1%, myalgia in 17.7%, fatigue in 17%, and febrile sensation in 15.2%. After vaccination, such adverse reactions began within 24 h in 70.6% of subjects. Eighty-nine percent of those adverse reactions persisted for 1-3 days, but 11% persisted more than 4 days. Serious adverse reactions were not noted; the reported adverse reactions were relatively minor and transient. Surprisingly, among those who were vaccinated, the physicians’ participation was the lowest. We believe that influenza vaccination is safe and that physicians should be more concerned with influenza vaccination and its impact on the health-care community.

INTRODUCTION

Vaccination of health-care personnel (HCP) reduces the transmission of influenza in health-care settings, staff illness and absenteeism, and influenza-related morbidity and mortality among persons at increased risk for severe influenza illness (1-5). Also, HCP can play a role as infectious mediators by acquiring influenza from patients and/or transmitting influenza to patients and other staff (2,6,7). Furthermore, since HCP provide care to patients at high risk for complications of influenza, HCP should be considered a high priority in expanding vaccine use (1). Despite the documented benefits of HCP influenza vaccination on patients’ outcomes and HCP absenteeism, vaccination coverage remains low (<50%) (1,8).

Reported barriers to HCP acceptance of influenza vaccination include fear of side effects, insufficient time or inconvenience, perceived ineffectiveness of the vaccine, medical contraindication, perceived low likelihood of contracting influenza, avoidance of medications, and fear of needles (1,9-14).

In this study, we investigated the vaccination rates in HCP and the incidence of adverse reactions and their duration after vaccination in a single tertiary university hospital.

MATERIALS AND METHODS

This study was conducted during three consecutive influenza seasons from 2005-2006 to 2007-2008 at Chonbuk National University Hospital, Jeonju, Korea, a 1,050-bed tertiary care university hospital. The influenza vaccine was given to full-time and part-time HCP who were employees at the hospital. To assess the frequency and nature of adverse reactions, we divided HCP into four groups based on their work; Group I was physicians, Group II was nurses and nurse assistants, Group III was technicians, therapists, emergency paramedical service personnel, laboratory personnel, pharmacists, and administrative workers, and Group IV was other employees in general areas (clerical, dietary, and maintenance) not directly involved in patient care but having the potential of being exposed to infectious agents that can be transmitted to and from HCP (1).

The trivalent inactivated split influenza vaccine containing A/New Caledonia/20/99 (H1N1), A/Hiroshima/52/2005 (H3N2), and B/Malaysia/2506/2004 (Dongsin, Seoul, Korea) was prepared for the 2005-2006 season; A/New Caledonia/20/99 (H1N1), A/Wisconsin/67/2005 (H3N2), and B/Malaysia/2503/2004 (Dongsin) for the 2006-2007 season; and A/New Caledonia/20/99 (H1N1), A/Wisconsin/67/2005 (H3N2), and B/Malaysia/2506/2002 (SK chemical, Seoul, Korea) for the 2007-2008 season. The vaccine was given intramuscularly in a 0.5-ml dose, during the last 2 weeks of October by the same nurse to all HCP working in the hospital. The infection control nurse using mobile vaccination carts visited all inpatient wards and clinic areas to facilitate the vaccination of HCP. The vaccine was given free of charge, and it was not compulsory.

At the time of vaccination, a questionnaire regarding adverse reactions that occurred in the first 10 days after receiving the vaccine was distributed to HCP.

The questionnaire form was to be used to record any signs and symptoms, including fever and other adverse reactions, local or systemic, observed in the 10 days after vaccination, regardless of the symptom’s severity.
RESULTS

Vaccination rates and questionnaire return rates: Table 1 shows the rate of influenza vaccination for three seasons. Three hundred and thirty physicians (72.2%) received the influenza vaccine in 2005-2006, 321 (68.4%) in 2006-2007, and 285 (62.9%) in 2007-2008, for a 3-year total of 936 (67.9%). The vaccination rate in physicians was the lowest of the groups vaccinated. The total vaccination rate of Group II was 1,764 (91.2%) out of 1,935, which was the highest among HCP; the rate of Group III was 1,462 (80.2%) and that of Group IV was 887 (89%).

Local and systemic reactions after influenza vaccination: The number of questionnaires returned was 293 (43.1%) in 2005, 490 (70%) in 2006, and 464 (62%) in 2007 (Table 2). The most frequent side effect of vaccination was pain at the injection site, which was seen in 416 (33.4%), followed by redness at the injection site in 226 (18.1%), myalgia in 221 (17.7%), fatigue in 212 (17.0%), and febrile sensation in 190 (15.2%). Other less common symptoms were chills (106, 8.5%), rhinorrhea (93, 7.5%), headache (87, 7.0%), sore throat (81, 6.5%), dizziness (60, 4.8%), cough (48, 3.8%), abdominal pain (10, 0.8%), and diarrhea (7, 0.6%) (Table 3).

The time of the symptoms presented: A total of 70.6% of side effects began on the day HCP received the vaccine, followed by 22.7% on the 2nd day, 5.7% on the 3rd day, and 1% after the 4th day (Figure 1).

The duration of adverse effects: A total of 42.8% of those who presented adverse symptoms reported that their symptoms subsided within 24 h, 31.3% experienced their symptoms for 2 days, 15% experienced them for 3 days, and approximately 10% complained of symptoms for more than 4 days. In total, 89% of the people who had vaccine-relating adverse symptoms improved within 3 days (Figure 2).
Transmission and outbreaks of influenza in hospitals are well documented (1,6,7). By acquiring influenza from patients and/or transmitting it to patients, HCP can be mediators in hospital influenza transmission. Furthermore, HCP influenza vaccination has an impact on patients’ outcome and HCP absenteeism, and on reducing influenza infection among hospital staff members (1,3-5). Several studies in foreign countries demonstrate that the rate of vaccination coverage remains below 50% (1,8). This report details the first study on influenza immunization rate and incidence of its side effects in HCP attempted in Korea.

Surprisingly, the vaccine coverage rate in this study was much higher than that reported in previous global studies (1,8). The reasons for the higher vaccination rate in the present study may be that the hospital provided the vaccine to HCP without charge and that the hospital ran a vigorous promotional campaign and made accessibility of the vaccine to HCP easy. The infection control nurse using mobile vaccination carts visited all of the inpatient wards and clinic areas to facilitate vaccination of HCP. Interestingly, 33% of HCP reported that they would refuse influenza vaccination if they were required to pay for the vaccine (15). Besides fear of the vaccine’s side effects, lack of time or inconvenience, perceived low likelihood of contracting influenza, avoidance of medications, and fear of needles, the cost was one of the major hindrances to HCP accepting the influenza vaccination. Therefore, healthcare institutions should consider multiple ways to maximize vaccination rates of HCP.

Influenza remains a major cause of illness, suffering, and death for the elderly and other high-risk patients cared for by physicians (16,17). Physicians should receive the vaccine as a top priority, because they can be a major source of infection for these vulnerable patients (1). However, physicians among HCP showed the lowest vaccinated rate in this study. This may be related to their self-confidence or over-credulity regarding their health and their being somewhat casual about their role as transmission mediators. We feel physicians should be more concerned with their position as transmission sources and make an effort to achieve high vaccination coverage levels.

According to this study, the most frequent local reactions to vaccination were pain and redness at the injection site, and the major systemic reactions were myalgia, fatigue, and febrile sensation. The less common other adverse reactions were chills, rhinorrhea, headache, sore throat, dizziness, cough, abdominal pain, and diarrhea. These reactions were very similar to those noted in previously reported studies (2,18-21), and they were relatively well tolerated. Several previous papers reported that vaccination-related adverse reactions typically began at 6 - 12 h after vaccination and persisted for 1 - 2 days (1,18,22-24). These findings were similar to this study, in which HCP reported adverse reactions that began within 2 days in more than 93% of vaccine recipients, and the symptoms subsided within 3 days in more than 89% of recipients, though it lasted more than 4 days in approximately 10% of HCP. Since this study was carried out using returned questionnaires only, results may differ depending on the response rate, and answers were subjective. That is, personal biases could have influenced the results with respect to the rate of adverse reaction and duration of symptoms. However, there were no severe adverse reactions such as immunologic hypersensitivity to certain vaccine components or Guillain-Barré syndrome.

In conclusion, though the presence of some biases in the data cannot be excluded, all the reported adverse reactions were relatively minor and transient, and there were no severe adverse reactions. We believe that healthcare institutions should consider ways to increase the vaccination rate in hospital personnel, by providing free vaccinations and education about influenza transmission to HCP.

REFERENCES
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