



Influenza vaccination among healthcare workers – realization, promotion

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ABSTRACT

Influenza vaccination is the most important component of prevention of occurring and spreading of this disease. 80% vaccination coverage of healthcare personnel provides a substantial reduction of transmission; each and every next vaccinated person results in a decrease of morbidity, especially amongst elder or immunocompromised patients. In the analyzed studies most common reasons of insufficient vaccination coverage among healthcare workers were fear of side effects, lack of knowledge, conviction of vaccine inefficiency, lack of feeling of social responsibility, and inadequate accessibility of vaccine. Healthcare workers who were vaccinated regularly did it mostly in order to provide safety to themselves, their relatives and patients; they did it also due to the knowledge of vaccination efficiency. The most effective actions to improve vaccination coverage were: vaccination requirement by the employer, active encouragement, effective promotion, better vaccine accessibility and promotion of vaccination as prosocial behavior. Offering surgical masks as an alternative did not improve vaccination rate in most analyzed studies. In conclusion, most important reasons of declining influenza vaccination by healthcare workers are lack of knowledge and low accessibility of vaccination, so evidently education, promotion and facilitating the vaccination in workplace are the most effective ways causing the growth of vaccination rate.

Keywords: Vaccines, healthcare workers, influenza, infectious disease prevention

1. INTRODUCTION

Influenza is an easily transmitted infection caused by orthomyxoviruses. It is spread by infectious droplets and by direct contact, for example by hands of infected people. Any age group may be affected with higher risk for immunocompromised, elder people and children. Viruses circulate worldwide and in tempered climates epidemics are more likely to occur during colder seasons (winter and the beginning of the spring) while in tropical climates it is more likely for an epidemic to appear through the whole year. Effects of influenza affect populations in many ways.

Increased morbidity and number of complications concern high risk groups – children aged 6 months to 5 years, elderly people [1,2,44], immunocompromised patients [3,44], pregnant women, people suffering from respiratory and cardiovascular diseases and healthcare workers. Losses of workforce mean direct losses for economy. More difficult access to healthcare causes trouble for patients with chronic diseases and those in urgent need e.g. with an acute disease. Treatment of influenza is possible but viruses are gaining resistance to some of the drugs used against them (M2 proton channel blockers). There are no more effective ways of influenza prevention than vaccines which have been used for more than 60 years and are safe and effective. In individuals with impaired immunity vaccine causes symptoms of the disease less severe, less complications and lower morbidity [44].

Additionally, vaccination of healthcare workers decreases number of days of lost work and of leaves of absence [4]. It is recommended for people living with or caring for people of high risk groups to be vaccinated every year.

Every year trivalent influenza vaccine containing 3 virus strains is developed [44]. Even when some mismatch between vaccine and circulating strains occurs, vaccine still can be partially effective like in 2007-2008 season when 2 of 3 vaccine strains suboptimally matched circulating strains [5].

2. RESULTS

According to the European Council recommendation healthcare workers vaccination coverage should not be lower than 75% to substantially decrease influenza transmission and reduce patients' morbidity [6]. US Centers for Disease Control and Prevention sets this ratio at 80% [7].

Throughout the world influenza vaccination coverage of healthcare workers varies between countries and continents. The aim of this review was to analyze studies performed on healthcare workers vaccination coverages in different countries, reasons of regular vaccination refusal, effectiveness of actions undertaken by governments and possible directions for worldwide campaigns.

2. 1. United States of America

In the United States, studies performed in four consecutive seasons (2012-2013, 2013-2014, 2014-2015, 2015-2016) show increasing vaccination rate among healthcare staff (72%, 75,2%, 77,3%, 79% respectively. Vaccination coverage is still highest in hospitals (91,2%) and lowest in long-term care centers (69,2%). On-site vaccination, active promotion and

requirement of vaccination by employer were main reasons of this growth. Facilities without any of these factors had the lowest vaccination rate (44.9%) [8-11].

Vaccination rate in the USA differs depending on healthcare professionals' place of work. In four subsequent studies vaccination coverages in hospitals and long-term care centers were analyzed. There is noticeable growth of these rates in both of these types of facilities, what can be seen in Figure 1.

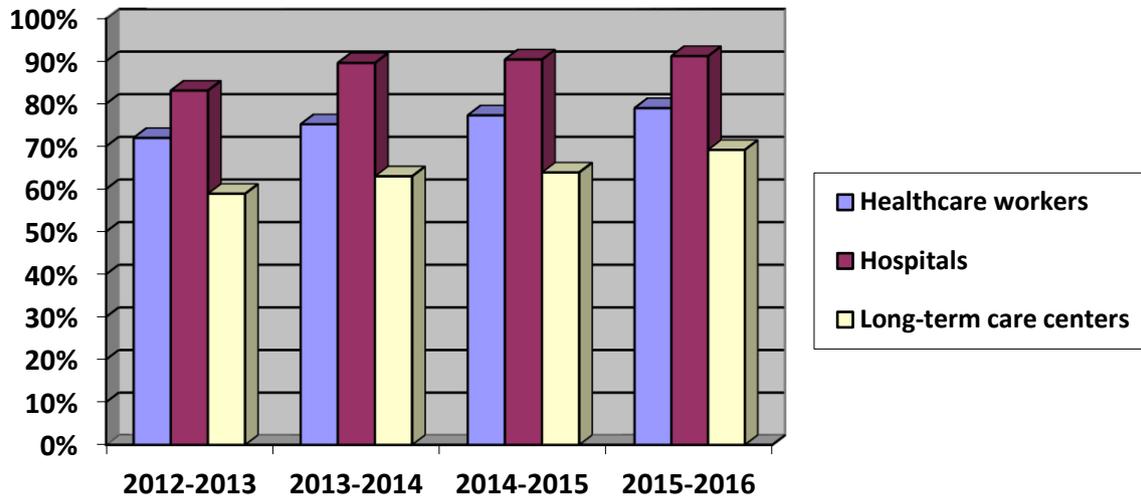


Figure 1. Vaccination rates among healthcare workers in the U.S. by place of work [8-11].

Increasing vaccination coverage among healthcare workers above 90% can be achieved without direct vaccination mandate on the example of 1100-bed healthcare center in the US. The campaign performed by the management of this center included obligatory declinations of vaccination and wearing masks for non-vaccinated staff, visible “I’m vaccinated” badges, vaccination stations at entrances to buildings, weekly compliance reports, adding requirement of 75% vaccination coverage to annual employee bonus program and discipline measures for those who do not complain. These actions combined led to coverage growth from 52-72% in three years preceding the campaign to >92% through four years of the campaign [12].

One study on healthcare organization has shown that interventions like requiring declination statements or quality scorecards with addition of vaccination rates can increase vaccination rate from 45% to 71,9% in 10 years. Most common reasons of non-vaccination were lack of knowledge about vaccine and insufficient leader inspiration [13].

In New York State a handout of surgical masks to wear in places where patients had been present substantially increased vaccination coverage of healthcare staff. Those of workers who refused refused vaccination admitted to having little knowledge about influenza vaccine [14].

2. 2. Western Europe

In the United Kingdom seasonal flu vaccine uptake among healthcare workers was 63% during 2016-2017 season and 49,5% during 2015-2016 season [45].

Study performed after 2009 influenza pandemic revealed different attitudes of healthcare workers towards vaccination. They based their decision on personal beliefs while they advised their patients to vaccinate based on medical guidelines. Those who accepted vaccination felt public health quality depends on them while those who refused claimed that their personal opinion cannot affect their patients. Only serious pandemic outbreak could increase vaccine uptake [15].

Survey performed on London midwives revealed that they are more willing to recommend vaccination to their patients (69%) than to accept it themselves (43%). Most important reasons of refusal were doubt of necessity, efficacy and safety concerns [16]. In another survey similar responses were given by UK healthcare workers – factors affecting personal choice were vaccine safety and belief that one's vaccination provides protection for patients. 69% of respondents knew that vaccination risks are significantly lower than all of the benefits [17].

Another study proved effectiveness of multiple interventions like peer vaccinations, educational DVDs and using social media in order to increase vaccine uptake and pointed that campaigns should be targeted at different healthcare workers groups [18].

In Italy, healthcare workers' vaccine coverage oscillates around 20% with peak in 2009/2010 season (34%) [19]. Another study on healthcare workers and students in Florence revealed that only 12,3% of them received vaccination annually [20]. The most important reason of non-vaccination was lack of active promotion and accessibility of vaccines [19,20]. Some studies revealed substantial growth in vaccination coverage by on-site vaccination offer, free vaccination, informational campaigns, personal reminders and requirement of vaccination declination from healthcare staff [21]. Vaccine promotion programs should focus on reminding healthcare workers about their role in prevention, transmission and importance of vaccination [22].

Informational campaigns were conducted in years 2014 and 2015 and that caused increased healthcare vaccination rates (from 2,3% to 3,3% and 7,4%). Still lack of knowledge and ignorance led to low vaccination coverage. Workers who did not vaccinate themselves were not aware of possibility of transmitting influenza to patients [23].

In Switzerland vaccinated staff coverage varies in two analyzed studies (53%, 33%) [24,25]. First study revealed that offering a mask as an alternative to vaccination causes growth of vaccination ratio but was preferred by part of non-vaccinating personnel. Encouragement campaign involving education about vaccine safety and efficacy should be introduced [24]. Second study shown that part of respondents refusing vaccinations had not considered lack of influenza immunization as an issue [25].

In Spain influenza vaccination coverage of healthcare workers was 20% in 2011-2012 season and 27,6% in year 2014. These scores are below target (75%) and the study suggests that authorities should undertake actions to increase this rate [26].

Study in Vigo aimed to establish reasons behind non-vaccination among healthcare professionals. Most common responses were: low necessity, low efficacy and fear of side effects while will of self-protection was the most common reason of vaccination. Authorities should carry out an informational campaign about influenza vaccination [27].

A study on actions in hospital in Madrid shown increase in healthcare staff vaccination coverage after using educational survey (30%-40%) [28].

2. 3. Middle-eastern Europe

Study on Croatian healthcare workers found substantial decrease of vaccine uptake after pandemic season (25-36% before, 30% during 2009 pandemic and 14-15% in following seasons). Healthcare workers' vaccination coverage was higher than in general population (5%) but still too low. A need for multimodal interventions of government was pointed [29].

Only 3,7% of general population and 5-6% of healthcare workers are vaccinated in Poland each season [46]. Main reasons for vaccination refusal by healthcare workers in Poland are hardly surprising: safety concerns, lack of time, doubt of vaccine efficacy, conviction that influenza does not affect the survey respondent). Those who agreed to be vaccinated wanted to provide safety for them and their patients [30].

Study in Czerniakowski Hospital revealed that free vaccines program did not substantially increase vaccination rate among hospital staff. Informational campaign about effectiveness, safety and importance for healthcare workers of influenza vaccine is needed [31]. Another study on medical students revealed no substantial difference between first and last year in vaccination coverage (17,1-15,9%). It shows that even with better knowledge of vaccination lack of proper encouragement means lack of vaccination ratio increase [32].

2. 4. Middle East

Study performed in Emek Medical Center in Israel revealed that offering a choice between wearing a mask and vaccination increases vaccination rate from 14% in 1994 to 46,6% in 2015. Since winter 2012 healthcare workers vaccinated against seasonal influenza wear a badge with the text "I am vaccinated to protect you", and those who were not vaccinated wear a badge with the text "I wear a mask to protect you" [33]. Another study performed in Israel aimed to determine reasons for non-vaccinating. These were: fear of side effects, being afraid of needles, and too little time to be vaccinated. Actions to educate staff about vaccinations and their positive effects like safety for families and patients should be performed [34].

Study performed in Makkah (Saudi Arabia) revealed high healthcare staff vaccination rate (88,3%) during 2014-2015 season. These ratios were lower in previous seasons (2012-2013: 54,5%, 2013-2014: 61,2%). Vaccinated workers claimed they wanted to provide safety for themselves and their patients while refusals were mostly caused by fear of getting infected with influenza by vaccine and opinion of low vaccine efficiency. Educational programs could change these misconceptions and lack of knowledge [35].

2. 5. China

In China vaccination coverage differs depending on region and study from 13% [36], through 5% [37], to 1,5-2,2% [38]. Coverage remains low because of fear of side effects, low knowledge about influenza vaccine and low funds spent on vaccination programs. Government programs should focus on providing knowledge about effectiveness and safety of the vaccine [36-38].

2. 6. Australia

In Australia healthcare workers' vaccination coverage of 72,2% was achieved in 2014 [39]. It increased since 2005 from 38% (data from Victoria state) [40]. People who wanted to protect themselves, their families and patients, who were aware of influenza complications risk, who wanted to reduce sick leave or received workplace guidelines were vaccinated more often than people thinking of flu as a light disease that does not concern healthcare workers. But that the vaccine causes flu and assumption of low vaccine efficiency were also barriers to be vaccinated. Free, mobile vaccination clinics, educational materials, mandatory declination forms and motivational actions like recruiting "Flu Champions" from senior staff significantly increased vaccination coverage [41].

Majority of medical students (53,4%) who received vaccine in 2014 mostly motivated their decision with self-protection while inconvenience was pointed as the most common reason of non-vaccination [42].

3. DISCUSSION AND CONCLUSIONS

Summing up, there are many reasons for healthcare workers to vaccinate against influenza. It protects them from complications and necessity for sick leaves. It encourages patients to vaccinate themselves. It protects patients, especially in risk groups – substantially lowers morbidity and reduces transmission. Influenza vaccine itself is safe and efficient.

It is hard to find a country where influenza vaccination coverage of healthcare workers above 75% is common for the whole healthcare system. In the analyzed studies only the USA achieved that ratio. Facilities other than hospitals have lower scores of vaccination [8-11]. On-site vaccinations, active promotion, declination forms and mandatory vaccinations play a big role in achieving such vaccination rate. Offering masks as a choice also increased workers' will to be vaccinated. Role of leaders cannot be forgotten.

The highest vaccination rates in Europe are in the UK, Romania, and Lithuania; lowest in Poland, Norway, and Slovenia [43]. Figure 2 shows that this ratio is not connected with the development and richness of country.

Among the most important reasons to decline vaccination are personal beliefs, lack of knowledge about the vaccine and lack of feeling of the social responsibility.

Studies have shown that well prepared interventions like educational campaigns or facilitating to be vaccinated in the workplace have substantial impact on vaccination coverage of healthcare workers.

Despite actions like Nationwide Anti-influenza Program Poland has still the lowest healthcare workers vaccination rate in European Union. Educational actions should be performed already during medical studies to convince future medical professionals to use their knowledge about infectious diseases prevention.

In Asia reasons of vaccination refusals are similar to the rest of the world. Healthcare workers are afraid of side effects, do not believe in vaccine efficacy or underestimate influenza itself. Those who vaccinate simply put the acquired knowledge to use in order to protect themselves, their relatives, and their patients.

Vaccination coverage among the Australian healthcare professionals substantially increased since 2005. It is an effect of successful multimodal interventions like active

promotion, education, using leaders or free, mobile vaccination clinics. Reasons of refusing vaccine are still the same and are result from misconceptions and lack of proper knowledge.

Mandatory vaccination policy for healthcare workers is controversial as it affects personal freedom. Employers can require influenza vaccination to hire healthcare professional, especially in nursing homes, hospitals or long-term care centers. However, no nationwide obligation to vaccinate healthcare professionals should be enforced in view of personal freedoms. Other ways to improve the vaccination ratio are easier to perform.

The question remains: why do healthcare professionals think of influenza vaccine as dangerous, inefficient or unnecessary when they face complications of the disease every year in their practice? Governments should take actions to educate healthcare workers in the first place, so that they notice importance of vaccination. Campaigns aimed at different healthcare professionals groups should be undertaken to maximize the effect.

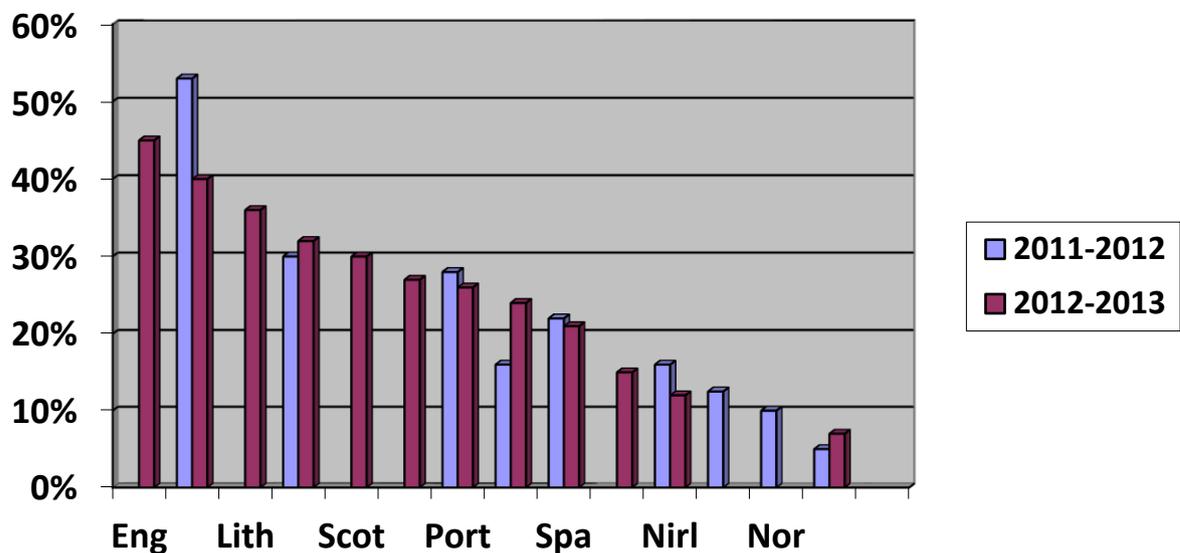


Figure 2. Healthcare workers vaccination coverage in Europe

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(Received 18 May 2017; accepted 07 June 2017)