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Stagnating Low Influenza Vaccine Coverage Rates in the Polish Elderly Population in 2008–2013

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Abstract

Although annual vaccination is the most effective way of preventing the disease and its severe outcomes, influenza vaccine coverage rates have always been at suboptimal levels in Poland. A retrospective analysis was conducted on influenza vaccine coverage rates among patients older than 65 years at local and national levels. Influenza vaccine coverage rates among the elderly in the capital city of Warsaw ranged from 20.5 % in 2013 to 31.5 % in 2010 and these rates were higher than those reported at the national level (from 7.6 % in 2012 to 11.3 % in 2009). At a local level the proportion of vaccines given to the elderly compared to all vaccinated individuals varied from 40 to 52 % which was comparable to the proportions reported at the national level (37–48.5 %). 69 % of the elderly were only vaccinated once during the observation period, and only 0.5 % of them repeated the vaccination in each subsequent year. The chance of being vaccinated against influenza more than once was statistically higher among women than men (OR 4.9; 95 % CI 4.2–5.8). Influenza vaccine coverage rates are low at both local and national levels and ought to be improved in Poland in future.

Keywords

Elderly • Flu • Immunization • Prophylaxis • Risk group

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1 Introduction

Influenza is an acute infectious viral disease spreading through droplets or contact with seasonal attack rates ranging from 5 to 20 % (increasing to 50 % in pandemic years). At the global level, these epidemics cause about 3–5 million severe cases of the disease and about 0.3–0.5 million deaths each year (Barr

et al. 2014). Despite its attack rate being highest among younger adults, influenza's effects are more significant in the elderly. It has been recognized that people aged 65 and over are at greater risk of serious complications from influenza compared with young, healthy adults. It is estimated that 90 % of seasonal influenza-related deaths and more than 60 % of seasonal influenza-related hospital admissions in the US each year occur in people aged 65 and older (Thompson et al. 2004). Influenza should not just be considered as a serious health condition but the disease's social and financial aspects should also be estimated. A decline in measurable functional status has been observed 3–4 months after infection in at least one major function (e.g., bathing, dressing, or mobility) in 25 % of older patients residing in nursing homes as compared with 16 % of controls (randomly selected residents living in the same facility not contracting influenza or influenza-like illness) during the same outbreak (Barker and Mullooly 1980). Molinari et al. (2007) estimated that the total financial burden of the seasonal influenza infection in the US amounts to $10.4 billion a year and that the older population is responsible for 64 % of the total economic burden. It has been estimated that direct costs of influenza in the elderly population in Poland can be very high (Kovacs et al. 2014). Therefore, efforts to reduce the disease's burden in the elderly population would have a substantial influence on the costs of seasonal influenza (Ryan et al. 2006).

Although an annual influenza vaccination for the elderly is recommended in many countries, including Poland, because it has been proven to be the most effective way to prevent the disease and its severe outcomes, influenza vaccination coverage rates have always been at suboptimal levels in almost all countries. For instance, the coverage rates among the elderly in 20 developed nations in 2008 ranged from 21 to 78 % (median 65 %) (Blank and Szucs 2009). In the US, influenza vaccination levels among the elderly population appeared to reach a plateau of about 70 % in the late 1990s (CDC 2006). A 2008 survey showed 40-fold differences between vaccination coverage in various European Union countries in individuals aged ≥65 years, ranging from less than 2 % to more than 80 % in the 2006–2007 season (Blank et al. 2009). Poland is one of the countries with a low influenza vaccination coverage rate, both in the general population and in age-related risk groups; in the 2013/2014 season, only 3.8 % of the entire population was vaccinated against influenza (NIPH-NIH 2013).

There is still limited literature on vaccination coverage rates in Central Eastern European countries, including Poland. The last report on influenza vaccine coverage rates in age-related risk groups, including the elderly population in Poland, analyzed the years 2004–2007 and indicated very low rates, ranging from 7 to 14 % throughout the country (Nitsch-Osuch and Wardyn 2009). The aim of the current study was to describe influenza vaccine coverage rates among the elderly aged >65 years in a single primary care setting in Warsaw (Poland) over a 6-year period (2008–2013) and to compare them with the official influenza vaccine coverage rates at the national level.

2 Methods

Approval from the local Ethics Committee was obtained prior to the study. A retrospective analysis of influenza vaccine coverage rates among patients aged over 65 from a single primary care clinic in Warsaw (Poland) was conducted and compared to influenza vaccine coverage rates among the elderly at the national level in years 2008–2013. The vaccine coverage rates were calculated as a percentage of vaccinated individuals among all patients over the age of 65 years, at both local and national level. At the national level, official data regarding the number of vaccinated patients were collected by National Institute of Public Health – National Institute of Hygiene (NIPH-NIH). These data, concerning the number of doses of vaccines given to patients and the age of vaccinated persons, were collected from reports prepared by Regional Sanitary-Epidemiological Stations. Data from these reports are supported by medical records obtained from general practitioners

administering flu vaccines. The official national data are published annually as the 'Vaccinations in Poland' bulletin, available on www.pzh.gov.pl. Demographic data (the number of persons aged >65 years in Poland in the years 2008–2013) were obtained from the Central Statistical Office (www.stat.gov.pl). The national data does not provide any information on the gender of vaccinated patients or the number of patients repeating the vaccination in subsequent years. At the local level, the medical history and vaccination records of patients aged over 65 years were analyzed with special attention being paid to the gender of patients receiving vaccinations and their willingness to repeat flu vaccines in subsequent epidemic seasons. In the primary care clinic the influenza vaccine for the elderly was paid for by a local government, while at the national level the vaccine was either reimbursed by local authorities or paid for by patients. The inactivated trivalent split vaccine was used for all vaccinated patients in a primary care setting, while both split and subunit inactivated trivalent vaccines were used in the country as a whole. Statistical calculations (OR and 95 % CI) were conducted using the medical statistical calculator available on www.medcalc3000.com. These calculations were required to find and describe the influence of the gender of vaccinated patients on their willingness to repeat the flu vaccine in subsequent seasons.

3 Results

In the period analyzed, the influenza vaccine coverage rates among the elderly in the primary care clinic ranged from 31.5 % in 2010 to 20.5 % in 2013. Every year the coverage rates were two to three times higher compared with the coverage rates reported at the national level (Table 1). At both local and national levels, the highest influenza coverage rates were reported in 2009 and 2010; the influenza A (H1N1) pdm09 pandemic year and the first post-pandemic year (Table 1). Persons aged >65 years represented between 37 % in 2009 and 48.5 % in 2012 and 2013 of all vaccinated individuals at the national level, while these proportions were slightly higher at the local level (43 % in 2008 and 52 % in 2013) (Table 2). Each year, more women than men were given an influenza vaccine at the local level (Table 3). Among the total of 4,459 flu vaccines given to 3,096 elderly patients, the majority of them (2,140) were only given in one single year, and patients never repeated the vaccination in subsequent years (Table 4). More women than men decided to be vaccinated against influenza in subsequent years (Table 4). The chance of being vaccinated against influenza more than once during subsequent seasons was statistically higher among women than men (OR 4.9; 95 % CI 4.2–5.8).

Table 1 Influenza vaccine coverage rates among the elderly at local and national levels in 2008–2013

	Primary care setting in the city of Warsaw			Poland		
Year	Number of individuals aged >65	Number of vaccinated individuals aged >65	Influenza vaccine coverage rate in individuals aged >65	Number of individuals aged >65	Number of vaccinated individuals aged >65	Influenza vaccine coverage rate in individuals aged >65
2008	3,135	721	23.0 %	5,146,287	464,755	9.0 %
2009	3,158	758	24.0 %	5,161,470	584,128	11.3 %
2010	3,232	1,018	31.5 %	5,184,564	480,951	9.3 %
2011	3,259	717	22.0 %	5,325,015	455,988	8.5 %
2012	3,238	680	21.0 %	5,487,713	418,905	7.6 %
2013	3,243	665	20.5 %	5,672,608	427,808	7.5 %

Table 2 Proportion of influenza vaccinations conducted among the elderly compared with the general population at local and national levels in 2008–2013

	Primary care setting in the city of Warsaw			Poland		
Year	Total number of vaccinated individuals[a]	Number of vaccinated individuals aged >65	% vaccines given to individuals aged >65 compared with all vaccinated individuals	Total number of vaccinated individuals[a]	Number of vaccinated individuals aged >65	% vaccines given to individuals aged >65 compared with all vaccinated individuals
2008	1,677	721	43.0 %	115,878	464,755	40.0 %
2009	1,895	758	40.0 %	584,128	584,128	37.0 %
2010	2,317	1,018	44.0 %	1,168,432	4,800,951	41.0 %
2011	1,593	717	45.0 %	1,061,111	455,988	43.0 %
2012	1,333	680	51.0 %	861,204	418,905	48.5 %
2013	1,279	665	52.0 %	880,904	427,808	48.5 %

[a]Each age

Table 3 The gender distribution of flu vaccines given to the elderly in a primary care setting in the city of Warsaw in 2008–2013

Number of flu vaccines given	Number (%) of vaccinated women	Number (%) of vaccinated men
2008	407 (56 %)	314 (44 %)
2009	421 (56 %)	337 (44 %)
2010	567 (56 %)	451 (44 %)
2011	406 (57 %)	311 (43 %)
2012	372 (55 %)	308 (45 %)
2013	361 (55 %)	304 (45 %)

Table 4 The gender distribution of flu vaccines among single and repeated users of the vaccine in a primary care setting in the city of Warsaw

Number of flu vaccines given	Number (%) of vaccinated patients	Number (%) of vaccinated women	Number (%) of vaccinated men
One	2,140 (69 %)	725 (34 %)	1,415 (66 %)
Two	675 (22 %)	486 (72 %)	189 (18 %)
Three	173 (5.5 %)	112 (65 %)	61 (35 %)
Four	90 (3 %)	74 (82 %)	16 (12 %)
Five	18 (0.5 %)	12 (67 %)	6 (33 %)

4 Discussion

In 2003, the World Health Assembly (WHA) issued a resolution for the prevention and control of influenza pandemics and annual epidemics, which urges the European Union's 25 Member States (EU-25) to establish and implement strategies to increase vaccination coverage among all high-risk groups, including the elderly and people with an underlying disease, with the aim of achieving vaccination coverage of the elderly population of at least 50 % by 2006 and 75 % by 2010 (WHA 2003). This resolution was reinforced by the EU Member States which agreed to make additional efforts to improve vaccination coverage in their territory in accordance with their own recommendations and to achieve the WHO target of 75 % in high risk groups before 2010. Today we know that the proposed and expected goals have not been reached in many countries, including Poland.

As previously described (Blank et al. 2009; Nitsch-Osuch and Wardyn 2009), influenza vaccination coverage levels among the Polish elderly population were well below the recommended limits (<15 %). The current official Polish data from the years 2008–2013 do not indicate any significant changes in influenza vaccine coverage rates among the elderly (rates from 11.3 % in 2009 to 7.0 % in 2012). However, higher influenza vaccine coverage rates (31.5 % in 2010 and 20.5 % in 2013) were reported in a single Warsaw primary care setting. Indeed, influenza vaccine coverage rates at a local level were two to three times higher compared with those reported nationwide. This difference may be explained by the fact that our study was conducted in a selected urban area. Warsaw is the country's capital city, where inhabitants have the highest income and access to healthcare services is fairly good. It also appears to be significant that

influenza vaccinations have been offered to the elderly free-of-charge in Warsaw by a local government for 10 years. Indeed, reimbursement for the influenza vaccine may have the greatest influence on higher coverage rates at a local level. Unfortunately, only one third of Polish local authorities provide free influenza vaccinations for the elderly. The highest influenza vaccination rate was achieved at both levels in 2009 and 2010, and we think this may be a result of an increased interest in vaccinations during and just after a pandemic year (especially given that the pandemic vaccine against influenza A (H1N1) pdm09 was not available in Poland). The proportion of the elderly among all individuals vaccinated against influenza in 2008–2013 increased at the national level; it varied between 37 and 48 % compared with the previous period of 2004–2007, when this proportion varied between 35 and 36 % (Nitsch-Osuch and Wardyn 2009). The proportion of vaccinated seniors among all those vaccinated against influenza at a local level was similar to the proportion reported at the national level.

The official data reported at the national level do not support any information on patients who continue vaccinations against influenza during subsequent seasons. In the present study we found that 69 % of vaccinated seniors received only a single flu vaccine during the 6 years' period analyzed. It should be noted that only a small fraction of the seniors (0.5 %) repeated flu vaccines every year. As the vaccine uptake patterns in the Polish elderly population are little known, this problem should be further investigated. Fitchett et al. (2014) identified several factors associated with recurrent non-uptake of the seasonal influenza vaccine in elderly patients: gender (elderly men were vaccinated less often than women), allergies, and the fear of adverse reactions. We also found that women are more likely than men to repeat the influenza shot in subsequent seasons. This finding indicates that special strategies should be implemented to encourage older men to get vaccinated.

Our data indicate that influenza vaccine coverage rates among the elderly are still at very low levels and must be improved. Reimbursement, while very important, is not the only possible factor increasing the coverage rate. Other possible methods for increasing influenza vaccine coverage rates have been described and their efficacy has already been evaluated. It is well known that "good intentions are not enough" (Litt and Lake 1993). Vaccination coverage rates can be improved by 10–30 % by the use of the risk register and reminder systems. Actions that have appeared effective were: financial incentives for patients, auditing and feedback, clinician reminders, financial incentives for clinicians, and team changes (more effective when nurses administered influenza vaccinations independently) (Litt and Lake 1993). The most powerful motivation for getting vaccinated in all countries was advice from a family doctor (58.6 %) and the perception of influenza as a serious illness (51.9 %). The major reasons why individuals do not get vaccinated were the feeling that catching influenza was not likely (39.5 %) and the issue of never considering the need for being vaccinated (35.8 %) (Lau et al. 2012). Negative patients' attitudes and the lack of organized and systematic approach are still identified as major barriers to improving vaccination rates (Lau et al. 2012; Litt et al. 1998). In Poland, systematic approach to influenza vaccines and vaccinations started in 2012 and resulted in creation of the National Influenza Program focusing on the ways to increase influenza vaccine coverage rates mainly among at-risk groups, including children, elderly, and healthcare workers.

Our study has some limitations. Firstly, we did not evaluate the health and social status and risk factors for a severe course of influenza in vaccinated patients. Secondly, we did not investigate the factors underlying motivation or its lack for conducting vaccination. Finally, we did not evaluate the possible co-administration of influenza vaccine with other vaccines, including pneumococcal vaccine. However, the advantage of this study is that it is the first, to the best of authors' knowledge, which compares influenza vaccination rates at local and national levels. The analysis of local data revealed that gender may influence the willingness of elderly patients to repeat flu shots in subsequent years.

5 Conclusions

Influenza vaccine coverage rates among the Polish elderly population are at a stagnating low level. The higher influenza vaccine coverage rates at a local level indicate that reimbursement for the vaccine, only available in some districts of the country, may play a crucial role in the acceptance and performance of the flu vaccine in the Polish elderly population.

Conflicts of interest The authors declare no conflicts of interests in relation to this article.

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