


SHORT REPORT



Healthy elderly and influenza vaccination

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ABSTRACT

In many countries, those at risk for complications due to influenza are invited for influenza vaccination, to prevent serious consequences for themselves and those around them. However, vaccination rates are decreasing. The first invitation for vaccination may provide an opportunity to convey ample information about the (dis)advantages of vaccination. We aimed to identify subgroups less likely to be vaccinated after their first invitation. Using data from 87 general practices participating in NIVEL Primary Care Database, we selected persons invited for vaccination for the first time because of their 60th birthday. Of 3,238 included persons, 78% were not vaccinated after their first invitation and in the vast majority (84%) this decision remained consistent over the next years. Men and those with fewer GP contacts were less likely to be vaccinated. This latter group is not easily reached by the GP, so maybe other ways should be considered to convey information about influenza vaccination.

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Introduction

Each year about 5% to 10% of adults get influenza.¹ In many cases the disease is self-limiting,¹ but complications related to influenza are estimated to lead to 250,000 to 500,000 deaths per year worldwide.² Although complications can occur in previously healthy individuals, especially the elderly and those with chronic diseases are at risk³

In many countries, groups at increased risk for complications due to influenza are advised to receive vaccination. The underlying rationale is that vaccination reduces the risk of influenza⁴ and if someone does get ill, it reduces the risk of complications.^{4,5} The criteria for risk groups differ per country, but in all European countries they include the elderly and persons with chronic diseases.⁶

Although influenza vaccination is an individual and voluntary decision, the World Health Assembly and European Union have set as a goal that 75% of the elderly population is vaccinated against influenza.^{7,8} In most European countries this goal is not reached.⁶ In the season of 2014–15, on average 42% of the elderly population received vaccination, ranging from 1% in Estonia to 76% in the UK. In the Netherlands the vaccination rate dropped from 77% in 2007–08 to 60% in 2014–15.^{6,9,10}

In order to increase the vaccination rate, it may seem logical to aim at the most vulnerable within the target group for vaccination, i.e. the oldest persons with a chronic disease. However, it may be hard to further increase the already relatively high vaccination rate in this group.¹¹ Aiming at those without a chronic disease who receive their first invitation for vaccination may be more profitable. These persons may not be at a high risk for complications themselves, but they are likely to come in contact with relatives and friends

who are. Besides, if they start vaccination now they may be more likely to keep being vaccinated if they develop a chronic illness.

We therefore aimed to see how people without a medical indication react to the first invitation for influenza vaccination, whether there are subgroups more/less likely to reject vaccination and whether the decision to accept/reject is consistent in the years thereafter. This may guide informational campaigns (i.e. should campaigns be aimed at a specific subgroup, should they still be targeted at people who have accepted vaccination before?)

Results

We included data from 87 GP practices. In these practices, 3,238 persons were enlisted who were 60 on April 1st 2012 or 2013 and had no medical indication for vaccination. Twenty-two percent of them was vaccinated.

Those with more GP contacts were more likely to be vaccinated (17% in those with no GP contacts v.s. 28% in those with 5 or more contacts). This was irrespective of the type of visit (office visits, telephone visits or home visits) (Table 1). Women were more likely to be vaccinated than men (25% vs. 20%). (Table 1) However, differences were not large, as even in women with more than 5 contacts, only 31% was vaccinated (data not shown).

Of those who were vaccinated after their first invitation, 69% was also vaccinated in the subsequent two years. Of those who were not vaccinated after their first invitation, 84% was also not vaccinated in the subsequent two years. (Figure 1) Ultimately, 65% was never vaccinated, 15% was always vaccinated and 13% was sometimes vaccinated. Men and those without face-to-face or telephone consultations in the previous year were more likely to have never been vaccinated.

Table 1. Characteristics of 60 year olds without a medical indication for influenza vaccination according to their response to the first invitation for vaccination.

	Not vaccinated (n = 2515) (78%)	Vaccinated (n = 723) (22%)	P (X2)
Age on Jan 1st			
59	677 (80%)	173 (20%)	.11
60	1838 (77%)	550 (23%)	
Sex			
Male	1267 (80%)	308 (20%)	< .001
Female	1248 (75%)	415 (25%)	
GP office visits in previous year			
0	821 (82%)	178 (18%)	< .001
1/2	893 (79%)	240 (21%)	
3/4	449 (74%)	157 (26%)	
>=5	352 (70%)	148 (30%)	
GP telephone consultations in previous year			
0	1589 (79%)	417 (21%)	.001
1/2	718 (77%)	212 (23%)	
3/4	159 (70%)	68 (30%)	
≥ 5	49 (65%)	26 (35%)	
GP home visits in previous year			
0	2462 (78%)	695 (22%)	.007
1 or more	53 (65%)	28 (35%)	
Living in deprived area			
Yes	22 (69%)	10 (31%)	.22
No	2493 (78%)	713 (22%)	

Those with many telephone consultations or a home visit from the GP were more likely to have been vaccinated in all three years. (Table 2)

Discussion

We found that, even in a country with one of the highest vaccination rates of the EU, four out of five 60-year olds without a medical indication for influenza vaccination decline their first invitation for vaccination. The decision to decline vaccination is consistent in the subsequent two years in over 80%. Moreover, a third of those who are vaccinated after the first invitation are not vaccinated in the subsequent two years.

Patients with fewer GP contacts are less likely to receive vaccination. Previous studies also found that those with more health care use are more likely to receive

Table 2. Characteristics of those vaccinated in all three years, not vaccinated in all three years and those switching.

	Never vaccinated (66%)	Sometimes vaccinated (19%)	Always vaccinated (15%)	P-value (X2)
Age on Jan 1st				
59	557 (66%)	171 (20%)	122 (14%)	.35
60	1575 (66%)	435 (18%)	378 (16%)	
Sex				
Male	1092 (69%)	278 (18%)	205 (13%)	< .001
Female	1040 (63%)	328 (20%)	295 (18%)	
GP office visits in previous year				
0	702 (70%)	179 (18%)	118 (12%)	< .001
1/2	781 (69%)	182 (16%)	170 (15%)	
3/4	363 (60%)	136 (22%)	107 (18%)	
≥ 5	286 (57%)	109 (22%)	105 (21%)	
GP telephone consultations in previous year				
0	1362 (68%)	358 (18%)	286 (14%)	.001
1/2	603 (65%)	179 (19%)	148 (16%)	
3/4	129 (57%)	52 (23%)	46 (20%)	
≥ 5	38 (51%)	17 (23%)	20 (26%)	
GP home visit in previous year				
Yes	42 (52%)	18 (22%)	21 (26%)	.01
No	2090 (66%)	588 (19%)	479 (15%)	
Living in deprived area				
Yes	20 (63%)	5 (16%)	7 (22%)	.58
No	2112 (66%)	601 (19%)	493 (15%)	

vaccination^{12,13} This may be because they are in poorer health, but also because these contacts give health care providers the opportunity to provide information about influenza vaccination. Indeed, patients indicated that an important reason to accept vaccination is advice from a health care provider^{12,14-17}

We used a large primary care registry with routinely recorded data, thereby avoiding selection and response bias. Besides, data quality was checked thoroughly. A limitation of our study is that we only had a small number of background variables available. It would have been interesting for instance to study the difference between those who are working and those who are not.

Given the low vaccination rate and consistency of the decision not to receive vaccination that we found, healthy 60-year olds seem a good target audience to convey information about

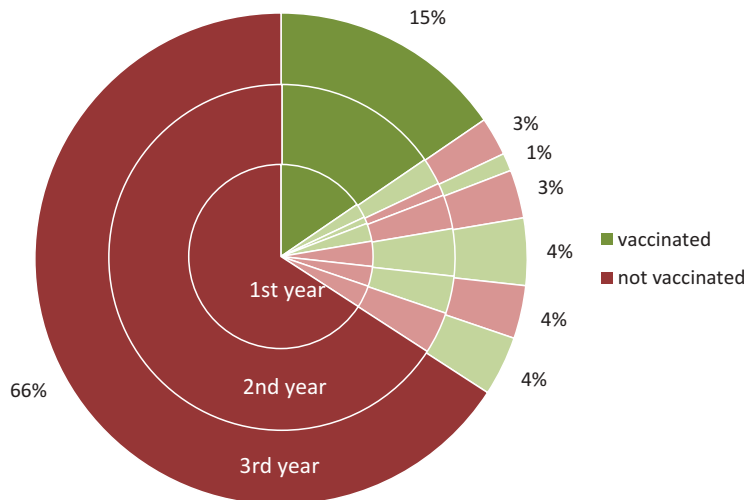


Figure 1. Vaccination status during three years after first invitation in healthy 60 year olds.

influenza vaccination. Informational campaigns should be targeted at the entire group of healthy 60-year olds, as we did not find subgroups with a relatively high vaccination rate and some of those who initially accept vaccination are not vaccinated in subsequent years. It is therefore important to further identify reasons to (not) receive vaccination.

Methods

We used data from GP practices participating in NIVEL Primary Care Database (NIVEL-PCD).¹⁸ In this nationally representative Dutch network participating GPs routinely record data on all patient contacts, including diagnoses. Diagnoses are coded according to the ICPC-1 (International Classification of Primary Care) coding system.¹⁹ For the analyses we only selected those practices who participated during the period 2012–2015 and provided complete and good quality data.²⁰

From these practices we selected patients who received their first invitation for influenza vaccination in the seasons 2012–2013 or 2013–2014. In the Netherlands all people who are aged 60 or older before the end of the yearly vaccination campaign, i.e. April 1st, or those who have one or more selected chronic conditions (i.e. abnormalities and functional disorders of the airways and lungs, chronic heart disorders, diabetes mellitus, chronic kidney disease, HIV infection, or reduced resistance to infection) in October receive a personal invitation letter from their GP for a free influenza vaccination at the general practice.

To identify people receiving their first invitation, we included those who were 60 years old on April 1st 2013 or 2014 and did not have a chronic condition for which they would have received an invitation for vaccination before their 60th birthday. They also had to be alive and enlisted with the GP practice during the three years after their first invitation.

Vaccination status was based on registration of the ICPC code R44 or ATC code J07BB02 in the electronic medical file. We calculated the percentage who were vaccinated in the first three years after the first invitation according to age, sex, and health care use (office visits, telephone consultations and home visits) and deprivation.

Disclosure of potential conflicts of interest

No potential conflict of interest was reported by the authors.

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