Disparities in influenza vaccination coverage rates in health care workers and the ways to overcome the barriers

Dr. Patricia R. Blank
Barcelona - November 15, 2012
The Menu

1. Situation in Europe
   - Recommendations for HCWs
   - Current VCR among HCWs
2. Approaches to improve VCRs
   - Immunization policies
   - Standing orders
   - Mandatory vaccination
3. Discussion and summary
Recommendations on influenza vaccination are getting stronger worldwide

Institute of Social and Preventive Medicine

Overall, 27 European Member States do recommend vaccination to health care professionals.

WHO guidelines

Target: for the adults over 65 by 2010/2011
75% coverage

European Union recommendations

Target: for the adults over 65 by 2014/2015
75% coverage

2010 ACIP recommendations

Universal vaccination
for people aged 6 months and older

Influenza vaccine coverage rates vary considerably among HCW (Aug 2010)

- Slovakia
- Spain
- Romania
- Portugal
- Netherlands
- Malta
- Italy
- Ireland
- Hungary
- Germany
- Estonia
- England
- Czech Republic
Decreasing VCRs among health care professionals in 2011 vs. 2010

Mean VCR among Swiss hospitals

Federal Office of Public Health FOPH, Switzerland, 2011
Barriers to pandemic influenza vaccination (general population)

- Poor compliance with official vaccination recommendation resulting in low uptake of pandemic influenza vaccines during the pandemic/post-pandemic season

- **Most frequently reported reasons for not receiving the vaccination**:
  1. Fear of side effects of pandemic vaccines: 37.2% (95% CI: 36.1-38.3)
  2. Pandemic vaccination is not necessary: 33.8% (95% CI: 32.7-34.9)
  3. Pandemic vaccination not officially recommended for me: 16.6% (95% CI: 15.8-17.5)
  4. Reject vaccinations in general: 8.5% (95% CI: 7.8-9.2)
Drivers and barriers among HCWs working in a high risk environment* (VCR: 43.8%): similar fears than general population

Table III
Primary reason for accepting pandemic influenza A (H1N1) 2009 vaccination, by occupational group

<table>
<thead>
<tr>
<th>Reason for vaccine uptake</th>
<th>Anaesthetists (%)</th>
<th>Operating department practitioners (%)</th>
<th>ICU nurses (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protect myself</td>
<td>28 (41.2)</td>
<td>16 (38.1)</td>
<td>25 (32.5)</td>
<td>69 (36.9)</td>
</tr>
<tr>
<td>Protect my family</td>
<td>22 (32.4)</td>
<td>17 (40.5)</td>
<td>27 (35.1)</td>
<td>66 (35.3)</td>
</tr>
<tr>
<td>Protect patients</td>
<td>7 (10.3)</td>
<td>4 (9.5)</td>
<td>8 (10.4)</td>
<td>19 (10.2)</td>
</tr>
<tr>
<td>Avoid sick leave</td>
<td>2 (2.9)</td>
<td>1 (2.4)</td>
<td>4 (5.2)</td>
<td>7 (3.7)</td>
</tr>
<tr>
<td>Advised by other HCP</td>
<td>4 (5.9)</td>
<td>1 (2.4)</td>
<td>6 (7.8)</td>
<td>11 (5.9)</td>
</tr>
<tr>
<td>Vaccine easily accessible</td>
<td>4 (5.9)</td>
<td>1 (2.4)</td>
<td>4 (5.2)</td>
<td>9 (4.8)</td>
</tr>
<tr>
<td>Other</td>
<td>1 (1.5)</td>
<td>2 (4.8)</td>
<td>3 (3.9)</td>
<td>6 (3.2)</td>
</tr>
<tr>
<td>Total</td>
<td>68 (100.0)</td>
<td>42 (100.0)</td>
<td>77 (100.0)</td>
<td>187 (100.0)</td>
</tr>
</tbody>
</table>

ICU, intensive care unit; HCP, healthcare professional.

Table IV
Primary reason for declining pandemic influenza A (H1N1) 2009 vaccination, by occupational group

<table>
<thead>
<tr>
<th>Reason for declining H1N1 vaccine</th>
<th>Anaesthetists (%)</th>
<th>Operating department practitioners (%)</th>
<th>ICU nurses (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor evidence of vaccine efficacy</td>
<td>12 (17.6)</td>
<td>12 (28.6)</td>
<td>15 (19.5)</td>
<td>39 (20.9)</td>
</tr>
<tr>
<td>H1N1 symptoms not severe enough</td>
<td>8 (11.8)</td>
<td>1 (2.4)</td>
<td>7 (9.1)</td>
<td>16 (8.6)</td>
</tr>
<tr>
<td>Poor access to vaccine</td>
<td>5 (7.4)</td>
<td>1 (2.4)</td>
<td>2 (2.6)</td>
<td>8 (4.3)</td>
</tr>
<tr>
<td>Immediate side-effects</td>
<td>8 (11.8)</td>
<td>11 (26.2)</td>
<td>14 (18.2)</td>
<td>33 (17.6)</td>
</tr>
<tr>
<td>Long term side-effects</td>
<td>29 (42.6)</td>
<td>15 (35.7)</td>
<td>26 (33.8)</td>
<td>70 (37.4)</td>
</tr>
<tr>
<td>Needle phobia</td>
<td>1 (1.5)</td>
<td>1 (2.4)</td>
<td>3 (3.9)</td>
<td>5 (2.7)</td>
</tr>
<tr>
<td>Adequate immunity</td>
<td>2 (2.9)</td>
<td>1 (2.4)</td>
<td>9 (11.7)</td>
<td>12 (6.4)</td>
</tr>
<tr>
<td>Other</td>
<td>3 (4.4)</td>
<td>0 (0.0)</td>
<td>1 (1.3)</td>
<td>4 (2.1)</td>
</tr>
<tr>
<td>Total</td>
<td>68 (100.0)</td>
<td>42 (100.0)</td>
<td>77 (100.0)</td>
<td>187 (100.0)</td>
</tr>
</tbody>
</table>

*Invasive ventilation and airway management procedures
Multivariate logistic regression analysis: determinants associated with HCW VCRs ($n = 980$)

<table>
<thead>
<tr>
<th>Factors</th>
<th>Vaccinated ($n = 333$)</th>
<th>Unvaccinated ($n = 647$)</th>
<th>Odds ratio (95% confidence interval)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographical determinants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic illness</td>
<td>74/333 (22.2)</td>
<td>24/647 (3.7)</td>
<td>8.50 (4.29–16.83)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Years working in health care &gt; 15</td>
<td>185/333 (55.6)</td>
<td>243/647 (37.6)</td>
<td>2.32 (1.50–3.61)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Behavioural determinants</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>High personal risk for influenza infection</td>
<td>136/333 (40.8)</td>
<td>60/647 (9.3)</td>
<td>2.80 (1.64–4.77)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Vaccination reduces the personal risk of influenza illness</td>
<td>163/333 (48.9)</td>
<td>34/647 (5.3)</td>
<td>2.56 (1.34–4.89)</td>
<td>0.005</td>
</tr>
<tr>
<td>Vaccination reduces the risk to infect patients</td>
<td>212/333 (63.7)</td>
<td>70/647 (10.8)</td>
<td>3.29 (1.92–5.63)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Knowing there is a guideline</td>
<td>106/333 (31.8)</td>
<td>74/647 (11.4)</td>
<td>1.86 (1.07–3.24)</td>
<td>0.028</td>
</tr>
<tr>
<td>Agreeing with the guideline</td>
<td>274/333 (82.3)</td>
<td>183/647 (28.3)</td>
<td>2.75 (1.68–4.50)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Media attention for avian influenza influenced my ideas</td>
<td>55/333 (16.5)</td>
<td>40/647 (6.2)</td>
<td>2.24 (1.12–4.50)</td>
<td>0.023</td>
</tr>
<tr>
<td>All HCWs should be vaccinated</td>
<td>227/333 (68.2)</td>
<td>49/647 (7.6)</td>
<td>2.25 (1.26–4.02)</td>
<td>0.006</td>
</tr>
<tr>
<td>HCWs should get vaccinated because of their duty not to harm</td>
<td>200/333 (60.1)</td>
<td>47/647 (7.3)</td>
<td>4.71 (2.68–8.29)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>People close to me think it’s important for me to get vaccinated</td>
<td>77/333 (23.1)</td>
<td>13/647 (2.0)</td>
<td>5.33 (2.18–13.06)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Organisational determinants</strong></td>
<td></td>
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</tr>
<tr>
<td>This year I received information through an information meeting</td>
<td>39/333 (11.7)</td>
<td>30/647 (4.6)</td>
<td>3.40 (1.59–7.30)</td>
<td>0.002</td>
</tr>
<tr>
<td>This year I received information from a nursing home physician</td>
<td>82/333 (24.6)</td>
<td>92/647 (14.2)</td>
<td>2.11 (1.21–3.69)</td>
<td>0.008</td>
</tr>
</tbody>
</table>

\( ^a \) AUC of multivariate model: 0.95.

The impact of European vaccination policies on seasonal influenza vaccination coverage rates in the elderly

Patricia R. Blank,¹,²,* Matthias Schwenkglenks¹,² and Thomas D. Szucs¹

¹Institute of Pharmaceutical Medicine; University of Basel; Basel, Switzerland; ²Institute of Social and Preventive Medicine; University of Zurich; Zurich

• There is a need for
  • Understanding the impact of vaccination policies
  • Determining ways to improve seasonal influenza VCRs among recommended groups

• The main aim of this study was
  • To better understand critical determinants of seasonal VCRs at national levels
  • To identify the influence of policy-related driving factors on VCRs among the elderly
  • To use this evidence for assessing possible challenges and opportunities in the immunization policy decision-making process in order to ensure successful and sustained improvement of influenza VCRs
There is a variety of immunization policies available – but do countries take advantage of them?

<table>
<thead>
<tr>
<th>Recommendation for &lt;65 years</th>
<th>GBR</th>
<th>NLD</th>
<th>FRA</th>
<th>ESP</th>
<th>ITA</th>
<th>IRL</th>
<th>BEL</th>
<th>DEU</th>
<th>CHE</th>
<th>FIN</th>
<th>SWE</th>
<th>PRT</th>
<th>CZE</th>
<th>SVK</th>
<th>POL</th>
<th>BRG</th>
</tr>
</thead>
<tbody>
<tr>
<td>National object per year for flu</td>
<td></td>
<td>a</td>
<td>b</td>
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<tr>
<td>Monitoring VCR each year by target (by HA and / or NVIG)</td>
<td></td>
<td></td>
<td>a</td>
<td>c</td>
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<tr>
<td>HCW have objective to achieve in high risk groups (GP and/or Specialist)</td>
<td></td>
<td>d</td>
<td>d</td>
<td>a</td>
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<td>HCW financial incentive</td>
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<tr>
<td>Reimbursement of vaccine (90-100%)</td>
<td></td>
<td>a</td>
<td>a</td>
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<tr>
<td>Letter for free flu vaccine (from HA/GP/HC)</td>
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</table>

VCR affected by number of implemented policy items?

- Recommendation for <65 years
- National object per year for flu
- Monitoring VCR each year by target (by HA and / or NVIG)
- HCW have objective to achieve in high risk groups (GP and/or Specialist)
- HCW financial incentive
- Reimbursement of vaccine (90-100%)
- Letter for free flu vaccine (from HA/GP/HC)

VCR, vaccination coverage rates; HA, Health Authority; NVIG, National Vaccine Industry Group; GP, general practitioners; HC, Health centre
* Since 2009: in the face of a pandemic, the Ministry of Health has issued an act saying about a special program of vaccination for HCW
Policy elements can have an impact on VCRs as stand-alone or combined element

- Positive correlation of stand-alone policy, Spearman's rho ρ (p-value < 0.05)
- Positive correlation if 2 policies are combined

- National policies impacting influenza coverage rate
- HCW financial incentives (payment fee or additional revenue)
- HCW objectives for their risk groups
- Reimbursement of flu vaccine (90-100%)
- National objectives per year (VCR)
- Awareness campaign: Radio-TV
- Awareness campaign: flyers in medical rooms, press adverts, website
- Personal letter for free flu vaccine or voucher
- Monitoring VCR
How to Improve Influenza Vaccination Rates: Ideas from the U.S.

Multi-dimension policies seem to be needed

- Epidemic level
- Influenza related mass media reports
- Vaccine and vaccination reimbursement
- Vaccine supply
- Nationally representative populations
- Utilization of rigorous methodologies

Providing policy implications which are generalizable at national level and probably in other countries

What can we do to make guidelines for infection prevention in crises work?

• There is a need to that generic barriers should be addressed when developing crisis guidelines in order to improve adherence among HCWs

• Crisis guidelines were found to have four generic barriers to adherence

1. Lack of imperative or precise wording

2. Lack of easily identifiable instructions specific to each profession (isolation, diagnostics, treatment)

3. Lack of concrete performance targets

4. Lack of timely and adequate guidance on personal protective equipment and other safety measures

Aura Timen, Am J Infect Control 2010;38:726-33
Mandatory vaccination among HCW – friend or foe?

Mandatory vaccination for all HCWs with direct patient contact

- US: mandatory vaccination achieving nearly 100% compliance

Advantage

- High vaccination rate will be achieved
- Vulnerable patients are protected

Challenge

- Infringement of HCWs autonomy
- Person’s right to make choices and decisions regarding their body

-> Risk of causing significant harm to patients is not the same in all areas of healthcare

Stuart McLennan & Sabine Wicker, Vaccine Volume 28, Issue 51, 29 November 2010
An example from Switzerland (Geneva University Hospital HUG, VCR: 27%)
We are needing a cocktail of various elements to enhance vaccination coverage rates across Europe.
Summary and conclusion

• Health care workers are recommended to receive influenza vaccination in all EU countries
• Vaccine up-take rates vary considerably among HCWs, but are low in most European countries
• There are several possibilities to increase influenza vaccination uptake in HCWs
• Key elements of vaccination policies at national level may include
  • Broad information and reminding systems to the public and HCW
  • Strong official recommendations with objectives and monitoring
  • Empowerment and motivation of doctors/ vaccinators