Dr. Helena Maltezou, Hellenic Center for Disease Control and Prevention, Athens, A Webber Training Teleclass

Vaccination of Healthcare Providers:
A Critical Step Toward Patient Safety

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Athens, Greece

Hosted by Paul Webber
paul@webbertraining.com

www.webbertraining.com May 7, 2015

Topics

1. Transmission of vaccine-preventable diseases (VPDs) in healthcare facilities
2. Rationale for vaccination of healthcare providers (HCPs)
3. Vaccination policies for HCPs
4. Susceptibility to VPDs, vaccination coverage and attitudes of HCPs about vaccinations
5. Toward an holistic approach of HCPs’ vaccinations
6. Conclusions

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1. Transmission of vaccine-preventable diseases (VPDs) in healthcare facilities

Transmission of VPDs and large outbreaks continue to challenge healthcare facilities even in developed countries with long-standing vaccination programs.

Re-emergence of measles in Europe and the United States and pertussis in the United States
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Measles in health-care settings
Helena C. Maltezou MD, PhD a,*, Sabine Wicker MD, PhD b
American Journal of Infection Control 41 (2013) 661-3

- extremely contagious (starting 4 days prior the onset of rash)
- outbreaks in closed settings when < 90% of persons are immune
- 14 – 45% of cases of measles in measles-free countries (e.g. United States) are acquired in healthcare facilities
- increased occupational risk for HCPs (x18.6 times compared with adults in the community)
- complications occur more frequently in adults compared with school-aged children.

Measles outbreaks in Emergency Departments
- congregation of large numbers of patients
- delay in implementation of infection control measures
- in developed countries young physicians may not be familiar with measles
- the vaccination history of HCPs is often unknown or history of one dose
- thousand contacts for tracing and investigation
  - in one healthcare associated outbreak in the US in 2008:
    7 cases ➞ 8,231 contacts ➞ 800,000 US$ total costs

Maltezou HC, Wicker S. Nosocomial measles. American Journal of Infection Control 2013;41:661-66
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Nosocomial influenza outbreaks

- Intensive Care Units
- Neonatal ICUs
- Internal Medicine, Pulmonary Clinics
- Bone Marrow Transplant Units
- Long Term Care Units

Nosocomial influenza outbreaks

- Attack rate up to 55% among patients
  and up to 18% among HCPs*

- Up to 25% mortality rate in NICUs*

* Meara et al. Influenza A outbreak in a community hospital. *Irish Medical Journal* 2006;99:175-177


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Nosocomial influenza: significant morbidity and mortality

- patients with underlying conditions
- immunocompromised patients
- elderly, neonates & young infants

Sources of nosocomial influenza

unsuspected or undiagnosed patients with influenza

visitors

unvaccinated HCPs
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HCPs continue to work while having influenza-like symptoms

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8 (38%) of 29 patients developed influenza
5 patients with severe lower respiratory tract infection
3 patients in ICUS
3 patients died
2 survivals remained in oxygen therapy for 2-3 months
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**Indirect consequences of nosocomial influenza**

- increased hospitalization costs
  (diagnosis, prolongation of hospitalization, treatment, prophylaxis, infection control)
- absenteeism of HCPs
- disruption of healthcare services

**Closure of medical departments during nosocomial outbreaks: data from a systematic analysis of the literature.**
S Hansen, S Stamm-Balderjahn, I Zuschneid, M Behnke, H Rüden, R-P Vonberg, P Gastmeier
J Hosp Infect. 2007 Apr;65(4):348-53

- review of 1.561 nosocomial epidemics
- 38.5% closure rate of a department in order to contain an outbreak of influenza
- influenza was the cause for the closure of an entire hospital in 3 of 10 such events

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Susceptible HCPs in healthcare facilities

→ occupational exposure to infectious agents
→ source of VPDs for patients and other HCPs
→ vehicles for the evolution of outbreaks

Occupational exposure and onset of VPDs among HCPs

measles
rubella
mumps
hepatitis A
hepatitis B
pertussis
chickenpox
multi-drug resistant tuberculosis
meningococcal disease

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Transmission of VPDs from HCPs to patients

- influenza
- pertussis
- rubella
- chickenpox
- hepatitis A
- hepatitis B

→ onset of serious nosocomial epidemics with high associated morbidity, mortality and costs

2. Rationale for vaccination of HCPs

→ direct protection of HCPs

→ indirect protection of susceptible patients
  (immunocompromised, pregnant, infants)

from nosocomial transmission of VPDs
Vaccination of HCPs against influenza: shield of protection

High vaccination coverage among personnel

→ reduction of transmission of influenza among patients

1. Salgado et al. Preventing nosocomial influenza by improving the vaccine acceptance rate if clinicians. Infection Control and Hospital Epidemiology 2004;25:923-928

Influenza vaccination of HCPs in long-term care facilities

↓↓ total mortality
↓↓ influenza-like illness mortality
↓↓ admissions to hospitals

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Influenza vaccination of HCPs in acute-care hospitals

-↓↓ influenza episodes
-↓↓ febrile respiratory illnesses
-↓↓ absence from work

3. Vaccination policies for HCPs

The United States Centers for Disease Control and Prevention recommendations for HCPs vaccination

- all HCPs against influenza, varicella, measles-mumps-rubella
- specific groups of HCPs against hepatitis B, pertussis, meningococcus
- BCG by case, following risk assessment


CDC. Immunization of health-care workers: recommendations of the Advisory Committee on Immunization Practices (ACIP) and the Hospital Infection Control Practices Advisory Committee (HICPAC). MMWR 1997;46(RR-28):1-44

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Influenza vaccination for HCPs in the United States

- Mandatory vaccination policies were adopted by several healthcare institutions and professional societies the past years

- Use as an index of healthcare quality

CDC. Immunization of health-care workers: recommendations of the Advisory Committee on Immunization Practices (ACIP) and the Hospital Infection Control Practices Advisory Committee (HICPAC). MMWR 1997;46(RR-18):1–44

Vaccination policies for health-care workers in acute health-care facilities in Europe

Helena C. Maltezou*, Sabine Wicker#, Michael Borg*, Ulrich Heininger*, Vincenzo Puro*, Maria Theodoridou*, Gregory A. Poland*

Vaccine 29 (2011) 6557–6562

* 27 countries in the European Union, Norway, Switzerland & Russia
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Mandatory vaccination of HCPs in Europe against:

- measles-mumps-rubella in Finland
- hepatitis A in Slovakia
- hepatitis B in France, Slovakia & Slovenia
- BCG in France, Italy and Slovakia
- poliomyelitis & tetanus-diphtheria in France

In case of refusal the HCP is moved to a low-risk department or to a post with no contact with patients

With the notable exception of hepatitis B and influenza vaccinations, significant country-to-country differences exist in Europe in terms of vaccines, implementation frame (mandatory or recommendation), target HCP subgroups and healthcare settings.

Maltezou HC, Poland GA. Vaccination policies for healthcare workers in Europe. Vaccine 2014;32:4876
4. Susceptibility to VPDs, vaccination coverage and attitudes of HCPs about vaccinations*

Measles susceptibility rates in Europe: 6% - 17%

Mumps susceptibility rates in Italy, Brazil and Japan: 15.9% - 20.1%

Rubella susceptibility rates in Italy, Brazil and Japan: 4.5%-15%

* recent publications

Susceptible HCPs (%) in healthcare facilities in Greece, 2010 - 2011

Maltezou et al. American Journal of Infection Control 2013;41:66-70
Maltezou et al. Journal of Infection 2012;64:319-324
Vaccination coverage of HCPs against influenza

• low vaccination rates worldwide (<40%)

• mandatory vaccination in US hospitals: >98%


Table 2. Barriers to increase influenza vaccine uptake among health-care workers

<table>
<thead>
<tr>
<th>Barriers to Increase Influenza Vaccine Uptake Among Health-Care Workers</th>
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<tbody>
<tr>
<td>Insufficient knowledge about nosocomial influenza</td>
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<tr>
<td>Misconceptions that they are not at risk for contacting influenza</td>
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<tr>
<td>Misconceptions about vaccine effectiveness</td>
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<tr>
<td>Misconceptions about vaccine safety</td>
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<tr>
<td>Misconception that the vaccine can cause influenza</td>
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<td>Unawareness of the recommendations for annual influenza vaccination</td>
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<td>Unavailable vaccine</td>
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<td>Fear of injections</td>
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<td>Lack of leadership support</td>
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<tr>
<td>Reliance on homeopathic agents</td>
</tr>
</tbody>
</table>

Maltezou HC, Tsakris A. Vaccination of health-care workers against influenza: our obligation to protect patients. Influenza and Other Respiratory Viruses 2011; 5:382-388
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Table 3. Strategies associated with increased influenza vaccine uptake in health-care workers

<table>
<thead>
<tr>
<th>Strategy</th>
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<tbody>
<tr>
<td>On-site vaccination</td>
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<tr>
<td>Vaccination free of charge</td>
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<tr>
<td>Lectures about influenza and influenza vaccine</td>
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<td>Organization of campaigns</td>
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<td>Mobile vaccination teams</td>
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<td>Use of declination forms</td>
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<tr>
<td>Implementation of a mandatory vaccination policy</td>
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<td>Use of reminding systems</td>
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<tr>
<td>Incentive programs</td>
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<tr>
<td>Leadership support</td>
</tr>
</tbody>
</table>

Maltezou HC, Tsakris A. Vaccination of health-care workers against influenza: our obligation to protect patients. Influenza and Other Respiratory Viruses 2011; 5:382-388

Vaccination coverage of HCPs in healthcare facilities in Greece, 2010-11

Maltezou et al. American Journal of Infection Control 2013;41:66-70
Maltezou et al. Journal of Infection 2012;64:319-324

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**Acceptance of mandatory vaccination policies for HCPs in healthcare facilities in Greece, 2010-2011 (n=1545)**

Vaccinations should be mandatory

- for all HCPs 52%
- for HCPs caring for high-risk patients 71%

Maltezou et al. *American Journal of Infection Control* 2013;41:66-70
Maltezou et al. *Journal of Infection* 2012;64:319-324

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**Acceptance of mandatory vaccination policies for HPCs by VPD and patient category in Greece, 2010-2011 (n=1005)**

Maltezou et al. *American Journal of Infection Control* 2013;41:66-70
Maltezou et al. *Journal of Infection* 2012;64:319-324
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5. Toward an holistic approach of HCPs’ vaccinations

● Need to address the fragmentation of vaccination policies for HCPs.

● Vaccination policies should be implemented following risk assessment and taking into account the epidemiological trends, the movement of people across borders and overall immunity gaps.

● Mandatory vaccinations against VPDs which can be transmitted to patients and for which safe and effective vaccines exist should be considered for HCPs.

Steps in the process of implementing a vaccination policy for HCWs.

<table>
<thead>
<tr>
<th>Goal/Actions to implement</th>
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<tbody>
<tr>
<td>Delivery of vaccine</td>
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<tr>
<td>Development of in-hospital platforms to vaccinate HCWs (be flexible, use already existing procedures and infrastructures, e.g. occupational department, vaccination clinic, mobile vaccination teams, delivery of vaccine free of charge and in all working shifts)</td>
</tr>
<tr>
<td>Estimate vaccine uptake</td>
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<tr>
<td>Establishment of in-hospital records for vaccination uptake, need to review and update information on regular intervals, use standardized definitions</td>
</tr>
<tr>
<td>Development of reminder systems</td>
</tr>
<tr>
<td>Approach all non-immune HCWs at regular intervals</td>
</tr>
<tr>
<td>Need to address concerns and mistrust about vaccines</td>
</tr>
<tr>
<td>Education of HCWs about VPDs and vaccines, communication, collaboration with medical schools and professional societies</td>
</tr>
</tbody>
</table>

Maltezou HC, Poland GA. Vaccination policies for healthcare workers in Europe. Vaccine 2014;32:4876-4880

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6. Conclusions

Significant country-to-country differences in HCPs vaccinations exist.

Need to study the reasons for suboptimal vaccination rates and to overcome mistrust about vaccinations among HCPs.

Studies indicate that acceptance of mandatory vaccination policies are vaccine-specific, profession-specific and patient-specific.

The possibility of implementing mandatory vaccination policies for HCPs should be addressed.

Communication to HCPs is critical in order to raise vaccine uptake.

Need to improve awareness of HCPs about vaccines, their efficacy and safety as well as their ethical responsibility toward patients.

«Κάλλιον το προλαμβάνειν ἢ το θεραπεύειν»

“Prevention is better than cure”

Hippocrates, Greek physician (460-377 BC)
Thank you for your attention!

May 13  (Free WHO Teleclass – Europe)
UNDERSTANDING CONSUMER PERCEPTIONS OF HAI AND HAND HYGIENE THROUGH A GLOBAL SURVEY
Claire Kilpatrick, WHO, and Dr. Maryanne McGuckin, McGuckin Methods International

May 21  (Free Teleclass)
IS YOUR PHONE BUGGED? THE ROLE OF MOBILE TECHNOLOGY IN INFECTION CONTROL
Richard Brady, Western General Surgery, NHS, UK

May 27  (South Pacific Teleclass)
FOOD SAFETY CULTURE – FROM FARM TO FORK
Dr Douglas Powell, Powell Food Safety, Australia

June 02  (Free British Teleclass … Denver Russell Memorial Teleclass Lecture)
PHAGE THERAPY IN A POST-ANTIBIOTIC ERA
Dr. Martha Clokie, University of Leicester, UK

www.webbertraining.com/schedule1.php

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