Influenza Vaccination Acceptance among Healthcare Workers.

Lessons learned for HPV Vaccination.

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Prevention and control of HPV and HPV related cancers: the role of HCW in HPV the vaccination and screening program implementation

HPV Prevention and Control Board Meeting

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Topics

1. **Rationale for influenza vaccination of healthcare workers (HCWs)**

2. **Attitudes and practices of HCWs toward influenza vaccination**

3. **Experience with parental vaccination refusal of pediatricians in Greece**

1. Rationale for influenza vaccination of HCWs

Fact No 1: HCWs are at increased risk for occupational exposure to influenza.

(compared with adults working in non-healthcare settings)

Influenza among HCWs

- **18.7% in unvaccinated HCWs**
- **5.4% in non-vaccinated non-HCWs**

*** Meta-analysis of 58,245 influenza cases (diagnosed by serology, PCR or culture)**

Kuster et al. *PlosOne* 2011;6:e26239

Fact No 2: HCWs continue to work while they have influenza-like symptoms placing their patients and colleagues at risk.

- **76.6% of HCWs with influenza-like illness cared for patients while ill.**

- **49% of HCWs with symptomatic laboratory-confirmed influenza were afebrile.**

1. Weingarten et al. *American Journal of Infection Control* 1989;17:202-207
2. Ridgway et al. *Clinical Infectious Diseases* 2015;60:1591-1595

Fact No 3: HCWs provide care to patients at high risk for serious morbidity, complications, death because of:

- their age (neonates, elderly)
- underlying conditions (pregnancy, immunosuppression)
- chronic diseases (malignancy, COPD)

high-risk groups

Fact No 4: Unvaccinated HCWs have been often traced as sources of infection in influenza outbreaks.

- In all influenza NICU outbreaks where the source was identified.

1. Maltezou HC, Drancourt M. *Journal of Hospital Infection* 2003;55:83-91
2. Eibach et al. *Journal of Hospital Infection* 2014;86:188-193
3. Payet et al. *Epidemiology and Infection* 2016;144:2025-2030

Nosocomial influenza outbreaks

- **Attack rate up to 55% among patients and up to 18% among HCWs**
- **Fatality rates up to 25% in outbreaks in NICUs**
- **Fatality rates up to 60% in transplant patients and ICU patients**

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1. Meara et al. *Irish Medical Journal* 2006;99: 175-177
2. Munoz et al. *Pediatric Infectious Diseases Journal* 1999;18:811-815
3. Salgado et al. *Lancet Infectious Diseases* 2002;2:145-155
4. Maltezou HC, Drancourt M. *Journal of Hospital Infection* 2003;55:83-91

Indirect impact of influenza outbreaks in healthcare facilities

- extensive costs
- absenteeism among HCWs
- 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 outbreaks**
- **38.5% closure rate in case of an influenza outbreak**

Fact No 5: Influenza vaccine is effective in preventing influenza, febrile respiratory illness and absenteeism in HCWs.

- **Absence of 21 days / 100 unvaccinated HCWs compared with 10 days / 100 vaccinated HCWs**

- **89% effectiveness of influenza vaccine in HCWs**

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1. Wilde et al. *JAMA* 1999;281;908-913, 2. Vanhems et al. *Human Vaccines & Immunotherapeutics* 2016;12:485-490, 3. Pearson et al. *MMWR Recomm Rep* 2006;55 (RR-2):1-16, 4. Saxen H, Virtanen M . *Pediatric Infectious Diseases Journal* 1999;18:779-783, 5. Van Buynder et al. *Vaccine* 2015;33:1625-1628

Fact No 6: HCWs serve as examples for their patients.

- ethical duty to promote vaccinations and protect the vulnerable
- patients expect that HCWs will not place them in danger by the transmission of diseases that are vaccine-preventable.

Maltezou HC, Poland GA. *Vaccine* 2014;27:4876-4880

Vaccination of HCWs is justified in order to:

- directly protect them
- indirectly protect their patients, colleagues and families
- preserve health-care services

from nosocomial transmission of influenza

Vaccination coverage of HCWs against influenza

- **low vaccination rates worldwide (< 40%)**

- **mandatory vaccination in US hospitals > 98%**

  (use as an index of healthcare quality)

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1. Maltezou HC. Nosocomial influenza: new concepts and practice. *Current Opinion of Infectious Diseases* 2008;21: 337-43

2. Babcock et al. Mandatory influenza vaccination of health care workers: translating policy to practice. *Clinical Infectious Diseases* 2010;50:459-464

Acceptance of mandatory vaccinations for HCWs

● United States	56%-84.6%
● Australia	83%-91%
● Canada*	25%

* mandatory vaccination or wearing a mask

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1. deSante et al. *Vaccine* 2010;28:2517-21, 2. Douville et al. *Arch Pediatr Adolesc Med* 2010;164:33-7, 3. Poland et al. *Infect Control Hosp Epidemiol* 2008;29:170-3, 4. Hakim et al. *Vaccine* 2011;29:5963-9, 5. Maurer et al. *Infect Control Hosp Epidemiol* 2012;33:213-21, 6. Seale et al. *Vaccine* 2011;29:3734-7, 7. Lei et al. *PlosOne* 2015;10:e0129993

Acceptance of mandatory vaccinations for HCWs in Europe

- **Greece**
  - **all HCWs** — **52%**
  - **HCWs caring for high-risk patients** — **71%**
- **United Kingdom**
  - **HCWs with any patient contact** — **58%**
  - **HCWs caring vulnerable groups** — **70%**
- **Germany** — **68.4%**

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1. Maltezou et al. *American Journal of Infection Control* 2013;41:66-70, 2. Maltezou et al. *Journal of Infection* 2012;64:319-324, 3. Little et al. *Public Health* 2015;129:755-762, 4. Wicker et al. *Infect Control Hosp Epidemiol* 2010;31:1066-1069

Table 6

Attitudes of HCWs regarding mandatory vaccinations for HCWs (n = 1,005)

Statement	HCWs favoring mandatory vaccinations for all HCWs, n (%)	HCWs favoring mandatory vaccinations for HCWs caring for immunocompromised patients, n (%)	*P* value*
Vaccination should be mandatory for			
Influenza	556 (55.3)	755 (75.1)	<.001
Measles	171 (17.0)	435 (43.3)	<.001
Mumps	154 (15.3)	342 (34.0)	<.001
Rubella	184 (18.3)	375 (37.3)	<.001
Varicella	180 (17.9)	416 (41.4)	<.001
Hepatitis A	429 (42.7)	565 (56.2)	.001
Hepatitis B	877 (87.3)	804 (80.0)	<.001
Pertussis	129 (12.8)	322 (32.0)	<.001

NS, not significant.

*McNemar's test.

Table 4

HCWs' completed vaccination rates in association with previous influenza vaccination

Disease	Influenza vaccination	No influenza vaccination	*P* value
Measles (n = 789)	26.1%	22.4%	NS
Mumps (n = 789)	26.1%	22.4%	NS
Rubella (n = 789)	36.2%	26.3%	.003
Varicella (n = 1,123)	3.0%	2.9%	NS
Hepatitis A (n = 1,515)	7.3%	4.7%	.034
Hepatitis B (n = 1,354)	61.0%	53.0%	.004

NS, not significant.

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

Insufficient knowledge about nosocomial influenza
Misconceptions that they are not at risk for contacting influenza
Misconceptions about vaccine effectiveness
Misconceptions about vaccine safety
Misconception that the vaccine can cause influenza
Unawareness of the recommendations for annual influenza vaccination
Unavailable vaccine
Fear of injections
Lack of leadership support
Reliance on homeopathic agents

Maltezou HC, Tsakris A. ***Influenza and Other Respiratory Viruses*** **2011; 5:382-388**

Table 3. Strategies associated with increased influenza vaccine uptake in health-care workers

On-site vaccination
Vaccination free of charge
Lectures about influenza and influenza vaccine
Organization of campaigns
Mobile vaccination teams
Use of declination forms
Implementation of a mandatory vaccination policy
Use of reminding systems
Incentive programs
Leadership support

Maltezou HC, Tsakris A. ***Influenza and Other Respiratory Viruses*** **2011; 5:382-388**

Experience with Parental Vaccination Refusal and Attitudes about Vaccinations of Pediatricians in Greece

H. C. Maltezou[1*], D. Gkentzi[2], I. Grivea[3], N. Chaliasos[4], E. Galanakis[5], A. Pavli[1], P. Katerelos[1], G. Syrogiannopoulos[3], E. Roilides[6] and M. Theodoridou[7]

BJMMR, 5(8): 971-977, 2015; Article no.BJMMR.2015.106

- **nation-wide questionnaire-based study, 2013**
- **211 private-practice pediatricians***

  (12.5% of 1683 private-practice pediatricians in Greece)
- **190 of 211 pediatricians (90%) had faced at least one case of vaccination refusal in the past**
- **a mean of 10.5 cases of parental vaccination refusal the past year**

*** 65-70% of all vaccine shots are provided by private-practice pediatricians**

Table 1. Number of pediatricians who encountered cases of parental refusal of vaccination in 2012 by vaccine

Vaccine	Number of pediatricians n = 211	Mean RVR* (range)
HPV	124 (58.8)	4.6 (0-75)
MMR	120 (56.9)	2.5 (0-120)
Varicella	74 (35.1)	1.3 (0-75)
Hepatitis A	43 (20.4)	0.7 (0-30)
Hepatitis B	43 (20.4)	0.5 (0-6)
DTaP-IPV-Hib	33 (15.6)	0.3 (0-6)
Pneumococcus	30 (14.2)	0.3 (0-6)
Meningococcus type C	30 (14.2)	0.3 (0-9)

RVR: ratio of vaccination refusal; HPV: human papilloma virus; MMR: measles-mumps-rubella; DTaP-IPV-Hib: Diphtheria-Tetanus-acellular Pertussis-inactivated Poliomyelitis-Haemophilus influenzae type b; pneumococcus: 10-valent or 13-valent conjugate pneumococcus vaccine
** per 1000 vaccinations*

Reasons for parental vaccination refusal

- fear about adverse events - safety of vaccine 84%
- use of alternative medicine 46.5%
- anti-vaccination beliefs against all vaccines 45.5%

Maltezou et al. *British Journal of Medicine and Medical Research* 2015;5:971-977

Attitudes of pediatricians about mandatory vaccinations

- **“Childhood vaccinations should be mandatory for school-entry” 67%**
- **“Parents have the right to refuse their children’s vaccinations” 14%**

Maltezou et al. *British Journal of Medicine and Medical Research* 2015;5:971-977

Attitudes of pediatricians about pediatric vaccinations

- **Concerns about vaccinations** **62%**
  - **cost of vaccines** **46%**
  - **safety of vaccines** **31.5%***

*** 19.5% of all participating pediatricians**

Maltezou et al. ***British Journal of Medicine and Medical Research*** **2015;5:971-977**

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

Goal/actions to implement	
Delivery of vaccine	
	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)
Estimate vaccine uptake	
	Establishment of in-hospital records for vaccination uptake, need to review and update information on regular intervals, use standardized definitions
Development of reminder systems	
	Approach all non-immune HCWs at regular intervals
Need to address concerns and mistrust about vaccines	
	Education of HCWs about VPDs and vaccines, communication, collaboration with medical schools and professional societies

VPD: vaccine-preventable disease; HCW: health-care worker.

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

Thank you for your attention!