

# Can we know the immunisation status of healthcare workers?

Results of a feasibility study in hospital trusts,  
England, 2008 \*

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\* This project was conducted as an EPIET Fellow at the Health Protection Agency Centre for Infections, London, UK



# Introduction

- Health Care Worker (HCW) immunizations are important
  - Patients health
  - Staff health

# Recommendation

- In England, the Department of Health recommends to vaccinate HCWs:
  - Against diseases normally included in the routine schedule: MMR and DTAP/IPV
  - Plus seasonal influenza, tuberculosis, hepatitis B, and varicella

# Uptake unsatisfactory in HCWs

## ■ England

- 13.4% flu vaccine uptake in HCWs after the 2007/2008 season
- 7% MMR uptake after two mumps incidents in hospital setting (Williams et al. J Hosp Infect. 2010 Sep;76(1):91-2)
- Patients exposed to chickenpox by infected healthcare workers (Health Protection Report, August 2008)
- Measles outbreaks reported outbreaks being reported from nurseries, schools, hospitals – including healthcare staff (Health Protection Report, May 2008)

## ■ Elsewhere

- Vaccination levels among health care workers generally low in 2007/2008 in 11 EU countries (Blank et al. J Infect 2009 58(6): 446-458)
- In Italy, vaccination coverage is high but not yet satisfactory for hepatitis B and is absolutely insufficient for influenza (Prato et al. Expert Rev Vaccines 2010 9(3): 277-283.
- .....



Michael... health

DAILY

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MORE than 1,000 patients could have caught deadly HIV or Hepatitis B from an NHS worker diagnosed with BOTH illnesses.

It is the first time a healthcare employee has been found to have both diseases.

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# Monitoring vaccine uptake in HCWs

- In England, there is a national surveillance system to measure influenza vaccine uptake in HCWs
- *But what about the other vaccines recommended for HCWs?*
- No national surveillance system to measure general vaccine uptake in HCWs

# Objective

- We conducted a survey of all English Acute and Foundation NHS hospital trusts to:
  1. Understand how HCWs immunizations are managed
  2. Determine the feasibility of establishing a national surveillance system for vaccine uptake in HCWs

# Methods

- Between January and April 2008
- Questionnaire survey to all 162 NHS Acute and Foundation hospital trusts in England
- 48 questions about staff immunisation policies and data management
- Submitted by email in 2 formats
  - MS Word
  - Online Form [www.surveymonkey.com](http://www.surveymonkey.com)
- Descriptive epidemiology
- Analytical epidemiology
  - We combined influenza vaccine uptake data and responses regarding vaccination policies in place at trust level.



# Results

- Respondent Trusts: 104/162 (64%)
- From all across England
- 40% (41/104) Foundation Trusts (i.e. decentralized management system)
- 61% (63/104) Acute Trusts (i.e. Managed directly by the NHS)
- Each trust responsible for 1 to 8 hospitals (median=2)
- Occupational Health (OH) managed by:
  - Own OH Department: 88% (92/104)
  - External (primary care trust or private contractors): 8% (8/104)
  - Did not respond: 4% (4/104)

# Screening and vaccination

- Policies for staff immunisations:
  - **82% (85/104): In Place**
  - 2% (2/104): Not In Place
  - 16% (17/104): Did not respond
- Hepatitis B Vaccination
  - 88% (91/104): All staff in direct contact with patients blood (i.e. not only staff performing EPPs):
  - 12% (13/104): Did not respond

# Vaccines offered to HCWs

Vaccine	N. Hospital Trusts		Since (median year )
	No	Yes	
Hepatitis B	0	94	1989
BCG	0	94	1990
Flu	0	94	1990
MMR	0	94	2005
Varicella	1	93	2004
DTIPV	14	71	2000
Other	9	48	—
Hepatitis A	—	33	—
Typhoid	—	19	—
Meningitis	—	9	—
Anthrax	—	5	—
Yellow Fever	—	1	—

# Numerators and denominators

Proportion of trusts holding specific information about immunization of HCW (n=104)

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Information recorded	Yes (%)	No (%)	Not responded (%)
All vaccinations in a central database	71 (68·2)	6 (5·8)	27 (26·0)
All staff eligible for immunizations in a central database	69 (66·4)	7 (6·7)	28 (27·0)
Hepatitis B vaccinations	51 (49·0)	38 (36·5)	15 (14·4)
Staff eligible for hepatitis B vaccine	17 (16·4)	72 (69·2)	15 (14·4)
Varicella vaccinations	50 (48·1)	39 (37·5)	15 (14·4)
Staff eligible for varicella vaccine	17 (16·4)	72 (69·2)	15 (14·4)
MMR vaccinations	48 (46·2)	38 (36·5)	18 (17·3)
Staff eligible for MMR vaccine	16 (15·4)	73 (70·2)	15 (14·4)
BCG vaccinations	39 (37·5)	16 (15·4)	49 (47·1)
Staff eligible for BCG vaccine	17 (16·4)	72 (69·2)	15 (14·4)

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# Do you know your numbers?

Data available at trust level (n=104)

Data	Yes (%)	No (%)	Not responded (%)
Number of staff employed	88 (84·6)	2 (1·9)	14 (13·5)
Number of employees per occupational category	75 (72·1)	15 (14·4)	14 (13·5)
Number of staff performing exposure-prone procedures	35 (33·6)	54 (51·9)	15 (14·4)
Number of staff in direct contact with patients' blood	15 (14·4)	69 (66·4)	20 (19·2)
Trusts issuing the Smart Card	85 (81·7)	6 (5·8)	13 (12·5)
Smart card users that store immunization data in a central database via this system	38 (44·7)	—	—

# Recording vaccinations

- OH software
  - 76% (79/104) use 9 different software packages to manage staff immunisations
    - 35% Cohort, 21% Opas, 11% Excel, 6% Access...
  - 10% (10/104) do not use any software
  - 14% (14/104) did not respond
- 42% (44/104) would agree to provide data on HCW vaccine coverage
  - 64% by an automated system
  - 48% by paper format
- 72% (75/104) reported flu vaccine uptake for the 2007/2008 season

# Analytical Epidemiology

- Trusts reporting influenza vaccine uptake data more likely to respond to the current study (PR 1.72, 95% CI 1.25–2.38,  $P < 0.001$ ).
- Trusts responding to our survey had higher influenza vaccine uptake (mean 15.2, 95% CI 12.9–17.5) compared to non-responders (mean 11.6, 95% CI 8.7–14.4,  $P = 0.04$ ).
- Reporting influenza uptake was more frequent in trusts that had knowledge of the number of staff employed per occupational category (PR 1.4, 95% CI 1.0–2.0,  $P = 0.017$ ).
- Reporting the use of OH software was also associated with knowing the number of staff employed in the trust (PR 4.6, 95% CI 1.7–12.8,  $P < 0.001$ ) and the number of staff employed per occupational category (PR 1.8, 95% CI 1.2–2.6,  $P < 0.001$ ).

# Discussion

- Immunisation policies are widely in place in hospital trusts
- Majority keeps information on immunisations in databases
  - Especially on vaccines administered (numerators)
  - But also, although in a lower percentage, on staff members eligible for vaccination (denominators)
- Trusts with “good” systems report higher coverage
  - “For better immunisation coverage, measure coverage better” (Papania & Rodewald Lancet. 2006 Mar 25;367(9515):965-6.)
- However:
  - Considerable variability in the way immunization data is recorded
  - Less than half of hospitals is willing to provide vaccine uptake data to HPA



# Possible Limitations

- Although response rate satisfactory, not all questions were answered
- Responders may be the “good” hospitals
  - Possibly leading us to overestimate good practice
- Responding trusts more likely to have responded also to the influenza vaccine
  - There may be a consistent group of trusts that are not keen to respond

# It doesn't apply to me...



# Conclusions

- Setting-up a national surveillance system HCWs vaccine uptake is:
  - Possible
  - Technically challenging
- How?
  - By encouraging hospitals to record every time they administer a vaccine or screen for protection
  - By using all potential sources of information to determine staff eligibility for vaccination
  - By designing a surveillance system which integrates with software packages used in hospitals
  - By considering the collection of uptake data in different ways in distinct hospitals

# Thank you

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