PUBLIC HEALTH 129 (2015) 755–762

Available online at www.sciencedirect.com

Public Health

journal homepage: www.elsevier.com/puhe

Original Research

Occupational vaccination of health care workers: uptake, attitudes and potential solutions

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ARTICLE INFO

Article history:
Received 10 March 2014
Received in revised form
31 December 2014
Accepted 22 February 2015
Available online 31 March 2015

Keywords:
Occupational health
Vaccination
Policies
Influenza
MMR

ABSTRACT

Objectives: Occupational vaccination of health care workers is strongly recommended to prevent health care associated transmission but coverage in general remains suboptimal. The aim of this survey was to: 1. Estimate levels vaccination coverage for annual flu and MMR vaccines among hospital-based health care workers; 2. Explore the reasons behind low vaccination rates; and 3. Identify potential practical and policy solutions.

Study design: A cross-sectional study.

Methods: An opportunistic survey was used to estimate MMR and flu vaccination coverage, and review attitudes and explore solutions. Staff from eight randomly selected wards, stratified by ward-level patient susceptibility, were invited to participate.

Results: In total 133 staff responded, an approximate response rate of 68%. Seventy one percent had ever received an MMR and 42% had received the most recent flu vaccination. Actively declining vaccination was more common for flu than MMR (29% and 7% respectively). Side-effects, insufficient knowledge and vaccine ineffectiveness were popular justifications for declining flu vaccination but not MMR. Not seeing vaccination as a professional responsibility was associated with declining flu vaccination ($P < 0.001$). Improving vaccination coverage with booster vaccines for new staff and immunity testing received strong support from staff working with vulnerable groups (82% and 74% respectively); 70% of this staff group also supported compulsory vaccination.

Conclusions: Improving staff education may increase coverage. Clarification of the benefits of vaccination in specific staff groups may also improve uptake. Routine booster vaccinations and immunity testing were generally acceptable and compulsory vaccination of certain staff groups warrants further investigation.

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http://dx.doi.org/10.1016/j.puhe.2015.02.031
0033-3506/

Introduction

Immunization continues to be one of the most successful public health interventions for controlling infectious diseases, saving approximately three million lives annually.[1] In addition to personal protection, population level protection achieved through high vaccine uptake and herd-immunity protects individuals who cannot be vaccinated themselves or in whom vaccinations are less effective such as the ill or elderly.[2]

Unfortunately, there have been several occasions where public fears over vaccine safety have resulted in suboptimal vaccination coverage and population immunity. Examples of this include the alleged links between pertussis vaccination and brain damage in the 1980s[3] and between the Measles, Mumps and Rubella (MMR) vaccination and autism in the 1990s and 2000s;[4] both led to several major outbreaks, including the south Wales measles outbreak during 2012/13.[5,6] In addition, Influenza (flu) vaccination coverage is limited by the need for an annual vaccination to maintain immunity to current circulating strains.

Occupational vaccinations, such as flu, MMR and hepatitis B vaccines, are strongly recommended for health care workers (HCWs) both for their own protection and that of vulnerable patients, as illustrated in the following extract from the UK governments advice on vaccination:[7]

> *Protection of health care workers is especially important in the context of their ability to transmit measles or rubella infections to vulnerable groups. While they may need MMR vaccination for their own benefit, on the grounds outlined above, they also should be immune to measles and rubella for the protection of their patients.*

However, despite evidence of protective effects,[8,9] coverage remains sub-optimal. For example, coverage of the 2012/13 flu vaccination in Wales was 35.5% for HCWs.[10] As in the community, under-vaccination of HCWs can lead to disease outbreaks including flu[11–14] and measles.[6,15] In addition to morbidity and mortality, HCW-associated outbreaks can disrupt essential health services through staff absenteeism.[16]

Previous research on low uptake rates has particularly focused on flu vaccination and has shown that coverage varies depending on staff group.[17] A variety of barriers have been suggested including personal influences such as doubts regarding vaccine efficacy, lack of personal knowledge and low concern about disease severity;[18,19] this is often despite regular extensive staff vaccination campaign, including messages around safety and efficacy, for influenza. Organizational influences such as inconvenient locations and times for vaccination clinics also affect uptake[19,20] and peer vaccinators have been trialled in many areas; for example in Abertawe Bro Morgannwg University Health Board, which covers the city of Swansea and the surrounding areas, their introduction contributed to increased flu vaccination coverage from 22% to 40% but were met with hostility by some staff (personal communication).

Mandatory vaccination has been shown to successfully maintain desired vaccination rates amongst HCWs.[21–23] However, there remains much debate around the ethical concerns raised by mandatory vaccination, such as infringement on freedom of choice, along with the issues around its cultural acceptability, opportunity cost of tracking non-compliers and arrangements for HCWs for whom vaccination is contra-indicated or ineffective.[24,25] Vaccination policies vary substantially on this issue across Europe and globally.[26,27] Other avenues to increase voluntary uptake therefore need to be explored. Understanding staff views is vital to designing appropriate and effective evidence-based immunization strategies.

The aim of this survey was to estimate vaccination coverage levels for annual flu and MMR vaccines across hospitals within a south Wales health board, and explore the reasons behind low vaccination rates and identify potential solutions.

Methods

A cross-sectional study design was used. A sample was selected using stratified random-location opportunistic sampling. All 63 wards across four main hospitals within the health board were categorized by the Occupation Health department as either higher risk (e.g. Intensive therapy unit) or lower risk (e.g. Mental Health Admission unit) based on the patients vulnerability to infection. After stratification one higher risk and one lower risk ward was randomly selected from each hospital using a computerized random number generation. The date and time of data collection was arranged with the ward managers in order to maximize the numbers of available staff and minimize disruption.

Each ward was visited once during September 2013 for approximately three hours. All clinical and non-clinical staff present on the ward were invited to participate. Researchers handed out paper surveys and invited staff to either complete them immediately, take them away for completion later, or submit a blank form to decline participation. Study information sheets were displayed in the recruitment areas (usually ward reception) and were available for staff to take away. The survey was anonymous and efforts were made to afford participants privacy when completing the survey, although separate rooms were not always available. Staff were asked not to discuss their responses with each other. Surveys were returned on the same day, either directly to researchers, or using a drop-box located within the departments. Survey completion took approximately five minutes.

The survey comprised of twelve questions, eleven required simple multiple choice tick box responses and one required numerical ranking. The survey requested information regarding: demographics, vaccination history, awareness of current recommendations, reasons for lack of uptake and, perceptions of vaccinations based on the Health Belief Model (i.e. perceived severity, susceptibility, benefits, costs and cues to action).[28] It also requested views on five potential vaccination policies:

- Immunity testing
- Compulsory vaccination
- Health passports