



DISCUSSION PAPER

Influenza vaccination

among healthcare workers

INTRODUCTION

Influenza is a serious respiratory illness which can pose significant risks to healthcare institutions. Healthcare workers are often exposed to the virus during the course of their work, contributing to substantial rates of infection during the influenza season.^{1,2} In fact, it has been estimated that up to 25% of healthcare workers can contract influenza during any given season.³⁻⁵

In turn, healthcare workers may transmit the virus to patients in their care^{1,6-11} including those who are at high-risk of developing serious complications from influenza, such as the elderly, young children and those with chronic underlying medical conditions. In addition, the tendency of a significant percentage of healthcare workers to continue working despite being ill with influenza exacerbates this already risky situation.¹¹⁻¹³ Some adults including healthcare workers may not show the classic symptoms of influenza and may also shed virus for up to 5 to 10 days.¹⁴

It is imperative that there is a greater focus on preventing influenza transmission within healthcare facilities;¹⁵⁻²⁰ particularly given the virus' ability to spread quickly and healthcare workers' variable adherence to other measures such as hand hygiene.²¹ Annual immunisation of healthcare workers has been cited as the most efficient method of preventing influenza infection and minimising exposure to vulnerable patients.²² Influenza vaccination is considered to be between 70-90% effective in healthy persons under 65 years of age.¹⁵ However, it is less effective in older people and those with weakened immune systems.¹⁵ As such, it is important that healthcare workers and those in close contact with these groups protect themselves against influenza, thereby indirectly protecting those most vulnerable to the virus.^{3,4,6,23,24}

The importance of achieving high levels of vaccination against seasonal influenza among healthcare workers is strongly recommended by the National Health and Medical Research Council (NHMRC) and the Australian Committee on Safety and Quality in Healthcare; and is supported by many studies, although no formal target level has been set.^{17,25,26}

However, despite this support vaccination rates remain suboptimal, usually below 50% of direct care staff within Australian healthcare institutions.^{19,23,26-30}

The Influenza Specialist Group believes that the timing is now critical for healthcare facilities to take greater responsibility for improving staff vaccination rates (particularly direct care staff), by adopting and implementing a national three-pronged approach:^{6,23,25,26}

- Continued improvements in educating healthcare workers about the benefits of influenza vaccination and ensuring easy access to staff vaccination programs;^{24,26,31-39}
- Mandatory requirement for healthcare facilities to ensure signed records are kept from all direct care staff who decline vaccination;^{31,40-43} and
- Mandatory vaccination of all direct care staff within critical high-risk areas.^{23,40,41,44-47}

This publication explores the current state of influenza vaccination among Australian healthcare workers and provides practical strategies which can be implemented nationally, and on an individual faculty / unit level to help minimise influenza outbreaks in Australian healthcare facilities.

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CURRENT UPTAKE RATES OF INFLUENZA VACCINATION IN HEALTHCARE FACILITIES

While influenza vaccination uptake is quite high in some workplaces, this is not usually the case among direct care staff in healthcare facilities. Where measured, influenza vaccination uptake rates among direct care staff have been shown to sit well below 40% across entire healthcare institutions,^{2,27-30,36} although there are some notable exceptions within some individual facilities or departments.

A recently published comprehensive Australian study in this area examined the extent of vaccination coverage across Victorian public hospitals in 2005. Investigators reported that an overall average of 38% of staff was vaccinated, with the highest rates of vaccination being among laboratory (42%) and allied health staff (45%).²⁷ The study also demonstrated that among clinical staff, medical staff had the lowest vaccination rates (29%), followed by nursing (35%).²⁷

A further audit conducted in 2007 of a tertiary hospital in the Northern Territory found that only 28% of doctors received influenza vaccination in that year; and of the 72% not immunised, only 44% had received vaccination prior to 2007.²

Australia's uptake rates also correspond with figures reported internationally. Recent US data has suggested that vaccination rates among healthcare workers are as low as 36%.⁴⁸ In Europe and the UK, research has shown that less than 25% of healthcare workers are vaccinated.^{16,19,49,50} While this suggests that poor vaccination rates are an issue world-wide, the task of improving Australian vaccination rates to an acceptable figure is hindered by the lack of a national approach.

BARRIERS TO INFLUENZA VACCINATION UPTAKE AMONG HEALTHCARE WORKERS

The adage that higher socioeconomic groups are more health conscious and aware of health risks does not necessarily apply when it comes to influenza vaccination. This is demonstrated in the abovementioned Victorian research, where medical staff (e.g. doctors and nurses) had much lower rates than non-clinical staff (e.g. hospitality and administrative staff) – 29% vs. 37%.²⁷

Local⁵¹ and international studies⁶ have identified several reasons for low levels of influenza vaccination uptake among direct care staff. These barriers, which can be divided into healthcare worker and system barriers, include:^{6,11}

HEALTHCARE WORKER BARRIERS

Perceived lack of need for vaccine – A 2008 US study found that the most common reason given by healthcare workers (31.8% of respondents) for not receiving influenza vaccination was that they did not believe they needed the vaccine.⁵² It has been suggested that a number of negative views held by healthcare workers can contribute to this perception of not being at risk,^{8,25,36,50,53} such as:^{2,23}

- “Influenza isn’t serious and I can get over it easily”,
- “I’m fit and healthy so I won’t get the disease” and
- “My boss doesn’t get vaccinated so why should I?”

Who **are** direct care staff?

Direct care staff includes all employees and volunteers within a healthcare facility who have regular contact with patients. This encompasses a very broad group of people, from healthcare workers (nurses, doctors, students) to some support staff who have face to face contact with patients.

Negative attitudes and misconceptions^{32,36,54-57} towards influenza vaccination present one of the greatest obstacles to achieving high vaccination rates. In particular, healthcare workers who see personal protection as the main purpose of vaccination often do not consider the consequences for patients, thereby limiting the number of healthcare professionals willing to undertake annual vaccination.

“It seems that healthcare workers may often fail to link the influenza vaccination with a duty-of-care rationale,” Dr Alan Hampson, Chair of the Influenza Specialist Group, said. “We need to get the message across that influenza vaccination offers both personal protection and can reduce transmission of influenza to vulnerable patients in their care.”

Concerns about adverse reactions – Concerns about becoming ill as a result of being vaccinated were cited as the second most common reason by healthcare workers (23% of respondents) for declining to undergo influenza vaccination according to the U.S. study.⁵² Other studies suggest these concerns may be even more common,^{13,32,36,50,55,58-61} with 31% of resident physicians in a teaching hospital believing the vaccine could cause influenza.⁶²

Such findings are echoed in Australian studies. Northern Territory doctors cited concerns regarding flu-like illness (15%) and adverse reactions (11%),² while National Institute of Clinical Studies (NICS) focus group research found many healthcare workers who declined vaccination did so because of a belief that the vaccine makes people sick.⁵¹

Serious adverse reactions to influenza vaccination are rare with the most common local reactions being redness, swelling and local pain at the injection site.¹⁵ Other post-vaccination symptoms mimicking a light influenza infection, such as fever, affect 1-10% of people vaccinated and are limited to 24-48 hours post-vaccination.^{15,36} More importantly, the influenza vaccine does not contain any live viruses and therefore cannot cause influenza.¹⁵

Concerns about vaccine efficacy – In the NICS focus group research, the efficacy of the influenza vaccine was queried and given as a reason for not receiving vaccination by healthcare workers.⁵¹ A number of Northern Territory doctors also said they lack faith in the evidence and the guidelines (7% of respondents) surrounding influenza vaccination.² While influenza vaccination does not confer 100% protection, its efficacy in healthy working adults is significant (70-90%).¹⁵ The vaccine also provides protection to healthcare workers,^{5,63} although a recent Cochrane Review provided ambiguous endorsement. Such ambiguity fuels the debate among naysayers.⁶⁴⁻⁶⁶

“The influenza vaccines we use in Australia provide a good level of protection for most people”, said Professor Anne Kelso, Director of the World Health Organisation Collaborating Centre for Reference and Research on Influenza. “The problem for elderly people and others with weakened immune systems is that, first, their response to the vaccine is also weakened and, second, they are more prone to the complications of influenza, such as pneumonia. By being vaccinated, healthcare workers can help to protect the patients in their care by reducing their exposure to the virus.”



SYSTEM BARRIERS

Lack of access to the vaccine – Certainly, influenza vaccination is more readily accessible for some healthcare workers than others. While many large government hospitals actively promote free influenza vaccination for their staff (including the organisation of mobile vaccination carts to reach healthcare workers in their wards), other healthcare workers (e.g. in some private aged care facilities) are not at all encouraged to undertake vaccination – and if they wish to do so, it is at their own cost and time.

Studies have shown that limited access to vaccination is believed to be another reason behind low vaccination uptake rates among healthcare workers.^{2,51} Reports indicate that many healthcare workers feel that the vaccination service is not offered in a convenient manner, while others are unaware of how to access the vaccine generally.²

Having said that, even where influenza vaccination is free, promoted and made readily available to staff, vaccination rates remain sub-optimal, demonstrating that this is not the only issue which needs to be addressed.

Direct care staff are not a homogeneous “one size fits all” group. In fact, they vary considerably in their health knowledge, educational level, primary work environment, race and culture; and these factors can affect the uptake of influenza vaccination.^{23,27} Thus, any successful program will need to address a wide range of issues raised by healthcare professionals.

BENEFITS OF VACCINATION

Unfortunately, very few randomised placebo-controlled studies investigating the benefits of vaccinating direct care staff against influenza have been undertaken,^{63,67} leading a 2008 Cochrane review to conclude there is an urgent need for more research in the area.¹¹ However, it is important to note that limited evidence at this level does not equate to an absence of effect. Influenza vaccination has long been established as best practice in the prevention of influenza. Thus, traditional study structures and methods required to meet requirements for inclusion in a Cochrane analysis (such as placebo-controlled trials), would be unethical to undertake. For example, purposefully not vaccinating direct care staff in a neonatal ward at a time of known influenza outbreaks for the purpose of a placebo-controlled trial, could result in a loss of life particularly when vaccination is well proven to help prevent infection. Therefore, other existing forms of research must not be ignored.

An examination of available evidence illustrates that many groups benefit from high levels of direct care staff vaccination:

- **To staff** – Healthcare workers are much more likely to become infected with influenza than other members of the general population. Studies show that rates of healthcare worker influenza infection range from 23% in a mild season¹² through to 47.5% during outbreaks⁹ (with some reports of an even wider range between 11-59%).¹

Influenza vaccination has been shown to help reduce the disease’s impact upon healthy working adults, reducing the frequency of all or total upper respiratory illnesses by 25% and nearly halving both GP visits and sick days.⁶⁸ It is therefore generally accepted that influenza vaccination for healthcare workers has the potential to decrease staff illness.²³

- **To patients** – Research has shown that up to 76% of residents in an affected aged-care facility may contract influenza during an outbreak.⁶⁹ Therefore, measures to reduce influenza transmission in healthcare facilities are particularly important for wards caring for the elderly, or other high-risk patients.^{15,23}



“Healthcare workers are much more likely to become infected with influenza than other members of the general population.”

There is good data to support the idea that direct care staff vaccination reduces influenza-related morbidity and mortality in high-risk patients under their care.^{2,12,50} A recent study using a pair matched cluster randomised control trial design found that vaccinating aged care facility staff can prevent deaths, health service use, influenza-like illness and hospital admissions in residents during periods of moderate influenza activity.⁷⁰ International evidence also indicates that vaccination of healthcare workers is associated with decreased mortality in long-term care (from 22.4% to 13.6%).^{27,67}

- **To healthcare facilities** – Numerous studies indicate that influenza vaccination has the potential to substantially reduce staff absenteeism,^{2,17} decrease healthcare expenditure,⁵⁰ improve patient and employee safety⁶⁷ and prevent workplace disruption.

Like all other groups targeted for influenza vaccination, the cost effectiveness of providing influenza vaccination to healthcare workers depends on two factors: the amount of virus circulating; and how well the three strains included in the influenza vaccine match the circulating strains in any given season. Internationally, it has been reported that vaccinating employees and thereby reducing absenteeism can provide employers with a saving of US\$2.58 for every dollar invested in an influenza vaccination program.²³

A cost-benefit analysis of the 2005 influenza vaccination program in two WA hospitals (with a vaccination rate of 47%), resulted in an estimated annual saving of \$65 per person vaccinated to the health service.⁵¹ When applied to a standard teaching hospital, which can have up to 4,000 employees, an estimated annual saving of \$130,000 can be made when a vaccination rate of 50% is achieved.⁵¹

“The Influenza Specialist Group acknowledges the significant workload of staff at healthcare facilities and that influenza vaccination of staff can fall to the bottom of the list,” Dr Hampson said. “However, current research helps illustrate that the work is worth the investment – both from a financial perspective and as a duty of care towards staff and patients.”

PRIMARY CARE

The issues facing health care workers in primary care are remarkably similar to those working in a hospital or aged care facility. Certainly, the role primary healthcare staff play in infection control and prevention of influenza related illness cannot be underestimated – both for their health and that of their patients.

Strategies for infection control and prevention in primary care facilities include:

1. Annual vaccination – As outlined previously, vaccination of healthcare workers reduces staff illness and absenteeism and improves employee and patient safety.^{43,67}

2. Personal hygiene – Promoting the following personal hygiene methods are important measures for preventing ILI:⁵¹

- Hand wash with soap regularly
- Avoid touching mouth or nose
- Cough into elbows, rather than your hands
- Dispose of tissues into the bin immediately to minimise germ transmission

3. Containment facilities – Where possible, designate an isolation area for infected individuals to minimise risk of transmission.

4. Protective equipment – Storing a supply of facial masks or other appropriate covering for the nose and mouth to provide to infected individuals may assist with reducing the spread of infection to other employees or patients. Please note that the evidence supporting mask use is at this stage incomplete; however greatest benefits appear to be through providing masks to already infected individuals to prevent further spread.

METHODS FOR INCREASING INFLUENZA VACCINATION UPTAKE

While many individuals are working very hard towards improving influenza vaccination rates among direct care staff, to date there have been limited or isolated results from this. The Influenza Specialist Group advocates three critical steps in order to improve direct care staff vaccination rates and reduce some of the worst morbidity and mortality associated with nosocomial infection:

1 Continued improvements in education and access

WHAT

Requirement for healthcare facilities to provide:

- **Education** – initiatives to keep influenza top-of-mind among direct care staff and ensure influenza and vaccination are well understood;
- **Easy access to vaccination** – free vaccination available at multiple times/locations to make vaccination as convenient as possible to direct care staff.

WHY

Educating direct care staff about the benefits of influenza vaccination – and making it easy for them to do so – is critical:

- Education helps dispel the myths about influenza/vaccination, as well as reinforce duty of care considerations;
- Without the vaccine being free and simple to access, it is all too easy for busy direct care staff to forget or avoid vaccination, even if they support the idea of vaccination.

HOW

- Display appropriate promotional material in high-traffic locations, including posters, leaflets, 'myth-buster' factsheets and conduct seminars;
- Adequate resourcing for infection control staff to a) communicate the upcoming vaccination program; and b) undertake it (i.e. ensuring free vaccines are available at multiple times/locations, including at major meetings/seminars and on wards (using mobile units), including after hours);
- Senior staff endorsement through management getting vaccinated themselves and actively encouraging staff to cooperate with annual vaccination programs.
- Providing incentives such as prizes (e.g. movie tickets), honourable mentions or rewards for wards which reach a set vaccination rate.

2 Mandatory signed declaration by all staff refusing vaccination

WHAT

Mandatory requirement for healthcare facilities to keep signed records of all direct care staff who decline vaccination.

Staff must have either received their influenza vaccine or signed the opt-out declaration by an agreed date (i.e. 1 June of each year).

WHY

As established above, a number of misconceptions result in many direct care staff refusing influenza vaccination. Thus, a compulsory opt-out declaration form has three main benefits:

- Provides opportunity for staff to be educated about the relative benefits and risks of influenza vaccination (including duty of care);
- Necessitates direct care staff to make an active choice about whether or not to be vaccinated; and
- Enables effective record keeping of staff vaccination, including information on why vaccination was refused.

HOW

- Infection control team to ensure all direct care staff complete one of two forms: a) vaccine consent form*; b) vaccine opt-out declaration*
 - Staff who complete the vaccine consent form to be vaccinated, with details on vaccine batch number and vaccination date recorded.
 - Staff who complete vaccine opt-out declaration to sign their acknowledgement of the risk they are putting upon themselves and their patients.
- Requirement for healthcare facilities to keep records of all staff vaccination. Infection control staff could be tasked with managing the records for the facility.
- Strategy could be built into hospital accreditation and infection control policies. Where influenza outbreaks occur, record reviews on vaccination status should be undertaken.

* For examples of both forms, please visit:
www.influenzaspecialistgroup.org.au

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Mandatory vaccination of all direct care staff within critical high-risk areas

WHAT

Requirement for all direct care staff working within particular high-risk areas to be vaccinated against influenza. The Influenza Specialist Group suggests that this commence with all intensive care units (ICUs), plus other high risk settings e.g. cancer, transplant and neonatal wards, where there is greatest risk of:

- Patients not being vaccinated (e.g. neonatal ward); or may have a sub-optimal vaccine response if they have been vaccinated (e.g. immunosuppressed)”;
- Patients suffering significant consequences from an influenza infection.

Direct care staff who decline influenza vaccination to be transferred to lower-risk wards or duties, with healthcare facilities responsible for keeping accurate records on the vaccination status of all relevant staff.

WHY

It is well established that influenza infection causes significant morbidity and mortality among some high-risk patients. Similarly, it is also well established that direct care staff are one of the key vehicles for nosocomial infection, making vaccination of this group critical.

HOW

Each healthcare facility to develop clear written policy on critical wards where influenza vaccination is compulsory among staff and suggested alternate duties for unvaccinated staff;

- Healthcare facilities responsible for clearly communicating policy to relevant staff;
- Vaccination status of all staff recorded (as per Method 2);
- Relevant counselling of staff who remain unvaccinated in wards where vaccination is compulsory;
- Organisation of staff transfers to other lower-risk wards as required.

“In medical school we are taught *primum non nocere* – first do no harm.”

Professor Robert Booy, Director of Research at the National Institute for Immunisation Research and Surveillance at The Children’s Hospital at Westmead, remarked that the duty-of-care message is important across all healthcare institutions.

“In medical school we are taught *primum non nocere* – first do no harm. Healthcare professionals should not bring infection into the ward, especially not influenza,” Prof Booy said.

Vaccination of direct care staff within Australian healthcare facilities remains a high priority. Encouragingly, many State and Territory governments are investing additional time and money into this issue, which is already reaping rewards. However, in order for such gains to be extended across Australia – and among all healthcare facilities (large or small), a national approach is required where individual healthcare facilities are active and accountable for direct care staff vaccination rates.



THE INFLUENZA SPECIALIST GROUP

The Influenza Specialist Group consists of medical and scientific specialists and includes representatives of professional and patient groups from around the country. It cooperates with State and Federal Governments in educational activities regarding influenza. In conjunction with other organisations including the Australian Medical Association, WHO Collaborating Centre for Reference and Research on Influenza, Royal Australian College of General Practitioners, National Asthma Council Australia, National Heart Foundation of Australia and Diabetes Australia it conducts an annual Influenza Awareness Program. The Program, launched in 1992, informs key audiences regarding the consequences of influenza and the importance of preventing and treating infection. The Influenza Specialist Group receives support as educational grants from industry organisations; however the Group, through its executive, maintains full control over all of its activities and published materials.

References

All references can be found at www.influenzaspecialistgroup.org.au

Published by the **Influenza Specialist Group**

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