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Short communication

Participant centred safety surveillance of health care workers receiving influenza vaccination

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ABSTRACT

Following the introduction of mandatory influenza vaccination for staff working in high risk clinical areas in 2018, we conducted active surveillance for adverse events following immunisation utilising an automated online survey to vaccine recipients at three and 42 days post immunisation. Most participants 2285 (92%) agreed to participate; 515 (32%) staff reported any symptom and eight (1.6%) sought medical attention. The odds of having a reaction decreased with age by approximately 2% per year. The system was acceptable to staff, and the data demonstrated rates of reported symptoms within expected rates for influenza vaccines from clinical trials. Rates of medical attendance were similar to previous surveillance. Participant centred real-time safety surveillance proved useful in this staff influenza vaccination context, providing reassurance with expected rates and profile of common adverse events following staff influenza vaccination.

1. Background

Health Care Workers (HCWs) are at increased risk of exposure to influenza infection through patient contact and, if infected, place vulnerable patients at risk of influenza and its complications. Despite long standing recommendations regarding seasonal influenza vaccination for HCW's engaged in patient care [1], rates of influenza vaccination coverage in Australian HCWs has historically been suboptimal [2]. New South Wales (NSW) was the first state to introduce mandatory influenza vaccination for staff working in high risk clinical areas in 2018 [3].

Influenza vaccines are licensed based on historical safety data. The precise components change annually and minimal safety testing is conducted prior to the release of a specific seasonal vaccine [4]. Several safety incidents have occurred following influenza vaccination [5,6], highlighting the ongoing need to monitor for adverse events following immunisation.

2. Methods

Vaxtracker, an online software program for active Adverse Event Following Immunisation (AEFI) surveillance, sends an automated online survey to vaccine recipients, or their carers for vaccine safety signal detection and AEFI case identification. Vaxtracker is part of the Australian national AusVaxSafety (AVS) consortium. Detailed methods have been published [7].

A self-enrolment webpage was designed to allow HCW's to enrol themselves before or after receiving the influenza vaccine (trivalent high dose or adjuvated vaccine for staff aged ≥65 years or quadrivalent vaccine). Onsite Staff Health Service computer devices were modified to only display the Vaxtracker enrolment webpage and staff trained in its use. Pilot sites were selected from two local health districts, one metropolitan and the other rural, who provided free vaccination for HCW's during scheduled clinics.

At enrolment, staff were asked about prior influenza vaccination receipt (categorised as receiving the vaccine: for the first time; for each of the previous five years; or at least once in the previous five years, but not annually) and also their NSW Health risk categorisation [8]; "category A high risk" for higher risk clinical areas

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such as intensive care, category A for other clinical areas, and category B, those staff working in non-clinical areas.

The first survey was sent from two days following vaccination (by sms and or email, as selected by the participant). This survey included additional questions regarding staff opinions on which staff categories should require mandatory influenza vaccination. A final survey was sent at day 42 regarding any hospitalisation since vaccination.

Human research ethics approval was not sought as this activity was conducted as a quality assurance project of routine health service provision. Reports of completed surveys were collated weekly and shared with Staff Health Service Nurses.

3. Results

Of 2478 staff members who completed online consent, 2285 (92%) agreed to participate, and 1628 (71%) completed the first survey. Participants were mostly female (n = 1364; 84%) and aged less than 65 years (n = 1585; 97%), and included 69 who identified as Aboriginal and one who identified as Torres Strait Islander (2.9% of NSW population identify as Aboriginal or Torres Strait Islander). Most participants had received the influenza vaccine previously (n = 1469; 90%).

The survey was completed a median 2.8 days following vaccination (iqr 2.9 days). Five-hundred-and-fifteen (32%) staff reported any symptom and eight (1.6%) sought medical attention. Most commonly reported symptoms were injection site reactions (either pain, redness or swelling, n = 268, 16.5%), followed by headache (n = 221, 13.5%), unexpected fatigue (n = 205, 12.6%), other symptoms (n = 185, 11.4%), joint pain (n = 143, 8.8%) and fever (n = 38, 2.3%) (Table 1).

Of staff reporting symptoms, 59 (11.5%) reported taking time off work or away from normal duties (range 1 to 4 days, accumulatively 198 days), most frequently in participants reporting fever (n = 13, 34%).

Participants who had received the vaccine annually for the previous five years appeared to have a lower rate of reaction compared to those receiving influenza vaccine for the first time (27.2% compared to 35.8%, p-value < 0.025). However, participants receiving the vaccine for the first year were also younger (Mean difference = 7.2 years, Mann-Whitney U corrected $p < 0.001$). When accounting for age and vaccination history using a logistic regression, the effect of vaccine history was not significant ($p = 0.164$), but age was (p-value < 0.001); each additional year of age corresponded to ~2% lower chance of a reported reaction (OR = 0.98, 95% CI 0.968, 0.992).

Most participants reported that all HCW categories should require mandatory vaccination (n = 1016, 62%), followed by all Category A staff (n = 212, 13%), Category A & B (n = 94, 6%), Category A high risk (n = 78, 5%), Don't know (n = 147, 9%) and only five percent of staff preferred no mandatory vaccination (n = 81).

A total of 1323 participants completed the Day 42 survey. Eight hospitalisations (0.6%) were reported; seven of which were clearly not associated with the vaccination and another was not directly related.

Table 1
Survey responses post vaccination with seasonal influenza vaccine.

Event	Count	%
Response to the day 2	**1628**	
Surveys with any symptoms	515	32%
Sought medical attention	8	1%
Medical attention		
Telephone advice	1	
GP/Clinic	5	
Other	2	
Time off work	**59**	**3.6%**
Range 1–4 days off, accumulative 198 days Exclude participants without reaction		
Symptoms		
Fever	38	2.3%
Headache	221	13.5%
Joint pain	143	8.8%
Injection site reaction	268	16.5%
Unexpected fatigue	205	12.6%
Other symptoms	185	11.4%
Response to the day 42 survey	**1323**	
Number of hospital admissions	8	0.6%

4. Discussion

This pilot demonstrated that Vaxtracker was successfully deployed to provide safety surveillance for the Staff Health Service influenza vaccination program. The system was acceptable to HCW's (evidenced by high survey completion), and the AEFI data demonstrated rates of reported symptoms within expected rates for influenza vaccines from clinical trials [9]. Rates of medical attendance were similar to previous surveillance [10,11].

We present new finding on adverse event rates in relation to receipt of prior influenza vaccines and age. Whilst we consistently found lower rates of any reaction for participants vaccinated annually for the prior five years compared to participants receiving their first influenza vaccine, the effect was attributed to age rather than vaccination history.

We also present new findings on attitudes of HCWs to mandatory influenza vaccination. Most HCWs were accepting of mandatory vaccination and thought it should extend beyond current policy requirements to include all clinical staff. Only 81 (5%) participants were not in support of mandatory vaccination of HCW's. This cohort may not be representative of all HCWs given their agreement to be vaccinated.

Staff Health Service Nurses noted their appreciation of the weekly reports as this equipped them to provide reassurance to staff presenting for vaccination.

The Vaxtracker system would not have been able to detect less common adverse events due to the sample size. Vaccine brands were not recorded, thus differential rates could not be calculated. Rate of vaccinated staff participation could not be determined as staff may have passed the computer station without declining to participate online.

5. Conclusions

Participant centred real-time safety surveillance proved useful in this HCW influenza vaccination context, providing reassurance with expected rates and profile of common adverse events following HCW influenza vaccination.

Declaration of interests

The authors declared that there is no conflict of interest.

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Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.vaccine.2019.02.082.

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