

OUTCOMES OF INFLUENZA INFECTION AMONG VACCINATED AND UN-VACCINATED PATIENTS PRESENTING TO A SUBURBAN HOSPITAL IN PERTH, WESTERN AUSTRALIA (WA), 2019 SOUTHERN HEMISPHERE INFLUENZA SEASON.

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Table 1. Clinical Characteristics

	No vaccine (n=25) Median (IQR)/Mean (SD)	Vaccinated (n=50)	P value
DEMOGRAPHICS			
Age	63 (33-70)	75 (23-83)	<0.01
Female	64%	48%	0.19
FiO2 at admission	0.00 (0.00 - 0.14)	0.00 (0.00-0.33)	0.15
Urea at admission	5.1 (2.0)	7.0 (3.1)	0.01
No comorbidity	52%	24%	0.02
OUTCOMES			
ICU admission	0%	10%	0.16
NIV/MV	0%	1%	>0.99
LOS (days)	3.0 (1-9)	3.0 (1-6)	0.73
Acute hospital LOS	2.0 (1-5)	2.5 (1-5)	0.25

Background

The 2019 Southern hemisphere influenza season started in April, two months earlier than any previous season. Meanwhile, the WA immunization registry showed a higher than average pre-season uptake of Influenza vaccine. By October 22,770 cases and 80 influenza related deaths were recorded (same period in 2018: 3,679 cases and 13 deaths).

Aim of Study: To characterize the clinical presentation and outcomes of laboratory confirmed cases of Influenza, comparing vaccinated with unvaccinated controls. We hypothesized that vaccination would result in less severe disease and better clinical outcomes.

Primary objective: Acute hospital length of stay (LOS). **Secondary Objective:** Prevalence of severe respiratory illness/pneumonia, ICU admission and death.

Methods

Retrospective case-control study accessing demographic and outcome data from electronic patient records of influenza PCR-positive inpatients from April to October 2019. Eligible patients underwent a telephone-based questionnaire for clinical and immunization data verification. Exclusion criteria: age < 18 years; the deceased; history of dementia; nursing home resident and those unable to consent. Continuous and categorical data of cases (vaccinated) and controls (unvaccinated) were compared using Mann-Whitney U test (non-parametric), student t-test (parametric), or Chi-square test or Fischer's exact test respectively. Correlation and multilinear regression analyses (least squares) were undertaken to determine the effects of vaccination status and identified confounders on the primary outcome. Based on previous average LOS (5 days, SD 1.5) the sample required to detect a difference of 1 day with 80% power was 70 patients. This study was approved by the SJGHC HREC.

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Results and Discussion

363 inpatient cases of influenza were diagnosed April to October 2019. Of 163 eligible, 83 completed the questionnaire. 8 were excluded due to incomplete data. 75 underwent analysis (50 vaccinated and 25 unvaccinated). Median age was 75 (23-83) and 63 (33-70) respectively (p<0.01). 76% vs 48% reported ≥1 comorbid condition (p=0.02). 10% vs 0% were admitted to ICU (p=0.16). We observed significantly higher vaccination uptake in older patients and in those with comorbid conditions. There was a significant correlation (Spearman r= 0.54 (0.34 to 0.68, p<0.001) between age and length of stay, but no significant correlation was found between comorbidity or vaccination and length of stay. Neither age (p>0.05), comorbidity status (yes/no; p=0.99), vaccination status (p=0.61) nor any combination of these variables were significantly associated with a dichotomised outcome of acute hospital stay > 3 days.

Conclusion

Vaccination with the 2019 influenza vaccine had no significant effect on hospital length of stay, mortality or critical care requirement in patients admitted to hospital with influenza in 2019. While vaccinated patients were older, with increased comorbidity compared to controls, in this relatively small, single centre study these factors were not significantly associated with the primary outcome (LOS).

References:

1. Communicable Diseases network Australia- Australian Government Department of Health October 2018.
2. Mark G Thompson et al Vaccine 2018
3. Dawood FS et al Lancet Infect Dis 2012