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Suboptimal COVID-19 vaccine uptake among hospitalised patients: an opportunity to improve vulnerable, hard-to-reach population vaccine rates

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Abstract:

Background: COVID-19 vaccination represents a key preventative part of the Australian public health approach to the SARS-CoV-2 pandemic. Hospital inpatients are frequently high-risk for severe COVID-19 and death. Anecdotes of high-risk inpatients being unvaccinated and a lack of EMR visibility of COVID-19 vaccination status prompted this study as these patients could represent a risk to themselves, staff, other patients and service provision.

Aims: To determine the uptake of COVID-19 vaccine among inpatients at an adult Australian tertiary public hospital and identify reasons for non-vaccination.

Methods: A point-prevalence study of patient-reported COVID-19 vaccine status was conducted on 26th October 2021 via an in-person interview with collection of demographic factors and reasons for non-vaccination.

Results: Of 368 (68% of inpatients) participants, 280 (76%) reported receiving at least 1 COVID-19 vaccine dose. Vaccination status was associated with older age, having received the flu vaccine, being born in Australia and not requiring an English-language interpreter. The majority (88%) of participants had at least 1 co-morbid risk factor for severe COVID-19. Of the unvaccinated (n=88), 67% were willing to be vaccinated with 54% of those indicating vaccination in hospital would be helpful and 42% requesting approval from their doctor.

Conclusions: Vaccine uptake in our cohort is sub-optimal. Existing public health programs have failed to reach this high-risk, vulnerable population. Changes to the national vaccination strategy to include a parallel in-hospital program for all hospital encounters and target culturally and linguistically diverse individuals may improve uptake among this high-risk, hard to reach group of patients.

Introduction

Australia has enjoyed enormous success in control and minimisation of direct harm from Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infection, the virus that causes COVID-19, through a combination of border controls, contact-tracing, isolation and quarantine under-pinned by a robust public health service. COVID-19 vaccines have been developed and approved with remarkable effectiveness against infection, hospitalisation, severe disease and death (1-3). Local authorities have determined a vaccine uptake rate of 80% in those over 16 years old as a trigger for relaxing restrictions on travel and activities (4). However, the 80% target does not account for granular vaccine uptake rates among vulnerable populations which may be lower than those reported in the population overall. Several conditions, independent of age, are known to increase the risk of severe COVID-19 and death, including obesity, diabetes mellitus, cardiovascular disease, and being immune compromised (5).

Tertiary hospitals, including the Royal Adelaide Hospital, care for a diverse range of patients, the majority of whom have one or more risk factors for severe COVID-19. As a health service, we became concerned at anecdotal reports of poor vaccine uptake among subsections of patients admitted to our hospital. These individuals are personally vulnerable to severe COVID-19 and also frequently utilise the services provided at our institution. In light of growing reports of hospital-based COVID-19 outbreaks interstate, these unvaccinated individuals also represent a risk to the on-going provision of health care at our institution. Efforts to audit vaccine uptake among inpatients and outpatients using our institutions' electronic medical record (EMR) were unsuccessful due to a lack of vaccine recording on the EMR and an inability to audit data held within the Australian Immunisation Register or My Health Record. Currently, clinicians must access a patient's My Health Record from within the EMR to find evidence of COVID-19 vaccine status. Approximately 8% of the Australian adult population has opted out of My Health Record and this data is not auditable. Further, many hospital-based clinicians are not aware of this record or how to access it. The EMR provides no prompts regarding vaccination status. Thus, we planned an in-person point-prevalence study conducted via an in-person interview to determine the rate of COVID-19 vaccine uptake among admitted patients on a single day. This method of study allowed us to concurrently determine reasons for non-vaccination. The aim of the study was to determine the rate of uptake among a sample of admitted patients, identify groups with low vaccine uptake and identify reasons for non-vaccination. The objective of the study was to inform public health responses locally to improve vaccine uptake among a vulnerable group of patients and contribute to minimising the risk of COVID-19 outbreaks within the hospital system.

Methods

Setting: The study was conducted as an observational point-prevalence vaccine uptake study via an in-person interview with each participant by reading from a standardised questionnaire (appendix 1). The Royal Adelaide Hospital is a 670 bed adult tertiary hospital providing all clinical services including renal and pancreas transplantation, cystic fibrosis, a satellite thoracic organ transplant service, burns, trauma, oncology, haematology, bone marrow transplantation and mental health services. The few services not provided are paediatrics and obstetrics.

Participants: All wards where patients are admitted for greater than 24 hours were included. Acute stay areas (the emergency department, operating theatres, recovery, day-surgery and geriatric acute assessment unit) were excluded. The intensive care unit was excluded due to the in-person nature of the interview.

Study conduct: Interviewers consisting of hospital-employed medical, nursing and research staff received uniform instructions on undertaking the interview. Prior to patient approach, patients unable to complete the interview independently (for example, due to cognitive impairment or illness) were identified by their treating team or the ward nurse unit manager, and attempts to contact their substitute decision-maker were made instead. All patients were approached by study staff in

conjunction with a member of their treating medical or nursing team. Participation in the interview was voluntary and implied consent was required. All local infection control measures were followed during interviews. Participants were asked if they had received at least 1 dose of vaccine followed by a series of demographic questions. Those who indicated they were not vaccinated were prompted with a series of potential reasons for non-vaccination and measures to increase their likelihood of getting vaccinated, as well as an opportunity to provide their own reason or measure. Participants could choose multiple answers. The questionnaire was developed to identify groups with known risk factors for severe COVID-19 and those with risk factors for poor access to health-care and social disadvantage.

Demographics and comorbidity data were confirmed from the EMR. Only data on comorbidities known to be associated with increased risk of severe COVID-19 or COVID-19 mortality were collected (5). Vaccination status was not confirmed due to study resource constraints. The study was approved by the Central Adelaide Local Health Network Human Research Ethics Committee (Reference: 15478) and was conducted in accordance with the ethical standards laid down in the Declaration of Helsinki (Brazil, 2013). All participants gave implied consent by participating in the interview. The point-prevalence study was conducted on Tuesday October 26th 2021. A team of 25 interviewers approached the 38 involved wards.

Analysis
Data analysis was performed using Prism 9 (version 9.2.0(238)) (GraphPad Software LLC). The primary outcome was vaccination status. Continuous variables were compared using the Mann-Whitney U test for non-parametric variables. Categorical variables were compared using the Fishers' exact test or the Chi-squared test. A p-value <0.05 was considered significant.

Results
At 8am on October 26th 2021, there were 670 patients admitted to the hospital, 538 patients were admitted to included wards. Interviews were conducted with 368 (68%) participants who were available and consented to participate. Over three-quarters (280, 76%) of participants had received at least 1 dose of a COVID-19 vaccine and 88 (24%) participants had not received any doses of a COVID-19 vaccine prior to October 26th 2021. Table 1 demonstrates the demographics of participants by vaccination status. The median age of the vaccinated participants was higher than the unvaccinated (69 years versus 60 years p=0.001). The majority of participants were born in Australia (n=264 (74%)). The vaccination rate among participants born in Australia was higher than those born overseas (211/264 (80%) versus 69/104 (66%), p<0.001). The vaccination rate was non-significantly higher among those who cited English as their primary language at home (252/324 (78%) versus 28/44 (64%) p=0.058). Participants requiring an English-language interpreter was associated with lower vaccination rate than participants who did not (5/15 (33%) versus 275/353 (77.9%), p<0.001). Residence in shared or group accommodation was reported in 32/368 (11%) of participants and was not associated with vaccination status (p=0.38). Vaccination rate was higher among those who had an influenza vaccine in 2021 (195/224 (87%) versus 76/134 (57%), p<0.0001). Vaccination rate among those who identified as Aboriginal or Torres Strait Islander was similar to other participants (p=0.3).

Comorbidities associated with increased risk of severe COVID-19 were highly prevalent with 323/368 (88%) participants having at least 1 comorbidity and 218/368 (59%) having ≥2 comorbidities. Vaccination uptake was 71% (32/45) among those with no comorbidities versus 77% (248/323) among those with at least 1 comorbidity (p=0.446). Postcodes were available for 366 participants, allowing determination of local government area (LGA) of residence (supplementary table 1). There was no association between vaccination status and metropolitan Adelaide LGA or rural versus urban residence (p=0.68).

Reasons for non-vaccination and measures to improve uptake are shown in table 2. Of the 88 unvaccinated participants, a majority (59/88, 67%), indicated they were willing to be vaccinated but reported the vaccine was too difficult to obtain, or expressed concern regarding side effects and/or safety. A majority (32/59 (54%)) indicated they would have the vaccine while hospitalised if offered to them, while 25 (42%) reported that approval from their doctor would be helpful. Twenty-seven participants indicated they were unwilling to be vaccinated; 63% and 70% expressed concerns about vaccine safety and/or side effects, respectively. A large number (24/27, 89%) reported a medical contra-indication to vaccination that we did not verify. Of the unwilling, helpful measures to assist them in getting vaccinated were reported as additional information on the safety of the vaccine (11/25 41%), approval from their doctor (6/25, 41%), and availability of the vaccine while in hospital (6/25, 41%).

Discussion

This is the first study reporting COVID-19 vaccination rates among a large sample of inpatients at a tertiary Australian hospital with exploration of reasons for non-vaccination. Only 76% of this cohort were vaccinated against COVID-19 despite the majority being high risk for severe COVID-19. Factors associated with lower vaccination rates in our cohort were younger age, being born overseas and requiring an English-language interpreter. The results suggest that existing public health measures to vaccinate these vulnerable individuals have failed. A majority of the unvaccinated in our cohort were willing to receive vaccination. The unvaccinated frequently cited in-hospital vaccination and requiring a doctor's approval as factors to assist in obtaining a vaccination, suggesting access and counselling has been inadequate for this group. Given these vulnerable patients are likely to require hospitalisation if they contract COVID-19, a vaccination strategy that can identify and target these individuals is required. Such a strategy will have individual patient benefits but also protect the healthcare system from excessive COVID-19 burden.

In our cohort, vaccination status was associated with multiple social determinants of health including the need for an English-language interpreter and being born outside Australia. Individuals from ethnic minorities, those with lower incomes and lower education levels have previously been identified as having lower rates of intention to receive a COVID-19 vaccine (6, 7). A surrogate of socio-economic status, residential LGA, was not associated with vaccination status in our cohort, although this may reflect the small sample size. Despite existing data on the risk groups for non-vaccination, public health measures to target these groups for COVID-19 vaccination do not appear to have been successful in our cohort. Our data suggest efforts to increase vaccination rates requires an approach that is accessible to people of all cultural and linguistic backgrounds. Culturally and linguistically diverse (CALD) groups are already at higher risk of adverse health outcomes (8, 9). Similarly, previous international SARS-CoV-2 outbreaks have disproportionally effected CALD communities (10). There is some variation of vaccination rates within some CALD communities with those born in Italy having high vaccination rates compared to low rates among those born in Greece (table 1), the reasons for this are unclear. Increasing age was also associated with increasing rate of vaccination which may reflect public health messaging or a greater duration of vaccine availability for older individuals.

Among those who were not vaccinated in our cohort, a substantial proportion indicated difficulty with obtaining the vaccine, while a number expressed concerns about safety and side effects, even among those who indicated they were willing to have the vaccine. These factors are supported by the finding that COVID-19 vaccination status was associated with influenza vaccination in 2021, signifying that those who are vaccinated against COVID-19 may have greater access to healthcare, be more engaged in healthcare and/or have greater healthcare literacy. Previous studies of influenza vaccine uptake

have identified those who have risk factors for severe influenza or recently visited their healthcare provider are more likely to be vaccinated (11, 12). The vaccination rate in our cohort is numerically lower than the concurrent overall vaccination rate in ≥ 16 year olds in South Australia on 26th October 2021 being 79.6% (13). Notably, the vaccine eligible South Australian population is likely to have a lower median age and fewer COVID-19 risk factors than our cohort.

A change in public health vaccination strategy may engage and vaccinate high-risk groups in our cohort who have proven hard to reach via existing programs. The current national vaccination strategy is focussed on general practitioners, pharmacies and state-run mass vaccination centres that have been unable to reach many in our cohort. Hospital admission represents an important health-care episode where multiple healthcare staff are able to counsel patients on the need for COVID-19 vaccination. The unvaccinated participants in our study frequently cited in-hospital vaccination as a feature that would assist them getting vaccinated. A parallel hospital-based vaccination program may assist in vaccinating high-risk and CALD individuals. In order to facilitate in-hospital vaccination, system changes to allow rapid and effortless identification of unvaccinated individuals at every hospital encounter is required in conjunction with ready and opportunistic availability of COVID-19 vaccination on-site. An emergency-department based program has had success with this approach for short-stay patients (14), but expansion of the program to all inpatient, emergency department and outpatient visits may yield considerable results. Administration of vaccines while patients are admitted is not commonplace in adult hospitals; this was indicated as an important measure that might facilitate vaccination for many participants. The unvaccinated participants were disproportionately from a non-English speaking background. Vaccination promotion campaigns that are culturally and language appropriate are required to engage and vaccinate CALD members of the Australian community. Additionally, outreach programs to deliver vaccines into communities may be required. Some of our cohort identified their health problems and transport access as a barrier to physically visiting a vaccination site; in-home vaccination services may overcome this barrier.

This study has several limitations. The study was resource and time intensive. However, this was the only method that could reliably determine the vaccination status of inpatients in the absence of auditable data being held on the EMR of our health system. The point-prevalence design and the in-person interview requiring consent, produced a discrete sample of willing participants at a single time-point that is likely to change over time. The resource-intensive requirements limited our ability to recruit a larger portion of patients who required an English interpreter or required their SDM to provide consent. The latter aspect may have inadvertently excluded some participants from residential care facilities (RCFs). Government resources dedicated to achieving high vaccine rates in RCFs may mean our vaccination rate is lower than the true rate among all admitted patients. Conversely, the implied consent required to participate may have inadvertently excluded unvaccinated individuals who are unwilling to discuss vaccination. The overall effect of these competing factors is unclear, however the authors speculate they may have balanced each other out to have minimal impact on the results. A further limitation is the patient-report of vaccination status that we did not confirm owing to study resource limitations. Multi-variate analysis was not performed but may have allowed better understanding of factors associated with vaccination uptake. Finally, our study is from a single centre, may not represent other centres and is not reflective of the overall community vaccine uptake among specific groups. Most participants cited their race/ethnicity as "Australian" (data not shown), the authors speculate the sample was predominantly Caucasian, English-speaking individuals. There were few Indigenous Australian participants in our study (3%) and only 25% of our sample was under 55 years old. Thus, public health measures extrapolated from this data may not be applicable to the wider community. Nonetheless, the primary theme of improving vaccine access, patient-clinician discussions and messaging is likely to be broadly beneficial.

Conclusion

Most hospitalised patients have multiple risk factors for severe COVID-19 and death however, vaccine uptake was suboptimal. Of those who were unvaccinated, the majority were willing to receive COVID-19 vaccinations provided vaccines were made easily available. Those not yet vaccinated represent a hard to reach population requiring different strategies. These strategies include developing systems to identify them and taking the COVID-19 vaccinations to the opportunistically, either in hospital or at home through a mobile outreach service. Changes to the national vaccination strategy to include a parallel in-hospital program for all hospital encounters and greater culturally and linguistically appropriate vaccine promotion and delivery services may improve uptake among this high-risk, hard-to-reach group of patients.

References:

1. Baden LR, El Sahly HM, Essink B, Kotloff K, Frey S, Novak R, et al. Efficacy and Safety of the mRNA-1273 SARS-CoV-2 Vaccine. N Engl J Med. 2021;384(5):403-16.
2. Polack FP, Thomas SJ, Kitchin N, Absalon J, Gurtman A, Lockhart S, et al. Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine. N Engl J Med. 2020;383(27):2603-15.
3. Voysey M, Clemens SAC, Madhi SA, Weckx LY, Folegatti PM, Aley PK, et al. Safety and efficacy of the ChAdOx1 nCoV-19 vaccine (AZD1222) against SARS-CoV-2: an interim analysis of four randomised controlled trials in Brazil, South Africa, and the UK. Lancet. 2021;397(10269):99-111.
4. Government of South Australia. South Australia COVID-ready plan 2021 [Available from: https://www.covid-19.sa.gov.au/response
5. Williamson EJ, Walker AJ, Bhaskaran K, Bacon S, Bates C, Morton CE, et al. Factors associated with COVID-19-related death using OpenSAFELY. Nature. 2020;584(7821):430-6.
6. Robertson E, Reeve KS, Niedzwiedz CL, Moore J, Blake M, Green M, et al. Predictors of COVID-19 vaccine hesitancy in the UK household longitudinal study. Brain Behav Immun. 2021;94:41-50.
7. Ruiz JB, Bell RA. Predictors of intention to vaccinate against COVID-19: Results of a nationwide survey. Vaccine. 2021;39(7):1080-6.
8. Sze M, Butow P, Bell M, Vaccaro L, Dong S, Eisenbruch M, et al. Migrant health in cancer: outcome disparities and the determinant role of migrant-specific variables. Oncologist. 2015;20(5):523-31.
9. Durey A, Thompson SC. Reducing the health disparities of Indigenous Australians: time to change focus. BMC Health Serv Res. 2012;12:151.
10. Izzy S, Tahir Z, Cote DJ, Al Jarrah A, Roberts MB, Turbett S, et al., editors. Characteristics and Outcomes of Latinx Patients With COVID-19 in Comparison With Other Ethnic and Racial Groups. Open forum infectious diseases; 2020: Oxford University Press US.

11.   Jimenez-Garcia R, Jimenez I, Garrido PC, Hernandez-Barrera V, de Andres AL, del Barrio JL, et al. Coverage and predictors of influenza vaccination among adults with diabetes in Spain. Diabetes Res Clin Pract. 2008;79(3):510-7.

12.   Jimenez-Trujillo I, Lopez-de Andres A, Hernandez-Barrera V, Carrasco-Garrido P, Santos-Sancho JM, Jimenez-Garcia R. Influenza vaccination coverage rates among diabetes sufferers, predictors of adherence and time trends from 2003 to 2010 in Spain. Hum Vaccin Immunother. 2013;9(6):1326-32.

13.   Health S. COVID-19 update 26 October 2021 2021 [Available from: https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/about+us/news+and+media/all+media+releases/covid-19+update+26+october+2021.

14.   Simons SN, Hutton J, Walker K, Harding S. Opportunistic COVID-19 vaccination in the emergency department. Emerg Med Australas. 2021.

Table 1: Participant demographic and comorbidities by patient-reported COVID-19 vaccination status

	Unvaccinated	Vaccinated	TOTAL	p-value
n	88 (24%)	280 (76%)	368	
Gender				
Male	56 (25%)	166 (75%)	222	0.533
Female	32 (22%)	114 (78%)	146	
Median age (IQR)	60 (45-75)	69 (58-79)	67 (55-79)	0.0011
Vaccine by age range (years)				
18-30	10 (56%)	8 (44%)	18	<0.0001
31-40	9 (36%)	16 (64%)	25	
41-50	9 (32%)	19 (68%)	28	
51-60	18 (28%)	46 (72%)	64	
61-70	13 (18%)	60 (82%)	73	
70+	29 (18%)	131 (82%)	160	
Country of birth				
Australia	53 (20%)	211 (80%)	264	0.0081
United Kingdom	12 (33%)	24 (67%)	36	
Vietnam	2 (40%)	3 (60%)	5	
China	1 (25%)	3 (70%)	4	
Italy	2 (13%)	13 (87%)	15	
Greece	7 (70%)	3 (30%)	10	
Germany	1 (20%)	4 (80%)	5	
Other	10 (34%)	19 (66%)	29	
Country of birth				
Australia	53 (20%)	211 (80%)	264	
Overseas	35 (34%)	69 (66%)	104	0.0095
Primary language at home				
English	72 (22%)	252 (78%)	324	
Other	16 (36%)	28 (64%)	44	0.058
English interpreter required	10 (67%)	5 (33%)	15	0.0004
Aboriginal and/or Torres Strait	4 (36%)	7 (64%)	11	0.3021
Group accommodation/nursing	10 (31%)	22 (69%)	32	0.38
Vaccinated for influenza				
Yes	29 (13%)	195 (87%)	224	<0.0001
No	58 (43%)	76 (57%)	134	
Unknown	1 (10%)	9 (90%)	10	
Comorbidities				

Diabetes	24 (22%)	85 (78%)	109	0.69
Chronic lung disease	21 (21%)	77 (79%)	98	0.58
Cardiovascular disease	29 (18%)	135 (82%)	164	0.014
Cerebrovascular disease	10 (31%)	22 (69%)	32	0.38
Active cancer in last 12 months	24 (30%)	55 (70%)	79	0.14
Solid organ transplant	1 (10%)	9 (90%)	10	0.47
Immunosuppressed	18 (24%)	57 (76%)	75	>0.99
Chronic renal failure	9 (16%)	49 (84%)	58	0.097
Chronic liver disease	5 (21%)	19 (79%)	24	0.8098
Pregnant	0 (0%)	0 (0%)	0	NA
BMI >30	20 (21%)	77 (79%)	97	0.377
BMI unknown	22 (24%)	71 (76%)	93	NA
Number of comorbidities				
0	13 (29%)	32 (71%)	45	0.1922
1	23 (22%)	82 (78%)	105	
2	29 (32%)	62 (68%)	91	
3	15 (21%)	55 (79%)	70	
4	5 (13%)	34 (87%)	39	
>/=5	3 (17%)	15 (83%)	18	
Questionnaire conduct				
Interpreter used	4 (50%)	4 (50%)	8	
SDM	11 (38%)	18 (62%)	29	

Notes: *BMI-* Body Mass Index, *SDM-* Substitute decision maker

Table 2: Patient-reported reasons for non-vaccination and measures to improve vaccination status

	Yes (%)	No (%)	Not answered
Willing to be vaccinated (n=88)	59 (67%)	27 (31%)	2 (2%)
Reasons for non-vaccination			
I am booked/booking to receive one	10 (17%)	0 (0%)	
It is too difficult to obtain	14 (24%)	2 (7%)	
I have been waiting for mRNA vaccines	5 (8%)	3 (11%)	
COVID-19 vaccines are not safe enough	6 (10%)	17 (63%)	
COVID-19 vaccines have side effects	13 922%)	19 (70%)	
I plan to wait and see if it is safe, and may get it later	12 (20%)	10 (37%)	
I don't want to be a guinea pig	2 (3%)	8 (30%)	
I'm concerned about effects on fertility	0 (0%)	4 (15%)	
COVID-19 vaccines are not effective	1 (2%)	11 (41%)	
COVID-19 is not a problem in South Australia	2 (3%)	4 (15%)	
COVID-19 is not a severe disease	1 (2%)	3 (11%)	
COVID-19 is not a big enough threat for me to get the COVID-19 vaccine	5 (8%)	6 (22%)	
Family/friend have had bad experiences of the COVID-19	5 (8%)	5 (19%)	
COVID-19 vaccines are not accepted by my religion	1 (2%)	1 (4%)	
I have a fear of having needles or infections	4 (7%)	2 (7%)	
I have a medical contra-indication to COVID-19	8 (14%)	24 (89%)	
What would assist you in obtaining a COVID-19 vaccine			
Additional information on safety of the vaccine	11 (19%)	11 (41%)	
Availability of the vaccine while I am in hospital	32 (54%)	6 (22%)	
Vaccination in my home/workplace	7 (12%)	0 (0%)	
Additional time off work	3 (5%)	0 (0%)	
Transport to a vaccine centre	12 (20%)	0 (0%)	
More availability of the vaccine	6 (10%)	1 (4%)	
Approval from my doctor	25 (42%)	6 (22%)	
A financial incentive	3 (5%)	2 (7%)	
The need to be vaccinated to enter public venues	5 (8%)	4 (15%)	
My employer requiring me to be vaccinated to work	6 (10%)	1 (4%)	