

## **An Integrated Vaccine Clinic; a Novel Model of Care to Improve Vaccine Uptake in At-Risk Patient Groups**

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Dear Sir,

We read with interest the recent article by Corcoran et al highlighting low pneumococcal vaccine uptake in adults<sup>1</sup>. Suboptimal vaccination coverage is a significant issue and we continue to see morbidity and mortality rearing to vaccine preventable infections.

To address poor vaccination uptake in HIV-positive individuals attending the Department of Genitourinary medicine and Infectious Diseases (GUIDE), St. James's Hospital, Dublin, an integrated vaccine programme was established in 2003. This novel model of care incorporates an on-site vaccine clinic supported by a multi-disciplinary team including a dedicated vaccine nurse, data manager and pharmacist specifically appointed to the unit. The programme is overseen by an Infectious Diseases Consultant and offers universal access to recommended vaccines. The vaccine programme also employs a number of interventions including SMS text reminders, vaccine passports as well as targeted patient and provider education and real-time monitoring of influenza vaccine coverage in the cohort.

We examined influenza vaccine coverage following establishment of the vaccine programme (2003) and investigated factors associated with vaccine uptake in the cohort in the 2014/2015 influenza vaccine season. Univariate and multivariate regression analysis was used to identify factors associated with influenza vaccine uptake. St James's Hospital Institutional board review approval was obtained to undertake this study.

Seasonal influenza vaccine coverage in the cohort was 50% (481/969) in 2003/2004 increasing to 76% (1523/2004) in 2014/2015. In the 2014/2015 cohort (n=2004) median [IQR] age was 39 [33-47] years, 69% (n=1379) male, 52% (n=1044) Irish. Risk of acquisition of HIV was heterosexual in 39% (n=787), MSM in 41% (n=816), IDU in 18% (n=362).

On multivariate analysis we found that younger age [OR (95% CI), 0.98 (0.97- 0.99), p<0.01], injecting drug use (IDU) as risk of acquisition of HIV [OR (95% CI), 1.51 (1.07-2.12), p=0.02] and non-receipt of pneumococcal vaccine [OR (95% CI), 0.73 (0.56-0.97), p=0.03] were significantly associated with non-receipt of influenza vaccine (Table 1).

We observed a significant increase in influenza vaccine coverage in the setting of the integrated vaccine programme. Older age and prior receipt of pneumococcal vaccine were associated with influenza vaccine uptake. Older individuals may be more health conscious or that healthcare providers have greater awareness of vaccine indication in this group. IDU as risk of acquisition of HIV was negatively associated with documented vaccination however these patients may have received vaccination in drug treatment facilities.

Currently in Ireland there is no system to accurately estimate vaccination uptake in at risk groups. A study undertaken in 2005-2006 estimated influenza vaccine coverage of 28% in at risk groups <65 years<sup>2</sup>. Better characterisation of the barriers to immunisation at both patient and healthcare provider level are needed to guide vaccination strategies. Corcoran *et al* suggest a pro-active campaign to increase vaccine awareness, advocacy from healthcare providers, provision of dual-vaccination and point of care vaccination in hospital settings<sup>1</sup>. We suggest that the integrated vaccine unit model of care could be employed in other health care settings to improve vaccine coverage particularly in high risk patient groups.

**Table 1. Factors associated with non-receipt of Influenza vaccine**

Total	Influenza vaccine documented n (%)	Influenza vaccine not documented n (%)	Univariate analysis OR (95% CI) p-value	Multivariate analysis OR (95% CI) p-value
Mean age [SD]	40 [10]	38 [10]	1.9 (0.92-2.96), <0.01	0.98 (0.97- 0.99), <0.01
Male	1059 (70)	320 (67)	0.85 (0.68-1.06), 0.15	0.83 (0.62-1.12), 0.22
Region of origin				
Ireland	787 (52)	257 (53)	0.81 (0.62-1.06), 0.12	0.78 (0.55-1.21), 0.18
SSA	368 (24)	96 (20)		
South America	84 (6)	27 (6)		
Europe	142 (9)	54 (11)		
Other	138 (9)	43 (9)		
Acquisition risk of HIV				
IDU	250 (16)	112 (23)	1.54 (1.17-2.03), 0.01	1.51 (1.07-2.12) 0.02
MSM	635 (42)	181 (38)		
Heterosexual	610 (40)	177 (37)		
Other	24 (2)	7 (2)		
Mean duration of HIV infection (years) [SD]	7 [6]	6.5 [6]	0.05 (-0.56-0.67), 0.87	1.02 (0.99-1.04), 0.18
Mean CD4 count [SD]	547 [290]	523 [292]	28 (2.7-59) 0.07	1 (0.99-1.0), 0.45
Viral load ND on HAART	1329 (86)	411 (86)	0.88 (0.65-1.84) 0.39	0.95 (0.69-1.30), 0.74
Pneumococcal vaccine	1229 (81)	357 (75)	0.71 (0.56-0.91), <0.01	0.73 (0.56-0.97), 0.03

Abbreviations: SD, standard deviation, SSA Sub Saharan Africa, MSM men who have sex with men, IDU injecting drug user, IQR interquartile range, ND not detected, HAART highly active antiretroviral therapy, OR Odds Ratio

**Key words:** HIV, Influenza, Vaccine clinic

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## References:

1. Corcoran M, Mereckiene J, Murchan S, McElligott M, 'Flanagan D, Cotter S, Cunney R, Humphreys H. Is It Time To Review The Vaccination Strategy To Protect Adults Against Invasive Pneumococcal Disease? Ir Med J. 2019 Mar 14;112(3):894
2. Mereckiene J, O'Donnell J, Collins C. Risk groups and uptake of influenza and pneumococcal vaccine in Ireland. Euro Suveill, 12(12), 756(2007).