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E-VACCINE REGISTRY: SYSTEMATIC VACCINE REGISTRY IMPROVES THE IMMUNISATION COVERAGE IN HIV PATIENTS

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BACKGROUND

Infections represent a significant threat for HIV-positive patients, with higher attack rates and an increased risk for severe and complicated illnesses, especially when CD4 counts fall below 200cells/mm^3. Despite existing recommendations, HIV-positive patients may not be immune to vaccine-preventable diseases due at least two reasons: (1) immunization schedules are not being systematically reviewed during routine consultations, and (2) there may be concerns on vaccine-induced adverse events and efficacy in this specific population. We aim at evaluating the impact of an electronic vaccine record on the immunization status of HIV-positive individuals in Geneva, Switzerland.

METHODOLOGY

In this controlled before-and-after cohort study, a vaccinology consultation was offered to all adult (>18 years old) HIV-positive patients attending the Infectious Diseases Division of the University Hospitals of Geneva between 1 May 2016 and 10 April 2018. A total of 328 patients were enrolled. Vaccinology consultations were then undertaken at the Center for Vaccinology of the University Hospitals of Geneva and entailed the following assessments:

1. **Vaccine history and documentation** in a national electronic immunization registry (www.myvaccines.ch)
   - Data is accessible by the HIV-center physicians, the patient's private physician and the patients themselves.
2. **Serological evaluation**
   - Hepatitis A/B, measles, rubella and varicella unless vaccination was documented
3. **Vaccine status assessment**
   - Through the algorithms of an expert Clinical Decision Support System (CDSS, viavac®) embedded in the registry - using age, gender, medical / exposition individual risk factors, registered vaccines and serologies.
4. **The establishment of a catch-up immunization plan**
   - Automatically generated by the CDSS and subsequently implemented during follow-up visits.

RESULTS

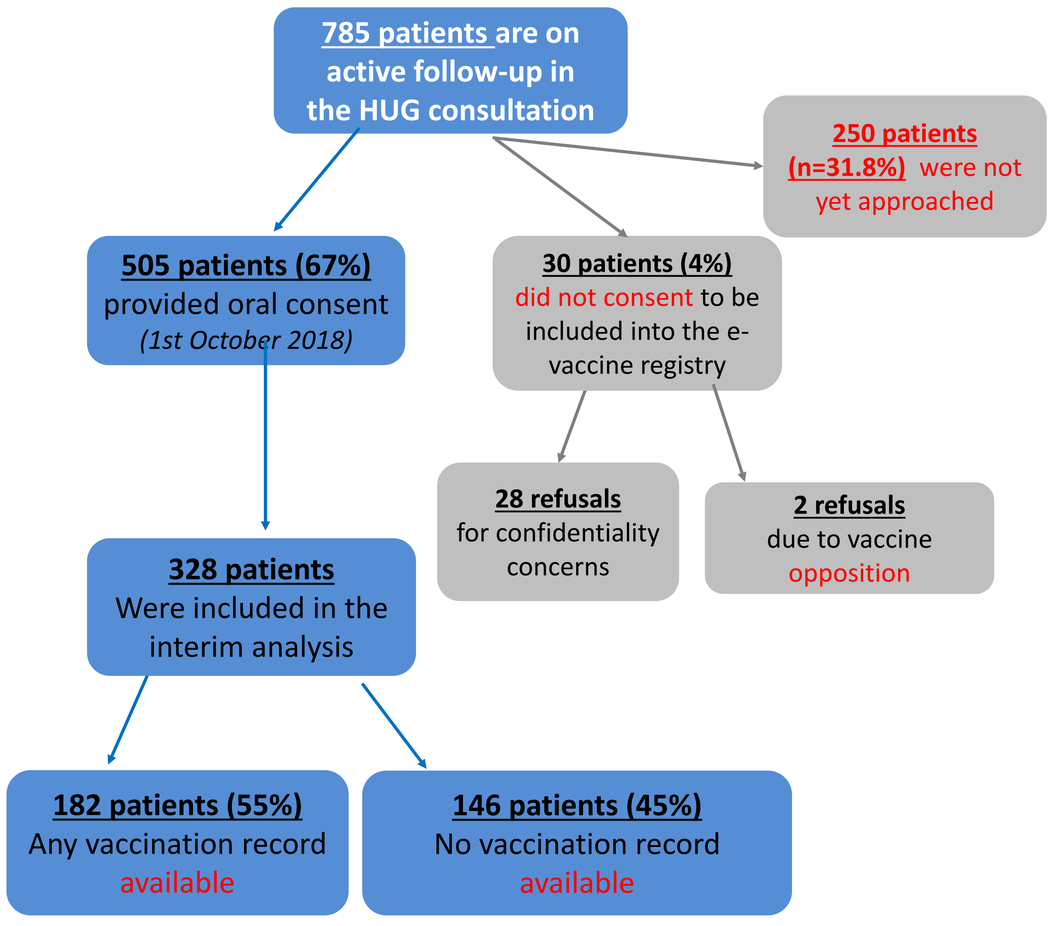

Table 1: Demographic characteristics

Age (median)	49 years (range: 18-85 years)
Males/females (ratio)	2.2
CD4 >200 (cells/mm3)	296 (90%)

Table 2: Immune protection against vaccine preventable disease.

	At enrollment n=328		On June 1st 2018 n= 328		Difference
	n	% (95%CI*)	n	% (95%CI*)	% (95%CI**)
Tetanus	8	2.4% (1.1 to 4.7)	141	43.0% (37.6 to 48.5)	+ 40.5% (35.2 to 46.1)
Hepatitis A	189	57.6% (52.1 to 63.0)	206	62.8% (57.3 to 68.1)	+ 5.2% (3.0 to 8.2)
Hepatitis B	206	62.8% (57.3 to 68.1)	207	63.1% (57.6 to 68.3)	+ 0.3% (0.0 to 1.7)
Measles	48	14.6% (11.0 to 18.9)	97	29.6% (24.7 to 34.8)	+ 14.9% (11.3 to 19.3)
Varicella	184	56.1% (50.5 to 61.5)	187	57.0% (51.5 to 62.4)	+ 0.9% (0.2 to 2.6)
Pneumococcus	0	0.0% (0.0 to 1.1)	87	26.5% (21.8 to 31.7)	+ 26.5% (21.8 to 31.7)

CONCLUSIONS

Despite regular visits and attention given to vaccine immunity, HIV-positive patients followed in our expert care center were poorly immunized / protected against vaccine-preventable-diseases, with only 2.4% being seroprotected against tetanus when assessed. The implementation of a systematic evaluation, supported by an electronic CDSS which generated ready-to-use catchup plans significantly increased vaccine coverage to tetanus and *S. pneumoniae*. Recommended immunization were readily accepted unless not covered by the medical insurance (Prevenar13®), which unfortunately limited catchup.

Thus the poor vaccine coverage observed in our patients mainly reflects missed opportunities during routine care and not vaccine hesitancy or refusal.