

HPV detection for cervical screening by vaginal self-sampling and urine collection in 201 women living with HIV

AUTOCol study

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Introduction: Vaginal self-sampling (VSS) has been implemented as primary screening tool in several countries. Urine collection (UC) can be an alternative if women are uncomfortable with genital sampling. Women living with HIV (WLHIV) are at increased risk of cervical intraepithelial lesions.

Methods: AUTOCol is a multicentre prospective study enrolling WLHIV for cervical cancer screening in 4 hospitals in Paris. Both VSS (FLOQSwab in Mswab medium, Copan, Italy) and UC (Colli-pee, Novosanis, Belgium) were offered. High-risk HPV (HR-HPV) were detected with AnyplexII (Seegene, South Korea) by semi-quantitative PCR.

Results

Inclusion:

- Between June 2023 and January 2024
- 201 WLHIV
- Median age = 51 years (IQR = 43-58)

Immunovirological status:

- HIV viral load: 72% undetectable (n=143/199, VL <20 c/mL)
- Median CD4 T-cell count: 772/mm³ with 5 WLHIV <200/mm³ CD4 cells

Sample collection: 174 VSS and 169 UC → 167 paired samples

Sampling method validity: only one unsatisfactory sample for each sampling method

HPV infections prevalence on VSS:

- 43.4% (75 WLHIV) had at least one HR-HPV
- 33.3% (n = 25) of them had multiple HR-HPV infections
- 10.7% (n = 8) were positive for HPV16

VSS and UC comparison for HPV detection:

Concordance: 83% of agreement, kappa = 0.64 (Fig.1, Table 1)

Discordant results (Fig.2)

- 39 HR-HPV from 34 WLHIV were detected in VSS and negative in UC
- 8 HR-HPV in 7 WLHIV were detected in UC and negative in VSS
- HR-HPV viral load estimation was low for 37 of these 47 discordant HR-HPV (79%)

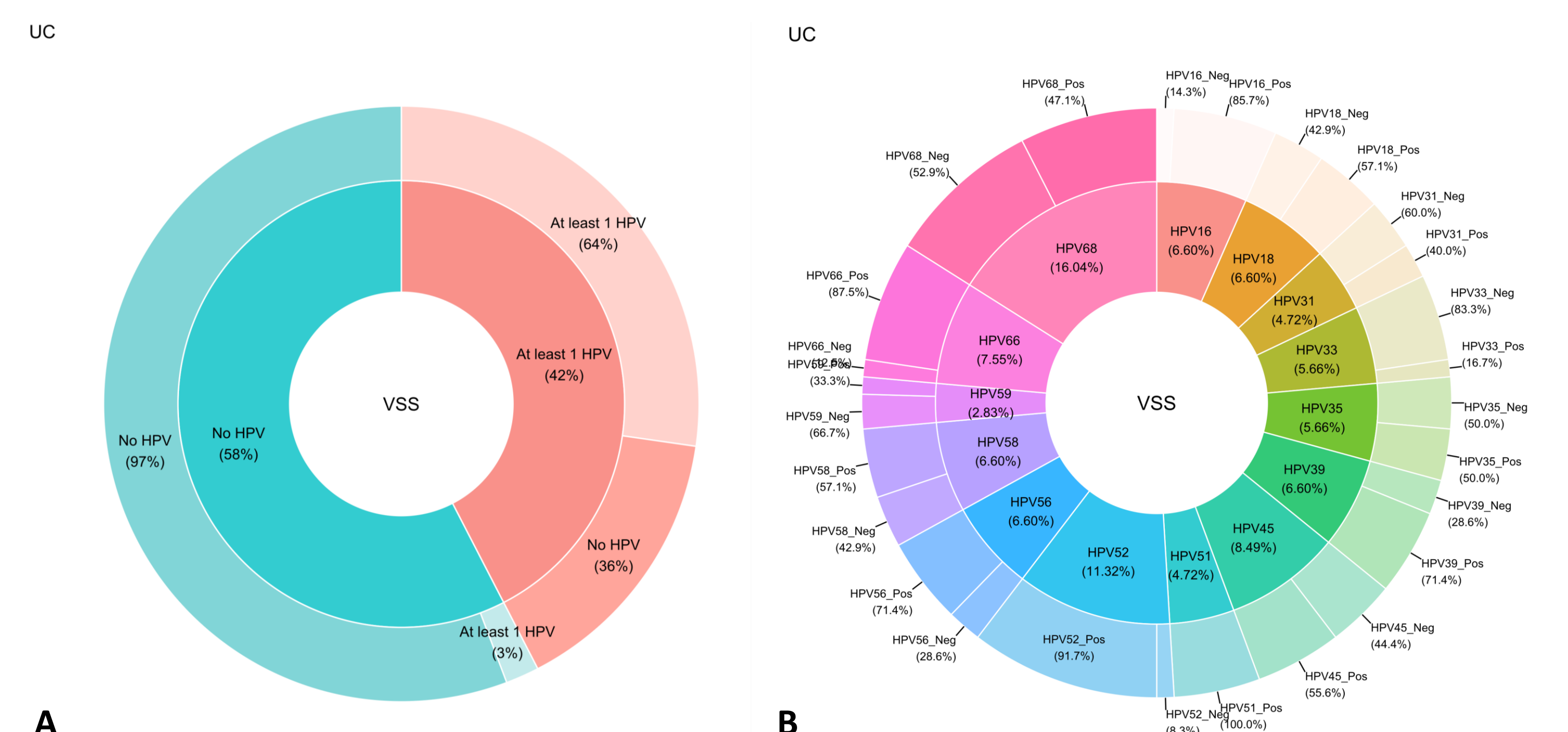


Figure 1: Pie-donut plots representing concordance of HPV detection between VSS and UC. A) concordance for at least one HR-HPV detection; B) concordance for the 14 HR-HPV detection.

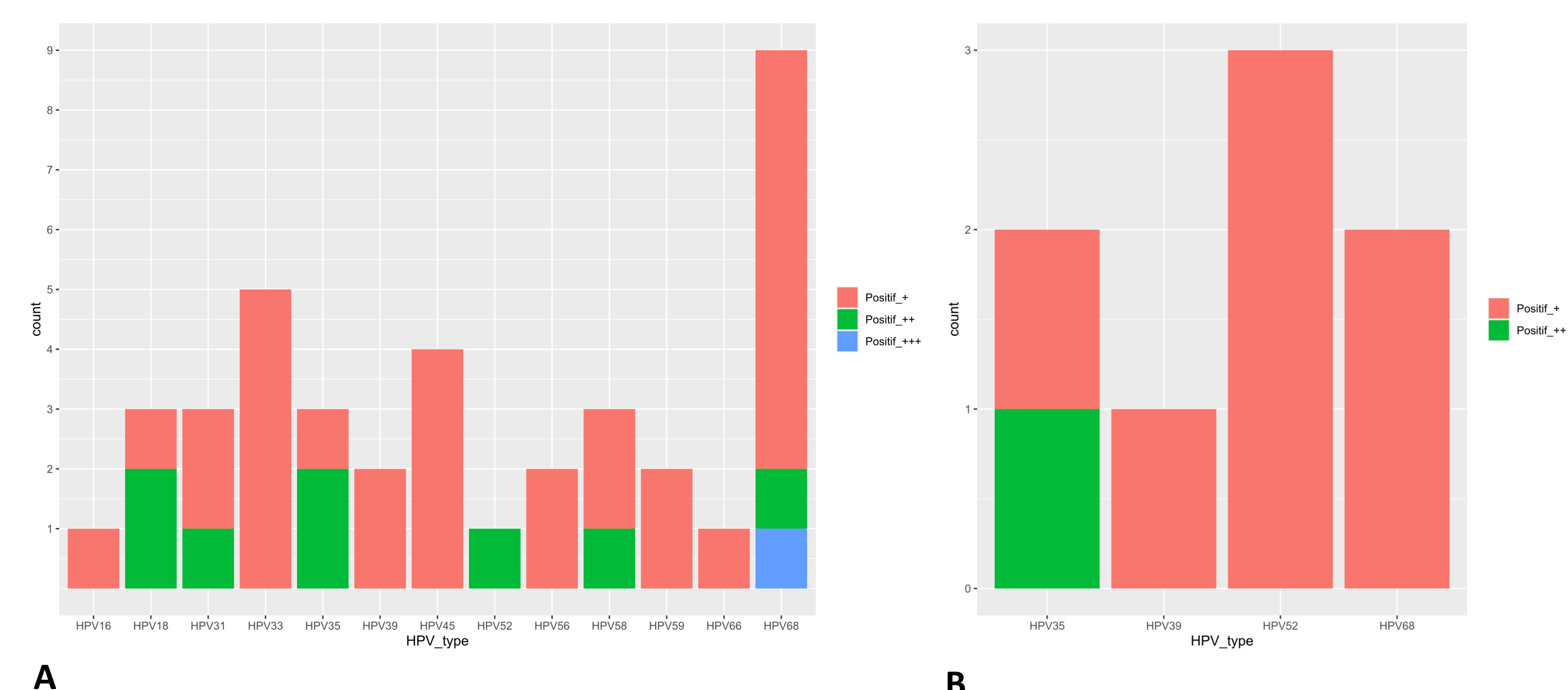


Figure 2: Description of discordant HR-HPV with semi-quantitative evaluation (+ low VL, ++ intermediate VL, +++ high VL).

A) 39 HR-HPV in 34 WLHIV detected in VSS while negative in UC

B) 8 HR-HPV in 7 WLHIV detected in UC while negative in VSS

| HR-HPV | Agreement | Kappa coefficient |
|--------|-----------|-------------------|
| HPV16 | 99.4 | 0.92 |
| HPV18 | 98.2 | 0.72 |
| HPV31 | 98.2 | 0.56 |
| HPV33 | 97.0 | 0.28 |
| HPV35 | 97.0 | 0.53 |
| HPV39 | 98.2 | 0.76 |
| HPV45 | 97.6 | 0.70 |
| HPV51 | 100.0 | 1.00 |

| HR-HPV | Agreement | Kappa coefficient |
|------------|-----------|-------------------|
| HPV52 | 97.6 | 0.83 |
| HPV56 | 98.8 | 0.83 |
| HPV58 | 98.8 | 0.72 |
| HPV59 | 98.8 | 0.50 |
| HPV66 | 99.4 | 0.93 |
| HPV68 | 93.3 | 0.56 |
| All HR-HPV | 83.0 | 0.64 |

Table 1: Percentage of agreement and kappa's coefficient for HR-HPV detection in paired VSS and UC samples by HR-HPV type and overall (n=165).

Interpretation:

VSS and UC are both suitable for HR-HPV detection
VSS appears to be more sensitive when HR-HPV VL is low

Conclusion: VSS is a good alternative for women needing more frequent cervical cancer screening or are reluctant to undergo gynaecological examination. UC should only be proposed if women refuse any genital sampling.