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# INCREASING INCIDENCE OF SYPHILIS AMONG PEOPLE LIVING WITH HIV IN CROATIA DURING THE COVID-19 YEARS 2020 AND 2021

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## INTRODUCTION

Croatia has a low-level HIV epidemic, men who have sex with men (MSM) are mainly affected [1]. HIV care is centralized, all people living with HIV (PLWH) are treated at the University Hospital for Infectious Diseases (UHID) in Zagreb [2]. We assessed temporal trends and associated risk factors for newly diagnosed syphilis in PLWH in the period 2018 - 2021.

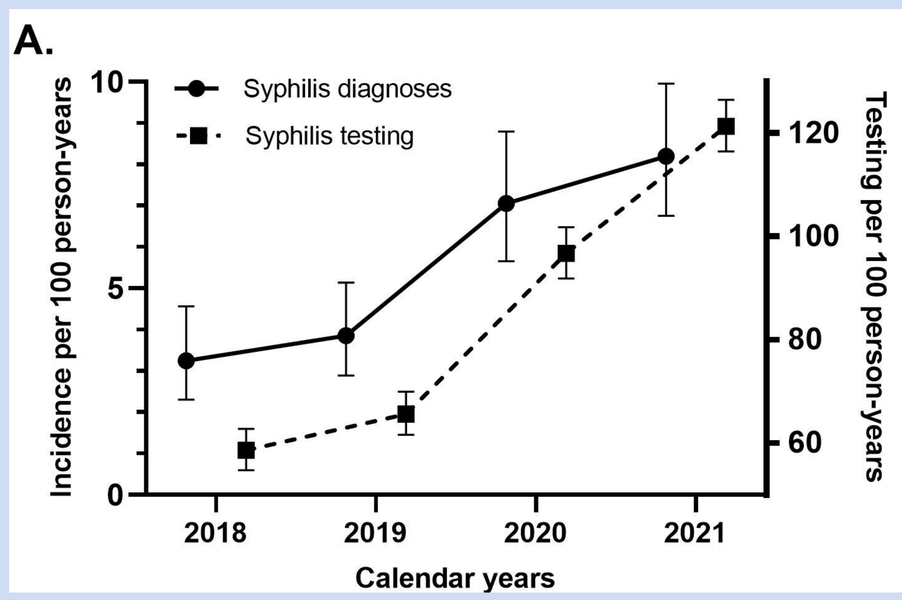
## MATERIALS AND METHODS

Incident syphilis infection occurring in PLWH were reviewed from the electronic database at UHID. New syphilis cases were defined based on a combination of established laboratory parameters as well as clinical diagnoses. All adults (≥18 years) followed at UHID for at least one year with at least one contact between January 1, 2018 and December 31, 2021 were included in this study (N=1315). The observation period ended with the last date of contact or December 31, 2021. We calculated the annual incidence density of syphilis diagnoses and performed Poisson GEE regression analysis for factors related to new syphilis diagnoses and testing.

## RESULTS

Of 1315 PLWH, 1184 (90.2%) were men, median age was 42.0 (34.9–51.1) years (Table). 211 PLWH had a total of 271 new syphilis diagnoses during 4740.1 years of follow-up. Of 271 events, 128 (47.2%) were first syphilis diagnoses, and 162 (59.8%) had symptomatic syphilis (secondary, n=97). The overall syphilis incidence was 5.7 (95%CI, 5.0–6.6) per 100 person-years (PY), it increased from 3.2 (95%CI, 2.3–4.5) to 8.2 (95%CI, 6.8–10.0) per 100 PY during 2018–2021 (Figure). On adjusted analysis (adjusted for the number of tests and other variables) younger age, calendar year, MSM risk was associated with syphilis, the association with living in Zagreb was less pronounced (Figure). The rate of syphilis testing doubled between 2018 (50.4, 95%CI, 56.5-64.6 per 100 PY) and 2021 (123.0, 95%CI, 118.1-128.1 per 100 PY). Factors related to the frequency of syphilis testing were: age, calendar year, MSM risk, and living in Zagreb (Figure).

**Figure.** Incidence of syphilis diagnoses in the whole study population and in MSM, and testing per 100 person-years of follow up in the period 2018 to 2021 (A), and factors related to syphilis incidence and testing on multivariable analysis (B).




*Adjusted also for syphilis testing. **Adjusted also for syphilis diagnoses. MSM, men who have sex with men.

**Table.** Main characteristics of people living with HIV with and without a new diagnosis of syphilis and the rate of syphilis in selected populations.

| | *Syphilis* | | | | *Syphilis rate per 100 PY and 95% CI* |
|---|---|---|---|---|---|
| | *No (N = 1104)* | *Yes (N = 211)* | *Total (N = 1315)* | *P Value* | |
| **Sex at birth** | | | | | |
| Female | 128 (11.6) | 0 (0.0) | 128 (9.8) | <0.001 | |
| Male | 973 (88.4) | 211 (100.0) | 1184 (90.2) | | 6.4 (5.6-7.2) |
| **Age, years** | | | | | |
| < 35 | 261 (23.6) | 73 (34.6) | 334 (25.4) | <0.001 | 8.5 (6.7–10.6) |
| 36-49 | 520 (47.1) | 103 (48.8) | 623 (47.4) | | 5.7 (4.7–6.9) |
| 50+ | 323 (29.3) | 35 (16.6) | 358 (27.2) | | 3.5 (2.4–5.0) |
| **Mode of transmission** | | | | | |
| MSM | 775 (70.2) | 201 (95.3) | 976 (74.2) | <0.001 | 7.4 (6.5–8.5) |
| Heterosexual | 254 (23.0) | 5 (2.4) | 259 (19.7) | | 0.6 (0.3–1.6) |
| Other/unknown | 75 (6.8) | 5 (2.4) | 80 (6.1) | | 1.8 (0.8–4.1) |
| **Living in Zagreb** | | | | | |
| No | 633 (57.3) | 81 (38.4) | 714 (54.3) | <0.001 | 4.2 (3.3–5.3) |
| Yes | 471 (42.7) | 130 (61.6) | 601 (45.7) | | 7.5 (6.4–8.9) |
| **Had clinical AIDS** | | | | | |
| No | 816 (73.9) | 184 (87.2) | 1000 (76.0) | <0.001 | |
| Yes | 288 (26.1) | 27 (12.8) | 315 (24.0) | | |
| **Antiretroviral therapy** | | | | | |
| After baseline | 77 (7.0) | 20 (9.5) | 97 (7.4) | 0.39 | |
| Before baseline | 1018 (92.2) | 190 (90.0) | 1208 (91.9) | | |
| No ART | 9 (0.8) | 1 (0.5) | 10 (0.8) | | |
| **Baseline CD4 cell count per mm$^3$** | | | | | |
| >500 | 628 (60.3) | 135 (64.3) | 763 (60.9) | 0.28 | |
| ≤500 | 414 (39.7) | 75 (35.7) | 489 (39.1) | | |
| **Duration of HIV infection, years** | 5.5 (1.4 – 12.0) | 2.8 (0.3 – 6.5) | 5.0 (1.2 – 11.3) | <0.001 | |
| **Antibody to hepatitis C** | | | | | |
| Negative | 1037 (93.9) | 202 (95.7) | 1239 (94.2) | 0.30 | |
| Positive | 67 (6.1) | 9 (4.3) | 76 (5.8) | | |
| **Hepatitis B surface antigen** | | | | | |
| Negative | 1049 (95.0) | 199 (94.3) | 1248 (94.9) | 0.67 | |
| Positive | 55 (5.0) | 12 (5.7) | 67 (5.1) | | |

Values are frequencies with percentages and median with first and third quartile. Rates are presented per 100 person-years (PY) with 95% confidence intervals (95% CI). MSM, men who have sex with men. ART, antiretroviral therapy.

## CONCLUSION

During the COVID-19 epidemic years, the incidence rate of syphilis was more than 2-times higher than in previous years reflecting ongoing sexual risk in predominantely younger MSM and highlighting the need for enhanced prevention interventions.

**REFERENCES:**
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