Impact of COVID-19 pandemic on HIV viral load testing in paediatric HIV centres in the European Pregnancy and Paediatric Infections Cohort Collaboration (EPPICC)

Siobhan Crichton[1], Cristina Epalza[2], Tessa Goetghebuer[3], Charlotte Jackson[1], Ali Judd[1], Marthe Le Prevost[1], Laura Marques[4], Vana Spoulou[5], Intira Jeannie Collins[1]
on behalf of the European Pregnancy and Paediatric Infections Cohort Collaboration (EPPICC)

[1]MRC Clinical Trials Unit at University College London, London, UK; [2]Pediatric Infectious Diseases Unit, Department of Pediatrics, Pediatric Research and Clinical Trials Unit (UPIC), Translational Research Network in Pediatric Infectious Diseases (RITIP), Hospital Universitario 12 de Octubre, Madrid, Spain ; [3]Hopital St Pierre, Brussels, Belgium; [4]Serviço de Pediatria, Departamento da Infância e da Adolescência, Centro Materno Infantil do Norte, Centro Hospitalar e Universitário do Porto, Porto, Portugal; [5]"Agia Sofia" Children's Hospital, 1st Dept of Paediatrics, Athens, Greece

s.crichton@ucl.ac.uk

Introduction

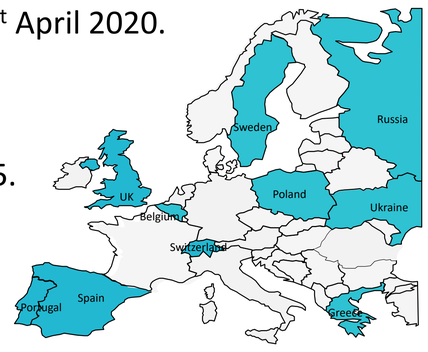
The COVID 19 pandemic impacted HIV services globally, with clinics limiting in-person visits to priority patients.

In children and young people living with HIV (CLWHIV) in Europe we explored trends in viral load (VL) monitoring before and during the pandemic and associated factors, from 2015 to September 2020.

Setting

Data source: 12 paediatric HIV observational cohorts across 10 European countries with routine VL data available in EPPICC beyond 1st April 2020.

Inclusion criteria: age <18 years at HIV diagnosis and in paediatric HIV care since 2015. For CLWHIV who transitioned to adult care, data from adult care were not included.



Methods

Generalised estimating equations (GEE) were used to estimate VL testing rates (linear models) and the proportion of results unsuppressed (VL≥200c/ml, logistic models), overall and by cohort.

- Models assessed trends over calendar year for 2015-2020, and then in more detail by month for 2019-2020.
- Logistic regression was used to explore characteristics (as of 01/04/2020, proxy for start of lockdowns) associated with having ≥1 VL test in the first quarter of the pandemic (April–June 2020).

Results: Temporal trends in viral load testing

Overall, 4,649 CLWHIV were in paediatric HIV care at some point between 2015-2020 and followed in EPPICC:

- 35% were in Ukraine, 24% United Kingdom, 24% Russia, 9% Spain, <5% from each of Greece, Switzerland, Poland, Portugal, Belgium and Sweden.
- 89% acquired HIV vertically, 97% ever initiated ART, median age at ART initiation was 3.0 [IQR 0.8, 7.6] years.
- Among CLWHIV in paediatric care at start of 2015 (n=3980) and in 2020 (n=2096), the median age was 10.8 [6.9, 14.6] and 12.7 [8.4, 15.9] years, respectively.
- VL test rates were stable from 2015-2019 and declined in 2020 (Fig 1A). During 2019-20, the lowest test rates were in April 2020 (Fig 1B).
- There was a significant decline in percentage of tests with VL≥200c/ml between 2015 and 2020 (Fig 2A). Overall, the percentage with VL≥200c/ml varied across regions, e.g., 53% in one Russian cohort vs 9% elsewhere in 2020 (similar differences were seen in other years).
- Overall, there was no evidence of an increase in proportion with detectable VL during 2020 (Fig 2B).

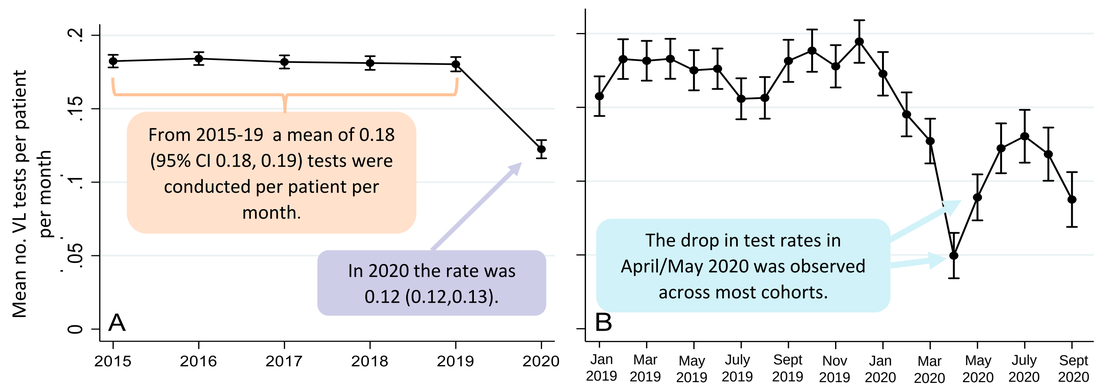


Figure 1: Estimated VL test rates (with 95% confidence intervals) by year (A) and by month (B)

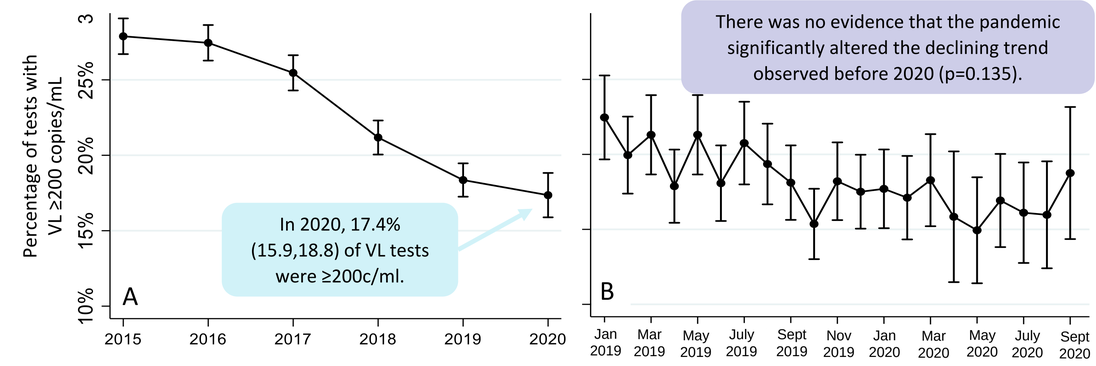
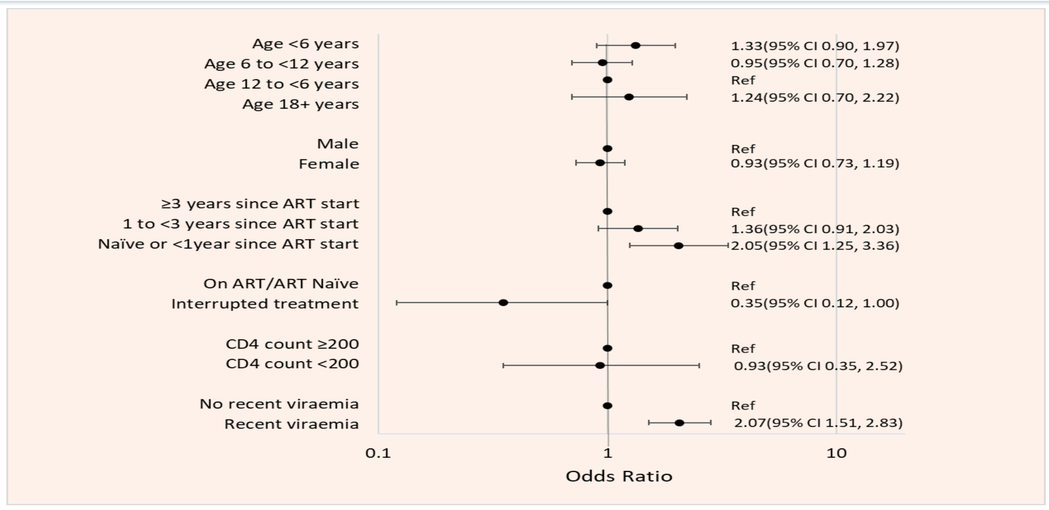


Figure 2: Percentage of tests (with 95% confidence intervals) with VL>200c/ml by year (A) and month (B)

Characteristics associated with having ≥1 VL test during the COVID pandemic



Note: Odds ratios calculated using a multivariable logistic regression, which additionally adjusted for cohort. Recent viraemia was defined as having ≥1 VL≥200c/ml in previous year. CD4 count was measured at last visit before April 2020.

Figure 3: Characteristics associated with having ≥1 VL test between April-June 2020

Data were available for **1,784 CLWHIV in paediatric care between April-June 2020.** As of 01/04/2020:

- 54% were female, median age was 12.3 [IQR 8.1,15.5] years
- 97% were on ART, 2.5% had interrupted treatment, 0.8% were treatment naïve,
- 6.9% had started ART within previous 12 months,
- 25.6% had recent viremia (≥1 VL≥200c/ml in previous year),
- 1.4% had CD4<200 at last visit.

403 of the 1784 (22.6%) CLWHIV in paediatric care had ≥1 VL test in April-June 2020

- In multivariate logistic regression analysis, those who were naïve or started ART within the last year, or had recent viraemia, were more likely to have a VL test, while those on treatment interruptions were less likely to have a test (Figure 3).

Conclusion

- **The COVID-19 pandemic had considerable impact on frequency of VL testing and there was evidence of appropriate prioritisation in testing CLHIV, mostly based on ART and VL status.**
- **The proportion with unsuppressed VL was already declining pre-pandemic and remained stable during the second quarter of 2020 despite use of targeted VL testing.**
- **Further data are needed to assess if trends continued across subsequent lockdowns and post-pandemic, and to assess any subsequent effect of reduced clinic visits on virological outcomes.**

Acknowledgements

Cohorts participating in EPPICC and included in this study: Hospital St Pierre Cohort, Brussels, Belgium (T Goetghebuer); Greece Cohort, Greece (V Spoulou); Paediatric Cohort, Poland (M Marczynska); The Republican Hospital of Infectious Diseases, St Petersburg, Russia (E Voronin, L Okhonskaia, V Rozenberg); The City HIV Centre, St Petersburg, Russia (A Samarina); Irkutsk AIDS Centre, Russia (Y Plotnikova); CoRISPES, rest of Spain cohort, Spain (M Navarro), Karolinska University Hospital, Stockholm, Sweden (L Naver); Swiss Mother and Child HIV Cohort Study, Switzerland (C Kahlert); Centro Hospitalar do Porto, Portugal (L Marques), Integrated Screening Outcome Surveillance Service, UK and Ireland (C Thorne); Collaborative HIV Paediatric Study, UK and Ireland (A Judd); Paediatric HIV Cohort Study, Odessa, Ukraine (A Volokha, R Malyuta).

Funding: PENTA Foundation and ViiV healthcare. The MRC Clinical Trials Unit at UCL is supported by the Medical Research Council (programme number: MC_UU_00004/03).

Smarter Studies
Global Impact
Better Health