Mortality Risk among Children <5 Years Old with HIV on ART

811

Nickolas T. Agathis, MD MPH[1], Iyiola Faturiyele, MBChB MPH[2], Kiva Fisher, PhD MPH[1], Stephanie Hackett, PA-C MPH MMSc[1], Elfriede Agyemang MD MPH[1], Susan Hrapcak, MD[1], George Siberry, MD MPH[2], Catherine Godfrey, MD[1,3]

[1]U.S. Centers for Disease Control and Prevention, Atlanta, GA; [2]United States Agency for International Development, Washington, D.C.; [3]Office of the Global AIDS Coordinator, U.S. Department of State, Washington, D.C.

BACKGROUND

- Children living with HIV (CLHIV) < 5 years old (yo) not on antiretroviral treatment (ART) experience disproportionately high mortality.
- Mortality risk among CLHIV on ART is less clear.
- We aimed to describe and compare mortality rates among CLHIV <5 yo on ART with that of older people living with HIV (PLHIV) ≥5 yo on ART.

METHODS

- We analyzed US President's Emergency Plan for AIDS Relief (PEPFAR) Monitoring, Evaluation, and Reporting data collected quarterly from all PEPFAR-supported sites globally during October 2019-March 2022.
- We described
  - **Total number of deaths reported among those on ART**,
  - **Percent of those on ART who died,** and
  - **Viral load suppression** (VLS) **rates**: proportion of PLHIV on ART with VL result reported who were virally suppressed [HIV RNA < 1000 copies/mL].
- **Crude mortality ratios (CMR)** using the percent who died were calculated by reporting quarter and for the entire time period.

$$\textbf{\% on ART who died} = \frac{\textbf{\# of reported deaths} \text{ in reporting quarter}}{\textbf{\# of PLHIV on ART} \text{ at beginning of reporting quarter} + \textbf{\# of PLHIV initiated on ART} \text{ in current reporting quarter}}$$

$$\textbf{CMR} = \frac{\textbf{\% of <5 yo on ART} \text{ (i.e. either <1 or 1-4 yo) } \textbf{who died}}{\textbf{\% of ≥5 yo on ART} \text{ (i.e. either 5-14, 15-49, or ≥50 yo) } \textbf{who died}}$$

Global PEPFAR program data suggest **children living with HIV < 5 years old on ART may have higher likelihood of death** compared to older children, adolescents, and adults living with HIV on ART.

RESULTS

- From Oct 2019-Mar 2022,
  - on average 123,636 CLHIV < 5 yo were on ART each quarter (n=14,152 < 1 yo and n=109,484 1-4 yo);
  - in total 7,949 CLHIV < 5 yo on ART died (n=1,510 < 1 yo and n=6,439 1-4 yo) over this period.
- CLHIV < 1 yo AND 1-4 yo on ART were more likely to die compared to PLHIV on ART 5-14 yo, 15-49 yo, and ≥50 yo (**Figure**).
- Average VLS rates among CLHIV < 1 and CLHIV 1-4 yo were 78% and 72%, respectively, compared to 84%, 94%, and 96% of those 5-14, 15-49 and ≥50 yo, respectively.

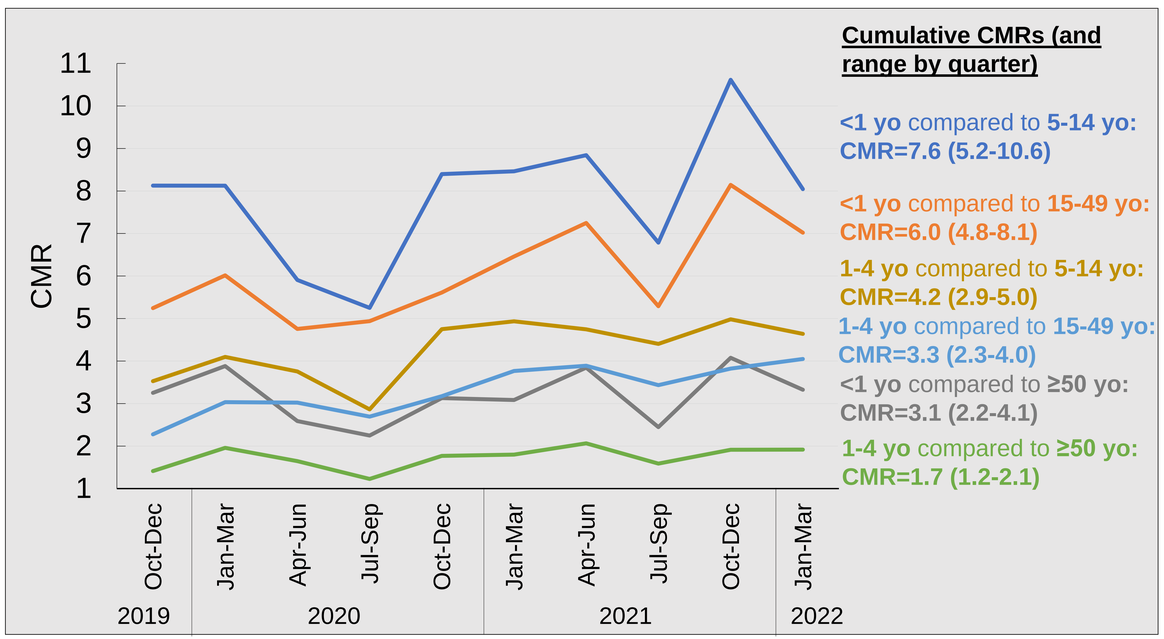


Figure: Crude Mortality Ratios (CMR) among PLHIV on ART by age groups and quarter during October 2019-March 2022 in all PEPFAR supported sites.

CONCLUSIONS

- PEPFAR program data suggest CLHIV < 5 yo on ART, including those < 1 and 1-4 yo, may have higher likelihood of death compared to PLHIV 5-14, 15-49, and ≥50 yo on ART based on deaths reported during October 2019-March 2022.
- Lower rates of VLS among those < 1 and 1-4 yo suggest inadequately treated HIV may be a factor.
- Limitations:
  - Data collected in aggregate quarterly and cannot monitor individuals over time or across indicators.
  - Data quality and completeness likely vary among indicators and over time and by program sites.
  - PEPFAR mortality data likely underestimate of true mortality due to underreporting
  - Cannot make causal inferences between VLS rates or other HIV indicators and mortality given risk of ecologic bias.
- Individual- or site-level data can help better understand confounding and causal factors related to mortality of CLHIV < 5 yo.
- These findings further highlight
  - the need to further characterize causes of death in young children on ART and identify potential interventions to reduce their mortality risk, and
  - the health inequities that CLHIV < 5 yo experience and the importance of global efforts to improve their health.

ADDITIONAL KEY INFORMATION

Please send questions and comments to Nickolas T. Agathis, U.S. Centers for Disease Control and Prevention, Atlanta GA, gdx7@cdc.gov

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