


# Call for action: addressing the alarming surge of HIV in Madagascar

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In stark contrast to its neighbours in Sub-Saharan Africa, Madagascar reports an estimated HIV prevalence below 0.5%.<sup>1</sup> HIV infections are perceived to be primarily concentrated in key populations. However, closer inspection suggests an underestimated epidemic transitioning to the general population.

A 2020 analysis by Raberahona *et al* on the status of HIV in Madagascar already suggested that the country may be on the verge of a high-prevalence epidemic, with a concerning rise in sexually transmitted infections (STIs) in the general population, elevated HIV rates among sex workers and an increase in cases newly diagnosed with late-stage disease.<sup>2</sup> The study also underscores weaknesses in the epidemiological surveillance of HIV.

A recent study in a high-risk region reports an unprecedented 2.9% HIV prevalence in the general population, soaring to 13% in urban areas.<sup>3</sup> Experts from various regions report a continuing surge in HIV positivity rates and AIDS-defining conditions, with many patients unaware of their serological status. Obstetricians observed a 7% HIV prevalence in pregnant women in a northern district in 2023, with limited testing and treatment capacities leading to untreated pregnant women and newborns being born without prophylaxis or treatment (C. Benski, unpublished). Hospital cohort data show a rise in newly diagnosed HIV cases during admission, increasing from 0% to 25.4% between 2010 and 2016, and patients diagnosed in stage 3 and/or 4 rose from 6.6% to 38.9%.<sup>4</sup> An increase in extrapulmonary tuberculosis (TB) cases, mainly lymphadenopathy, revealed by TB surveillance data, raises further concern. Limited diagnostic resources frequently necessitate reliance on clinical assessment for diagnosis, hindering the exclusion of differentials. In a

## SUMMARY BOX

- ⇒ In Madagascar, the HIV epidemic was long thought to be concentrated on key populations like sex workers, men who have sex with men and intravenous drug users. Although weaknesses in the national epidemiological HIV surveillance have been described, mounting evidence now reveals a surge in HIV across populations and regions, indicating a potential transition of the epidemic to vulnerable and the general population.
- ⇒ Despite broadening its national HIV strategy, the lack of larger epidemiological studies hampers international support and consequently the country's ability for a comprehensive response, leading to inadequate HIV awareness, care services and research initiatives.
- ⇒ The authors, representing academic, civil society and governmental sectors involved in the HIV response, urge immediate collaborative action between national and international stakeholders to expand HIV interventions, bridge funding gaps and deepen epidemiological understanding for a more robust national HIV response.

study assessing the specificity and sensitivity of molecular diagnostics for extrapulmonary TB, Rakotoarivelo *et al* found a 12% HIV positivity rate among clinically diagnosed cases, hinting at a potential connection with the HIV epidemic.<sup>5</sup>

Madagascar's population faces heightened vulnerability to STI transmission. A 2018 demographic survey reveals 18%–20% of individuals aged 15–49 having multiple concurrent sexual partners, with low condom usage (less than 5% among those aged 15–24).<sup>6</sup> A 2021 health survey shows less than 27% have a comprehensive understanding of HIV transmission, and three out of four exhibit stigmata towards people living with HIV. The majority (82%–92%) has never undergone an HIV test, and only 3% of women are aware



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of their serological status.<sup>7</sup> A cross-sectional study on STI prevention among university students indicates over one in three engage in high-risk sexual behaviour.<sup>8</sup> Madagascar's artisanal mining sector, exceeding one million in 2014, poses additional transmission risks with its young population, frequent migration, transactional sex driven by local economic factors and limited healthcare access within a highly informal sector, further amplifying risks and vulnerabilities.<sup>9</sup>

According to the World Bank, eight of 10 people in Madagascar live in monetary poverty (with a daily consumption below USD 2.15 per person).<sup>10</sup> With 1.9 medical doctors and 2.9 nurses and midwives per 10 000 in 2019, Madagascar's health worker density is particularly low.<sup>11</sup>

A recent modelling study, considering these contextual factors, forecasts a transition to a generalised HIV epidemic with a prevalence rate of 9%–24% in the general population within the next decade unless testing and treatment efforts are escalated.<sup>12</sup>

In Madagascar's population of 28.9 million, UNAIDS estimates 70 000 HIV cases in 2022, with 18% of cases receiving antiretroviral treatment.<sup>1</sup> The country recently expanded its national HIV strategy to move beyond key populations, including vulnerable groups like the youth and individuals with STIs, and bridge populations. However, the Global Fund, the primary funder of the country's HIV response, constrains its funding to target key populations in hot spot cities, resulting in insufficient testing capacities for vulnerable groups. This includes shortages of rapid tests and trained healthcare workers for HIV counselling and care across sectors and levels. Despite repeated appeals for increased funding to implement the national HIV strategy, the international response has been limited. International funders withhold additional resources in the absence of robust evidence, leaving local stakeholders unable to generate the necessary proof—a vicious circle of delayed awareness and response.

Given Madagascar's healthcare system and the population's vulnerability, this urgent plea implores national and international organisations and funding bodies to address this health crisis. We strongly advocate for expanding funding to ensure comprehensive HIV awareness, prevention, diagnostics, medical treatment and psychosocial support, encompassing not only key populations but also vulnerable and bridge populations. Strengthening research initiatives is imperative to fill gaps in epidemiological, sociocultural and implementation knowledge, providing a crucial foundation for a resilient public health response to Madagascar's escalating HIV epidemic.

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## REFERENCES

- 1 Joint United Nations Programme on HIV/AIDS (UNAIDS). Country Factsheet Madagascar. 2022 Available: <https://www.unaids.org/en/regionscountries/countries/madagascar>
- 2 Raberahona M, Monge F, Andrianiana RH, *et al*. Is Madagascar at the edge of a generalised HIV epidemic? Situational analysis. *Sex Transm Infect* 2021;97:27–32.
- 3 Robinson KE, Long JK, Fardine M, *et al*. Patterns of rising HIV positivity in northern Madagascar: evidence of an urgent public health concern. *TropicalMed* 2024;9:19.
- 4 Raberahona M, Rakotomalala R, Andriananja V, *et al*. Trends in characteristics and outcome of newly diagnosed adult HIV patients enrolled in care in a large HIV reference center in Antananarivo, Madagascar, from 2010 to 2016: A retrospective cohort study. 23rd International AIDS Conference; 2020
- 5 Rakotoarivelo R, Ambrosioni J, Rasolofo V, *et al*. Evaluation of the Xpert MTB/RIF assay for the diagnosis of smear-negative pulmonary and Extrapulmonary tuberculosis in Madagascar. *Int J Infect Dis* 2018;69:20–5.
- 6 Institut National de la Statistique (INSTAT), United Nations International Children's Emergency Fund (UNICEF). Enquête

- par Grappes À Indicateurs multiples. MICS Madagascar; 2018. Available: <https://www.unicef.org/madagascar/mics2018>
- 7 Institut national de la Statistique (INSTAT) et l'enquête Démographique et de Santé À Madagascar. 2021. Available: <https://dhsprogram.com/pubs/pdf/FR376/FR376.pdf> [Accessed 20 Jan 2024].
  - 8 Andriamamonjisoa AJ, Rakotomalala R, Andriananja V, *et al.* Knowledge, attitude, and practice of academic students about Stis and HIV/AIDS at the University of Fianarantsoa: A cross-sectional study. *ESJ* 2023;19:1.
  - 9 Ndagano P, Schneck N. Madagascar Artisanal and small-scale mining sector; country profile. Delve; 2021. Available: <https://delvedatabase.org/uploads/resources/Madagascar-Country-Profile.pdf>
  - 10 Poverty and equity brief – Africa Eastern & Southern – Madagascar. 2023. Available: [https://databankfiles.worldbank.org/public/ddpext\\_download/poverty/987B9C90-CB9F-4D93-AE8C-750588BF00QA/current/Global\\_POVEQ\\_MDG.pdf](https://databankfiles.worldbank.org/public/ddpext_download/poverty/987B9C90-CB9F-4D93-AE8C-750588BF00QA/current/Global_POVEQ_MDG.pdf) [Accessed 20 Jan 2024].
  - 11 The global health Observatory: SDG target 3.C | health workforce. World Health Organization (WHO), Available: <https://www.who.int/data/gho/data/themes/topics/indicator-groups/indicator-group-details/GHO/sdg-target-3.c-health-workforce> [Accessed 20 Jan 2024].
  - 12 Alonso D, Vallès X. A potential transition from a concentrated to a generalized HIV epidemic: the case of Madagascar. *Infect Dis Poverty* 2023;12.