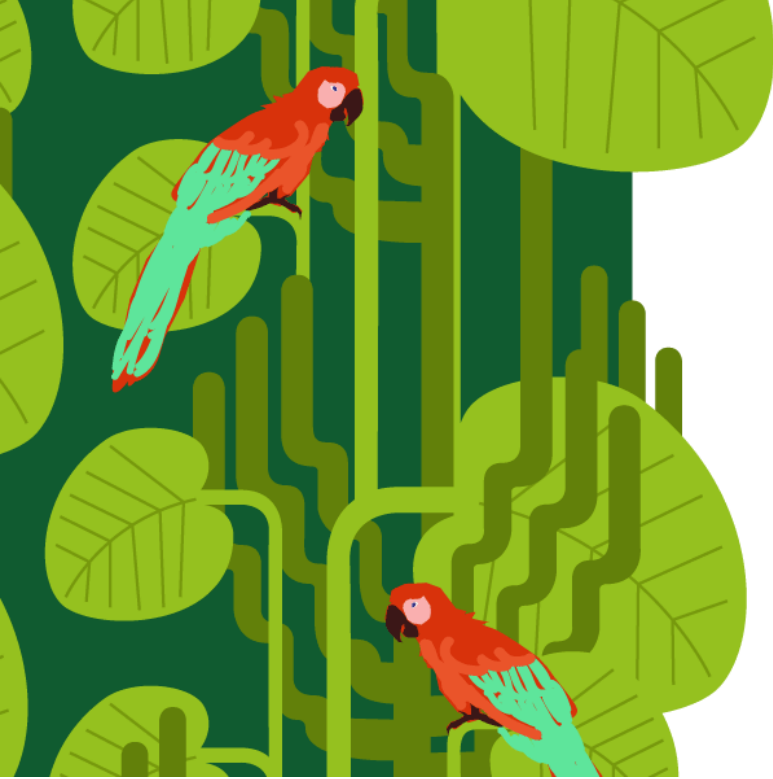




Compute, infrastructure, and sovereignty



 **AIDS 2026**

26–31 July • Rio de Janeiro, Brazil

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AI and HIV: Who owns the future of public health?

AIDS 2026 satellite session • Tuesday 28 July 2026, 13:40 (GMT-3) • Riocentro, Room 203

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Behind every model is a machine, and behind every machine an owner

Whether AI strengthens the HIV response is only partly a question about models. It is equally about the infrastructure those models run on, and who builds it, who governs it, and who controls what it can and cannot do.

1

The economics of health systems have changed

2

The computing map has not. The geography of computing remains concentrated in certain parts of the world.

3

Sovereignty is increasingly becoming a design requirement

Sources: Reid et al. (2025) and Kickbusch et al. (2021).



AIDS 2026 Scarcity has become the driver for reform

–23.1%

real-terms reduction in
official development
assistance in 2025
(OECD, 2026)

US\$17

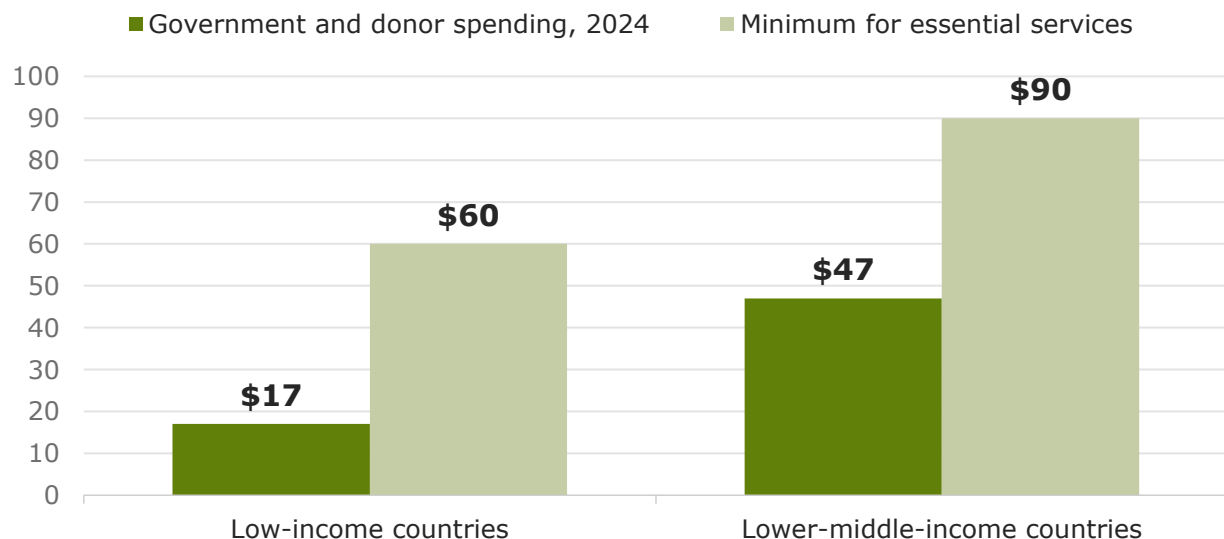
combined government and
donor health spending per
person in low-income
countries (World Bank, 2025)

80%

Of HIV prevention
funding in LMICs is
connected to
international assistance
(UNAIDS, 2025)

US\$21.9bn

committed annually by
2030, alongside “national
health sovereignty”
(UNGA, 2026, para. 48b,
50)

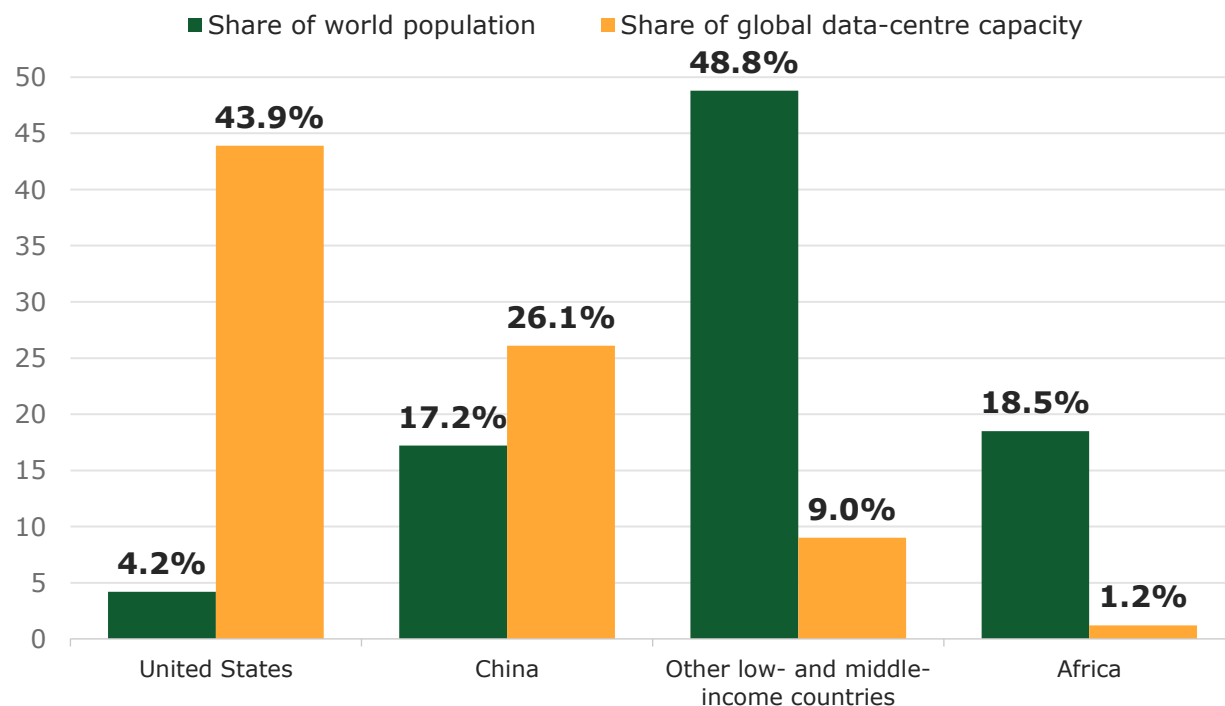


Sources: Health spending per person per year, Data from World Bank (2025); OECD (2026); UNAIDS (2025); United Nations General Assembly (2026).



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The global distribution of compute bears no relation to epidemiological need



Note: "Low- and middle-income" is a diverse classification: China holds 26% of world capacity; all other LMICs together hold 9%.

The global distribution of computing infrastructure

44%

of the world's installed data-center capacity sits in the United States alone (IEA, 2025).

63%

of global cloud infrastructure spending accrues to three providers (Synergy Research Group, 2026).

App.5%

of health data generated in LMICs is currently used at all (Monlezun et al., 2025).



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The same binding constraint recurs across income levels and geographies

Here are four responses to one asymmetry

FRANCOPHONE WEST AFRICA

- In January 2024 Sénégal Numérique SA and the Ministry of Health signed a three-year agreement to repatriate health data previously hosted abroad into the national data center, under the World Bank-financed Program de Digitalization du Système de Santé 2023–2027.
- Côte d'Ivoire is harmonizing SIGDEP 2, its patient-level HIV record, with DHIS2 and OpenELIS.

(Sénégal Numérique SA, 2024; World Bank, 2025b)

LUSOPHONE COUNTRIES

- Mozambique's DHIS2-based SIS-MA has run since 2016; an evaluation found vertical-transmission data only 50% complete against facility registers. Over 30,000 health personnel were affected by the 2025 disruption.
- Brazil made the Rede Nacional de Dados em Saúde the integration layer of the SUS by decree in 2025.

(Banze et al., 2021; UNAIDS, 2025a; Brasil, 2025)

ISLAND STATES

- Fiji has one of the world's fastest-growing epidemics : 1,583 new diagnoses in 2024 and 1,226 in the first half of 2025; and has committed a further US\$4.5 million domestically.
- Island states hold a mean of 3.9 international subsea cables against 6.9 elsewhere, and lie app. 2,200 km from repair hubs.

(WHO, 2025; Yeo et al., 2026; PANCAP, 2019)

LMICs AT SCALE IN ASIA

- India's Ayushman Bharat Digital Mission has linked over 1 billion health records to more than 930 million health accounts on a federated, consent-based architecture in which records stay with the originating provider.
- Indonesia mandated SatuSehat submission in December 2024; fidelity across 33,901 facilities stayed well below target.

(National Health Authority, 2026; Astari et al., 2025)

Sovereignty is divisible: It can be supported one layer at a time



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Very few countries need to own all of the layers. Every country needs to know which layers it is choosing not to own, and on what terms.

Governance and accountability

When the system is wrong, who is responsible?

Models and applications

Who may adapt, audit and retain a model trained on national data?

Compute and hosting

Whose law applies?

Data and standards

Who defines the record, and who holds the master copy?

Power and connectivity

Does it still work where care is actually delivered?



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The Required Foundation: Power, connectivity and interoperability

1 The physical is the required foundation

Around 15% of health facilities in sub-Saharan Africa have no electricity; close to one billion people are served by facilities with unreliable power or none (WHO, 2023).

2 Interoperability is still evolving

By 2024 only about 15% of countries had architecture capable of real-time health data exchange (JHU CGDHI, 2024).

3 Continuity is not guaranteed

In 2025 the principal international HIV reporting platform was effectively switched off, and the local teams maintaining data flows also stopped (DHIS2, 2025).

ROUND-TRIP LATENCY BY WHERE THE WORKLOAD PLACEMENT

In-country, near users

the benchmark in mature markets

< 20 ms



In-region

where a local cloud region exists

35–45 ms

Offshore

typical for African users today

70–100 ms +

Sources: latency ranges as reported for African markets in ADCA (2026). Data from DHIS2 (2025); Johns Hopkins CGDHI (2024); WHO (2023).



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Most HIV-relevant AI is inference: that can be sovereign

10.5x

A study out of Kenya using 167,000 routine national HIV EMRs showed the model used sorts people far better than random. In practice that means if you test the people it ranks highest, you find positives at a much higher rate than testing everyone (Friedman et al., 2025).

The study used routine program data already held in country.

Frontier model training

- Global and extremely capital-intensive.
- Not a realistic near-term objective for a national HIV program

Adaptation and fine-tuning

- Regional or shared national facilities are currently Feasible now, and the strategic place to pool demand across countries.

Inference at the point of care

- National, and increasingly on the device itself.
- Modest compute.

Notes and sources. Data from Friedman et al. (2025). Tiering informed by Ciecierski-Holmes et al. (2022) and Reid et al. (2025).



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Data should steer local programs, not only satisfy reporting

FROM

- Data assembled chiefly to satisfy external reporting obligations
- Annual, aggregate and retrospective
- Analysis performed outside the country that generated the data

TO

- Data used to allocate staff, commodities and outreach
- Monthly, disaggregated and prospective
- Analysis performed by the people accountable for the outcome

Guardrails that remain necessary in LMICs

Service data encodes service gaps

A model trained on who currently reaches care will faithfully reproduce who currently does not (Ciecierski-Holmes et al., 2022).

Disaggregation without exposure

The granularity can improve targeting, and can also raise re-identification risk for criminalized populations (WHO, 2024).

Community oversight

Community-led monitoring is a commitment under the 2026 Political Declaration, and can also be the cheapest error detection available.



AIDS 2026 **Partnership is essential and welcomed**

- | | |
|---|---|
| 1 Data residency and jurisdiction | Named locations and named applicable law. |
| 2 Exit and portability | Documented export formats and agreed upon migration protocols |
| 3 Rights in models and derived artefacts | Explicit rights over fine-tuned datasets derived from national data. |
| 4 Continuity obligations | Duties that survive a change of donor, of ownership or of political conditions. |
| 5 Measurable capability transfer | Named national counterparts and defined skills, with practical KPIs |



AIDS 2026 **Five Key Decisions For African Countries**

1

Publish a health compute and hosting policy

2

Commit to funding the physical layer with the digital one

Facility power, connectivity, and records exchange budgeted.

3

Adopted the instruments already agreed

AU Data Policy Framework, Continental AI Strategy, Africa CDC health data governance, WHO guidance.

4

Procure for exit, not only for price

Portability, residency and continuity as criteria in every digital health tender.

5

Pool demand across the region

Smart Africa and Africa CDC as existing vehicles for shared compute and shared terms.

Countries are investing in these steps.



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Thank you

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