- Alignment of HRH support to host country government systems is key for facilitating any planned public sector absorption of workers required for sustained epidemic control. Plans for HRH absorption should be connected to broader domestic resource mobilization efforts to advance greater shared responsibility of HIV. Alternative types of HRH remuneration and payment should be considered (e.g. contracting) for greater financial efficiencies.
- Review and consideration of how roles/responsibilities of cadres supporting HIV services who are not formally recognized by country governments (e.g., community-based and lay) can be formally integrated into countries' health systems in accordance with the 2018 "WHO guideline on health policy and system support to optimize community health worker programs"[201].
- Advance use of private sector workforce through further introduction of market-based solutions and decentralization of HIV services to expand access to client-centered HIV services (e.g. HIV testing, ART distribution)
- Countries nearing epidemic control should conduct a more rigorous analysis of workforce requirements to support essential 'maintenance package' of HIV services to inform concise and up-to-date planning.
- Prioritizing HRH for con-financing investment to complement PEPFAR investments in country.

Section 6.6.9 contains additional information on HRH interventions and tools to be considered.

6.6.8 Impact-Driven Information Systems and Data Management Investments

Problem Statement

- Disparate data formats and systems in each country are barriers to using data to drive programmatic impact. Data linked from multiple sources are required for improved on-the-ground patient care, and they provide a standardized foundation for surveillance and health care monitoring.

- Most national-scale data in PEPFAR-supported countries are programmatic aggregates and periodic HIV surveys. Where other types of data are available, they are often in

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[201] https://www.who.int/hrh/resources/health-policy-system-support-hw-programmes/en/

disparate systems and formats. The lack of consistently applied data standards limits primary and secondary data use.

- The current data and systems environment is a complicated landscape of existing investments/systems. Major investments in data management and information systems remain siloed. Data fragmentation, duplication, and lack of interoperability are global challenges.

- PEPFAR and other donors, in conjunction with host governments, must collaborate and promote common standards and principles. Standards will align digital health investments with costed national digital health strategies. Shared principles promote the use of digital global goods and sustainable country capacity.[202] These problems can best be addressed by fostering information sharing via peer-learning networks.

Data Impact Vision

- Where feasible, data should be collected, processed, and analyzed at the individual level to effectively monitor clinical HIV care and treatment outcomes and program indicators using a patient-centered approach. Above-site information systems investments and clinical service delivery approaches that do not effectively enable person-centered HIV monitoring should be reviewed and revised in order to reflect this vision.   Managing patient Loss to Follow Up (LTFU), retention, and returning patients to care are critical use cases to support a patient-centered approach to care delivery.

- OU teams should work to foster a culture of secure data sharing across the OU team, inclusive of all USG agencies, relevant ministries, implementing partners, civil society, and beneficiaries as appropriate. OU teams should consider the entire Data Value Chain (Figure 6.6.10)[203] and also plan to ensure uptake and *impact*. Data should be viewed holistically. Triangulating data sources provides insight into the current challenges observed in the global HIV epidemic. The use of deduplicated, linked, individual-level patient data allows more accurate analyses compared to aggregated, non-deduplicated data. USG OU teams must share all data in the interagency space. This includes data on commodities, facility-level data, individual-level data from medical

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[202] Digital Investment Principles. https://digitalinvestmentprinciples.org/

[203] The Data Value Chain: Moving from Production to Impact. https://opendatawatch.com/publications/the-data-value-chain-moving-from-production-to-impact/

records and registries, and other relevant data available in any repository supported directly or indirectly with PEPFAR resources. Barriers preventing this level of sharing should be identified and overcome, including potential changes to USG and/or host country government policies and guidelines that ensure data can be linked and shared while maintaining or strengthening patient confidentiality, data security and ethical safeguards.

● Developing scalable, flexible, context-appropriate processes and systems that deliver data that drive *impact* requires regular engagement of an interdisciplinary group of stakeholders who consider entire Data Value Chain as data management and information systems investments are planned, implemented, and iteratively improved.

● Increasingly sophisticated programmatic questions and other emerging data needs place greater demands on existing data and systems infrastructure and associated support staff. OU teams need to capacitate and/or recruit staff that can manage and guide adoption or adaption of interoperable data or health information exchange concepts across the OU team[204], promote adoption of the Principles for Digital Development[205] across all data- and systems-related activities, and participate regularly in relevant peer-to-peer learning networks (e.g. Data Use Community). Teams should orient themselves to relevant frameworks[206] available to assist with planning for capacity of various aspects of their digital health infrastructure. Teams should allocate support to the PEPFAR/MoH Data Alignment activity[207] and ensure that lessons learned throughout the activity inform data and systems investment plans. Strategic investments should align with the Data Value Chain; continue to track investments in data management and information systems in Table 6.

Figure 6.6.10: Data Value Chain

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[204]Data Interoperability: A Practitioner's Guide to Joining Up Data in the Development Sector: https://unstats.un.org/wiki/display/InteropGuide/Home

[205] Principles for Digital Development: https://digitalprinciples.org

[206] Early Stage Digital Health Assessment Tool: http://www.katicollective.com/what-were-thinking/introducing-the-early-stage-digital-health-assessment-tool

[207] PEPFAR/MoH Alignment Activity Overview: https://datim.zendesk.com/hc/en-us/articles/360035139192-PEPFAR-MoH-Data-Alignment-Activity-Overview
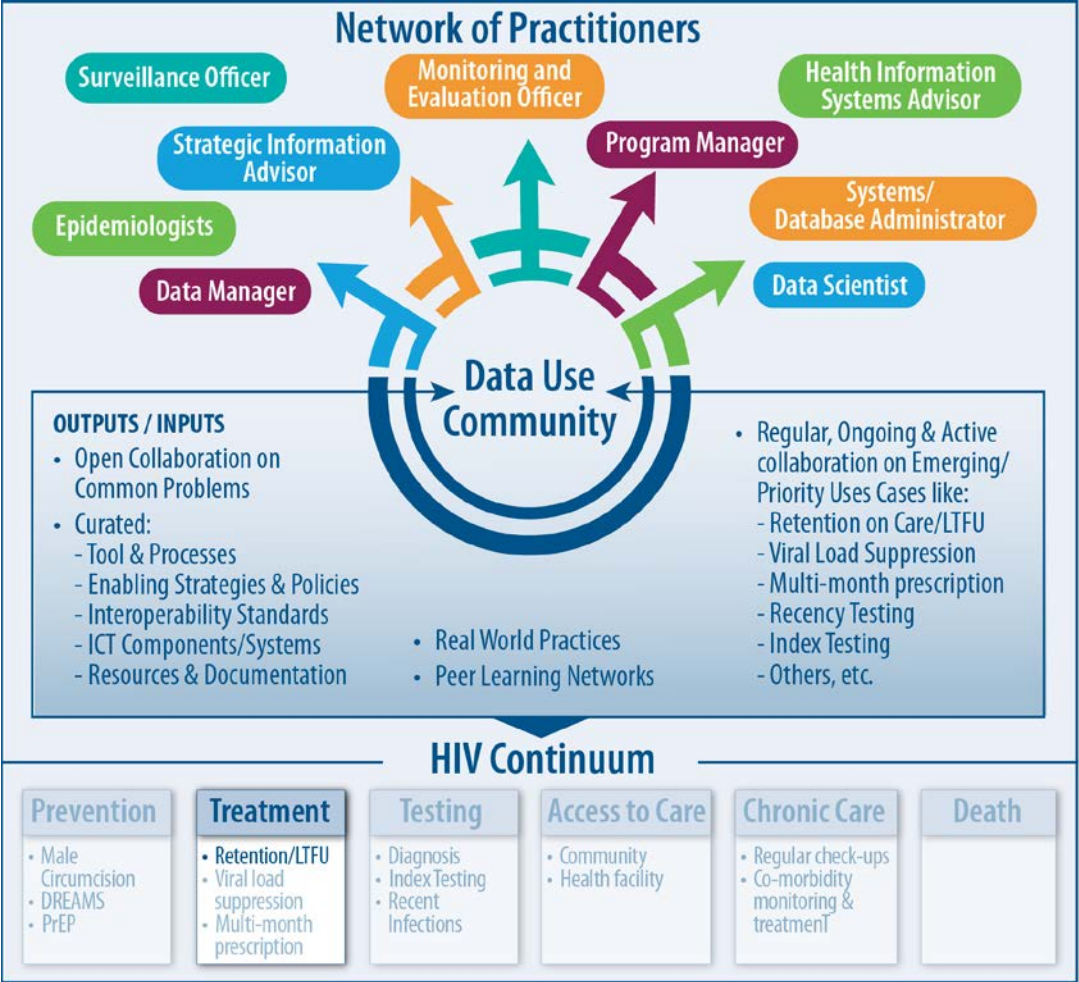
DATA VALUE CHAIN
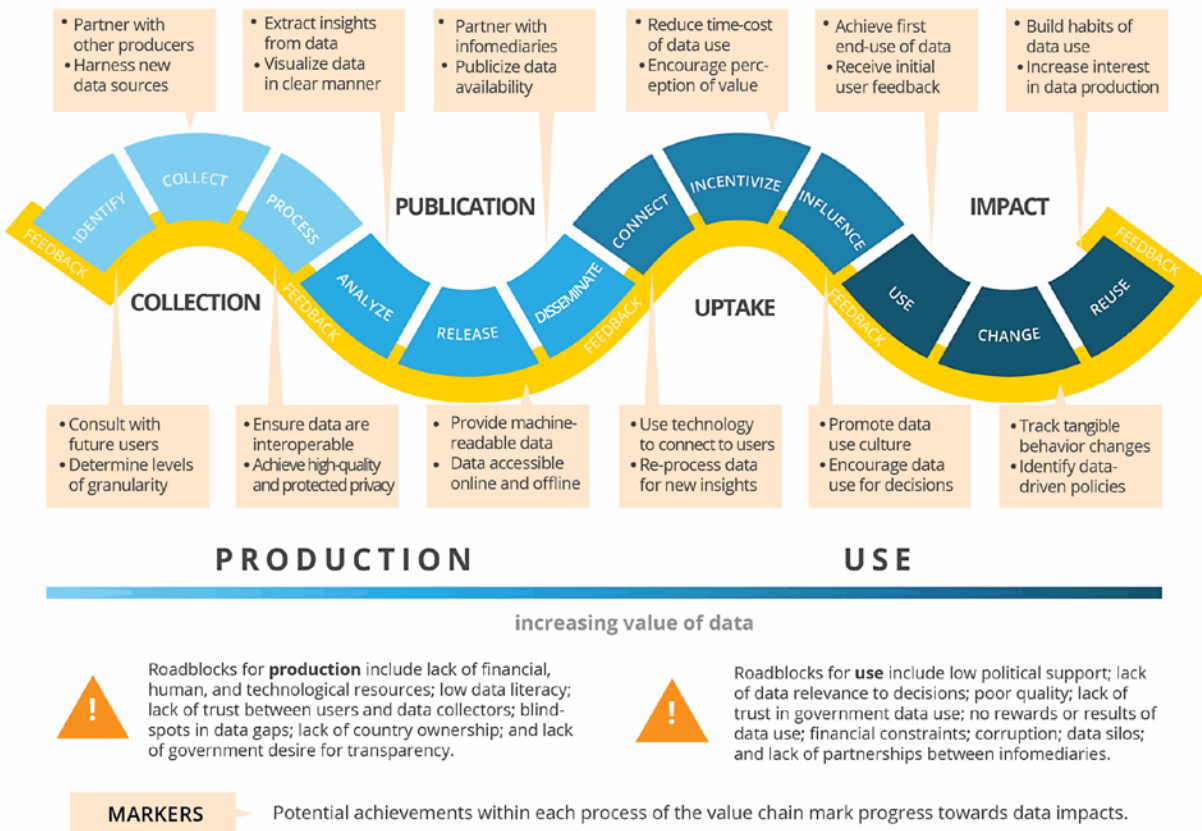
Supporting and Solving Data and Systems Issues

- S/GAC is launching the Data Use Community (DUC) (Figure 6.6.11) to help with sharing and refining best practices for developing and implementing context-specific solutions that maximize data *impact*. It will be a peer-to-peer learning network structured to become responsive to existing and emerging country needs along the entire Data Value Chain. The DUC will consolidate best practices, drawn from country experience, to a generally applicable and context-specific approach to the priority data use cases identified by S/GAC leadership that have potential for greatest impact across the program. The DUC will complement the existing PEPFAR Solutions Platform, providing an opportunity to share and explore data *impact* solutions in much greater detail from programmatic, technical, policy, and integrated perspectives.

Figure 6.6.11: Data Use Community

Network of Practitioners

Surveillance Officer · Monitoring and Evaluation Officer · Health Information Systems Advisor

Strategic Information Advisor · Program Manager

Epidemiologists · Systems/Database Administrator

Data Manager · Data Scientist

Data Use Community

OUTPUTS / INPUTS
- Open Collaboration on Common Problems
- Curated:
  - Tool & Processes
  - Enabling Strategies & Policies
  - Interoperability Standards
  - ICT Components/Systems
  - Resources & Documentation
- Real World Practices
- Peer Learning Networks

- Regular, Ongoing & Active collaboration on Emerging/Priority Uses Cases like:
  - Retention on Care/LTFU
  - Viral Load Suppression
  - Multi-month prescription
  - Recency Testing
  - Index Testing
  - Others, etc.

HIV Continuum

Prevention	Treatment	Testing	Access to Care	Chronic Care	Death
• Male Circumcision • DREAMS • PrEP	• **Retention/LTFU** • Viral load suppression • Multi-month prescription	• Diagnosis • Index Testing • Recent Infections	• Community • Health facility	• Regular check-ups • Co-morbidity monitoring & treatmenT	

For more information please click on **WWW.OHIE.ORG/DUC**

- The initial focus use case of the DUC is to work with OU teams to identify data challenges around the management and use of systems to capture individualized data in efforts to improve retention. These priorities will drive the development of technical approaches to address these challenges. These technical approaches will be provided within a data use and systems maturity framework that OU teams will be able to use to readily understand the applicability of a particular approach in their setting. As depicted in Figure 6.6.11, additional focus use cases along the HIV Continuum will be incorporated subsequently.

- The DUC will be supported by a secretariat that develop and share actionable technical artifacts. Intended activities for the DUC secretariat include:
  - develop and vet the maturity framework with DUC members

- ○ identify exemplar countries, at different levels within the maturity framework, whose priorities will drive the needs for identification of existing or the development of new technical artifacts

- ○ coordinate and contribute to the development of reusable technical artifacts to accelerate digital transformations through routine "Technical Exchange Calls"

- ○ orient OU teams to relevant technical artifacts and other digital health assets that can be used to address retention issues as well as to highlight successful approaches by national programs through "Community Webinars"

- ○ maintain shared meeting schedules and minutes, onboard interested members to the DUC, and curate relevant tools on a public web-portal

- This approach seeks to maximize peer learning opportunities for those interested in addressing program data impact challenges, like patient retention, by using and reusing data more effectively.

We encourage interested parties to visit http://ohie.org/duc to learn more and follow along.

6.6.8.1 HIV Case Surveillance

HIV case surveillance (CS) is the systematic reporting of diagnosed HIV cases to a public health authority and subsequent reporting of their sentinel events throughout the course of infection. The primary objectives are to (1) establish a routine surveillance system of individual-level de-duplicated information on a national cohort of diagnosed PLHIV throughout the course of infection; and (2) use its data to routinely monitor epidemic trends and programmatic impact to direct HIV resources to where they are needed the most. A fully functioning CS system provides the basis for our understanding of the burden of disease, including routine HIV program data (e.g. newly diagnosed cases, linkage to care, and retention in care and viral suppression) and comprehensive information on gaps along the HIV care and treatment cascade to guide public health action in both civilian and military health systems. As countries reach epidemic control, national HIV CS data will become essential for sustaining epidemic control by monitoring trends of new infections, different modes of transmission (risk behaviors), outcomes of HIV services and disparities between groups to identify those not receiving care or enrolling and returning them to care. The establishment of HIV CS and use of its data remain a key priority for all