Strengthening Health Management Information Systems at Uganda’s Public Hospitals: SUSTAIN Project’s Experience

Background

Proper management of clients enrolled into HIV care is dependent on the availability and utilization of good quality client data. In Uganda, however, the quality and utilization of data for clients in chronic care remain a major challenge. It is imperative that Health Management Information Systems (HMIS) for health care facilities have the capacity to generate good quality data that can be used for managing patient care and evidence-based decision making.

The SUSTAIN project is supporting Uganda’s Ministry of Health (MOH) in strengthening systems to effectively treat HIV and AIDS. One of the project’s main focal areas is HMIS strengthening. In order to design targeted and relevant strategies for strengthening HMIS, SUSTAIN conducted an HMIS assessment at all project supported hospitals during the project start-up phase in October/November 2010. The following gaps were identified during this assessment and subsequently guided systems-strengthening initiatives:

- Very few staff trained in utilization of MOH data tools for HIV patient management and monitoring
- Understaffing—some hospitals had no staff handling data management
- Non-standardized tools for data recording and reporting at different hospitals (e.g., outdated versions of MOH tools, tools specific to various Implementing Partners, site-improvised data tools, etc.)
- Poor filing systems for patients’ records
- Stock-outs of data-recording tools
- Poor quality of data recorded on data-recording tools

Practical training for 8 hospitals to roll-out of the MOH OpenMRS Express electronic patient monitoring system in June 2012.

- Low levels of data utilization for decision making
- Lack of infrastructure (space, computers, and Internet) for HMIS.

Intervention

SUSTAIN has taken a number of steps to address the identified gaps in order to strengthen HMIS at the supported hospitals. Two data staff were seconded to each of the regional referral hospitals to address human resource shortages. Seconded and hospital staff were trained on the MOH’s HMIS system for monitoring HIV patients. The project also supported the transfer of

July 2012

SUSTAIN is funded by the United States Agency for International Development (USAID) and is made possible by the generous support of the American people. SUSTAIN is managed by University Research Co., LLC (URC) in partnership with The AIDS Support Organization (TASO), Integrated Community Based Initiatives (ICOBi), Health Research Inc. (HRI), and Initiatives Inc. For more information, please contact Timothy Wakabi (twakabi@urc-chs.com), Olivera Stojanovic (ostojanovic@urc-chs.com), or Kate Howell (khowell@urc-chs.com), or visit URC’s website at www.urc-chs.com.
data from partner-specific and site-improvised tools into the standard MOH patient-monitoring system tools for all hospitals by printing and distributing MOH tools for data recording and reporting, and facilitating data transcription volunteers.

Supportive supervision is offered to the facilities regularly and focuses on availability and proper utilization of data recording and reporting tools, clients records’ filing system, reporting, data utilization, quality of electronic and paper-based data, and functioning of IT equipment used for data management and communication. To facilitate systematic supervision, a supervision checklist, a data quality assessment tool, and an action plan are used.

In May 2011, SUSTAIN conducted a data validation exercise to review inconsistencies identified in data reported by the supported hospitals. By physically counting client clinical records (files) and comparing client numbers with drug dispensing logs and quarterly reports, the validation exercise clarified discrepancies resulting from use of non-standardized tools, poor data collection and reporting, failure to update data tools, and presence of multiple files for a single client. This exercise helped determine the actual numbers of clients served and ARV regimen break-downs for each hospital, a critical step in improved HMIS systems.

To address weaknesses in the filing systems for patients’ records, hospitals were provided with patients’ files, filing cabinets, and shelves. Hospital staff were coached on file indexing, storage, and tracking. SUSTAIN also supported the rollout of the MOH’s electronic patient-monitoring system (OpenMRS Express) at nine hospitals. This support involved training staff to use the system, providing the required Information Technology (IT) infrastructure (Computers and Internet), installing and setting-up the system, facilitating data entry volunteers to clear data entry backlogs, and offering supportive supervision. An additional 8 hospitals received initial training in OpenMRS Express in June 2012 and roll-out of the system is ongoing. This system creates a foundation for more efficiency in data management and increased use of data for clinical decision-making.

SUSTAIN staff conduct quarterly Data Quality Assessments (DQA) for selected indicators, as part of routine supportive supervision. All facilities have been coached on quality improvement (QI) with emphasis on utilizing data for making decisions. To further promote data use, facilities have been supported and encouraged to conduct quarterly performance reviews that inform implementation of more improvement activities.

"We have reduced loss of client files from an average of 10–15 to 0–1 per week."

— Data Officer, Mubende Regional Referral Hospital —

Before and After, Hoima RRH: Filing systems for patient records at supported hospitals were improved through provision of file folders, cabinets, and shelving and support for proper indexing and organization, resulting in more efficient data management systems and eased retrieval of files.
Results

- **Use of MOH’s recommended data tools:** All facilities are using standard MOH tools for data recording and reporting.
- **Timely reporting:** All facilities prepare and submit reports to MOH and SUSTAIN in a timely manner.
- **Improved quality of data:** The quality of data generated and reported by the facilities has greatly improved. Results for DQAs conducted during quarter 1 of FY 2011 and quarter 1 of FY 2012 show a reduction in the discrepancies between the data reported by the facilities and what was recounted during the DQAs (see Figure 1).
- **Increased data demand and utilization:** Demand for data by clinical staff at the facilities has increased and all facilities are utilizing data for QI. Hospital teams use the generated data to identify poorly performing indicators and address them by applying QI approaches. The teams also regularly monitor their QI activities using the data generated, in order to inform further action. Besides targeted QI initiatives, health facilities are increasingly using data for quarterly performance reviews and are coming up with strategies to improve performance.
- **Improved client management:** As a result of establishing the actual numbers of clients served at each facility, hospitals are able to quantify drug and HIV-related commodity requirements, track performance of key clinical indicators, and manage client load through use of appointment systems.
- **Improved data management:** All regional referral hospitals and one general hospital are using electronic HIV patient-monitoring systems to manage their data. These facilities are generating both routine and ad hoc reports required by facility staff, MOH, and SUSTAIN.

> Now we take less than 3 minutes to retrieve a client’s file. Previously we would take almost 30 minutes because files were bundled according to appointments that were only known to expert clients.

– Data Officer, Jinja Regional Referral Hospital –
• **Improved systems for filing patients’ records:** Facilities’ filing systems have improved with proper indexing, file tracking, and easy file storage and retrieval. This improvement has led to a reduced loss of patients’ files and less time spent retrieving files, with a resultant decrease in patients’ waiting time.

**Lessons Learned**

• Training of hospital staff should be followed with on-site support, if the desired results are to be achieved.

• Use of MOH-recommended HMIS, as compared to tools of implementing partners, is well received by the hospitals and promotes sustainability.

• Improved data quality leads to more reliable projection of needs for medicines and commodities and more efficient allocation of resources.

**Next Steps and Future Needs**

Building upon the achievements to date, SUSTAIN plans to further strengthen HMIS through the following activities:

- **Implement a web-enabled reporting system:** A project-based web-enabled reporting system (SWERS) currently under development will improve availability and quality of data.

- **Link OpenMRS Express generated reports with SWERS:** OpenMRS Express generates reports required by the MOH, hospitals, and SUSTAIN. The systems will be linked so that reports generated by OpenMRS Express are uploaded to SWERS, ensuring efficient data management.

- **Increase involvement of hospital staff in HMIS for HIV services:** At the majority of health facilities, HIV services data management is primarily done by seconded staff. To ensure sustainability and improve data utilization, SUSTAIN will promote wider involvement of hospital staff through training, mentorship, and support for hospital management. Hospital records staff will be trained on OpenMRS Express, SWERS, and HIV clients’ monitoring tools.

- **Inclusion of data for other service areas into OpenMRS Express:** The database is currently used to manage data for clients enrolled into HIV care. To promote wider utilization and improve data management for other service areas, SUSTAIN has recommended use of the system for other service areas such as PMTCT/EID, TB, HCT, and nutrition to the MOH.

---

**Description of the Open Source Medical Record System (OpenMRS)**

OpenMRS is a community-developed, open-source electronic medical record system founded in 2004 by a multi-institution, nonprofit collaborative led by Regenstrief Institute, Inc., Partners In Health, and South African Medical Research Council. The Uganda MOH AIDS Control Program adopted OpenMRS Express (for HIV patient monitoring data) with the aim of reducing the burden of data management at hospital level, improving the quality of patient monitoring data, and harmonizing medical records systems. Of the 17 SUSTAIN-supported hospitals, 9 were included in the MOH pilot (of 20 pilot sites), 15 have initiated use of the system, and the remaining 2 received the initial training.

**Key features of OpenMRS:**

- Open Source, generic forms, and web application
- Microsoft InfoPath, Html, and XForm used for development of forms
- Basic application does not require significant programming
- Generic database model which allows for additional configurations with increased data requirements

The system is based on the standard MOH HIV Care and Treatment Card used for all clients. Client data, including psychosocial and clinical notes as well as laboratory and radiology results, from each clinic visit are recorded. Using this information, the system can generate trends on individual patient outcomes (CD4 and weight), clinic reports required by MOH, appointment registers and reminders, and lists of sub-populations requiring specialized care. The system also has a validation module to enhance data quality.