Data for Action - Developing a Multi-Country CLM Dashboard for Visualization, Reporting, and Program Management

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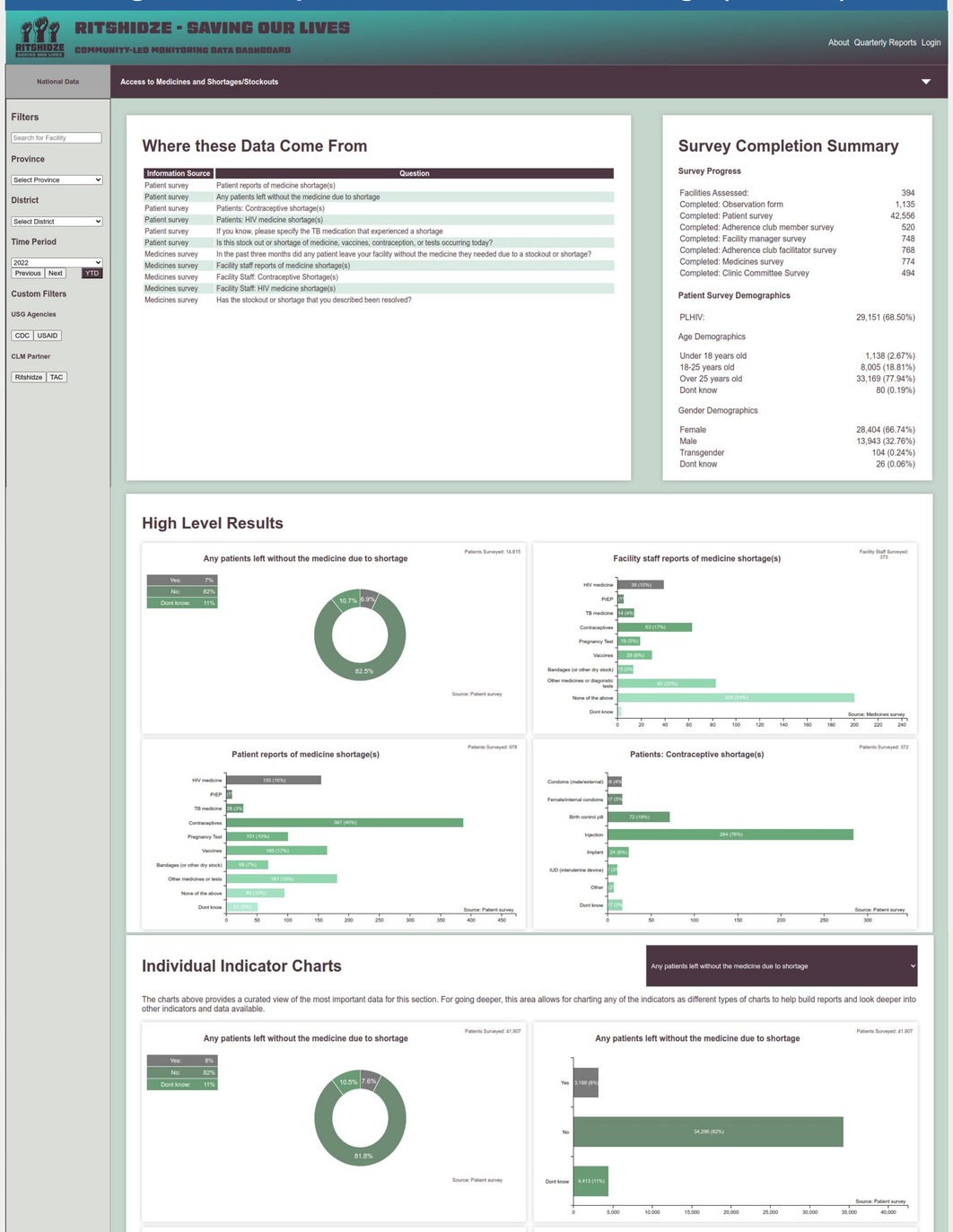
Background

Community-Led Monitoring (CLM) is a key way to improve healthcare quality and accountability. CLM of health care services involves independent communities and civil society organizing to routinely collect data on health services at health facilities or in communities, analyzing those data, providing feedback to duty bearers on the findings, advocating for changes in service delivery, and monitoring changes to ensure improvement in services.

CLM has seen increasing support in recent years from donors including PEPFAR and the Global Fund to Fight AIDS, Tuberculosis and Malaria.

Despite considerable early successes and impact by CLM projects, an emerging challenge in many programs is the need to rapidly clean and structure CLM data, conduct analysis of large volumes of data at different levels (facility, district, provincial, national), produce easily understood visualizations, and develop reports that facilitate real-time advocacy and accountability interventions. Doing so requires a level of technical skills that many civil society organizations implementing CLM do not have readily available as in-house expertise nor is it easily developed. This poster discusses a multi-country CLM data visualization platform to support these efforts.

Figure 2: Sample Ritshidze Dashboard Page (FY 2022)



Description

Overview

Since 2019, the Ritshidze program in South Africa has developed an online CLM data dashboarding system to automate critical CLM data and project management functions. The system has been developed primarily through partnership with amfAR's Andelson Public Policy Office and has been continuously iterated with additional features to support emerging needs of the Ritshidze program.

Recognizing the greater need for data systems support across CLM efforts in multiple countries, development of the data dashboarding has been structured to support multiple CLM efforts independently with full customization and ownership of the data systems.

Adapted versions of this platform are in use in Haiti, Malawi, Uganda, and Zimbabwe. The system provides near real-time data and analytical support across all stages of CLM implementation including data collection, warehousing, analysis, visualization, report generation, advocacy, and project management.

Processes and Components

The CLM data platform has been developed to support most critical data systems requirements of CLM efforts, including:

- **Data Collection**: Electronic android tablet/phone-based data collection that can be completed on- and offline based on survey tools developed by each independent CLM effort. Currently the system supports Dimagi's CommCare data collection platform, but has been developed to be platform agnostic, with alternative backend support targeted for future development;
- **Data Extraction, Transformation, and Loading (ETL Pipeline)**: All survey-based data collection systems require some transformation and re-structuring of the raw data collected to make the data suitable for data analysis and visualization. The CLM data platform extracts data and performs these basic cleaning, transformation, and CLM project independently determined automated analysis functions before loading the re-structured data on a separate MySQL/MariaDB database.
- **Data Visualization Dashboard:** Web-based portals that are branded and structured by each CLM effort individually support near real-time visualization of CLM data at the facility, district, provincial, and national levels as well as the ability to assess trends over time, and create customized filters for different implementing partners, funders, or CLM organizations. Multiple languages are also supported.
- **Automated Reporting:** Each CLM project is able to develop automated PDF facility, district/county, and provincial/regional reports using a series of pre-built visualization modules or components (pie charts, bar charts, tables, etc) as well as generate solutions and track commitments from duty bearers.
- **Project Management Support:** The CLM data platform enables project management through tracking of submitted forms against CLM derived criteria for data completion, user/community monitor management, and tracking of issues that require urgent remediation (i.e. stockouts).

Figure 1: CLM Data Flow

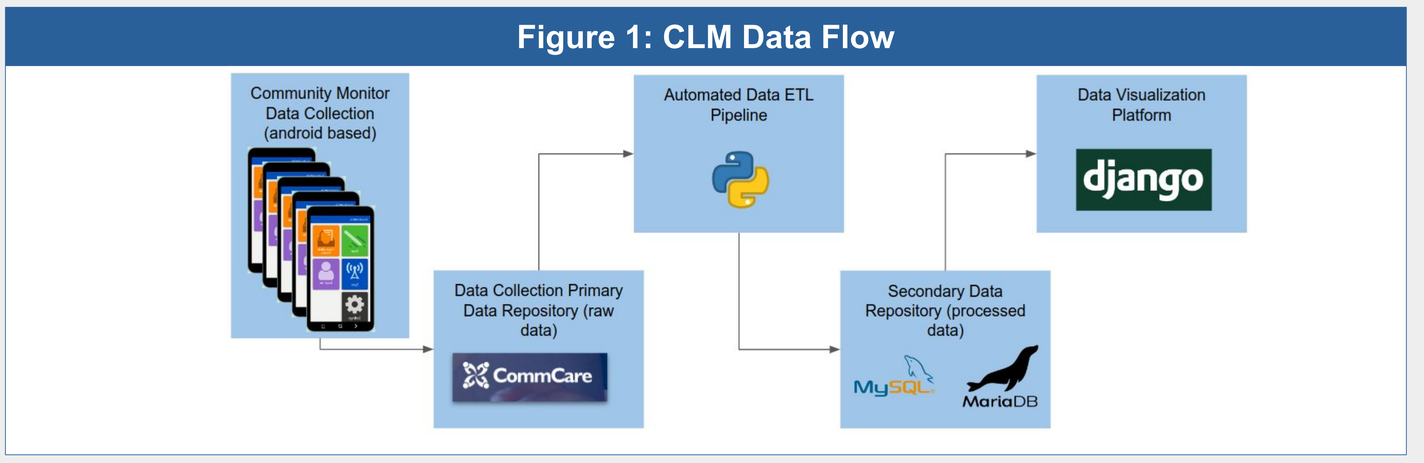
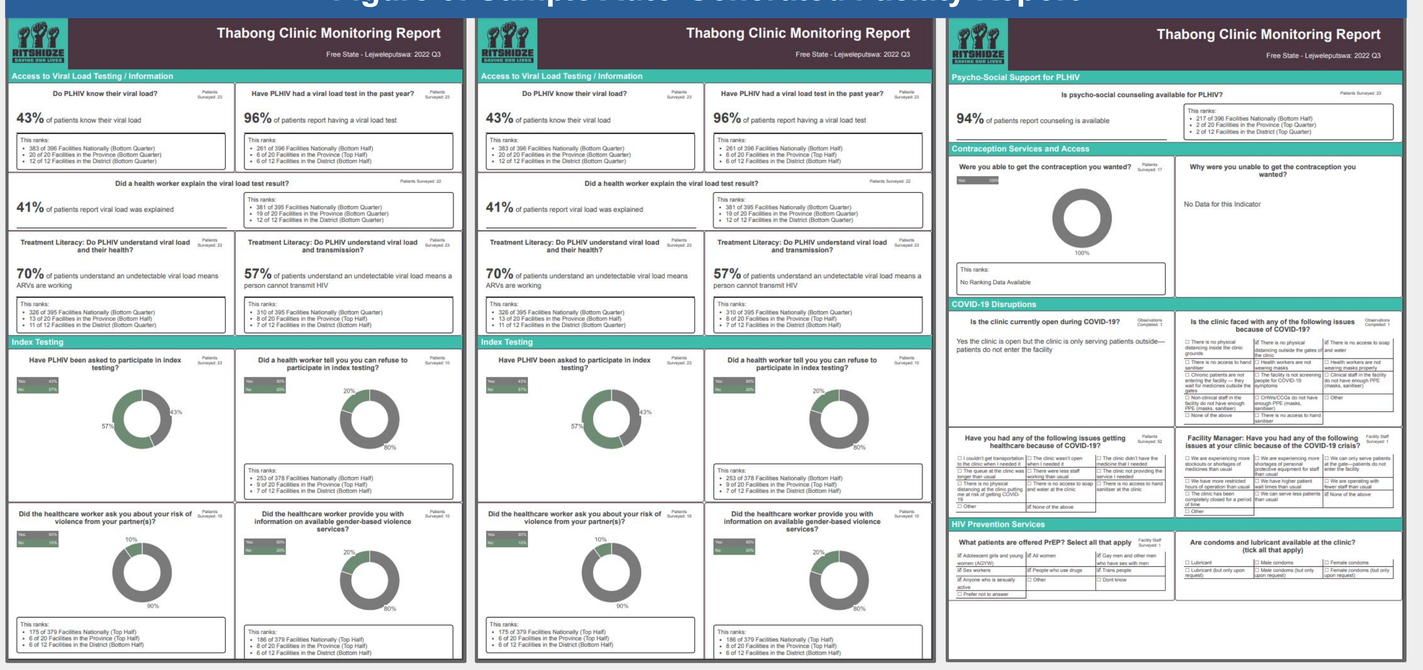


Figure 3: Sample Auto-Generated Facility Report



Lessons Learned

Partnership: The data and reporting needs of CLM projects are dynamic and data support systems must be responsive to the changing advocacy needs of civil society. As such, prioritizing long-term partnership between CLM project staff and developers of CLM support tools over short-term technical assistance or contract development is essential to enable data system features to evolve along with the needs and goals of the CLM project. Likewise, long-term partnership enables data systems developers to gain subject matter, use case, and contextual information that informs pathways for feature development and allows for more iterative development along with CLM project staff. Finally, having a central development structure enables cross-country learning and feature development to support multiple CLM projects' needs simultaneously.

Data Warehousing: Recognizing the need to ensure data ownership by the community, CLM tools targeting support for multiple projects should not store multiple project's data together in mixed database tables. Rather, all CLM data for each project can and should be maintained in separate databases to ensure data are always fully controlled by the individual CLM project and can be seamlessly moved to alternative platforms based on the needs and desires of the individual CLM project. Where linkage to other data systems (Government, PEPFAR, GF) are desired, such linkages can easily be accommodated through linking identifiers and standardized naming conventions.

Indicator Analysis: Automated scoring and/or ranking systems for each CLM indicator/survey question are essential for rapid analysis and tracking of results over time, accounting for unequal sampling sizes and lack of predefined performance targets. Most CLM indicators do not have clearly comparable results without significant manual effort. Developing a series of indicator analytical methods (averages, proportions, response scores) that are pre-selected for each indicator creates a mechanism for rapidly cross-comparing facility or district level results and highlighting priority sites for remediation.

Granular Data Visualization and Reporting: CLM projects are generally inherently focused on fixing issues at the local level. Issues that affect the quality of services are not uniform across sites. Visualization platforms geared at the national level or other higher levels often overlook critical local service delivery failures and do not facilitate local accountability and advocacy. As a result, data visualization systems for CLM data must be orientated around driving users to analyses to the level of disaggregation where issues require resolution, namely identifying priority facilities that require intervention. Likewise, having automated high-quality reports at facility, district, and provincial levels are an indispensable tool for routinely sharing findings with health officials, conducting advocacy efforts, and obtaining buy-in from health facilities, without overwhelming the CLM project staff and capacity. Reports that contextualize successes and challenges relative to peers are the most effective. Failing to provide findings back to facilities directly not only undermines advocacy objectives of CLM projects, but also can create frustration among facility staff having to respond to questions routinely with no feedback provided in terms of the findings.

Project Management Tools: Large-scale CLM implementation is administratively and logistically complicated. Project management tools for tracking data collection completion, administer community monitors, and track issues is essential for easing the data collection burden on CLM projects so that more time is available to focus on the data analysis, feedback, accountability, and advocacy elements of CLM projects.

Conclusion & Next Steps

As CLM efforts continue to develop and expand, there will be increasing need for data systems support. The CLM data platform we have developed will be freely released as an open source (GPLv3) project in the near future to allow for wide adoption by any interested CLM project. Additional features being considered and implemented include: 1) Support for additional data collection systems – currently, only CommCare is supported, but support for other data collection platforms (DHIS2-Tracker, ODK, etc) could be developed; 2) Improved administrative back-end support for CLM projects to administer analytical and visualization customizations on their own without any developer involvement; 3) Data systems integration with other data systems, such as PEPFAR's DATIM/MER indicator data.

The public Ritshidze Dashboard is available online at: http://data.ritshidze.org.za