At the Click of a Button: Information System Strengthening in Kenya

The Government of Kenya wanted a robust, stable health information system (HIS) to inform health decisions and health management. It also needed a support system to train users to take full advantage of health data. MEASURE Evaluation PIMA (MEval-PIMA) was created by the U.S. Agency for International Development (USAID) to help Kenya achieve these goals and make health data available for improved health services for Kenyans.

On the ground, MEval-PIMA functions encompassed assessing current systems and testing new ones, building human capacity for data use and strong organizations to manage data, securing basic infrastructure assets and Internet connectivity, and addressing emerging user needs. "That has been the experience throughout. That is why the project exists," says Abdinasir Amin, chief of party.

The project began work in 2012. A year later and thereafter, the health sector was challenged by the transition to a devolved system of government that shifted the responsibility for health services to Kenya's 47 counties. This shift led to reallocation of health staff, new organizational structures at the national and county levels, and changes in beneficiaries and stakeholders. In the midst of these governmental structural changes, the Kenya USAID Mission shifted its focus to core priorities for HIV programming funded by the U.S. President's Plan for Emergency AIDS Relief (PEPFAR): referral system strengthening (RSS), strengthening of the civil registration and vital statistics (CRVS) system, child protection information and an ongoing orphans and vulnerable children (OVC) longitudinal management information system (OLMIS), and community health information system (CHIS). These two significant developments influenced the work the project could undertake, the geography of its work, and its strategic objectives.

As the project reacted to these shifts, it moved from a nationally focused project, to a nationwide project focused on county-level results, to one focused on 10 target counties. In each case, however, it always was important to help Kenyan health services to collect good-quality data and to have the capacity to analyze and use data strategically. To that end, and in service of PEPFAR's priorities, the project then focused on accomplishments made in HIS for those sectors named above.

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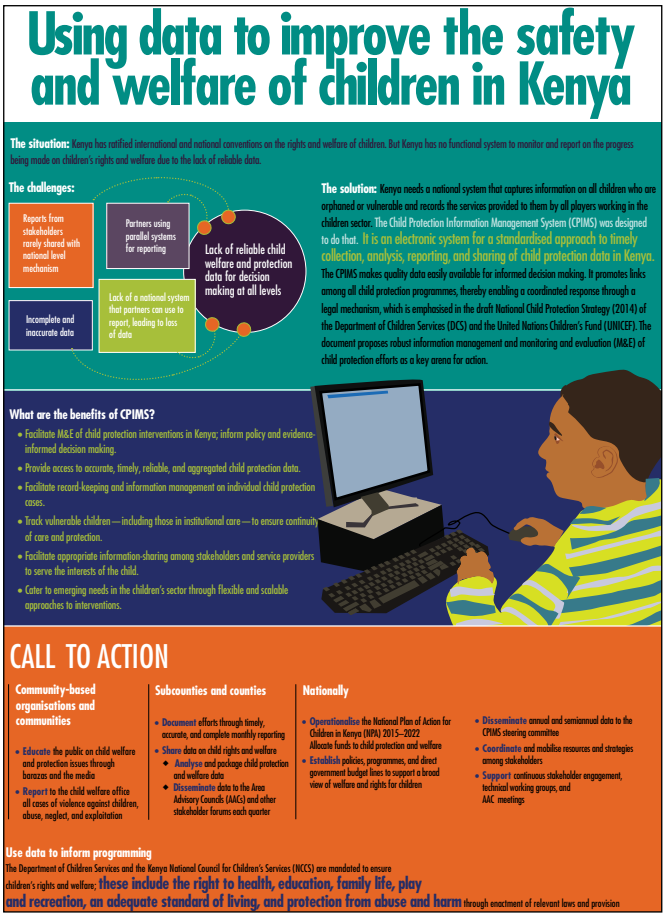


To support meaningful data for policymaking and improved health programming, MEval-PIMA's approach was essentially the same for the four sectors:

- Determine a baseline of available data systems
- Assess staff capacity to manage and analyze data
- Consult with stakeholders on their information needs and point of view
- Develop interventions to address the technical, organizational, and human capacity gaps as required

A chief lesson learned in carrying out this approach was that the time required was almost always underestimated. Issues of scale and adequate coverage of counties remain. Resources and infrastructure deployment required to set up and maintain information system function also was underestimated and typically underfunded.

However, the project's achievements in information systems, accomplished in close collaboration with health services at all levels, are heartening. To name a few, a national child protection information management infrastructure is now deployed in 10 MEval-PIMA target counties and, in those counties, service directories assist the referral process from one health facility to another to help coordinate care for HIV clients and achieve 90-90-90 targets.[1] Improved death and cause-of-death recording has been enhanced by integrating patient-level cause of death reporting in DHIS 2 (especially from the six sites supported by MEval-PIMA), and the Kenya Department of Civil Registration Services (CRS) has developed three sequential annual vital statistics reports (2013, 2014, and 2015). For CHIS, besides improved timely reporting, all five MEval-PIMA-supported counties have developed performance improvement plans to address gaps relating to quality and use of data, and are working with partners to carry these plans out.

Child Protection Information Management System (CPIMS)

A functional child protection information management system is required to document incidence and prevalence of protection issues and to bring the matter to public attention and policy agendas. Since 2007, Kenya had been struggling to develop a functioning child protection management system. When MEval-PIMA began work on the issue, the Kenya Department of Children Services (DCS), in collaboration with the United Nations Children's Fund (UNICEF), had acquired a web-based platform for a system. The project's assessment identified several issues the project should address to make the system more functional:

- Strengthen the CPIMS data flow and reporting structures in the DCS
- Strengthen the paper-based reporting system
- Develop a hybrid system for case management and data aggregation
- Address Internet connectivity challenges
- Simplify the amount of data to be captured
- Develop a sustainability plan that includes capacity building for staff

MEval-PIMA, with other stakeholders, supported Phase II of the CPIMS program to provide a comprehensive system upgrade and increased system function. CPIMS is meant to generate important aggregate data on child maltreatment and protection that is reported to the

1 By 2020, 90 percent of all people living with HIV will know their HIV status; 90 percent of all people with diagnosed HIV infection will receive sustained antiretroviral therapy; 90 percent of all people receiving antiretroviral therapy will have viral suppression. See http://www.unaids.org/en/resources/documents/2017/90-90-90

national level; track cases of identified child abuse, neglect, or exploitation; and provide aggregate data on the effectiveness of the response to cases of children in need of support. The system also must support the diverse needs of child protection stakeholders. To that end, MEval-PIMA held a stakeholder workshop to develop the roadmap for the CPIMS upgrade and added support for governance structures and development of a multiyear system-strengthening program. MEval-PIMA supported the CPMIS technical working group (TWG) to determine implementation strategies and activities and work with stakeholders to develop annual costed action plans.

In parallel with this activity, MEval-PIMA also supported the rollout of OLMIS for U.S. government (USG) programs so they could collect data on children and households affected by HIV, who have multiple, cross-disciplinary needs. These data are crucial components for successful planning of programs to help and to respond appropriately to changing needs over time for orphans and vulnerable children (OVC). A chief accomplishment was the successful incorporation of USG reports and migration of selected data sets from OLMIS data into the CPIMS.

Today, the CPIMS can capture data on children needing protection wherever they are in Kenya. The system manages children's cases over time and can produce reports useful for planning, implementation, monitoring, and evaluation of child protection programs and services. The information and communication technology (ICT) unit of the Ministry of East African Community, Labour and Social Protection participated in the design and rollout of the system and is providing technical and financial support for operations and maintenance, improving system utility, and involving more stakeholders from county governments. MEval-PIMA has supported the rollout of CPIMS in 10 target counties including distribution of ICT equipment (desktops, uninterruptible power supplies, printers, scanners, and hard drives).

MEval-PIMA also conducted data quality assessments in the 10 counties, and continued mentorship activities among users—including peer support with a WhatsApp user group—and continued performance improvement plans at CPIMS headquarters, where, this year, second-quarter reporting from counties to the national level was 72 percent, compared to less than 10 percent the quarter before.

Measurement also shows an improved capacity of USG implementing partners (IPs) to manage and use OLMIS. For example, MEval-PIMA onboarded AIDS, Population and Health Integrated Assistance Zone 1 (APHIAplus Western), by migrating their data into OLMIS. After training of their staff and roll out of OLMIS to their IPs, a semiannual performance review showed their reporting on OVCs served was more than 90 percent—which is significant, as they have more than 80 IPs serving more than 280,000 children.

Civil Registration and Vital Statistics

A fully functional civil registration system (the continuous, universal recording of the occurrence and characteristics of vital events, such as births and deaths) provides the "denominator" of the population, from which more accurate statistics can be derived to allow program managers to better plan health service delivery. Guidance says at least eight of every 10 births in an area should be recorded to draw a true picture of population trends. The national average of birth registration in Kenya was 65.9 percent in 2015.

Protecting Children

More than half of Kenya's population is below the age of 18. DCS is responsible for protecting the rights and welfare of all children through policies and services (Children's Act, 2001) and evidence-informed interventions (National Plan of Action for Children [2015–2022]).

Between July 2016 and March 2017, CPIMS recorded 21,492 cases of almost 21,000 children (an average of 2,500 children and cases per month). The top three types of cases reported were neglect (54%), custody disputes (17%), and abandonment (5%). The most vulnerable group is children younger than five years: they comprise almost half of the children captured in CPIMS.

Vital statistics should also record deaths and causes of deaths among the population. The International Classification of Diseases (ICD) diagnostic tool of the World Health Organization (WHO) is the global standard for certification and coding of illness and death data that are used to compile and analyze national statistics. In a bid to ensure uniform data

capture, coding, and analysis to enable comparison nationally and globally, Kenya adopted the ICD-10 version, introduced by WHO in 1993. According to a baseline assessment of Kenya's CRVS system in 2013, the recording of deaths was not up to date, because of several gaps—one of which was a lack of systematized training on certifying and coding deaths. This fact posed an obstacle to obtaining complete and high-quality, cause-specific mortality information that could be used for assessing the effectiveness of healthcare and resource allocations. Mortality information can be used at all levels within a country as the ultimate indicator of the impact of health and social interventions. Cause-specific mortality rates can also be used to guide programming priorities.

Although Kenya has had a civil registration system since 1904, little progress has been made despite various attempts to improve it. It lacked a functional national database and had no direct link to the HIS.

MEval-PIMA began its work with the development of the CRS M&E plan and supportive supervision tools and guidelines to build the foundation for securing quantitative data on systems performance. In Year 2, civil registration offices (CRO) reporting by the monthly deadline improved from 22 percent to 43 percent in the 12 target counties, while national birth registration coverage increased from 55 percent to 68 percent in 2014. Those initial increases were promising. Over the project life since then, MEval-PIMA supported CRVS system strengthening with interventions in expanding birth and death registration coverage, improving data quality, and enhancing use of quality vital statistics for evidence-based decision making in 12 counties, and then in 10 target counties.

The project also focused on training, developing a national ICD guideline and curriculum to standardize training and implementation of ICD certification and coding in the country. It conducted trainings of trainers for the initial 12 target counties and supported rollout of the ICD guidelines through orientation of health managers and training of health workers in 72 health facilities in six counties in Year 3, and an additional 23 health facilities in three more counties in Year 4. MEval-PIMA also supported the orientation of health managers and training for health records and information officers in ICD coding, DHIS 2 (the district health information system platform), and WHO tools in another county. Post-training follow-up included facility mentorship visits, continuous medical education (CMEs), and data quality reviews. MEval-PIMA also supported the printing of wall posters to be used at health facilities on death and cause-of-death certification and on birth registration. These were distributed during mentorship visits. Results indicated that ICD implementation was being carried out and the quality of cause-of-death information was improving, as well as death reporting in DHIS 2.

At the national level, MEval-PIMA's continued support to strengthen stakeholder engagement and collaboration included participation in and support for the national CRVS TWG and the mortality subcommittee. The project conducted training in data management and analysis targeting the CRS statistics team and provided technical assistance in analysis of the birth and death registration data. The CRS has so far developed three annual vital statistics reports (2013, 2014, and 2015). The manual procedures for civil registration create a challenge in attaining complete coverage due to untimely submission of reports and poor data quality. Computerization of CRVS would improve timely availability of vital events data and enhance data sharing. Following the security assessment for the electronic CRVS system supported by MEval-PIMA, the project facilitated modifications to improve data access and security, and supported the rollout of the system in target civil registration sites through support for Internet connectivity and training of staff to administer the CRVS system and use it for reporting.

The Most Important Change

"The most important change we have experienced as a hospital is the improved efficiency in recording mortality cases. Whereas before, we were using a system that required one to manually record [data] on a card, and to key in the information on Excel, now the system is automated and all you have to do is upload the information and the system generates the reports immediately. Today, we are able to take 18 minutes to upload 30 files, while before, it would take us two weeks to upload 30 files."

—Sarah Manywanda, a health records and information officer at St. Mary's Hospital, in Kakemega

Community-Based Civil Registration: A Key Achievement

According to a 2000 study in Kenya, 60 percent of births and 70 percent of deaths occur at home. The CRS registers home events through national government administration officers and assistant chiefs at the community level, who have an important role in building community awareness of the need to record this data. A community-based registration agent is supervised by the chief. For lay reporting of vital statistics to be reliable, chiefs and assistant chiefs need to understand the principles of "verbal autopsy," so they can help their community record cause-of-death diagnoses.

MEval-PIMA has helped CRS train assistant chiefs and chiefs on birth and death registration. The training was conducted using birth and death registration principles, and included drama and role-playing for practice. The assistant chiefs were also trained on guidelines for birth reporting in special cases such as children born to single mothers. MEval-PIMA supported dissemination of assistant chiefs' job aids to strengthen capacity to correctly complete registration forms at the community level.

Photo by Yvonne Otieno, MEASURE Evaluation PIMA

Referral System Strengthening

An assessment of the health referral systems in Kenya in 2013 showed inadequate structures to effectively coordinate and improve collaboration among entities for referral system management to ensure continuity of care among healthcare clients. Kenya also lacked policy documents to guide implementation of referrals. Challenges in the country's referral system were a lack of standard tools to communicate and document referrals, poor coordination and linkages within and between facilities, noncompliance with referrals, weak referral monitoring systems, and inadequate referral infrastructure and financing.

MEval-PIMA advocated forming a referral systems TWG to address coordination and spearhead the development of key policies conforming to the National Health Sector Referral Strategy (2014–2018), which also was developed with support from MEval-PIMA. In Year 4, the project focus shifted to supporting HIV referrals and linkages.

This initiative for referral system strengthening was a response to various weaknesses, including a high proportion of clients receiving care at secondary and tertiary facilities when care at a primary health center would be appropriate and less expensive. A pilot implementation of a global toolkit for monitoring HIV and AIDS referrals in two districts in Nyandarua County also found a lack of good-quality data to measure the completion of referrals among patients at all levels of the health system.

As the first step, the project convened stakeholder workshops in each of the targeted counties to initiate a community dialogue, seek input on creating a formal referral network, and generate buy-in for the activity. Invited stakeholders included representatives from communities, support groups for people living with HIV and AIDS, subcounty health management teams, private sector clinics, health facilities from tertiary to community levels, social welfare offices, local nongovernmental organizations (NGOs) and community-based organizations, and faith-based groups.

A strong referral system must communicate referrals and capture referral data using standard tools such as

referral forms, referral registers, data collection, patient tracking, feedback forms, and a directory of services. The project set out to work with national stakeholder groups to implement an RSS assessment in target counties to see how the referral system operates within facilities, between facilities, and between communities and facilities. Findings from each assessment were used to inform a referral strengthening plan and develop guidelines for the targeted counties. Work also included the following:

- Technical assistance to develop a national policy and strategy
- Standard operating procedures (SOPs) with data collection tools and a health worker training curriculum to improve health workers' capacity to manage referrals
- Performance monitoring and improvements on data use
- Coordination between facilities and care providers

One important area for work was to create a directory of HIV/AIDS services for 10 target counties. The purpose of a directory is to inventory the services available within a referral network, to foster communication among service providers, and to ensure compliance when patients are referred to a facility.

MEval-PIMA finalized and disseminated HIV/AIDS referral directories to nine target counties over the project life and, in Year 5, completed the Nairobi County directory, which was the largest of all 10 and captured referral points for other primary care services. MEval-PIMA also finalized a summary report on facility-based continuing medical education on HIV referral and linkage, the referral system performance report, and the SOPs for HIV referral and linkage.

Community Health Information Systems

High-functioning CHIS are the primary source for the evidence of disease burden and make an important contribution to improving basic healthcare services to communities. These systems can measure and evaluate critical elements of care at the community level, such as antenatal care, newborn care, nutrition, breastfeeding, delivery by trained midwives, and family planning. They should produce good-quality information for decision making by all health stakeholders.

A 2011 review of the Kenyan CHIS noted that it generally lacks systematic and consistent implementation to ensure that data are of good quality and complete at each level of the health system.[2] The underperformance was attributed to a lack of tools (guidelines, standards, and data collection forms), high turnover among community health workers (CHWs), and limited demand and use of CHIS information.

MEval-PIMA originally planned to address CHIS performance gaps by setting up Centers of Excellence (COEs) in every county. Eight community units (CUs) were identified and started on the path to becoming COEs and local partners were enlisted to support rapid scale-up. In Year 2, the project's activities were limited to those eight counties and were not to be scaled up as planned. In Years 3–5, MEval-PIMA's support for CHIS was adjusted from developing COEs and limited to improving CUs in the eight counties. By Year 4, MEval-PIMA was supporting CHIS in five counties: Siaya, Migori, Kisumu, Homa Bay,

2 The AIDS, Population, and Health Integrated Assistance (APHIA II) evaluation of CHIS, conducted with the Community Health Services Unit (CHSU), formerly the Division of Community Health Services (DCHS) in 2011.

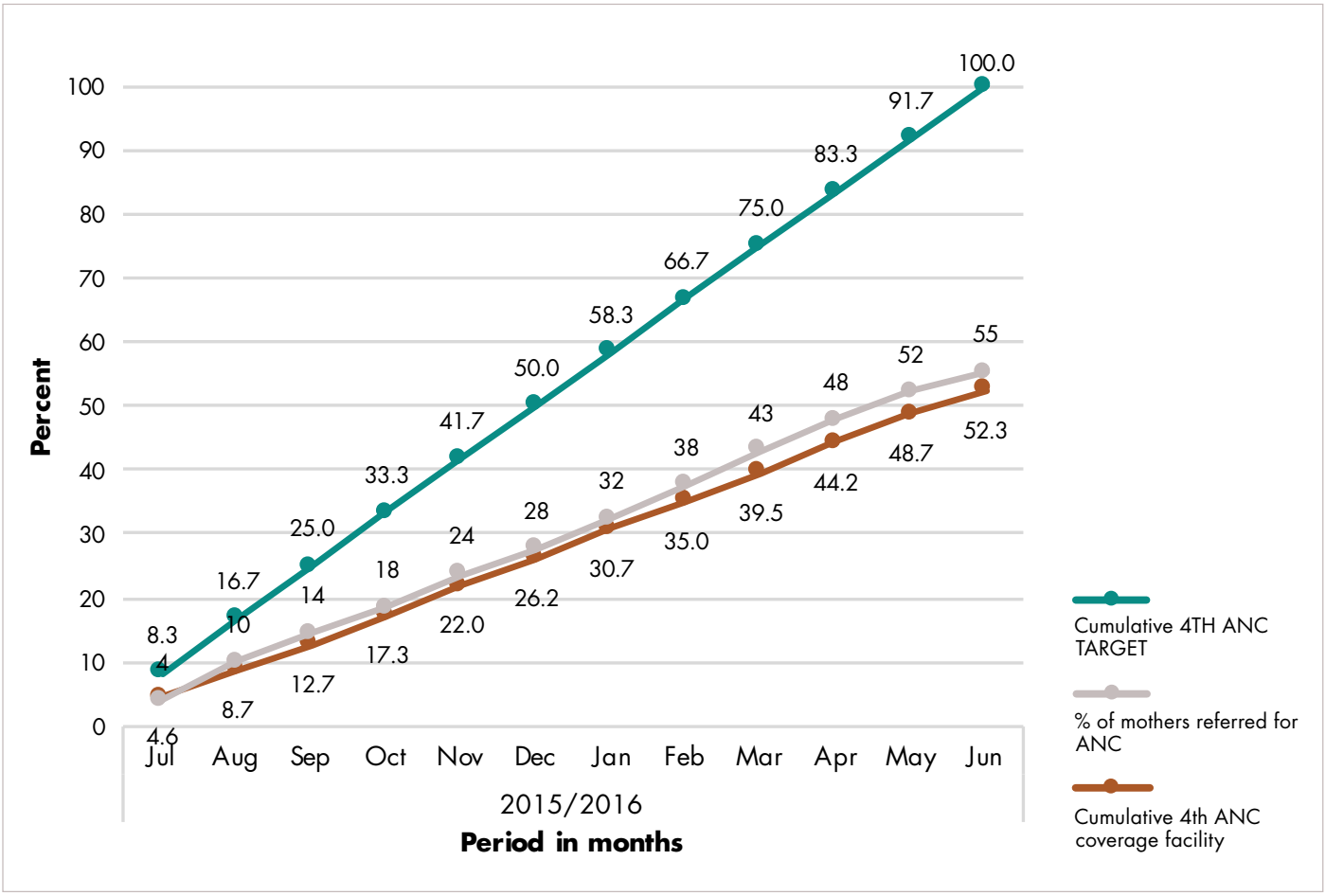
Photo by Yvonne Otieno, MEASURE Evaluation PIMA

and Nairobi, to enhance community reporting through improved availability and quality of community data and to promote the use of data for decision making.

In Year 4, MEval-PIMA convened stakeholder groups from the five counties to assess gaps in their CHIS, develop remedies, and share learning. Some of the gaps identified were lack of knowledge among community health assistants, community focal persons, and health records and information officers at subcounty levels regarding revised reporting tools; lack of standardization in reporting tools, which led to simultaneous use of both old and new tools; and an insufficient number of tools at the county level. These challenges affected the quality of the health data reported to DHIS 2, which is the software platform for aggregating health data. Stakeholders, implementing partners, and county health officials jointly developed strategies to improve data quality and committed to action plans.

Siaya County, with support from MEval-PIMA, shared its approach to address the challenges with the following five-point strategy:

- Provide technical support for joint planning and implementation of action plans
- Orient community health assistants on revised tools
- Harmonize a master list of community units to ensure proper linkages from the parent facility to community units
- Review data to examine how the county was performing on community health indicators (e.g., the number of defaulters referred for additional antenatal care [ANC], the percentage of mothers referred for initial ANC visits, and the total number of children referred for immunization)
- Conduct a regional forum for stakeholders to coordinate action steps



Siaya County achieved a rate of 52 percent of pregnant women receiving a fourth antenatal care visit. The community health volunteers had a cumulative referral rate of 55 percent. This analysis helped to show the volunteers how their efforts contribute to the performance of overall health indicators. The county attributes the improved performance shown in the graph to the joint planning meeting supported by MEval-PIMA, which helped ensure a smooth transition from old to new tools as well as encouraged improved reporting rates. The successful transition in Siaya County can be replicated by other counties that aim to improve community reporting.

MEval-PIMA support has achieved harmonization of the master community unit listing and facility linkages in DHIS 2, standardized use of revised tools, increased reporting, and enhanced skills in data interrogation, including triangulation of community and facility data in the five target counties. In addition, the results of a CHIS rapid assessment and follow-up stakeholder engagement have seen commitments from partners, such as APHIAplus Western, to access and use the revised tools. Partners have also adapted use of the rapid assessment tool in determining CHIS areas for improvement. In Year 5, the project goal was to consolidate the gains made over the past four years and, through the national monitoring and evaluation (M&E) TWG, to advocate continuity and support from other implementing partners.

MEval-PIMA participated in a community health TWG workshop held in March 2017 to review the measurement of the CU functionality index and to develop a community health dashboard that contains indicators for monitoring CU performance. Participants also developed a concept note for an evaluation of the community health strategy to review indicators, financing options, and expected outcomes on institutionalizing community health at the county level. The Community Health Services Unit (CHSU) is soliciting funds to conduct this assessment.

Conclusion

In these four important sectors of the health information system, MEval-PIMA is leaving a legacy of routinized approaches to collect and use health data to improve lives—informed in each case by assessments to understand existing system strengths and weaknesses and existing capacity among the health workers who run the system. The project, always engaging with stakeholders, developed a purposeful mix of solutions—software, hardware, infrastructure, mentoring, training, and monitoring—to upgrade and institutionalize methods that leave Kenya better positioned to know its health issues, to devise strategies to address them, and to manage the work required to improve the health of its citizens.

MEASURE Evaluation PIMA is funded by the United States Agency for International Development (USAID) through associate award AID-623-LA-12-00001 and is implemented by the Carolina Population Center at the University of North Carolina at Chapel Hill, in partnership with ICF International; Management Sciences for Health; Palladium; and Tulane University. The views expressed in this publication do not necessarily reflect the views of USAID or the United States government. FS-17-240

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