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APHIAplus NAL (AIDS, Population, and Health Integrated Assistance, Northern Arid Lands) (2007-2012) is a USAID-funded project building health system capacity to deliver quality HIV prevention, care, and treatment; maternal and child health; reproductive health; family planning; and tuberculosis care and treatment services. Originally called APHIA II North Eastern Province, the project expanded in 2011 and was renamed APHIAplus NAL.

APHIAplus NAL is led by Pathfinder International, in partnership with Management Sciences for Health (MSH), IntraHealth International, Food for the Hungry, and the International Rescue Committee.

Strengthening Strategic Health Information Systems in Kenya's North Eastern Province

Now ending its final year of implementation, APHIAplus NAL has laid the foundation for the use of data for decision making at facility, district, provincial, and national levels. With a mandate to improve the quality of service delivery, building strategic health information systems (HIS) capacity was integral to the APHIAplus NAL strategy. This technical brief discusses steps taken by the project to meet challenges to the use of strategic health information in Kenya's North Eastern Province (NEP), and provides recommendations for future similar efforts in comparable contexts.

Background

In 2007, Kenya's North Eastern Province* faced significant obstacles to delivery of quality health services. According to the Kenyan Demographic and Health Survey, women in NEP were the most likely of any in the country to cite poor quality of services as the reason why they did not seek facility care for delivery.¹ As a province, NEP's arid climate, resource scarcity, and

low population density combined with its history of economic and social marginalization to present a challenging environment for recruitment and retention of sufficiently skilled human resources for health. With a total population of over 2 million, NEP had an average of one doctor per 120,000 people.² In 2008, 32 percent of facilities were closed due to lack of health personnel, and only 4 out of 10 doctors posted to the province that year reported to duty.³ Overall, NEP had the

*This technical brief discusses APHIAplus NAL's data systems related efforts in NEP, where they were consistent over the project's five years. For discussion of APHIAplus NAL's full strategy in NEP, see Pathfinder International's 2012 program brief, "Increasing Access to Quality Health Services in Kenya's North Eastern Province."

lowest retention rate of human resources for health in the country.⁴ Owing in part to these constraints, the province's data reporting was deficient. Over a three-month period, the reporting rate across the province's high-volume facilities was just 32 percent.⁵ In response to these gaps and weaknesses, the government of Kenya (GOK) prioritized targeted investments in NEP health system quality improvements.⁶ These priorities included provincial alignment with national health information and monitoring and evaluation goals.⁷

The APHIAplus NAL Strategic Health Information Approach

In 2008, APHIAplus NAL conducted an assessment of 71 of NEP's then 86 high-volume facilities, from the health center level to the Provincial General Hospital. Assessment results confirmed a wide range of gaps in health system infrastructure and performance. The assessment concluded that the province lacked the

necessary resources to execute even its most basic monitoring responsibilities.⁸ Accordingly, APHIAplus NAL set a target to cover a minimum of 80 percent of the province's high-volume health facilities with strategic health information support. Because APHIAplus NAL was mandated to improve HIV prevention, care, and treatment services in particular, the project planned to first prioritize data capacity building efforts in comprehensive care clinics (CCCs), the province's dedicated HIV care and treatment service posts. Following targeted efforts in the CCCs, all other participating facilities received the project's strategic health information interventions. Figure 1 illustrates the NEP health system, and the CCCs' relationship to the health system levels.

INTERVENTION PRIORITIES

APHIAplus NAL prioritized alignment with existing public sector processes as it designed its strategic health information intervention. The section below highlights key areas with which the project sought to align its efforts.

Performance management and accountability structures

At the time of project start-up, the national reporting structure was organized such that data was collected at the facility level, aggregated by district health information and records officers (DHRIOs) at the district level, submitted to the province level for aggregation, and finally submitted to the national level. Though the structure was intended to monitor service delivery quality, it lacked any formal mechanism to enable feedback between health system levels. Recognizing this gap, the project designed its intervention to supplement the existing structure with mechanisms for routine performance dialogue. Figure 2 illustrates the process adjustments APHIAplus NAL sought to make as part of its core priorities.

Data infrastructure

Whereas data was collected using an exclusively paper system in 2008, in 2009 the GOK introduced a new file transfer protocol to enable facility- and district-level electronic reporting. As the new process got underway, availability of internet connectivity, software, and computer equipment became critical to facilities' transition to electronic reporting. Because it was anticipated that electricity shortages and inconsistent funds

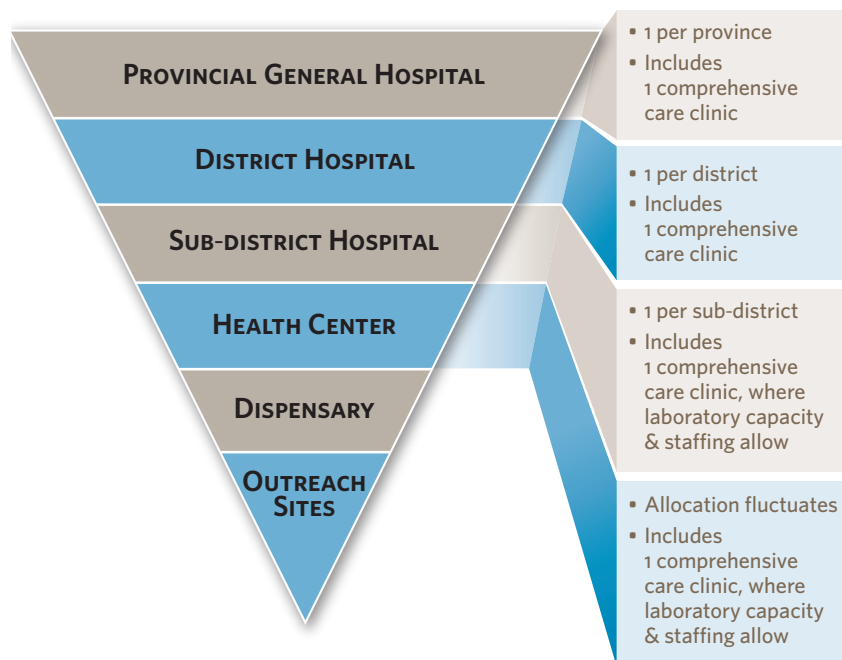


FIGURE 1. THE HEALTH SYSTEM IN NORTH EASTERN PROVINCE

APHIAplus NAL sought to cover at least 80 percent of high-volume facilities between the health center and provincial general hospital levels with strategic health information support. Comprehensive care clinics located at many of these facilities provided HIV prevention, care, and treatment services, and were prioritized to make the most rapid advancements in data-based decision making. In 2007, NEP had 86 high-volume facilities and just six CCCs. By 2012, NEP had 187 high-volume facilities and 27 CCCs. All were covered by project close.

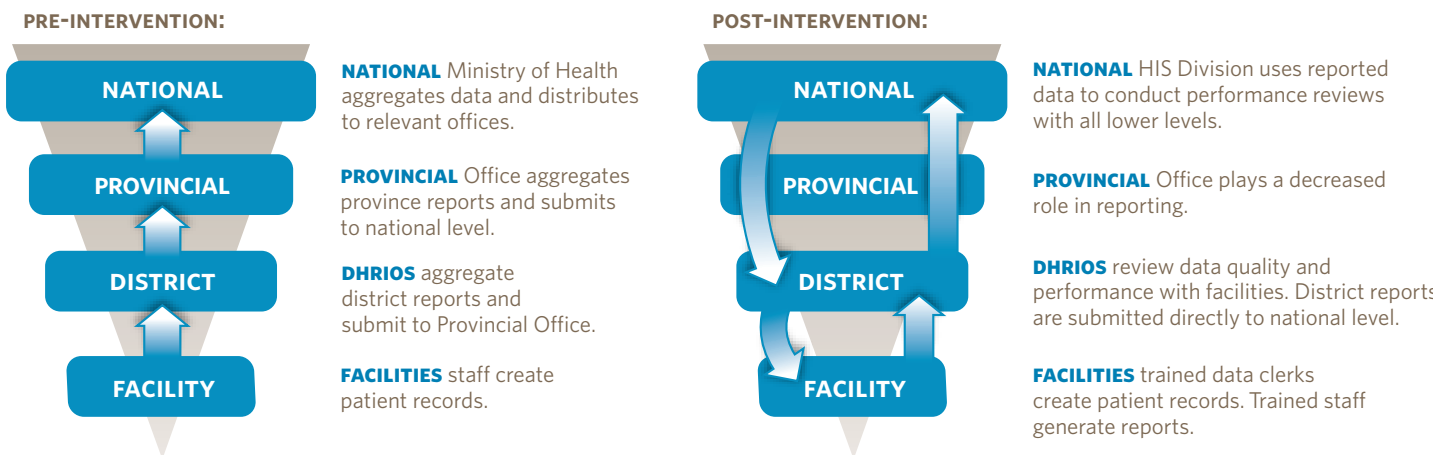


FIGURE 2. APHIAplus NAL STRATEGY TO ALIGN AND ADAPT PUBLIC REPORTING STRUCTURES

Pre-intervention, reporting occurred without any formal structure for feedback on performance. Post-intervention, districts and facilities communicated regularly about performance. Districts reported directly to national offices, and all three levels gained formal channels for review and dialogue about performance.

for internet connectivity would continue to hinder the province’s full-scale adoption of electronic reporting, APHIAplus NAL chose to support a hybrid data maintenance approach. The project planned to support 100 percent of NEP’s CCCs to initiate electronic reporting, providing equipment and training CCC staff to enter and maintain data using the systems, while continuing to use their paper-based records as a back-up in the event of electricity shortages. NEP’s remaining high-volume facilities were supported to improve their management of existing paper-based systems.

Kenya’s national data system

Throughout APHIAplus NAL’s intervention planning, the project stressed the importance of adaptation to Kenya’s changing HIS context. At project start-up, the 2008 file transfer protocol introduced many facilities to electronic reporting methods. A new national HIS in 2010 brought facilities and districts to again adopt new reporting processes⁹ and, by 2011, new national monitoring and evaluation goals presented further cause for procedural updates. Recognizing the GOK’s ambitions to modernize and streamline data systems, the project prioritized timely and responsive support as stakeholders adjusted to evolving national systems.

Implementation

APHIAplus NAL implementation prioritized:

- 1) accuracy of data sets and data analysis,
- and 2) accountability for data use.

IMPROVING DATA ACCURACY & ANALYSIS

Facility-level efforts

Data collection The project undertook efforts in each of the district facilities to ensure proper data collection practices. As the health facility assessment had revealed, the government form used to capture a patient’s personal information, service uptake, and clinical assessment records was being used inconsistently across district facilities. Without proper use of this form, clinic registers and subsequent facility service delivery data were unreliable records of performance. To address the issue, APHIAplus NAL first ensured an adequate supply of the form, allocating funds to stock both public and private facilities throughout the province. The project then engaged DHRIOs to conduct data collection and record keeping training for all relevant facility staff. In this way, DHRIOs were familiarized with their facilities’ data collection capacity as they trained staff in the skills necessary to improve their monitoring practices.

Staff sensitization Due to stigma surrounding HIV, many NEP providers delivered particularly poor quality services to people living with HIV (PLHIV). This provider-driven discrimination within facilities also manifested in inconsistent and poor quality record-keeping for HIV positive clients, posing challenges to districts’ ability to track HIV service performance. As part of the project’s larger efforts to strengthen HIV services, APHIAplus NAL conducted a wide range of technical and sensitization trainings. Training

participants received follow-up support to maintain their data skills through DHRIOs' supportive supervision visits and the project's on-the-job training efforts.

District-level efforts

Human Resources District-level efforts first focused on human resource capacity. Though national guidelines designated one DHRIO per district, only 4 of the province's then 11 districts[†] had any such officer in place. With each officer managing the records of 25 facilities on average, and facility providers having received minimal data-related training, NEP did not have sufficient human resources to maintain its data systems. To address the shortage of data officers, APHIAplus NAL leveraged its partnership with Intra-Health to engage with its existing Capacity Project.[‡] This project, which supports the national health workforce, facilitated the hiring of seven DHRIOs in NEP, thus ensuring that each district had one full-time staff person to manage performance data. As a result, the districts gained the critical staffing required to sustain NEP's evolving data systems.

Data reconstruction To ensure district capacity to create and maintain quality data sets, APHIAplus NAL undertook data reconstruction efforts in each of

NEP's six existing CCCs. To begin, the project provided training in basic data maintenance skills to all DHRIOs, reviewing the CCCs' service registers together to identify data entry errors. Where errors were identified, DHRIOs were taught data cleaning procedures to rectify discrepancies and ensure accurate data sets. Thus, DHRIOs gained critical skills to support their review of facility performance reports, while CCCs simultaneously gained accurate service delivery records. The project also undertook data quality improvement efforts in all new NEP CCCs, ensuring that 100 percent of the province's CCCs

could base their monitoring on accurate data sets in the future.

Monitoring achievement of targets Because facilities' data reporting had been relatively erratic at the start of project efforts, the first step in assurance of quality analysis was to routinize district supervisors' use of national targets to measure facilities' performance. To support DHRIOs to more readily identify district performance gaps, APHIAplus NAL developed a user-friendly data entry and analysis module. A simple excel spreadsheet, the module contained tabs aggregating district's service uptake data for family planning; maternal and child health; prevention of mother-to-child transmission (PMTCT); sexually transmitted infection; tuberculosis; safe delivery; HIV counseling and testing; and diagnostic counseling and testing. By providing automatically generated district summaries, the module enabled district supervisors to quickly and routinely monitor facilities' progress toward meeting targets and identify problem areas for follow-up. Until this point, reviewing performance against national standards had been a rare event, typically conducted by outside stakeholders. For many districts, the module supported supervisors' uniform target-based monitoring for the first time.

Analyzing linked service delivery The project also emphasized performance analysis beyond target-based monitoring. As a first step in supporting districts to conduct this type of analysis, APHIAplus NAL reviewed facilities' HIS indicators to identify pairs of data that, when compared with each other, could provide insight into the comprehensiveness of the services received by clients. To monitor facilities' performance in linking PLHIV to treatment, for example, DHRIOs began regularly comparing facilities' reported number of clients testing HIV positive to the number of clients who initiated anti-retroviral treatment (ART). Figure 3 provides a sample of the indicator pairs that districts were supported to use in their performance analysis.

BUILDING ACCOUNTABILITY FOR DATA USE

Sustainability was a primary goal of APHIAplus NAL's data capacity building efforts. As a result,

HIS Indicator Comparison Sets

Linking HIV testing to care:

- HIV-positive test result numbers compared to numbers initiating ART
- Pregnant women testing HIV positive compared to the number receiving supply of prophylaxis for mother and for infant.

Linking ANC to HIV testing:

- Antenatal care (ANC) visit numbers compared to numbers of HIV tests provided at ANC

Linking HIV testing to family planning:

- Numbers of HIV testing visits compared to number of family planning counseling visits

FIGURE 3. SAMPLE OF HIS INDICATOR-BASED PERFORMANCE ANALYSES SUPPORTED THROUGH APHIAplus NAL

[†] Since the project began in 2007, districts have been redrawn several times, resulting in a fluctuating number of total districts served under APHIAplus NAL.

[‡] For more information on IntraHealth's Capacity Project (now called CapacityPlus), visit <http://www.capacityplus.org/>.

the project prioritized institutional approaches to foster accountability for data use.

Quarterly feedback sessions

Because Kenya's existing reporting structure did not provide a platform for dialogue about performance, the project worked with the districts to introduce this. Already, APHIAplus NAL was conducting its own internal quarterly performance reviews in which DHRIOs participated. As these key players were thus familiar with the process, the project proposed that DHRIOs adapt the quarterly reviews for use in their districts. Beginning in 2009, APHIAplus NAL staff joined DHRIOs as they led provincial officers, district counterparts, and facility managers in reviews of facilities' quarterly performance. A day-long meeting, the reviews included discussion of facilities' progress toward national targets, as well as the quality and comprehensiveness of services delivered. Because facilities were publicly compared and ranked by performance at these sessions, many DHRIOs reported that an atmosphere of competition for improvement developed among the facilities.

Data quality audits

To bolster facilities' continued maintenance of service delivery records, the project supported DHRIOs to initiate data quality audits. Conducted at random, these audits brought together facility data clerks, district and facility managers, and DHRIOs to review data sets. Audits prioritized identification of data entry errors such as discrepancies between quarterly performance reports and facility service records, as well as duplicate entries and missing client information. DHRIOs then included the results of these audits in quarterly review meetings, while providing formal recommendations to facility managers for relevant data system improvements.

Performance

By 2012, APHIAplus NAL was successfully serving 100 percent of NEP's 187 high-volume facilities, including 27 CCCs. All facilities under the project had initiated the data capacity building process, from data collection training to quarterly reviews and data audits, and DHRIOs were successfully leading data system capacity building efforts across NEP. Key results of the project's efforts



Facility record keeping systems evolved from relative disorganization to uniform, easy-to-use filing systems.



Record keeping prior to APHIAplus NAL partner efforts (top), and after (bottom).

PHOTO CREDIT: John Kere

to build production and use of strategic health information are discussed below.

IMPROVED DATA ACCURACY

In 2012, facility- and district-level improvements in data accuracy were evident. Where records management had been paper based, facility record keeping systems evolved from relative disorganization to uniform, easy-to-use filing systems. Notably, all of NEP's original CCCs had undergone data reconstruction, and 100 percent of CCCs had received equipment

and training to initiate electronic records systems—thereby setting the stage for concerted improvements in performance monitoring for HIV services.

Supervisory Performance Monitoring Tool: PMTCT and ANC Data Cascade

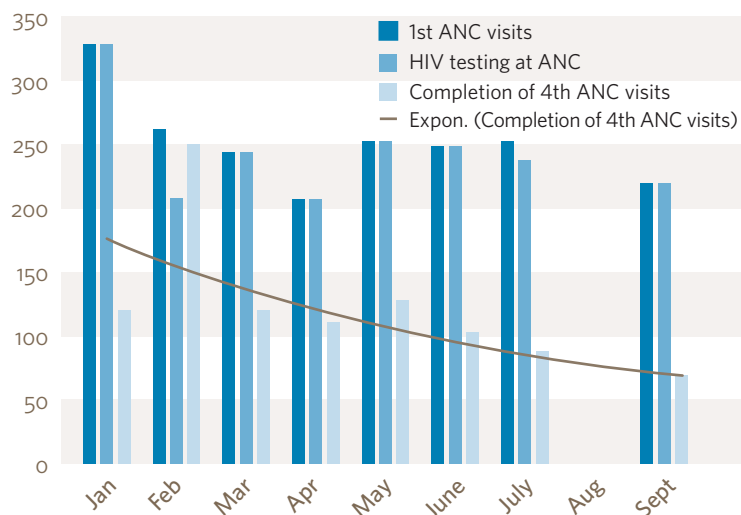


FIGURE 4. EXAMPLE OF THE GARISSA PROVINCIAL GENERAL HOSPITAL'S PMTCT AND ANC DATA CASCADE OVER THREE QUARTERS, 2011

The visual alignment of related service performance data allowed supervisors to easily monitor performance. Here, supervisors compared numbers of 1st ANC visits with numbers receiving HIV testing at ANC, inferring the hospital's strong performance linking ANC clients to HIV testing. The downward trend in numbers completing the 4th ANC visit was also easily observed, enabling supervisory follow up.

IMPROVED DATA USE FOR DECISION MAKING

Using data to track complete packages of services

Service delivery monitoring in NEP evolved over the course of implementation, incorporating consistent comparison of key indicators to monitor quality and comprehensiveness of services. Data cascades like the one pictured in Figure 4 became a routine part of quarterly review discussions. In this way, whole packages of services delivered are now monitored (as opposed to isolated service uptake numbers), as are trends in service provision.

Building on this analysis, CCCs in the province also initiated tracking of ART service uptake for the first time—a critical step for the province, where managers are aware of a rising HIV prevalence rate¹⁰ but have insufficient data to measure the true extent of need

for services. By monitoring CCCs' success linking HIV-positive clients to care, supervisors gained a real-time mechanism to understand the need for HIV services, and facilities' progress toward meeting that need. As CCCs' data maintenance improvement efforts got underway, these cascades also offered supervisors easy alerts to possible data entry issues requiring attention. Figure 5 depicts the supervisory analysis DHRIOs conduct using CCCs' HIS indicator data.

Responding to loss to follow-up

By 2012, all of NEP's 27 CCCs had initiated tracking of loss to follow-up, aided by electronic software developed by MSH. APHIAplus NAL successfully integrated the software into CCCs' new electronic medical records systems, enabling facility managers to receive alerts when instances of loss to follow-up are revealed in routine service delivery data. As a result of the automated alerts, several facility managers began using these prompts to generate lists of potential clients who may have missed a needed service. They have since begun contacting community health workers to follow up with these individuals and encourage them to return

Supervisory Performance Monitoring Tool: HIV Testing and Care Cascade

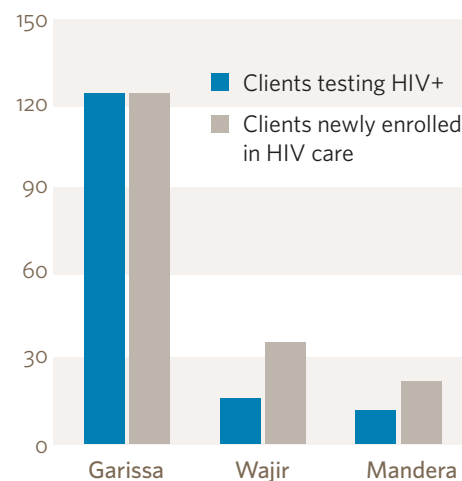


FIGURE 5. DISTRICT HIV TESTING AND CARE, JANUARY–MARCH 2012

Based on this visual, supervisors followed up with Wajir and Mandera CCCs to ensure an explanation was available for the higher numbers of clients enrolled in care compared with those testing positive. Visuals like these help supervisors to quickly see areas for inquiry based on performance data, a significant change given that data was seldom used for this purpose previously.

to the facility for care. As facility managers have shared this innovation in the quarterly review sessions, DHRIOs have uniformly instructed CCCs to initiate the new process. It is now occurring across NEP.

Commodities forecasting

As a result of their routine monitoring of service uptake, facilities across NEP now conduct forecasting on a quarterly basis to assist in supply chain maintenance. Equipped with years' worth of consistent service uptake and commodities consumption records, NEP facilities use this data to anticipate increases in demand for services and commodities, placing their orders accordingly and coordinating with each other when national supplies cannot sufficiently cover anticipated need. In one such instance in Garissa, stocks of nevirapine at a particular facility had consistently run out each year over a two-month period, while commodities data at a nearby facility reflected a steady stock of the drug at that time. Comparing their consumption records at a quarterly review meeting, the facility managers of the two facilities agreed to share the surplus to guard against stock-outs in the coming year.

INSTITUTIONALIZED ACCOUNTABILITY

Reporting & reviews

By 2010, 100 percent of NEP's 187 health facilities adhered to the quarterly review process, with facility managers reporting that findings from the review meetings were now being used to update facilities' annual workplans on a quarterly basis. By 2012, 90 percent of facilities in NEP were reporting on time,¹¹ reflecting a marked improvement in the province's participation in Kenya's national health information system goals.

Performance contracts

In 2010, the GOK introduced performance-based financing by instituting performance contracts for all facilities and individual public sector providers. To assess facilities' and providers' performance against their contracted targets, the GOK initiated a schedule for performance review meetings based on the NEP quarterly review process. These performance reviews now align with newly mandated district quarterly reviews, thus institutionalizing both the quarterly review process and accountability for data use on a national scale.

Province-wide adoption of data quality audits

The audits introduced during APHIAplus NAL's tenure have become a core component of supervision processes nationally. Embedded in districts' annual operating plans and enforced by provincial offices, data quality audits are routinely included in annual budgeting across Kenya's eight provinces.

Lessons Learned & Recommendations

GOVERNMENT OWNERSHIP IS KEY TO SYSTEM SUSTAINABILITY

The NEP experience demonstrates the importance of working through existing government systems when pursuing data system strengthening objectives. Rather than creating parallel monitoring and evaluation systems, APHIAplus NAL strengthened facilities' use of the existing national HIS such that use of the national data satisfied not only project reporting needs, but also long-term quality monitoring capacity in the region. By designing interventions to support national HIS goals, APHIAplus NAL ensured ownership by key stakeholders and fostered a culture of data use for performance review and decision making across all levels of the Ministries of Health.

SUPPORT FOR BOTH ELECTRONIC AND PAPER-BASED DATA SYSTEMS IS APPROPRIATE IN RESOURCE-LIMITED SETTINGS

Longitudinal analysis of service delivery performance allows managers to see trends over time and identify need for targeted interventions, which is especially valuable when monitoring delivery of the HIV continuum of care. In the NEP context, efforts to introduce longitudinal analyses were hampered by complex paper-based records systems. This made the need for electronic systems pressing. Because a complete transition to an electronic system was not possible for all NEP facilities, APHIAplus NAL prioritized NEP CCCs for electronic system adoption, while supporting remaining facilities to maintain high-quality paper-based records. In doing so, the project achieved coverage of its catchment area while enabling immediately necessary, sustainable improvements for monitoring of its key mandate: HIV prevention, care, and treatment

service delivery. This hybrid approach to data systems proved to be an effective strategy for NEP's resource-limited setting.

DATA CASCADES ARE A USEFUL MONITORING TECHNIQUE

Aggregated data, common in national health information systems, can pose challenges for health managers who may not have strong analytical skills. Data cascades show how indicators connect to contribute to a full service delivery package, helping managers visualize performance in terms of the services most dependent on each other for quality patient health outcomes. When integrated into routine reporting, these data cascades provide managers with an easy way to understand and interpret the implications of their data sets, and make informed decisions for performance improvements.

HEALTHY COMPETITION AND SUPPORTIVE SUPERVISION MUST BE BALANCED

Institutionalized systems for feedback were critical to the sustainability of NEP's data use. Quarterly reviews bringing together multiple

key stakeholders created a constructively competitive atmosphere and aided in facilities' collective desire for improvement. However, a competitive performance environment should not be promoted without equal efforts to bolster supportive supervision at the facility and district levels. All key stakeholders, from providers to facility managers, must be supported to make the changes necessary for quality improvement in monitoring and data use.

Conclusion

In 2011, with the support of the GOK and USAID, the project expanded its efforts to include the northern arid portions of Rift Valley, Eastern, and Coast provinces. Now covering 395 facilities, the project drew upon its experience implementing its strategic health information approach in NEP. The project's expanded region was termed the Northern Arid Lands, and is now in the process of institutionalizing systems for the use of data for decision making. To date, all of NAL's 81 CCCs have completed data reconstruction efforts, laying the groundwork for further improvements under the next phase of APHIA programming leadership.

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COVER PHOTO: A facility's paper-based records filing system. APHIAplus NAL helped to improve facilities' maintenance of paper-based data systems such as this, while graduating NEP's CCCs to electronic data systems.

PHOTO CREDIT: Linet Otieno

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