



Improving Gender Equity and Health Outcomes

by Addressing Gender
in Health Information
Systems

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ABBREVIATIONS

AGYW	adolescent girls and young women
APHIAplus	AIDS, Population and Health Integrated Assistance
CHV	community health volunteer
CRVS	civil registration and vital statistics
CSO	Central Statistics Office
DIMES	DREAMS Integrated Monitoring and Evaluation System
DREAMS	Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe
FMOH	Federal Ministry of Health
GBV	gender-based violence
HIS	health information system
HISSM	health information system strengthening model
IPV	intimate partner violence
M&E	monitoring and evaluation
MER	Monitoring, Evaluation, and Reporting
MEval-SIFSA	MEASURE Evaluation Strategic Information for South Africa
MIS	Management Information System
MOH	Ministry of Health
NRPC	Department of National Registration, Passport and Citizenship
OLMIS	OVC longitudinal management information system
OVC	orphans and vulnerable children
USAID	U.S. Agency for International Development
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
SAVVY	Sample Vital Registration with Verbal Autopsy
SDG	Sustainable Development Goals
SOP	standard operating procedure
UNC	University of North Carolina



MEASURE EVALUATION LEARNING AGENDA

Health information systems (HIS) represent a significant investment for global, international, and subnational groups and organizations that require evidence for accountability and informed decision making. However, despite such a compelling need for robust evidence of HIS function, these systems have not traditionally been a subject for rigorous study and evaluation. That lack limits learning, sharing, and cultivating best practices that can be shared more widely.

MEASURE Evaluation, a five-year cooperative agreement with the United States Agency for International Development (USAID), helps countries improve HIS management, governance, and performance. In July 2014, USAID asked MEASURE Evaluation to implement activities to justify and build an evidence base for which investments in HIS are effective and useful. In response, we developed an HIS Learning Agenda (MEASURE Evaluation, 2015), to explore what works to strengthen HIS. For the Learning Agenda, we seek to answer questions such as these: What are the factors and stages of progress in HIS performance and how are they measured? And what are the characteristics of a strong HIS? The project is also implementing activities to build the evidence base on HIS strengthening. We hope our efforts will contribute to evidence-informed global work to strengthen HIS and health outcomes.

INTRODUCTION

Gender dynamics play a key role in factors that influence health and well-being. Decades of global research have demonstrated that gender equity affects a range of health outcomes. These studies have been very important to lay the groundwork for understanding gender norms and increasing investment in policy and programs to reduce inequities resulting from social expectations. Therefore, as countries around the world invest or are encouraged to invest in both gender and HIS, it is important to consider how these issues intersect. The focus of this synthesis report—which is part of a series—is twofold: **to demonstrate how HIS is strengthened by addressing gender, and to show that addressing gender in HIS improves gender equity and health outcomes.**

METHODS

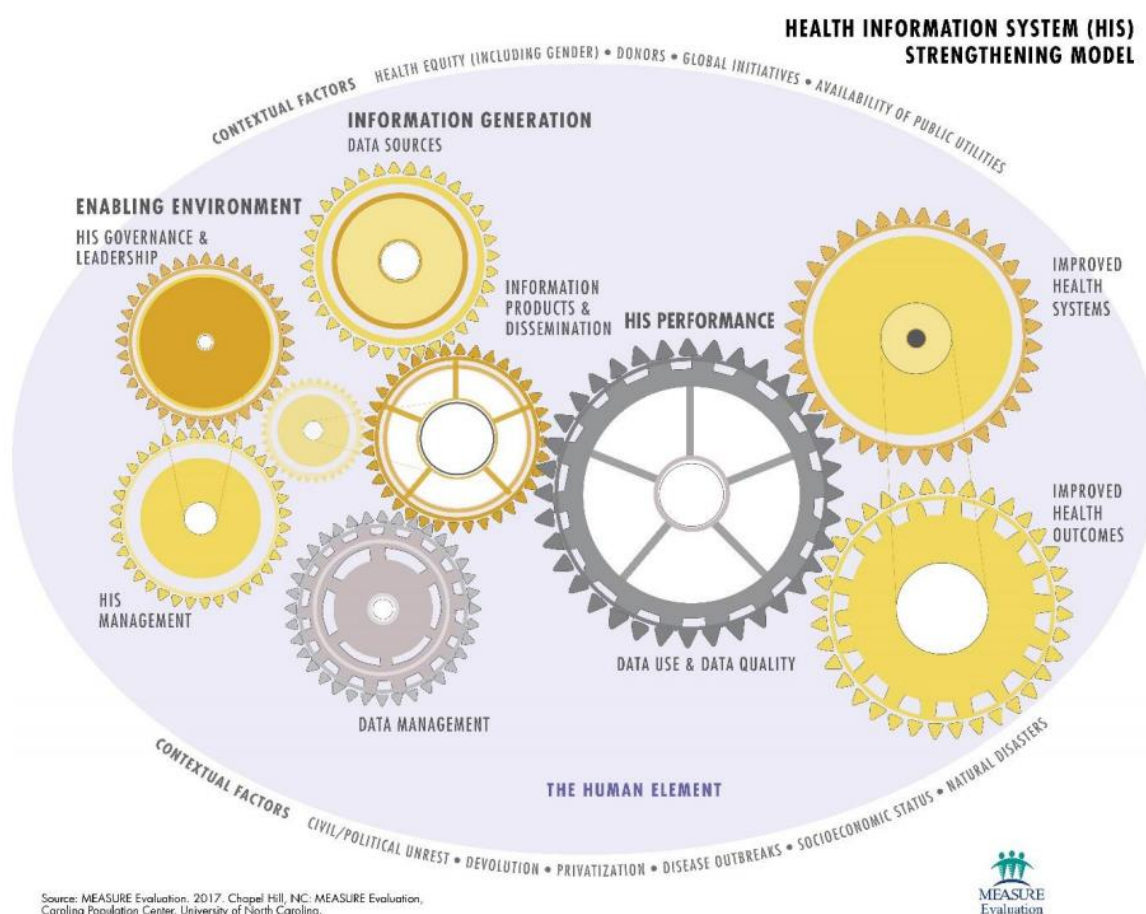
This synthesis was based on a literature review of two types of documents and a portfolio review of MEASURE Evaluation Phase IV activities. The sources were:

- *Peer-reviewed literature* pertaining to gender equity and equality-related factors in health information systems and their effects on health outcomes. This search was conducted using several databases: Global Health, Google Scholar, OVID, POPLINE, and PubMed. Search terms employed in these databases were: (gender, gender equity, gender equality, gender power, gender factors, women's autonomy) AND (maternal health, child health, nutrition, TB, Malaria, HIV, AIDS, reproductive health, fertility, mortality, gender-based violence (GBV), family planning, contraception) AND (mhealth, HIS, routine data systems, data strengthening, data, monitoring and evaluation, health program information systems, routine health information systems) AND (less developed countries, developing countries, Africa, Asia, Latin America). Articles were selected if they addressed gender equity, health, and data.
- *Grey literature* from government, nongovernmental, bilateral, and multilateral organizations. These were located by conducting Google searches on the above terms and searching organizational websites for publications.
- *MEASURE Evaluation activities* were selected from a portfolio review, using the project's management information system (MIS), as well as the Year 1 and Year 2 annual reports from Phase IV. All activities that included some reference to gender were reviewed. Three activities were selected for a closer look, as they addressed multiple aspects of HIS strengthening; others are more specifically focused on developing tools, databases, or guidance.

MAPPING TO THE HIS STRENGTHENING MODEL

Part of MEASURE Evaluation's HIS Learning Agenda has been to develop a health information system strengthening model (HISSM) (Figure 1). The model illustrates the logical progression of the effects of HIS strengthening activities to improve management, data, and data use to improve health systems and health outcomes for people. Much like an engine, it has gears that have wheels. Each wheel has cogs, making the wheel turn and the engine run. Every cog is essential to that engine. Like an engine, when “cogs” in the HISSM model are removed or distorted because of inequities and underrepresentation, an engine might skip, stall, or simply not work.

Figure 1. HIS strengthening model (HISSM)



This model is divided into several areas: the human element and contextual factors (both of which affect everything), the enabling environment (HIS leadership and governance and HIS management), information generation (data sources, data management, and information products and dissemination), and HIS performance (data quality and use). Gender is a contextual factor, affecting all else in the model. One of the premises of the model is that an HIS serves the larger health system and can only be as strong as the system it supports.

WHAT WE LEARNED FROM THE LITERATURE REVIEW

What is gender equity?

Gender equity is related to gender equality, but they are different concepts. Gender equity is about fairness among people, irrespective of gender. For example, if more women than men in a country are affected by a disease for which there is treatment, such as HIV, and access to that treatment is equitable between women and men, we should see a proportionally larger number of women in treatment. To ensure fairness, available data must support measures that reflect the economic, social, and political disadvantages that prevent women and men, boys and girls from operating on a level playing field. Gender equality is the state or condition that affords women and men equal enjoyment of human rights, socially valued goods, opportunities, and resources (Interagency Gender Working Group, n.d.). Genuine equality extends beyond equity in numbers, as in the HIV example, and the establishment of laws and policies. Rather, there is an improved overall quality of life for all people. This analysis focuses on gender equity, a precursor to eventual gender equality.

Why is gender equity important to health outcomes?

Gender directly influences factors that predict health outcomes, including risk of exposure, behaviors related to personal and community health (including nutrition), access to and use of services (Mullany, Hindin, & Becker, 2005; Speizer, Whittle, & Carter, 2005; Kishor & Gupta, 2009; Higgins, Hoffman, & Dworkin, 2010). Harmful gender norms can lead to deleterious outcomes for women, men, girls, and boys (WHO & UNAIDS, 2016). For example, in Botswana, masculinity norms act as a barrier to men seeking HIV testing, delaying timely care for HIV and prolonging the risk of transmitting the infection to sexual partners. For many men in Botswana, the act of seeking healthcare is akin to asking for help—something that diminishes their masculinity (Ramatala, Bloom, & Machao, 2016). Gender also intersects with other power identities such as age, race, ethnicity, and class. This intersection can magnify inequitable health outcomes (Cho, Crenshaw, & McCall, 2013). Addressing gender in health policies, interventions, and programs is critical to the prevention and response to outcomes as varied as GBV, maternal morbidity and mortality, child survival, HIV and AIDS, tuberculosis, and malaria (Sen & Östlin, 2008).

Health Information Systems and Gender Equity

Integrating gender into HIS increases the potential for better health outcomes for all (Payne, 2009). The Gender, Equity and Human Rights (GER) team was established by the World Health Organization (WHO) in 2012 to investigate health inequities that take place as a result of gender inequality and inequity on a global level. One of the three pillars identified in its Roadmap for Action 2014-2019 is “health inequality monitoring and data disaggregation (by sex, socioeconomic status, age, etc.)” to identify health inequities and their causes, gender being one of the inequities (WHO, 2016). Integrating gender into all levels of HIS is required to make this a reality.

A strong, continued commitment to gender integration is one of the most effective means to support promotion of gender equity at all levels of an HIS. Gender integration ensures that gender perspectives and attention to the goal of gender equity are central to all activities (UNECOSOC, 1997; UN, 2001). Gender integration aims to ensure that women, men, and those marginalized due to gender-related norms can

influence, participate in, and benefit from HIS efforts. A fully integrated initiative examines all components of an HIS through a gender lens—from governance and leadership (e.g., Does leadership support and promote gender integration? Do standard operating procedures or policies specify including gender in routine mechanisms for data collection, use, and reporting?), to human resources (e.g., What percentage of HIS managers are female? Are there equal opportunities for advancement by sex or gender? Are staff trained on gender and data?), to data generation (e.g., Are key data collected by sex and age?), to dissemination (e.g., Do information products such as reports and presentations highlight or include gender differences? Are groups that contribute to or may benefit from the information included in dissemination?).

A gender assessment is a key part of integrating activities. Gender assessments are important to identify gender-related gaps in programs and policies that need to be addressed to improve health outcomes (Greene, 2013). These assessments are most successfully completed when both routine and non-routine data are available for analysis. Routine data are those collected on a regular basis at health facilities and institutions including at the community level, typically by providers and program implementers. While sex-disaggregated data in routine systems are basic to detecting gender differences, information is needed on socio-demographic factors (such as age and education) in order to identify possible gender inequities. To understand if patterns and trends demonstrate existing inequities in health monitoring and evaluation activities, information on norms, attitudes and beliefs must be collected and analyzed (WHO & UNAIDS, 2016).

WHO recommends using a standard set of agreed-on gender-sensitive indicators to be augmented with the data available from non-routine health systems, since most routine systems cannot provide the data needed for these indicators. These indicators usually require data that can only be collected through surveys (such as the Demographic and Health Surveys) and special studies, to supplement what is available in the routine health information system (WHO, 2010).

Currently, most national health information systems have not gone through gender integration and lack key information needed to identify and address health inequities, including those based on gender. A plan for response cannot be developed without empirical documentation and monitoring of such inequities, along with country-level capacity to use the information. Strengthening HIS by integrating gender into all of the components of the system enables decision makers to understand and plan to address health inequities along the lines of gender and other social status inequities (Nolen, et al., 2005). The gender-integrated health information systems in Ethiopia, Malawi, and Zambia illustrate that if there is a real commitment to including gender as part of an HIS strengthening strategy, data from the HIS can be very valuable to addressing gender inequities in health outcomes.

In Ethiopia, the goal to integrate gender throughout the country's health system includes a gender-integrated HIS. The Federal Ministry of Health (FMOH) formulated a Gender Directorate intended to align policy with practice within the Ministry. The Gender Directorate created a three-year strategic plan, including activities and indicators focused on achieving gender equity in health. Stakeholders were identified and convened to agree on gender-sensitive indicators and how to measure them for careful monitoring of the collective progress toward gender integration. An example indicator is the proportion of health sectors performing sex-disaggregated data analyses. Challenges to integrating sex-disaggregated and gender-sensitive data have included a lack of dedicated staff, as well as standardized tools, methodologies, and plans for effective data collection, analysis, and use of data for advocacy of resource allocation to identify gender issues (Giorgis, n.d.).

In Zambia, the United Nations Population Fund (UNFPA) has supported government efforts to increase the availability of data disaggregated by sex and other key stratifying indicators through capacity development of national, provincial, and district-level institutions. Capacity building includes data generation, in-depth analysis, and use of disaggregated data by sex, age, wealth quintile, and geographic location, to inform national development processes. UNFPA has also supported the government with the implementation of a monitoring and evaluation (M&E) plan that includes generation and documentation of policy- and program-relevant gender information and data (UNFPA, 2015).

In Malawi, the Ministry of Gender, Children, and Community Development developed a national gender policy in 2011 which included strategies for gender integration, including an implementation plan and outcome indicators. The plan described the provision of technical guidance to all sectors, including gender training, research, analysis, and planning skills to build capacity for gender-responsive interventions. The plan set targets for gender equity in the provision of health services and health outcomes. The plan also recognized the country's national HIS as the data source for health-related targets and named stakeholders who were responsible for working to reach each target (Republic of Malawi, 2011). Challenges have included weak linkage between the databases and systems and delays in information dissemination, making triangulation a challenge. Malawi also continues to lack a coherent system for registering births and deaths, further limiting data sources to draw upon for sex-disaggregated data (WHO, n.d.).

Furthermore, two systematic reviews have examined the question of whether gender-related HIS interventions—in this case, examples in data systems in post-conflict settings and mHealth—do what they are intended to do. Designing gender interventions must take place with an understanding of the context and its potential effects.

Gender exerts a pronounced effect in post-conflict settings because conflict disrupts societal structures, often exacerbating inequities that were already present. Infrastructures have often collapsed and are in need of rebuilding or replacing. This situation grants an opportunity for new public sector reforms. A review of post-conflict settings was conducted to investigate the effect of promoting gender-equitable reforms to data systems. The review postulates that gender equitable health systems—including HIS—could contribute to gender equality, having a cascade effect in the post-conflict setting. Authors found that post-conflict health system reform has not fully integrated gender and noted that there is no clear guidance on how gender inequalities impact health system functioning or on how these systems can improve gender equity. More needs to be done to identify what a gender-equitable health system would look like to create guidance and incentives to implement gender-sensitive reforms (Percival, et al., 2014).

A systematic review of gender-related mHealth programs using mobile phones and SMS technology in developing countries explored whether these programs improved gender relations or exacerbated gender-power imbalances. Most of these interventions took place in sub-Saharan Africa and demonstrated the potential to improve gender relations and gender empowerment for women through mHealth interventions. However, these interventions were also connected to perpetuating existing gender-power imbalances, and GBV, if not designed carefully (Jennings & Gagliardi, 2013).

When Gender Is Part of an HIS, Gender Equity Increases, and Health Outcomes Improve

Addressing gender inequalities in programming and policy results in better health and development outcomes. Using a gender-integrated HIS for program monitoring and evaluation is critical to ensure that gender is addressed and measured as a part of health programs and policy and that it is used to inform decisions that will rectify gender inequities and improve health outcomes (Taukobong, et al., 2016). Table 1 illustrates certain HIS interventions that include gender as a priority. These interventions occur in the enabling environment and information generation areas of the HISSM and can fortify HIS for potential gains to both gender equity and improved health outcomes. These interventions ensure that data and program managers, policymakers, service providers, and civil society can use data to identify gender-related disparities, identify reasons for the disparities, and identify strategies for improvement.

Table 1. Gender-related interventions to strengthen HIS mapped to the HISSM

Area	Subarea	Examples
Enabling environment	Governance and leadership	Ministry departments, health sector plans, HIS policies and strategies, and M&E plans address gender activities, indicators, and targets.
	HIS management	In-service and continuous education and human resources training and incentives address gender. Gender-responsive interventions and data generation, analysis, and use of gender-sensitive data.
Information generation	Data sources	Surveys, censuses, health facility data, etc. capture information about sex, age, and socioeconomic status; norms, beliefs, and role definition; and expectations and power dynamics.
	Data management	Standard operating procedures and data management guidance address gender-sensitive data; data are kept disaggregated throughout systems to allow for gender analysis at different levels; data collection tools capture gender-sensitive information; and data quality practices, ethics procedures, and supervision practices cover gender-sensitive data.
	Information products and dissemination	Reports, bulletins, briefs, meetings, dashboards, scorecards, and non-routine reports and publications retain disaggregation by sex, age, and socioeconomic status and present results highlighting gender differentials.

The following sections briefly describe the relationship between gender and a range of specific health outcomes that are monitored and evaluated by HIS.

Family Planning and Reproductive Health

The effects of gender norms and gender power factors on FP and RH outcomes have been demonstrated by numerous studies worldwide over the last three decades. More equitable gender roles and more equality between women and men, girls and boys, is positively associated with the use of family planning, lower fertility, and the uptake of reproductive health services (Upadhyay, et al., 2014). In this area of health, in particular, program designers and implementers have been making an effort to account for male gender norms and inequalities and to involve men and boys, because these are factors that influence demand for and use of FP services. Measures accounting for both female and male gender effects will help improve FP and RH outcomes (Greene, et al., 2006).

Gender-Based Violence (GBV)

Many factors lead to the risk and experience of GBV. A strong HIS that can be used to address GBV in a country will include disaggregation by sex, age, socioeconomic status, and education. A strong predictor of GBV that is not feasible to collect routinely is the belief (by men or women) that husbands are justified in beating their wives. A study across 10 countries found that acceptance of wife beating as justified was statistically significantly associated with women experiencing intimate partner violence (IPV) (Garcia-Moreno, 2005). In Nigeria, a study was conducted to investigate what factors predict acceptance of wife beating among women. Education, wealth index, ethnic and religious affiliation, and women's autonomy in household decision making were among the factors that had statically significant associations with this important risk factor for experiencing GBV (Oyediran, 2016).

GBV has also been identified as a major driver of the HIV epidemic, associated with both the risk of infection as well as the result of becoming infected. This relationship operates through a variety of direct and indirect mechanisms (Maman, et al., 2000). Recent IPV (within the last 12 months) was added as a core indicator to the United Nations Global AIDS Monitoring System in 2011. The indicator is meant to be interpreted as a proxy for gender equality. A change in the prevalence of recent IPV over time will indicate a change in gender equality—which is one of the structural factors driving the HIV epidemic (UNAIDS, 2017). Gender equality has a clear, inverse relationship with IPV: In countries where IPV is high, gender equality, women's rates of education, and women's reproductive health and rights are low (UNIFEM, 2010).

GBV is seldom part of a national HIS because the data are collected by many sectors that do not directly collaborate with each other. Reports may be collected by the police, the health system, the social welfare system, etc. It is critical that information on the prevention and response of GBV become part of a national HIS, to address GBV itself as well as prevention and response to HIV.

Maternal Health

Gender inequalities affect the use of maternal health services during pregnancy, delivery, and postpartum, and these inequalities directly influence maternal morbidity and mortality. Gender inequalities also impact structural factors, such as education and wealth status, which in turn affect maternal morbidity and mortality (Thaddeus & Maine, 2004). Studies in South Asia have also documented the influence of these

sociodemographic factors on areas of women's autonomy, and the association of women's autonomy itself on antenatal and delivery care (Bloom, Wipyj, & Das Gupta, 2001; Hogan, Berhanu, & Hailemariam, 1999). Higher gender equality and higher women's autonomy is correlated with better health outcomes for both women and their children. An intervention to improve a maternal healthcare information system was evaluated in a district of South Africa, focusing on using routine data for monitoring and closer supervision and training of staff. Investigators found that while recordkeeping at the local clinic levels improved, a more systematic approach involving the wider systems needed to be strengthened to affect care and resulting outcomes. In particular, the use of quality routine data was mentioned (Thomas, et al., 2007). Better routine data around maternal health and the ability to disaggregate these data by sociodemographic factors will improve maternal health. Programs can target interventions on improving routine system data use through training and the use of good tools, such as analytic dashboards.

Child Health

The association between gender factors and child health and nutrition has enjoyed less attention than maternal and reproductive health, but similar patterns and trends have been noted by several studies. Many studies have detected a positive relationship between child nutrition and women's autonomy (Carlson, Kordas, & Murray-Kolb, 2014). Other studies found the same association between treatment for acute respiratory infection and vaccine coverage with women's autonomy (Singh, Bloom, & Brodish, 2012). Gender factors, such as women's decision-making power over health decisions for their children, or their ability to leave the house to travel to the health clinic with their children need to be part of M&E activities for child health programs in order to guide decision making.

Vaccine Coverage

Gavi, the Vaccine Alliance, has introduced an equity dashboard (a data display tool) to monitor equity in vaccination coverage that includes child sex as their gender factor. The tool draws from Demographic and Health Survey (DHS) data and allows for comparisons across countries (Arsenault, et al., 2017). Gavi selected factors for disaggregation based on those factors identified as feeding into data monitoring and accountability of United Nations Sustainable Development Goal (SDG) 17. The equity dashboard demonstrates whether equity is met or not by several factors, including child sex. Côte d'Ivoire and Haiti were used as example countries to investigate the effect of child sex on vaccination coverage. In Côte d'Ivoire, gender equity was not met for the diphtheria, pertussis, and tetanus vaccine but was for the meningococcal vaccine, while in Haiti gender equity was met for both vaccines. The dashboard enables decision makers to quickly and easily see where improvement along all the equity factors (wealth, education, urban/rural residence, and child sex) has been met or not. Meeting equity between the sexes of children will lead to better vaccine coverage and health outcomes associated with them (Arsenault, et al., 2017).

Orphans and Vulnerable Children (OVC)

Civil strife, humanitarian emergencies, disease outbreaks, and the HIV epidemic, in particular, have left many children without one or both parents. The problem is global, but sub-Saharan Africa bears a disproportionate burden of orphans and vulnerable children (OVC). OVC are at risk for a range of ill health outcomes, nutrition-based maladies, infectious diseases, GBV, and HIV. OVC whose parent(s) has/have died from HIV are initially affected by the virus and are at high risk of acquiring it (Operario, et al., 2011). Adolescent girls

have rates of new HIV infections that are up to four times higher than those of their male peers (Dellar, Dlamini, & Karim, 2015). Gender attitudes and norms within relationships exacerbate the risks to girls (Bingenheimer & Reed, 2014). OVC data need to be analyzed, by sex and age at a minimum, to assess the special needs of OVC, and girl and boy OVC, outcomes. Gender sensitive indicators would be even more helpful in helping decision makers understand the effects of gender on outcomes among OVC.

APHIAplus (AIDS, Population and Health Integrated Assistance), a USAID/Kenya-funded project providing services to OVC populations in Kenya, has both sex-disaggregated reporting on beneficiaries and has addressed gender when reporting on indicators related to OVC services and caregivers (MEASURE Evaluation, 2014). To strengthen the system, ALPHIAplus introduced harmonized reporting forms and cascade training to support community health volunteers (CHVs). Standard operating procedures clearly define reporting roles and responsibilities. Supportive supervision training of CHVs is continuous. At the time of this report, the OVC Longitudinal Management Information System (OLMIS) had been rolled out in some regions to support data collection. OLMIS eliminates the burden on community health workers to aggregate data. It can produce standardized and customized reports, facilitating analysis and use. Challenges include a heavy data collection burden on CHVs and lack of data use at the CHV level. In addition, the OLMIS database was intended mainly for PEPFAR reporting requirements and lacked linkages with existing government systems.

HIV/AIDS

Gender inequality has been documented as a major driver of the HIV epidemic worldwide for 20 years. Gender inequality puts both men and women at risk for HIV. Gender power equity in relationships was associated with the incidence of HIV in South Africa, with those reporting low power being more likely to acquire HIV (Jewkes, et al., 2010). Similarly, the risk of HIV in North India is driven by gender equality and gender power factors (Bloom, et al., 2015; Agrawal, et al., 2014). When UNAIDS was developing the revised set of core indicators for the global AIDS progress reporting, they requested that UN Women convene a group of experts to agree on a single gender indicator to add. The measure of gender equality that was chosen was the proportion of women experiencing recent IPV, since IPV is a direct outcome of gender inequality (UNAIDS, 2017). Countless studies have demonstrated an association between GBV and HIV, with GBV both a risk factor for infection and a consequence of infection (Program on International Health and Human Rights and Harvard School of Public Health, 2009; WHO & UNAIDS, 2010).

The need for gender-related factors for programmatic decision making for HIV drove UNAIDS and PEPFAR to mandate gender analyses of national epidemics all over the world. HIS in this area of the health sector will tend to have more gender integrated data than almost any other, for this reason. However, major limitations still exist since HIV HIS were developed prior to international attention towards gender, meaning that gender has been an add-on to the system. There are still indicators that cannot be analysed by sex, because data at the aggregate (province/district/state) level drops the variable for sex and only counts individuals (MEASURE Evaluation/Tanzania, 2016; MEASURE Evaluation, 2017a; MEASURE Evaluation, 2017b).

Tuberculosis (TB)

Gender influences TB outcomes, and there are gender inequities in exposure, treatment, and survival (WHO, 2002). Gender influences TB transmission, testing, treatment, and adherence to treatment. TB outcome data clearly reflect gender inequalities. There are differentials in mortality, service uptake, and treatment adherence (Van den Hof, et al., 2010). For example, in Nigeria, an analysis of routine data examining gender differentials in TB treatment showed gender inequities in TB profiles and treatment. Recommendations included gender-specific strategies to optimize TB management (Oshi, et al., 2015). By disaggregating TB indicators by sex, these differentials can be analyzed and the resulting evidence used to address gender inequities in risk, exposure, access, and adherence to treatment, leading to better outcomes for both men and women.

Malaria

Malaria prevention and response is influenced by gender norms and gender power dynamics. Beliefs around the roles of women, men, girls, and boys affect the risk of exposure to malaria, access to treatment, and recovery. For example, in many parts of the world, women collect water and may be more exposed, or men or children who are out at dusk may be more exposed. Who sleeps under mosquito nets or who gets to access healthcare may also be shaped by gender norms (Cotter, et al., 2013; Garley, et al., 2013; Tolhurst & Nyongato, 2006). Accounting for these factors in program design and development of HIS will make for better outcomes.

Other Infectious Diseases

Gender needs to be addressed in the monitoring and evaluation of infectious disease interventions and programs, such as Ebola and Zika virus. Enough research has taken place over a range of health outcomes to understand that gender needs to be integrated into data systems that track incidence, prevalence, and prevention and response. For example, a risk factor for leptospirosis is being male, due to occupational and recreational exposure; HIS should be designed to disaggregate incidence and prevalence of leptospirosis by sex for appropriate programmatic response (Skufca & Arima, 2012). Gender-integrated data systems will help minimize gender inequities for all.

WHAT HAVE WE LEARNED FROM MEASURE EVALUATION'S WORK TO ADDRESS GENDER IN HIS AND IMPROVE GENDER EQUITY AND HEALTH OUTCOMES?

MEASURE Evaluation has conducted many activities that demonstrate how to add gender to HIS and improve gender equity and health outcomes through proper analysis and use in policy and programming. Much of MEASURE Evaluation's work in gender in HIS focuses on improving data systems and measures in order to have data that can be analyzed to identify inequities and design programs to improve gender equity and health outcomes. Examples include supporting the ministry in Côte d'Ivoire to improve the OVC database; improving methods to improve measures of material mortality using census data; and comprehensive listing of gender indicators (MEASURE Evaluation, n.d.). Other work is focused on ensuring that gender is integrated into M&E assessment tools and all aspects of monitoring, evaluation, and research, spanning the enabling environment and information-generation activities (MEASURE Evaluation, 2016a; MEASURE Evaluation, 2018a). In most cases, the effects on gender equity and health outcomes are not yet known since these changes will only begin to manifest months or years after interventions result in programmatic and policy decision making. Below are a few sample activities selected because they address multiple aspects of HIS strengthening.

Technical Assistance to Botswana for Monitoring and Evaluation of Gender-Based Violence

Overview

In Botswana, the Gender Affairs Department (GeAD) in the Ministry of Nationality, Immigration, and Gender Affairs has been working for over ten years to improve access to services for survivors of gender-based violence (GBV). An important strategic approach is to improve referrals of survivors to and between services provided by the justice system, health providers, social workers, tribal authority, schools, and NGOs. In 2013, with funding from USAID and support from MEASURE Evaluation, the GeAD developed and implemented a Gender-based Violence Referral System Project (GBVRSP) pilot. Aspects of the project included increasing community awareness of GBV and GBV resources, improving care and support to survivors, and launching a mobile-based referral system. The community mobilization aspect of the GBVRSP began in 2015 and implementation of the mobile-based referral system in 2016. A report of a study of operations research informed much of this section (MEASURE Evaluation, 2018b).

The Need that the MEASURE Evaluation Activity Meets in Botswana

Botswana has one of the highest prevalence of HIV in the world, and GBV is a significant driver of the epidemic. Care for GBV survivors is often ad hoc in Botswana, and there were no standard operating procedures (SOPs) to coordinate care across sectors. Stakeholders reported that clients were traumatized from having to retell their stories multiple times to different providers, resulting in some clients not seeking needed services. Referral forms were rarely used or were used incorrectly, and tracking clients was a challenge. The National GBV Indicators estimate that 67 percent of women in Botswana have experienced GBV, while only 1.2 percent have reported to the police (Machisa & van Dorp, 2012). To reduce GBV, the Government

of Botswana prioritized increasing access to services and improving the quality of care for survivors. The introduction of a formal referral system was seen as a necessary strategy in order to link providers across sectors, improve access to services, enhance reporting and documentation, and strengthen stakeholder collaboration. Thus, the GBVRSP was designed and piloted in four sites: Maun and Shorobe in Ngamiland District, and Artesia and Mochudi in Kgatleng District, representing north and south and urban and rural locations.

HISSM: Enabling Environment

Development and implementation of the GBVRSP hinged on involvement of key stakeholders, particularly the GeAD, along with engagement of the Ministry of Health [MOH], Department of Social Protection, Botswana Police Service, Department of Education, Tribal Administration, and relevant national and local NGOs and civil society organizations, as well as partnerships with private partners, such as mobile phone companies. Other components of the GBVRSP included training service providers on GBV issues and use of the mobile referral information system (RIS); collaborative meetings between providers; development of SOPs; and job aids. GBV Awareness-raising and mobilization activities also took place in the four pilot communities.

HISSM: Information Generation

The RIS is at the core of the GBVRSP. The RIS allows providers at any service delivery point to enter GBV cases using a unique ID, including the ability to record a case history, and refer clients to other providers, minimizing the number of times a client needs to retell their story. The system can also provide reminders to providers via SMS. The RIS tracks referrals made, received, and completed; identifies incomplete referrals for follow-up; allows real-time access to data; reduces data entry burden; and improves data quality. Regular reports and a dashboard provide information on indicators previously agreed upon by stakeholders and providers at all levels.

HISSM: Expected Effects on HIS Performance

Findings from the operations research study suggest that providers had positive views of the GBVRSP. Providers and stakeholders pointed to the benefits of increased collaboration between providers from the GBVRSP trainings, regular meetings, and service directory. Program managers were able to see trends in GBV cases over time, across sectors and locations, as well as gaps in referral completion. Provider heavy workloads was an important challenge to using the RIS as they often did not have time until the end of the work day to type case notes in to the mobile system.

HISSM: Expected Effects on Health Outcomes

Findings from the operations research study show that between August 2016 and July 2017, 401 GBV cases were logged in to the system, with about one-third of clients receiving a referral. Improvements in improved connections between providers and increased follow up on referrals were attributed to the system. Providers' comfort handling GBV cases improved in pilot sites, but clients still reportedly encountered a number of social barriers to seeking services. With more time, intervention, and resources, the GBVRSP should improve identification and reporting of cases, linkages to care, and quality of care. Continued community mobilization

efforts will also contribute to decreased acceptability of violence and increased awareness of resources, leading to improved access to care and support.

Challenges

A lack of understanding about GBV and knowledge of available resources for survivors, stigma around violence, and cultural norms of acceptability of violence remain underlying barriers for survivors to seek help. Commonly cited barriers included economic dependence, shame, embarrassment, fear of retribution, and a desire to protect the perpetrator. While providers were positive about the system, they reported challenges with phones (lack of a touch screen) and network availability and difficulty remembering to use the phones. Institutional support across sectors implementing the GBVRSP was also identified as an area for improvement and a key to sustainability.

SAVVY/CRVS in Zambia

Overview

Maintaining a quality civil registration and vital statistics (CRVS) system means that a country can derive a range of fertility and mortality rates and ratios. It also means that women and girls will be counted, and data on births and deaths can be analyzed for equity. Poor and uneducated women are significantly less likely than better-off women to register their children. In some countries, a woman must be legally married to register her child; in others, the father's signature is required. MEASURE Evaluation works to strengthen CRVS systems and provide alternatives when those systems are slow to improve. Nontraditional systems, such as Sample Vital Registration with Verbal Autopsy (SAVVY), can be used to supplement existing CRVS for accurate and reliable vital statistics and mortality indicators at various levels (national, provincial, rural, and urban) and provide nationally representative estimates of cause-specific mortality fractions by age and sex. These data can provide accurate maternal mortality rates and information on whether women or men are dying disproportionately of certain diseases.

The Need the MEASURE Evaluation Activity Is Meeting in Zambia

Zambia is one country where MEASURE Evaluation has been implementing SAVVY, since the CRVS system is new and does not yet produce high-quality data on all citizens. SAVVY was first commissioned as a pilot project and later expanded to cover nine provinces, with the main objective of providing nationally representative estimates of age and sex and cause-specific mortality fractions. Census data were used to sample geographic areas with a known probability of selection. Deaths are identified from the census, and data on cause of death are obtained through a verbal autopsy interview at the household level. Physicians review the data and code the cause of death according to ICD-10 guidelines.

HISSM: Enabling Environment

Successful SAVVY implementation has involved important supporting pieces. In the enabling environment, Zambia has created a national steering committee to ensure that the national strategic action plan includes

SAVVY in its scope. The committee has a CRVS technical working group that is active in coordination and in ensuring that project objectives are met by each of the responsible government entities. A number of government partners have been involved, including the Central Statistics Office (CSO), Ministry of Health (MOH), and the Department of National Registration, Passport and Citizenship (NRPC) in the Ministry of Home Affairs (MEASURE Evaluation, 2016b). Each government entity has clearly defined roles.

Zambia also engaged in a public awareness campaign in order to raise awareness among communities, families, and local religious and other leaders in order to increase responsiveness during data collection and to educate them about the value of the data being collected.

HISSM: Information Generation

Use of SAVVY is further supported in the information-generation area with a data processing manager's manual, a budget manual to be used for SAVVY implementation planning, a field office manager's manual, a standardized questionnaire, an interview manual, and quality assurance procedures for data collection. Interviewers, who are typically healthcare workers in the region, visit a person's next of kin or caregiver to understand cause of death. Physicians are trained to review the data and code the cause of death according to international standards (MEASURE Evaluation, 2016b).

HISSM: Expected Effects on HIS Performance

SAVVY implementation has been shown to improve coverage, availability, and accessibility of accurate and reliable indicators (MEASURE Evaluation, n.d.d). When data are analyzed, they help stakeholders understand gaps in the quality of and access to care and that information can be used to strengthen the healthcare systems.

HISSM: Expected Effects on Health Outcomes

CRVS systems are critical to the prevention of maternal, infant, and child deaths. However, many countries have weak CRVS systems which are not amenable to rapid change. MEASURE Evaluation's interventions using SAVVY have introduced a feasible way to collect data on maternal and infant deaths. Being able to analyze the patterns and trends of maternal and infant mortality are helpful to know how to target programs to prevent these incidents and address inequities.

Challenges

SAVVY is an example of where a focus on equity in representation has led to improved data sources; however, an ongoing challenge has been in coordinating the SAVVY results with other data in the country and issues linking SAVVY results with the CRVS system. Further linkages are needed to be able to use the data more effectively and place relevant sex-disaggregated data in the hands of decision makers at all levels of the health system. WHO guidelines recommend conducting a census priority to conducting verbal autopsy; thus, these activities are dependent on supportive and dedicated government staff and donors.

DREAMS Integrated Monitoring and Evaluation System (DIMES) in South Africa¹

Overview

The Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe (DREAMS) initiative focuses on empowering adolescent girls and young women (AGYW), reducing new HIV infection in AGYW, and increasing secondary school completion, decreasing gender-based violence, and decreasing the number of unintended pregnancies. MEASURE Evaluation Strategic Information for South Africa (MEval-SIFSA), an associate award of MEASURE Evaluation, provided support to DREAMS in 457 wards in five districts in South Africa to strengthen the existing health information systems and use of innovative data collection and visualization methods in order to inform programmatic course corrections and reach DREAMS targets.

The Need the MEASURE Evaluation Activity Is Meeting in South Africa

Several programs were implementing relevant interventions, but they were not necessarily standardized to the DREAMS Core Package of Interventions (DREAMS, n.d.) nor coordinated in how they were monitoring these interventions. Moreover, the data systems were not sufficient to conduct the required age disaggregated analysis needed for monitoring and reporting progress and to understand whether inequities by age were being addressed by programs or if new strategies were required. In order to monitor and evaluate the implementation of DREAMS interventions and programs, MEval-SIFSA provided support as the Monitoring, Evaluation, and Reporting (MER) partner to develop a DREAMS integrated monitoring and evaluation system (DIMES) and other interventions in the HIS enabling and information-generation environments.

HISSM: Enabling Environment

MEval-SIFSA provided technical support to a DIMES task team that included multi-sector government agencies (such as the Department of Health, Department of Social Development, Department of Education, Department of Planning, Monitoring and Evaluation, and Reporting, civil society organizations, and the Office of the Premier), US Government Agencies, and the Joint United Nations Programme on HIV/AIDS (UNAIDS). A common M&E framework with a core package of DREAMS indicators were developed by MEval-SIFSA and partners following a review of implementing programs (MEASURE Evaluation, n.d.c). MEval-SIFSA provided technical assistance to stakeholders and 22 implementing partners and trained stakeholders and implementing partners on the M&E framework, SOPs, and data collection and review.

HISSM: Information Generation

The team built DIMES, a web-based M&E system that collects, validates, consolidates, and reports on the data generated by implementing partners using standardized M&E tools and working in the five DREAMS districts in South Africa (MEASURE Evaluation, n.d.a). MEval-SIFSA developed a data-exchange platform and data-sharing protocol to facilitate the direct transfers of data into DIMES from 14

¹ Much of this section is informed by an internal MEASURE Evaluation presentation by Hilda Manzana and Manyobvo Machipanda on March 14, 2018, titled "DREAMS dashboards for improved data visualization and use: The development process and use cases from South Africa."

implementing partners and stakeholders, data analytics plans, and data dashboards. The data-sharing protocol outlines who is the national custodian of data, how data are distributed, the responsibility parties, timelines, and platforms for sharing. With the task team, MEval-SIFSA developed standardized data collection tools; defined roles and responsibilities; and developed SOPs to collect, analyze, and report data, including with the required finer age, sex, and geographic disaggregation. Data analysis was conducted in Tableau and Microsoft Excel. Data reports were available in raw data form, pivot tables, emailed reports, and Tableau and Excel dashboards. Dashboards were developed for use by district and provincial DREAMS management teams, South African and US Government teams, district and local AIDS councils, and activity managers. They show service coverages and interventions and activity performance and allow for data verification, monitoring of implementing partner performance, and tracking district and subdistrict performance against targets.

Expected Effects on HIS performance

Because of efforts to facilitate data sharing on DIMES, the data collection burden is reduced, and data users are better able to monitor implementation, track performance against targets, and make evidence-based decisions about targeting interventions. The use of Excel and Tableau has allowed data analyses to be tailored to users with varied skill levels, making results more available for people with lower data analysis and interpretation skills yet facilitating more complex analyses with others. The more advanced Tableau dashboards allow for interactive menus, drilling down by location and age, data manipulation, and visualization of results through graphs and maps. The system also produces performance scorecards and data quality reports so that the performance of the system can be monitored and improved. These efforts improved data quality and use of data for decision making by all stakeholders.

Expected Effects on Health Outcomes

Use of DIMES allows for better monitoring of improvements in inequities and health outcomes. Implementing partners reported that they would use these data to understand where performance was lagging, and the system provided information to help adjust programs. The use of the dashboards resulted in the capacity at all levels, including at the levels of subdistricts local AIDS councils, to effectively monitor DREAMS activities. At the time of writing, this system is being considered for scale-up in the government's national campaign on AGYW.

Challenges

There were two main challenges encountered. The first is that the design of the whole system took place during implementation, rather than at the time when the program was being conceptualized, which is preferred. The project found that regular consultation with all stakeholders was important to gain consensus on the system's content and use. It was necessary to constantly monitor and review the relevance of the tools and adjust tools as needed. There was little to no barrier with installing and using Excel. But, the Tableau software met with some resistance due to the fact that some uses of the software require a license. It took some time to explain how the free version of the software could be used. Also, while Tableau is able to facilitate more sophisticated visualizations and analyses, it encountered challenges due to some users' lower capacity.

CONCLUSION: PROCESS OF GENDER-RELATED HIS STRENGTHENING INTERVENTIONS LED TO IMPROVED GENDER EQUITY AND HEALTH OUTCOMES

Addressing gender in HIS strengthens the system itself and influences better health outcomes for all (Payne, 2009). With increased investments in HIS, there is an opportunity to ensure that development and reform processes address the problems of longstanding inequality between women and men, both as providers and users of health information. HIS gender interventions can target specific aspects of the HISSM, or the system as a whole through larger gender-integrating initiatives. MEASURE Evaluation has conducted many activities that contribute to our understanding of the intersection of gender equity and strong HIS.

One set of HIS gender interventions takes place by **making gender-related data available**. These interventions may range from ensuring that sex and age disaggregation in data collected at health facilities is maintained at all levels of data aggregation, or by introducing a new system to track certain outcomes such as GBV (routine systems) and collect information about gender norms and attitudes, as well as data that can be used to measure gender power dynamics, such as women's autonomy or recent IPV. Evidence from MEASURE Evaluation's work has revealed that data entry by sex may be inconsistent and impact the quality of available sex- and age-disaggregated data (Bloom & Arnoff, 2012). Creating a system that can capture gender data is only the first step; routine monitoring is essential to strengthen and retain quality. The availability of quality data impacts the extent to which analysis can be used.

If data are available, **analysis-level interventions** need to take place. The results of analyses need to retain a gender focus in visualizations, tools, and reports aimed at providing easy access to information needed by decision makers. Work in Botswana with GBV systems allows practitioners at their own service delivery points to see how many of their clients have uncompleted referrals, and national stakeholders can see where the demand and supply for GBV services are in balance or where attention is needed. However, we know from other activities that use of data is tied closely to its perceived value. Sex-disaggregated and other gender-sensitive data will not get used if program and policy decision makers do not appreciate its value.

Leadership and governance and management practices are needed to support the integration of gender in data sources, information products and dissemination, and data management. When gender factors are added to HIS and retained in analyses, and the effects of these factors are presented to committed decision makers at any programmatic level, both the health outcome being targeted and gender equity itself improve. Diversity in representation and increased advocacy training with M&E program and policy decision makers can emphasize the value of sex-disaggregated data and its use to make policy/program decisions; this training also needs to include the basics of gender and gender equity, and why it is important to health. These types of systematic interventions will feed back into the demand and availability of sex-disaggregated and gender-sensitive data.

These examples underscore the interconnectedness of individual components at a number of different levels. **Gender integrating** in HIS goes beyond reporting gender-based inequities in outcomes to addressing underlying inequities in the enabling environment and system itself. MEASURE Evaluation's work in integrating gender in the 12 Components M&E System prioritizes engagement with local stakeholders at each level of the system to understand how components in the system interact and influence one another in a gender-equitable way. It is important to design systems that can evolve and adapt to greater inclusion

systematically, so that all citizens, regardless of gender, can influence, participate in, and benefit from HIS efforts. Inequitable inputs into any HIS will only result in inequitable outcomes. Greater gender equity can strengthen HIS, and stronger HIS can reveal health inequities that can be better addressed by programs to achieve gender equality.

Finally, a limitation of this synthesis is that the MEASURE Evaluation activities mentioned are ongoing or recently completed. Given that the impact of gender interventions may take some time to manifest, we suggest returning to these activities to update what has been learned about the HIS and improving outcomes.

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