IFAKARA HEALTH INSTITUTE
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Spotlight

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Sentinel Panel of Districts

A new platform for health monitoring and evaluation in Tanzania

Overview

The Sentinel Panel of Districts (SPD) is a nationally-representative sample of 23 districts (plus an additional 4) in Mainland Tanzania for health monitoring, evaluation and research.

The panel has two "arms". The population-based arm (*SAVVY*[1]) tracks vital events in a total population of around 800,000 people. This will produce annual estimates of age- and cause-specific mortality as well as other key demographic variables.

The facility-based information system (FBIS) arm collects health service statistics from all facilities in the sample districts (~1,500 in total, ~20% of all health facilities in the country). To begin with, the FBIS focus is on routine health statistics. Later, custom modules may be introduced to track indicators *not* collected by the government's Health Management Information System (HMIS) and to further analyse findings from routine reports.

In addition to its monitoring function, the SPD provides an ideal platform for research and evaluation, with facility-based or population-based end points. The SPD was initiated in 2009 by Ifakara Health Institute, in collaboration with the Ministry of Health and Social Welfare (MOHSW), the National Bureau of Statistics (NBS) and the National Institute for Medical Research (NIMR). It is supported by the US Centre for Disease Control, UK Department for International Development, Irish Aid, Norwegian Agency for Development Cooperation and Swiss Agency for Development & Cooperation.

[1] SAVVY: Sample vital registration with verbal autopsy

Introduction

In the absence of a comprehensive vital registration system, Tanzania is unable to produce annual estimates of key demographic variables. The census (every ten years) and demographic & health surveys (every five years) provide periodic estimates, but without information on cause of death. Existing demographic surveillance produces annual estimates, including cause of death – but these statistics are not representative of the whole country.

Recent developments in health demographic surveillance methods provide an opportunity to use standardized tools to generate annual, nationally-representative estimates of all key demographic variables including age- and cause-specific mortality. With such information, Tanzania will have unrivalled capability to monitor progress towards the international Millennium Development Goals and national health outcome targets. More generally, this information will be critical in monitoring and evaluating large-scale public health programs to avert maternal deaths and combat HIV/AIDS, TB and malaria.

Tanzania also has limited capability to monitor health service delivery achievements. Some programs (such as EPI, TB) generate accurate statistics on intervention coverage through a dedicated reporting system. Others (e.g. HIV/AIDS, malaria) collect data from "sentinel facilities". However, other information of interest (personnel, drugs, Emergency Obstetric Care signal functions) is largely unavailable except by special survey. Recent steps to strengthen the Health Management Information System (HMIS) will help, but the HMIS will still be unable to satisfy many monitoring and evaluation information needs.

The Sentinel Panel of Districts (SPD) offers the opportunity to fill these information gaps. The population-based arm will collect demographic data and generate age/sex/cause-specific mortality estimates through SAVVY (SAmple Vital registration with Verbal autopSY). The facility-based information system (FBIS) will generate statistics on routine service delivery – but also offers the prospect of "custom" reports to satisfy the requirements of individual strategies and programs.

About the SPD

The SPD is a new initiative established by the Ifakara Health Institute in collaboration with NBS, NIMR and MOHSW. The National Bureau of Statistics guided the sampling methodology. The overarching goal of the SPD is to provide a sustainable source of reliable, national data to meet the monitoring needs of program managers, policy-makers and funding partners. In addition, it offers a national, integrated platform for impact evaluation and research. The panel comprises 23 districts sampled to represent Tanzania Mainland, plus the 4 districts (Kilombero, Ulanga, Rufiji, Kigoma Urban) where IHI already operates Demographic Surveillance.

Figure 1: Sample Districts of the SPD

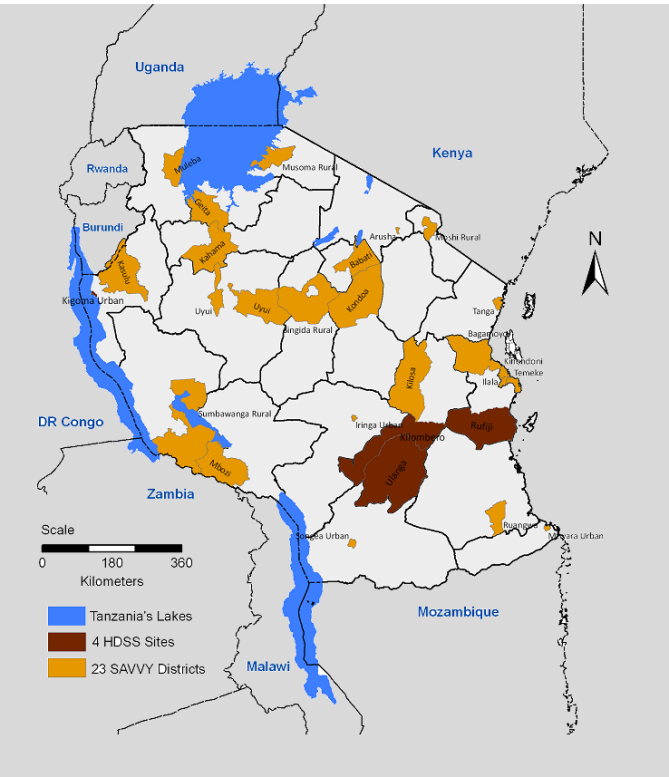
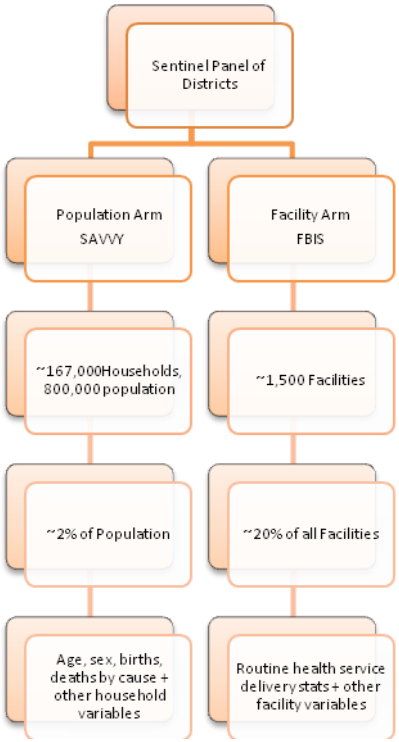


Figure 2: SPD Concept



SAVVY

SAVVY is a demographic surveillance system built around vital events monitoring. It operates in a similar way to existing Health and Demographic Surveillance (HDSS) but is distributed across the country and sampled to generate estimates that are nationally representative. The system is based on a periodic census of the sample population that provides information on population age, sex, household characteristics and migration. During the year, community key informants report births and deaths and probable cause of death is determined through verbal autopsy.

A two-stage probability sampling approach was employed. District sampling aims to permit disaggregation of results by residence (urban/rural) as well as by zone. Within selected districts, enumeration areas were randomly selected from the national master sample frame, to yield a total sample of 167,000 households comprising about 800,000 individuals. Data collection instruments include two registers (births, deaths) and three questionnaires (household census, and verbal autopsy questionnaires for neonates, children and adults). The household census questionnaire includes household identification, location, household members, dates of

birth, highest educational attainment, occupation and births in the past twelve months. The births and deaths registers record individual and household identity, location and date of event. The verbal autopsy questionnaires have an identification section; history of chronic illness; verbal account of the events leading to death; symptoms checklist; lifestyle (use of alcohol, drugs and smoking), and sequential use of health services prior to death. Table 1 shows the estimated number of events per year that SAVVY is expected to detect.

Table 1: Events detected by SAVVY

Element	Rate	Number detected per year
Population		~800,000
Under-fives	~17%	170,000
Births	CBR ~40/1000	40,000
Deaths	CDR ~14/1000	14,000
Under-five deaths	5q0 ~90/1000	3,600
Adult deaths	~20/1000; 50% of pop.	~7,000
Malaria deaths	~20% of all deaths	2,800
HIV deaths	~1.5 – 2 per 1,000 pop.	~1,500
Maternal deaths	MMR ~454/100,000	~180

Note: DHS detects only ~150 maternal deaths over a 10-year period

At the time of writing, SAVVY has been established in four new districts and will scale up in phases during 2011 and 2012 to cover an additional 10 districts. By 2013 the first national estimates of vital events and cause-specific mortality data will become available.

FBIS

The facility-based information system arm of the SPD includes all health facilities (public and private) located in sample districts. These amount to over 1,500 health facilities, around 20% of all health facilities in Mainland Tanzania. The FBIS collects routine health statistics using standard MOHSW registers and reporting forms and therefore includes all data elements presently found in the Quarterly form F004, the Annual F005, and program-specific reports for EPI, TB & Leprosy, STIs and HIV/AIDS etc. With permission from MOHSW, the FBIS will begin to use the new generation registers and reporting forms presently being tested in Coast Region.

Table 2: Routine data from facilities

Report	Content	Period
EPI	Vaccination coverage, every antigen	monthly
HIV: VCT, Care & Treatment	VCT, care & treatment incl. ARV	4 forms monthly
PMTCT	HIV testing, maternal & neonatal prophylaxis	4 forms, monthly
STI	Sexually-transmitted infections	monthly
Notifiable diseases	Notifiable diseases detected	weekly
F004	OPD, ANC, deliveries, MCH, vaccination, diarrhea treatment, notifiable disease	quarterly
F005	More comprehensive, multiple sections including facility equipment, personnel, IPD/OPD diagnoses etc.	annual

The main difference between SPD districts and other districts is the earlier introduction of the District Health Information System (DHIS) software, the presence of a dedicated, IHI-funded data manager, capability to follow up missing or erroneous data by phone and motorcycle and a stringent cascade of quality assurance and quality control from the facility level to national level. IHI staff work hand-in-hand with their respective Council Health Management Teams and help to build capacity in data use at both facility and district levels. All data captured through the FBIS is shared with the national data warehouse maintained by the MOHSW with the University of Dar es Salaam.

Initially, the FBIS will add value though accelerated implementation of the HMIS strengthening initiative, and generation of national estimates of key indicators. In addition, best-practice lessons from FBIS may be replicated elsewhere in the country.

In the medium term, the FBIS will provide the opportunity to track indicators that are *not* presently included in the HMIS. There is a wide range of potential uses of such information. The disease control programs need indicators only obtainable by survey or

dedicated data collection. The "One Plan" needs to track service delivery and outcome parameters for maternal and neonatal health. The human resources for health (HRH) strategy has multiple indicators not available through HMIS. The pharmaceutical management unit would like to monitor stock-outs of drugs and medical supplies. The SPD could therefore provide accurate, national statistics on indicators that would otherwise require a multitude of surveys or separate data collection exercises.

In addition, the FBIS could provide a platform for *ad hoc* facility surveys to provide a "rapid-response" capability to respond to the information needs of decision-makers.

Beyond monitoring, the FBIS provides an ideal platform for health services research and evaluation. This may include either cross-sectional or longitudinal analysis of factors associated with health service delivery. It may also allow controlled testing and evaluation of new service delivery initiatives to inform decisions on optimisation before scaling-up.

Looking ahead

No other country has undertaken SAVVY on a national scale. This is a major logistical and data management undertaking that will take four years to roll out. The system will need to produce data of impeccable quality to retain the confidence of information customers. The main technical risks facing SAVVY are the completeness of vital event detection by community informants, and the sensitivity and specificity of the verbal autopsy technique. Nonetheless, SAVVY will fill a very important gap in Tanzania's health and demographic information systems by providing annual, cause-specific mortality profiles and a host of other demographic and household information.

The FBIS arm also faces challenges. Obtaining full and accurate reporting of multiple reports from over a thousand facilities presents its own difficulties. There is also a risk of omission and error between source (registers) and summaries (reports submitted). These risks highlight the importance of rigorous quality assurance and quality control - which can only be achieved when greater use of data is made at the facility and district levels.

As HMIS strengthening progresses, FBIS will have little value-added if it only collects routine data. The real potential of FBIS lies in the opportunity to address the monitoring and evaluation needs of programs, strategies and funding partners that cannot be met by routine data alone. As with the SAVVY arm, the long-term sustainability of the system will depend upon how much demand there is for the information – and whether this translates into commissioned studies and reports that can help to fund the system in the long run.

Despite the challenges and risks, if Tanzania is able to sustain the SPD it will have an information platform for health sector monitoring, evaluation and research that is unrivalled in Sub-Saharan Africa. It is an aspiration worth striving for.

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