

## **Using information systems to manage health in Uganda**

by: Davis Weddi

In order to continually improve the quality of healthcare, Uganda's Ministry of Health has put in place a routine reporting system backed up with electronic databases replacing all pre-existing totally paper-based reporting instructions in districts all over the country.

This system, called the Health Management Information System (HMIS), is designed to produce relevant and functional information on the health services on a routine basis. It is kicked off at the grass-roots health units and the information gathered is transferred to health sub-districts, then on to the districts and finally to the national level for planning, managing and evaluating healthcare delivery. In other words, from the health unit it goes through the districts and straight to the National Health Databank.

Uganda's HMIS is a product of a review of the country's health information through a needs assessment in 1992. The review led to the incorporation of a management component with subsequent development of the HMIS. The issue of management alone automatically saw the need of Information and Communication Technologies (ICTs) being applied. The system was first piloted in two districts and after a year expanded to the rest of the county.

Because of the previously accumulated cases of poor management of health systems, the consequences are still being felt: there has been a resultant tendency to delivery of poor service quality, irrational utilization of scarce resources creating a dissatisfied 'public' and a demoralised 'staff.' All this coupled with the fact of infrastructure that has suffered from poor maintenance has a cumulative effect of poor service delivery systems and negative responses to cost sharing in the country.

There was and there has always been a need in Uganda to solve problems that lead to delivery of poor health services, inefficient use of resources and failure to meet the people's health needs. But despite the good intentions, in Uganda the contention that good health is basic to human welfare and a fundamental objective of socio-economic development has lagged behind the performance of other developing countries.

By and large, the HMIS, it is hoped, will improve the efficiency and effectiveness of the country's health managers in planning for a healthy nation. The HMIS is one of the most important advanced ICT planning methods needed for prevention and control of diseases, because it gives information critical for planning, monitoring and evaluation of services, prevention and control of diseases.

The development of this HMIS has been ongoing for over a decade and a half. Worth noting is that we may not at this juncture delve into what system existed before this HMIS was put in place.

So many players and stakeholders have been involved in ensuring that the HMIS grows and works for the nation. Many people have made a contribution, the input of the district health teams and all the departmental heads at the Ministry of Health have made this system possible. Financial and expert support that enabled this system to be developed came from DANIDA, Danish Red Cross, UNICEF, WHO, and the Uganda Essential Drugs Management Programme.

### **How ICTs have been applied**

Amos Nzabaneta, a Principal statistician at the Ministry of Health argues that information and communications technologies (ICTs) are just one of the many ways the HMIS is executed. "I look at ICTs as a tool for facilitating the HMIS."

Nzabaneta, who understands the HMIS in and out, says they use modern tools like e-mail, internet, fax and telephones in the process of executing the HMIS. At the health unit level, hard copies of registers and tally sheets are provided to staff to produce a record of the source of data - patients' information - for aggregated data.

The data is then moved up to the health district level. The transcription at this level corresponds to what computerization would be like and the data book (District Processing File) is similar to a computerized database – so the initial input is already fully in line with the way the information is recorded in the HMIS.

Districts that have a computer and resources to maintain it, are provided with an easy spreadsheet based system for compiling monthly and annual reports. The reports from the districts may be delivered to the headquarters either by hand or they could be faxed. According to Nzabaneta, a few district reports come in by e-mail.

It is worth to note at this point that information collected for the HMIS is relevant to the policies and goals of the government and to the responsibilities of the health professionals to stop duplication.

“We have developed a local area network (LAN) here at the ministry headquarters and we have a wide area network (WAN) that is used to connect to our Engineering department about 10 km away,” Nzabaneta says. Using the LAN, most offices at the headquarters can gain access to the HMIS products like the ministry of health website. The WAN, it is expected, will in future be expanded to reach all districts in the country and this will automate delivery of reports from other parts of the country into the National Health Databank.

Ms. R.K. Magola, an official at the National Health Databank (home to the HMIS), explains that “Routine data from the health units are compiled on a weekly, monthly and annual basis and continually and respectively sent to the district health offices that also make their own compilation that is sent to the ministry of health headquarters in Kampala.” In simple terms, the data starts by being entered into well-designed forms on paper and as the data is transferred from one lower point on the highest point it finds its way into the computers.

“At the Databank, we receive aggregated data from the districts,” Magola explains. It is here at the national health databank that they enter it into the computers, consequently turning it into digital material for electronic processing. Here, health related data is collected and compiled ready for analysis and interpretation

“We then use a software called EPIinfo to store and process this data. Here in the Databank, we do analysis depending on the Health sector strategic plan indicators, then we come up with weekly, monthly and annual reports for the entire country. These reports are both electronic and paper based,” Magola says.

“These reports are then used for planning for our country's health sector. The Ministry's departments use this data and the ministry's offices at the district too. Other Ministries in the country also come in for this very information; they include the Ministry of Agriculture, Finance, Education and the Uganda Bureau of Statistics. Researchers also flock to the Databank's library to take a share of this very valuable information,” Magola explains.

When asked what data is collected she says, “The data is basically about patients. It is about mortality, it's about our health facilities, equipment and infrastructure, staffing, medicine supplies, preventive services including family planning and environment, and it is also about the population.”

Anyone with a genuine interest in the reports generated at the National Health Databank using the Health Management Information System is free to go there and get his or her share. According to Magola, the reports are absolutely very free.

In 1997, software at national level was not working all the time. Even until recently, software in computerized districts varied. Processing the health information needs to be done in 3 different software packages including Excel, Lotus 123 and Quatropro. Some districts are using other types of software which is not similar to the one at the headquarters, though currently this is not a problem because even then the districts also have to send paper based reports to the national health database for entry into the database.

However, now the Databank has a project in place where they are piloting the locally developed Access-based EPlinfo software in seven districts and should it be a success here it will then be rolled out to the rest of the country. Because of the increased need for electronically processed information at national level, common software (EPlinfo) was developed.

The Databank staff intends to have standardized software that would in future be used all over the country for feeding the National Health Databank. "This is a small time software. It is not as big as Access. We think like this: start small and then grow bigger later," is what one staffer had to say.

It is hoped that when put in place at the district health offices; this will enable them to input data from health units into the computers and use it for:

1. planning, management and review of health services,
2. making a review of the health status of the population,
3. provide reports to the local councils and policy makers,
4. provide feedback to the individual health units and
5. to conduct health system research in the district on specific issues.

"It is hoped that if we connected to the districts (using the WAN), life would be made very easy. We are now planning to connect ourselves to the National Immunisation Programme about 30 km away in Entebbe.," Nzabaneta says and reveals that the NGO DANIDA has promised to connect districts in the North and North Eastern parts of the country.

"If the data we receive from the districts was all soft (electronic), we would do our work without worrying of backlogs," Nzabaneta says. He however, notes that much as the Health Ministry is happy with donations made to them, "some donors give (us) computers that have no capacity. Talk about systems which don't talk."

Through the HMIS' national health databank, health information is disseminated to stakeholders in the health sector. The databank also now periodically provides indicators for monitoring and evaluation of the health sector.

Products of the HMIS include: reports on epidemiological surveys, periodical surveys, and special studies, disease registers like the cancer registry, the population and housing census. The center also has a lot of community based information and data from outside the health sector.

Nzabaneta says the HMIS is used to monitor government policies and programmes. "We do that by looking at the Out Patient data, deliveries at health centers, utilization of health facilities and other details which all form the indicators under the Poverty Eradication Action Plan (PEAP). We also use the HMIS to monitor immunization coverage, staffing norms in the ministry. It is also used to monitor HIV/AIDS prevalence in the country.

According to Nzabaneta, the HMIS is key in monitoring the Ministry of Health's programmes including the five-year Health Sector Strategic Plan II (HPPS II).

One of the nearest references of the products of the HMIS is the 2004-2005 Annual Health Sector Performance report that was published in October 2005. This report indicates how raw data from various parts of the country has been transformed into a huge document.

In his forward in that report, the Minister of Health Jim Muhwezi says that: "... It (the report) therefore provides an opportunity for evaluation of the achievements of the sector against the Health Sector Strategic Plan I target ..."

Among other problems the HMIS is facing is lack of an adequate number of dedicated staff. Nzabaneta blames this on the employment policies at the Ministry of Public Services that is yet to put into consideration the issue of employing IT staff for the Ministry of Health. It is unfortunate that the Ministry of health has only a systems administrator who is seconded to it by a project of an NGO. If this project winds up, then the Ministry of Health's IT intensive programmes like the HMIS will collapse.

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