The Consistency and Concurrency Between the Kenya HIV/AIDS Program Monitoring System (KePMs) and the National Reporting System (DHIS2), 2012

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Background and Purpose: Kenya implemented the use of District Health Information Software (DHIS2) countrywide in 2011. The successful roll out of DHIS as the national reporting system provided a strong foundation for the development of "One unified and integrated, country owned, country led, National Health Information System (NHIS)." In order to achieve this, there was need to transition all existing parallel reporting systems into the DHIS. The Kenya HIV/AIDS Program Monitoring System (KePMs) was one of the major parallel reporting systems that were targeted for integration. KePMs is a computerized database for the management and analysis of the President's Emergency Plan for AIDS Relief Care (PEPFAR), treatment and prevention indicators required by United States of America Government program managers. This paper examines the current status of the implementation of the DHIS2 for use as the national health information system in order to inform transition from KePMs to DHIS2. It examines the consistency and concurrency between the DHIS2 data and KePMs data using selected indicators.

Methods: In order to assess the concurrency of data between KePMs and DHIS2, data from sampled facilities and sampled indicators (in HIV Testing and Counselling (HTC), Prevention of Mother to Child Transmission (PMTCT) and Care and Treatment (CT)) were analysed by comparing datasets from the two databases (i.e. DHIS2 and KePMs).

Indicator selection was purposive as determined from an indicator matrix developed in previous meetings. The PEPFAR 2012 data set on KePMs was considered as the sampling frame for facilities in both the KePMs and DHIS2. The data for September 2012 were used. Data were received from one reporting tool (dataset); the MOH711. A convenient sample size of 141 facilities (comprising three facilities per county) was determined.

Descriptive data analysis was done using Microsoft Excel package. The analysis involved computing the concurrency and consistency between the data reported in DHIS2 and KePMs for the period of September 2012. During the analysis of these data, concurrency was only looking at the sites that had reported data while consistency checked through all the 134 health facilities sampled.

Results: On average, data in the selected indicators showed a consistency rate of 79.5% in both systems. The consistency rate was above 75% in all indicators except in the indicator; "Number of individual tested and received results through Provider Initiated Testing and Counselling (DTC/PITC)" which had 63%. The average concurrency rate was 69%. Concurrency rates varied amongst the various indicators with DTC/PITC achieving the highest concurrency rate of 97%. The lowest concurrency rate was for "couples testing for HIV" at 34%. In general 74% of data in both systems had no variance.

Conclusions: The main reason for developing parallel system was the absence of a reliable national system. The results show a very high consistency rate between the two systems. Minor differences in data were attributed to data entry and poor data validation rules. It is recommended that with minor improvements, the DHIS is in a position to provide the necessary data to cater for all stakeholders and hence become the National reporting system.

Keywords: Health Information Systems, District Health Information Software, Service delivery Indicators

1   Introduction

Enhancement of Health information systems has become a top priority agenda globally, regionally and nationally. Reliable data is essential in identifying gaps for interventions to reduce mortality, improve quality of care, determine the extent of coverage and track progress of the various interventions. This creates an increased demand for better data to facilitate evidence based decision making at all levels of healthcare. Such data would be used to support the generation of policies as well as identification of priority areas for interventions. Recent years have witnessed significant commitments and investments towards the strengthening of health information systems. Efforts to improve health information systems in Africa often face various challenges including the emergence of fragmented systems propagated by the diverse international organizations supporting them, leading to the development of many uncoordinated donor initiatives that maintain parallel health information systems [1]. To counter the effects of many parallel systems, Kenya has embarked on a process of implementing "One unified and integrated, country owned, country led, National Health Information System (NHIS)." This calls for transitioning of all existing parallel reporting systems into the national reporting system. This paper compares data from the development partner supported reporting system with the national system.

1.1   The Implementation of District Health Information Software (DHIS2)

Kenya adopted the use of the District Health Information Software (DHIS 2) in 2010. This was hosted on a central server using cloud computing infrastructure [2]. DHIS is a tool for collection, validation, analysis, and presentation of aggregate statistical data, tailored to integrated health information management activities [3]. It was designed to allow data collection and use at the facility and district levels, encouraging data use for decision making at the lowest level. The software supports a full Web-API which gives access to all of the functions of the software through a web interface allowing data entry or reporting interfaces on mobile devices or desktops. It has a fantastic support from a worldwide network of users and developers [3].

1.2   The Kenya HIV/AIDS Program Monitoring System (KePMs)

The Kenya HIV/AIDS Program Monitoring System (KePMs) is one of the major parallel reporting systems in Kenya. KePMs is a computerized database for the management and analysis of the President's Emergency Plan for AIDS Relief Care (PEPFAR), Treatment and Prevention Indicators. It is a Microsoft Access based indicator monitoring database for use in the management, monitoring and evaluation of HIV/AIDS treatment and prevention programs supported by PEPFAR. The system was created approximately 6 years ago to plug the gap between the Government of Kenya reporting system and the PEPFAR reporting requirements. It is designed to operate at the level of in-country implementing partners who manage program specific data and forward it to national level where it is aggregated automatically by United States of America Government (USG) program managers. The KePMS also allows partners to monitor their own performance and make decisions informed by the data [4]. KePMS also collects and collates data from health facilities and is, therefore, largely seen to be duplicating the facility reporting functionality of DHIS2.

1.3   Transition of KePMs to DHIS

The completion of the rollout of DHIS2 in all districts in Kenya in the year 2011 and the completion of indicator harmonization process in most program areas within the Ministry of health (MOH) mean that the MOH has a strong foundation on which to integrate the service delivery data for use by all stakeholders in the health sector. The country is striving to eliminate the vertical Monitoring and evaluation (M&E) systems and developing an integrated health information system to serve as a repository for all health and health related data. It is against this background that the Ministry of Health selected, through consultative fora, the open source DHIS2 software as the framework for building the routine health information system as a first step towards integration. The objectives of the transition are:

1. Ensure that all indicators in KePMs are captured and correctly generate results in DHIS2.
2. Ensure that DHIS supports both ad hoc and scheduled USG required reports.

In preparation for the transition, data from DHIS and KePMs were analysed to establish the consistency and concurrency. This paper examines the current status of the implementation and adoption of the web based DHIS2 software for use as the national health management system in order to inform transition from KePMs to DHIS2. It examines the consistency and concurrency between the DHIS2 data and KePMs data using a select set of indicators and data elements.

2   Materials and methods

2.1   Determination of Data Concurrency

In order to assess the concurrency of data between KePMs and DHIS2, data from sampled facilities and sampled indicators (in HIV Testing and Counselling (HTC), Prevention of Mother to Child Transmission (PMTCT) and Care and Treatment (CT)) were analysed by comparing datasets from the two databases (i.e. DHIS2 and KePMs).

Indicator selection was purposive as determined from an indicator matrix developed in previous M&E subcommittee meetings. The PEPFAR 2012 data set on KePMs was considered as the sampling frame for facilities in both the KePMs dataset and DHIS2 data set. The data for month September 2012 were used. Data were received from one reporting tool (dataset); the MOH711. A convenient sample size of 141 facilities (purposive) was considered in each of the 47 counties i.e. 3 sites per county. Sites that had reported on KePMs but not found on DHIS (16) were not substituted. The final sample was therefore 134 facilities.

2.2   Data Analysis

Descriptive data analysis was done using MS Excel. The analysis involved computing the concurrency and consistency between the data reported in DHIS2 and KePMs for the period of September 2012. During the analysis of these data, concurrency was only looking at the sites that had reported data while consistency checked through all the 134 health facilities sampled.

3   Results

The data reported in the two systems was obtained from MOH 711A which is the standard National Reporting Summary tool. Since the source of the data reported in both systems is the same for similar indicators it is expected that the data will be consistent. The section below presents results from the analysis of concurrency and consistency between data reported in KePMs and DHIS2 for the selected facilities.

Generally consistency of the data in 6 (75%) indicators out of the selected 8, performed better than the concurrency levels, as reflected in the **Fig. 1** below.
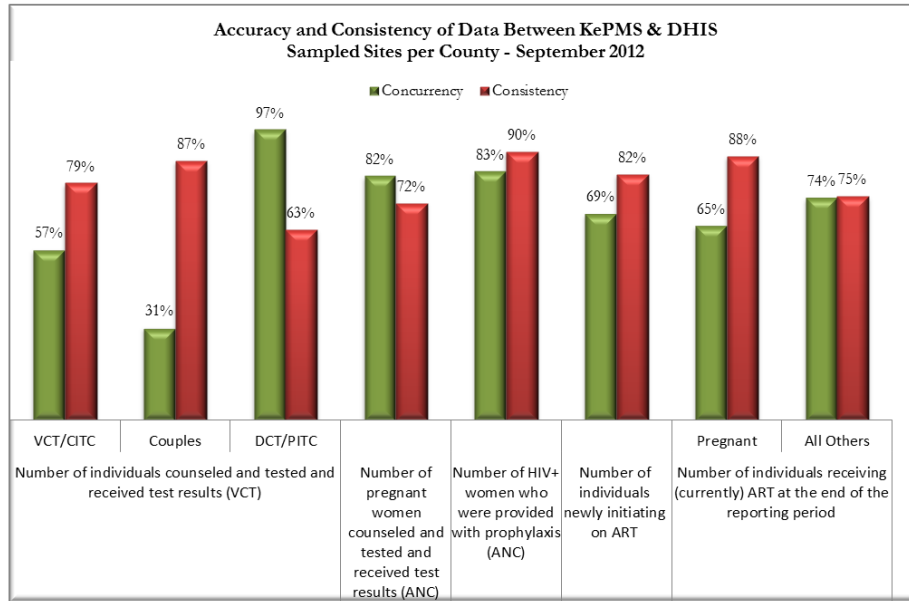
Fig. 1. Accuracy and consistency of Data between Kepms and DHIS, September 2012

Each indicator was analysed for consistency and concurrency. In general, the indicators displayed a very high rate of consistency of 79.5% in both systems. The average concurrence rates were however, lower at 69.7%. When both consistency and concurrence rates were analysed, the average accuracy rate for the data in both systems came at 74.5%. The following are the individual results for the indicators.

3.1   Number of individuals tested and received results through VCT (CITC)

For this particular indicator, the concurrency level was 57% in only 54 health facilities that had reported VCT services while consistency stood at 79% in all the 134 health facilities.

3.2   Number of couples tested and received through the VCT setting

Of the 45 health facilities assessed for concurrence, only 31% of them had similar numbers in the two softwares for Couples tested at the VCT setting. The consistency was at 87% for all the health facilities.

3.3   Number of individual tested and received results through Provider Initiated Testing and Counselling (PITC)

Out of the 107 health facilities that reported Diagnostic Testing and counselling/Provider Initiated Testing and counselling (DTC/PITC) data, the concurrency levels were at an all-time high of 97% while consistency was at 63% for all the health facilities.

3.4   Number of pregnant women tested for HIV in Ante Natal Care (ANC)

ANC services had the highest number of reporting sites i.e. 115 (86%) and concurrency was 82% while consistency was at 72% for all the health facilities.

3.5   Number of HIV pregnant women receiving Anti-Retroviral (ARV) prophylaxis

Out of the 47 health facilities that reported ANC prophylaxis, concurrency levels achieved was 83% while consistency was at 90% for all the health facilities.

3.6   Number of individuals newly initiating on ARVs

Out of the 134 health facilities sampled, only 50 reported on the newly initiating clients on ART hence giving a concurrency level of 69% while consistency stood at 82% for all the health facilities.

3.7   Number of individuals currently on Anti-Retroviral Therapy (ART)

This indicator is a subset of the total clients currently on ARVs. Concurrency of data achieved was 65% for the 42 health facilities that reported pregnant mothers on ARVs while 88% of all the health facilities data was consistent.

3.8   Number of individuals currently on Anti-Retroviral Therapy (ART) (all others)

For all the clients currently on Anti-Retroviral (ARVs), only 65 health facilities reported on the indicator giving a concurrency level of 74% while consistency was at 75%.

4   Discussion

The DHIS is a recently adopted national system taking care of all the service delivery reports in the country. KePMs on the other hand monitors only HIV/AIDs data for the USG reporting requirements. The results show that consistency levels achieved were above 75% across all the indicators, hence a consistency level for the two systems had been attained. Minor differences in data could be attributed to data entry and poor data validation rules in both systems. Considering that both systems are well developed with highly trained personnel, it would be useful to find ways of enhancing their data quality and reducing duplication of data entry. For this to occur, each system would have to concentrate on different datasets to avoid duplication of efforts. One other possibility would be to address the accuracy rates in view of improving one system for use in the country. Since DHIS has a wider coverage, it is possible for it to be in a position to provide the platform for a national health information system.

In conclusion, the DHIS has proved that it is able to adequately serve the needs of HIV/AIDS reporting as required by the USG programs and has been recommended to take over the functions of KePMS.

Acknowledgements

Statement on conflicts of interest

The authors will require further clearance from the Ministry of Health and USAID

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