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DISSEMINATION WORKSHOP REPORT

Strengthening data management and use in decision making to improve health care services: Lessons learnt



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Acronyms

CHMT	Council Health Management Team
HMIS	Health Management Information System
IMCI	Integrated management of childhood illness
IPD	Inpatient department
MoHSW	Ministry of Health and Social Welfare
mRDT	Malaria rapid diagnostic test
MSH	Management Sciences for Health
PQIT	Pediatric quality improvement teams
OPD	Outpatient department
RHMT	Regional Health Management Team
THP	Tibu Homa Project
URC	University Research Co., LLC
USAID	United States Agency for International Development
WHO	World Health Organization

ABSTRACT

Malaria continues to be a major killer of under-fives, and Tanzania has set strategies to reduce malaria in the country. To complement efforts of the Ministry of Health and Social Welfare, in 2011 the United States Agency for International Development (USAID) created the Tibu Homa Project to improve diagnosis and treatment of febrile illnesses among children under five years of age in the Lake Zone of Tanzania. THP is led by University Research Co., LLC (URC) working in partnership with Amref Health Africa and Management Sciences for Health (MSH). The project is operational in 28 districts of six regions in the Lake Zone (Kagera, Mwanza, Geita, Mara, Shinyanga, and Simiyu).

Over the past three years, the Tibu Homa Project (THP) has been supporting health facility system strengthening to improve case management of children under five with fever in the Lake Zone of Tanzania. This intervention has applied a quality improvement approach that emphasizes proper documentation and data use for decision making.

THP facilitated the establishment of pediatric quality improvement teams (PQITs) in each of the supported health facilities and trained two members of each team in data management. THP assisted the teams in developing an improvement aim, identifying performance indicators, setting targets, documenting changes, testing the effectiveness of specific changes, plotting data on time series charts to track performance, and using the results to make decisions.

Quarterly results showed significant improvement in proper data collection and use. The proportion of health facilities using data to make improvement decisions has improved. The improvements were largely brought about by the strong collaboration between Council Health Management Teams (CHMTs), PQITs, and the project staff.

The key lessons learnt here are that the improvement in health facilities' data management has a direct link in improving case management of under-fives with fever. The availability of accurate facility-generated data contributes to strengthening the capacity of health systems to make good decisions in improving care for under-fives. Data use and decision making is an important component of quality improvement at all levels.

It is recommended that data management initiatives continue to be an integral part of supportive supervision and mentorship to health facilities.

I. INTRODUCTION

The Health Management Information System (HMIS), also known in Kiswahili as *Mfumo wa Taarifa za Huduma za Afya*, was introduced in Tanzania in 1993 and scaled up in 1998 (HRA, 2000). The introduction of the HMIS was aimed at ensuring the availability of accurate, timely, and relevant data to health managers for purposes of planning and decision-making.

However, recent studies carried out in Tanzania have indicated that the HMIS has not been able to provide decision makers with data of reliable quality (Simba & Mwangu, 2006; Nyamtema, 2010).

This situation is not unique to Tanzania. Reports from Sub-Saharan Africa indicate that vital health decisions are often made based on crude estimates of disease and treatment burdens (Robey & Lee, 1990). A number of factors have been associated with poor quality HMIS in Tanzania like in many other developing countries. These factors included failure of health workers to appreciate the importance of information; lack of knowledge and skills for data analysis; inadequate staff to record medical information; and lack of feedback from health managers after receiving data. The collection of enormous amounts of data tends to put an unnecessary burden on data collectors (Simba & Mwangu, 2006; Nyamtema, 2010; WHO, 1997; Mshana, 2004).

Although knowledge of HMIS concepts was found to be associated with better quality of HMIS data, this was not true of training on HMIS per se. Supervision, regardless of the duration, was found to have no relationship with improved data completion. This raised some doubts on the quality of supervision provided by Council Health Management Teams (CHMT) to the health facility workers. An approach that makes training on HMIS part and parcel of continuing education in the workplace and incorporated in career development of the respective staff was recommended (Simba & Mwangu, 2006).

In one of the studies, failure to use health data collected at the health facility level as reported by 63% of care providers indicated that the primary purpose of data collection was to report to higher levels suggesting a high prevalence of the "mailbox syndrome." The "mailbox syndrome" is a phenomenon whereby crucial information generated at the health facility level is mailed rather than used locally for quality care improvement (Bergstrom, 2003).

These findings suggest that the existing HMIS in Tanzania has not been institutionalized in the sense of being integrated into the everyday activities, an important factor for its sustainability and reliability.

To complement efforts of the Ministry of Health and Social Welfare (MoHSW), in 2011 the United States Agency for International Development (USAID) created the Tibu Homa Project. THP is led by University Research Co., LLC (URC) working in partnership with Amref Health Africa and Management Sciences for Health (MSH). The project is operational in 28 districts of six regions in the Lake Zone (Kagera, Mwanza, Geita, Mara, Shinyanga, and Simiyu).

Over the past three years, the Tibu Homa Project (THP) has been supporting health facility system strengthening to improve case management of children under five with fever in the Lake Zone of Tanzania. This intervention has applied a quality improvement approach that emphasizes proper documentation and data use for decision making.

At the start of the project, THP staff found that most of the supported health facilities had no working culture of using data to make necessary quality improvement decisions. Through training and supportive supervision and mentoring, health facilities were introduced to a quality improvement model and techniques for analyzing data and making decisions through established pediatric quality improvement teams. Health care workers had their skills strengthened through "on-the-job" coaching during monthly supportive supervision and mentorship visits by RHMT, CHMT, and THP staff. THP observed significant improvement in

data management and use for under-fives with fever in supported health facilities in the Lake Zone. However, challenges remain due to the fact that many of the health facilities are yet to sustain these quality improvement efforts.

II. METHODOLOGY

THP facilitated the establishment of pediatric quality improvement teams (PQITs) in each of the supported health facilities and trained two members of each team in data management. This included assisting the teams in developing an improvement aim, identifying performance indicators, setting targets, doing a processes analysis to identify reasons behind the improvement gaps, testing solutions to identified gaps, carrying out an assessment to determine the effectiveness of the changes made, charting these results on a time series chart, and using the results to make decisions. This quality improvement approach makes use of a quality improvement model referred to as the plan-do-study-act model. THP also provided PQITs with a team journal in which to document over time their facility's performance for each improvement aim.

Health care workers' knowledge and skills acquired through classroom training were reinforced through monthly supportive supervision and mentorship visits and in quarterly peer learning sessions. During supportive supervision visits by RHMT/CHMT and THP staff, the health facilities reviewed their data, verified the quality of the collected data, addressed the observed data quality gaps, and plotted time series charts for each improvement objective, together trying to find out the reasons for the observed results and planning for other changes or maintaining the successful changes.

During the learning sessions, PQIT members had an opportunity to share their results, challenges and successes with teams from other health facilities and develop new plans as a result of the lessons learnt. This helped health facilities to learn of effective changes that were introduced by their peers in other health facilities and/or how to overcome some challenges they faced in the course of implementing their quality improvement initiatives.

THP developed a tool that was administered quarterly to systematically measure if the health facility was consistently collecting and using results to make decisions.

III. RESULTS

Since January 2013, THP has assessed each quarter how the health facilities were collecting and using data to make quality improvement decisions using the standard assessment tool, including collecting data on key indicators, plotting the data on a time series chart, interpreting the data, and then making decision based on the results. The results show significant improvement in proper data collection and use. The following time series charts show the performance of 183 THP-supported health facilities that were assessed in the three Lake Zone regions (66 in Kagera, 47 in Mara, and 70 in Mwanza) . between January-March 2013 and January-March 2014. The results show that the proportion of health facilities using data to make improvement decision has increased in all three regions: Kagera Region improved from 24% to 59%, Mara from 38% to 57%, and Mwanza from 75% to 85%.

Figures 1, 2 and 3 show that most (17 out of 22) of the districts have improved between 2013 and 2014. These graphs also show that most districts made significant improvements in proper data collection and data use. Figure 4 shows that each of the three regions improved over the past year.

Figure 1: % of supported health facilities per district in Kagera that used data to make improvement decisions

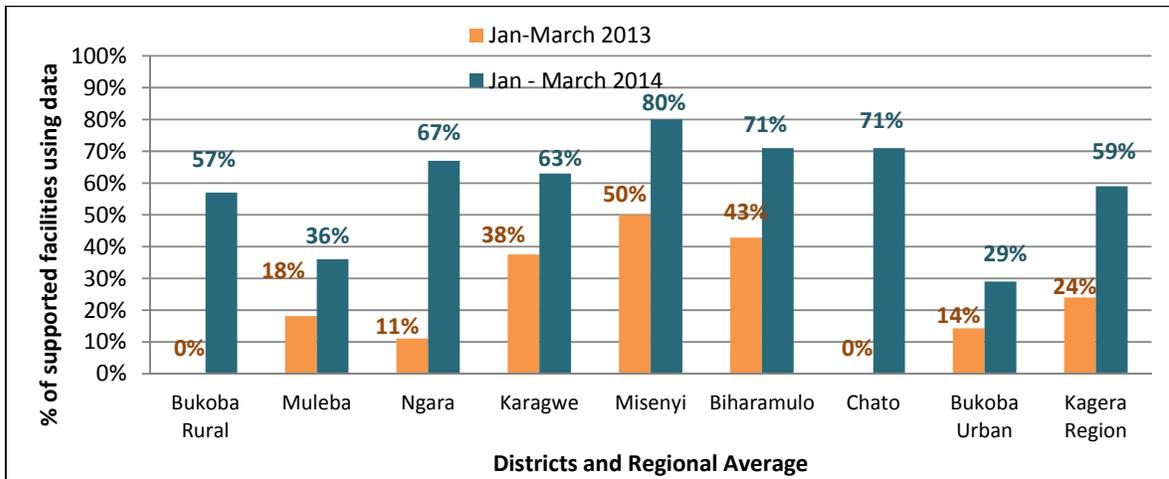


Figure 2: % of supported health facilities per district in Mwanza that used data to make improvement decisions

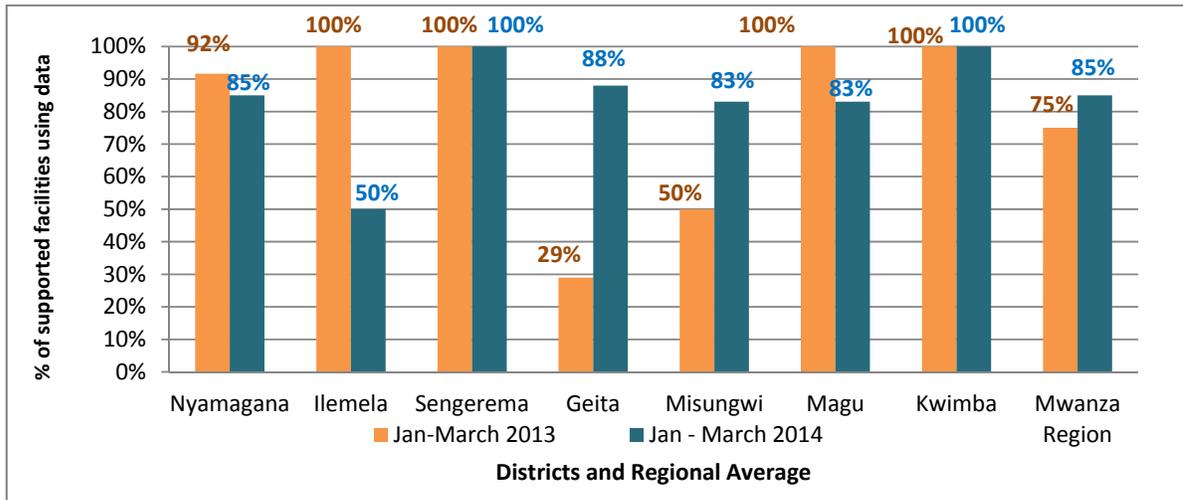


Figure 3: % of supported health facilities per district in Mara that used data to make improvement decisions

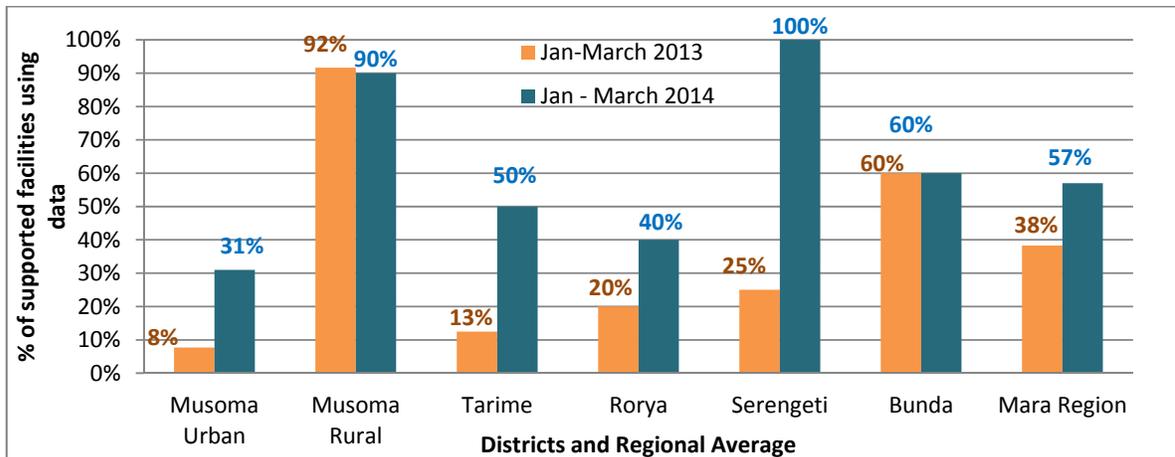
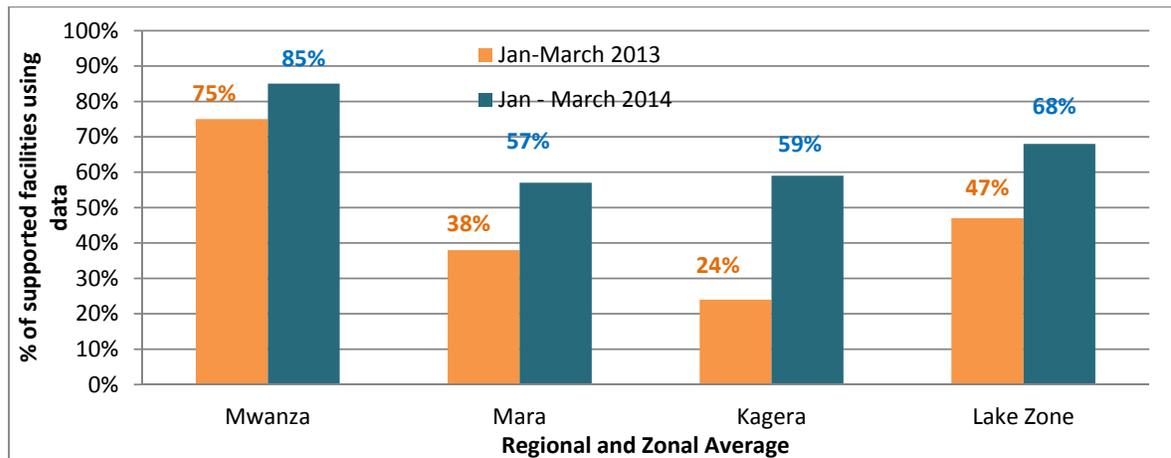


Figure 4: % of supported health facilities per region in Lake Zone that used data to make improvement decisions



The improvements were largely brought about by the strong collaboration between CHMTs, PQITs, and the project. In areas where QI efforts were taken seriously, there were considerable improvements. We learnt that strong facility and CHMT leadership has high impact on the performance of the facility and district at large. The figures show there was little or no improvement in districts where institutional leadership was not strong, such as Bukoba Urban, Musoma Urban, Muleba, Rorya, and Ilemela districts.

Changes Made in Data Collection and Use

Before THP interventions, most of the facilities had no reliable data due to poor documentation in HMIS registers. Most of the health facilities were using exercise books, and patient records for outpatient departments (OPDs) and in-patient departments (IPDs) were not kept at the health facilities. Report and request forms and dispensing registers were not correctly filled in, and health facilities were not tracking their own performance.

Through quality improvement trainings, the PQITs were exposed to practical approaches for identifying gaps and preparing their respective improvement plans. In this process, the teams discussed and identified changes that could improve documentation and data management and use. Some of the most common changes were:

- Developing an under-fives logbook in cases where the facility runs out of HMIS registers (see Figure 5)
- Adding columns to HMIS registers to document under-fives with fever (see Figure 6)
- Retention of exercise books or purchase of OPD and IPD cards (see Figure 7)
- Proper storage of patient information
- Introduction of stock-out form to track all essential medicines and supplies (Figure 8)
- Monthly tracking of progress of improvement initiative through team improvement journals
- Modifying flow maps to reduce redundant steps and waiting time
- Identifying a focal person to coordinate data collection and analysis

Figure 5: An example of under-fives registers

Tarehe	No	Jina	Kisiji	Umri	Jinsi	Xikwa ya kwanza	Diagnosis	Fever	Fever	ANC	HR	WZ	1	2	3	Matibabu
01/02	01	Isack jackson	Mwanamume	5	ME	Jakua wipaka	U. melau	✓			Pos	7				Alii, P. X. B. 2
	02	Rehute Emanuel	Mwanamume	34	ME	Sacral chondritis	S. melau	✓	✓		Pos	14	✓			Alii, 14 y. S. X. B. 2
	03	Hagyes Emanuel	Mwanamume	12	ME	Sacral chondritis	S. melau	✓			Pos	11				Alii, 14 y. S. X. B. 2
03/02	04	Daniel Abel	Mwanamume	18	ME	Sacral chondritis	S. melau	✓			Pos	8				Alii, 14 y. S. X. B. 2
03/02	05	N. Pakena Samat	Mwanamume	11	ME	Sacral chondritis	S. melau	✓	✓		Pos	9				Alii, 14 y. S. X. B. 2
04/02	06	Samuel Papi	Mwanamume	3	ME	Sacral chondritis	S. melau	✓			Pos	6				Alii, 14 y. S. X. B. 2
05/02	07	Hagyes Dato	Mwanamume	5	ME	Sacral chondritis	S. melau	✓			Pos	9				Alii, 14 y. S. X. B. 2
03/02	08	Fredy Kulu	Mwanamume	30	ME	Sacral chondritis	S. melau	✓	✓		Pos	11				Alii, 14 y. S. X. B. 2
10/02	09	Daniel Abel	Mwanamume	24	ME	Sacral chondritis	S. melau	✓			Pos	12				Alii, 14 y. S. X. B. 2

Figure 6: An example of HMIS registers with extra columns

KONJWA WA NJE (OPD)														
5	6	7	8	9	10	11	12	13	14	15				
Mahali Anapohishi (Kijiji/Mtaa)	Umri	Jinsi	Uzito (kg)	Ukoko (cm)	Vipimo vilivyoya agizwa	Matokeo ya Vipimo	Diagnosis	Matibabu	Matokeo (k.m., Rufaa, kulazwa, au Kifo)	Msoni				
Mwami	2	ME	9	90	horo	ME	A. danda	Paadim, OPS	✓	✓				
Mwami	9	ME	8	80	horo	ME	Sepha	Chikwani ya	✓	✓				
Mwami	3	ME	10	100	horo	ME	horo	horo	✓	✓				
Mwami	2	ME	12	120	horo	ME	horo	horo	✓	✓				
Mwami	1	ME	10	100	horo	ME	horo	horo	✓	✓				
Mwami	1	ME	9	90	horo	ME	horo	horo	✓	✓				
Mwami	1	ME	9	90	horo	ME	horo	horo	✓	✓				
Mwami	1	ME	10	100	horo	ME	horo	horo	✓	✓				

Figure 7: An example of retained patient records (OPD cards and exercise books)



Figure 8: Example of an introduced stock-out form

Angalia kuthibitisha kama kila dawa iliyopo kwenye orodha hii ipo kituoni. Weka alama ya tiki (✓) kama dawa husika ipo na alama X kama dawa haipo

Jina la Dawa	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Idadi ya siku ambazo dawa haipo (hesabu alama X)
ACTs 6 tablet	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0
ACTs12 tablet	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	2
Quinine tabs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	
Quinine inj.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	
Artesunate inj.	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	30	
Amoxicillin Syrup	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	27	
Erythromycin	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	
Gentamycin inj.	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	30	
Benzyl penicillin inj.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	

IV. DISCUSSION

These results suggest that the formation of health facility PQITs and empowering their members with problem-solving skills helped some health facilities and districts to make significant progress in data collection and use. PQIT members perform assigned roles such as daily monitoring of completeness of documentation of patient information in HMIS registers, summarizing data from the registers weekly and then monthly, and submitting data to the PQIT focal person.

The presence of an individual assigned to HMIS issues on a daily basis has been associated previously with improved quality data (Simba & Mwangi, 2006). Although PQITs received classroom training in data management and developed improvement plans, most of them had not implemented their plans as of the first supportive supervision visit. The PQIT training went hand in hand with training of RHMTs and CHMTs in improvement methods, comprehensive supportive supervision, and data management. The improvement in data management was found to increase with each subsequent supportive supervision and mentorship visit, as the quality of supervision improved with technical support from THP staff.

Monthly effective supportive supervision and mentorship have been found to be a powerful method as it involved direct interactions with HCWs at their work places and tended to address issues in real time.

The differences observed across health facilities, districts, and regions is attributed partly to the strength in health facility, CHMT or and RHMT leadership. For instance, some of the key challenges in data management at facility level were:

- Some facility HCWs still see improvement initiatives as THP activities, thus leaving improvement efforts to only staff trained by the project.
- Some clinicians do not consistently document their HMIS registers.
- Trained staff are transferred to other health facilities or moved to other departments.
- Stock-out of registers (e.g., OPD registers, dispensing registers, OPD cards)

Most of these challenges were found in health facilities and districts which did not have strong leadership. In the previous studies in Tanzania, lack of commitment, dedication and accountability within the organization were reported to be associated with poor HMIS status (Simba & Mwangu, 2006; Nyamtema et al., 2003).

The improvement model has been used to build the capacity of HCWs to test interventions, allowed them to study the results by plotting the data on time series charts, and use the results to decide on what is needed to be done to bring the desired improvement. The teams then presented their results to the health facility management and other HCWs. Sharing the results has stimulated management to use the results and support the PQITs. The more confident the health facility is on the quality of data collected, the more likely they will make appropriate decisions using their data, thus avoiding the "mailbox syndrome" which is contrary to Tanzania's decentralization policy.

The key lesson learnt here is that improvement in health facilities' data management has a direct link in improving case management of under-fives with fever. This has contributed to an increased number of health facilities reporting no stock-out of essential medicines and supplies, increases in malaria parasite testing rates, and improvement in provider compliance with the IMCI algorithm.

Another important lesson is that health facilities have demonstrated an understanding of and willingness to use data to make decisions. This is vital in sustaining improvement in data management.

V. RECOMMENDATIONS

The appropriate use of accurate facility-generated data contributes to strengthening the capacity of health systems to make good decisions in improving care for under-fives. Data use for decision making is an important component of quality improvement at all levels.

It is recommended that data use and decision making be priorities at all levels of the health care system. Data management initiatives need to continue to be an integral part of supportive supervision and mentorship in health facilities. Innovations tested by teams, such as adding columns for fever and duration of fever in the updated HMIS registers and introduction of daily stock-out monitoring forms at dispensing areas, should be spread and institutionalized in all facilities.

All health facilities need to have and retain files for documentation of patient information. There is also a need for standardization of required patient information at the time of admission to allow clinicians to fill in provided spaces or circles as appropriate so as to reduce time wasted in writing.

VI. REFERENCES

Bergstrom S. (2003). 'Quality of audit of maternity care'. In Harrison KA & Bergstrom S (Eds.), *Maternity Care in Developing Countries*. London: RCOG Press.

Health Research for Action (HRA). (2000). *Review of the Health Management Information System HMIS/MTUHA*. p. 136.

Mshana S. (2004). *Health management information system evaluation: Lesson from Tanzania*. University of Kuopio. PhD Thesis.

Nyamtema AS. (2010). Bridging the gaps in the Health Management Information System in the context of a changing health sector. *BMC Med Inform Decis Mak*. 2010; 10: 36. Published online Jun 25, 2010.

Nyamtema AS, Mgaya HN & Hamudu NS. (2003). A survey on obstetric care, factors affecting provision of care and pregnancy outcome in Dar es Salaam district hospitals. *Tanz Med J*. 2003; 18:36–39.

Robey JM & Lee SH. (1990). Information system development in support of national health programme monitoring and evaluation: The case of Philippines. *World Health Stat Q* 1990; 43: 37 – 43.

Simba DO & Mwangu MA. (2006). Factors Influencing Quality of Health Management Information System (HMIS) Data: The Case of Kinondoni District in Dar es Salaam Region, Tanzania. *East African Journal of Public Health*, Vol. 3, No. 1, April 2006, pp. 28-31.

World Health Organization (WHO). (1997). *Clinical Data Assessment Guidelines: Strengthening the quality of data for improving health services*. Geneva: WHO.