

## IMPLEMENTING A COMMUNITY-BASED HEALTH MANAGEMENT INFORMATION SYSTEM IN BUNGOMA DISTRICT, KENYA

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### Abstract

*The development of community-based health management information systems in developing countries is not well documented. This paper reports how a Community-based Health Management Information System (CHMIS) in Bungoma, Kenya, was started and used to generate information through sources at the community level. The CHMIS had several constraints and limitations like inadequacy of qualified and dedicated community volunteers to run the CHMIS, lack of skills to handle quantitative information, lack of incentives and supervisors for community health workers and inadequate financing of the information resource centres. Despite these, the article highlights a CHMIS model that embraces key requisites of PHC: equity, empowerment and effectiveness. Two important principles can be drawn from the Bungoma CHMIS. First, although DHS staff may assist communities in conceptualizing, designing, implementing and utilizing the CHMIS, the community must use the system to make its own decisions. Second, communities must see a benefit to themselves in operating a CHMIS. The basic premise to be adopted in the development of any CHMIS model is that it should be designed with a focus on improving the health status of the community.*

### Introduction

Although the broad strategies to achieve equity in health are similar, each health system reflects local health priorities, culture, and resources. Amidst this diversity, however, certain health information system elements are constant because the questions are similar regardless of setting. Planners need information to identify and prioritize health problems. Supervisors need information about the number of births or service coverage in their communities. Community health workers (CHWs) need information on whom to visit. Mothers need information on the next vaccination opportunity (Marsh, 2000).

Few people in sub-Saharan Africa have access to modern health care. This is basically due to inadequate numbers and inequitable distribution of health facilities. Costs of travel, where means of travel exist, are unaffordable to most of those in need, particularly vulnerable groups such as young women and children. In this situation, a facility-based health management information system captures information relating to only a small proportion of ill-health. This calls for the need for more community-friendly

methods of collecting health information from households (Oranga and Nordberg, 1997).

There are two types of health management information systems (HMISs) in Kenya, the District Health Management Information System (DHMIS) which is facility-based and the Community-based Health Management Information System (CHMIS) which is community-based. The DHMIS generates information originating from health facilities such as hospitals, health centres and dispensaries, private clinics, nursing homes and mission hospitals. This source of information is limited in scope since it only covers the group consisting of healthcare-seeking clients who are to visit or pay for the services. It excludes all those members of the population who are too poor to pay or without access to care. Unlike the CHMIS, the facility-based system fails to monitor those illness conditions that are either too mild to be reported at the health facilities, those culturally stigmatized or those whose cause and treatment are culturally interpreted not be amenable to the western medicine offered in the health facilities. Such conditions include

mild diarrhoea in children, STDs, leprosy, TB and epilepsy to mention but a few.

A CHMIS generates information through sources at the community level. Such a source is more comprehensive since it covers all those who need particular health care or all who suffer from a given condition in a population. At the community level, this source of information is complete in coverage and is planning- and action-oriented. It is the only source of information for mild conditions as well as stigmatized illnesses amongst communities that are culturally sensitive to those conditions. For example, in some communities, leprosy and epilepsy may be considered punishment for past wrong-doing and their reporting in a health facility are then limited. Families with such cases do not report them to the authorities in health facilities (Oranga and Nordberg, 1997). At the community level, the relevant information can be collected by CHWs, the Village Health Committees (VHCs) and also by the Primary Health Care (PHC) programme. The information normally collected by a CHMIS includes: the target population for the Community-based Health Care (CBHC) Programme; environmental health data (water, sanitation e.g. number of latrines in use); disease incidence; utilization of family planning services; immunization among children; growth in children; traditional cultural practices affecting health, utilisation of traditional healers etc.

The development of CHMISs in developing countries is not well documented (Oranga and Nordberg, 1997). The first CHMIS in the Western Province of Kenya was introduced by the Kenya-Finland Primary Health Care Programme (KFPHCP) in Bungoma District Health System (DHS) in 1994 and funded by the Government of Finland (KFPHCP, 1994). It started shortly after the introduction of the DHMIS in the Bungoma DHS. The Government of Kenya (GoK) recognized that without an effective and appropriate information system, the Ministry of Health's (MoH's) capacity to cope with its planning and management needs would be severely compromised (GoK, 1994). Reasons advanced for the introduction of these DHMISs in the DHSs were: (a) Health facilities collected information haphazardly and irregularly; (b) Information collected was incomplete and unreliable with limited analysis and use at the point of collection; (c) Too much data was collected rendering analysis impossible. The objective of the DHMIS was to facilitate the use of selected existing information to support operational decision-making and planning. Relevant information compiled at the District Health Information System (HIS) Office was to be extracted,

processed and made available regularly to the District Health Management Teams (DHMTs) and District Health Management Boards (DHMBs) for action planning, supervision and impact assessment (MoH, 1991).

As for the Bungoma DHMIS, the users (the DHS managers) needed information to plan and monitor the DHS needs and the services provided at the community and district level. Without proper - relevant, accurate and timely - information, they were unlikely to make proper - relevant, rational and timely - decisions. The main feature of the DHMIS which was hitherto implemented was that relevant information compiled at the District HIS office - or known only to the District Medical Officer of Health (DMOH) - was extracted, processed, and made available regularly to the DHMT for purpose of action planning, supervision and impact assessment. Two broad categories of information were collected in this way: data on health trends and data on administrative matters. In this way, the DHMIS provided the material for the DHMT meetings - identifying problem areas and providing key information for making decisions, and giving a basis for setting new targets and drawing up immediate action plans. The quarterly reports provided the data from which the annual reports were written.

### *The Objective of the CHMIS*

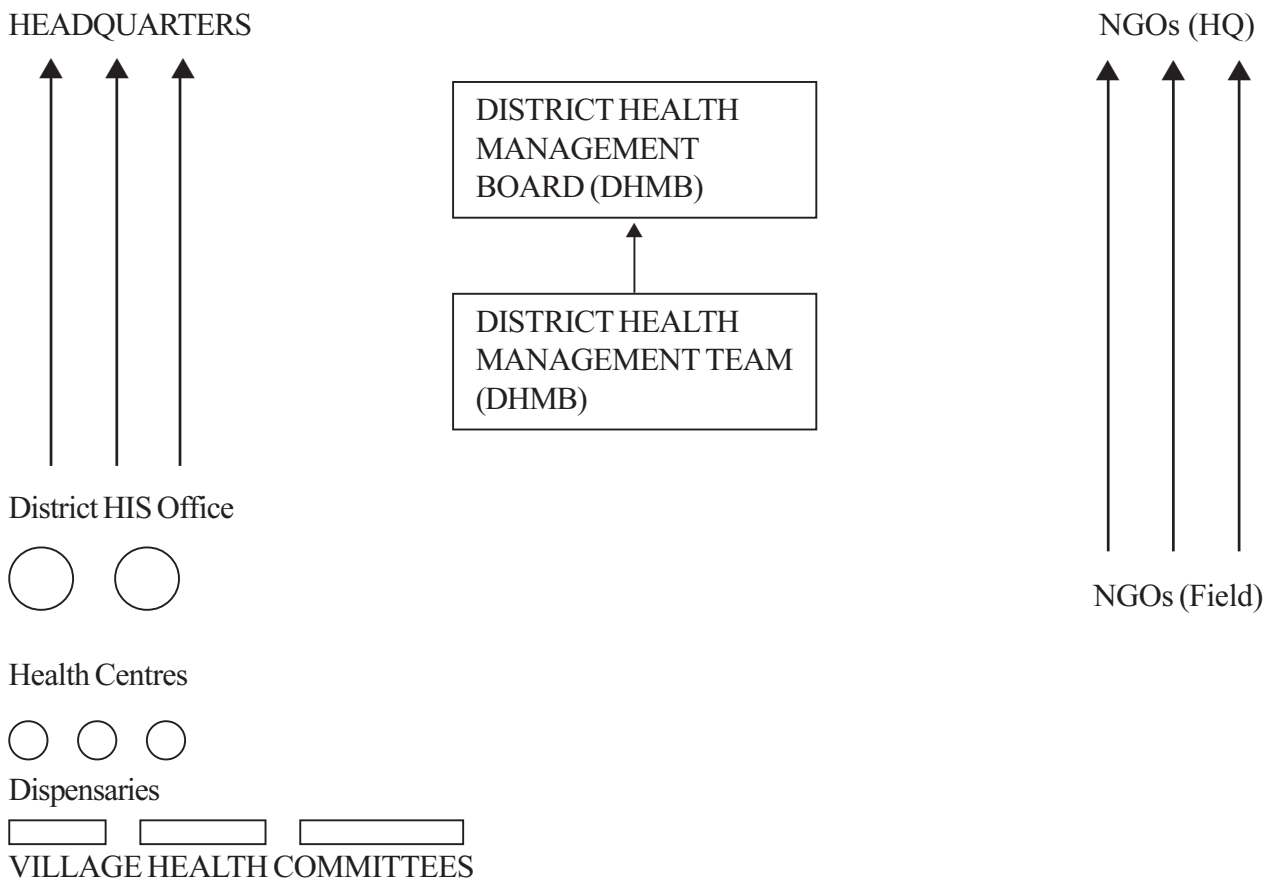
Health management information systems (HMISs) have been recognized as an integral part of a health system infrastructure. They facilitate information-sharing among all stakeholders at all levels of the health system about experiences, lessons and best-practices elsewhere. The MoH, Kenya is still struggling to strengthen its facility-based DHMIS. The introduction of the CHMIS was therefore an innovative idea aimed at enriching the data and improving the collection and use of health information. Pre-occupation with the DHMIS had tended to overshadow the use of community data. The main objective of this CHMIS was to extend to the VHCs, facility-management committees (Health Centre Management Team - HCMT, and Health Centre Development Committee - HCDC) the same advantages enjoyed by the DHMT: ready access to a range of information needed to signal problems and to plan the appropriate responses.

Kenya's health system operates in line with Primary Health Care (PHC) which is based on a central principle of community participation, including participation in the planning and monitoring of PHC services. To carry out those functions, DHS

managers in Bungoma felt that communities needed the type of information that they could use for planning and monitoring their own health activities. What hampered proper identification, planning, action and supervision - at both district and community levels - was the lack of any kind of system usable to collect management information. A good deal of information was recorded in the facilities, collected by the Health Information System (HIS) offices at the district hospitals and then sent off to the HIS offices in Nairobi, headquarters of the MoH. As shown in Figure 1, this flow of information bypasses the very management groups that need it most: the DHMT and the facility-based teams and committees. It is rarely fed back from headquarters - and if it is - it comes far too late to have influence on management decisions. The VHCs, if they exist as a consequence of community-based primary health care initiatives, are often isolated from their nearest health centers or dispensaries. Also, it is rare that Non-Governmental Organizations (NGOs) at either the headquarters or field levels, exchange information with the various MoH management groups and committees.

It was felt that a CHMIS could meet these needs. Previously the communities had no such information,

and therefore had to depend on information from the health system to identify their needs, set their priorities, and monitor progress. Although in some districts the health system was able to provide this information, it could only do this for a few communities in their catchment areas. The implementation of the CHMIS in Bungoma DHS was seen as relevant to the most common health and administrative problems occurring at the facility and community levels. The CHMIS was to complement the DHMIS which was already being used in the DHS by the DHMT; although, in some cases, the community and the health system would use the same data (Reynolds, 1988). No population-based community health system can successfully stand alone. It needs to be linked to referral services for curative and rehabilitative care at the health facility in the catchment area. In the rural areas, government health facilities should provide these services. Thus this CHMIS was an integral part of the Bungoma DHS. The focus only shifted from the peripheral facility to the communities in the catchment area served by the health facility. The community added another management level to the DHS, with its own information needs.



**Figure 1: A Fragmented Health Management Information System**

In the Bungoma CHMIS, the community, with supervision from the facility staff, was to collect its own data, analyze it and produce information which was to be used to decide which health problems the community needed to address. The basic objective of data collection by CHWs was to improve their own work, management and output. Through such an arrangement, the community was enabled to address some of its health-related problems with its own resources (for example, construction of latrines). Others health-related problems required assistance from the health system (for example, immunization of infants).

### **The Operation of the CHMIS**

Community-based systems include local community participation in planning, managing, and responding to the system and its information (Marsh, 2000). In this case, the main strategy was to involve all stakeholders - community, DHS staff and donors - in all the stages of its implementation (the design of the system, development of the data collection tools, building of the implementers' capacity and dissemination and use of the information generated). The community members together with the health facility staff developed a comprehensive, concise CHMIS, integrating data from both the community and the facility. This CHMIS was introduced at the time when health resources for the expansion of the health system's planning and monitoring were on the decrease. Thus it was in the interest of the DHS that communities took a larger role in planning and monitoring their own PHC services. It challenged the existing health information system by using a bottom-up approach to discover community health needs and was a comprehensive source of information, covering all those who need particular health care or all who suffer from a given condition in the population (Oranga and Nordberg, 1997). Through this approach, communities at risk were identified. The context in which the system was introduced was a pattern of committees which encouraged and ensured a high degree of community participation in the management of local health services.

The KFPHCP began its PHC programme by using community collaboration as a fundamental programme principle. The community identified from its members people for training as voluntary community health workers, after which they were attached to the government health centre or dispensary in the catchment area. They were accountable to health boards comprising of community members. The simplest method of data collection for CHWs and their supervisors was a family or household card. The card

was used to record the status of the household composition, which identified individuals in vulnerable groups (pregnant women, children under 5 years, the disabled, the chronically ill etc.), the household environment, water supply, housing, excreta disposal, garbage disposal, socio-economic aspects etc. The amount and detail recorded depended on programme objectives and data use, and on the understanding and literacy of the CHW. The ongoing information collection during subsequent visits included recording of information on the CHW inputs such as home visits (when, what was done), drugs distributed, and public health activities. The communities were thus able to carry out problem identification, planning, specifying the types of activity and support needed, and evaluating the status of their basic minimum health needs. In this way, communities became more aware of their problems and their level of achievement.

### **Management and Supportive Supervision of the CHMIS**

The decision-making structure at the community mirrored that at the district level. Where the DHMB worked with the DHMT, the HCDC worked with the HCMT. The management of the CHMIS was under the control of the VHC whose composition was decided by village members at a public meeting of the village members. The HCDC was made up of representative chairpersons of VHCs in the facility's catchment area, and was chaired by one of them. The Officer in Charge of the Health Centre was the secretary of the HCDC, and there was one other staff representative in the committee - the Public Health Technician (PHT). Community members had input into how outreach workers were supervised in collecting data and communicating with households. The HCDC met quarterly. The HCMT met monthly and was made up of the Clinical Officer, Public Health and Administrative staff based at the local Health Centre. It was responsible for the technical implementation of the plans of the HCDC. Supervisory activities involved making field spot-checks by the immediate supervisors and members of the district level and MoH to ensure that implementation was within the agreed plan. Such supervision empowered the community by ensuring that information was regularly fed back to the community and that community members were trained to interpret data.

While the DHMIS used a series of 26 forms, the core package of this CHMIS was a set of 14 report forms; six dealing with health issues, seven with administrative matters and one recorded highlights of the reports from various VHCs within the catchment area of a particular health facility. Most of the information

needed for the CHMIS did not have to be generated or collected afresh - it was already available from the routine DHMIS in the facilities. The CHMIS collected information on the following areas:

1. Major health problems
2. Immunization coverage
3. Inpatient and outpatient service statistics
4. Maternal Child health, family planning and nutrition.
5. Water, sanitation, hygiene and vector control.
6. Health education and training - venues and topics.
7. Finances - revenue and expenditures.
8. Transport - maintenance needs and costs.
9. Maintenance of buildings and equipment.
10. Supplies - availability of drugs and shortages of other supplies.
11. Personnel - vacancies, workloads and training.
12. Meetings and reporting rates.
13. Support supervision.
14. Highlights from Village Health Committee Reports

These reports were completed each quarter, and, with the exception of Report 14, the other forms also had space for recording data for each quarter of a whole year. The topics had been identified by groups of health facility staff and lay committee members as important for the running of community health services. The intention was not to collect as much information as possible on these topics - but only that data crucial in indicating ("flagging") whether health problems in the area in that aspect are being dealt with effectively and whether the administration of the services is running smoothly.

The CHMIS was seen as a management tool, to provide the information necessary for tackling the common health problems that occurred within health facilities and in community-based health care activities. The reports were to be completed each quarter, and a review of these reports was expected to reveal which topics and issues could make up the agenda of the quarterly meetings of the HCDC.

On the back of each form there was space for noting the decisions made at the HCDC meetings:

- What needs to be done?
- Who will do it?
- By when?
- Resources needed?

Also, there was a section for recording the targets set

by the committee. The final sheet (Form #14) served two main purposes:

- For the HCDC itself, it acted as a summary of the key data arising from all the 14 quarterly reports.
- For the community, it acted as a means of informing the public about the local health services.

#### *Dissemination and Feedback Systems*

A properly designed CHMIS must have well-defined and efficient channels of information dissemination and feedback systems. Since the consumers of this CHMIS information were primarily community members, the majority of whom were semi-illiterate, the form and means of disseminating the information was made easy and simple to be understood by them. Simple frequency distributions and graphical presentations were used for the local communities. During the operation of this CHMIS, a lot of information was generated. The information generated was often required for other intermediate interventions to be instituted. Hence a feedback system was connected to all activities going on within the CHMIS. It was found to be efficient and dynamic enough for monitoring changes taking place at any time within the community. Dissemination of the information was carefully done. It was mandatory to ensure the confidentiality of the information relating to individual households. This was given top priority to guarantee the continued participation of the households in the CHMIS. In order for the information to reach many users, the dissemination was carried out during public meetings; social and religious gatherings by women's groups and churches were also used as alternative venues. Whenever finances allowed, seminars and workshops for community leaders were organized. It was important that the information generated by the CHMIS was forwarded to the nearest health facility in order to solicit support and appropriate interventions by mobilizing resources set aside for such activities in the district. The feedback system sent back views and responses from the higher levels through the same channels.

Since there were bound to be resource constraints, it was important to anticipate problems in supplying all HCDC members with copies of all the 14 CHMIS report forms for each quarterly meeting. This is why it was decided to include space for all four quarters on one form, simply to save paper and photocopying costs. The CHMIS data was to be shared with the public who used the health facility and its outreach

programmes. Dissemination of this information was done by simply posting the sheets on the notice board at the local health facility.

For the general public, the most captivating data were presented, such as:

- The three most frequent diseases.
- The three major causes of death.
- Number of children not vaccinated.
- %age of undernourished children.
- %age of households still without safe water.
- %age of households still without latrines.
- Number of schools without adequate sanitation.
- Number of days most drugs were not available.
- Number of theft cases reported within the health centre.
- Major repairs completed.

### Strengths

This CHMIS model embraced the key requisites of PHC: equity, empowerment and effectiveness. Affordable programmes must be cost-effective. Equitable programmes target risk groups and must be accessible. Programmes that empower communities are likely to be acceptable since communities participate in guiding them. In every community there are groups whose needs are relatively neglected: women and girls and the poorest members. Without information from all segments of the community, these inequities cannot be demonstrated. Through the household card system, this CHMIS was able to identify and respond to those in greatest need. This CHMIS reached every household in a community and demonstrated improved health among the previously unhealthiest members. Information from the CHMIS galvanized communities, the DHS and the donors to action. Access to this broader health information improved the ability and willingness of the communities to analyze local problems and take action.

This CHMIS encouraged community participation in PHC and it lessened the burden on the health system to do everything for the community. Effective participation also leads to empowerment. A prerequisite step of empowerment is enfranchisement. That is, a community will not support the development of such a CHMIS unless it is perceived to address important local problems. This CHMIS empowered the local communities through provision of accurate and timely information. The communities received and were able

to interpret the information the CHMIS generated. The communities, especially CHWs worked closely with PHTs and Enrolled Community Nurses to immunize all unimmunized children identified through this CHMIS. The health interventions met the needs identified by the CHMIS.

The CHMIS forms were only a means to an end. They were a tool for giving warning of any serious health trends that needed attention, for identifying health problems that needed to be solved, and for helping one make appropriate decisions. CHWs had the advantage of being present in the community when activities and events took place and could therefore provide first-hand information. The CHWs were also accepted and known to the people in individual household and therefore could get all the required details, compared to health workers in the DHMIS.

Issues of data validity, reliability, accuracy and completeness were tackled through training the community health workers involved in CHMIS operations. The Bungoma CHMIS indicates two things: one, the communities can manage and utilize the information generated, and two, the communities are likely to be willing and able to do this if it is in their self-interest and gives them control over health priorities and resources. The CHMIS source was comprehensive since it covered all those who needed particular health care or all who suffered from a given condition in the population. Data collected by the CHMIS was limited in scope and easy and relevant for direct use by the community.

### Weaknesses

The development and operation of the CHMIS was faced with several constraints and limitations. The problems included inadequacy of qualified and dedicated community volunteers to run the CHMIS on a voluntary basis, making it very difficult to obtain continuous information from the entire community; CHWs were volunteers and were not used to handling quantitative information; lack of incentives and supervisors; inadequate financing of the information resource centres; adverse impact of external social and economic forces were at times detrimental to community participation in development projects; lack of medical backup for cases identified as seriously ill in the respondent households (for the CHWs, it was felt unethical to visit a household for the sake of gathering the needed data, but fail to assist the critically ill persons encountered during routine sessions of the CHMIS); difficulty in the harmonization of the CHMIS with the DHMIS.

## Conclusions

The CHMIS grew from a need to achieve equity in health in a participatory, accountable way. Designers of this system sought to provide services to those most underserved and to empower the powerless. At the DHS level, the planning cycle of community diagnosis, risk group identification, response implementation and monitoring, relied on information from the CHMIS.

Most HMIS project failures have been attributed to the fact that important actors and partners were not fully involved in the project conceptualization, design and implementation. Although normally the conceptualization of a CHMIS project takes place outside the community, it still has to address itself to problems or needs related to the community at hand. The early involvement of the community and local health workers in a participatory CHMIS helps to develop commitment to the CHMIS project and facilitates its smooth implementation. To this extent, the Bungoma CHMIS experience indicates that all necessary precautions were taken to involve the local communities at all the stage of the implementation of this CHMIS.

Two important principles can be drawn from the Bungoma CHMIS. First, although DHS staff may assist communities in conceptualizing, designing, implementing and utilizing the CHMIS, the community must use the system to make its own decisions. Otherwise if the DHS staff decides for the community what is needed, this will become a facility-based HMIS and not a Community-based HMIS. Clearly, there is a fine line between helping community members to interpret data and telling them what the data say they need. This principle is fundamental and well-understood in all fields of adult education. People learn best by doing, not by having someone else do it for them. Second, communities must see a benefit to themselves in operating a CHMIS.

The basic premise to be adopted in the development of any CHMIS model is that it should be designed with a focus on improving the health status of the community. The goal should be to reduce morbidity, disability and premature mortality and improve efficiency in health care delivery. A CHMIS must collect only relevant information needed by the community for their own use and should avoid gathering too much unnecessary information which is not of immediate use.

In view of the existence of these two systems (DHMIS

and CHMIS) within the same MoH system in Kenya, there is need to harmonize them in order for each one of them to complement the other. Since any CHMIS is supposed to support the DHMIS, compliance with the MoH guidelines is mandatory and important for the long-term sustainability of the system. For such a system, the local health workers at the facilities should be placed such that the information generated passes through them for any referral and prompt action that may be necessary as in the case of epidemics outbreak. It is normal to engage the nurses and clinical officers-in-charge of the nearest health centres and dispensaries as first-level supervisors of the CHMIS. Ultimately, all data collected must be accessible to the same health workers before onward transmission to the higher levels of the DHMIS.

Techniques and instruments for data collection are among the most important components of a CHMIS. The methods and questionnaires for data collection should be simple to understand, easy and cheap to implement and fast to analyze, comprehend and interpret. They should be capable of producing timely information without unnecessary cost, bearing in mind the meager financial and physical resources available within reach of these communities. Moreover, most people in these communities are semi-literate and should not be loaded with complex statistical survey methods and bulky questionnaires. The number of questions included should be minimal and should only solicit the information identified by the community as their priority needs for local health care planning and management. The questions should be simple, clear, precise and unambiguous. It is only then that valid, consistent, and comparable information can be obtained.

A high degree of standardization is advisable to ensure that data collected by the community is also relevant for District and Ministry of Health planning. Community-generated data and data sets of the DHMIS should not be viewed as competing, but as complementary. Ideally, they should enhance co-operation where common objectives are identified, stimulate debate about health priorities, and increase community participation in health planning and monitoring. The current status of CHMIS is worse than facility-based DHMIS. The MoH, Kenya is still struggling to strengthen its DHMISs, a pre-occupation that has tended to overshadow the development of CHMIS. Given that any CHMIS is supposed to complement and support the DHMIS, urgent and serious attention needs to be focused on developing CHMISs countrywide.

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