

TANZANIA HUMAN RESOURCE CAPACITY PROJECT
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PRELIMINARY DRAFT

ANALYSIS OF HUMAN RESOURCES INFORMATION
at
30 Faith-Based Hospitals Implementing the HRIS

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List of Acronyms

- APHFTA - Association of Private Health Facilities of Tanzania
- BAKWATA - National Muslim Council of Tanzania
- BMAF - Benjamin William Mkapa HIV/AIDS Foundation
- CCHP - Comprehensive Council Health Plan
- CHMTs - Council Health Management Teams
- CSSC - Christian Social Service Commission
- DC - District Council
- DHRO - District Human Resource Officer
- DMO - District Medical Officer
- FBO - Faith Based Organization
- FY - Fiscal Year
- GOT - Government of Tanzania
- HRH - Human Resource for Health
- HRIS - Human Resource Information System
- HRM - Human Resource Management
- HSSP III - Health Sector Strategic Plan III
- ICT - Information and Communication Technology
- ICTO - Information and Communication Technology Officer
- iHRIS - Open source HRIS software developed by IntraHealth
- IMA - IMA World Health
- LGA - Local Government Authority
- MOFEA - Ministry of Finance and Economic Affairs
- MoHSW - Ministry of Health and Social Welfare
- M&E - Monitoring and Evaluation
- OPRAS - Open Performance Review and Appraisal System
- POPSM - President's Office Public Service Management
- PMO-RALG - Prime Minister's Office Regional Administration and Local Government
- PMP - Performance Monitoring Plan
- RAS - Regional Administrative Secretary
- THRP - Tanzania Human Resources Project
- USAID - United States Agency for International Development
- UDSM - University of Dar es Salaam

1. Background

The Tanzania Human Resources Project (THRP) was a four-year project funded by the U.S. Agency for International Development (USAID) and led by IntraHealth International. In the THRP, the Christian Social Services Commission (CSSC) was responsible for leading the HRIS implementation in the faith-based and private sectors with technical assistance provided by IMA World Health (IMA). An overall goal of the THRP was to support Government of Tanzania (GOT) efforts to address challenges that the country faces in developing an adequate health and social welfare workforce in order to strengthen the delivery of health and social services.

THRP Strategic Objectives

One of the primary challenges faced by the Tanzania Human Resource Project (THRP) was to implement and establish a Human Resources Information Systems (HRIS) in the FBO and Private sectors within a context that comprises a complex system of public and private professional and paraprofessional cadres, as well as those in the non-formal sector. Over the years the GOT has adopted various health system policies and structures in attempt to deal with this complexity in ways that could more fully integrate health and social welfare workforce operations across all sectors of the health system. Unfortunately, a resulting side effect of these attempts to move all sectors into uniformity is an unclear, fragmented and inconsistent adoption of standards, not only between FBO/Private/Public sectors, but also within distinct areas of health practice across these sectors. This situation is not unique to Tanzania, it is evident in nearly every health system impacted by the HRH crisis. Therefore, an underlying theme of this report is that the absence of a unified framework to establish consistent understanding about HRH staffing norms prevents a clear view of global HRH capacity, precludes effective national planning and allocation of resources and promotes broader confusion and even corruption, especially at local levels; and it severely limits HRH information exchange required to promote health development objectives.

The overall goal of IMA World Health in the THRP was to provide technical assistance to the Christian Social Services Commission (CSSC) in improving project performance, strengthening HR management capacity, orienting new users on the use of HRIS tools, and strengthening the application of HRIS & tools at FBO and Private Sector networks (CSSC, BAKWATA and APHFTA). Throughout the project, IMA provided technical assistance through data and systems guidance, new user training and human resource management training in pursuit of the following specific objectives:

1. Specific Objective 1.0: To advocate using Human Resource for Health Data in Decision Making at all levels (Government and Private Sector) by April 2013.
2. Specific Objective 2.0: To improve Human Resource Management skills (retention and statistical analysis) at all levels (CSSC, BAKWATA and APHFTA) by April 2013.
3. Specific Objective 3.0: To improve data collection, entry, analysis, storage and utilization of HRH in the Human Resource Information System at all levels (National, zone and facility) on the Private Sector by April 2013.

In addition, the following unified strategies were applied to more clearly focus activities in meeting the specific objectives to accomplish the overall goal:

- Improve quality of HRH data by assisting further dissemination and adoption of clarified standards and by strengthening data entry skills, methods and QA/QC tools & procedures.
- Increase utilization of HRH data at all levels by strengthening HRM reporting, analysis and data management practice, applications and increased understanding of system capabilities.
- Improve the technical skills of HR and IT staff in targeted positions responsible for data quality, analysis and use by strengthening links between HRIS and HRM efforts at zone to district levels.
- Improve communication efforts on THRP implementation scope, scale and system capabilities by strengthening project related documentation and presentation materials.
- Promote sustainability by improving data quality, improving skills of HR and IT staff through further training and linking of efforts, and by strengthening documentation and communication efforts that will primarily focus on increasing data demand for HRH information use.

During the four project years, CSSC was responsible for managing HRIS implementation and coordinating HRIS deployments at APHFTA, BAKWATA and CSSC facilities. The map below shows **THRP Team** coverage and deployment sites around Tanzania. A listing of these facilities and their implementation and training status is also provided in **Annex A**.

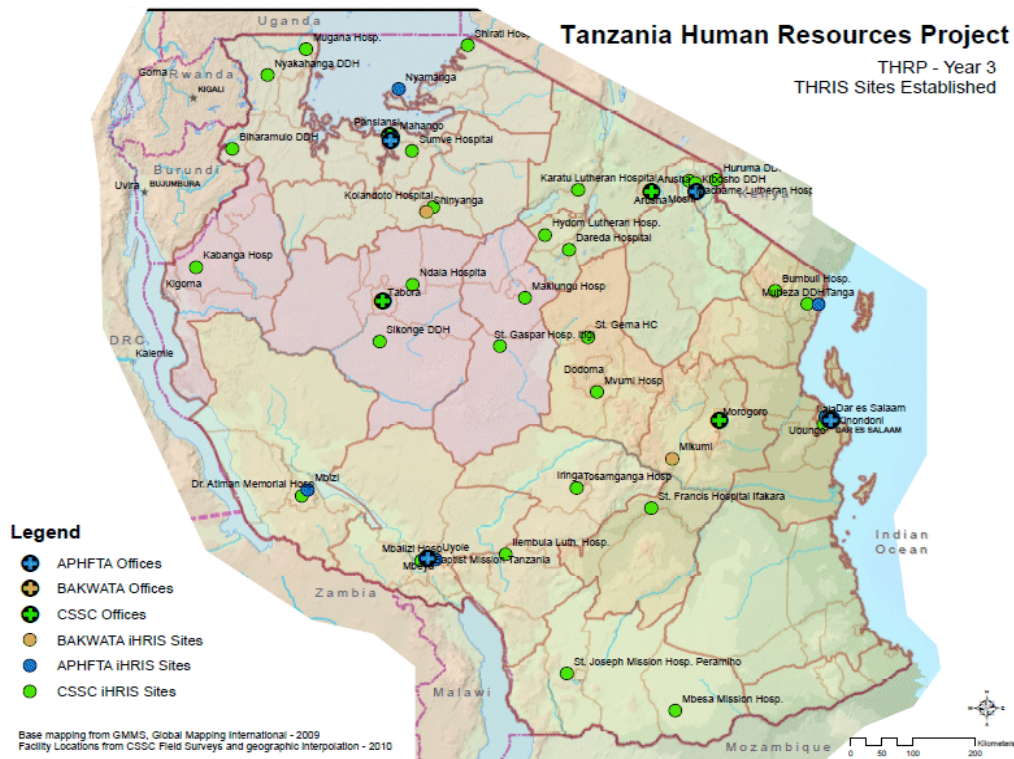


Figure 1: THRP iHRIS Deployment Site Locations

2. Results

2.1. System

The map in **Figure 1** above shows the location of primary iHRIS server appliance deployments. These servers were set up and networked at 6 CSSC offices, 5 APHFTA offices and 1 BAKWATA office. The map also shows the location of 45 CSSC hospitals, 16 APHFTA health facilities and 3 BAKWATA health facilities where the iHRIS Manage web-based software was successfully deployed for health facility staff to collect and enter HR information on their personnel. In addition to the data entered by health facility staff who were trained to use the software at each of these locations, APHFTA, BAKWATA and CSSC zonal and HQ personnel also entered HR data on personnel from many additional smaller facilities. The resulting HR data collected from CSSC health facilities alone comprises almost 17,000 HRH personnel records so far.

The CSSC health network includes over 830 health facilities of various types, with 91 of these being hospitals. **Figure 2** below shows the location and distribution of all CSSC health facilities, symbolized according to type, as reflected in the legend. The system currently carries HR data from all 95 FBO hospitals and almost 300 additional health centers and dispensaries to date.

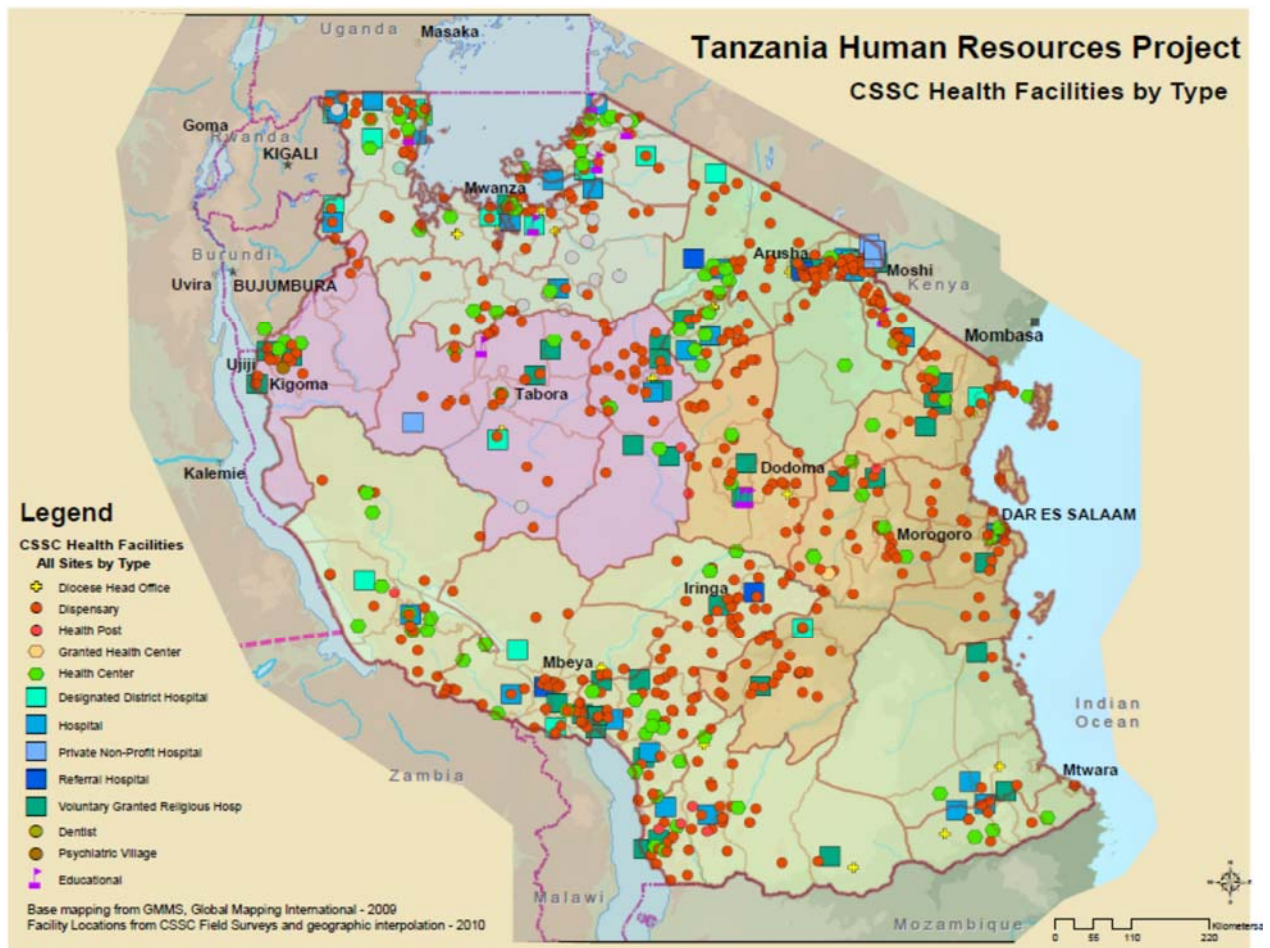


Figure 2: CSSC Health Facility Locations by Type

In terms of results in system implementation activities related to site assessment, Internet provision, hardware, software installation, customization and new user training, the project's achievements exceeded goals and objectives for the national level implementation and deployment. The CSSC Final Project Report details the results, lessons and sustainability factors associated with the implementation activities, whereas this report focuses on the resulting HRH data and approaches to system configuration that will hopefully inform subsequent HRIS implementation activities and ongoing improvement to HRH in Tanzania.

While deploying web-based technology was new to everyone involved, helpful assistance in software customization was provided to the THRP CSSC team both from developers at IntraHealth International and from the University of Dar es Salaam, in addition to the project being well supported overall by the IntraHealth Tanzania office.

Much of the success of deployment efforts was related to significant advocacy that was led by CSSC, with participation of other partners, during the first two years as part of sensitization, orientation, training and outreach at all levels. Through these efforts, and subsequent follow-up and training activities performed in year three, the knowledge of HR management practice and the importance of quality HR data, especially at management levels throughout the FBO health sector, was greatly expanded – and hundreds of FBO, private and public HRH stakeholders came to understand the strength and value of implementing the iHRIS through the THRP.

While the functional capabilities and technology transfer through HRIS deployments at all implementing facilities is a tremendous benefit to the overall health sector in Tanzania, these advocacy efforts exponentially increased HRIS interest and understanding of HRH issues all over the country. In addition, the activities and achievements related to knowledge transfer through HRM trainings also provided great benefit to government HRH management, health planners and health care workers regarding the key role of HRIS in HR management practice.

2.2. Data

This section of the report provides the results of an HR data analysis on various workforce factors using data from 30 of the CSSC hospitals that implemented the HRIS (**ANNEX B**). While HR data was collected on health workers from almost 400 health facilities, the focus of primary HR data development, supervision and quality control efforts was on the actual hospitals where the system was deployed, customized and where training was provided. Throughout the third and fourth years, follow-up supervision from CSSC HQ was performed at all of these hospitals and ongoing supportive interaction between CSSC Zonal IT Technicians and HRM/Data entry personnel also occurred. As part of these efforts, several data quality and use tools were used to monitor and guide procedures for data entry and quality improvement (**ANNEX C**).

The primary focus of these efforts was to cross-check and ensure that the specific employee information taken from the personal particular form (Employee Data Sheet - **ANNEX D**) was entered accurately into the system. The CSSC Final Project Report also describes several hospitals where specific protocols and procedures for data quality control and confirmation were put into place and the majority of HR data from all implementing hospitals was of good

quality for these key employee attributes. However, due to a variety of issues described later in this report (primarily related to health sector-wide confusion in Tanzania about MoHSW standards for employee Cadre and Job Designations) this information was either missing or too inconsistent for national level aggregation. Therefore as part of preparing this report, IMA performed reconciliation and standardization of all employee Cadre and Job Designation data on the 5,187 health workers at the 30 hospitals selected to support this analysis.

The map below in **Figure 3** shows the location of the 30 CSSC HRIS implementing hospitals that are the focus of the HR data analysis that follows. This map shows the hospitals, color coded by hospital category (type), with symbols sized according the number of personnel working there.



Figure 3: CSSC Implementing Hospitals featured for HR data analysis in this report

Several of these hospitals have medical specialists in various fields and the capacity to function as Regional Referral hospitals, able to serve the specialized needs of patients being referred from lower level hospitals. These are the highest referral point at the regional level, with bed capacities ranging from 176 to 450 comprised in 9 or more wards. A Designated District Hospital is generally the highest referral point at the district level, with bed capacities ranging from 100 – 175, and at least 7 wards (Cite). In some cases Council Designated Hospitals may actually have higher bed capacities than district hospitals, but generally they only provide basic

curative and clinical care in outpatient and inpatient settings, as well as preventive services like maternal and child health care. In some districts the government also negotiates with religious organizations to designate Voluntary Agency Hospitals that provide services similar to the public sector hospitals at this level. All of the CSSC HRIS implementing hospitals are also listed on the bar chart in **Figure 4** below that compares the number of health workers at each hospital.

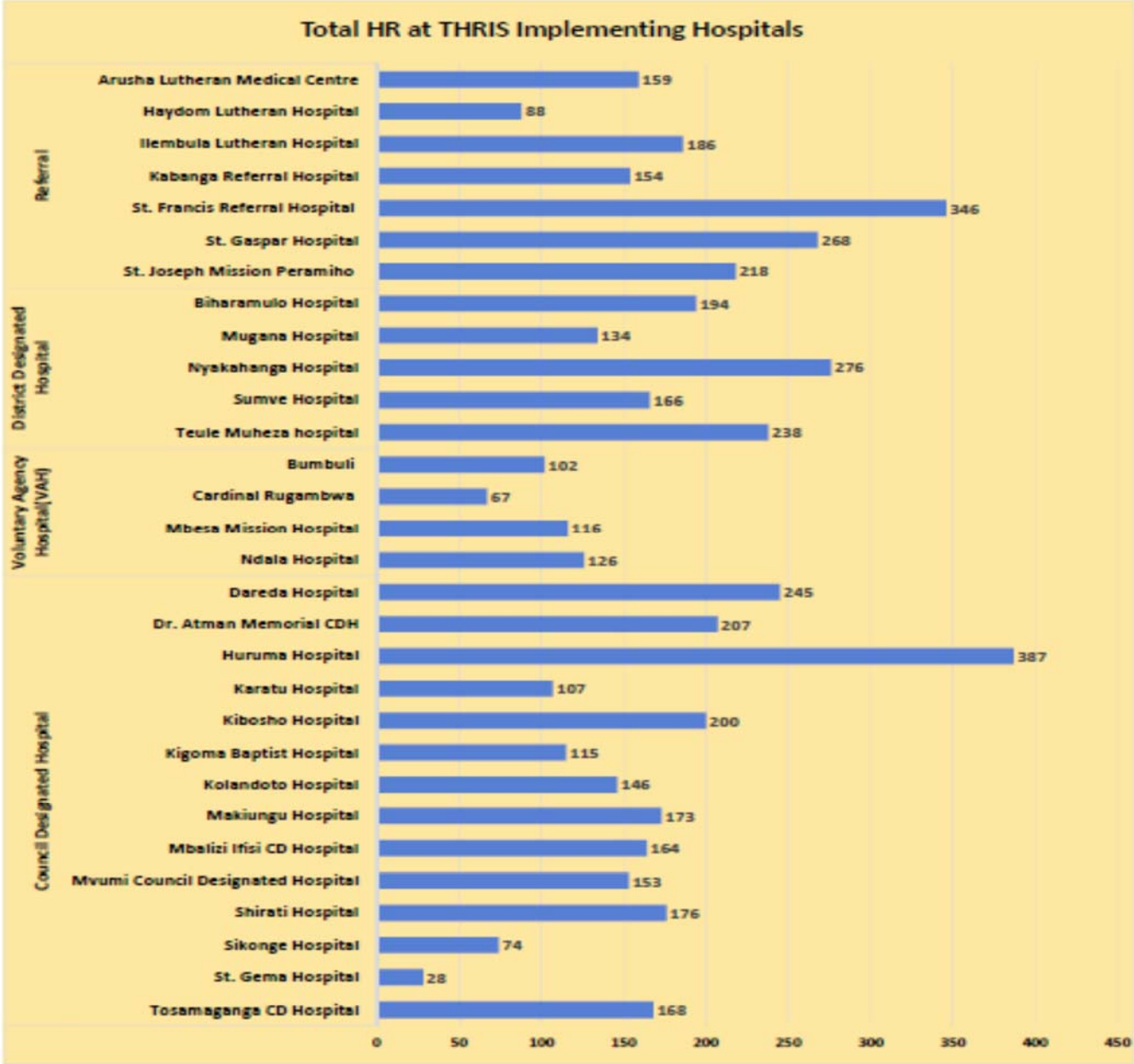


Figure 4: Total Human Resources at CSSC Implementing Hospitals in HR Data Analysis

The pie chart below in **Figure 5** shows the overall composition of the health workforce at the 30 CSSC HRIS implementing hospitals that performed data entry of the 5,187 health worker records analyzed for this final report. The workforce categories shown are based on a new data element that IMA advised CSSC to add to the iHRIS data structure. This new data element designates the

health workers by Area of Practice (AOP). The AOP categorization was first used to reconcile and consolidate the random Job Designation Titles for standardization into Job Designation and Cadre classifications. While it served as an extremely useful means of organizing health worker records by job function, the AOP data element was also very well suited for supporting the wide variety of workforce factors analyzed and presented in the charts that follow.

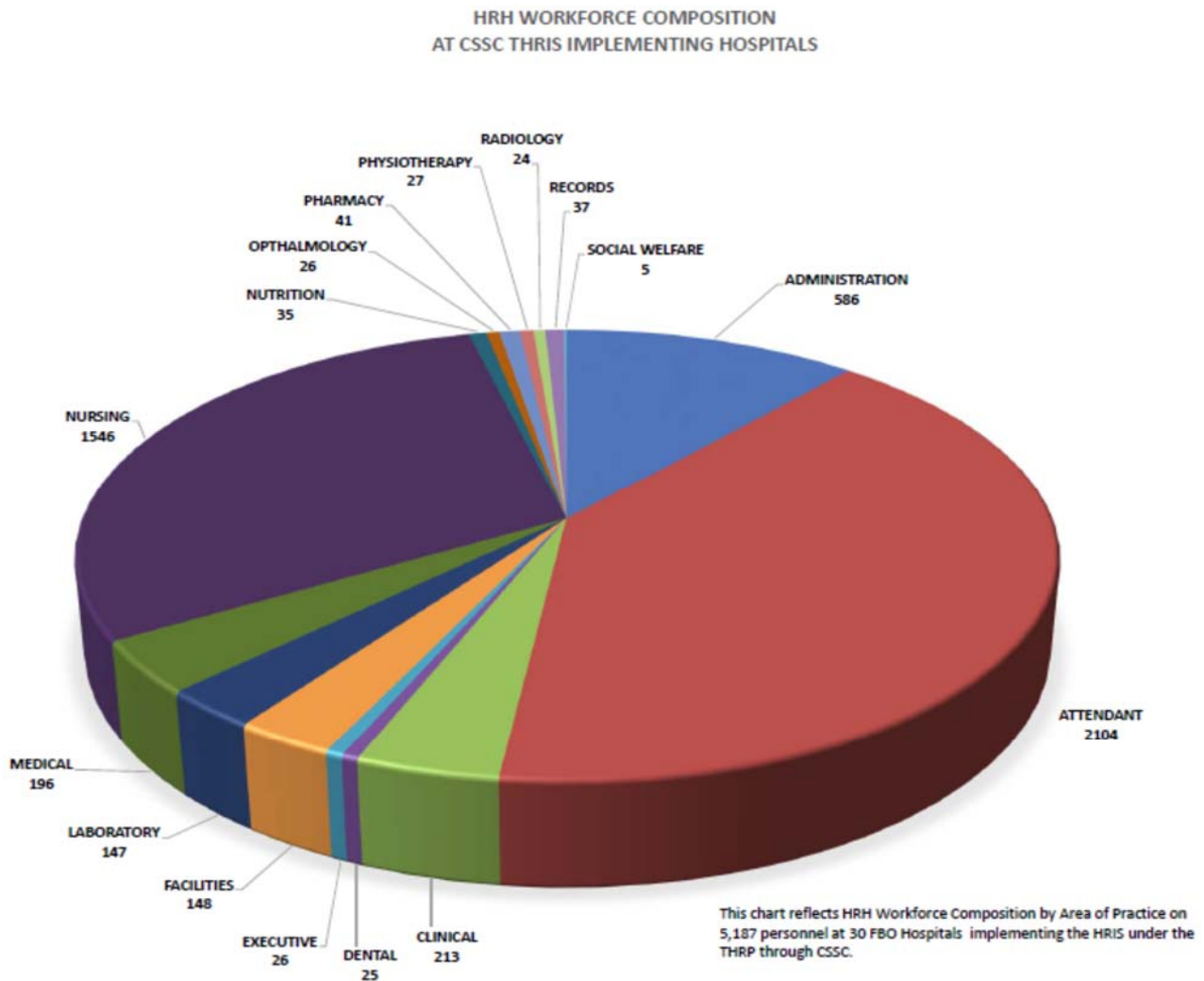


Figure 5: HRH Workforce composition at CSSC Implementing Hospitals in HR Data Analysis

As the chart above shows, the largest two segments of the HRH workforce are the Nursing and Attendant Areas of Practice. Beyond these two, there is a reasonably even distribution of the workforce across many of the other AOP categories, with the next larger segments represented in the primary care and facility support categories. More detail on the Nursing and Attendant categories, as well as those more specifically related to medical and clinical practitioners, is provided later in this analysis. However, first it is important to understand the primary division of hospital workers according to the established classification between Health and Non-health related job functions. The chart below in **Figure 6** shows

the distribution of workers across these two classifications in the overall study sample, with 902 workers in the Non-health classification and 4,284 workers in the Health classification.

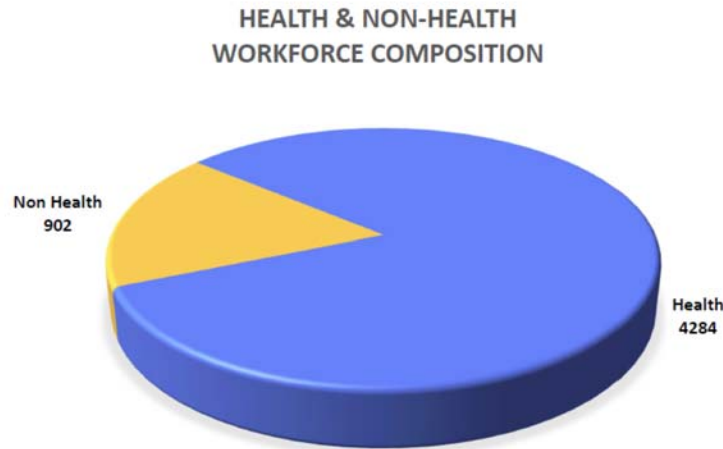


Figure 6: Health & Non-health Workforce composition at CSSC Implementing Hospitals

The next chart below in **Figure 7** shows the distribution of health workers across job functions within the Non-health classification, being primarily comprised of 586 Administrative personnel. The next largest segments represent workers involved with facilities management and maintenance. These are split more evenly between trained facility technicians and officers (148) and attendant level personnel (131) that perform more menial cleaning, laundry and maintenance functions. The fourth Non-health segment represents the 37 health workers at the selected 30 hospitals who are involved with records intake and management functions.

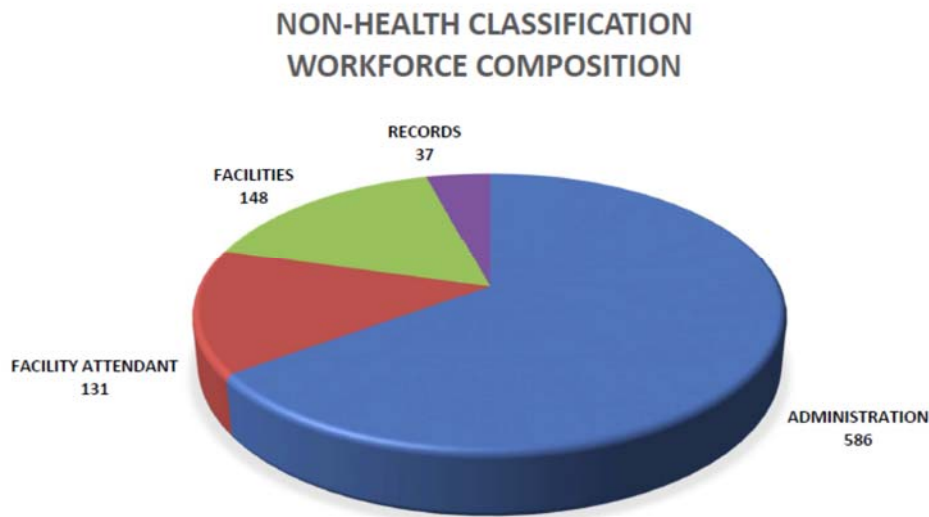


Figure 7: Non-health Workforce composition at CSSC Implementing Hospitals

The next chart below in **Figure 8** focuses on the workforce composition in the Health classification. While it is even more clear in this representation that Attendants (1973) and Nurses (1546) dominate the health workforce in numbers, looking specifically at the health classification allows for better visualization of the next three larger primary health worker segments, which are Clinical personnel (213), Medical personnel (196) and Laboratory personnel (147). Therefore these three segments will be referred to in this report as the Core Areas of Practice.

HEALTH CLASSIFICATION WORKFORCE COMPOSITION

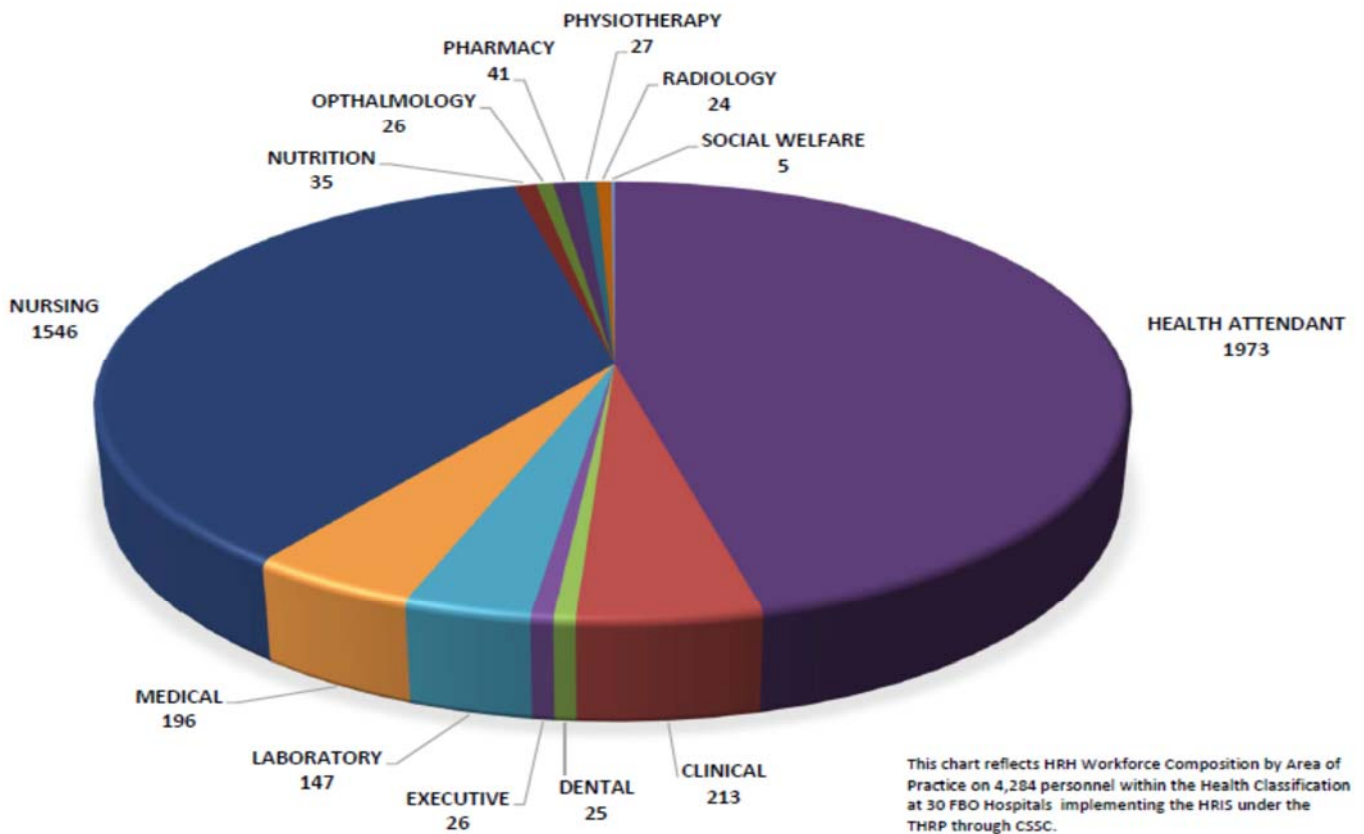


Figure 8: Non-health Workforce composition at CSSC Implementing Hospitals

Unfortunately the proportion of Nurses and Medical Attendants is not surprising given that these are the lowest level and least trained workers in the health classification, and therefore most affordable and available. This is also common in less developed settings where low resourced hospitals are not able to find or retain enough workers to meet patient flows even at the most basic levels of care, let alone trained staff to provide higher levels of care in regions where significant populations are impacted by severe health challenges and myriad other constraints. While this may not surprise those familiar with human resource issues in this setting, having the HR data and numbers to confirm this critical factor as part of the HRH crisis is very helpful, but more insight, analysis and understanding is needed in order to understand and hopefully reduce this imbalance.

The chart below in **Figure 9** shows a more detailed representation of health worker distribution across the primary Health Areas of Practice at all 30 HRIS implementing hospitals. This chart shows one series of AOP columns for each of the 30 hospitals, which are also organized by category. It is difficult to visualize the distribution of workers across all AOPs in this chart due to the dominance of Attendant and Nursing workforce segments. Therefore, to comparatively understand this aspect of workforce distribution, Nursing and Attendant segments were first studied in greater detail to understand their relative composition and hopefully provide further insight. In turn, other health AOPs were then analyzed without nurses and attendants to

improve visual clarity in comparing the remaining workforce composition. Particular attention was also focused on the next three larger health worker Core AOP segments – Clinical, Medical and Laboratory personnel.

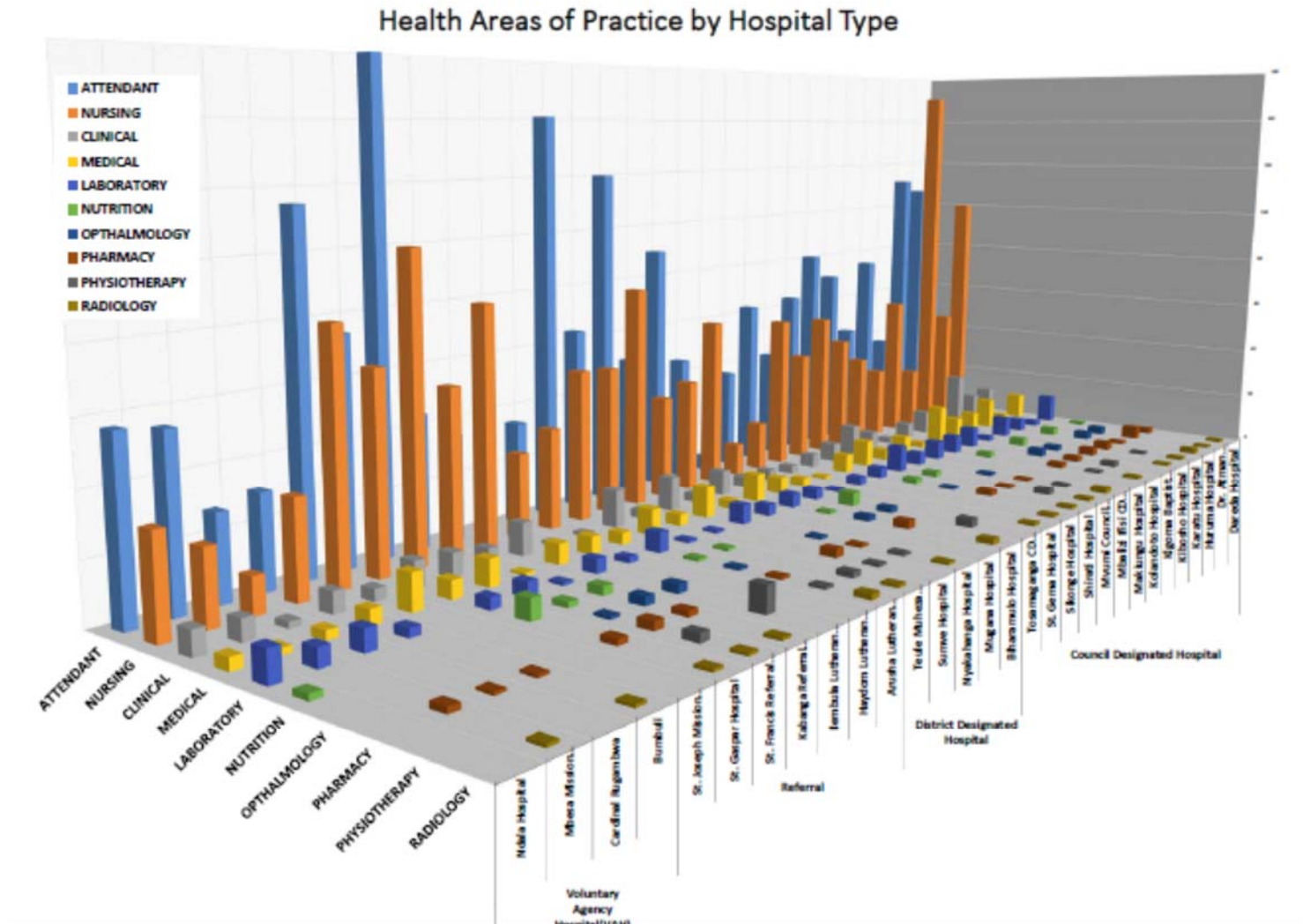


Figure 9: All Health Areas of Practice by Hospital Type at CSSC HRIS Implementing Hospitals

Medical Attendant is a generally recognized staff cadre across many Sub Saharan Africa (SSA) health systems. Specific definitions of this cadre vary widely, even within most SSA countries. Most frequently this cadre is comprised of health workers without any professional training. However in some health systems, there is a distinction between untrained attendants and Skilled Birth Attendants (SBA). Generally the higher level SBA distinction carries certification and/or registration requirements. No SBA Job Designation exists in the 2009 Tanzania MoHSW Scheme of Service (staffing norm), therefore no specific distinction could be made between SBAs and unskilled attendants. However it is clear from the CSSC HRIS data that there are widely varying levels of skill across this segment of the workforce, and this is reflected in the 2009 staffing norm, which does include higher level Principal and Senior Medical Attendant job designations.

The Attendant AOP defined for these 30 CSSC HRIS implementing hospitals consisted of all personnel records that contained “attendant” in the Job Designation Title. In total, this consists of 2,140 personnel in both the Health and Non-Health classifications (over 40% of the entire workforce being studied). The pie chart in **Figure 10** below details the composition of the Attendant workforce.

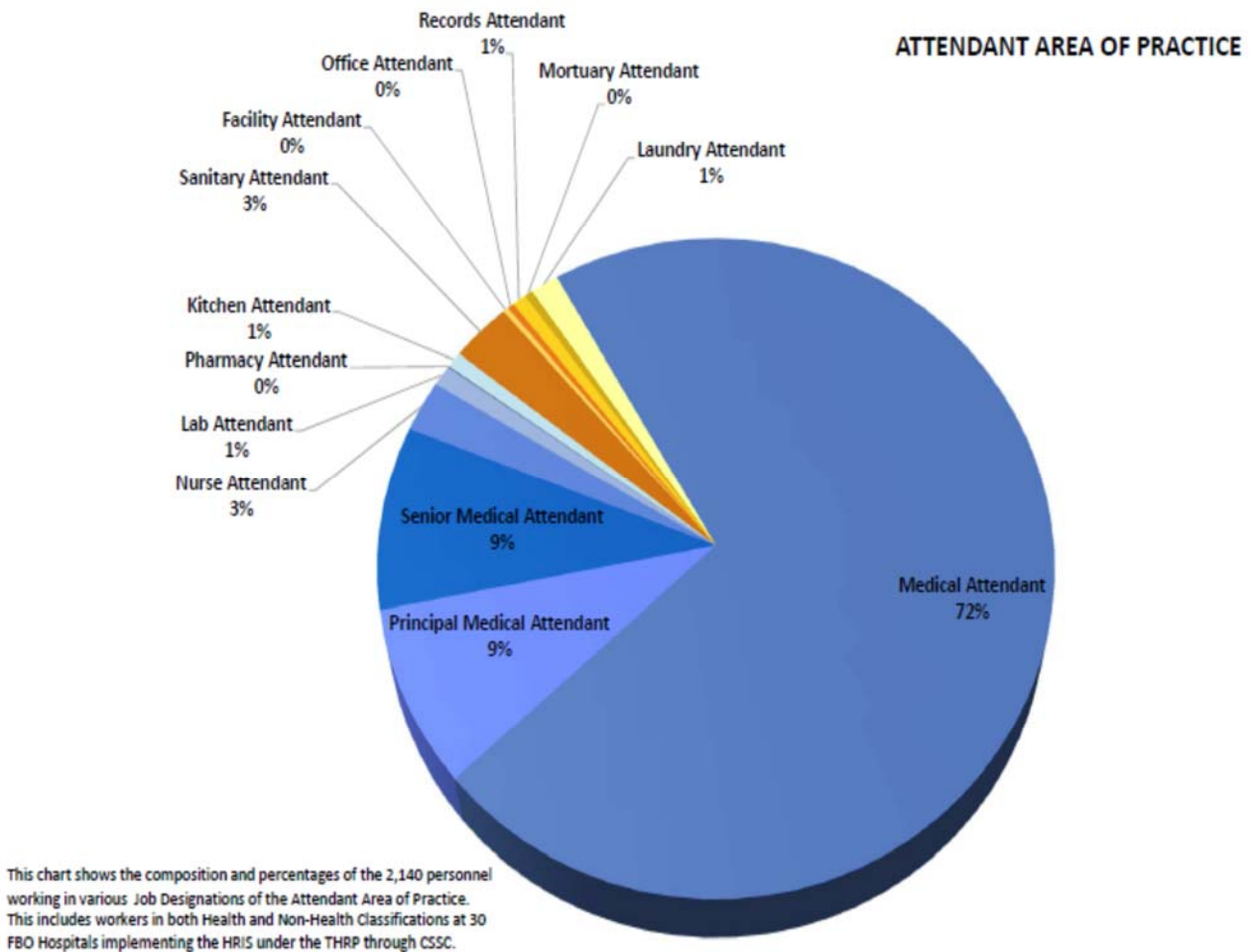


Figure 10: Attendant Area of Practice Job Designations at CSSC HRIS Implementing Hospitals

The chart shows this workforce segment, categorized according to attendant function based on further information that was also contained in the non-standardized Job Designation Title field of the database. This indicates a wide variety of specific skill sets in the Attendant AOP segment, with specific distinctions being made for attendants involved with nursing, lab and pharmacy in support of key medical functions. However, despite this more detailed classification, the HRIS still carries 1,540 health worker records (nearly 30% of the total 5,187) with no further designation than Medical Attendant, indicating the need for much further HR analysis on this huge segment of the HRH workforce.

The Nursing Area of Practice is more defined and balanced than the Attendant AOP, however the HR data still reflects some ambiguity within the Nurse level I and II cadres due to the wide variety of different nursing Job Designation Titles (over 140) that were carried in the system and consolidated into these two cadres to support system wide HRIS data cleaning as part of this analysis. Some examples of this wide variety of 140 different Nursing Job Designation Titles is provided in **ANNEX E**. The pie chart below in **Figure 11** further details the composition of the Nursing workforce.

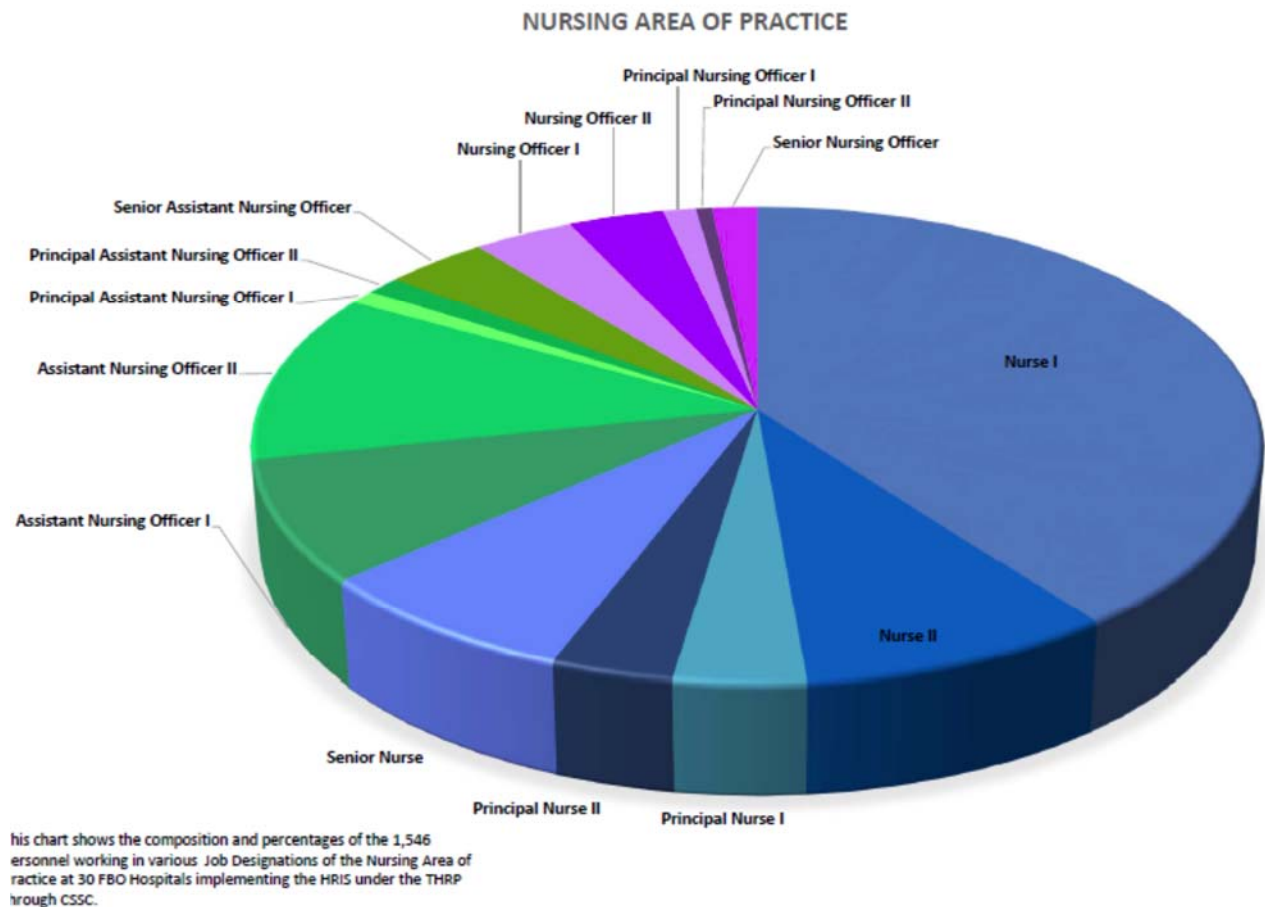


Figure 11: Nursing Area of Practice Job Designations at CSSC HRIS Implementing Hospitals

The nursing Job Designations reflected in the chart above are contained in the three nursing Cadres of Nurse, Assistant Nursing Officer and Nursing Officer. The bar chart in **Figure 12** on the next page compares the number of health workers in each of these three cadres across the 30 CSSC HRIS implementing hospitals, again organized by category. Note that, while the total number of nurses working at Referral and District hospitals is not always higher than that of other levels, the balance between cadres tends to be more even at Referral and District levels, with most also having higher numbers of Assistant Nursing Officers.

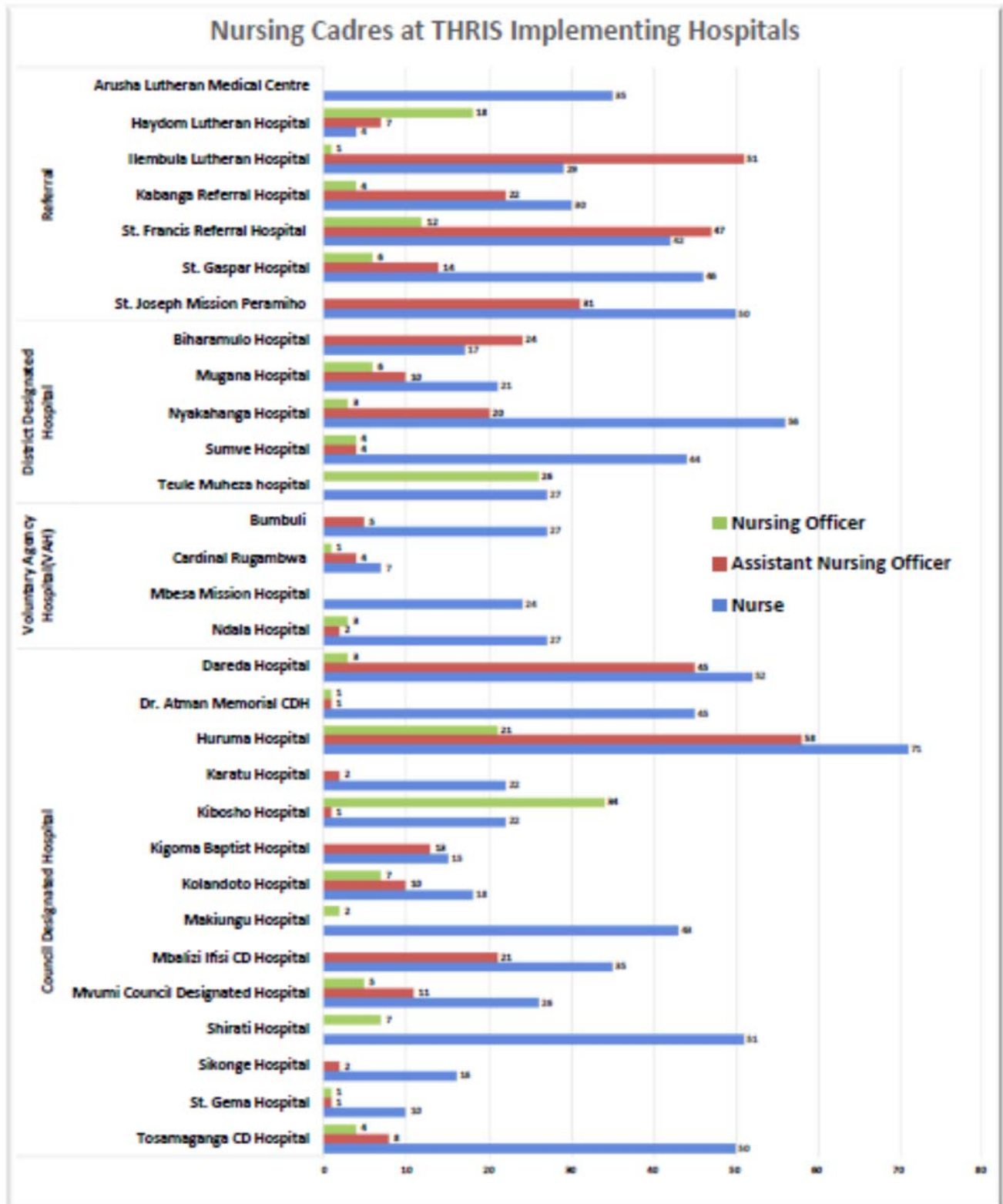


Figure 12: Nursing Cadres at CSSC HRIS Implementing Hospitals

The column chart in **Figure 13** below shows the number of personnel employed in all other health AOP's, after removing Nursing and Attendant AOP health worker segments. While this provides a clearer indication of AOP distribution across the workforce, there is still a jump in numbers between the Core Health AOPs (Medical, Clinical and Lab) and the other health AOP segments. In this chart AOP columns are grouped by hospital category, but not normalized. Therefore each category has a different number of hospitals. While there appear to be many more health workers in core AOP segments at Council Designated Hospitals (CDHs), actually there are just more CDHs in the study group at ##, compared with ## Voluntary Agency Hospitals, ## District Designated Hospitals and ## Regional Referral Hospitals. Therefore a tighter focus on groups of specific hospitals is again required to better visualize core medical capacity.

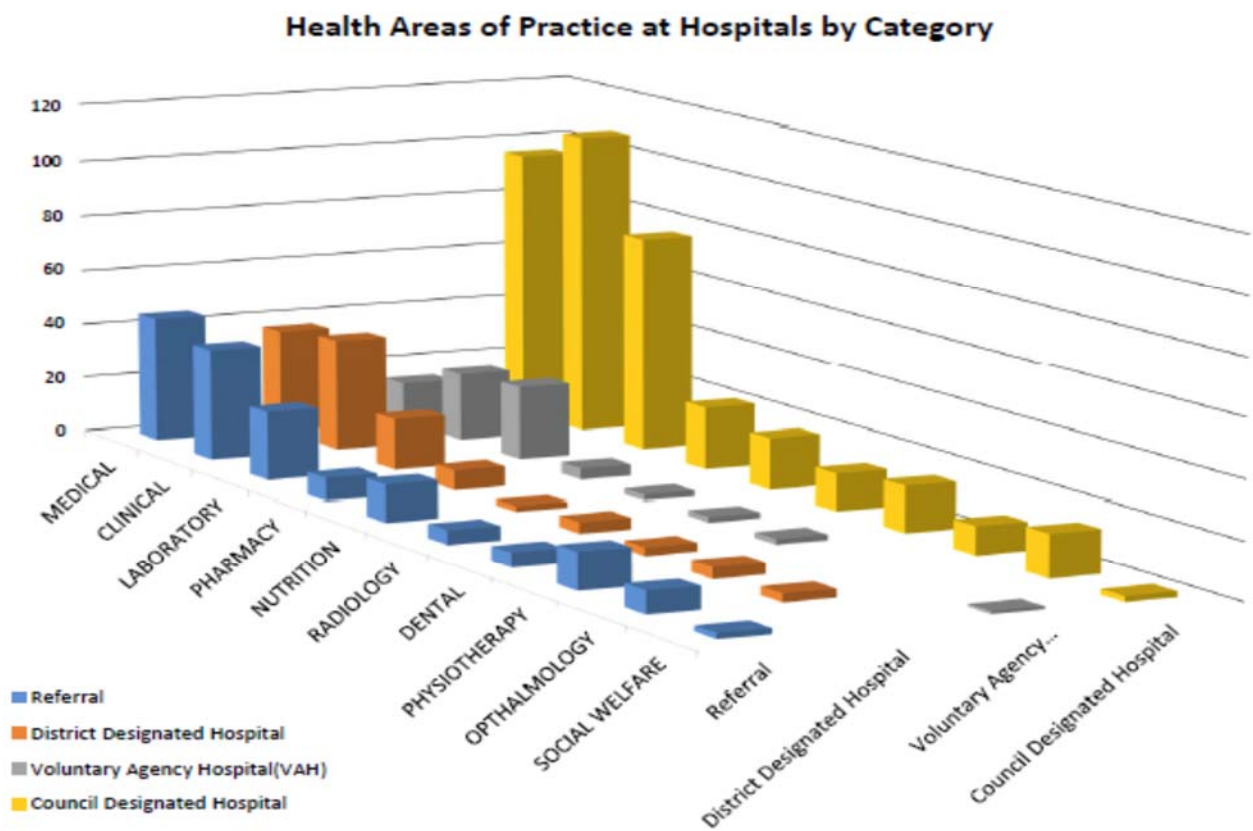


Figure 13: Health Areas of Practice at CSSC HRIS Implementing Hospitals (without Nurses or Attendants)

The more focused column chart in **Figure 14** on the next page limits the study set further to Core AOPs at only Regional Referral Hospitals and District Designated Hospitals. By taking the chart down to this level of focus the relative strengths and weaknesses in core medical capacity become much clearer. This visual approach to workforce analysis adds clearer specificity to HRH capacity at these FBO hospitals and can greatly strengthen insight for workforce allocation, national planning and policy.

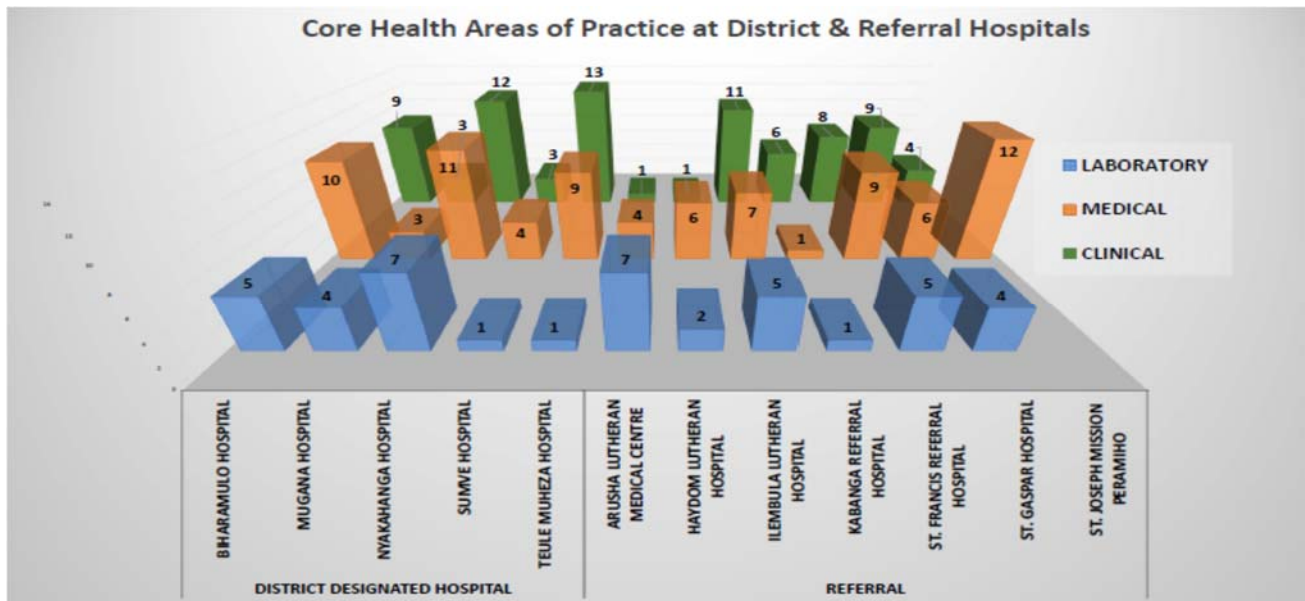


Figure 14: Core Health Areas of Practice at CSSC District and Referral Hospitals

And, the HRIS data can bring understanding even deeper than HR capacity to reflect qualifications as shown below in **Figure 15** that focuses on certification levels of medical and clinical staff at all 30 hospitals.

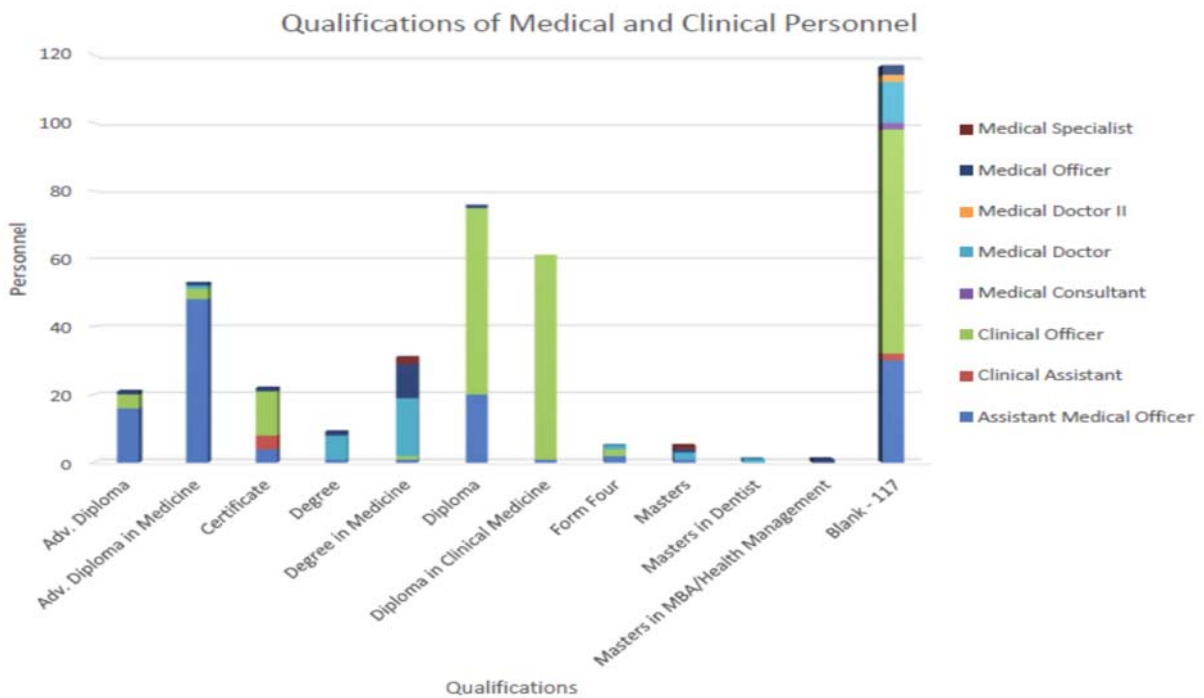


Figure 15: Qualification / Skill levels of Medical and Clinical Personnel

Another area of interest needing further study beyond capacity and qualifications is that of the employer. While all 30 CSSC HRIS implementing hospitals are faith-based, not all the health workers at those hospitals are employed by FBO employers. In fact, health workers at Church

run hospitals may be employed and/or paid through a variety other mechanisms or sources, including district councils, donors, hospitals themselves, local government, the MOHSW, NGO Partners or through user fees. The chart below in Figure 16 shows numbers of health classification workers, color-coded by AOP and ordered by Employer Type.

All Health Areas of Practice by Employer

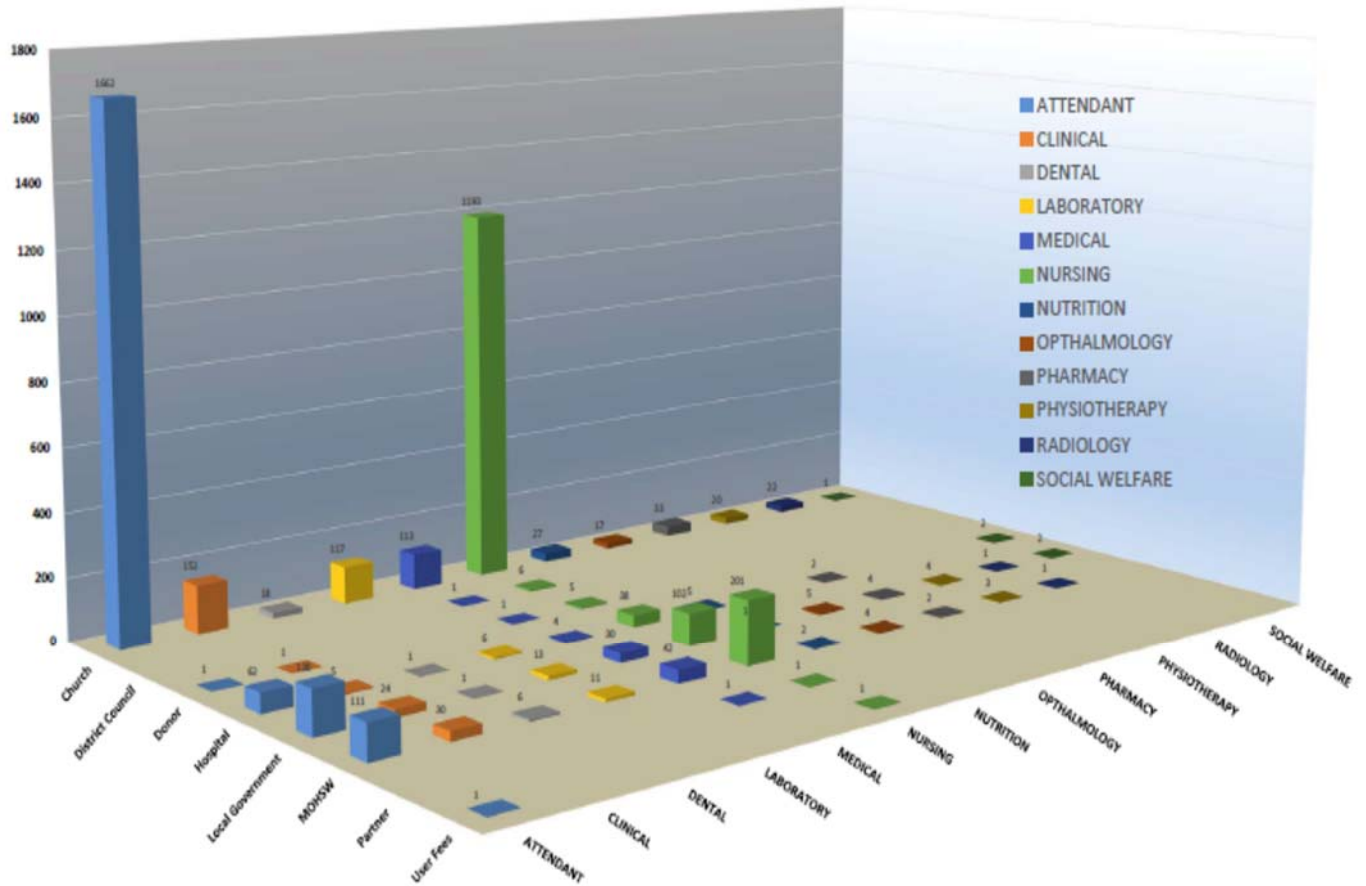


Figure 16: All Health AOPs by Employer

Once again we see that the dominance of the Attendant and Nursing AOP segments limits visualization of employer distribution across the workforce, so greater detail can be provided by removing those as shown on the chart in **Figure 17** on the next page. Additionally, since FBO employment is also dominant, an even clearer understanding of employer variance can be seen on the next chart in **Figure 18** where the Church employer category has also been removed. Both charts show higher numbers in core medical AOPs, but with churches removed, it also becomes clearer that the next largest employers of health workers at FBO hospitals are local governments and the MoHSW.

The charts in **Figures 17** and **18** clearly show that the majority of employees at faith-based facilities that are employed by other organizations are in the core health areas of practice (as designated in this analysis), which are Medical, Clinical and Laboratory. In order to understand further detail, the chart in **Figure 19** below was developed to compare numbers of health workers in core AOP's based on employer type at all CSSC Referral Hospitals.

Core Health Areas of Practice by Employer at THRS Referral Hospitals

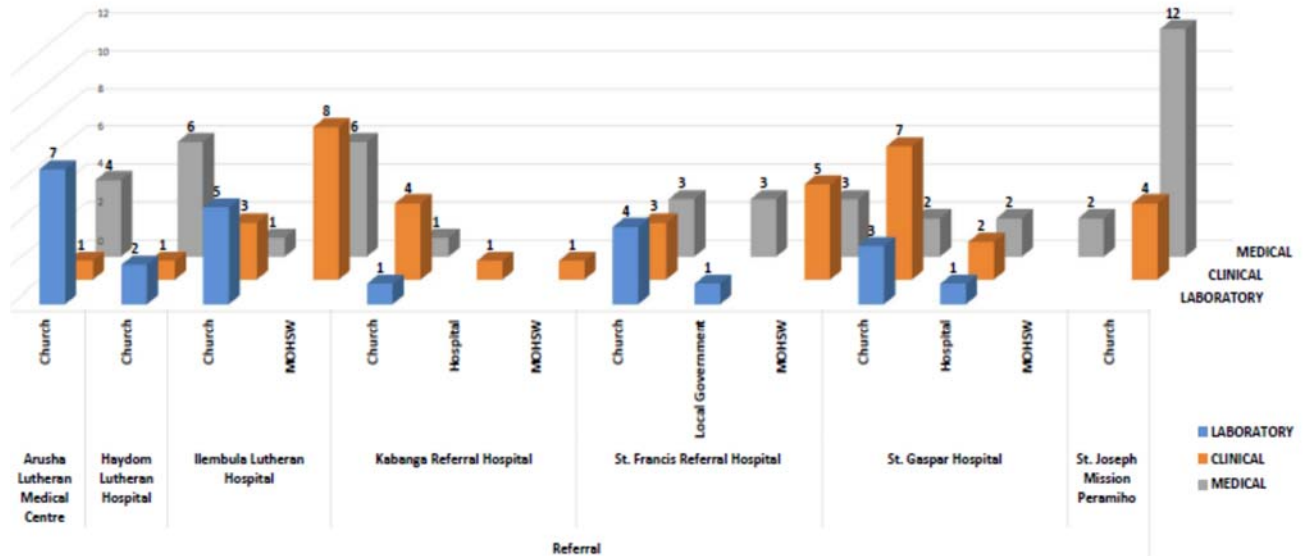


Figure 19: Core Health AOPs by Employer at Referral Hospitals

Understanding the employer aspect of the health workforce at facilities is important to a variety of issues related to workforce balance, secondments, service agreements, requirements for medical and clinical specialists, approved bed ratios and capacity, basket funding and various other broad scale policy and decision-making factors. For example, as the chart in **Figure 19** shows, two of the seven FBO Referral hospitals in the CSSC network actually have higher numbers of MoHSW employed health workers than church employed health workers in the medical and clinical core areas of practice. In addition, when this level of detail is available on health workers at facilities it can add much more credence and insight to statistics provided in various journals like the following reported in a Case Study from 2009:

“The voluntary sector holds 17.7% of the health infrastructure (against 64.2% for the state), but 39.7% of hospitals, equal to the MOH figure. In total, 41% of hospital beds, according to an official census, belong to faith-based structures. Hence they constitute an indispensable addition to the care provided by the public sector.” (CITE – MMIN)

Another important HR factor that requires considerable further attention is retirement. Information on this factor is essential to support a wide variety of planning and policy issues from national scale workforce levels to individual facility planning for attrition, staff

management, promotions, training, etc.. The chart below in **Figure 20** shows the number of medical and clinical health workers who are scheduled to retire within the next ten years at the 30 hospitals. The chart reflects a series of spikes in number of Assistant Medical Officers and Clinical Officer's that will occur between 3 and 8 years, with the highest numbers of AMO's retiring in years 3 and 4, and the highest numbers of CO's retiring this year, in 5 years, and in 8 years. While this provides an overall picture of pending retirements in these selected cadres, further analysis at individual facilities or by facility category should occur to further inform planning, policy and decision making.

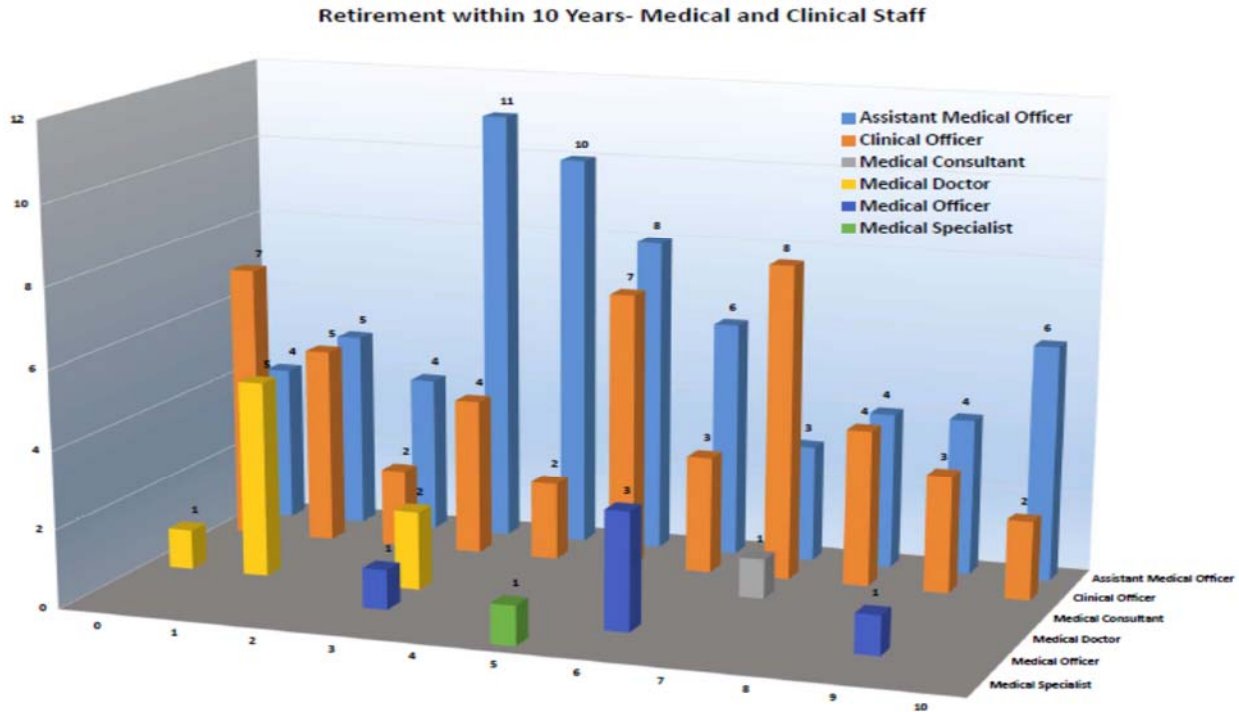


Figure 20: Retirement of Medical and Clinical Staff within 10 Years

The last analysis deals with bed ratios at the 30 CSSC HRIS implementing hospitals selected for this study. **Figures 21 & 22** on the following two pages chart the number beds available versus the number of beds approved at these hospitals per the data currently entered in the HRIS. In order to indicate as much information as possible, the bar chart shown on Figure 21 lists at facilities by name and grouped according to category. This chart shows clearly that, in all cases, there are more actual/available beds at these hospitals than are officially approved for use.

One of the hospitals in the Referral section of the chart is Haydom Lutheran Hospital, which is authorized by the MoHSW as a first level referral hospital. This means that Haydom receives government grant funds based on its number of employees and bed grant funds based on the number of approved beds.

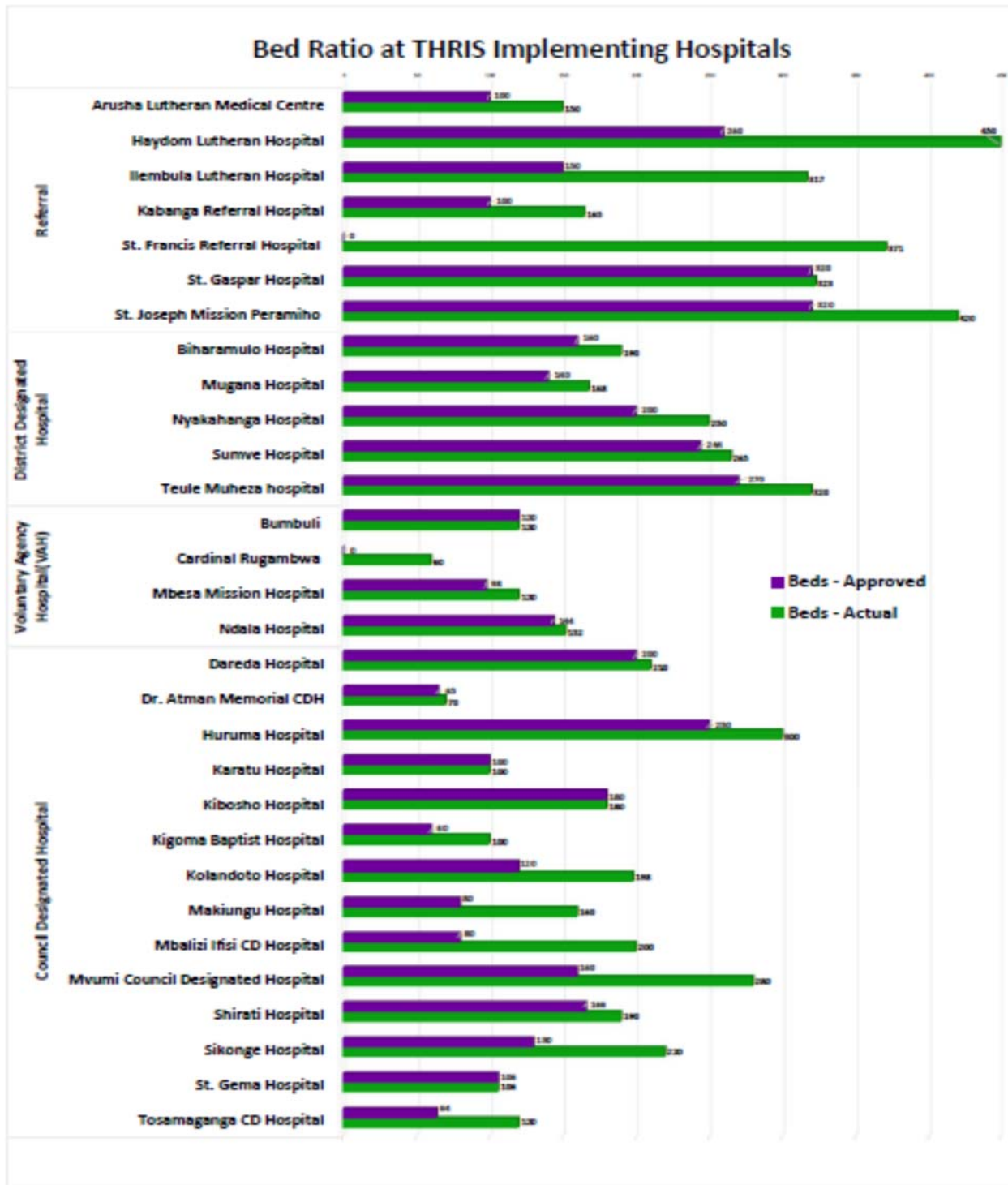


Figure 21: Bar Chart of Bed Ratios at HRIS Implementing Hospitals

As is the case for many of these hospitals, the number of MoHSW approved beds, which sets the values of these grant funds, is much lower than the number of actual beds at the hospital (in this case about half). The number of MoHSW approved beds is based on the number of key staff. In the case of Haydom, the primary limitation cited is a general lack of specialists. Overall however,

the number of health workers in other cadres is also a key factor in making this determination and affects many aspects of a hospital's ability to serve the needs of patients. The map below shows a similar picture in terms of approved to actual bed ratios. The map view however, also provides better insight about the distribution of beds geographically and, if overlaid onto population mapping, could even more clearly show the potential for increased positive impact of these hospitals in the predominantly rural areas they support with more approved beds.

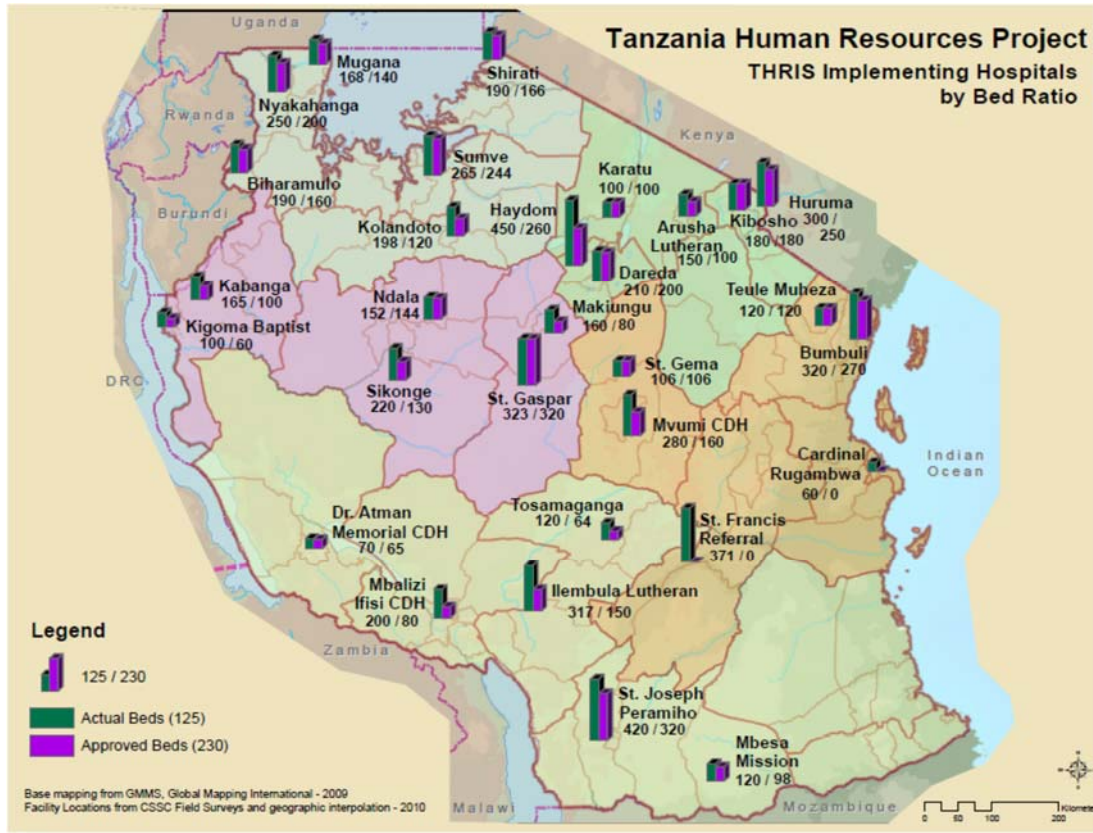


Figure 22: Map of Bed Ratios at HRIS Implementing Hospitals

This analysis shows a great need for expanded study into bed ratios and other issues briefly described here as a crucial part of moving toward a more balanced and effective health workforce. This analysis also shows that the Area of Practice categorization can greatly inform HRH overview and assessment, as well as improving data management capabilities; and that it can be applied as a higher level unified framework for HRH staffing norms that can support consistent understanding about the health workforce without deterring local customization requirements or over-riding national standards.

2.3. Capacity

Early in the project CSSC realized that additional skills in basic human resource management (HRM) would be needed at health facilities in order to take advantage of the capabilities in the HRIS. Therefore, with IntraHealth support, IMA World Health, Capacity Plus and CSSC organized a four day training workshop on HRM for 36 HR managers and facility administrators from CSSC, APHFTA and BAKWATA. The overall focus was on applied HRM practice using the HRIS, and on applying HR data in HRM analysis and decision making.

The HRM training was designed to equip human resource managers and leaders with the necessary skills needed to apply HRIS in HRM and decision making. It was conducted in Morogoro near the CSSC Eastern Zone office, which is centrally located to HRIS deployments at 11 FBO and Private sector health facilities, including St. Francis Referral Hospital in Ifakara and Al-Jamiah Health Centre in Mikumi. Many different issues were shared and discussed during the training. Among the topics presented were HRM systems in the context of the HRM action frame work, workforce planning, recruiting and deployment, health worker retention, career development, performance management, gender and leadership in HRM. Participants were also taken through the functionalities of the human resource information system to help them understand its application to their HRM responsibilities.



HR Managers Training - EZ Office, April 2012

In these workshops, zonal Data Clerks and IT Technicians learned about HR information management along with hospital HR Managers and Focal Persons in an applied context where each group learned about the others functions and needs regarding the HRIS. This greatly strengthened links between these groups and enabled both to improve project performance and data utilization in the fourth year. Another result of the workshop was that many HRM participants returned to their health facilities and put the plans, people and practices in place to ensure reliable data from the system and they made use of the HRIS reporting capabilities in various decision making applications.

3. Lessons Learned

3.1. System

The iHRIS Manage web-based open source software developed by IntraHealth provides an excellent set of tools and level of functionality to support HRIS implementation, ranging from the context of an individual health facility up to a national level health system. The data model also incorporates many aspects of HR management and operation that enable users to develop and customize their information to specifically meet the needs and structure of their health facility and/or the overall system. This level of customization is required for developing data and implementing systems that fit with and build upon existing health information strengths of user organizations. But the early advantages of open customization at the local level can also create barriers to full establishment at the national scale later on. In moving the implementation of a national scale system into full establishment, there is also a need to bring health system levels together, from individual health facility up to a national level health system; and a primary indicator of full establishment is operational data use at all levels to support decision making.

In the context of an information system, this has traditionally meant that that all individual user systems needed to develop their data according to an overall system data structure that controls input within the same sets of values (domain) within each variable or data item being entered so that data from individual lower-level systems can then be further aggregated into a higher level national database. In recent years however, new data types have been developed, especially for use in web-based content, that allow for data exchange and certain levels of integration without adhering to the traditional rules of more structured systems. While these new data types do allow for data integration outside the traditionally formal data structures, they can also allow for the entry of inconsistent data values that cannot be aggregated at a larger scale due the lack of structured domain specification.

To compensate for this potential lack of consistency and traditional data integrity, new data management and analysis applications have also been recently developed to provide tools for organizing and working with unstructured data, rendering the former priority for structured data less important. However, without access to these newer unstructured data analysis applications, especially in a developing country context like Tanzania, the users of unstructured data will have great difficulty using data that was developed without the requisite structure needed for the traditional data management, analysis and utilization tools at their disposal.

Therefore, in this context, two potential options could be considered that would greatly facilitate data being developed that can be more readily aggregated and integrated at higher levels to fully establish operational data use for decision making. One of these option is for the potential

values of key variables to be hard-coded as part of system customization within structured domains at the start. Another option would be for tools and procedures to be made available and put into practice for editing, clean-up and update at higher levels later on to re-introduce the standardization and integrity controls required for a nationally integrated database. Without these capabilities, or very close supervision and technical assistance throughout implementation, the lack of structured and controlled data entry inherent to web-based systems is very likely to ultimately result in data that cannot be aggregated at higher levels and therefore will be unusable at higher levels until it has been restructured for applications available in this context.

The remainder of this section will address the specific issues encountered in this implementation in order to serve as examples for why alternate options should be further considered as well as illustrating how they might be incorporated in future implementations. This will first be considered in light of system issues for improved data management and then in terms of data issues unique to the Tanzania context.

Recognizing that iHRIS Manage is designed primarily for customization and implementation via code modification there is an inherent tension, especially in a developing country context, between retaining a light-weight, low-cost web-based system and one that provides graphic dialogs and “wizard-like” functions to be more user-friendly, so that it can improve lower level user capabilities for developing country system implementers to improve data quality more effectively in this context. Essentially this all seems to be an inherent part of a tension between fully open customization as opposed to a structured system with predefined and standardized variables to ensure data integrity during data entry.

In addition, if these functions were available via graphic user interface (**GUI**) dialogs to support more visual interaction with the data (as opposed to being command line driven), it would allow for more users to be trained as local level data managers. Allowing lower level system users to interact with the data would also expand these users ability to further inform health system strengthening by allowing them to more quickly and clearly provide examples to higher level decision makers about what it means to utilize data for decision making. While it is understood that this level of functionality may not be a highest priority in early years of system roll-out, in the longer term scope of system evolution, if a primary measure of system implementation is going to be assigned to data utilization at all levels – a priority should also be assigned to improving system capabilities in these areas in the near future.

However, the current system structure seems to prioritize a facility focused functionality driven from the local level and in-turn does not adequately support large scale data quality improvement from higher central levels. While some of this data cleaning can and should be

done record-by-record at the local level where it was initially entered, there is also the need, in a nation-wide implementation, for central system capabilities to perform these clean-up operations on the overall database at the national scale. Therefore, since the open structure of iHRIS allowed different individual THRP HRIS user systems to enter inconsistent local level data, which also needed to be managed at zonal and/or central levels to support aggregation at district, regional and national levels, there was also a great need for effective and user-friendly data management tools at the zonal and central levels to support administrative data cleaning en-masse on large numbers of records. Unfortunately user-friendly data management tools to perform these operations at the central level were still under development for the iHRIS Manage software during the course of this project. However, the developers at IntraHealth were responsive in developing a custom script for remapping of data elements. In order to utilize this script all old (erroneous) values first needed to be reconciled into the new (corrected) staff category values. However, due to the lack of standardized domain values which would have normally enforced data integrity, this required IMA and CSSC to reconcile 1,747 unique Job Designation Titles into 261 standardized Job Designations, which were then further classified into 86 standard Cadres and 16 standard Areas of Practice. The screen capture below shows part of the first stage of reconciliation (looking at nurses) where existing (erroneous) Job Designation Titles (values in the table) were assigned to the (corrected) new Job Designation (headings of the table).

L	M	N	O	P	Q
4.2 Principal Assistant Nursing Officer I	4.3 Nurse II	4.3 Nurse I	4.3 Principal Nurse II	4.3 Principal Nurse I	
P.A.N.O					
Princ Assist Nurse Officer	Assist. Nurse II	Ass. Nursing	Principal Assist Nurs	Principal Nurse I	
Princ. Assist Nursing Officer I	Enrolled Nurse II	Assistant Nurse 1	P/Nurse II	P. ENROLLED NURSE	
Princ. Assist. Nurse Officer	Enrolled Nurse II	ASSISTANT NURSE I	PPRINCIPAL NURSE	P.Enr.Nurse (MAT ward itc)	
PRINC. ASSIST.NURSE	Enrolled Nurse II	Assistant Nurse	Principal Nurse II	P.Enr.Nurse (OPD itc)	
Princ.Assistant Nurse Officer itc	MCHA-11	EN I	Princ. Nurse II	P.Enr.Nurse (R.C.H. itc)	
Principal A/Nursing Officer I	N. Attendant	Enrolled Nurse	Princ.Nurse II	P.Enr.Nurse	
PRINCIPAL ANO	N/M III	Enrolled Nurse	Principal Nurse 2	P.N/M.	
Principal Ass. Nurse	Nurse II	Enrolled Nurse (Anaesthet)	Principal Nurse II	P.Nurse Midwife	
Principal Assistant Nursing Officer	Nurse 2	ENROLLED NURSE I	Principal Nurse II	P.Nurse	
Principal Assist. Nurse Officer (Ass. Matron)	Nurse 11	ENROLLED NURSE itc	Principal Nurse II	P/Nurse	
Principal Assist. Nursing Officer I	Nurse 11	ENROLLED NURSE MID/WIFE (IC CHILDRENS VA	Principal Nurse II	P/NURSING MID/WIFE	
Principal Assistant N.O. (MATRON)	Nurse Assistant 11	Enrolled Nurse Midwife		PNM	
Principal Assistant Nurse Officer	urse II (Incharge FEMALE WARC	ENROLLED NURSE MID/WIFE		Pr. Nurse	
Principal Assistant Nurse Officer	urse II (Incharge Pschiatric Nurse	Enrolled Nurse		Princ. Nurse I	
Principal Assistant Nurse Officer I	Nurse II	Enrolled Nurse		Princ. Nurse I	
Principal Assistant Nurse Officer I	Nurse II	Enrolled Nurse		Princ. Nurse	
Principal Assistant Nurse	Nurse III	ENROLLED NURSING MID/WIFE		Principal Enrolled Nurse	
Principal Assistant Nurse	Nurse Medical officer II	Enrolled Registered Nurse (INCHARGE CTC)		Principal Nurse I	
Principal Assistant Nurse	Nurse Midwife II	Enrolled Registered Nurse		Principal Nurse Assist	
Principal Assistant Nursing Officer	Nurse Midwife II	Enrolled Nurse		Principal Nurse I	
Principal Assistant Nursing Officer	NURSE MID/WIFE III	EROLLED NURSE I		Principal Nurse I	
Principal Assistant Nursing Officer	Nurse Midwife II	Maternal Child Health and Aid		Principal Nurse I	
Principal Assistant Nursing Officer	Nursell	Maternal Child Health		Principal Nurse I	
Principal Assistant Nursing Officer	Nursing Assistant	Maternal/Child Health Aid		Principal Nurse I	
Principal Assistant Nursing Officer	NURSING Attendant	MCH I		Principal Nurse Midwife I	
Principal Assistant Nursing Officer I	Nurse Assistant	MCH		PRINCIPAL NURSE	
Principal Assistant Nursing Officer (ADM. Office)	Nurse Assistant	MCHA - Maternal Child Health Aid		Principal Nurse	
Principal Assistant Nursing Officer I	Nurse Assistant	MCHA		Principal Nurse	
Principal Assistant Nursing Officer I	Nurse Assistants	MCHAS		Principal Nurse/Midwife	
Principal Assistant Nursing Officer I	Nurse Attendant	Nurse (Dispensary Incharge)		PRINCIPAL NURSING MID/WIF	
Principal Assistant Nursing Officer I	Nurse Attendant	Nurse (Matron)		Principal Nursing	
Principal Assistant Nursing Officer I	Nurse AUX	Nurse (RCH Incharge)		Principal Nursing	
Principal Assistant Nursing	Nurse Auxiliary	Nurse I		Principal Nurse I	
Principal Assistant Nursing	Nurse Auxiliary	Nurse		Principle Nurse I	
Principal Asst Nurse	Nurse Auxiliary	Nurse		Principle Nurse Midwife	
Principal Asst.Nursing Officer	Nurse Ass.	NURSE 1		PRINCIPLE NURSE	
Principle Assist.Nursing Officer I	Public Nurse II	NURSE 1		Prinpal Enrolled Nurse	
Principle Assistant Nursing Officer	registered Nurse 11	NURSE & MID/WIFE			
Principle Assistant Nursing Officer I	Registered Nurse 11	Nurse (In Charge of Injection)			
Principle Assistant Nursing Officer I	REGISTRED NURSE II	Nurse I			
Principle Assistant Nursing Officer I	Trained Nurse II	Nurse Anaesthetist			
Principle Assistant Nursing Officer I	PART II MID/WIFE	NURSE AND MID/WIFE			
Principle Assistant Nursing Officer I		Nurse Assistant I			

These reconciled values then had to be set up into an overall listing to individually reconcile each of the 1,747 (non-standard) Job Designation titles into the 261 (standard) Job Designations as shown in the second screen capture below.

A		B
Existing Data Input:		REMAP To:
Job Designation Title		Job Designation
435	Trained Nurse II	Nurse II
436	PART II MIDWIFE	Nurse II
437	NHI	Nurse II
438	NHIF - CO-ORDINATOR	Nurse II
439	NT	Nurse II
500	ENI	Nurse I
501	Enrolled Nurse	Nurse I
502	Enrolled Nurse	Nurse I
503	Enrolled Nurse (Anaesthet)	Nurse I
504	ENROLLED NURSE I	Nurse I
505	ENROLLED NURSE I/c	Nurse I
506	ENROLLED NURSE MIDWIFE (I/C CHILDRENS W/ARD)	Nurse I
507	Enrolled Nurse Midwife	Nurse I
508	ENROLLED NURSE MIDWIFE	Nurse I
509	Enrolled Nurse	Nurse I
510	Enrolled Nurse	Nurse I
511	Enrolled Nurse	Nurse I
512	ENROLLED NURSING MIDWIFE	Nurse I
513	Enrolled Registered Nurse (INCHARGE CTC)	Nurse I
514	Enrolled Registered Nurse (INCHARGE CTC)	Nurse I
515	Enrolled Nurse	Nurse I
516	EROLLED NURSE I	Nurse I
517	Maternal Child Health	Nurse I
518	MCH I	Nurse I
519	MCH	Nurse I
520	Nurse (Dispensary Incharge)	Nurse I
521	Nurse (RICH Incharge)	Nurse I
522	Nurse I	Nurse I
523	Nurse	Nurse I
524	Nurse	Nurse I
525	NURSE I	Nurse I
526	NURSE I	Nurse I
527	NURSE I MIDWIFE	Nurse I
528	Nurse (In Charge of Injection)	Nurse I
529	Nurse I	Nurse I
530	Nurse Anaesthetist	Nurse I
531	NURSE AND MIDWIFE	Nurse I
532	Nurse I (BIMA)	Nurse I
533	Nurse I (OT INCHARGE)	Nurse I
534	Nurse I (RICH I/C)	Nurse I
535	Nurse I	Nurse I
536	Nurse I	Nurse I
537	Nurse I	Nurse I
538	Nurse Midwife (Gv/ I/C)	Nurse I
539	Nurse Midwife I	Nurse I
540	Nurse Midwife	Nurse I
541	Nurse Midwife	Nurse I
542	Nurse Midwife	Nurse I

Unfortunately, CSSC had great difficulty setting up, initiating and running the remapping script with any success at zonal and central levels. While this indicates a lack of capability that had been understood as existing, it also indicates a need for more user friendly iHRIS tools that could operate via GUI to support data management, and especially to facilitate selection and subsequent modification/correction of erroneous data. **Annex ##** provides a description of how data management tools with the kind of user-friendly GUI being proposed can function, along with examples from another data management application to illustrate how it could work relative to data clean-up in the CSSC THRP database.

iHRIS Manage does very well to support customization and control at the facility level, but it is unfortunately missing the tools needed to establish and promote data integrity needed for consistent aggregation of data at higher levels which, if established early on during the implementation process, can strongly encourage adoption and implementation through utilization instead of making data utilization an end goal. While local (facility) customization is a good priority, if a national level system is being established, there must also be a priority on the data from the HRIS being utilized at higher levels to assist decision-making in workforce allocation, composition, deployment, mobilization, planning, etc. In retrospect for the Tanzania implementation, some of the issues encountered might have effectively been mitigated by assigning a higher priority to improving lower level user functionality for certain applications to allow a broader number of system users to manage data. An added focus in this area could have allowed central level data management users to connect to lower level (zonal) databases at remote servers – then to query, select and modify values and then to post back to those zonal servers for subsequent upload to the central server. This level of functionality would have

greatly assisted the CSSC central level in moving toward data utilization at all levels more effectively within constrained timeframes and budgets required.

While this data management issue underscores the difficulty experienced by the team in reconciling the disparate data values, and indicates other methods for more effectively dealing with similar issues in the future, it does not address an overall issue with perspective and implementation approach. In broad terms, the traditional systems implementation approach is to install and establish the system, acquire and develop the data, and then utilize the data through reporting and analysis. However, this approach relegates data utilization to the final stage as a systems implementation goal, rather than making utilization an active part of the process at all levels. While iHRIS Manage software provides good functionality for early data utilization at the individual health facility level, the lack of enforced data integrity, as well as the permissions structure for certain data types, limits central level modification and impedes utilization of aggregate data at the district, regional or national scale as an integral part of implementation. In effect, the system forces an approach that puts higher level data utilization at the end of the process. Early utilization and visualization of broad scale aggregate data, while not critical for individual health facilities, can be extremely helpful in promoting and encouraging nearly every other aspect of a national scale information system implementation.

Along these same lines, further investment in upgrading iHRIS capabilities for query and analysis to allow for more complex SQL-like querying to support filtering by selected subsets within variables could further inform user understanding at all levels regarding the power afforded by the system if data integrity is maintained from the start. For instance, the system currently allows hospital level users to select employees or groups of employees and they can edit that data record by record. But there is no utility to recalculate selected variables en-masse from an overall selection set. This is a broad level of functionality that should not only be provided in a user-friendly way for local level users, but also via data management applications at the higher central level.

In the final evaluation, more technical assistance should have been provided by IMA and other development partners, either during customization to support CSSC with definition of as many standardized variables as possible, or via earlier development of user friendly tools to support large scale data cleaning and quality improvement. Perhaps in future projects, inclusion of follow-up TA from higher level software developers as part of the standard customization process at the end of the first year could inform specification of country-wide standards for key variables based on information entered up to that point. This could strongly support earlier data utilization and could greatly improve data uniformity later. Also, as upgrades to iHRIS Manage in the future, good features to consider might include simplified tools and video

tutorials on the procedures required for local developers to remap data elements and further set parameters for standardizing domain values.

3.2. Data

A fully customizable system like iHRIS Manage provides great opportunities for tailoring data to meet specific user needs and/or existing information standards. However, given a national deployment in Tanzania, with decades of diverse information standards in practice across the country, there were many varied health worker information standards existing when the project started. Adjusting for this required establishing standard data values (domains) for certain key variables to ensure that data being entered would be consistent across those variables. The importance of standardizing domain values, like job function for example, enables information such as - number of health workers performing the same job at different health facilities – to be aggregated and compared at higher levels (district, regional and national) above the local health facility.

Unfortunately, a wide variety of standards have been applied and modified at different levels and in different locations throughout the Tanzanian health system during the past 25 years. While some of the divergent impact of this variation is generally worked out and moderated within local and district levels, there is much dysfunction created by the lack of current uniform standards, especially related to HRH at the national level, and this severely impacts the exchange of information from local to national levels in the Tanzanian health system. Tanzania is not the only country experiencing this difficulty. In a descriptive study of definitions and roles from nine Sub Saharan African (SSA) countries, the authors point out when describing the complexity of one particular cadre (among many others with similar issues) that:

There are currently more than twenty different cadres of health care providers reported to work as a “Skilled Birth Attendants” (SBA) in the nine surveyed sub-Saharan African countries. Comparison of these cadres across countries is difficult because of different names, roles and responsibilities . . . The range of cadres of health care providers who were reported to be SBAs differed greatly among the countries . . . Comparison of cadres of health care providers reported to be SBA across countries is difficult because of lack of standardization in names, training, and functions performed. There is a need for countries to develop clear guidelines defining who is a SBA and which EmOC signal functions each cadre of health care provider is expected to provideⁱ. (CITE)

Recognizing the great variability of HR standards and staffing norms around the world, iHRIS Manage is designed to be fully customizable, and there is very little hard-coded standardization of data values in the base system installation. However, while HR standards will differ from one system to another, within each system they must be established and applied uniformly in order to provide comparative results through analysis so that health system information can be compared at all levels. Standardization is also needed to organize, maintain and manage human resource information, for many things like staff functions, job titles, terms of employment, pay grades, education levels, certification/credential requirements, department headings and myriad other operational factors. HR standards are also essential operationally within a health system

so that, for instance, a health worker who is employed as a clinical assistant at an FBO hospital in Tanga can potentially move to a government health center in Kigoma and still be able to perform the same clinical assistant functions for relatively the same wage.

Understanding this complexity, the THRP team was aware from the outset of data development that there was a critical need to establish coded value domains for two key HR variables - health worker Cadre (staff category) and Job Designation (specific function). These variables require standardization because they allow for categorization of health worker job function and therefore their aggregate measure indicates health worker capacity within each of the health disciplines. Along with pay grade information, these two data items form the basis of the TZ MoHSW Scheme of Service (staffing norm). As previously described in the analysis, the number staff assigned in certain medical cadres and specialties is also a key measure in determining the MoHSW Standard Establishment, which sets the approved bed capacity, allocated share of funding and other public support provision for each health facility.

Based on experience in a prior project with CSSC, IMA recognized the complexity of HR staffing norms in Tanzania at the outset of the project. IMA also had concerns related to the iHRIS Manage system's open approach to maintaining full customization at all levels. Recognizing both of these issues, IMA put considerable effort into establishing and assisting CSSC in promulgating standardized staffing norms, specifically for Cadre and Job Designation values to support and guide data entry at facility and zonal levels. However, unfortunately these efforts failed to effectively guide and assist CSSC in maintaining or enforcing data integrity for these key variables. As an aid to reconciling the THRP data, the team added a new data element to assist higher level staff categorization. The Area of Practice (AOP) data element that was featured in the preliminary analysis section of this report was set up to provide a super structure of categories to classify job functions of the myriad health worker cadres into the larger functional categories that allowed for the consolidated analysis provided.

While standardizing Cadre and Job Designation was planned very early in the process, the THRP team wanted to be sure the coded values for these variables would match the MoHSW standard list in order to allow for potential cross-platform integration in the future. Therefore the most recent staffing norm/Scheme of Service standards were requested early in the first year. The MoHSW informed CSSC that the standards were being revised and would be released in the next few months. Therefore a starter list of standard cadre and job designations from a prior CSSC HR project was initially promulgated to HRIS implementing facilities to begin data entry. However, in order to maintain the open nature of the system for customization at facility levels, it was agreed in the first year that initial standardization of key domain values would only be provided as guidance, and therefore these staff values were not hard-coded into the iHRIS data structure.

MoHSW delay of standards release continued throughout the first 2-1/2 years of the project pending further internal review and authorization of the new official cadre and job designation standards. In the second quarter of the third project year CSSC was informed that new MoHSW standards would not be released in the near future and that adoption of the 2009 standards was being recommended. Coded value domains were then established for these variables based on the 2009 standard for health worker cadre and job designation. However by this time, over 16,000 personnel records had been entered without coded standardization which allowed a wide variety of inconsistent values to be entered into these key data elements. While the initial guidance developed by the THRP team to guide domain standardization for cadre and job designation was helpful, it did not always match information on the HR personnel source documents at each facility that varied according to different standards that had been in force in different regions and districts over the past 30 years. Unfortunately this added further confusion about staff category naming conventions and considerable data was entered at health facility levels during the first 2-1/2 years that was inconsistent and required subsequent reconciliation.

During the delay, CSSC HRIS staff continued to instruct local data entry personnel that accurate adherence to existing personnel records at the local facility was of primary importance to ensure accuracy in the data. In turn, data entry personnel maintained this accuracy criterion, entering job function information according to facility records. However, since they knew there was a "correct" standard for Cadre and Job Designation, but were unsure of what it was, they were also unable to interpret facility records when they indicated a different function. Therefore many Cadre and Job Designation entries were left blank, with the actual job function from facility records being entered into the Job Designation Title variable which, in this case, became a catch-all for staff function information. As a result, the central HR database of 17,055 health worker records ultimately contained 7,611 records blank for Cadre and 6,757 records blank for Job Designation, while only 545 records were blank for Job Designation Title, with most of those being in the Non-Health Classification.

In retrospect, we believe other options could have been pursued to improve initial iHRIS Manage data development and THRP implementation overall. Another strongly recommended option would be to establish a standard iHRIS data element, like the Area of Practice (AOP) described earlier, with a system coded value domain related to job function or staff category that would be required for each personnel record entry, outside country-level customization. This would help to ensure consistency of HR data across the country from the outset and would have greatly assisted aggregation for generalized comparison early on. Further, if this outside standard was also applied to iHRIS Manage implementations in other countries, it could also facilitate HR comparison internationally.

3.3. Capacity

In addition to the implementation options described, an idea for building capacity that could address both system and data issues connects with the need for facility based variables in order to assess HRH capacity per facility. In the Tanzania context this could allow for incorporating certain information either from MTUHA records or from the developing DHIS national HMIS. Addition of variables of this nature could support analysis of patient flow and workload and would document inpatient and outpatient numbers per week or month. Coupled with addition of the AOP variable, this would begin to indicate what personnel are responsible and essential for provision of which kinds of medical, clinical care versus support systems. Facility-based variables would also be extremely useful in assisting facilities with preliminary analyses to assess staff utilization for the sake of prioritizing most needed areas of staff record input, processing and data cleaning to support subsequent aggregation at higher levels in order to allow for and show earlier data utilization. If health facilities and HR people can see a preliminary assessment /analysis technique providing early indicators for things like staff utilization, this will encourage and motivate them, by seeing the value of data in a populated system to understand to power of the system to fully embrace data quality and data management earlier in the system implementation process and the importance of understanding how to use tools to assist export to other applications for analysis and the need to establish processes to do it.

As the results section of this report described, the implementation and deployment overall did succeed. However, this area of TA fell short in terms of establishing the implementing partner's understanding and knowledge of how to effectively modify and improve their iHRIS Manage system and its data at the central level for managing human resource information through active data utilization. While several limiting factors and issues contributed to the lack of national scale data utilization, like data standardization to enforce integrity and a lack of data management functionality to support improved data quality through its utilization. Ultimately the responsibility for lack of capacity building falls upon a failure of technical assistance in these areas to adequately guide the implementation process around all of these pitfalls.

In order for the project to fully meet the requirement of HR data utilization at all levels, CSSC will need to move from deploying and implementing the system/data into full establishment through broad level day-to-day utilization of HR data in practice. While IMA performed clean-up, correction and aggregation of HR data for CSSC health worker records on the 30 HRIS implementing hospitals to support analysis in this report, about half of the remaining HR records must still be reconciled. Unfortunately, until HR records for all CSSC facilities are uniformly reconciled to adopt the standardized Cadre and Job Designation values, that broader utilization in practice appears unlikely at this time given current capacity.

4. Sustainability

4.1. System

While many system issues have been described at length in this report, two key factors will be required for ongoing sustainability of the Tanzania HRIS for the faith-based and private sectors. The first one will be to provide user-friendly tools for reconciling the entire database. The second one will be to fully establish customized domain control of national standards for staffing norms through a final Scheme of Service and Standard Establishment that will be fully promulgated by the MoHSW, not just to the public sector, but also equally and inclusively integrated across both the faith-based and private sectors – with all hospitals, health centers and dispensaries being treated as equal participants in improving health care for all of Tanzania.

4.2. Data

There is no question that all health system sectors are committed to improving quality and coverage of care for the people of Tanzania. However, these good intentions will only be realized through additional commitment of coordinated adoption of data standards across all levels of the system. While the THRP HRIS has been successfully implemented at many hospitals, there are still many that need to be included. In order for a fully established national HRIS to function, health facilities at all local levels must be reporting information consistently to the national level MoHSW. While the current state of system establishment greatly improves upon the prior condition, it also continues to replicate a decade's long inconsistency that does not adequately integrate the lower level health centers and dispensaries. There is no question that a strong base of infrastructure now exists through the efforts of both the THRP system and the MoHSW HRIS system, but to fully establish a sustainable system will require further national investment along with local level leadership commitment to fully participate.

4.3. Capacity

At zonal levels the skills acquired through the TOT training and HRM workshops described in the next section have established strong connections between HR Managers and IT Technicians across district levels. At hospital and health facility levels the data entry, verification and utilization skills that HR Focal Persons have gained is reflecting improved data quality, expanded data use and the ability to further train more HRH users. The skills established for HR Managers and Health Secretaries have also allowed them to recognize that designating a data manager to check data quality and supervise will not only improve data quality and use, but it will also allow higher level administrators to spend less of their own time supervising HR data efforts and more time gaining the benefits of good data with skilled users to provide effective information for HR planning and decision making. Strengthened relationships and increased collaboration have clearly expanded data utilization and increased demand and this may serve as a primary key for unlocking a great Tanzanian potential for ongoing sustainability of a national HRIS.

5. Human Interest Success Stories

5.1. HRM Training

IMA World Health (IMA) and the Christian Social Services Commission (CSSC), as partners in the USAID-funded Tanzania Human Resources Project (THRP), have been working together with the National Muslim Council of Tanzania (BAKWATA) and the Association of Private Health Facilities in Tanzania (APHFTA) to improve human resources for health (HRH) management by developing and implementing a national level human resource information system (HRIS). The system applies iHRIS Manage software, developed by IntraHealth International, and data is now being actively used to inform HR management decisions on workforce planning, retention and training for improved productivity and service delivery.

In April 2012, 36 organizational and health facility representatives participated in a workshop on Human Resources Management Training for iHRIS Users. The workshop focused on training these HR managers and leaders about the role that the Tanzanian Human Resource Information System (iHRIS) can play in health workforce management at their organizations and health facilities. The training linked day-to-day human resources management (HRM) activities with tools available from the iHRIS, and provided HR managers and leaders with the necessary skills to apply iHRIS data for human resource management and decision making, and to help them integrate iHRIS tools as part of their daily HR management functions.

When used to its maximum capacity the iHRIS can provide users with data to advocate for additional health workers, budget, plan facility workforce, health worker development, retention and training, among other issues. Improved human resource management systems have great benefits to both health institutions and the health workers¹ⁱⁱ such as enhanced performance and productivity, improved service delivery, motivation and retention. All of these things improve the quality of health services and ensure that health services are available to those who need them.

In addition to working with THRP lead-agency IntraHealth International, IMA and CSSC also linked with the Benjamin Mkapa HIV/AIDS Foundation (BMAF) for the development of this week-long workshop. Understanding that people learn in different ways, these four organizations developed a curriculum that included presentations, group work, role play and individual assignments.

Content was split into two foci – Human Resources Management which focused on workforce planning, recruitment & deployment, health worker retention, career development, performance management, gender, leadership; and iHRIS which focused on data quality & attributes, utilization & decision making. The foci of the sessions were integrated by ensuring that the concepts taught in the HRM sessions were applied practically in the iHRIS sessions. For instance, in one of the role plays participants had an opportunity to apply skills learned in the human

¹ Management Sciences for Health, 2005. *Human Resource Management Rapid Assessment Tool for Public and Private Sector Health Organizations; A guide for Strengthening HRM Systems*, Baker Printing, USA

resource management session on recruitment by role playing the recruitment decision-making process using data and information available from the iHRIS.

Participants included both technical and administrative teams. The training was tailored to suit this mixed audience and synergized joint learning among the different teams who all play a key role in supporting the health workforce for quality healthcare service delivery. The mixed teams also allowed for team-building to strengthen the relationship between those who are inputting the data and those who use the data in their decision making. Participants left the workshop with increased understanding on the importance of iHRIS and HRM. Several positive workshop evaluations included highlights such as:

- "Importance of data and effective HRM"
- "Personnel records must be updated and used for day to day running of HR departments"
- "Planning"
- "Leaders are Made"
- "How to use data to be a good leader in HRH"
- "Strong data collection and ownership can lead to strong decision making"
- "Professional development and career advancement increase provider competency and motivate workers"

As a component of the training, participants committed to making various changes at their health facilities and institutions to strengthen HRM and iHRIS use and developed action plans. These action plans aimed to improve data utilization, quality and reporting. In addition to the human resources data within the iHRIS system being utilized to assist facility level human resource management decisions, it can also be used by higher level public and private health sector institutions to provide HRH information for regulatory and professional bodies to collaborate on national health sector strategic planning.

As a way forward, participants agreed that consistent and effective utilization of the iHRIS would improve and enhance a culture of using human resource data and information for human resource management, leadership and decision-making and thereby ensuring the effective utilization of the health workforce for improved health outcomes.

In looking at the progress since the April 2012 training, facilities have reported that they now regularly update their human resource information and utilize the human resource data and iHRIS reports to inform decisions on promotion, retirement plans, and salary reviews. They also report that information on human resources at some of the facilities is now more readily available and faster to retrieve.

A participant from Cardinal Rugambwa Hospital stated that "since the training I have been able to generate information that is accurate, timely, and adaptable to address new health workforce issues". Through their (Cardinal Rugambwa Hospital) experience with utilizing the iHRIS, they now have quality data and are effectively using the iHRIS to report. As a result they have been able to better understand the current workforce and to plan accordingly for recruitment, training and retention. The iHRIS has also helped their management team to quickly answer key policy

questions affecting health care service delivery. In this facility however, they are affected by other looming health workforce challenges such as shortage of skilled and experienced staff, retention challenges and high cost of living, among other economic factors. They intend to press on despite these challenges, saying that “the fruits of the iHRIS training can be seen in our facility. By using the scarce resources we have, we are trying to motivate them [health workers] by any means in order to satisfy them and improve the health service delivery”.

System benefits have also been reported by the Association of Private Health Facilities in Tanzania (APHFTA) by improving coordination of their members and utilization of human resources data through follow-up with zonal offices. High staff turnover has however been a challenge for them, which impacts both institutional memory and the technical ability to support their affiliated health facilities.

Bumbuli Hospital reported that since the training, information on employee data is now systematically stored and can be easily retrieved. However, they also note that unreliable internet connectivity and challenges with inconsistent power supply affects access and retrieval of iHRIS data and information. They suggest modifications to the iHRIS system so that it can also function without internet connectivity.

ⁱ Adegoke A, Utz B, Msuya SE, van den Broek N (2012) Skilled Birth Attendants: Who is Who? A Descriptive Study of Definitions and Roles from Nine Sub Saharan African Countries. PLoS ONE 7(7): e40220. doi:10.1371/journal.pone.0040220