




**USAID**  
FROM THE AMERICAN PEOPLE



Health Finance  
& Governance  
*Expanding Access. Improving Health.*



# UNIT COST AND QUALITY OF HEALTH SERVICES IN NAMIBIA

**October 2017**

This publication was produced for review by the United States Agency for International Development. It was prepared by Altea Cico, Claire Jones, and Stephen Musau for the Health Finance and Governance Project.

### **The Health Finance and Governance Project**

United States Agency for International Development's Health Finance and Governance (HFG) project helps to improve health in developing countries by expanding people's access to health care. Led by Abt Associates, the project team works with partner countries to increase their domestic resources for health, manage those precious resources more effectively, and make wise purchasing decisions. As a result, this six-year, \$209 million global project increases the use of both primary and priority health services, including HIV/AIDS, tuberculosis, malaria, and reproductive health services. Designed to fundamentally strengthen health systems, HFG supports countries as they navigate the economic transitions needed to achieve universal health care.

**October 2017**

**Cooperative Agreement No:** AID-OAA-A-12-00080

**Submitted to:** Scott Stewart, AOR  
Office of Health Systems  
Bureau for Global Health

**Recommended Citation:** Cico, Altea, Claire Jones, and Stephen Musau. October 2017. *Unit Cost and Quality of Health Services in Namibia*. Bethesda, MD: Health Finance & Governance Project, Abt Associates.



Abt Associates Inc. | 4550 Montgomery Avenue, Suite 800 North | Bethesda, Maryland 20814  
T: 301.347.5000 | F: 301.652.3916 | [www.abtassociates.com](http://www.abtassociates.com)

Avenir Health | Broad Branch Associates | Development Alternatives Inc. (DAI) |  
Johns Hopkins Bloomberg School of Public Health (JHSPH) | Results for Development Institute (R4D)  
RTI International | Training Resources Group, Inc. (TRG)



# UNIT COST AND QUALITY OF HEALTH SERVICES IN NAMIBIA

**DISCLAIMER**

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.



# CONTENTS

<b>Acronyms</b> .....	<b>iii</b>
<b>Acknowledgments</b> .....	<b>v</b>
<b>Executive Summary</b> .....	<b>vii</b>
<b>1. Introduction</b> .....	<b>1</b>
<b>2. Background of the Study</b> .....	<b>3</b>
2.1 Rationale for the study.....	3
2.2 Significance and applications of the study results .....	4
2.3 Objectives of the study.....	4
<b>3. Methodology</b> .....	<b>5</b>
3.1 Sample selection.....	5
3.2 Data collection .....	6
3.3 Data cleaning and analysis .....	7
3.4 Data limitations .....	8
<b>4. Cost of Health Services</b> .....	<b>9</b>
4.1 Costs of outpatient care.....	9
4.2 Costs of inpatient care.....	14
<b>5. Quality of Health Services</b> .....	<b>17</b>
5.1 Quality of health services in public health facilities.....	17
5.2 Quality of health services in private health facilities.....	19
<b>6. Drivers of Unit Costs</b> .....	<b>21</b>
6.1 Drivers of outpatient unit costs .....	21
6.2 Drivers of inpatient unit costs .....	24
<b>7. Conclusions</b> .....	<b>29</b>
7.1 Main Findings.....	29
7.2 Limitations .....	29
7.3 Recommendations .....	30
<b>Annex A: Costs of Outpatient Services</b> .....	<b>31</b>
<b>Annex B: Costs of Inpatient Services</b> .....	<b>37</b>
<b>Annex C: Quality Components' Impact on Outpatient Unit Costs</b> .....	<b>40</b>
<b>Annex D: Quality Components' Impact on Inpatient Unit Costs</b> .....	<b>44</b>
<b>Bibliography</b> .....	<b>47</b>



## List of Tables

Table 4.1: Average outpatient costs by facility type, 2015 Namibian Dollar .....	9
Table 4.2: Average unit costs of outpatient services by facility type, 2015 Namibian Dollar.....	11
Table 4.3: Inpatient costs by facility type, 2015 Namibian Dollar .....	14
Table 4.4: Average unit costs of inpatient services by facility type, 2015 Namibian Dollar .....	15
Table 5.1: Average quality assessment scores in public sector facilities .....	17
Table 5.2: Average quality assessment scores in private sector facilities .....	19

## List of Figures

Figure 4.1: Contribution of cost categories to total outpatient unit cost, on average.....	10
Figure 4.2: Outpatient unit costs in public facilities, by facility type.....	10
Figure 4.3: Contribution of cost categories to total inpatient unit cost, on average.....	14
Figure 6.1: The number of visits per doctor as a driver of outpatient unit costs.....	21
Figure 6.2: The number of visits per nurse as a driver of outpatient unit costs.....	22
Figure 6.3: The number of visits per medical staff as a driver of outpatient unit costs.....	22
Figure 6.4: Quality of primary health care services as a driver of outpatient unit costs.....	23
Figure 6.5: Overall facility quality as a driver of outpatient unit costs .....	24
Figure 6.6: Average length of stay as a driver of inpatient unit costs .....	25
Figure 6.7: The number of beds per doctor as a driver of inpatient unit costs.....	25
Figure 6.8: The number of beds per nurse as a driver of inpatient unit costs .....	26
Figure 6.9: The number of beds per medical staff as a driver of inpatient unit costs .....	26
Figure 6.10: Quality of inpatient care as a driver of inpatient unit costs.....	27
Figure 6.11: Overall facility quality as a driver of inpatient unit costs .....	28
Figure A.1: Cost of general outpatient care, by facility type.....	31
Figure A.2: Cost of outpatient antenatal or maternal care, by facility type.....	31
Figure A.3: Cost of outpatient pediatric care, by facility type .....	32
Figure A.4: Cost of HTC, by facility type.....	32
Figure A.5: Cost of HIV care or ART, by facility type .....	33
Figure A.6: Cost of PMTCT, by facility type .....	33
Figure A.7: Cost of outpatient TB care, by facility type .....	34
Figure A.8: Cost of family planning, by facility type.....	34
Figure A.9: Cost of NACS, by facility type.....	35
Figure A.10: Cost of dental care, by facility type.....	35
Figure A.11: Cost of ophthalmology, by facility type.....	36
Figure B.1: Cost of general inpatient care, by facility type.....	37
Figure B.2: Cost of inpatient maternal and newborn care, by facility type .....	37
Figure B.3: Cost of inpatient pediatric care, by facility type.....	38
Figure B.4: Cost of inpatient TB care, by facility type.....	38
Figure B.5: Cost of ICU/high care, by facility type .....	39
Figure C.1: Facility governance and management as a driver of outpatient unit costs.....	40
Figure C.2: Patient rights and access to care as a driver of outpatient unit costs.....	41
Figure C.3: Facility risk management as a driver of outpatient unit costs.....	41
Figure C.4: Human resource management as a driver of outpatient staff costs.....	42
Figure C.5: Medication management as a driver of outpatient clinical supplies costs.....	42
Figure D.1: Governance and management as a driver of inpatient unit costs.....	44
Figure D.2: Patient rights and access to care as a driver of inpatient unit costs.....	45
Figure D.3: Facility risk management as a driver of inpatient unit costs.....	45
Figure D.4: Human resources management as a driver of inpatient staff costs.....	46
Figure D.5: Medication management as a driver of inpatient clinical supplies costs.....	46

# ACRONYMS

<b>AIDS</b>	Acquired Immunodeficiency Syndrome
<b>ART</b>	Antiretroviral therapy
<b>GRN</b>	Government of the Republic of Namibia
<b>HFG</b>	Health Finance and Governance Project
<b>HIV</b>	Human Immunodeficiency Virus
<b>HTC</b>	HIV testing and counseling
<b>ICU</b>	Intensive care unit
<b>MoHSS</b>	Namibia Ministry of Health and Social Services
<b>NACS</b>	Nutrition assessment, counseling, and support
<b>NAD</b>	Namibian Dollar
<b>PEPFAR</b>	President's Emergency Plan for AIDS Relief
<b>PMTCT</b>	Prevention of mother-to-child transmission
<b>SHOPS</b>	Strengthening Health Outcomes through the Private Sector Project
<b>TB</b>	Tuberculosis
<b>UHC</b>	Universal Health Coverage
<b>UHCAN</b>	Universal Health Coverage Advisory Committee of Namibia
<b>WHO</b>	World Health Organization





# ACKNOWLEDGMENTS

This study was financed by the U.S. Government through the United States Agency for International Development-funded Health Finance and Governance project.

The authors thank all those who contributed to this report. We would like to recognize the support and commitment of the Ministry of Health and Social Services, Namibia's Social Security Commission, and, specifically, the members of the Universal Health Coverage Advisory Committee of Namibia and its Technical Working Group for providing key input and feedback on the structure and content of this unit cost and quality assessment study. We are grateful to the Ministry of Health and Social Services for providing the data and other sources of essential information critical to the foundation of this study. We would like to thank the private health facilities for their participation in the study and particularly Ms. Esme Botes, the chairperson of the Namibia Association of Private Hospitals, for coordinating and facilitating private sector participation. Further appreciation needs to be expressed to the PharmAccess Foundation of Namibia and the SafeCare team for their relentless work on the quality assessment component of the study.





# EXECUTIVE SUMMARY

## Introduction and background

The Government of the Republic of Namibia (GRN) has prioritized identifying sustainable financing options for the provision of health services and the achievement of universal health coverage (UHC). Critical decisions needed to achieve UHC require substantial information and evidence, including the cost of health service provision. The information will serve as the basis for decision making on the structure and financing of a health system that achieves UHC.

This study assesses the unit costs of health services, provides a basis for the estimation of the total costs of health services, and can help determine the total funding requirements for UHC. To understand the variations in unit costs among health facilities at the same level of care, the Health Finance and Governance (HFG) project, led by Abt Associates, conducted a quality assessment as part of this study.

## Methodology

The Health Finance and Governance Project sought data on the costs and quality of health service provision from health facilities in both the public and private sectors to ensure that the study covers the health system as a whole. Furthermore, the study covered health facilities at different levels, including referral hospitals, district hospitals, clinics, and health centers since these facilities provide different packages of health services and have different overhead costs. HFG collected costing data for the 2014/15 government financial year from both public and private facilities to ensure that all financial data would be available at the time of data collection. HFG performed data analysis for the costing of health services using the Management Accounting Systems for Hospitals methodology (a top-down costing approach) (Partners for Health Reformplus 2004).

HFG performed the quality assessments for the referral, district, and private hospitals using the SafeCare Advance Healthcare Standards assessment methodology and used the SafeCare Basic Healthcare Standards assessment methodology for the quality assessments of the health centers and clinics. The SafeCare assessment team analyzed the quality assessment data for each health facility and generated summaries of findings and roadmaps for quality improvement, which HFG shared with the health facilities.

The HFG technical team performed further analyses to identify any correlations between the quality assessments ratings and the unit costs of services provided.

## Results

The total cost of outpatient care per visit ranges from Namibian dollars (NAD) 313 in health centers to NAD 1,934 in private health facilities. In public facilities, the average cost of outpatient care is NAD507. On average, staff costs constitute the majority of outpatient costs across all facilities (55%), followed closely by clinical supplies (34%). A more detailed description of the costs of outpatient services is in Section 4.1.2.

The total cost of inpatient care per patient day ranges from NAD 1,239 in district hospitals to NAD 4,265 in private health facilities. In public facilities, the average cost of inpatient care is NAD 1,296. On average, staff costs constitute the majority of inpatient costs across all facilities (56%), followed by clinical supplies (31%). A more detailed description of the costs of inpatient services is in Section 4.2.2.

Higher overall facility quality and quality of primary health care and inpatient care scores are correlated with higher outpatient and inpatient unit costs, respectively. Furthermore, higher numbers of visits per doctor, per nurse, and per any type of medical staff are correlated with lower outpatient unit costs. A higher number of beds per doctor is correlated with higher inpatient unit costs, while higher numbers of beds per nurse and per any type of medical staff, as well as higher average length of stay, are correlated with lower inpatient unit costs.

Private facilities had higher outpatient and inpatient costs and scored higher on almost all quality indicators, including overall quality, compared with public facilities.

## Conclusions

The findings of HFG's analysis of the link between costs and quality suggest that lower costs do not necessarily buy adequate quality. However, due to the low sample size and possible endogeneity, these analyses are not intended not to be conclusive, but merely to suggest areas for further investigation. The results do, however, suggest that it is important to take quality considerations into account when making reimbursement decisions. We recommend that further analysis be carried out to explore how quality improvement efforts impact costs.

One of the major limitations of this study was related to the lack of facility-level expenditure data. Tracking facility-level expenditure data will facilitate and improve the accuracy of conducting similar studies in the future.

# I. INTRODUCTION

The GRN has prioritized identifying sustainable financing options for the provision of health services and the achievement of UHC. The World Health Organization (WHO) defines UHC as “providing financial protection from the costs of using health services for all people of a country as well as enabling them to obtain the health services that they need (of sufficient quality to be effective).” The WHO goes on to define the goals of UHC as: equity in the use of health services; quality of care; and financial protection (McIntyre 2014).

In the Namibian context, achievement of UHC will require expanding health coverage and improving financial protection, indicating that sustainable health financing is an increasingly pertinent issue that the GRN needs to address. In addition, Namibia has been classified as an upper middle income country with adequate domestic resources, so donors have been reducing their support. Particularly affected are Human Immunodeficiency Virus (HIV) interventions, which have made significant progress in combatting the disease and receive funding from donors such as the U.S. President’s Emergency Plan for Acquired Immunodeficiency Syndrome (AIDS) Relief (PEPFAR) and the Global Fund.

The Ministry of Health and Social Services (MoHSS) and the Social Security Commission are working in close collaboration to explore the way forward to achieving UHC. They have established the Universal Health Coverage Advisory Committee of Namibia (UHCAN) for this purpose. The objective of UHCAN is to provide guidance to the MoHSS on the development of sustainable systems and policies to achieve UHC in Namibia with a focus on compiling evidence and developing alternative policy approaches tailored to the Namibian context.

For the UHCAN to make these critical decisions to achieve UHC, the committee will require substantial information and evidence on the structure and financing of a health system on which to base its decision making. One key piece of the required information is the actual cost of health service provision. This will ultimately affect many factors, including the total amount of financing required for a specified package of health services, provider reimbursement amounts, and required resource management mechanisms.

As a result, HFG Namibia, through support from United States Agency for International Development, has been requested to provide technical assistance to the UHCAN by conducting a study on the unit costs of health services in Namibia. The data will be an input into a UHC feasibility study on UHC, which will enable the UHCAN to make informed decisions about the funding requirements and evaluation of health financing options to achieve UHC.





## 2. BACKGROUND OF THE STUDY

### 2.1 Rationale for the study

The UHCAN has been given the mandate to provide the MoHSS with guidance on approaches to expanding health coverage in terms of the population, accessibility, and quality of health service. The UHCAN also must consider equitable distribution of services, the types of services provided in the essential benefits package, the proportion of costs covered, and the affordability and the sustainability of the financing sources. The sustainability of the HIV/AIDS response is a particular concern since donors provide approximately 51 percent of HIV/AIDS spending. With the prospect of continued decreases in donor funding, there is a significant risk to the continuity of the substantial gains Namibia has made in the fight against this disease.

The UHCAN has commissioned various studies, including a health financing review, burden-of-disease study, and a study on the capacity of the health system. The goal was to collect information on some of the defined areas to enable informed decision making and evidence-based advice to the GRN. But the GRN needs additional information on the cost of health services in Namibia to achieve UHC. There is significant pressure on the government for a health system that allows improved access to quality service within existing resource constraints. The need for equity of access to health care further necessitates efficient allocation and proper management of scarce resources that the GRN can achieve effectively only with a comprehensive understanding of the costs of service provision.

In many developing countries, cost data are not always available from routine data systems due to poor information systems and lack of resources devoted to hospital management. The result has been an over-reliance on expenditure review data. These data are, typically, limited to use for accounting purposes only, and they are not adequate to assess efficiency levels or accurate estimations of costs per patient for services provided. Without good quality cost data, it is not possible to make accurate projections, improve technical efficiency, control expenditures, or enhance manager accountability.

Currently, limited national information exists on the actual costs of health care provision, in both the public and the private sectors. This information involves stringent cost information requirements from health facilities, which in turn entails substantial collection efforts and accurate analysis. Furthermore, obtaining reliable cost data requires good quality primary data, appropriate costing methods and assumptions, and comprehensive analyses to understand the determinants of costs. Only limited costing studies have been conducted within the public sector of Namibia, and the information generated through these studies provides limited usefulness to the UHCAN's current decision-making requirements. The information is dated and limited to only one intermediate referral hospital and the outreach services provided by a sample of district hospitals.

Within the private sector, cost information also is not readily available. Current estimates of health insurance expenditures are based on claim costs of existing schemes as opposed to the costs of service provision. To achieve sustainable UHC financing by maximizing the efficient use of scarce resources, it is important to ensure negotiation of reimbursement rates and premium contributions based on actual costs of health care provision.

Based on international experience, one of the key cost drivers in the provision of health care services is service quality. The relationship between costs and quality of services is critical, given that the provision of quality services is an important cornerstone for the achievement of UHC. Currently, only a few health facilities have undergone quality assessments, and no comparable information exists on the quality of services at different facilities.

## 2.2 Significance and applications of the study results

This study on the unit costs of health services provides a basis for estimating total costs of health services and determining the total funding requirements for achieving UHC. Furthermore, this cost information will help in negotiating reimbursement rates with health care providers, designing health system financing options, and setting insurance premium contributions.

In addition, this study provides essential information the GRN requires for decision making related to allocative and technical efficiencies, which have been on the ministry's agenda for some time. The MoHSS has developed a resource allocation formula to replace the historical budgeting approach currently used. This cost information provides additional evidence to support the approval and implementation of such a policy.

To understand the variations in unit costs among health facilities at the same level of care, HFG commissioned a quality assessment as part of this study. This assessment is based on the Donabedian framework for quality, according to which quality can be measured by examining elements of structure, process, and outcomes (Donabedian 1988). The quality assessment provides valuable information to help understand the level of quality care for which health providers receive compensation. Quality of care can explain differences in unit costs among providers. This information will be useful in the design of reimbursement mechanisms to encourage high quality of care while containing costs.

## 2.3 Objectives of the study

The main objective of the study was to determine the cost per unit of service (e.g., per outpatient visit or inpatient day<sup>1</sup>) in selected public and private health facilities. HFG based its analysis on real expenditures incurred and the packages of services provided at different levels of health facilities in the 2014/15 financial year of the health facilities included in the study. The study was expected to generate ratings of the quality of services provided at the different health facilities.

---

<sup>1</sup> The cost per outpatient visit refers to the cost of each visit a patient makes in a health facility in an outpatient setting. The cost per inpatient day refers to the cost of each day a patient spends in a facility in an inpatient setting.



## 3. METHODOLOGY

This section describes the approach that was followed for the implementation of the study and the scope of the research activities.

### 3.1 Sample selection

HFG sought data on the costs and quality of health service provision from health facilities in both the public and private sectors to ensure that the study covers the health system as a whole. Furthermore, the study covered health facilities at different levels (including referral hospitals, district hospitals, clinics, and health centers) because each of these facilities provides a different package of health services and has different overhead costs. Due to the study's budget and time constraints, it was not possible to include all public and private health facilities in the study sample. Therefore, HFG limited the data collection to a sample of health facilities selected randomly within a set of predefined strata.

For public facilities, HFG included different levels of health care provision in the study sample, specifically one referral hospital, four district hospitals, four health centers, and four clinics. However, during data collection, HFG noted that one of the facilities selected as a clinic was in fact a district hospital that had a separate HIV clinic. HFG decided to cost the full hospital instead of only the HIV clinic. As a result, the final sample included five district hospitals and three clinics. In selecting the sample, HFG ensured representation of different regions based on the geographic zones of Namibia (North East, North West, Central, and South). Furthermore, HFG spread public health centers between rural and urban locations to ensure identification of differences between these locations. Thirteen public health facilities were in the study sample for data collection.

The reluctance of the private sector to participate in the study limited the possibility of selecting facilities at random for inclusion in the study sample. Instead, HFG asked private hospitals to participate through coordination and cooperation with the Namibia Association of Private Hospitals. Although HFG initially targeted a sample of four private facilities at different levels of health care provision, only three private facilities, all at the hospital level and all based in Windhoek, participated.

HFG conducted the sample selection with reference to the Health Facility Census of 2009 (MoHSS and ICF Macro 2010) and the Strengthening Health Outcomes through the Private Sector (SHOPS) project's (O'Hanlon et al. 2010) private sector assessment report. HFG compiled a list of all public and private health facilities and categorized the health facilities according to the strata noted above. Within each of the defined categories, HFG selected health facilities at random. HFG conducted a second random selection for the public clinic in the South. The health facility HFG initially selected was found unfeasible due to accessibility challenges and logistical complexities for data collection.

## 3.2 Data collection

### 3.2.1 Costing data

HFG collected the costing data for the 2014/15 government financial year to ensure availability of all financial data at the time of data collection. A team of data collectors under the technical guidance of the HFG's costing team collected the cost data between May 2016 and February 2017.

HFG provided the public health facilities with a list of required data to produce and communicated dates for data collection visits via the regional MoHSS offices. HFG faced significant challenges during data collection since the lower level public health facilities, such as health centers and clinics, do not maintain most of the detailed cost information and the financial management function is not decentralized at this level. Instead, most of the cost information came from either the regional or even national level of the MoHSS, which meant that the data often were not disaggregated by the individual health facilities. Thus, it was necessary to apply various assumptions to allocate the district or regional costs to an individual health facility. The data from national and regional levels included the Funds Distribution Certificate Report, architectural plans of the facilities, salary and grading structures (including salary ranges per job grade), annual reports, and regional budgets. HFG collected directly from all health facilities data on the utilization of services, facility capacity, staffing numbers, allocation of staffing time, utilization of pharmaceuticals and clinical supplies across departments, and asset inventories. The district and referral hospitals generally maintained some level of financial or cost data, so HFG partially obtained this type of information directly from the hospitals.

HFG obtained data from the national-level Directorate of Pharmaceutical Services on total pharmaceutical and clinical supplies expenditures for most facilities. However, the data for some facilities were not available at the national level because the regional medical store or another hospital distributed pharmaceuticals for the smaller facilities and did not maintain this information or report it back to the national level. HFG obtained the total costs for laboratory tests per facility from the National Institute of Pathology.

For private health facilities, HFG met briefly with the heads of the three hospitals to discuss the data requirements and expectations for their participation in the study. They also received a list of the data requirements and set with HFG the dates for data collection visits. HFG obtained all data relating to private health facilities directly from the health facilities. Building costs were not included in this study, as information on the cost of buildings could not be obtained from the facilities or from the central level. Depreciated equipment costs were collected during data collection and included as such in the study.

### 3.2.2 Quality assessment

HFG performed the quality assessments for the referral, district, and private hospitals using the SafeCare Advance Healthcare Standards assessment methodology. HFG used the SafeCare Basic Healthcare Standards assessment methodology for the quality assessments of the health centers and clinics. These assessment standards were established by PharmAccess, the Joint Commission International and the Council for Health Service Accreditation of Southern Africa. The standards serve as an objective measurement and rating of the quality level of basic health care facilities. SafeCare focuses on 13 areas of operation (service elements) that together represent the different aspects of health care delivery.

These elements include:

- ▶ Management and leadership
- ▶ Human resource management
- ▶ Patient and family rights and access to care
- ▶ Management of information
- ▶ Risk management
- ▶ Primary health care services
- ▶ Inpatient care
- ▶ Operating theatre and anesthetic services
- ▶ Laboratory services
- ▶ Diagnostic imaging
- ▶ Medication management
- ▶ Facility management services
- ▶ Support services

Detailed definitions of these elements can be found in the SafeCare standards manual (SafeCare n.d.). A team of certified SafeCare specialists collected data for the quality assessments concurrently with the costing data collection.

### 3.3 Data cleaning and analysis

After the completion of data collection from the facilities, HFG rigorously reviewed the data for completeness and consistency before consolidating it into a combined Excel spreadsheet. Where expenditure data were from the district or regional level only, HFG applied different means of cost apportionment, such as an educated estimate of the proportion of regional costs (as advised by district or regional health office staff), catchment population size, or the relative percentage of utility costs.

HFG used the Management Accounting Systems for Hospitals methodology to perform data analysis for the costing of health services (Partners for Health Reformplus 2004). This methodology is adaptable to the size and type of health facility and thus can apply to lower level facilities such as health centers and clinics. The main function of the methodology is to calculate the financial costs of interventions while also taking into account any costs that accounting records do not capture, for example donated goods and services, pharmaceuticals, and other materials, by collecting the necessary data from other sources. HFG calculated all costs and reported them in 2015 Namibian dollars.

The SafeCare assessment team analyzed the quality assessment data for each health facility and generated summaries of findings and roadmaps for quality improvement, which the team shared with the health facilities. Furthermore, the SafeCare team analyzed the findings of the individual health facilities and consolidated the results to identify systemic issues within the different segments of the health system.

The HFG technical team performed further analyses to identify any correlations between the quality assessments ratings and the unit costs of services. The purpose of these explorations was not causative, but rather descriptive, given that quality and costs are endogenous. This analysis provides a preliminary indication of quality elements or components that may need to be explored further when making reimbursement or funding decisions. Taking into account not only unit costs but also the quality of the care provided would lead to identifying costs that are efficient while also being sufficient for the provision of acceptable-quality care.

## 3.4 Data limitations

HFG identified numerous data gaps where the information was not available at the health facility level or where the data were not available at the time of the data collection visit. HFG performed a lengthy process of data follow up either by contacting the facility directly or requesting the outstanding information through the MoHSS national and regional levels. HFG followed up these requests for outstanding information on a regular basis until a specified cut-off point.

HFG obtained the data on pharmaceutical and clinical supplies expenditure of public health facilities at the national level for most public facilities. However, the data for some facilities were not available at the national level since the regional medical store or another hospital distributed pharmaceuticals for these facilities. This means nobody reports the data back to or maintains the data at the national level. While HFG requested the data from the regional level and/or facility level a number of times, HFG did not obtain the information for two public clinics. As a result, HFG in consultation with the MoHSS costing team decided to exclude the two facilities from our analysis.

One district hospital does not maintain any of its operational expenditure data separately but instead disaggregates the information at regional level. Furthermore, no means for allocating a portion of the regional expenditures to the hospital were available. For other facilities, HFG used an estimate of the proportion of regional costs, catchment population size, or the relative percentage of utility costs as a basis for allocating operational expenditures. Unfortunately, none of this information was obtainable for that district hospital despite regular follow up and requests for data. Therefore, HFG had to exclude the hospital from the analysis, resulting in the inclusion of 10 public facilities in the final sample for analysis.

The private hospitals participating in the study did not have their own in-house x-ray/imaging services or pathology services, although these services are usually available on site through different providers that rent space in the hospitals. Most of the private hospitals provided intermediate clinical services; however, independent providers also offered these services and claim their costs directly from the patient or their medical aid fund. Since all these services are not part of the hospital, HFG did not include these services in the costing exercise. Furthermore, the hospitals generally do not employ medical officers. Instead, the medical officers come to the hospital to consult with the patients and then charge the patients or their medical aid funds directly for the provision of their services. Thus, the cost of service provision in the private sector generally does not include the cost of any medical personnel other than nurses.

Finally, HFG used a top-down costing approach. The costs of individual services calculated through this study and reported in this report are likely less accurate than if we used a combined or bottom-up approach.

## 4. COST OF HEALTH SERVICES

### 4.1 Costs of outpatient care

#### 4.1.1 Overall costs of outpatient care

The cost of outpatient care per visit ranges from NAD 313 in health centers to NAD 1,934 in private health facilities (which included three hospitals) (Table 4.1). In public facilities, the unweighted average cost of outpatient care across levels of facilities is NAD 507. The costs of outpatient care in one district hospital drive up average costs among district hospitals (Figure 4.2). If that facility is excluded from the calculation, average costs of outpatient care per visit among district hospitals would be NAD 414, average outpatient staff costs per visit would be NAD 215, average clinical supplies costs per visit would be NAD 160, and other outpatient costs per visit would be NAD 39.

**Table 4.1: Average outpatient costs by facility type, 2015 Namibian Dollar**

Facility type	Staff costs per visit*	Clinical supplies costs per visit	Other costs per visit	Total outpatient costs per visit
Referral hospital	241	138	49	428
District hospital	347	415	52	814
Health center	154	92	67	313
Clinic	388	43	41	472
Private health facility	827	980	126	1,934

\*Inclusive of doctor and nurse costs. Among private facilities, only one facility has a doctor that provides outpatient care.

Staff costs represent a range from 43 percent of total outpatient unit costs in district hospitals to 82 percent of total outpatient unit costs in clinics. On average, staff costs constitute the largest component of outpatient cost across all facilities (55%), followed by clinical supplies (34%) (Figure 4.1). Other costs constitute 11 percent of total outpatient unit costs on average, include all costs other than staff and clinical supplies, and cover the following: equipment and furniture; vehicles; courier, TV, photocopy, postal services; medical gases; water, sewerage, electricity, and other utilities; gasoline and lubricants; telephone services; general maintenance; equipment maintenance and supplies; uniforms; butane gas; food services; cleaning and washing; laundry; other contracted services (e.g., security, procurement); office supplies; textiles and linen; depreciation of buildings and structures; and all other indirect costs.

**Figure 4.1: Contribution of cost categories to total outpatient unit cost, on average**

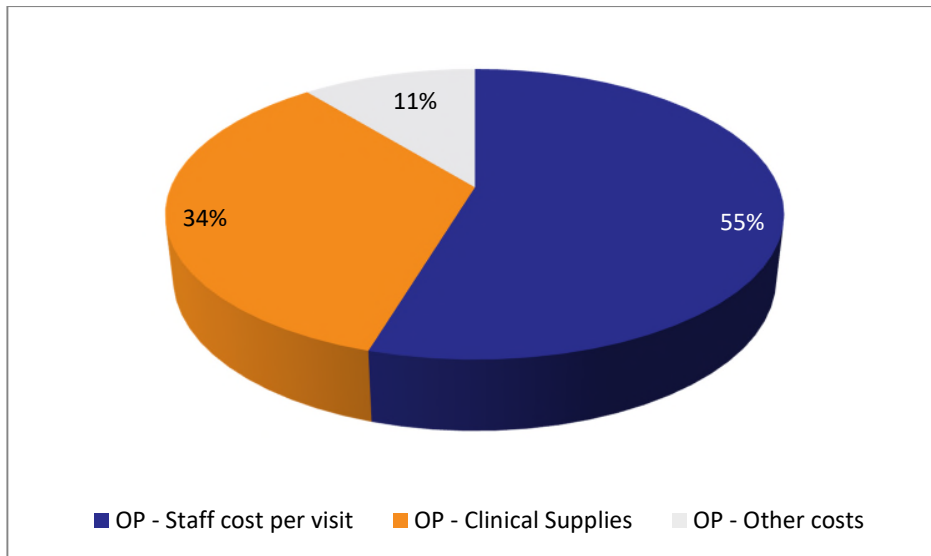
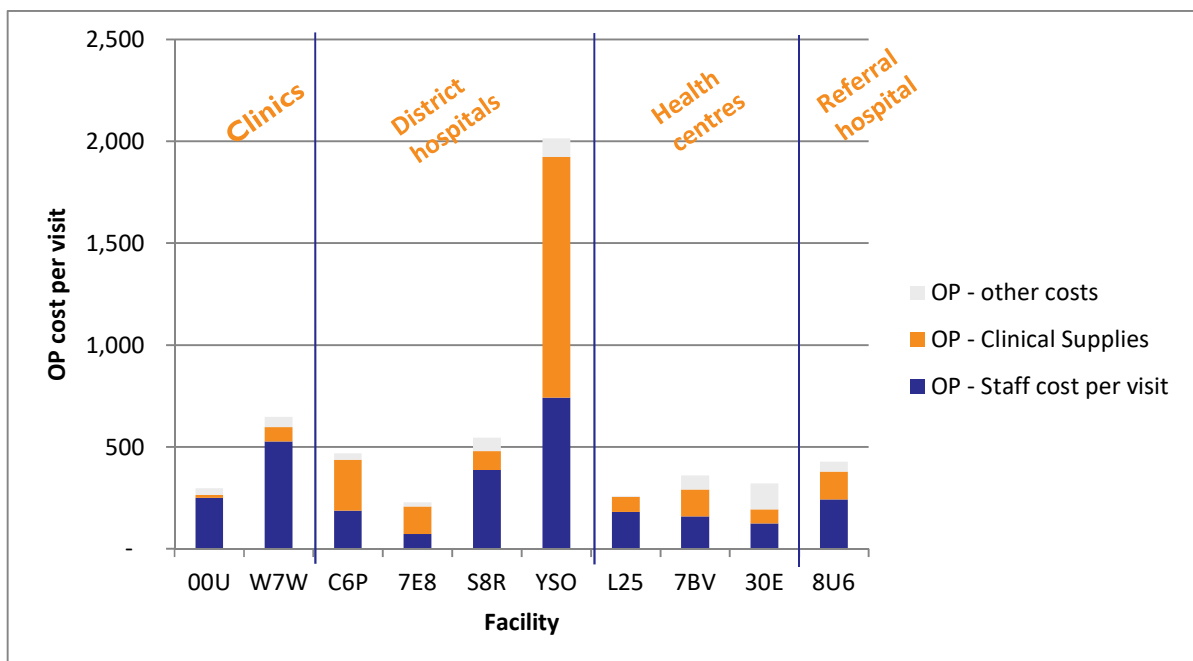


Figure 4.2 illustrates the variation of unit costs in public facilities based on facility type. To preserve confidentiality, HFG replaced facility names with randomly generated three-letter codes throughout this report. While facility YSO is considered a public facility, it is owned by a faith-based organization and subsidized by the government. Its significantly higher outpatient costs per visit can be explained by its different ownership and management model and its higher overall quality compared to other public facilities. If YSO is removed from this analysis, district hospitals and health centers have lower average outpatient unit costs compared to clinics and the referral hospital.

**Figure 4.2: Outpatient unit costs in public facilities, by facility type**



## 4.1.2 Costs of outpatient services

Where data on the annual number of visits separated by the type of service were available from the facilities, we calculated and reviewed the costs of the various services provided.

Table 4.2 presents the average costs per visit of outpatient services by facility type. The referral hospital in the analysis provided most of the services listed in Table 4.2. A breakdown of the cost of outpatient services by facility is included in Annex A.

**Table 4.2: Average unit costs of outpatient services by facility type, 2015 Namibian Dollar**

Service	All facilities	Referral hospital	District hospitals	Health centers	Clinics	Private facilities
General outpatient care	467	402	387	647	494	183
Antenatal care/maternal care	470		381	604	359	
Pediatric care/baby growth monitoring	393		95	390	548	
HIV testing and counseling (HTC)	799	1,634	165	999	717	
HIV care/antiretroviral therapy (ART)	786	505	1,671	153	309	
Prevention of mother-to-child transmission (PMTCT)	3,598	246	830	7,875	244	
Tuberculosis (TB)	1,490		540	971	4,945	
Family planning	157		56	96	299	
Nutrition assessment, counseling, and support (NACS)	3,286			25	4,917	
Dentistry	266	304	347			
Dermatology	880		880			
Ear, nose, and throat (ENT)	554	554				

Obstetrics and gynecology	139	139				
Oncology	43,252					43,252
Ophthalmology	649	142	1,156			
Orthopedics	3,628	3,628				
Outpatient surgery	621	621				
Plastic surgery	340	340				
VMMC	9,840		9,840			

Ten of the facilities in our analysis have general outpatient departments. The average cost of general outpatient care per visit for the 10 facilities is NAD 467, ranging from NAD 183 in private facilities to NAD 647 in public health centers. When excluding the health center with the highest cost (7BV), the average cost of general outpatient care per visit in the remaining facilities is NAD 351. If facility 7BV is excluded, the average cost of general outpatient care per visit is lowest among private facilities (NAD 183) and highest among clinics (NAD 494). The average cost of general outpatient care per visit is only NAD 214 among health centers if 7BV is excluded. The significantly higher costs in 7BV compared to other health centers can be explained by differences in the utilization of services: 7BV received only about 2,400 general outpatient visits during the period covered by this study, compared to about 11,900 received in facility 30E, another health center that incurred similar total outpatient costs during the same period.

Seven of the facilities included in our analysis have outpatient antenatal or maternal care departments. The average cost of outpatient antenatal or maternal care per visit across all seven facilities is NAD 470, ranging from NAD 359 in clinics to NAD 604 in health centers.

Six of the facilities included in our analysis have outpatient pediatric care departments or provide baby growth monitoring services. The average cost of outpatient pediatric care per visit for the six facilities is NAD 393, ranging from NAD 95 in district hospitals to NAD 548 in clinics. Among health centers, the average cost of outpatient pediatric care per visit is NAD 390. However, there is wide variation in the cost of outpatient pediatric care among facilities of the same type (e.g., clinics or health centers).

Eight of the facilities in our analysis provide HTC services. The average cost of HTC care per visit for the eight facilities is NAD 799, ranging from NAD 165 in district hospitals to NAD 1,634 in the referral hospital.

Eight of the facilities in our analysis provide HIV care or ART services. The average cost of HIV care or ART per visit for the eight facilities is NAD 786, ranging from NAD 153 in health centers to NAD 1,671 in district hospitals.

Eight of the facilities included in our analysis provide PMTCT services. The average cost of PMTCT per visit for seven of the eight facilities is NAD 3,598, ranging from NAD 244 in a clinic to NAD 7,875 in public health centers. One health center (30E) was a significant outlier. The calculated cost of PMTCT per visit in



that health center is NAD 23,544. In the remaining facilities, the average cost of PMTCT per visit is NAD 244 among clinics, NAD 40 among health centers, NAD 830 in a district hospital, and NAD 246 in the referral hospital.

Six of the facilities included in our analysis provide outpatient TB services. The average cost of outpatient TB care per visit for the eight facilities is NAD 1,490, ranging from NAD 540 in district hospitals to NAD 4,945 in clinics.

Six of the facilities included in our analysis have family planning departments. The average cost of family planning per visit for the six facilities is NAD 157, ranging from NAD 56 in district hospitals to NAD 299 in clinics.

Three of the facilities included in our analysis provide NACS services. The average cost of NACS per visit for the three facilities is NAD 3,286, ranging from NAD 25 in health centers to NAD 4,917 in clinics.

Three of the facilities included in our analysis provide dental services. The average cost of dental care per visit for the three facilities is NAD 266, ranging from NAD 247 in district hospitals to NAD 304 in the referral hospital.

Two of the facilities included in our analysis provide ophthalmology services. The cost of ophthalmology care per visit is NAD 1,156 in a district hospital and NAD 142 in the referral hospital, averaging NAD 649 for the two facilities.

## 4.2 Costs of inpatient care

### 4.2.1 Overall costs of inpatient care

Costs of inpatient care in Namibia by facility type are in Table 4.3. The total cost of inpatient care per visit ranges from NAD 1,239 in district hospitals to NAD 4,265 in private health facilities. In public facilities, the unweighted average cost of inpatient care is NAD 1,296.

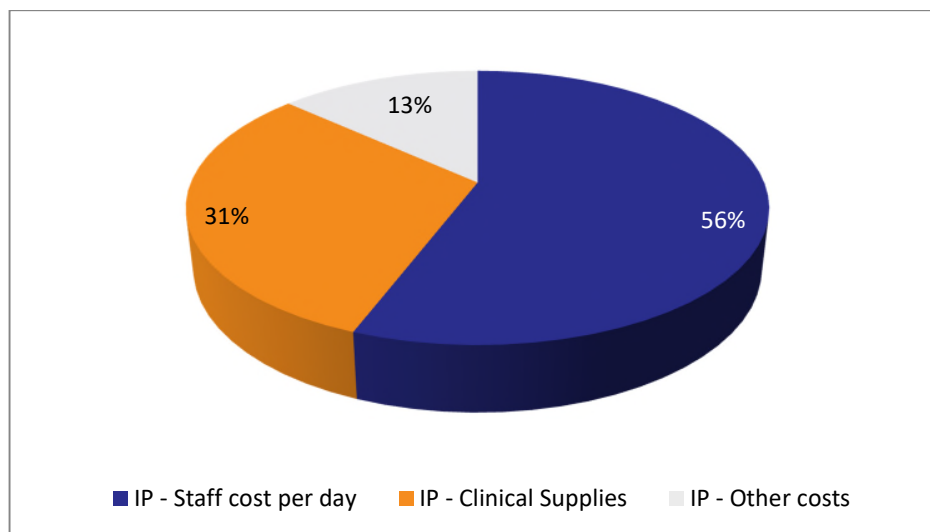
**Table 4.3: Inpatient costs by facility type, 2015 Namibian Dollar**

Facility type	Staff costs per visit*	Clinical supplies costs per visit	Other costs per visit	Total inpatient costs per visit
District hospital	672	420	147	1,239
Referral hospital	895	231	227	1,353
Private health facility	2,010	1,775	480	4,265

\*Inclusive of doctor and nurse costs. Among private facilities, only one facility has doctors that provide inpatient care.

Staff costs represent a range from 47 percent of total inpatient unit costs in private facilities to 66 percent of total inpatient unit costs in referral hospitals. On average, staff costs constitute the majority of inpatient costs for all facilities (56%), followed by clinical supplies (31%). Other costs constitute 13 percent of total inpatient unit costs, on average. Figure 4.3 shows the contribution of each cost category to the total inpatient unit cost.

**Figure 4.3: Contribution of cost categories to total inpatient unit cost, on average**



## 4.2.2 Costs of inpatient services

Where data on the annual number of patient days for each service were available from the facilities, we calculated and reviewed the costs of the various services provided.

Table 4.4 presents the average costs per visit of inpatient services by facility type. The referral hospital provided most of the services in Table 4.4. A breakdown of the cost of inpatient services by facility is included in Annex B.

**Table 4.4: Average unit costs of inpatient services by facility type, 2015 Namibian Dollar**

Service	All facilities	Referral hospital	District hospitals	Private facilities
General inpatient care	3,193		1,375	5,010
Inpatient maternal and newborn care	2,863	2,467	2,696	3,928
Inpatient pediatric care	2,063	1,212	899	6,409
Inpatient TB care	953	1,488	774	
Intensive care unit (ICU)/high care	494	615		374
Inpatient general surgery	1,463	1,463		
Intravenous unit	1,663	1,663		
Multidrug resistant (MDR) TB care	895	895		
Neonatal intensive care	8,852			8,852
Premature care	1,329	1,329		

Six of the facilities in our analysis have general inpatient wards. The average cost of general inpatient care per day for the six facilities is NAD 1,110, ranging from NAD 414 in district hospitals to NAD 1,805 in private health facilities. Two additional facilities, a district hospital and the referral hospital, had general inpatient female and male wards instead of mixed general inpatient wards. The costs of general inpatient care per day in those facilities were NAD 145 and NAD 146, respectively.

Six of the facilities in our analysis have maternal and newborn wards. The average cost of maternal and newborn care per day for the six facilities is NAD 1,304, ranging from NAD 446 in the referral hospital to NAD 3,259 in a private health facility.

Five of the facilities in our analysis have pediatric wards. The average cost of pediatric care per day for the five facilities is NAD 753, ranging from NAD 188 in the referral hospital to NAD 2,840 in a private health facility.

Five of the facilities in our analysis have TB wards. However, we only calculated the cost of TB care per day in four of those facilities (the data on the number of patient days were not available for one of the facilities). The average cost of TB care per day for the four facilities is NAD 225, ranging from NAD 200 in the referral hospital to NAD 233 in district hospitals.

Two of the facilities in our analysis have ICU/high care wards. The cost of ICU/high care per day is NAD 72 in the referral hospital and NAD 166 in a private facility, averaging NAD 119 across the two facilities.



## 5. QUALITY OF HEALTH SERVICES

### 5.1 Quality of health services in public health facilities

Table 5.1 shows the average scores for each service element of the quality assessments by facility type for the public health facilities in the survey. Overall quality scores were similar across different types of facilities, on average, ranging from 55 among health centers to 65 among clinics.

Based on the overall facility scores and the individual scores per service element, each health facility received a level in its Certificate of Improvement that reflects the quality level, ranging from 1 (modest quality) to 5 (high quality). Within the public sector, both clinics in the study sample achieved a quality level of 2, implying modest quality. Two of the health centers achieved a level of 2, while one of the health centers demonstrated a medium quality level (3). All four of the district hospitals and the referral hospital also achieved a quality level of 3.

The service element with the highest score is surgery and anesthesia services, with an average score of 80, but there were only four district hospitals and one referral hospital contributing to this score. For all five of these facilities, this service element was among the three highest scoring service elements. The service element with the second highest score is primary health care (outpatient) services, with an average score of 78. Primary health care (outpatient) services is also the only service element that is consistently among the three highest scoring elements for all public health facility types. It is the best performing service element for clinics, health centers, and district hospitals, which should predominantly provide these services within the referral system. The MoHSS has adopted a primary health care approach in its service delivery, and it is encouraging that the rating for the quality of these services is relatively high. Similar to the strong performance in the primary health care (outpatient) services, the inpatient services element performed comparatively well by achieving a score of 72 out of 100.

The worst performing service element among public health facilities is risk management, with a score of 40, followed closely by support services with a score of 47. The human resources management service element is one area where the referral hospital, district hospitals, and health centers have also performed relatively poorly, with scores of 45, 47, and 49 respectively. The overall average of all public sector facilities got a big boost, however, from the strong performance of the clinics, with a score of 70.

**Table 5.1: Average quality assessment scores in public sector facilities**

Service element	Referral hospital	Average district hospitals	Average health centers	Average clinics	Overall public facility average
Governance and management	51	51	56	59	54
Human resources management	45	47	49	70	52
Patient rights and access to care	62	62	51	74	61
Management of information	63	66	70	78	69
Risk management	41	43	41	32	40
Primary health care (outpatient) services	74	78	75	85	78
Inpatient care	77	70	n/a	n/a	72

Service element	Referral hospital	Average district hospitals	Average health centers	Average clinics	Overall public facility average
Surgery and anesthesia services	88	78	n/a	n/a	80
Laboratory services	n/a	n/a	n/a	n/a	n/a
Diagnostic imaging services	52	71	75	n/a	69
Medication management	64	59	67	73	65
Facility management services	88	57	43	55	56
Support services	33	46	42	63	47
Overall facility score	61	61	55	65	60

All types of public health facilities were noncompliant on many of the same indicators within the risk management service element. Most facilities have the national post-exposure prophylaxis guidelines, national waste management policy, and the national infection prevention control policy available within the facility. While all facilities also have security guards at the facility, there is limited control over the access of people into the facility except at the hospital level. Furthermore, none of the facilities has security in place within the facility to provide for access control to restricted areas or to provide security to the personnel and patients inside the facility. While facilities had firefighting equipment in place, the equipment in most facilities was overdue for a service, and staff did not know how to operate the equipment. There are not fire rehearsals in any of the facilities. The facilities do not have formal risk management plans, have not identified the clinical and nonclinical risks, and have no team responsible for the management of such risks. There are also no formal facility-level emergency disasters plans in place. Facilities generally did not have any formal occupational health and safety programs. If they did have such a program in place, it was not sufficiently comprehensive. Although the facilities do have the national waste management policy in their facility and mostly adhere to the waste management color coding, some facilities were noncompliant in terms of the storage and removal of waste from the facility property or did not have inventory of certain color-coded bags.

In terms of support services, the main areas of noncompliance related to the food preparation, laundry services, and cleaning services. Food services are available only in the district hospitals and referral hospitals in Namibia, which means that the findings relating to food preparation relate only to these types of facilities. Within the hospitals, the kitchens generally had limited access controls, with non-kitchen staff able to enter the kitchen freely. Most of the kitchens are not well ventilated or temperature controlled. Nor do they have any measures for fly control, which resulted in many flies in the kitchens. In some instances, kitchen waste is kept in plastic bags on floors due to a lack of closed waste bins. Although staff generally demonstrated some level of knowledge of food hygiene, health, and safety precautions, kitchen personnel receive no formal training. In terms of laundry services, the laundries do not have demarcated areas for soiled and cleaned linen, and washing equipment in some facilities is not sufficient to meet the facility's needs. The cleaned laundry is not stored in a way to guarantee hygiene. In health centers and clinics, the laundry services are outsourced, but the storage of soiled and clean linen remains a problem within the facility. Within the cleaning services division, there are no documented policies or procedures for cleaning, and cleaning registers/schedules are not in place. The cleaning materials, mops, and brooms are not stored in a designated secure area, and there is no dedicated and secure place for drying mops. Although waste is generally disposed of in color-coded bags, many facilities do not store waste in a dedicated and secure place before incineration. In most facilities, support services staff did not receive training on infection prevention control policies and procedures.

For the health centers, district hospitals, and the referral hospital, the main indicators of noncompliance in the human resources management service element include poor maintenance of personnel files. They do not include job descriptions, staff appraisal documents, or in-service training records. They often are not current and are not updated annually. Some facilities do not maintain in personnel files proof of credential checks and documentation of degrees/diplomas and registrations with the Health Professions Councils of Namibia. The job descriptions are not customized to the specific position and thus do not specify the details of accountability, responsibility, formal lines of communication, principal duties, and entitlements. Most facilities do not monitor or analyze absenteeism and sickness rates. All of the facilities lacked a formal documented orientation plan and in many instances, facilities could not provide evidence that they conducted staff orientations. Most facilities do not have standardized in-service training plans and often provide training to specific cadres only and in a nonstandardized way. Facilities do not maintain staff appraisal documents in the staff files and in many cases do not do appraisals or do them irregularly and only for certain cadres. Proof of credential checks was missing in some personnel files.

## 5.2 Quality of health services in private health facilities

The average overall facility score for private hospitals of 83 is significantly higher than the overall score of public sector facilities of 60 and the average facility score of public hospitals of 61. The overall facility scores of the private facilities ranged between 78 and 86 points. Two of the private hospitals in the study achieved a quality level certification of level 3, while one of the private hospitals achieved a quality level certification of level 5. While the average overall facility score and the overall facility scores of the individual private hospitals are considerably higher than the average overall facility score of the public hospitals, the quality level certification levels of two of the private facilities are the same as the certification level of the public hospitals included in the study. This is due to the fact that certain policies and procedures are not implemented at these private facilities, which prevents them from achieving a higher quality level certification although their overall score is relatively high. Only one of the private hospitals significantly outperformed the public hospitals in terms of the quality level certification.

The average scores of the individual service elements reveal that the best performing areas within the private facilities include management of information with a score of 93, facility management services with a score of 92, inpatient care with a score of 91, and surgery and anesthesia services with a score of 90 points. Human resources management is by far the worst performing service element, with an average score of 59, followed by support services with a score of 76 and risk management with a score of 78.

**Table 5.2: Average quality assessment scores in private sector facilities**

Service element	Overall private facility average
Governance and management	84
Human resources management	59
Patient rights and access to care	84
Management of information	93
Risk management	78
Primary healthcare (outpatient) services	81
Inpatient care	91
Surgery and anesthesia services	90
Laboratory services	n/a
Diagnostic imaging services	n/a
Medication management	88
Facility management services	92

Service element	Overall private facility average
Support services	76
Overall facility score	83

The human resources management service element was consistently the lowest scoring service element for the three private facilities. All of the private facilities have some part of the human resources management function outsourced to consultants or human resources service providers, which in some instances has resulted in the fragmentation of the function. For all three private hospitals, concerns were raised about the job descriptions of staff. In some instances, facilities do not keep job descriptions on file at all, the job descriptions are not customized to the specific responsibilities and accountability of the individual position, or they are not updated annually and signed by the relevant employee. One of the hospitals does not have a recruitment policy in place, while another hospital needs to revise its policy. One of the hospitals does not have any evidence that it performed credential checks for new recruits, while the other two facilities do not have consistent documentation of verification of certificates and licenses or maintain only noncertified copies on file. The induction programs of two of the private hospitals need to be improved by ensuring that the induction program is offered to all staff (all cadres and permanent and contracted/temporary staff) and that they maintain records documenting implementation of all induction orientation programs. Two of the facilities do not analyze absenteeism and sick leave rates on a regular basis.

The facilities generally performed well in terms of most of the indicators in the support services section. They adhere to strict food hygiene and safety policies, restrict access to kitchens, and have strong systems in the laundry, with clearly demarcated areas for dirty and clean laundry. One of the hospitals has outsourced many of the support services, but hospital staff are responsible for ensuring the contractors adhere to the standards the hospital requires. Areas for improvement in the three different facilities include having a cleaning roster available in all wards, implementing a more organized waste management system with color coding, dedicating areas for drying and storing mops and brooms, conducting a formal training on laundry service, waste management and infection prevention control, having dedicated space within the laundry to store clean laundry, and consistently monitoring and recording room and fridge temperatures in the kitchen.

In terms of the risk management service element, there is a need for systematic identification, documentation, and planning for all service-related clinical and nonclinical risks. Two of the private hospitals did not have a comprehensive risk management plan and risk register in place, including dedicated persons responsible for the risk management process. One facility did not maintain any minutes of the risk management committee meetings. Furthermore, the occupational health and safety policies of two private hospitals were not sufficiently comprehensive. Two of the three hospitals did not perform fire evacuation drills on a regular basis. One of the facilities did not have an assembly point outside the facility, while the evacuation route plan of another facility did not clearly indicate the positions of fire extinguishers and firehoses. One facility did not have the contact details of police displayed at the facility in case of an emergency. Two hospitals should improve handwashing signage by adding posters of proper handwashing techniques. One of the hospitals needs to improve its signage of restricted areas. One of the hospitals had no system in place for checking adherence to waste management policies and training of staff, including support staff. While all hospitals have some system to monitor near misses or adverse events, one of the hospitals does not have a system to analyze the root causes of negative incidents and implement preventive action.



## 6. DRIVERS OF UNIT COSTS

### 6.1 Drivers of outpatient unit costs

#### 6.1.1 Staff productivity's impact on outpatient unit costs

We explored three indicators of staff productivity—the number of visits per doctor, the number of visits per nurse, and the number of visits per medical staff<sup>2</sup> (inclusive of doctors, nurses, and other clinical staff)—and examined their relationship with outpatient unit costs to determine the extent to which staff productivity affects outpatient costs.

Figure 6.1 illustrates the relationship between the number of visits per doctor and outpatient unit costs. Of the 12 facilities included in our analysis that provide outpatient services, only seven had doctors as part of their staff. The number of visits per doctor ranged from 2,072 in a district hospital to 52,082 in a public health center, averaging 16,603 across the seven facilities. There appears to be a negative correlation between the number of visits per doctor and outpatient unit costs, with the number of visits per doctor decreasing as outpatient unit costs increase.

**Figure 6.1: The number of visits per doctor as a driver of outpatient unit costs**

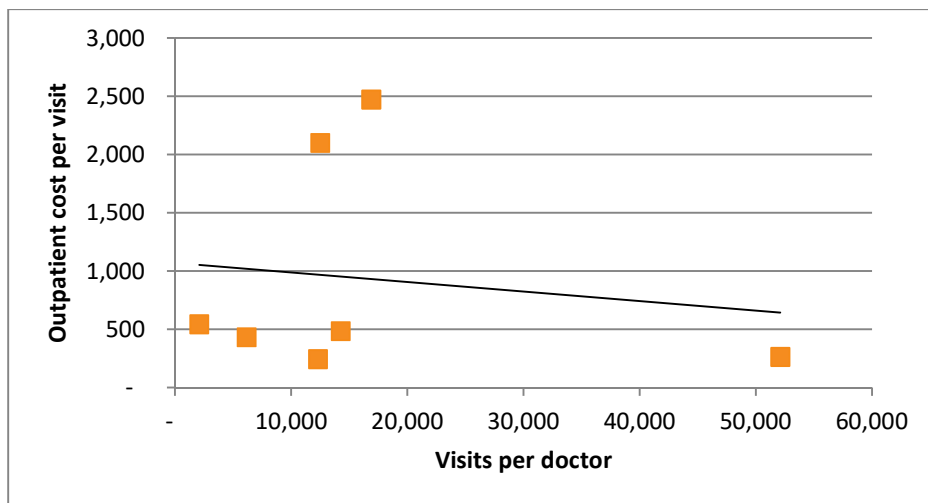


Figure 6.2 illustrates the relationship between the number of visits per nurse and outpatient unit costs. The number of visits per nurse ranged from 401 in a private facility to 8,785 in a public clinic, averaging 3,980 for the 12 facilities in our analysis that provide outpatient services. Two of the three facilities with the highest outpatient cost per visit also have the lowest number of visits per nurse. There appears to be a negative correlation between the number of visits per nurse and outpatient unit costs, with the number of visits per nurse decreasing as outpatient unit costs increase.

<sup>2</sup> The numbers of doctors, nurses, and other clinical staff were calculated in terms of full-time equivalents.

**Figure 6.2: The number of visits per nurse as a driver of outpatient unit costs**

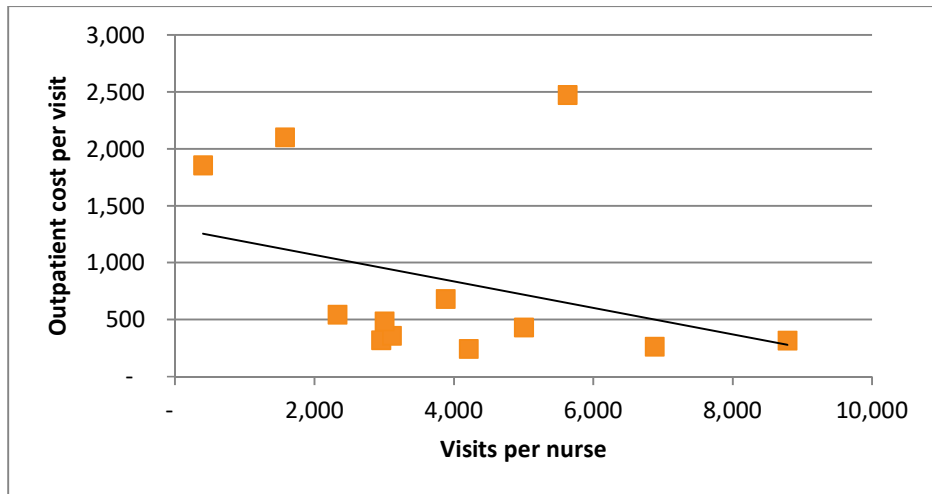
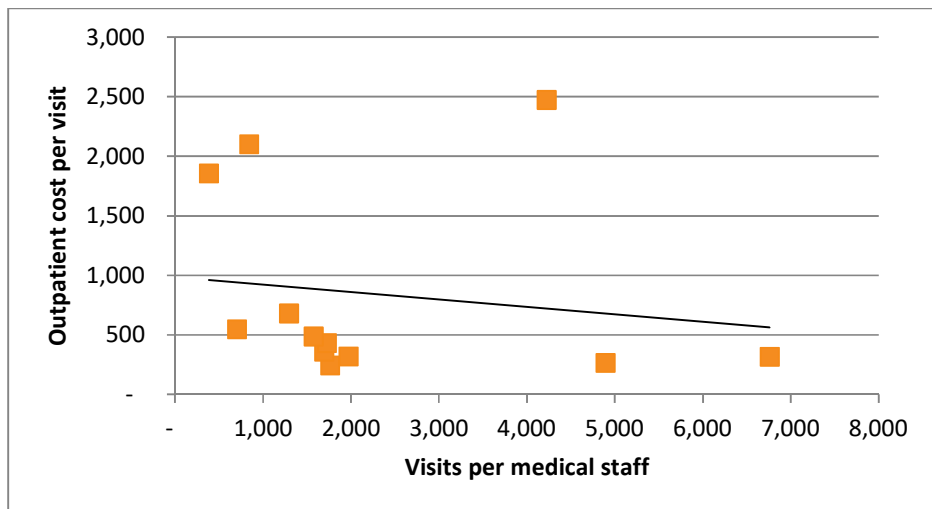


Figure 6.3 illustrates the relationship between the number of visits per medical staff (including doctors, nurses, and other clinical staff) and outpatient unit costs. The number of visits per medical staff ranged from 384 in a private facility to 6,758 in a public clinic, averaging 2,318 for the 12 facilities in our analysis that provide outpatient services. As in the case of the two previous figures, there appears to be a negative correlation between the number of visits per medical staff and outpatient unit costs, with the number of patients per medical staff decreasing as outpatient unit costs increase.

**Figure 6.3: The number of visits per medical staff as a driver of outpatient unit costs**



Based on the analysis of the relationship of the number of visits per doctor, number of visits per nurse, and outpatient unit costs, it appears that staff productivity is a driver of outpatient unit costs, that is., greater staff productivity appears to drive down outpatient unit costs.

## 6.1.2 Quality's impact on outpatient unit costs

We also explored facility quality scores in seven areas: overall facility quality, facility governance and management, patient rights and access to care, facility risk management, primary health care services, human resources management, and medication management. We examined their relationship with outpatient unit costs to determine the extent to which quality drives outpatient costs. The relationships between overall quality and outpatient unit costs are presented here. Further details on the relationships between the individual components of quality and outpatient unit costs are included in Annex C.

Figure 6.4 illustrates the relationship between the quality of primary health care services score and outpatient unit costs. The quality of primary health care services scores ranged from 72 in a public health center to 88 in a private health facility, averaging 78.9 for the 12 facilities in our analysis that provide outpatient services. Overall, there appears to be a positive correlation between the quality of primary health care services score and outpatient unit costs, with the quality of primary health care services increasing as outpatient unit costs increase.

**Figure 6.4: Quality of primary health care services as a driver of outpatient unit costs**

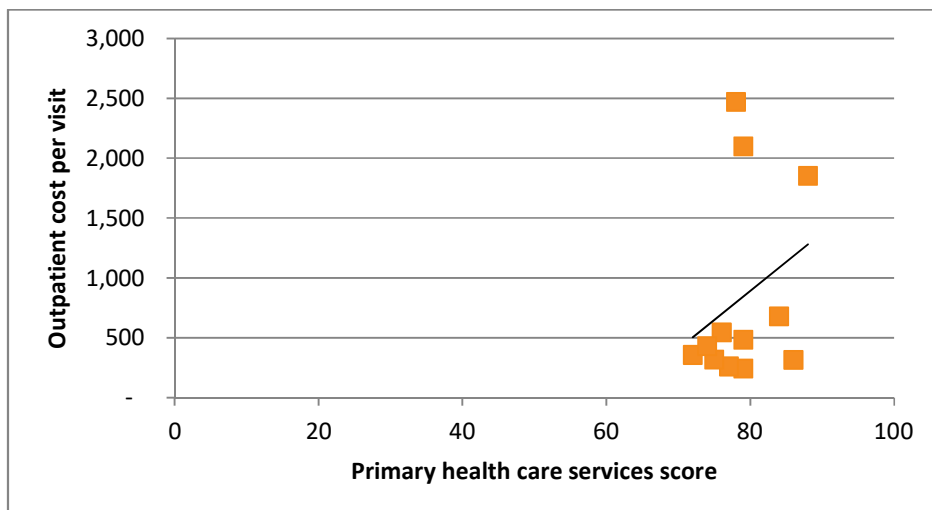
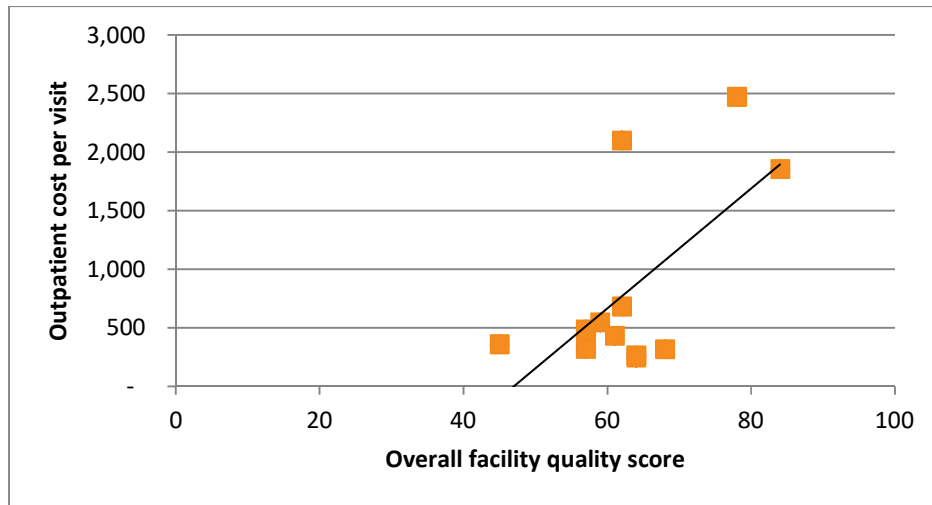


Figure 6.5 illustrates the relationship between the overall facility quality score and outpatient unit costs. The overall facility quality scores ranged from 45 in a public health center to 84 in a private health facility, averaging 63.4 for the 12 facilities in our analysis that provide outpatient services. Overall, there appears to be a positive correlation between the overall facility quality score and outpatient unit costs, with overall facility quality increasing as outpatient unit costs increase. There does appear to be a difference in overall quality between public and private health facilities, as noted previously.

Figure 6.5: Overall facility quality as a driver of outpatient unit costs



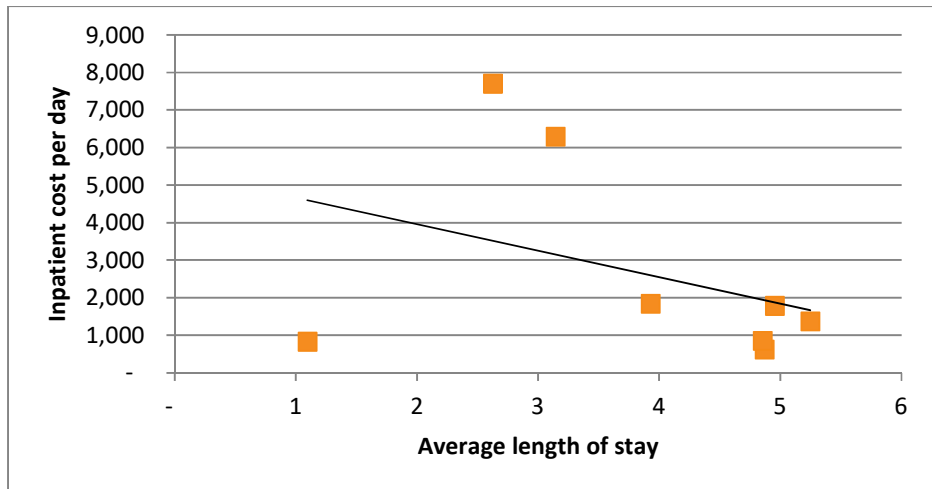
Based on the analysis of the relationships between quality and its various components and outpatient unit costs, it appears that quality is a driver of outpatient unit costs, that is, higher quality appears to drive up outpatient unit costs.

## 6.2 Drivers of inpatient unit costs

### 6.2.1 Length of stay's impact on inpatient unit costs

Figure 6.6 illustrates the relationship between average length of stay and inpatient unit costs. The average length of stay ranged from 1.09 days in a private health facility to 5.25 in a referral hospital, averaging 3.84 for the eight facilities in our analysis with inpatient services. Private facilities had shorter average lengths of stay on average (2.29), compared with public facilities (4.77). Among public health facilities, the facility with the lowest inpatient unit cost had an average length of stay of 4.87 days, and the facility with the highest inpatient unit cost had an average length of stay of 4.95. Overall, there appears to be a negative correlation between average length of stay and inpatient unit costs per day, that is, shorter length of stay is associated with a higher inpatient cost per day.

**Figure 6.6: Average length of stay as a driver of inpatient unit costs**



## 6.2.2 Staff productivity’s impact on inpatient unit costs

We explored three indicators of staff productivity—the number of beds per doctor, the number of beds per nurse, and the number of beds per medical staff (inclusive of doctors, nurses, and other clinical staff)—and examined their relationship with inpatient unit costs to determine the extent to which staff productivity affects inpatient costs.

Figure 6.7 illustrates the relationship between the number of beds per doctor and inpatient unit costs. Of the eight facilities in our analysis that provide inpatient services, only six had doctors on staff. The number of beds per doctor ranged from 10.3 in a referral hospital to 65.1 in a district hospital, averaging 33.6 for the six facilities. There appears to be a positive correlation between the number of beds per doctor and inpatient unit costs, with facilities that had higher numbers of beds per doctor generally having higher inpatient unit costs.

**Figure 6.7: The number of beds per doctor as a driver of inpatient unit costs**

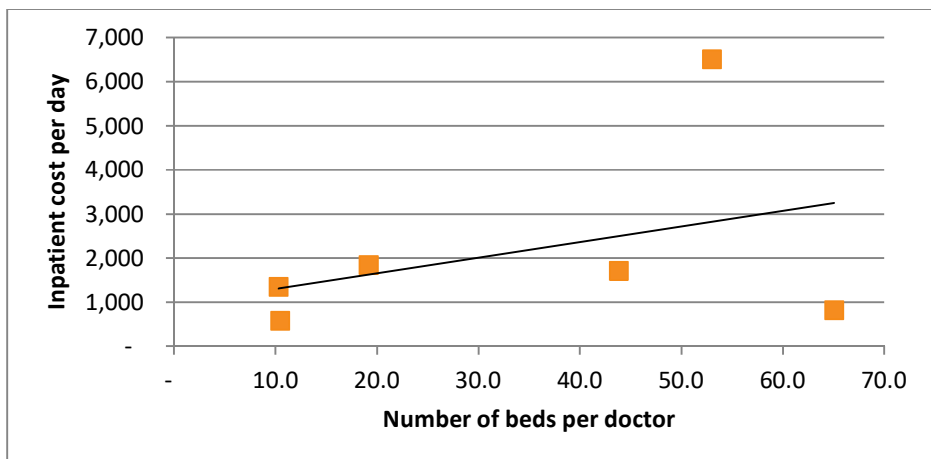


Figure 6.8 illustrates the relationship between the number of beds per nurse and inpatient unit costs. The number of beds per nurse ranged from 0.7 in two private health facilities to 3.3 in a district hospital,

averaging 2.2 for the eight facilities in our analysis that provide inpatient services. There appears to be a negative correlation between the number of beds per nurse and inpatient unit costs, with facilities that had lower numbers of beds per nurse generally having higher inpatient unit costs. Private facilities had a lower number of beds per nurse on average (1.2) compared with public facilities (2.8) and had higher costs.

**Figure 6.8: The number of beds per nurse as a driver of inpatient unit costs**

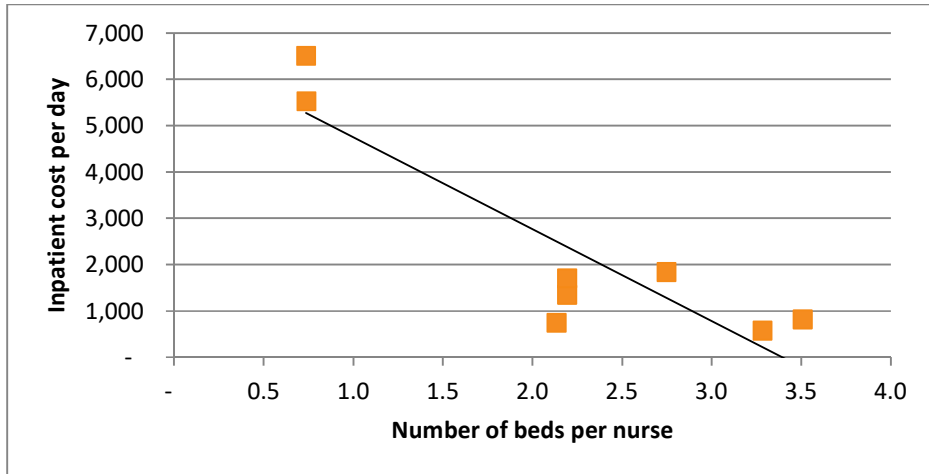
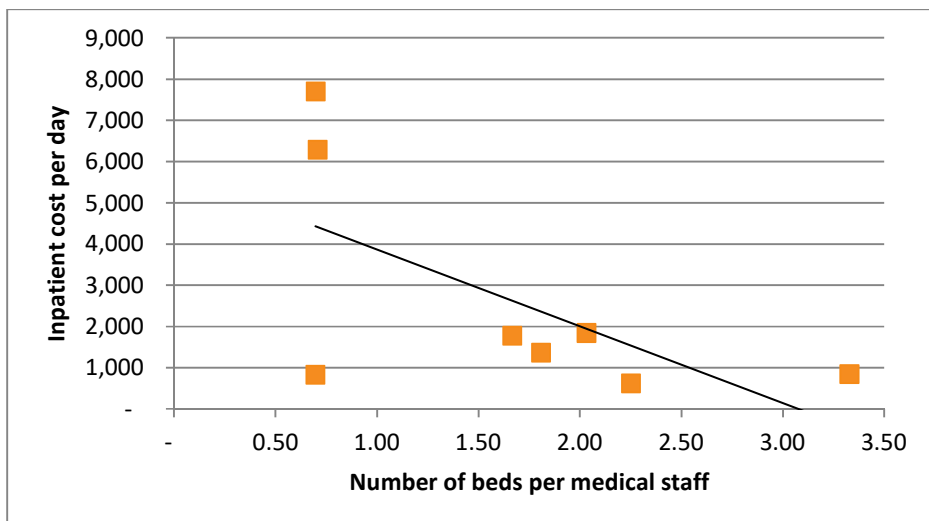


Figure 6.9 illustrates the relationship between the number of visits per medical staff (including doctors, nurses, and other clinical staff) and inpatient unit costs. The number of beds per medical staff ranged from 0.7 in two private health facilities to 3.3 in a district hospital, averaging 1.7 for the eight facilities in our analysis that provide inpatient services. There appears to be a negative correlation between the number of beds per medical staff and inpatient unit costs, with facilities that had lower numbers of beds per medical staff generally having higher inpatient unit costs. Private facilities had a lower number of beds per medical staff on average (0.7) compared with public facilities (2.2) and had higher costs.

**Figure 6.9: The number of beds per medical staff as a driver of inpatient unit costs**



### 6.2.3 Quality's impact on inpatient unit costs

We explored facility quality scores in seven areas: overall facility quality, facility governance and management, patient rights and access to care, facility risk management, inpatient care, human resources management, and medication management. We examined their relationship with inpatient unit costs to determine the extent to which quality affects inpatient costs. The relationships between overall quality and inpatient unit costs are presented here. Further details on the relationships between the individual components of quality and inpatient unit costs are included in Annex D.

Figure 6.10 illustrates the relationship between the quality of inpatient care score and inpatient unit costs. The quality of inpatient care scores ranged from 60 in a district hospital to 92 in two private health facilities, averaging 79 for the eight facilities in our analysis that provide inpatient services. Overall, there appears to be a positive correlation between quality of inpatient care scores and inpatient unit costs, with facilities that scored higher on the quality of inpatient care generally also having higher inpatient unit costs.

**Figure 6.10: Quality of inpatient care as a driver of inpatient unit costs**

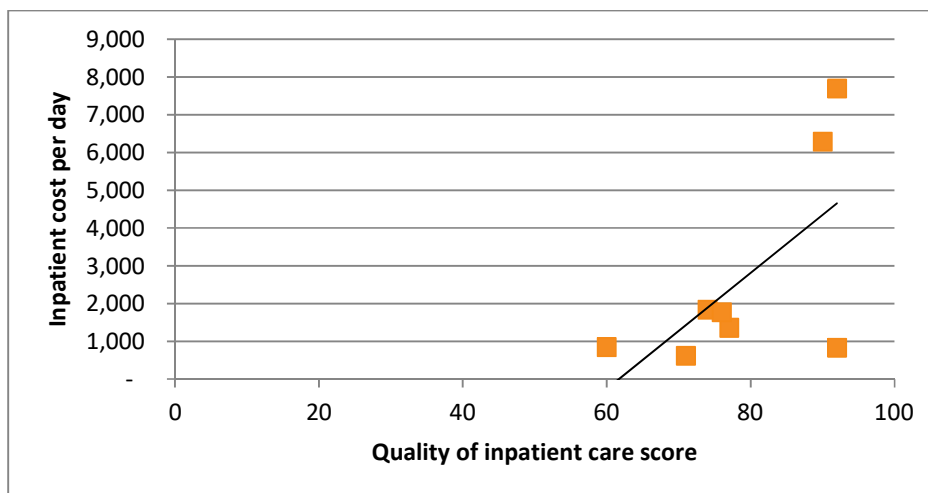
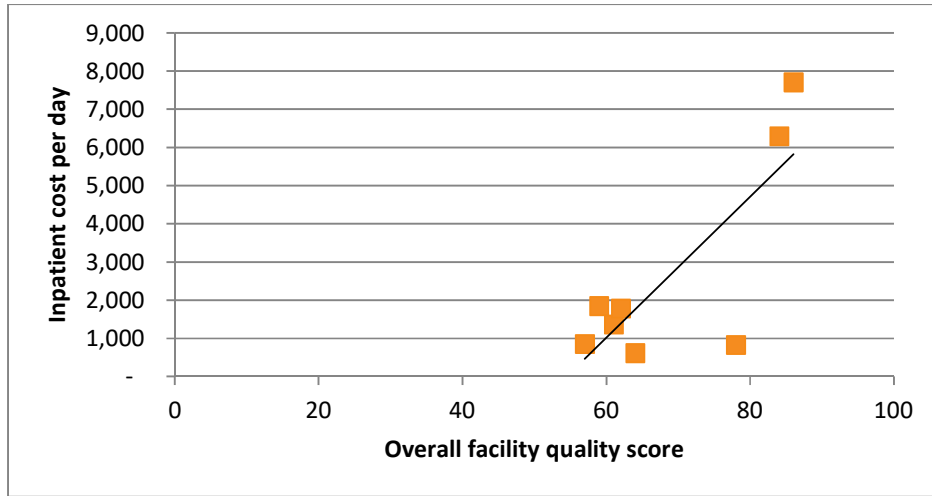


Figure 6.11 illustrates the relationship between the overall facility quality score and inpatient unit costs. The overall facility quality scores ranged from 57 in a district hospital to 86 in a private health facility, averaging 68.9 for the eight facilities in our analysis that provide inpatient services. Among public health facilities, quality scores average 60.6. There appears to be a difference in overall quality scores between public and private health facilities. All private facilities included in our analysis had above average quality scores and the overall highest quality scores (78, 84, and 86) among all facilities. Overall, there appears to be a positive correlation between the overall facility quality score and inpatient unit costs, with facilities that received higher overall quality scores also having higher inpatient unit costs.

**Figure 6.11: Overall facility quality as a driver of inpatient unit costs**





## 7. CONCLUSIONS

### 7.1 Main Findings

The total cost of outpatient care per visit ranges from NAD 313 in health centers to NAD 1,934 in private health facilities. In public facilities, the average cost of outpatient care is NAD 507. Staff and clinical supplies costs constitute 89 percent of all outpatient costs. Both overall outpatient unit costs and unit costs of specific outpatient services are generally lower in public facilities compared with private facilities.

When examining the relationship between quality scores and outpatient unit costs, it appears that higher overall facility quality and quality of primary health care scores are correlated with higher outpatient unit costs. Higher quality scores in most of the quality components examined (Annex C) are also correlated with higher outpatient unit costs. Furthermore, higher numbers of visits per doctor, per nurse, and per any type of medical staff (inclusive of doctors, nurses, and other clinical staff) are correlated with lower outpatient unit costs.

The total cost of inpatient care per visit ranges from NAD 1,239 in district hospitals to NAD 4,265 in private health facilities. In public facilities, the average cost of inpatient care is NAD 1,296. Staff and clinical supplies costs constitute 87 percent of all inpatient costs. Similar to outpatient costs, both overall inpatient unit costs and unit costs of specific inpatient services generally are lower in public facilities compared with private facilities.

When examining the relationship between quality scores and inpatient unit costs, it appears that higher overall facility quality and quality of inpatient care scores are correlated with higher inpatient unit costs. Higher quality scores in most of the quality components examined (Annex D) are also correlated with higher inpatient unit costs. Similarly, when examining the relationship between measures of productivity and inpatient unit costs, it appears to that a higher number of beds per doctor is correlated with higher inpatient unit costs, while higher numbers of beds per nurse and per any type of medical staff (inclusive of doctors, nurses, and other clinical staff), as well as higher average length of stay, are correlated with lower inpatient unit costs.

Private facilities, while having higher outpatient and inpatient costs, scored higher on almost all quality indicators, including overall quality, compared to public facilities.

### 7.2 Limitations

Public facilities generally do not maintain any of their operational expenditure data; these data are available only at the regional level and are aggregated to include all the facilities within each region. HFG therefore allocated regional expenditures to the individual facilities on the basis of catchment population size or the relative percentage of utility costs. This presented a major limitation for the study, as it may significantly affect the cost calculations.

The sample size of this study was small, especially after a number of facilities had to be excluded due to major data gaps described in section 3.4. While HFG attempted to analyze the relationship between costs and quality, the conclusions brought by these analyses remain tentative given the small sample. These analyses are therefore not intended to be conclusive, but merely to suggest areas for further investigation.

## 7.3 Recommendations

As mentioned above, one of the major limitations of this study was related to the lack of facility-level expenditure data. Tracking facility-level expenditure data will facilitate and improve the accuracy of conducting similar studies in the future.

The findings of HFG's analysis of the link between costs and quality suggest that lower costs do not necessarily buy adequate quality, and therefore it is important to take quality considerations into account when making reimbursement decisions. These decisions should be linked to the country's goals for quality in health care. However, due to the low sample size and possible endogeneity, the results of HFG's analysis should be further investigated. We recommend that further analysis be carried out to explore how quality improvement efforts impact costs.

The results of the study are only a first step toward generating the evidence required for making informed decisions on health financing policy related to UHC. As suggested above, further analysis will be required to

- ▶ estimate the total financing requirement for UHC;
- ▶ determine premiums and provider reimbursement rates of possible additional health insurance schemes;
- ▶ estimate budgets for health facilities;
- ▶ benchmark to improve efficiency among the different levels of health facilities; and
- ▶ benchmark quality of services provided at different facilities for a specified cost.

# ANNEX A: COSTS OF OUTPATIENT SERVICES

Figure A.1: Cost of general outpatient care, by facility type

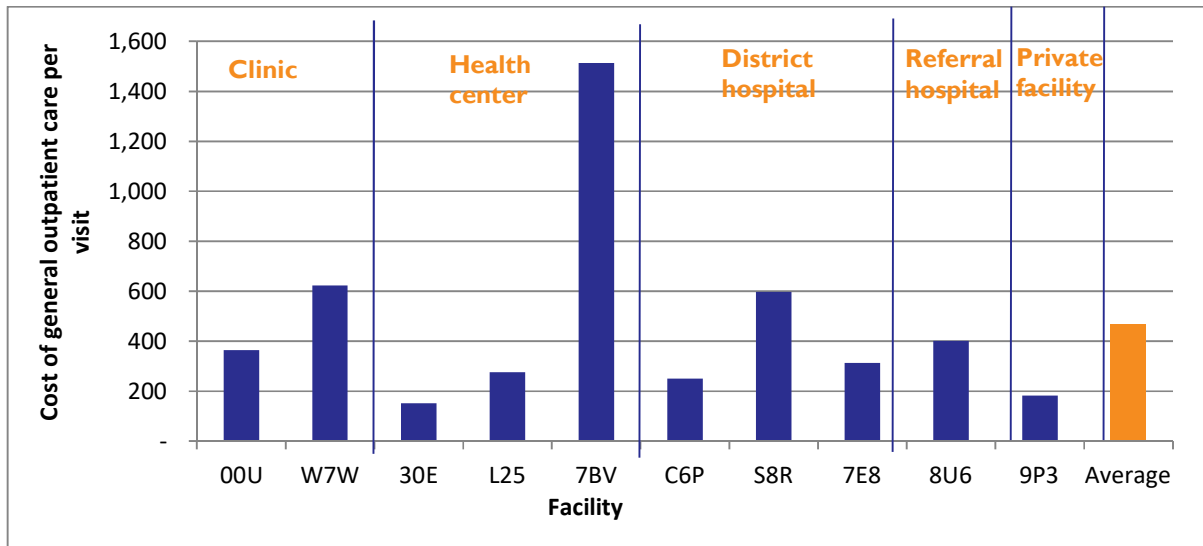
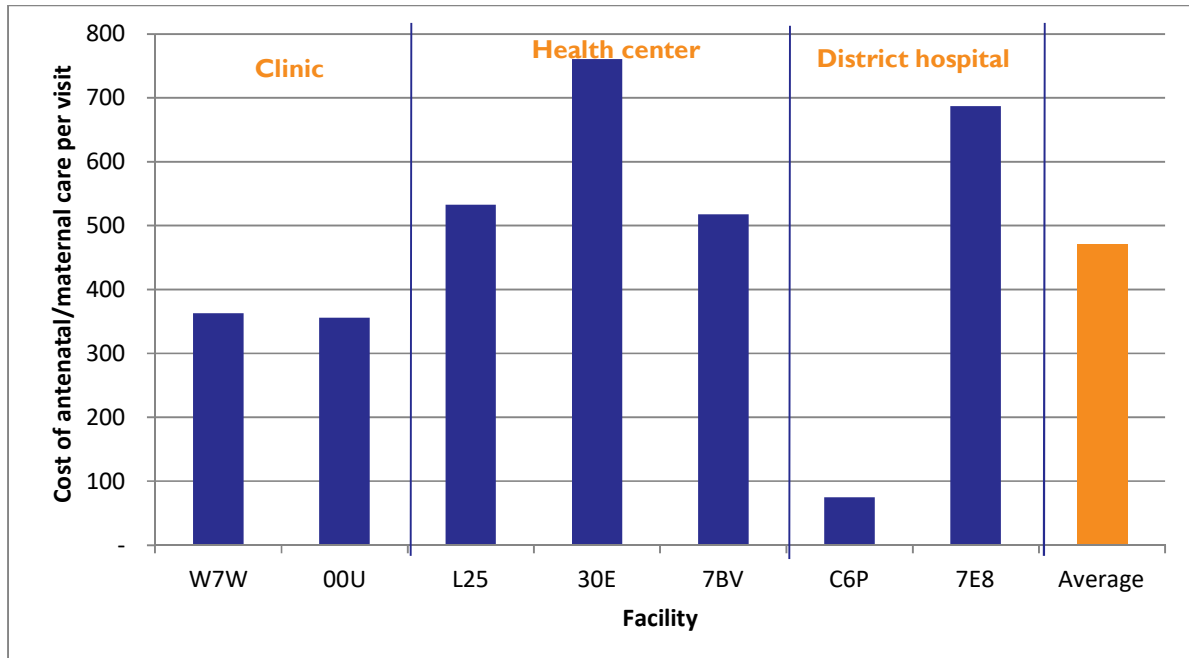
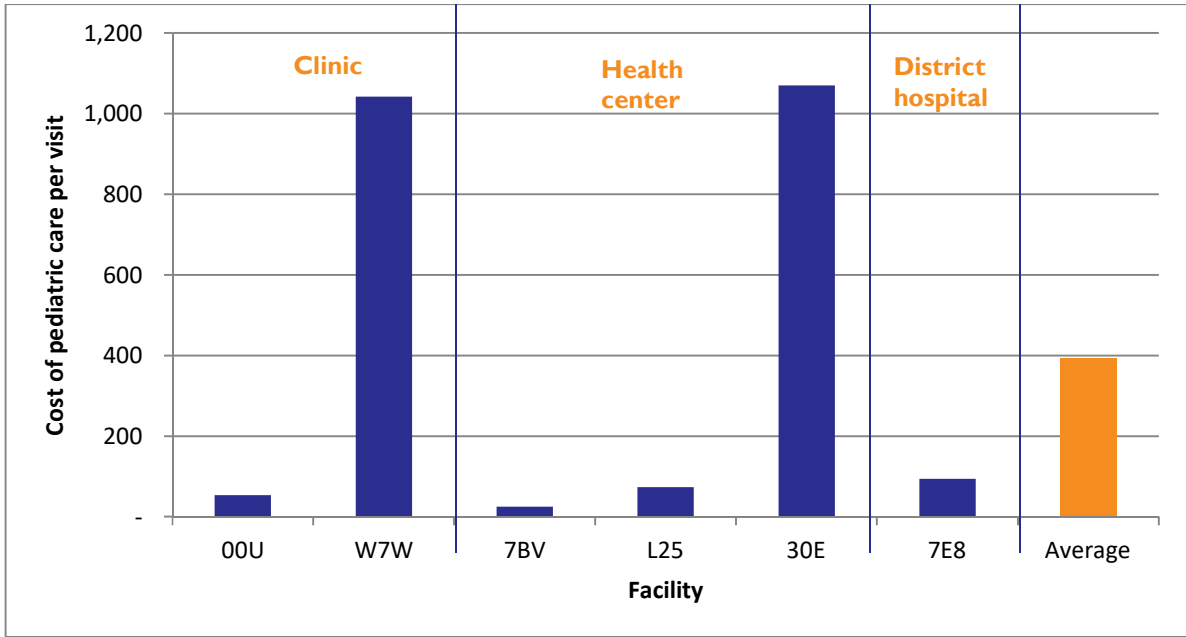


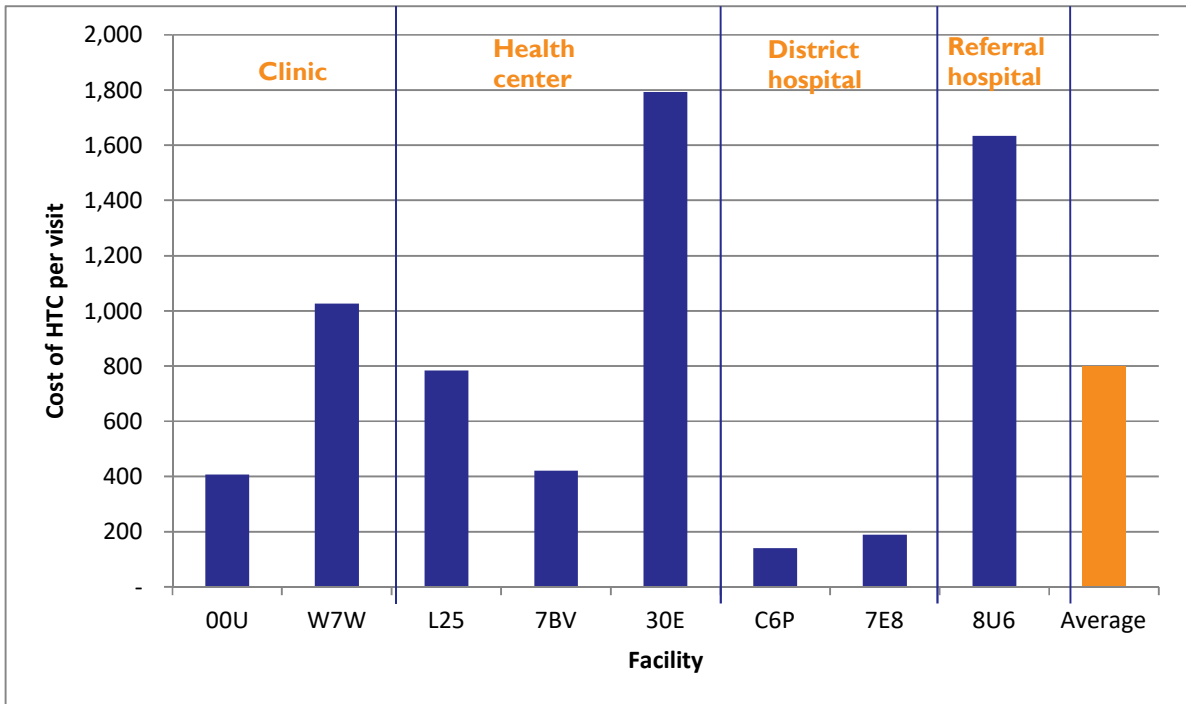
Figure A.2: Cost of outpatient antenatal or maternal care, by facility type



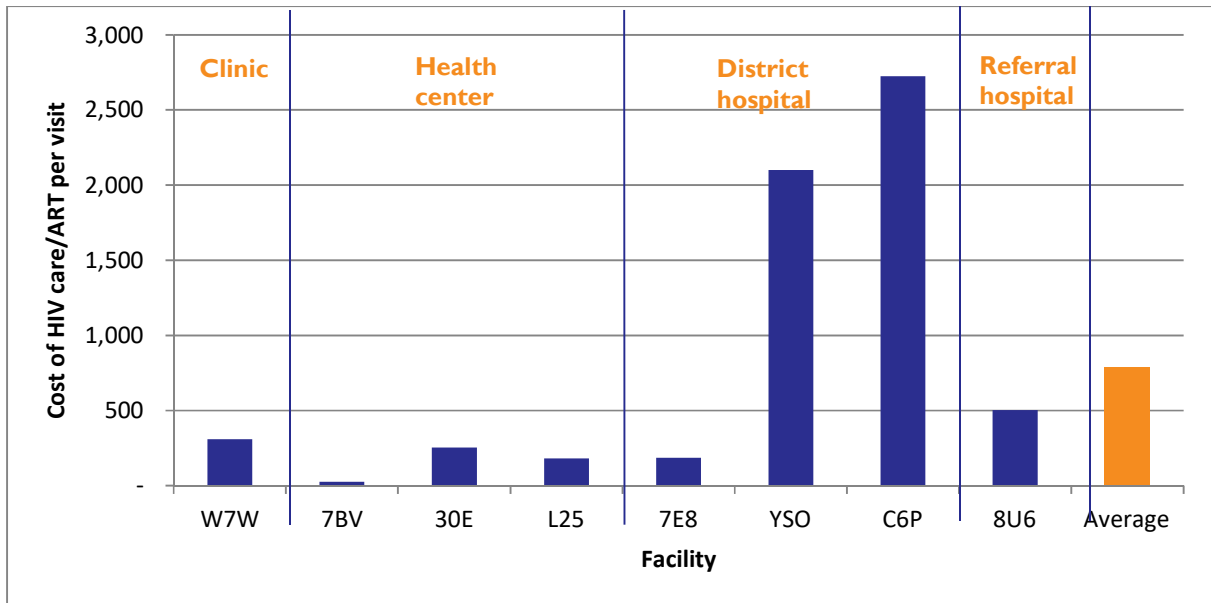
**Figure A.3: Cost of outpatient pediatric care, by facility type**



**Figure A.4: Cost of HTC, by facility type**



**Figure A.5: Cost of HIV care or ART, by facility type**



**Figure A.6: Cost of PMTCT, by facility type**

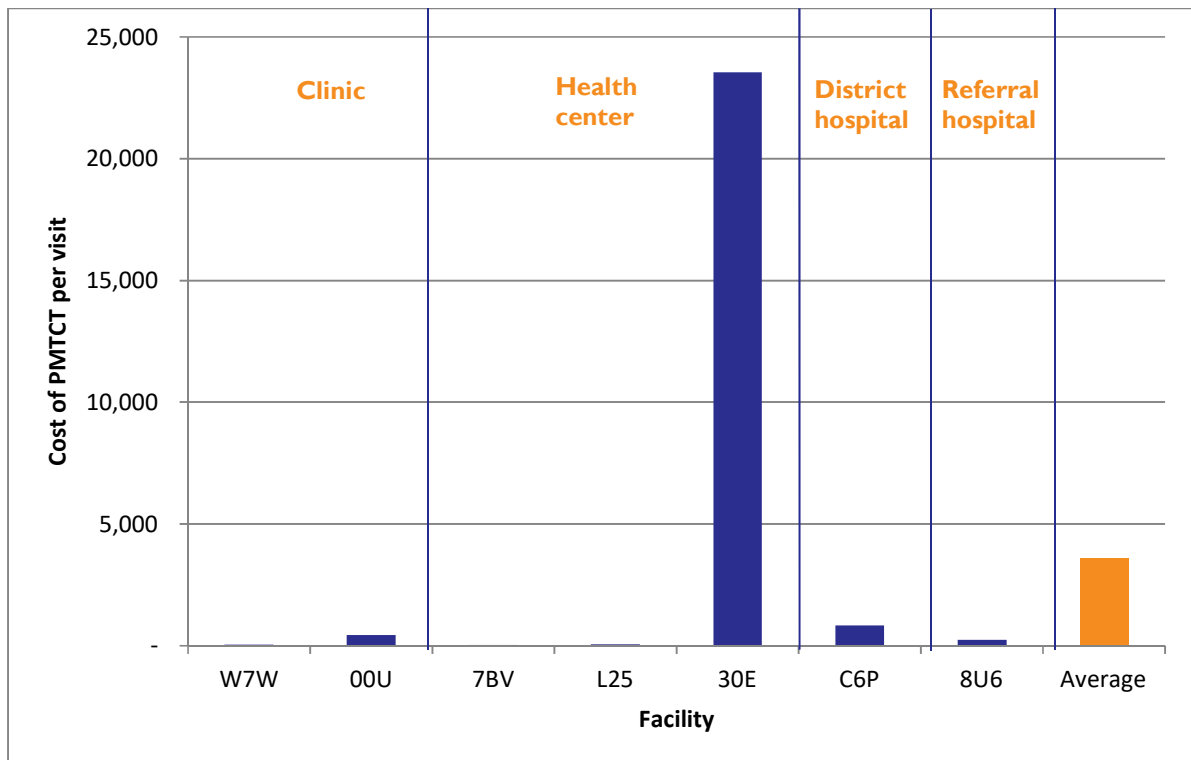


Figure A.7: Cost of outpatient TB care, by facility type

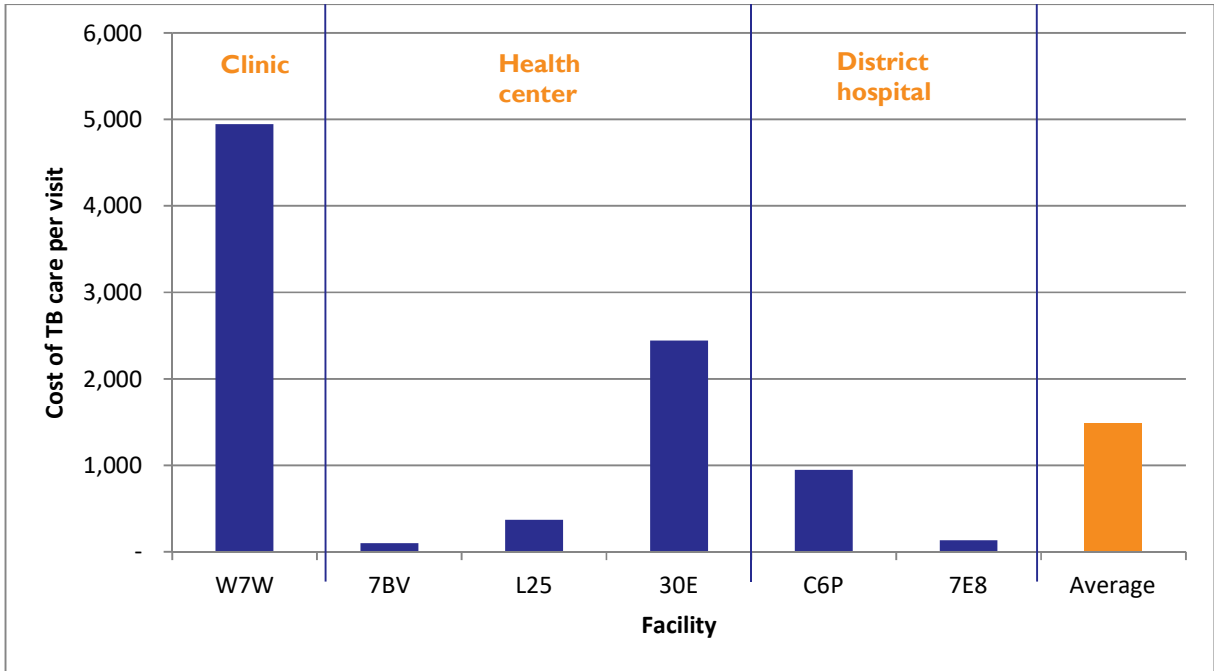


Figure A.8: Cost of family planning, by facility type

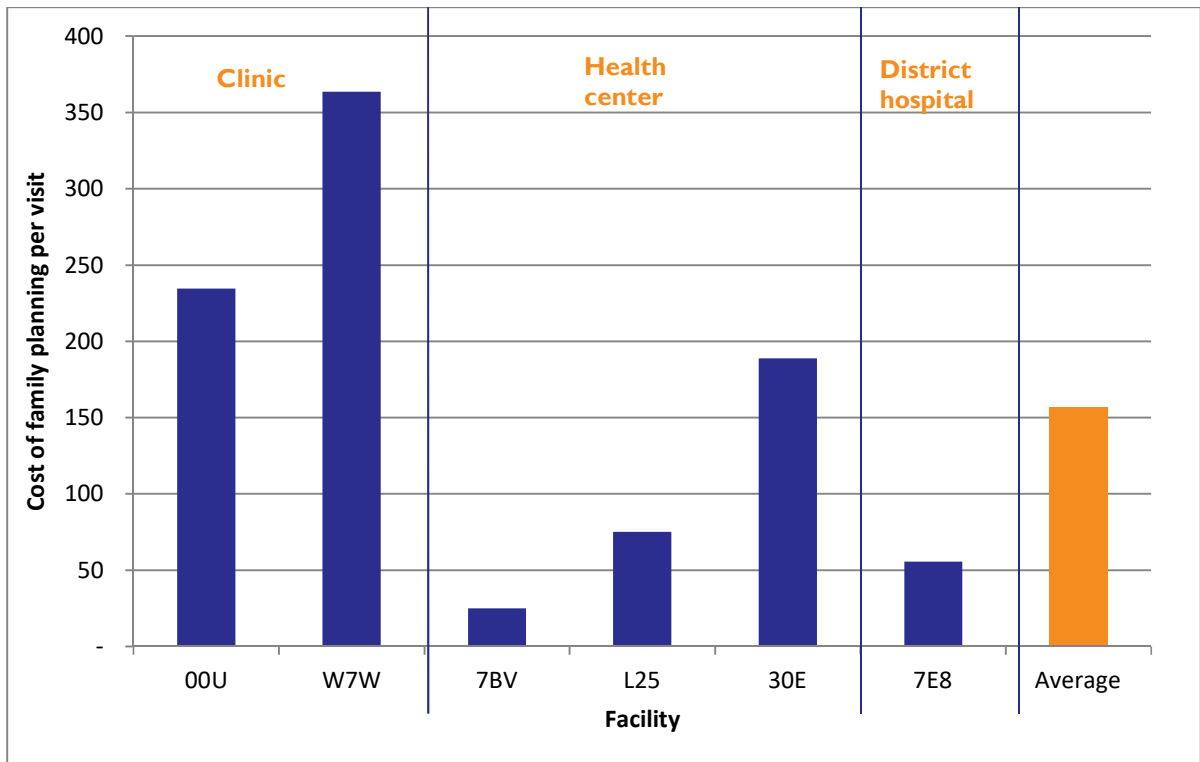


Figure A.9: Cost of NACS, by facility type

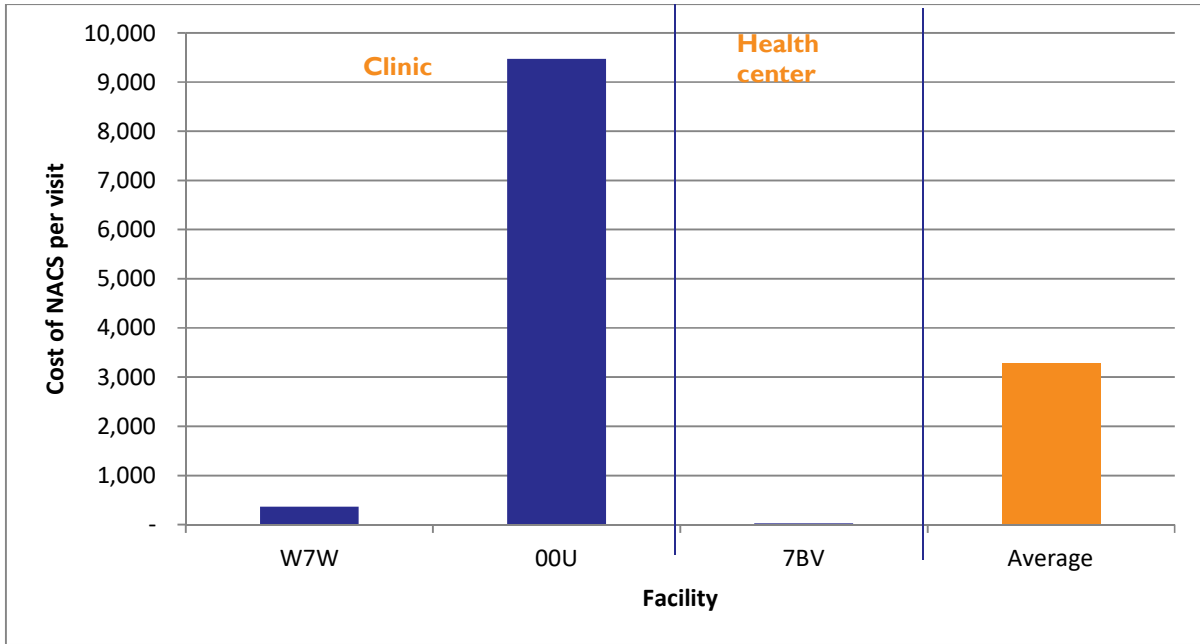


Figure A.10: Cost of dental care, by facility type

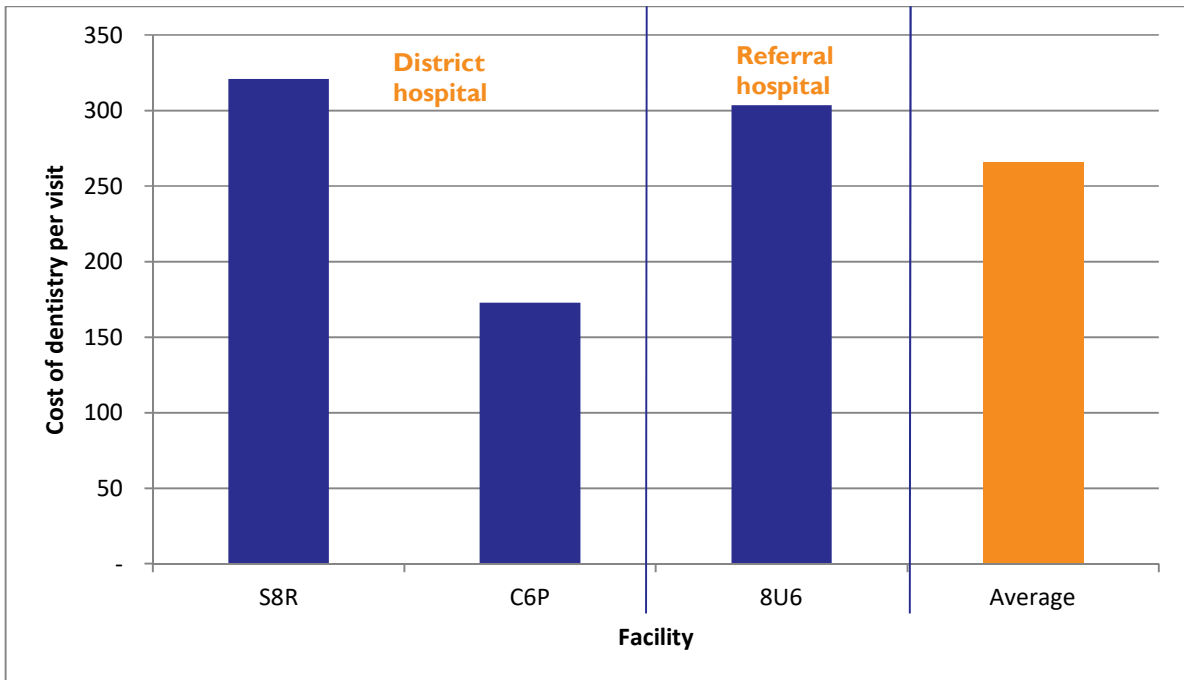
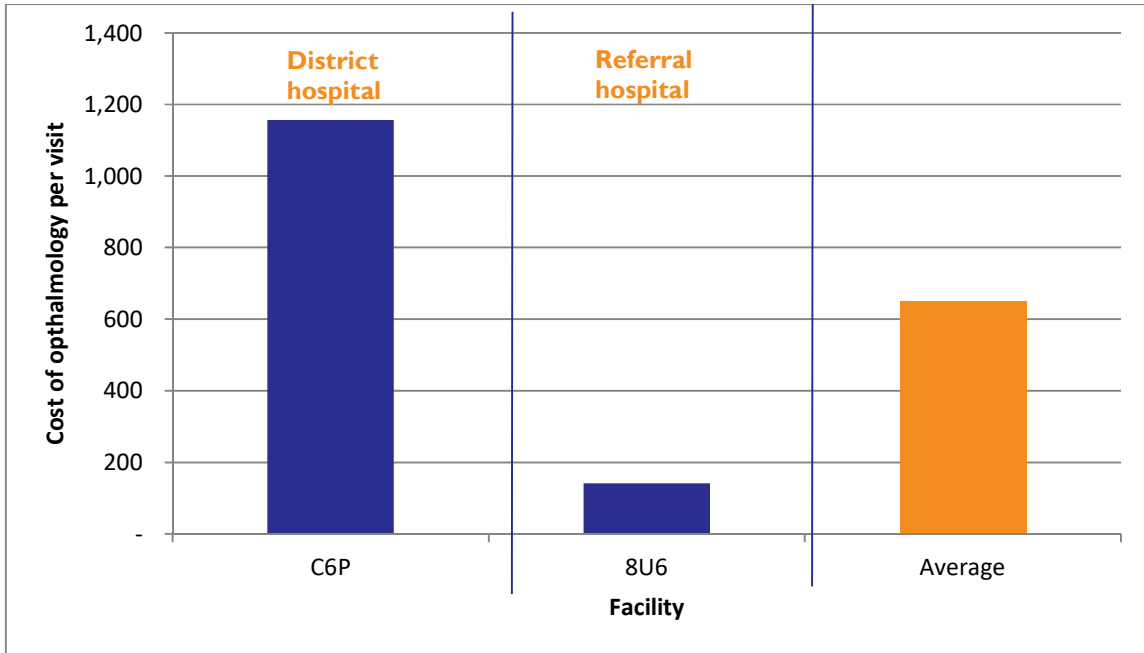


Figure A.1 I: Cost of ophthalmology, by facility type





# ANNEX B: COSTS OF INPATIENT SERVICES

Figure B.1: Cost of general inpatient care, by facility type

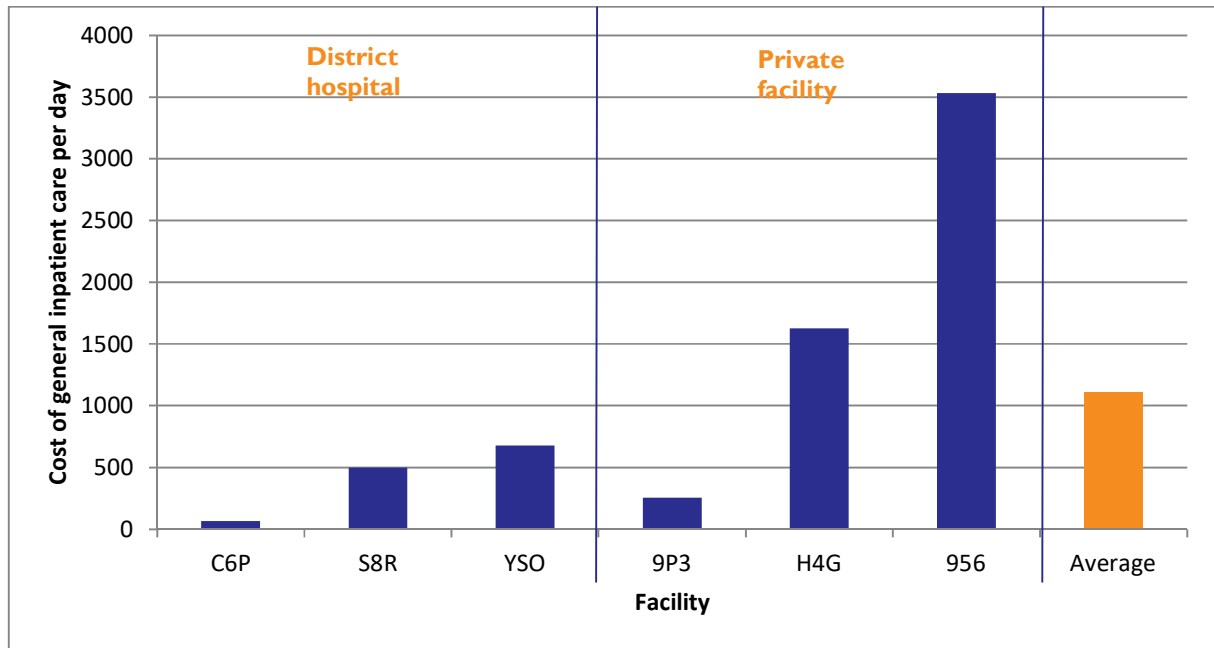
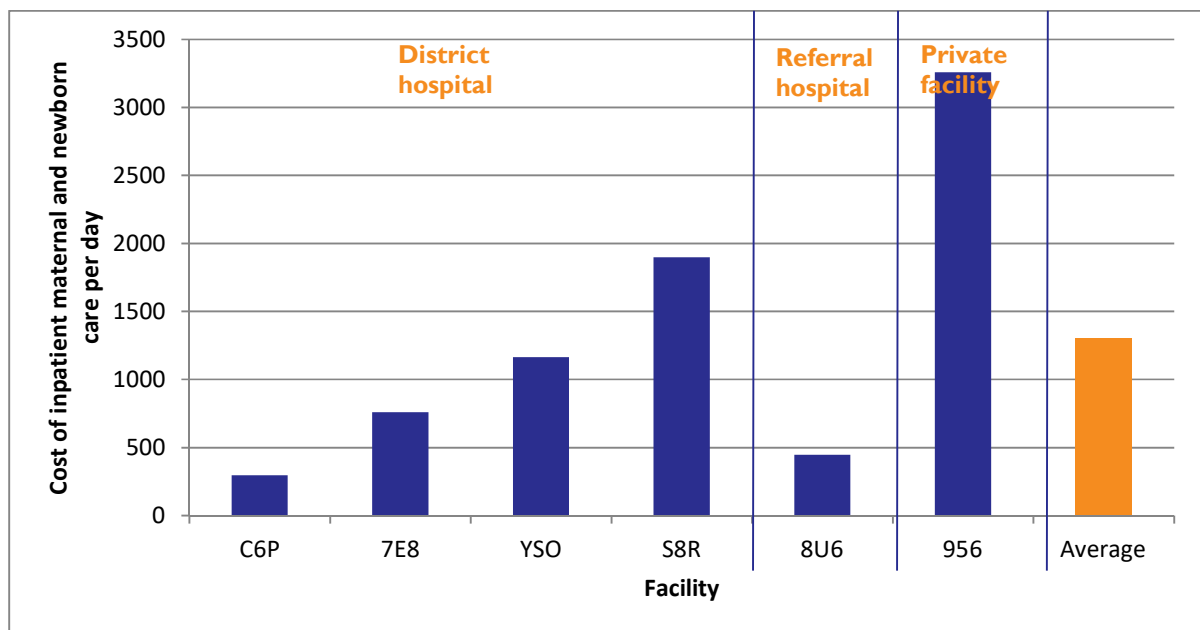
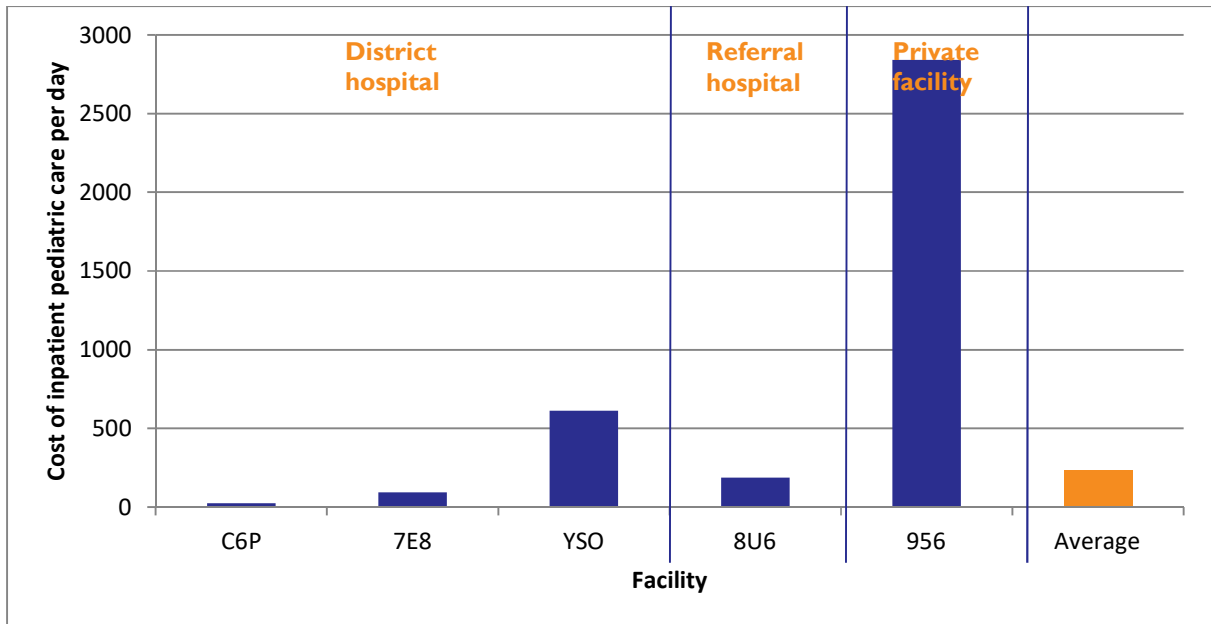


Figure B.2: Cost of inpatient maternal and newborn care, by facility type



**Figure B.3: Cost of inpatient pediatric care, by facility type**



**Figure B.4: Cost of inpatient TB care, by facility type**

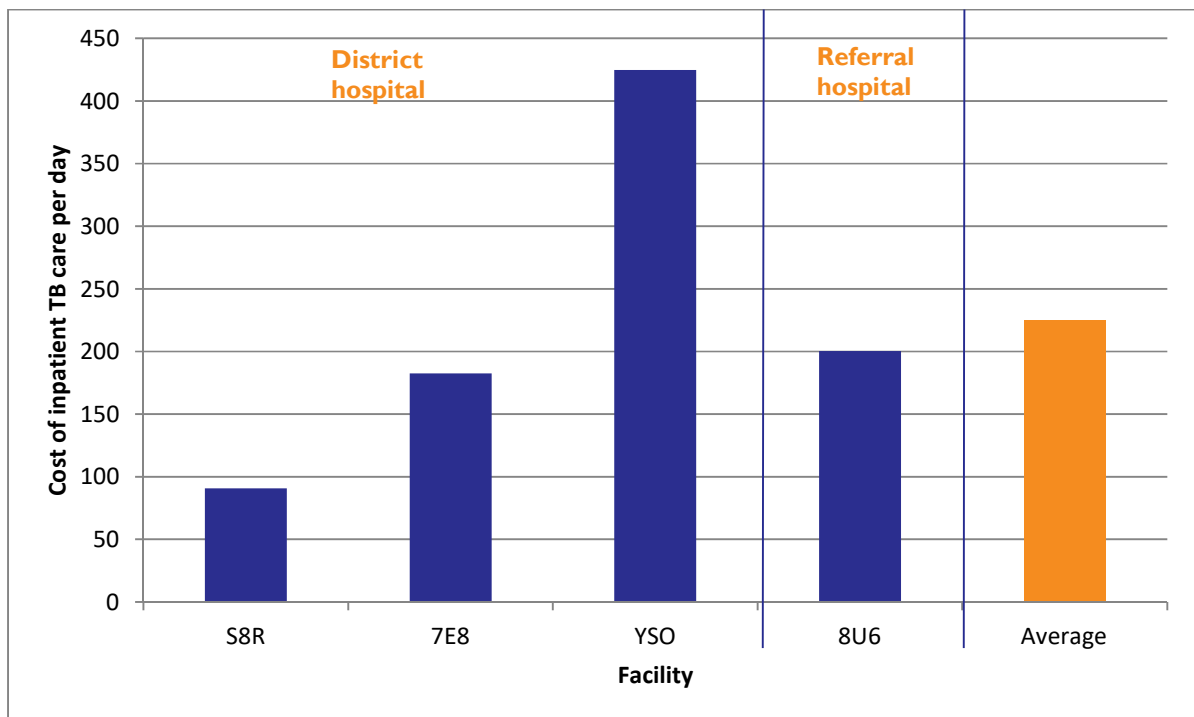
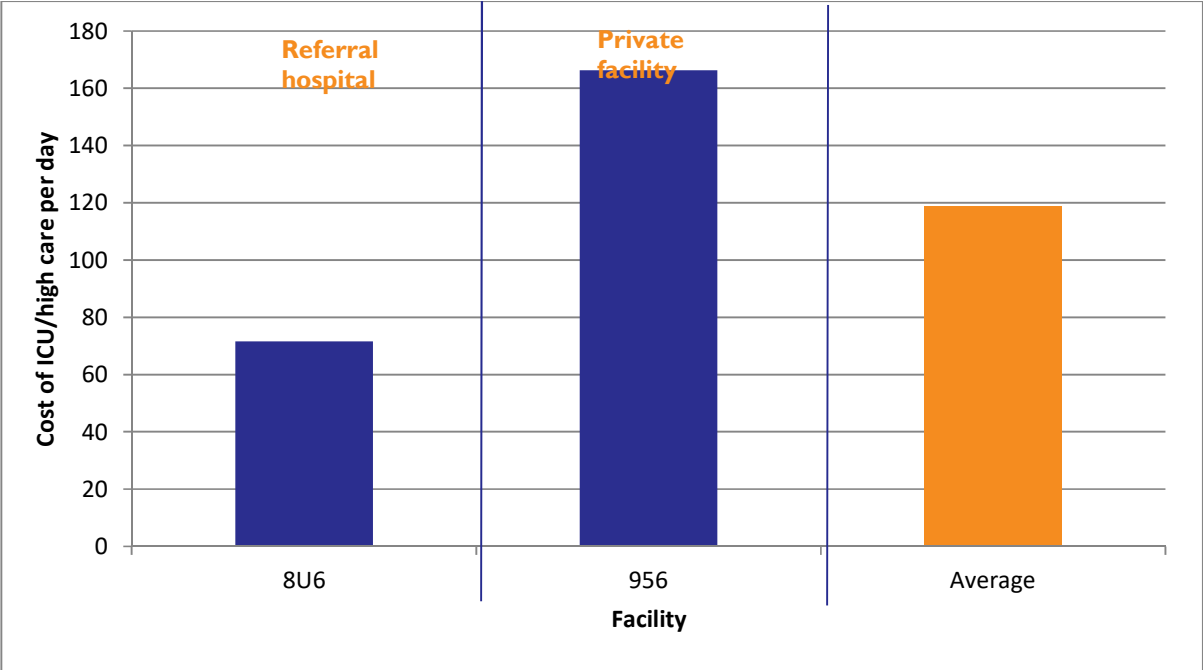


Figure B.5: Cost of ICU/high care, by facility type



## ANNEX C: QUALITY COMPONENTS' IMPACT ON OUTPATIENT UNIT COSTS

Figure C.1 illustrates the relationship between the governance and management score and outpatient unit costs. The governance and management scores ranged from 40 in a district hospital to 86 in a private health facility, averaging 58.2 for the 12 facilities in our analysis that provide outpatient services. Private facilities scored higher on governance and management (74 and 86) compared with public facilities. Overall, there appears to be a positive correlation between facility governance and management scores and outpatient unit costs, with facilities that scored higher on governance and management generally having higher outpatient unit costs.

**Figure C.1: Facility governance and management as a driver of outpatient unit costs**

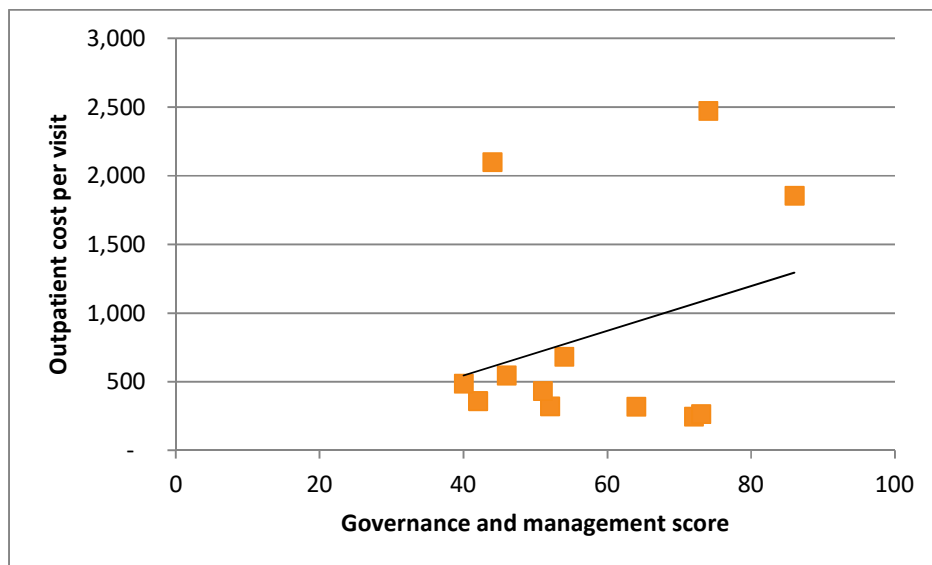


Figure C.2 illustrates the relationship between the patient rights and access-to-care score and outpatient unit costs. The patient rights and access-to-care scores ranged from 43 in a public health center to 92 in a private health facility, averaging 64.7 for the 12 facilities in our analysis that provide outpatient services. Private facilities scored higher on average on patient rights and access to care (84) than public facilities did (60.8). Overall, there appears to be a positive correlation between patient rights and access-to-care scores and outpatient unit costs, with patient rights and access-to-care scores increasing as outpatient unit costs increase.

**Figure C.2: Patient rights and access to care as a driver of outpatient unit costs**

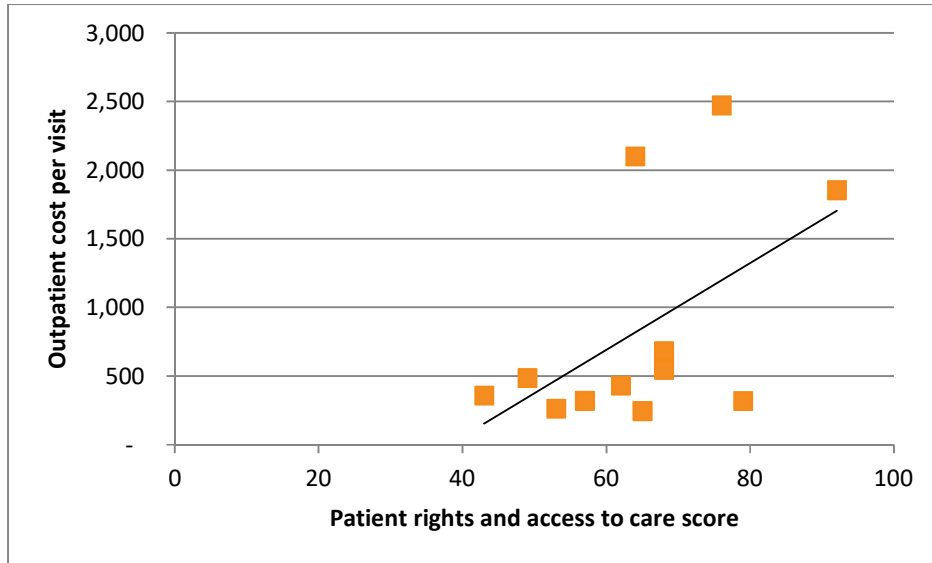


Figure C.3 illustrates the relationship between the facility risk management score and outpatient unit costs. The facility risk management scores ranged from 22 in a public health center to 80 in a private health facility, averaging 44.9 for the 12 facilities in our analysis that provide outpatient services. Private facilities scored higher on average on patient rights and access to care (69) than public facilities did (40.1). Overall, there appears to be a positive correlation between risk management scores and outpatient unit costs, with risk management scores increasing as outpatient unit costs increase.

**Figure C.3: Facility risk management as a driver of outpatient unit costs**

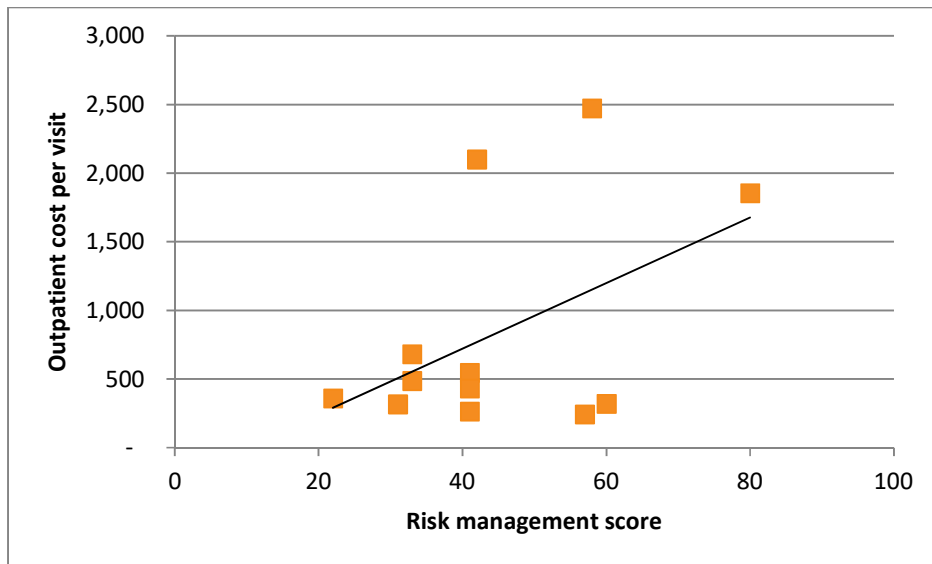


Figure C.4 illustrates the relationship between the human resources management score and outpatient staff costs per visit. The human resources management scores ranged from 36 in a district hospital to 80 in a public clinic, averaging 53.8 for the 12 facilities in our analysis that provide outpatient services.

Private facilities scored higher on average on human resources management (64.5) compared with public facilities (51.7). Overall, there appears to be a positive correlation between human resources management scores and outpatient staff costs per visit, with human resources management scores increasing as outpatient staff costs increase.

**Figure C.4: Human resource management as a driver of outpatient staff costs**

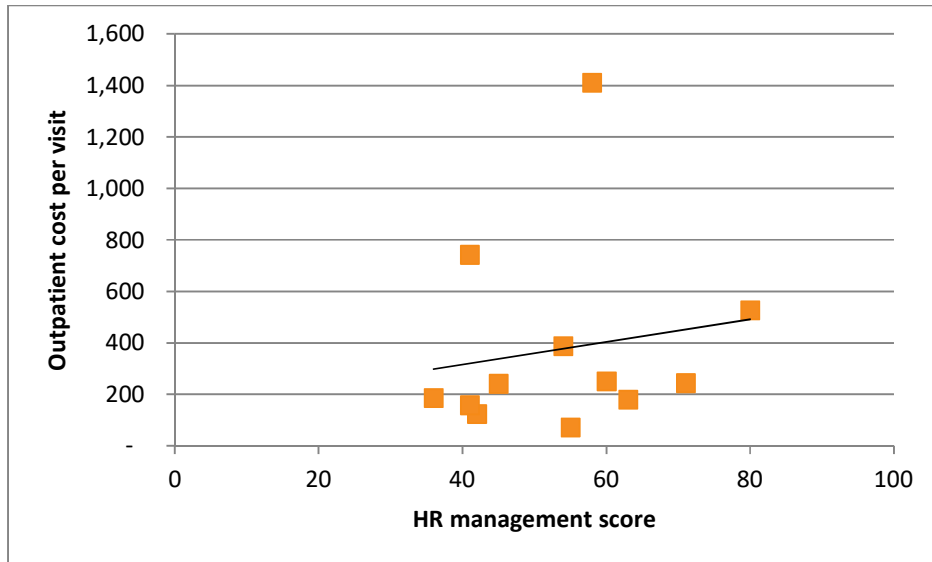
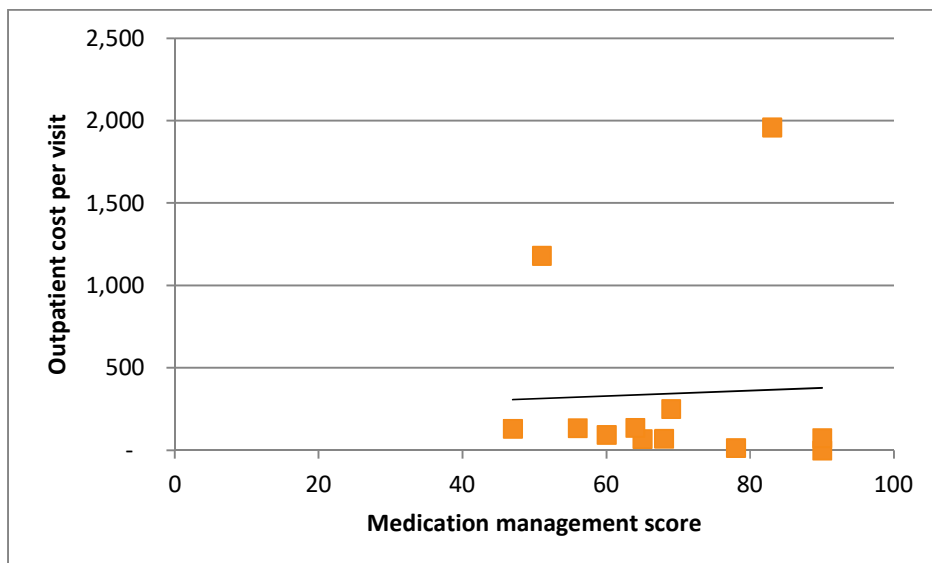


Figure C.5 illustrates the relationship between the medication management score and outpatient clinical supplies costs per visit. The medication management scores ranged from 47 in a public health center to 90 in a private health facility, averaging 68.4 for the 12 facilities in our analysis that provide outpatient services. Only 11 of those 12 facilities are shown in Figure 6.9, as one facility (a private health facility) did not report any outpatient clinical supplies costs. Private facilities scored higher on average on medication management (86.5) compared with public facilities (64.8). Overall, there does not appear to be a clear correlation between medication management scores and outpatient clinical supplies costs per visit.

**Figure C.5: Medication management as a driver of outpatient clinical supplies costs**





# ANNEX D: QUALITY COMPONENTS' IMPACT ON INPATIENT UNIT COSTS

Figure D.1 illustrates the relationship between the governance and management score and inpatient unit costs. The governance and management scores ranged from 40 in a district hospital to 93 in a private health facility, averaging 63.3 in the eight facilities in our analysis that provide inpatient services. There appears to be a positive correlation between governance and management scores and inpatient unit costs, with facilities that scored higher on governance and management also generally having higher inpatient unit costs. There also appears to be a difference in governance and management scores between public and private health facilities. All private facilities included in our analysis had above average governance and management scores and the overall highest governance and management scores (74, 86, and 93) among all facilities.

**Figure D.1: Governance and management as a driver of inpatient unit costs**



Figure D.2 illustrates the relationship between the patient rights and access-to-care score and inpatient unit costs. The patient rights and access-to-care scores ranged from 49 in a district hospital to 92 in a private health facility, averaging 70.1 for the eight facilities in our analysis that provide inpatient services. Private facilities scored higher on average on patient rights and access to care (84.3) compared with public facilities (61.6). Overall, there appears to be a positive correlation between patient rights and access-to-care scores and inpatient unit costs, with facilities that scored higher on patient rights and access to care also generally having higher inpatient unit costs.



**Figure D.2: Patient rights and access to care as a driver of inpatient unit costs**

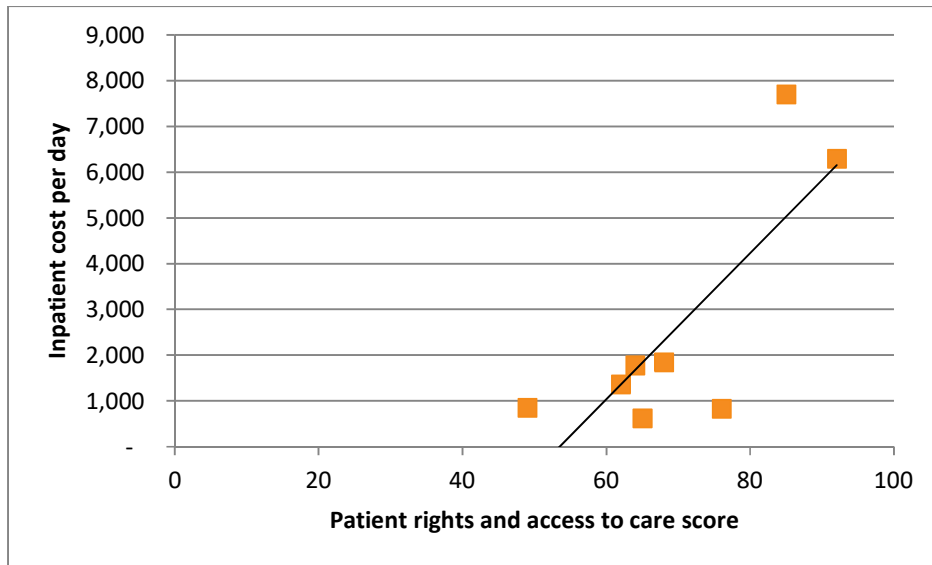


Figure D.3 illustrates the relationship between the facility risk management score and inpatient unit costs. The facility risk management scores ranged from 33 in a district hospital to 95 in a private health facility, averaging 55.9 for the eight facilities in our analysis that provide inpatient services. Private facilities scored higher on average on risk management (77.7) compared with public facilities (42.8). Overall, there appears to be a positive correlation between risk management scores and inpatient unit costs, with facilities that scored higher on risk management generally also having higher inpatient unit costs.

**Figure D.3: Facility risk management as a driver of inpatient unit costs**

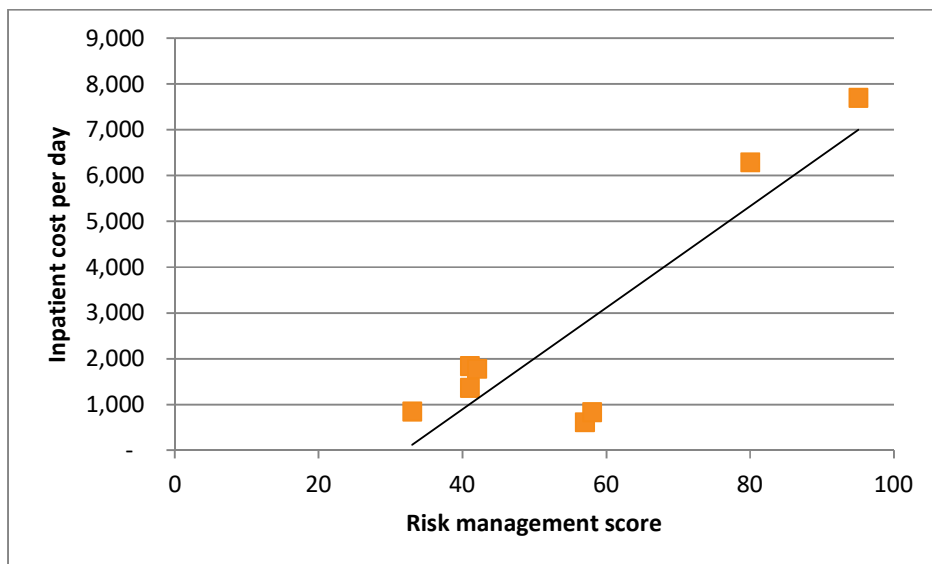


Figure D.4 illustrates the relationship between the human resources management score and inpatient staff costs per visit. The human resources management scores ranged from 36 in a district hospital to 71 in a private health facility, averaging 50.9 for the eight facilities in our analysis that provide inpatient services. Private facilities scored higher on average on human resources management (58.7) compared

with public facilities (46.2). Overall, there does not appear to be a clear correlation between human resources management scores and inpatient staff costs per visit.

**Figure D.4: Human resources management as a driver of inpatient staff costs**

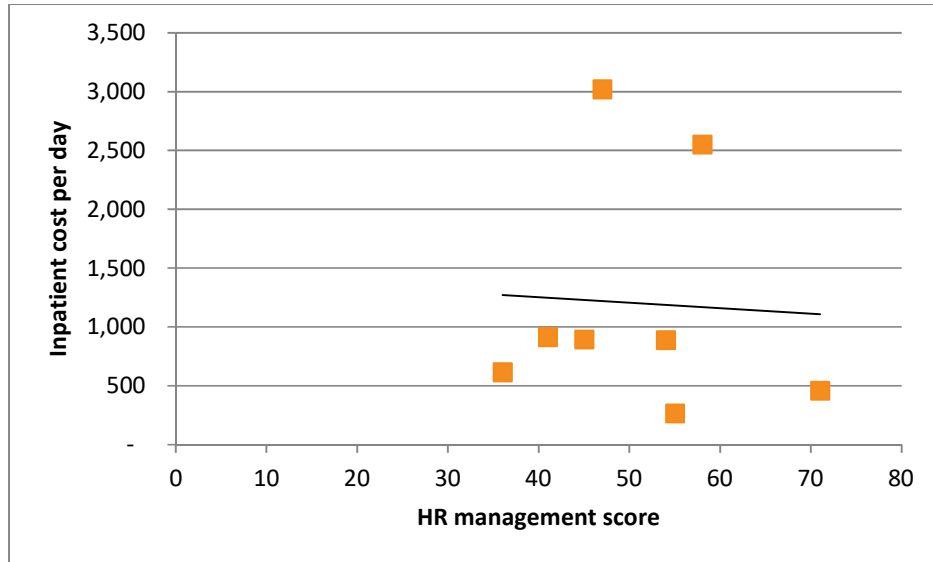
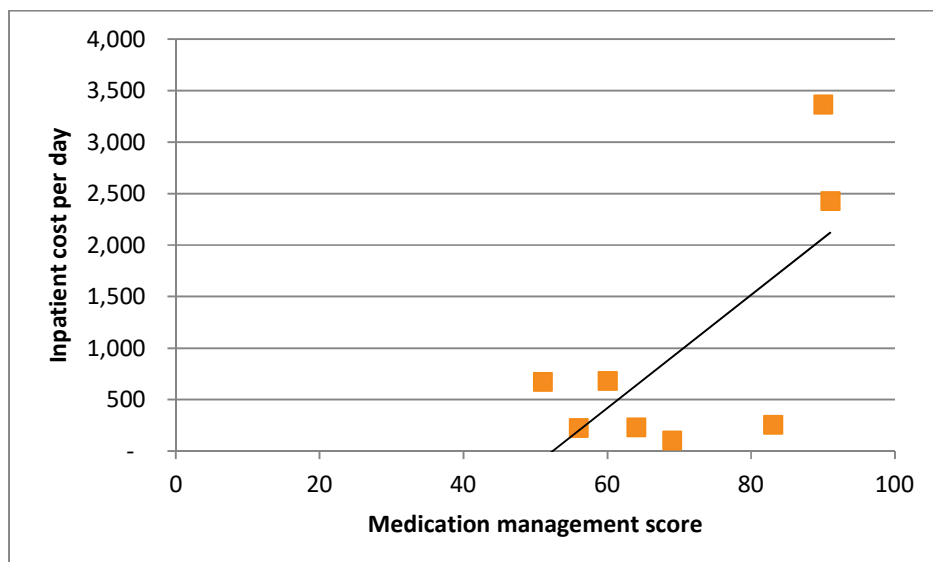


Figure D.5 illustrates the relationship between the medication management score and inpatient clinical supplies costs per visit. The medication management scores ranged from 51 in a district hospital to 91 in a private health facility, averaging 70.5 for the eight facilities in our analysis that provide inpatient services. Private facilities scored higher on average on medication management (88) compared with public facilities (60). Overall, there appears to be a positive correlation between medication management scores and inpatient clinical supplies costs, with facilities that scored higher on medication management also having higher inpatient clinical supplies costs.

**Figure D.5: Medication management as a driver of inpatient clinical supplies costs**



## BIBLIOGRAPHY

- Donabedian, A. 1988. The quality of care. How can it be assessed? *JAMA*, 260(12): 1743–8.
- McIntyre, D. and F Matheus. 2014. *Fiscal Space for Domestic Funding for Health and Other Social Services*. London: The Royal Institute of International Affairs, Chatham House.
- Ministry of Health and Social Services (MoHSS) [Namibia] and ICF Macro. 2010. *Namibia Health Facility Census 2009: Key Findings on Family Planning, Maternal and Child Health, and Malaria*. Windhoek, Namibia: MoHSS and ICF Macro.
- O’Hanlon, Barbara, Frank Feeley, Ingrid de Beer, Sara Sulzbach, and Heather Vincent. September 2010. *Namibia Private Sector Assessment*. Bethesda, MD: Strengthening Health Outcomes through the Private Sector, Abt Associates, Inc.
- Partners for Health Reformplus. 2004. *Management Accounting System for Hospitals (MASH) Manual*. Bethesda, MD: The Partners for Health Reformplus project, Abt Associates, Inc.
- SafeCare. n.d. SafeCare Standards, <http://www.safe-care.org/index.php?page=safecare-standards>  
Accessed July 9, 2018.



BOLD THINKERS DRIVING  
REAL-WORLD IMPACT