ASSESSMENT ON AUDITABLE PHARMACEUTICAL TRANSACTIONS AND SERVICES IMPLEMENTATION OUTCOME: THE CASE OF AMANUEL MENTAL SPECIALIZED HOSPITAL

BY

YEWBNESH ALEMAYEHU (B. PHARM.)

SGS/0536/08A

JUNE 7, 2017 G.C

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A THESIS SUBMITTED TO SCHOOL OF GRADUATE STUDIES OF ST. MARY UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTERS OF BUSINESS ADMINISTRATION IN PROJECT MANAGEMENT

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SCHOOL OF GRADUATE STUDIES

This is to certify that the thesis prepared by Yewbnesh Alemayehu, entitled: Assessment on the implementation outcome of Auditable Pharmaceutical Transactions and Services and submitted in partial fulfillment of the requirements for the Degree of Master of Business Administration in Project Management complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

Signed by the examining committee

Examiner (Internal)_____ Signature_____ Date_____

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Advisor _____Signature _____Date_____

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Chair of Department

Table of Contents

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List of Abbreviation/ Acronyms

AMSH	Amanuel Mental Specialized Hospital
APTS	Auditable Pharmaceutical Transaction and Service
ARHB	Amhara Regional Health Bureau
CEO	Chief Executive Officer
EHRIG	Ethiopian Hospital Reform Implementation Guideline
EML	Essential Medicine List
FMOH	Federal Ministry of Health
HSTP	Health Sector Transformation Plan
RHB	Regional Health Bureau
SIAPS	System for Improved Access of Pharmaceutical and Services
SNNP	Southern Nation Nationalities and People
SPS	Strengthening Pharmaceutical Systems
SSA	Stock Status Analysis
USAID	United States Agency for International
VEN	Vital Essential and Nonessential
WHO	World health Organization

List of Tables

List of Figure

Abstract

The Auditable Pharmaceutical Transactions and Services (APTS) Initiative was implemented in Amanuel Mental Specialized Hospital (AMSH), Ethiopia with the aim of improving the quality of pharmaceutical care services and financial management through its expected result in improving availability of medicine, transparent and accountable transaction, efficient budget utilization, effective deployment of work force, generation of information for decision making and improving customer satisfaction. Nevertheless, no study is conducted to assess the outcome of the program in AMSH. Therefore the study assessed the implementation outcome of APTS in AMSH based on its expected result areas. Both qualitative and quantitative methods were used to collect data. Census and single proportion formula techniques were utilized to determine the sample size for the quantitative data respondents whereas; the qualitative data respondents were purposively selected. Quantitative findings showed that, most of the medicines prescribed for the clients were available and clients acknowledged the assistance they received from the pharmacy staffs. Regarding the pharmacy staffs, only 52.4% of them were trained on APTS and most of them believed APTS increased the attrition rate. From the qualitative findings, though most of the indicators for transparent and accountable transactions were conducted, there was lack of regular auditing and monthly financial reporting. And it is shown that workload; inadequate salary and lack of indemnity policy were the major challenges. It is highly recommended for AMSH to; conduct auditing on a regular basis to improve transparency, conduct workload analysis to determine the staff size on an ongoing basis and work on the implementation of an indemnity policy.

***Key words**: APTS, accountability, transparency*

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

According to world health organization (WHO) one of the building blocks of health system is pharmaceuticals which accounts for 10-30% of health care costs (WHO, 2009). Early diagnosis and treatment of public health problems could be achieved through provision of adequate inputs Pharmaceuticals.

Millions of people worldwide die or face disability each year due to diseases that have proven pharmaceutical treatments (Lozano et al, 2012). In order to decrease these preventable deaths, access must increase to necessary medicines. Around two billion people worldwide and over one-half of the poorest in Asia and Africa are known to have inadequate access to essential medicines and vaccines, or none at all. One reason for this could be poor drug supply management system.

Drug supply management is a process of ensuring regular availability of right drug products, at the right quantities, of the right quality and reasonable price, where they are needed, at the right time and ensuring their proper use. Effective drug supply management includes proper selection and quantification, procurement, distribution, use and improving transparency and accountability in the practice of Pharmaceuticals transactions and provision of pharmaceutical services (USAID, 2011).

In practice many governments and health care facilities do not have a sustainable, uninterrupted, drug supply management (UN, 2015). Up to 90% of the populations in developing countries purchase medicines through out-of-pocket payments, making medicines the largest family expenditure item after food. As a result, medicines are unaffordable for large sections of the global population and are a major burden on government budgets (Teferi et al, 2016). Thus, uninterrupted supply of safe, effective, quality drugs at an affordable price, and rational use is crucial for the success of health program implementation (FMOH, 2010).

Federal ministry of health (FMOH) of Ethiopia has been implementing different reforms to improve the quality and accessibility of services at all of the country's health system and these are Business Process Re – engineering; Pharmaceutical Fund and Supply, Ethiopian Hospital Reform Implementation Guideline, Health Care Financing, Food and Medicine Regulation and others. As part of this reform, the ministry of health developed the Ethiopian hospital reform implementation guidelines (EHRIG) in 2010. One of the parts in the guideline is the pharmacy chapter that the hospital is using to improve the pharmacy services (FMOH, 2010).

During implementation of EHRIG in Debre Markos hospital; there were challenges related to medicine transaction that could not be resolved using the existing tool which gave birth the idea of a system called the Auditable Pharmaceutical Transactions and Services (APTS) in July 30, 2010. APTS was created as a system to track information on pharmaceutical transaction that makes transactions transparent, measurable and accountable. The system also designed to manage pharmaceutical budget rationally and envisages the implementations of health care financing by enabling recording of detailed descriptions of pharmaceuticals consumed and by helping preparations of monthly summary of claims for insurances/sponsors. The system facilitates the physical inventory of pharmaceuticals, process of handing over during resignations of professionals and facilitates auditing. Furthermore continuous supply of pharmaceuticals to the community at an affordable price can be attained. The system also results in optimal treatment outcomes which improve customer and professional satisfaction (FMOH, 2014).

Even if APTS is started at Debre Markos hospital the system were accepted by Health facilities in Amhara Regional Health Bureau (ARHB) and then followed by other regional health bureaus as well as to federal ministry of health (ARHB, 2012). Currently more than 47 hospitals from different regions including AMSH are implementing APTS (FMOH, 2015). The Ministry is preparing a huge medicines procurement plan to improve access to essential and specialty medicines at hospitals and APTS is one of the strategic initiatives to do so (FMOH, 2015). Hence, assessing the implementation outcome of the system in order to make further improvements in the areas where gaps are seen and to strengthen the areas in which it is good at is crucial. Therefore, this study tries to assess the implementation outcome of APTS in Amanuel Mental Specialized Hospital (AMSH).

1.2. Statement of the Problem

Good Pharmaceutical service promote the safe, rational and cost effective use of drugs thus maximizing health gain and minimizing risk of patient. Well-organized pharmaceutical service ensures the continuous availability of all pharmaceuticals (FMOH, 2010). In opposite poor drug supply management results in unreliable availability of drugs that leads to stock out, shortage and then to irrational prescribing, poor adherence, emergence of Antimicrobial resistance strains, treatment failure, etc. It could also result in significant wastage of resources due to deterioration, expiration, diversion, etc. which leads not only to the morbidity or mortality of a patient but also have socioeconomic impacts (USAID, 2011). One of the factors that contribute to gaps in access and inappropriate use of pharmaceutical is weaknesses in governance of pharmaceutical system (WHO, 2009).

Ethiopia's pharmaceutical supply chain management has been facing many challenges including lack of transparency and accountability, inaccessibility, wastage and poor quality of service. According to a recent assessment made in 17 Federal and Addis Ababa city administration government hospitals, the availability of key medicines at the dispensaries of these hospitals at time of visit ranged from 33.3% to 100%. Dispensing practices were found to be in a shape that needs huge improvement. For example, the average counseling time was a mere 43 seconds, labeling of medicines was suboptimal, and only 50% of the patients interviewed knew how to take their medicines properly. Patient satisfaction with pharmacy services was rated at 74% (FMOH, 2015a). The wastage rates of medication in eight hospitals included in the study were 5.1% (Tadeg et al, 2014).

Similarly in Amhara Regional State, pharmaceutical transactions and services at the health facilities were not supported with adequate tools and systems that ensure transparency and accountability. The existing system doesn't generate adequate reliable and consistent information that allow effective auditing of pharmaceutical transaction and services. The quantity and price of medicine that are dispensed, lost or damaged; where they came from; and who sold them and who bought them cannot be traced. Because this system is neither transparent not accountable; there is huge potential for medication to be diverted from public health system. And because of absence of proper documentation of transaction and controlling mechanism, pharmacy personnel are being held for the loss and misappropriation. Besides, the non-transparent and non -

accountable system makes it difficult to identify the illegal practitioner from those working ethically and responsibly (ARHB, 2012).

As a means to solve these challenges, the ARHB together with other stakeholders and partners has been implementing an initiative called Auditable Pharmaceutical Transaction and Service (APTS), a new and innovative intervention. It was started in Southern Nation Nationalities and People (SNNP) region and there were 17 hospitals who were implementing the intervention. Currently this system is being rolled out to several facilities and more than 47 hospitals from different regions have been implementing APTS including AMSH (FMOH, 2015b). However, According to a recent assessment made in the implementation outcome of APTS in 17 Federal and Addis Ababa city administration government hospitals, the availability of key medicines at the dispensaries of these hospitals at time of visit ranged from 33.3% to 100% (Tadeg et al, 2014). And Since AMSH is the only mental specialized hospital in Ethiopia which serves only mentally ill patients, shortage in supply of medicines or pharmaceutical products especially antipsychotic medications (which are used for a long period of time for the treatment of mental illnesses) results in huge gap in delivering the prospected quality healthcare service to patients. Hence, assessing the implementation outcome of the system in order to make further improvements in the areas where gaps are seen and to strengthen the areas in which it is good at is crucial. This is in light of this that this paper tries to assess the implementation outcome of APTS in AMSH.

1.3. Research Questions

1) What are the key outcomes of APTS implementation as per the five APTS result areas as a reference for measurement?
2) What are the major challenges that have an impact on the proper implementation of APTS?
3) What lesson was learned from the experience that can be shared with other health sectors?

1.4. Objectives of the Study

1.4.1. General Objective

The general objective of the study is to assess the implementation outcome of APTS in AMSH.

1.4.2. Specific Objectives

1) To assess the key outcomes of APTS implementation using the five APTS result areas as a reference for measurement.
2) To dig out the major challenges that has an impact on the proper implementation of APTS.
3) To identify lesson learned from the experience for sharing with other health sectors.

1.5. Operational Definitions

For this study purpose, the following terms were to mean;

Clients: a patient or a care giver who use the pharmacy at the time of data collection in AMSH.

Pharmacy staff: a person trained and qualified in pharmacy education which includes pharmacy technician, druggists and pharmacist and work in pharmacy department of AMSH.

Pharmacy service: a service provided in hospital regarding pharmaceutical supply management and use and includes all services provided by store, outpatient, in patient and emergency pharmacy.

1.6. Significance of the Study

1.6.1. Implication for AMSH

The study will be significant to uncover the major challenges faced during the implementation process of APTS in AMSH. So the result of the study could provide some applicable recommendations to make further improvement in areas where gaps are seen and strengthen areas in which the system is good at in order to improve the pharmaceutical governance of the hospital.

1.6.2. Implication for Social Change

This study may contribute to social change by assisting organizations in the field of medicine in ensuring that essential medicines are available for patients at the time they need them.

1.6.3. Implication for Others

In addition, the study will also be a contribution to the increase of the general knowledge of the subject and will act as a reference for future researchers.

1.7. Delimitation/ Scope of the Study

1.7.1. Geographical Scope

The study is conducted in western part of Addis Ababa in Addis Ketema sub city kebele 08. Among the various hospitals located in Addis Ababa, the studyis limited to AMSH.

1.7.2. Topical/ Conceptual scope

The study tried to assess the implementation outcome of APTS in AMSH with the aim of generating information that will help improve the pharmaceutical governance at the hospital.

Even though governance at hospital level is a broad concept, this study will be limited to pharmaceutical governance.

1.7.3. Methodological Scope

A data collection technique the study utilized mainly includes Plant visits (Observation), Interview with pharmacy head, finance head and internal Auditor and Questionnaire provided for clients and pharmacy staffs. Methodologically, the study uses mixed type of data analysis (both qualitative and quantitative type of data analysis).

1.7.4. Time Scope

The study was undertaken within the time period of Mar, 2017 to Jun 14, 2017.

1.8. Limitation of the Study

The non response rate in the sample size determination utilized was 10% but during the data collection period, it exists to be 12.3%.

1.9. Organization of the Study

This document is composed of five sequential chapters designed to assist the reader to effortlessly obtain desired information distinguishably. The first chapter has dwelled on introduction component of the study to give detailed information about background of the study, statement of the problem, objectives, scope, significance and other relevant specification of the study. Second chapter contains the literatures reviewed to support the study. The research design and methodologies used are stated in chapter three of the document. The forth chapter contains the result and discussion part. The final chapter which is chapter five contains conclusion, limitation and recommendation part of the study.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1. Theoretical Review

2.1.1. Revolution of APTS

In Ethiopia a double burden of diseases is already emerging, with a mix of persistent infectious diseases and increasing non-communicable diseases and injuries (Teferi et al, 2016). Communicable diseases such as pneumonia, diarrhea, and malaria continue to be the major causes of morbidity and mortality. Cardiovascular diseases, diabetes mellitus (DM), and cancer are contributing to overall mortality (FMOH, 2008). Most of these health challenges could have easily been prevented or treated by ensuring the continuous availability and proper use of a few essential medicines selected on the basis of disease prevalence and evidence of the efficacy, safety, and relative cost-effectiveness of these medicines. However, there are many reasons these essential medicines are not adequately available at all public health facilities on a continuous basis (WHO, 2005).

The poor governance of the pharmaceutical sector in the country is believed to have contributed significantly to most of the challenges related to pharmaceuticals management at different levels of the health system (Tadeg et al, 2014). The selection and prioritization of medicines was not guided by proven tools and techniques, resulting in frequent stock outs and expiry of life-saving medicines. Moreover, the provision of pharmaceutical services was not systematized to ensure proper workflow and adequate medication use counseling during the dispensing process, compromising the overall treatment outcome and patient satisfaction. Documentation of services was very minimal and was not standardized. As a result, relevant reports were neither generated nor shared with the relevant body to guide the decision-making processes.

In recognition of the problems, the country implemented several measures in the past to build a strong pharmaceutical and medical supplies system. Notable among these measures were an increase in health care spending—including the drug budget—as well as an increase in the drug-financing risk pool, the establishment of the Pharmaceutical Fund and Supply Agency (PFSA), and the introduction of systems, tools, and guidelines such as the Integrated Pharmaceutical Logistics System (IPLS), Logistics Management and Information System (LMIS), Auditable

Pharmaceutical Transactions and Services (APTS) and Ethiopian Hospital Reform Implementation Guidelines (EHRIG) (FMOH, 2010).

The EHRIGs, which were developed in 2010, are among the sector-wide reforms implemented by the Federal Ministry of Health (FMOH) to improve the quality and accessibility of health services, including pharmaceutical services. Among other things, the guidelines focused on hospital governance, service quality, patient flow, record-keeping, pharmacy services, and human resources management (FMOH, 2010). The Pharmacy Chapter of EHRIG was designed to improve the provision of quality pharmaceutical services and institute transparency in pharmaceutical transactions in hospitals.

Amhara Regional Health Bureau (ARHB) has been supporting the efforts of hospitals in the region to implement EHRIG, and Debre Markos Hospital pioneered its implementation (Adinew et al, 2012). Following the implementation, the hospital management identified the pharmacy services as determinants of service quality and customer satisfaction. A team of pharmacists identified major gaps and devised possible interventions after sharing their experiences during visits to hospitals in Addis Ababa with relatively better pharmacy services. Best practices and lesson learned there inspired the management and pharmacy professionals in Debre Markos Hospital to take concrete actions. They sought technical assistance from the USAID project Strengthening Pharmaceutical Systems (SPS), a predecessor of SIAPS. As per the hospital's request, the technical team from SPS began to work jointly with them to improve pharmacy services at Debre Markos Hospital, developing a package of interventions in identified areas, which was later called Auditable Pharmaceutical Transactions and Services (APTS).

2.1.2. Description of APTS

APTS is a package of interventions that involves the following activities (FMOH and SIAPS, 2013):

- **Preparing/using tools to ensure transparency and accountability—**Tools include receiving and issuing vouchers, sales tickets, registers, and daily summary and monthly reporting forms.
- **Developing/using methodologies for efficient utilization of medicines budget—** Methods include: price setting; generating a daily sales summary as cash, credit, and no

charge; generating information on products, finances, and pharmaceutical services; assigning bin ownership at the dispensary; preparing a facility-specific drug list with items categorized as vital, essential, and non-essential (VEN); undertaking ABC/VEN analysis to identify and reconcile the most needed medicines; and determining stock turnover through consumption and undertaking stock status analysis (SSA) to identify the usable stock versus obsolete stock.

- **Planning for pharmacy renovation, reorganization, equipment/facilities, and suitable workflow—**reorganize dispensaries in such a way as to promote one-stop shopping service and effective medicines sales; reorganize pharmacy workflow to improve medication use counseling and patient convenience; and redefine the roles of dispensers, accountants, and cashiers.
- **Conducting workload analysis and determining proper human resource deployment, performance evaluation, and training.**
- **Planning for regular physical inventory and auditing to ensure transparency and accountability.**
- **Planning prescription evaluation and medicines-use counseling to promote proper use of medicines.**

2.1.3. Developing and Implementing Legal Instruments for APTS

APTS is expected to improve the efficiency of pharmaceutical services in five key result areas (Table 1). Following its successful piloting at Debre Markos Hospital in the Amhara Region, APTS has been effectively implemented in 19 different regions, where it is producing encouraging results. By the mid-2015, all 19 hospitals in the Amhara region had implemented APTS. The FMOH and six RHBs (Amhara, Tigray, Addis Ababa, Oromia, SNNPR, and Dire Dawa) enacted legislations and have begun implementing APTS in selected hospitals under their jurisdiction. Apart from documenting the impact of APTS and the major factors that contribute to its success, information on potential challenges is important for advancing the scale-up of APTS to all hospitals and health centers in the country.

Table 2.1. Auditable pharmaceutical transaction and service logical framework

Input	Activity/ process	Output	Outcome
• Human resource • Guideline, tools and SOP • Drug and supplies • Budget • Information system • Health facilities premise • Technical Assistance	• Training • Receiving • Setting price, coding and billing • Auditing and inventory • Updating stock and cards • Premise rearrangement and shelving • Requesting • Issuing • Dispensing • Daily summery report • Monthly financial and service report • Quarterly and annual report	• # of deployed and trained staff • # Monthly, Quarterly and annual report • # Audit report, inventory report • % of voucher, sales ticket and registers properly recorded • % of medicines procured based on facility specific list • Adequacy of the pharmacy store as per standard • Stock turnover rate • Average dispensing/ counseling time • % of adequate labeling • Availability of basic equipment • # patient served per dispenser	• Improved customer satisfaction • Generation of information • Improved budget utilization • Improved accountability and transparency • Effective workforce deployment and development

***Source**: own survey, 2017.*

2.1.4. Indicators used to measure key result areas

Table 2.2. Core indicators for measuring key result areas and implementation processes

Key results	Indicators
Transparent and accountable transaction	➢ documenting/reporting their wastage of medicines annually ➢ conducting internal auditing at least once in a year ➢ tracking sales of medicines and reconcile with actual medicines dispensed on a daily basis ➢ average number of days required to take physical inventory
Efficient budget utilization	➢ % of expired medicines (based on monetary value) ➢ average revenue from sales of medicines ➢ conducting stock status analysis (SSA) ➢ perform ABC/VEN reconciliation annually
Improved customer satisfaction	➢ % of patients who know the correct dosage of dispensed medicines ➢ % overall patient satisfaction ➢ Average availability of 32 key medicines in pharmacy stores ➢ Average availability of 32 key medicines in the dispensing units ➢ Mean stock out duration ➢ % prescribed medicines that are actually dispensed
Generation of information	➢ submitting financial reports each month ➢ generating service delivery reports on a monthly basis ➢ % discrepancy between quantity of medicines recorded on bin card and actual physical count ➢ received monthly feedback from RHBs on APTS indicators/performance

Effective workforce	➢ accountants fully dedicated to managing financial transactions at pharmacy ➢ cashiers fully dedicated to managing daily pharmaceuticals transactions ➢ performing workload analysis ➢ Overall satisfaction of pharmacy professionals

Source: *(Adinew et al., 2012)*

2.2. Empirical Literature Review

Pharmaceuticals are a crucial high-value element in health care systems that often make a difference in the health outcomes for the individual and the population (Fidler and Msisha, 2008). Provision of essential medicines was outlined by WHO as one of the eight essential components of primary health care (Teferi et al, 2016). As the availability of necessary medicines is integral to modern health care, access to these medicines is the fundamental right of every person. However, the World Health Organization (WHO) reported that approximately 67% of the population lives without access to essential medicines. Among the medicines made available, more than 50% are prescribed, dispensed, or sold inappropriately, and 50% of patients fail to take them correctly.The factors undermining the availability of medicines include poor medicine supply and distribution systems; insufficient health facilities and staff; low investment in health; and the high cost of medicines (Sakthivel, 2005).

In general, health sector suffers from different type of supply chain problem. This includes complex and lengthy procurement resulting in shortage and irregularity of the necessary drugs, supplies and equipment at health facilities. A study conducted in India has revealed that not only does the quantity of medicines received fall short of the requirement but also the supply is often erratic. Even common medicines are out of stock and remain so for a considerable period (Kidwai, 1992). Huge budget and key element in the provision of care make drugs as an important component of hospital care. Approximately 35.0% of annual hospitals budget is spent on buying materials and supplies, including medicines (Kunders et al, 2000). But the inefficiency of the procurement has also resulted in the poor absorption capacity of funds allocated from different stakeholders. A study conducted in Jamaica reveled that not every public health facility had the VEN List, since it was only available in about 1 in each three facilities (35.7%)(WHO, 2012).Other study in Ethiopia showed that only four hospitals (23.5%) reported being allocated

adequate budget for pharmaceuticals in the 2005 Ethiopian calendar (EC) year. Among those hospitals reporting that they had inadequate budget for pharmaceuticals, the average number of months covered by the allocated budget was 7.84 (Tadeg et al, 2014).

Other major challenges are poor quality control system; substandard storage facilities; inefficient distribution; inadequate transportation and poor inventory system. National assessment on pharmaceutical sector in Jamaica Storage conditions varied from 70% of adequacy in the store rooms of public health facilities to 90% of adequacy in warehouses supplying the public sector (WHO, 2012).Another study in Tanzania showed that only 33% of the health facilities has adequate storage for pharmaceutical (MOHSW, 2008). Similar national assessment in Ethiopia showed on the average, the score for storage conditions were 6 and 8 on a scale of 0−11 in public health facilities and regional drug stores, respectively (FMOH, 2003). Another study conducted in woreda health offices of west hararghe zone in Ethiopia reveal that the equipment that aid in store management are not adequate at the time of the study. There is also shortage of floor pallets and not even enough space for storage and reception area (GizatM.k and Samson M., 2014).

Poor storage conditions can lead to losses either through the mismanagement of pharmaceuticals (leading to their expiration) or plain corruption (theft of medicines). In the past decade, available research has provided increasing evidence that greater vulnerability to corruption can lead to limiting access to medicines and health services (IMF, 2000). A study by Amnesty International on maternal health in Burkina Faso found that one of the primary causes of annual mortality in thousands of pregnant women (including during childbirth) is due to corruption by health professionals and poor healthcare delivery (Amnesty, 2010).Of the various explanations for non-availability of even simple medicines in the third world countries, a large number are related to materials management.

According to the WHO countries with weak governance within the medicines chain are more susceptible to being exploited by corruption as they lack appropriate medicines regulation, enforcement mechanisms and conflict of interest management. It is calculated that 10 to 25% of public procurement spending (including on pharmaceuticals) is lost to corrupt practices which can have a negative impact on the health of the population (WHO, 2009). Most public health systems in developing and transition countries lack the ability to limit access to drug supplies

and the infrastructure to control access, although there are some exceptions. The absence of information systems for supplies and drugs, and an inability to sanction (or hold accountable) abusing staff makes control of theft particularly (Lewis, 2006). In study conducted in Sudan no records available about inventory control at the pharmacy level (Elamin et al, 2014).There is no proper stock management in health facilities as revealed by absence of stock control tools such as stock card in 60 % of the surveyed health facilities **(**FMOH, 2003).

More insidious and difficult is drug mishandling from the importation of substandard medications, to the repackaging of drugs, substituting lower cost/quality medications, to the pilfering of drug supplies at points of service (e.g., clinics and hospitals). The health consequences of tampering can be serious, but rarely traced to the source of the problem due to ignorance, lack of regulation and enforcement (Lewis, 2006).

Conversely, evidence has also shown that good governance can improve key development goals; a study from Transparency International demonstrated that increasing transparency, accountability and integrity in 48 countries had a robust correlation to better outcomes in health, The public posting of medical supplies purchased by public hospitals by the city government of Buenos Aires, Argentina resulted in prices reductions within the first few months of this intervention (Kohler et al, 2014). Pillans et al showed that review and control measures for expensive drugs brought about 20% savings.

The other outcome of poor storage practice is wastage due to expiry. In China various studies indicate that on average about 30 percent of public drug supplies are expired or counterfeit, suggesting poor logistics management, limited oversight and graft. In national assessment of Ghana pharmaceutical assessment 10% percent of the public dispensaries had expired medicines (WHO, 2008). At least US$550 000 worth of anti-retro-virals and 10 million anti-malarial doses recently expired in Uganda's National Medical Stores (Nakyanzi et al, 2010). Similarly a studyon pharmaceutical sector in Ethiopia showed that average presence of expired drugs about 8% in health facilities (FMOH, 2003).This emphasizes the need for planning, designing and organizing the medical stores in a manner that results in efficient clinical and administrative services. Efficient priority setting, decision making in purchase and distribution of specific

drugs, close supervision on drugs belonging to important categories, and prevention of pilferage depend on the drug and inventory management (Doshi et al, 2007).

The other problem which affects access to essential medicine is inadequate availability. Key essential medicines are largely available in public health facilities in Jamaica were (93.3%) (WHO, 2012). A study conducted in Costa Rica showed half of exit survey respondents had not received a prescribed drug due to non-availability, an important indicator of ineffectiveness. Costa Rica's strong record in health care delivery and its relatively higher income, greater health spending and education levels among developing countries suggests the difficulty and challenges inherent in managing health systems and drugs in particular. (Cameron et al, 2008) investigated the availability of 15 generic medicines used for a range of conditions in 36 developing countries and found it to be 38% in the public. Another study in developing country indicated that in all countries < 7.5% of these 32 medicines were available in the public sector, except in Brazil, where 30% were available, and Sri Lanka, where 28% were available (Mendis et al, 2007).

Different studies showed that there is a shortage in availability key essential drugs in different countries (Yang et al, 2010). Findings Average public sector availability of generic medicines ranged from 29·4% to 54·4% across WHO regions (Cameron et al, 2008). In Ghana Overall indicators of access show that key essential medicines selected for the country are to a high extent available in public health warehouses (80%)(WHO,2008) . Whereas in Tanzania About 61.75 % of the 14 items monitored was available in public health facilities (Kishiwa M., 2011). In Sudan on the average, availability of selected essential medicines at the public pharmacy was found to be 80.6% (Elamin et al, 2014). The national average for availability of key essential drugs in health facilities was 70% for public health facilities (FMOH, 2003).

In Ethiopia, 86 % of prescribed drugs are dispensed in public health facilities (FMOH, 2003). A study conducted in Tanzania showed adequate patient knowledge about the dispensed medicines was met only for 83.85% of patients (Kishiwa M., 2011). The assessment in Ethiopia shows that on average, only 19.9% of medication dispensed to the patients in health facilities is adequately labeled (FMOH, 2003).

In Tanzania the correct medicine labeling criteria for prescriptions were met in 62.29%of the analyzed prescriptions (Kishiwa M., 2011). But in Ghana, seven patients (15%) in public

pharmacies had not been informed on how to take their medicines (WHO,2008). In recent study conducted only 12.8% respondents understood how to take their medication as compared to the ideal value of 100% (FMOH, 2014).

Across WHO Treatments for acute and chronic illness were largely unaffordable in many countries especially in countries where value added tax was applied to medicines, the amount charged varied from 4% to 15% (Cameron et al, 2008). (Babur et al, 2007) showed in Malaysia the public sector, where medicines are free, availability was low even for medicines on the National Essential Drugs List. For a month's treatment for peptic ulcer disease and hypertension people have to pay about a week's wages in the private sector. In china for most of the population, the medicine prices are affordable, but for those of low income they are not (Yang et al, 2010).In Jamaica the public sector, the medicines are provided free of charge for all conditions chosen. Data suggests that affordability of treatment for common primary health problems is a large problem when the medication is not available in the public facility, since the burden for the lowest paid public servant in terms of working days is high for common diseases like hypertension (WHO, 2012).

In Ethiopia the drug expenditure to income ratio has revealed that on the average 21% of estimated family weekly income or total weekly household expense is required to cover the cost of drugs to treat a single episode of illness. The affordability of adult and child preparations in public health care facilities was 135 % and 68 %, respectively. This means that approximately 1.4 days' and 0.7 days' salary of the lowest paid unskilled government employee is required to cover the cost of a single course of therapy of pneumonia in adult and children, respectively (FMOH, 2003).This has the overall effect of poor quality of service at the grass roots level.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1. Research Design

The purpose of this study was to assess the implementation outcome of APTS in AMSH. And, the findings of the study could be used as an input for the improvement of the service. According to Koul (1992) descriptive survey is the only means through which views, opinions, attitudes, and suggestions for improvement of practices can be collected. Therefore descriptive study design was utilized for this study purpose.

3.2. Data Type and Source

The data for this study was obtained from primary and secondary sources. Concerning primary source, relevant data was collected from respondents who have direct involvement in the implementation process and are believed to have valuable insight about the phenomenon (such that: head of pharmacy, pharmacy staffs, finance head, internal auditor and clients). Regarding to secondary source, data was gathered from hospital records.

3.3. Data Collection Method and Instrument

Both qualitative and quantitative methods were used to gather the primary and secondary data's used by the study.

The data collection instruments were adopted from Teferi et al., (2016). Questionnaire was the main instrument used to collect quantitative data from clients and pharmacy staffs. To support the quantitative data, key informant interview was conducted with the pharmacy department head, finance head and internal auditor of the hospital.

In addition, the data was also supported by review of relevant documents and plant visit (observation). Documents related to bin/stock cards and records on medicine wastage rate were reviewed to gather information on relevant indicators. Data on the availability of key medicine and accuracy of records were collected through direct observation of the services. The availability of medicines were measured based on actual observation of products on the shelf at the time of the visit. Information recorded on the stock/bin card was gathered and the results

were comparedwith an actual physical count to measure the accuracy of records. Then mismatch between records and actual counts were reported as a discrepancy.

3.4. Population and sampling technique

The participants of the study were those employees of AMSH who are involved in the implementation of APTS and clients who receive service from the hospital outpatient pharmacy at the time data collection period.

All pharmacy professionals (42 in number) were used as respondents for the quantitative data where as single proportion formula (Reddy, 2006 & Getahun, 2010) was used to determine the sample size of clients. Available figure from previous study on proportion of patient satisfaction which was found to be 74% (FMOH, 2015) was probed to identify the yield of estimated sample size. With the assumption below, the sample size was determined as;

$$n = \frac{(z_{\alpha/2})^2 \cdot pq}{d^2}$$

Where: n = the size of the sample,

Z = the standard normal distribution,

d = degree of accuracy,

p= proportion in the target population estimated to have particular characteristics. In this case, Prevalence/ proportion of patient satisfaction =74%=p=0.74, q=1-p; q=0.26

Confidence interval: 90%, α=0.1 &Margin of error/ degree of accuracy =5%

Therefore: n= $(1.64)^2$*(0.74*0.26)/$(0.05)^2$= 207 and adding 10% contingency (non response rate) gave a total of 228 clients.

Then Systematic random sampling technique was maintained to recruit the study population (clients). The hospital serves around 400 clients per day and over the two weeks data collection

period around 6000 clients were assumed to receive service from the hospital pharmacy. Thus the sampling fraction (k) was calculated to be 6000/228 ≈ 26. A starting point was chosen randomly from numbers 1 to 26. Then, every 26^{th} client was considered respondents of the study.

In addition, the data was supported through an in depth interview with 3 of key informants specifically; the head pharmacy, finance head and internal auditor of the hospital. The informants are purposely selected as they are believed to have valuable insight regarding the phenomenon considered in the study.

3.4. Data Collection Procedures

An official letter from St. Merry University to AMSH was received and after getting approval by the CEO of AMSH, the closed-ended questionnaire was administered in a period of two weeks to all categories of respondents and interview was also conducted with a few selected respondents.

3.5. Methods of Data Analysis and Presentation

The quantitative data after being edited for completeness and consistency, it was analyzed using descriptive statistics. The data was presented in frequency tables and interpreted through frequency counts and percentages. Regarding the qualitative data, content analysis was utilized.

3.6. Ethical Consideration

The following basic principles gave a highlight of the ethical principles that were observed during the study: voluntary participation, confidentiality and harm to respondents. The data for the study was collected after the respondents agreed to participate and the collected data was analyzed guaranteeing confidentiality. And also the study did not expose respondents to psychological harm since the information sought was not private and sensitive.

CHAPTER FOUR: RESULT AND DISCUSSION

4.1. Results from quantitative data

4.1.1. Client Care and Satisfaction

The response rate of clients was 87.7%. Therefore, the total number of clients involved in the study was 200.

4.1.1.1. Client Knowledge on Dispensed Medicines

Among the total of 200 clients surveyed, more than two third (63.5%)were male. Nearly two-thirds (59.5%) of the participants were married, and 64.5% followed Orthodox Christianity. In terms of residence, 68% of the participants were from the relatively urban/town areas where the hospital is located (Table 3).

Table 4.1. Socio-demographic profile of clients/patients visiting the outpatient pharmacies of AMSH (n=200)

Variable		**Frequency (%)**
Gender	Male	127 (63.5%)
	Female	73 (36.5%)
Marital status	Single	79 (39.5%)
	Married	119 (59.5%)
	Divorced	2 (1%)
Religion	Orthodox Christian	129 (64.5%)
	Islam	38 (19%)
	Protestant	19 (9.5%)
	Catholic	10 (5%)
	Other	4 (2%)
Residence	Urban/town	136 (68%)
	Rural	64 (32%)
Educational status	Unable to read and write	27 (13.5%)
	Able to read and write only	6 (3%)
	Primary school	75 (37.5%)

	Secondary school	60 (30%)
	Certificate/Diploma	14 (7%)
	Degree and above	18 (9%)
Employment status	Government employee	8 (4%)
	Private company employee	109 (54.5%)
	NGO employee	10 (5%)
	Merchant	26 (13%)
	Housewife	19 (9.5%)
	Student	4 (2%)
	Not working	18 (9%)
	Other	6 (3%)
Status/type of visit	New visit	24 (12%)
	Repeated Visit	176 (88%)
What is your reason for your visit to the hospital pharmacy?	To get medicines for yourself	53 (26.5%)
	To get medicines for friend/family	147 (73.5%)
Is your visit because of chronic disease? (hint: diabetes, hypertension, asthma, psychosis)	Yes	192 (96%)
	No	8 (4%)
Did you get the medicine with?	Cash	106 (53%)
	Credit	-
	Free	94 (47%)

Source: *own survey, 2017.*

Participants whose educational levels included secondary/vocational and primary school accounted for more than two-thirds of the participants. More than half (54.5%) of participants are employs at a privately owned company followed by merchants, who made up of about 13% of the participants (Table 3).

Most of the participants who visited the hospitals were there many times, accounting for more than three quarters (88%). While nearly three quarters (73.5%) visited the pharmacies to get

medicines for their friends or family members, the rest were acquiring the medicines for themselves. The overwhelming majority (96%) reported that they had some type of chronic illness. 53% of the participants reported that they paid for the medications (Table 3).

The proportion of medicines dispensed to the person for whom it was prescribed was 87.5%. In terms of the overall knowledge of patients on the dosage schedule of the medicines prescribed for them, 100% of patients/clients served in the hospital replied they knew the correct dosage of their medicines (Table 4).

4.1.1.2. Labeling Practice on Dispensed Medicines

In terms of the completeness of the labeling information on the medicine packages provided to patients, 100% of the clients replied there was complete written information about name of the medicine, frequency, and quantity/duration on the package of the medicine they took(Table 4).

Table 4.2. Percentage of labeling completeness and actually dispensed medicines

Name of hospital	Number of medicines				
	prescribed	Actually dispensed	% dispensed	Complete Labeling	% of complete labeling
AMSH	200	176	88	200	100

Source: *own survey, 2017.*

4.1.1.3. Patient Satisfaction

The parameters used for assessing patient satisfaction were dispensing area, dispensing process, personnel skills, privacy of the setting, and assistance offered to the patient. More than 90% of patients from the Hospital were satisfied with the easy accessibility of the pharmacy and dispensing area. The privacy of settings was also acknowledged by most of the patients. The average result obtained for cost of the medicines was the lowest, i.e., 78.5%. More than 90% of the respondents acknowledged that they received good assistance from the pharmacy staffs. Considering everything the overall satisfaction stood at an average of 89.25% (Table 5).

Table 4.3. Patient satisfaction with pharmacy service under different criteria

Variable	**Disagree/ Strongly disagree (%)**	**Neutral (%)**	**Agree/ Strongly agree (%)**
Dispensing area			
The location of the pharmacy is easily accessible.	4 (2%)	10 (5%)	186 (93%)
The overall cleanliness and comfort of the pharmacy waiting area	4 (2%)	12 (6%)	184 (92%)
Convenience of the dispensing area and counter for service provision	4 (2%)	16 (8%)	180 (90%)
Dispensing process			
The clarity of the pharmacy professional's instructions about how to take your medication	2 (1%)	18 (9%)	180 (90%)
The information the pharmacist gives you about the results you can expect from your pharmacotherapy	2 (1%)	10 (5%)	188 (94%)
The promptness of processing prescription medicines	4 (2%)	10 (5%)	186 (93%)
The availability of medicines that are prescribed to you in the pharmacy	2 (1%)	16 (8%)	182 (91%)
Privacy			
The privacy of your conversations with the pharmacist	-	14 (7%)	186 (93%)
Assistance to patients			
The courtesy and respect shown to you by the pharmacy staff	-	18 (9%)	182 (91%)
Others			
The fairness of cost of medicines in the pharmacy	6 (3%)	37 (18.5%)	157 (78.5%)

Source: *own survey, 2017.*

4.1.2. Pharmacy Professionals' Perception of APTS

As shown in Table 6, a total of 42 pharmacy personnel were given questionnaire. A majority of them were males (61.9%).73.8% of participants had more than 4years of professional experience; and 71.4% were unmarried.

Table 4.4. Socio-demographic and job-related information of pharmacy professionals at AMSH, 2017(n=42).

Variable		**Frequency (%)**
Gender	Male	26 (61.9)
	Female	16 (39.1)
Marital status	Single	30 (71.4)
	Married	12 (28.6)
Academic qualification	Diploma in pharmacy	2 (4.8)
	Bpharm	38 (90.4)
	Masters degree in pharmacy	2 (4.8)
Total year of professional experience	<4yrs	11 (26.2)
	≥4yrs	31 (73.8)
Experience at current job	<4yrs	28 (66.7)
	≥4yrs	14 (33.3)
Access to written job description	Yes	34 (81)
	No	8 (19)
Primary practice area	ART, clinical pharmacy & dispensing	1 (2.4)
	Admin , clinical pharmacy & dispensing	1 (2.4)
	clinical pharmacy & dispensing	15 (35.7)
	Dispensing	21 (50)
	Compounding	1 (2.4)
	Drug information service & dispensing	1 (2.4)
	DSM & dispensing	1 (2.4)
	Store management & dispensing	1 (2.4)

Source: *own survey, 2017.*

Out of the total respondents, 90.4% were pharmacists predominately with a bachelor's degree in pharmacy (BPharm), and the primary area of practice for majority of the respondents was dispensing (50%) followed by clinical pharmacy service and dispensing which accounts for 35.7% (Table 6).

Though APTS initiative was implemented in AMSH, most of the pharmacy staffs did not receive training on APTS. The proportion of trained versus untrained staffs is shown in the figure above.

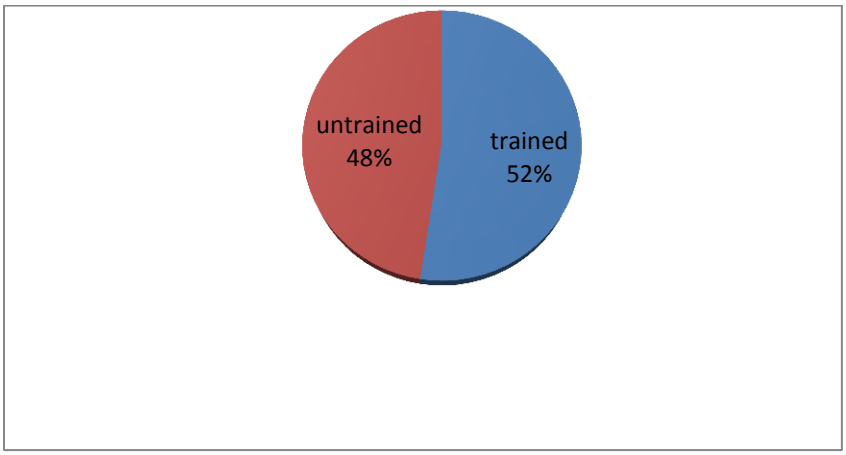

Figure 4.1. Proportion of staffs based on their status of training on APTS

The overwhelming majority 95.2% of the professionals believed that APTS helped improve auditing and facilitate transparency and accountability in pharmaceutical transactions. All participants believed that APTS increases the efficiency of resources utilization and 80.9% agreed APTS would help in reducing wastage of medicines while 19% are neutral about the idea (Table 7).

Table 4.5. Pharmacy professionals' views on different aspects of APTS implementation at AMSH, Ethiopia, 2017

Variable	**Disagree/ Strongly disagree (%)**	**Neutral (%)**	**Agree/ Strongly agree (%)**
APTS implementation improved availability of medicines.	3 (7.1%)	5 (11.9%)	34 (80.9%)
APTS implementation increased my workload.	-	-	42 (100%)
APTS implementation improved job opportunity for pharmacists	-	-	42 (100%)

APTS implementation has reduced expiry of medicines.	-	8 (19%)	34 (81%)
APTS implementation has reduced theft of medicines.	5 (11.9%)	12 (28.6)	25 (59.5%)
APTS implementation has not helped to reduce damage to medicines.	22 (52.4%)	7 (16.7%)	13 (31%)
APTS has improved transparency of pharmaceutical transactions.	-	2 (4.8%)	40 (95.2%)
APTS has improved the record-keeping practice of the pharmacy.	-	-	42 (100%)
APTS implementation has improved patient satisfaction	10 (23.8%)	25 (59.5%)	7 (16.7%)
APTS implementation has improved budget utilization efficiency	-	11 (26.2%)	31 (73.8%)
APTS implementation has improved other hospital units satisfaction	7 (16.7%)	28 (66.7%)	7 (16.6%)
APTS implementation has improved work flow	21 (50%)	8 (19%)	13 (31%)
APTS implementation has reduced waiting time of patients to receive pharmacy service	39 (92.9%)	3 (7.1%)	-
APTS implementation increased attrition rate of pharmacists	-	11 (26.2%)	31 (73.8%)

Source: *own survey, 2017.*

The perceptions of the pharmacy professionals were also assessed in relation to expected outcomes of APTS, the implementation process, and the workload. As shown in (Table 7), more than 50% of respondents responded favorably for most of the key outcome measures: improving availability of medicines; reducing expiry and theft; improving transparency and accountability;

increasing budget utilization efficiency; improving record-keeping; increasing attrition and better forecasting practices. However, responses were less favorable concerning improving workflow and neutral responses towards the ideas of improving patient satisfaction and satisfaction among other health professionals in nursing, laboratory, and radiology departments. 100% of participants believed that APTS increased their workload and increased attrition of professionals (73.8%). On the other hand, 100% of them believe that APTS has improved job opportunity for pharmacists.

4.1.2.1. Job Satisfaction of Pharmacy Personnel

For a hospital to be effective in serving its clients, the job satisfaction of employees plays a key role. Job satisfaction is "an individual's reaction to the job experience" (Berry 1997).Job satisfaction is usually measured using the following parameters: pay, promotion, benefits, supervisor, coworkers, work conditions, communication, safety, productivity, and the work itself. Individual employees respond differently to these issues.

The job satisfaction of employees in AMSH was assessed as regards the state of supervision, collaboration with coworkers, payments, promotion, the work itself, and pharmacy premises and facilities. Professionals of the hospital feel that their payments are unfairly low and believe that they should receive better benefits in light of their contributions and responsibilities (Table 8).

They are also unhappy about their work settings. 73.8% of them responded that they disagree or strongly disagree with the premises and facilities. The highest satisfaction was obtained for collaboration with coworkers and for satisfaction with the work itself. Considering everything, the level of satisfaction of pharmacy professionals is very low, more than 50% responding to disagree or strongly disagree. On the other hand, the results show that pharmacy staffs do appreciate their profession and are able to create better working environments with their colleagues.

Table 4.6. Job Satisfaction of Pharmacy Staffs (N=42)

SN	Job satisfaction parameters	Disagree/ Strongly disagree (%)	Neutral (%)	Agree/ Strongly agree (%)
	Satisfaction with Supervision			
	The supervisors I work with are supportive.	-	8 (19%)	34 (81%)
	My superiors listen to me properly.	-	10 (23.8%)	32 (76.2%)
	I am fairly treated by the management of the hospital.	5 (11.9%)	3 (7.1%)	34 (81%)
	My suggestions are usually given consideration by my supervisor.	-	10 (23.8%)	32 (76.2%)
	My work responsibilities are made clear by my supervisor.	-	5 (11.9%)	37 (88.1%)
	Satisfaction with Coworkers			
	I enjoy working with my colleagues in the hospital.	2 (4.8%)	-	40 (95.2%)
	The people I work with are responsible for their job.	2 (4.8%)	-	40 (95.2%)
	The people I work with support me well.	4 (9.5%)	-	38 (90.5%)
	Satisfaction with Payment			
	My pay is adequate, considering the responsibilities I have.	25 (59.5%)	13 (31%)	4 (9.5%)
	The hospital pays me fair benefits (transport, medical, etc.).	23 (54.7%)	13 (31%)	4 (9.5%)
	There are benefits we do not have that we should have.	-	4 (9.5%)	38 (90.5%)
	Satisfaction with Promotion			
	I like the basis on which my hospital promotes people.	11 (26.2%)	27 (64.3%)	4 (9.5%)
	Satisfaction with the Work Itself			
	My job is interesting.	2 (4.8%)	9 (21.4%)	31 (73.8%)

I would rather be doing another job.	21 (50%)	19 (45.2%)	2 (4.8%)
I feel unappreciated by the hospital for the work I do.	15 (35.7%)	22 (52.4%)	5 (11.9%)
I have too much to do at work.	-	15 (35.7%)	27 (64.3%)
I often feel that I don't know what is going on in the organization.	17 (40.5%)	17 (40.5%)	8 (19%)
I feel a sense of pride in doing my job.	2 (4.8%)	2 (4.8%)	38 (90.4%)
I don't feel my efforts are rewarded the way they should be.	8 (19%)	19 (45.2%)	15 (35.7%)
My job makes good use of my skills and abilities.	5 (11.9%)	11 (26.2%)	26 (62.9%)
I have the tools and resources to do my job well.	21 (50%)	9 (21.4%)	12 (28.6%)
My work gives me a feeling of personal accomplishment.	4 (9.6%)	24 (57.1%)	14 (33.3%)
I get chances for in-service trainings to help me do my job better.	29 (69%)	2 (4.8%)	11 (26.2%)
Premises and Facilities			
Sufficient attention is given to job safety.	35 (83.3%)	7 (16.7%)	-
Premises are convenient for conducting my duties	31 (73.8%)	6 (14.3%)	5 (11.9%)
Overall Satisfaction			
Considering everything, I am satisfied with my job	24 (57.1%)	5 (11.9%)	13 31%)

Source: *own survey, 2017.*

4.2. Results from Qualitative data

4.2.1. Interview with pharmacy department head

4.2.1.1. Profile of interviewee

The pharmacy department head interviewed was male with masters in pharmacy and around 7 years of experience as professional but has been working at the current position for the last 4 years. The interviewee also reported that, he had received training on APTS.

4.2.1.2. Availability of Services

As per (FMOH, 2010), hospital pharmacy service can be categorized as outpatient, inpatient, emergency, ART, emergency, clinical, drug information, Drug Supply Management (DSM) office, chronic care pharmacy, pharmacy compounding, pharmacy store, etc., based on the hospital need and specialization. AMSH was assessed in relation to availability of pharmacy services. Accordingly, except for chronic care pharmacy service, all the other services listed above are provided by the hospital.

4.2.1.2. Effective work force deployment

Availability of adequate and motivated human resources based on APTS system design assumptions is one of the critical APTS implementation enablers. In the present assessment, however, the interviewed pharmacy section head at AMSH stressed that though base line assessment was conducted prior to implementation of APTS and the human resource gap identified based on the requirement of APTS was tried to be filled by hiring around 15 pharmacy staffs, the existing staff levels in pharmacy departments were still insufficient to effectively implement APTS. According to the respondent, the APTS human resource categories with critical shortage were dedicated cashiers and porters next to pharmacy staffs.

The pharmacy head interviewed believed that attrition was a problem in the hospital. Workload, inadequate salary and lack of policy in indemnity were ranked as major reasons respectively.

According to the pharmacy section head, 20% was the profit margin added on to medicines cost and believed the costs of the medicines are fair. But it was also reported that patient care indicator and satisfaction survey were not conducted. In addition, regular survey to measure patients' waiting time to get pharmacy services was not conducted.

As per the head pharmacy, the major challenges faced throughout the implementation of APTS were; attrition among pharmacy staffs and cashiers, higher workload and responsibility which is not supported by indemnity policy, lack of capacity building (new pharmacy staffs were not trained on APTS) and lack of strong performance management incentive system. And the interviewee also believed APTS is progressing well to full implementation.

4.2.1.3. Transparency and Accountability of Transactions

In this Assessment, the interviewee reported that, basic tools of APTS such as model 19 and model 22 (modified), cash sales ticket and dispensing registers were available and in use at AMSH. A financial summary for cash sales and free provisions of medicines was also recorded on a daily basis.

Conducting a complete count of the physical inventory in the store and dispensary on a regular and timely basis is also another indicator of a transparent and accountable pharmaceutical transactions system in a hospital. In this regard, AMSH undertook a physical inventory regularly which took almost half a day.

4.2.2. Interview with internal auditor

4.2.2.1. Profile of interviewee

The internal auditor of the hospital interviewed was male with around 5 years of experience as professional and has been working at the current position for the last 3 years. The interviewee also reported that, he had received training on APTS.

4.2.2.2. Transparency and Accountability of Transactions

As per the auditor, taking a sample of products randomly and matching it with different financial documents was the most common way of auditing pharmaceuticals in the hospital. In doing so, auditor of the hospital believed that APTS helped him in auditing pharmaceutical transactions, which was previously not the case. However, the absence of regular financial auditing and manual recording of large number of items were reported to be the major challenges regarding the auditing task.

It was also reported that the absence of regular auditing could be the reason for low discrepancy detection.

4.2.3. Interview with finance head

4.2.3.1. Profile of interviewee

The finance head of the hospital interviewed was male with around 9 years of experience as professional and has been working at the current position for the last 2 years. The interviewee also reported that, he had received training on APTS.

4.2.3.2. Efficient Budget Utilization

The interviewee reported that percentage of expired medicines in monetary basis were reported quarterly which is one of the core indicators for efficient budget utilization.

Stock must be analyzed regularly to utilize the pharmaceuticals budget efficiently, as it informs how much stock is on hand and the length of time it will last. In this regard, AMSH analyzes its stock but not on a regular basis. And the interviewee reported that underperformed SSA analysis and ABC/VEN reconciliation were the major challenges.

Average revenue generated from sales of medicines was also calculated and in doing so and the above, the accounting functions of the hospital pharmacy were controlled as per the auditor.

4.2.3.3. Generation of information

As per the interviewee, among the indicators for generation ofinformation, AMSH is dedicatedly practicing only on the submission of monthly service reports. Though summiting financial reports are conducted, but it is not on a monthly basis. In addition, monthly feedback from RHBs was not received on APTS performance of the hospital and this has been a challenge.

It was also reported by the finance head that, discrepancy analysis between the quantities of medicines recorded on bin card and actual physical count is not regularly conducted.

4.3. Discussion

The study summarizes the assessment of APTS implementation outcome, which is a new initiative meant to improve the quality of pharmaceutical services. The new approach was designed based on health systems strengthening building blocks (WHO, 2010). The key results and discussion part is structured to address issues related to AMSH performance in the implementation of APTS.

Meeting the objectives of APTS depends largely on the knowledge, skills, motivation, and deployment of the required personnel who are organizing and delivering the services. The present assessment revealed that AMSH tried to fulfill the required mix of human resources at dispensaries though there is still a gap as mentioned by the head of the pharmacy department. AMSH were found to be performing workload analysis. However, the shortage of human resources for APTS was reported to be the major factor limiting its implementation.

As per Teferi et al, 2016, a key contributor to the human resources crisis in developing countries was found to be attrition. High turnover negatively affects health care quality by increasing workload, undermining team morale, creating disruptions and inefficiencies in the work process, and causing a loss of institutional knowledge (WHO, 2006). In the present assessment, 78.6% of the hospital pharmacists believed that attrition was a major problem.

According to Teferi et al, 2016, Attrition in most cases is aggravated by inadequate salary and remuneration, weak performance management and incentive schemes, a poor working environment, a lack of training, stress due to workload, and a lack of supervision and support. The qualitative findings of the present assessment also indicated that inadequate salary, workload, and lack of policy in indemnity, respectively, ranked first as causative factors according to head of the pharmacy department. The impact of high attrition on the pharmacy workforce needs to be seriously considered, and optimal use of the current personnel should be made in order to have better implementation of APTS. Effective management of health workers' performance in general requires training and supportive supervision programs to update their skills and monitor staff turnover was attributed to the perceived workload and fear of responsibility without the implementation of an indemnity policy in APTS sites. On-the-job training not only improves program performance, it also helps to retain workforce. The present assessment documented that only 52.4% of staff members had received training on APTS but all interviewee's of AMSH are trained on APTS. Given the high turnover and presence of relatively inexperienced staff, planned and continuous induction training in different quality improvement initiatives should be in place.

Teferi et al, 2016 discussed that availability of adequate funds, infrastructure, and human power to implement a program alone may not necessarily lead to the desired output and impact. It is the

commitment and motivation levels, along with the competencies of the human power involved in the implementation of the health programs that significantly impact performance. Understanding the factors influencing the health workers' motivation is important when trying to explain why interventions such as APTS, which rely on changing behavior, succeed or fail (Teferi et al, 2016). According to Adinew et al, 2012, it is expected that APTS would increase staff satisfaction by facilitating their promotion based on transparent performance evaluation.

In the view of (Clark and Oswald, 2005), rate of pay is one of the major retention factors of human resources. And the present analysis reveals that, staff members were found to be moderately dissatisfied with their jobs, and the lowest satisfaction scores were obtained for a variable related to rate of pay (2.07) and chances of training (2.03). This assessment on job satisfaction of pharmacy professionals was conducted using a modified form of the Warr, Cook, and Wall Scale (Teferi et al, 2016). Except for the variable "relation with fellow workers", in almost all dimensions, pharmacy service providers were moderately dissatisfied. As job satisfaction is a multi-dimensional phenomenon, it can be difficult to assign one factor as a sole determinant of satisfaction or dissatisfaction. In this case, it is reasonable to assume that perceived workload and responsibility without an indemnity policy could have been the sources of dissatisfaction.Studies revealed a correlation between perceived workload and satisfaction. Workload means productivity for the employers, but for the individual, it means time and energy spent to do the work (Teferi et al, 2016). For example, in the present assessment, the number of patients served per pharmacy personnel per day was 35, which was lower than the standard set for APTS-implementing hospitals. However, the staff still believed that APTS resulted in an increased workload. This may not be linked to the quantity of work but rather the process introduced by APTS, which largely involved manual documentation of transactions followed by auditing, which is a liability to individual workers.

As a package of interventions designed to bring about change in the delivery of pharmaceutical services, APTS leads to improvements in a number of areas. The success of the intervention depends on the extent to which the system requirements are followed. In this regard, 73.8% of the staffs disagreed that the premises are convenient and half of the respondents also disagreed that tools that aid the proper implementation of APTS are available. However, 90% of the clients

agreed on the quality of the counseling process, which, in turn, contributes to patient knowledge on dispensed medicine, consequently affecting adherence and treatment.

APTS recommends different methodologies that would positively impact the pharmaceutical services in budget utilization, reducing wastage, ensuring transparent and accountable transactions, and improving patient satisfaction. It was encouraging to note that AMSH generates monthly service report. Moreover, AMSH performs most of the process indicators. However, critical activities such as ABC/VEN and SSA, workload analysis, and supportive supervision were underperformed.

Pharmaceuticals are the largest health expenditure category in many countries next to human resources. It is therefore expected that medicine transactions are vulnerable to inefficiencies and corruption (Waning and Vian, 2008).Transparency International also reported that pharmaceuticals and the health care sector are highly vulnerable to corruption (Transparency International UK, 2016).

Lack of transparency in the pharmaceutical system is a growing concern that can lead to wastage of resources, including the availability of essential medicines (WHO, 2009). Transparency requires consistent generation and reporting of information that is of reliable quality, standardized, and disaggregated for a defined purpose (Teferi et al, 2016). The present assessment noted that AMSH was producing a financial summary for cash sales and free provisions of medicines on a daily basis. More important still, according to the internal auditor, APTS opened a window of opportunity for auditing pharmaceutical transactions that never before existed. However, the practice of financial auditing was not regularly conducted. This underuse of the opportunity provided by APTS could be due to the manual recording of very large number of items which makes the auditing task very difficult. Linking the APTS requirements to the performance evaluation of hospital auditors would have enhanced auditing of pharmaceutical transactions though.

Another indicator of a transparent and accountable pharmaceutical transactions system in a hospital is, conducting a physical inventory in the store and dispensary on a regular and timely basis. In this regard, AMSH reported that they are undertaking physical inventory. APTS enabled physical inventories in dispensaries to be done in less than a day.

Improving pharmaceuticals' budget utilization is also one of the fundamental objectives and driving factors of APTS implementation. In this regard, minimizing wastage of medicines is also important for efficient budget utilization. It was interesting to see that the average wastage rate in AMSH after implementation of APTS with wastage documentation was 1.1%, which was less than the national target of 2% (FMOH, 2015). Reduction in wastage is one APTS benefit that seems to have improved availability of medicines. However, the practice of documenting and reporting wastage was minimal.

Sound and reliable information is the foundation of decision making across all health systems building blocks (WHO, 2007). The APTS system design and anticipated key results were built on health systems strengthening core elements, which included generating reliable information. In this regard, AMSH is producing information related to service, finance, and patient satisfaction, which is a significant advance in terms of enhancing evidence-based decision-making. The type of information being generated is clearly indicative of the enormous potential for improving practice through better decision making. However, accuracy of product recording at medical stores still requires attention, as procurement forecasting depends on this information, which ultimately affects the availability of medicines.

The availability and distribution of medicines are among the factors that determine patient satisfaction (Teferi et al, 2016). Lack of access to medicines at public health facilities causes households to face financial catastrophe through increased out-of-pocket expenses. Theoretically, APTS is believed to increase availability. In this regard, the results of the assessment indicated that 176 of the medications prescribed were actually dispensed and 90.3% of key medicines were found at the store during the time of visit.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1. Conclusion

The present assessment revealed benefits of implementing APTS. APTS contributed to improving the quality of services/patient satisfaction, improving medicines availability, reducing wastage, and optimizing the use of the medicines budget.

APTS also contributed to the increased access to information and facilitated auditing practices, thereby improving transparency/accountability and informed decision-making. A key contributor to the human resources crisis in developing countries was found to be attrition (Teferra, 2008). High turnover negatively affects health care quality by increasing workload, undermining team morale, creating disruptions and inefficiencies in the work process, and causing a loss of institutional knowledge (WHO, 2006). Associated to this the study revealed a low satisfaction level among professionals regarding the work load associated with APTS, limited training, inadequate salary and lack of indemnity policy and also were identified as the major challenges in the implementation process. As per FMOH (2010), there is a need to set up pharmaceutical services as per the standards in the EHRIG pharmacy chapter but AMSH lacks chronic care pharmacy service.

Lesson learned: In its design, APTS considered all components of health system building blocks, including human resources, governance, information, finance, and services that are focused mainly on pharmaceuticals. Therefore, the interventions addressed all health system bottlenecks affecting pharmaceutical services; this is the main reason that APTS should be regarded as a powerful tool for making system-wide changes in practices at public health facilities. In addition, APTS system design assumptions are well aligned with the operational standards set forth in EHRIG for pharmacy services. Hence, it was well received by most of the health mangers and policy makers, which contributed to its success. However, meeting minimum structural, input, and process requirements are prerequisites for the success of APTS in key result areas.

5.2. Recommendations

- It is recommended that AMSH should include chronic pharmacy among the other services as there is a need to set up pharmaceutical services as per the standards in the EHRIG pharmacy chapter.
- AMSH should urgently make an adjustment in their workforce. And the determination of staff size should be considered as an ongoing process and conducted on the basis of the workload of pharmacy staff.
- Undertaking internal auditing on a regular base is also recommended to make the transaction more transparent.
- Budget allocation, revenue generation, and self-sufficiency to cover the needs for pharmaceuticals deserve better consideration from concerned authorities, such as FMOH, RHBs, the Ministry of Finance and Economic Development, Bureau of Finance and Economic Development, and Hospital Boards. In addition, the proven methodologies that enable hospitals to efficiently manage and use their budgets such as enhancing income-generating capacity, developing facility-specific medicine lists, prioritization of medicine lists by VEN, conducting ABC value analysis, reconciliation of ABC value analysis and VEN categorization, SSA, and stock turnover analysis should be widely practiced and the results obtained should be diligently implemented, and should guide decision making on medicine selection, procurement, inventory management, and dispensing activities.
- It is recommended if AMSH together with the Ethiopian Pharmaceutical Association provide training on APTS for the untrained staffs.
- Together with the FMOH, AMSH should work on the implementation of indeminity policy
- It is recommended if summiting financial reports to the concerned body on a monthly basis is conducted as the information generated is required for the purpose of decision making.

- Financial dissatisfaction of the staffs could be reduced by introducing merit-based salary scales and other incentive mechanisms such as extending the idea of private-wing clinics to the pharmacy section and as such the experience can be used to motivate the pharmacy staffs.

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APPENDIX

APPENDIX A

ENUMERATOR GUIDED QUESTIONNAIRE FOR PATIENTS TO ASSESS THEIR KNOWLEDGE ON THE MEDICINES THEY TOOK AND SATISFACTION WITH PHARMACY SERVICES

Section I: Background characteristics of respondents

S.No	Question/item	Response
1	How old are you?	…….years
2	Gender	Male □ Female □
3	Marital Status	Single □ Married □ Divorced □ Widowed□
4	Religion	Orthodox Christianity □ Islam□ Catholicism □ Protestant □ Other(specify)_____
5	Place of residence	Urban □ Rural□
6	What is the highest level of education that you attained?	Unable to read and write □ Able to read and write □ Primary school (Grades 1-8) □ Secondary school (Grades 9-12) □ Certificate/Diploma □ Degree/above □

7	Employment status	Government employee□ Private company employee□ NGO employee □ Merchant□ Housewife □ Student □ Not working□ Retired □ Other (specify) _____
8	Status/type of visit	New visit □ Repeat Visit □
9	What is your reason for your visit to the hospital pharmacy?	To get medicines for yourself □ To get medicines for friend/family □
10	Is your visit because of chronic disease? (hint: diabetes, hypertension, asthma, pychosis)	Yes □No □
11	Did you get the medicine with?	Cash□ Credit □ Free □

Section II: Patient care indicators

12. Total number of medicines prescribed for the patient_____

13. Number of medicines dispensed per prescription _____

14. Patient's knowledge of medicine(s) dispensed and labeling practice

Answer by writing *Yes* if correctly answered by the patient, *No***,** if not.

Med. No.	**Patient's knowledge of dispensed medicines**			**Adequacy of labeling of medicine package(s)**		
	Dose	Frequency	Duration	Medicine name	Frequency	Quantity /duration
1						
2						
3						
4						

Section III: Questions on respondent's satisfaction with pharmaceutical services

Mark ratings by encircling scores provided by patients corresponding to the items

Excellent (E) = 5; Very Good (VG) = 4; Good (G) = 3; Fair (F) = 2; Poor (P) =1

No.	Items	E	VG	G	F	P
Dispensing area						
1.	The location of the pharmacy is easily accessible.	5	4	3	2	1
2.	The overall cleanliness and comfort of the pharmacy waiting area	5	4	3	2	1
3.	Convenience of the dispensing area and counter for service provision	5	4	3	2	1
Dispensing process						
4.	The clarity of the pharmacy professional's instructions about how to take your medication	5	4	3	2	1
5.	The information the pharmacist gives you about the proper storage of your medication	5	4	3	2	1
6.	The information the pharmacist gives you about the results you can expect from your pharmacotherapy	5	4	3	2	1
7.	The promptness of processing prescription medicines	5	4	3	2	1
8.	The availability of medicines that are prescribed to you in the pharmacy	5	4	3	2	1
Privacy						
11.	The privacy of your conversations with the pharmacist	5	4	3	2	1

Assistance to patients						
12.	The amount of time the pharmacy professional spends with you	5	4	3	2	1
13.	The courtesy and respect shown to you by the pharmacy staff	5	4	3	2	1
Others						
14.	The fairness of cost of medicines in the pharmacy	5	4	3	2	1
15.	The amount of time you spend waiting for your prescription to be filled	5	4	3	2	1

APPENDIX B

SELF-ADMINISTERED QUESTIONNAIRE FOR PHARMACY PROFESSIONALS WORKING IN THE HOSPITAL

Introduction and Consent

Dear Sir/Madam,

Hello. My name is Yewbnesh Alemayehu a post graduate student in project management at Saint Mary's University College. I would like to ask you a few questions regarding your attitudes and feelings about the service provided by the outpatient pharmacy of this hospital. The questionnaire would take 15-20 minutes of your time. The purpose of this study is to assess the quality of pharmaceutical services provided in this hospital. This will be helpful in improving the quality of the health services in general and the pharmaceutical services in particular. Your participation is completely voluntary. All your responses will remain strictly confidential: The hospital staff will not have access to your responses, your name will not be recorded, and your responses will not be linked to your identity at any time.

Section I. Socio-demographic Characteristics of Respondents

S.No.	Question/item	Response
1.	Gender	Male □Female □
2.	Marital Status	Single □ Married □ Divorced □ Widowed □ Separated □
3.	Academic qualification (check all that apply)	Diploma in pharmacy earned BPharm□ MPharm□ Other (specify) _____
4.	Total number of service years since graduation	_____years
5.	Number of years at current job (in this Hospital)	_____years
6.	Average number of hours that you work per day	_____hrs
7.	Duty hours per month	_____ hrs
8.	Do you have access to a written job description in your hospital?	Yes □ No □
9.	Primary practice area?	ART dispensing □ Administrative activity □ Clinical pharmacy services □ Dispensing□□ Compounding □ Drug information services □ DSM □ Store management □ Other (specify) _____

***Section II: Knowledge and perception of pharmacy professionals toward APTS implementation and outcomes**

1.	Have you received training on APTS?	Yes □No □

Please mark the rating corresponding to your level of agreement based on the following descriptions

1- Strongly disagree (SD) 2- Disagree (D) 3-Neutral (N) 4-Agree (A) 5-Strongly agree (SA) Not Applicable (NA)

S.No.	**Parameter**	**SA**	**A**	**N**	**D**	**SD**	**NA**
1.	APTS implementation improved availability of medicines.	5	4	3	2	1	
2.	APTS implementation increased my workload	5	4	3	2	1	
3.	APTS implementation improved job opportunities for pharmacists	5	4	3	2	1	
4.	APTS implementation has reduced expiry of medicines.	5	4	3	2	1	
5.	APTS implementation has reduced theft of medicines.	5	4	3	2	1	
6.	APTS implementation has not helped to reduce damage to medicines.	5	4	3	2	1	
7.	APTS has improved transparency of pharmaceutical transactions.	5	4	3	2	1	
8.	APTS has improved the record-keeping practices of the pharmacy.	5	4	3	2	1	
9.	APTS implementation has improved patient satisfaction.	5	4	3	2	1	
10.	Other hospital units like laboratory, nursing and radiology are better satisfied in the service they get from the pharmacy department after the start of APTS	5	4	3	2	1	
11.	Introduction of collective responsibility shared by all pharmacy professionals in a unit improved accountability.	5	4	3	2	1	

12.	The assigning of bin locations in dispensaries to pharmacists improved the supply of the medicines.	5	4	3	2	1	
13.	The assigning of bin locations in dispensaries to pharmacists improved the security of the medicines.	5	4	3	2	1	
14.	APTS has improved forecasting of the medicines needed.	5	4	3	2	1	
15.	APTS has reduced the waiting time of patients to get pharmacy services. (Note: initial point of the service is contacting the Rx evaluator.)	5	4	3	2	1	
16.	After the implementation of APTS, workflow improved.	5	4	3	2	1	
17.	After the implementation of APTS, Rx evaluation improved.	5	4	3	2	1	
18.	After the implementation of APTS, medication counseling has improved.	5	4	3	2	1	
19.	APTS implementation has increased the attrition rate of pharmacy professionals.	5	4	3	2	1	
20.	APTS implementation has improved budget utilization efficiency.	5	4	3	2	1	
21.	APTS should be expanded to all health facilities.	5	4	3	2	1	
22.	In general, APTS is a vital initiative to improve pharmacy service.	5	4	3	2	1	

Section III: The level of job satisfaction of pharmacy professionals in the hospital

1. Strongly disagree (SD); 2. Disagree (D); 3. Neutral (N); 4. Agree (A); 5. Strongly agree (SA)

No.	Parameters	SA	A	N	D	SD
Satisfaction with Supervision						
1.	The supervisors I work with are supportive.	5	4	3	2	1
2.	My superiors listen to me properly.	5	4	3	2	1
3.	I am fairly treated by the management of the hospital.	5	4	3	2	1
4.	My suggestions are usually given consideration by my supervisor.	5	4	3	2	1
5.	My work responsibilities are made clear by my supervisor.	5	4	3	2	1
Satisfaction with Coworkers						
6.	I enjoy working with my colleagues in the hospital.	5	4	3	2	1
7.	The people I work with are responsible for their job.	5	4	3	2	1
8.	The people I work with support me well.	5	4	3	2	1
Satisfaction with Payment						
9.	My pay is adequate, considering the responsibilities I have.	5	4	3	2	1
10.	The hospital pays me fair benefits (transport, medical, etc.).	5	4	3	2	1
11.	There are benefits we do not have that we should have.	5	4	3	2	1

Satisfaction with Promotion						
12.	I like the basis on which my hospital promotes people.	5	4	3	2	1
Satisfaction with the Work Itself						
13.	My job is interesting.	5	4	3	2	1
14.	I would rather be doing another job.	5	4	3	2	1
15.	I feel unappreciated by the hospital for the work I do.	5	4	3	2	1
16.	I have too much to do at work.	5	4	3	2	1
17.	I often feel that I don't know what is going on in the organization.	5	4	3	2	1
18.	I feel a sense of pride in doing my job.	5	4	3	2	1
19.	I don't feel my efforts are rewarded the way they should be.	5	4	3	2	1
21.	My job makes good use of my skills and abilities.	5	4	3	2	1
22.	I have the tools and resources to do my job well.	5	4	3	2	1
23.	My work gives me a feeling of personal accomplishment.	5	4	3	2	1
24.	I get chances for in-service trainings to help me do my job better.	5	4	3	2	1

Premises and Facilities						
25.	Sufficient attention is given to job safety.	5	4	3	2	1
26.	Premises are convenient for conducting my duties	5	4	3	2	1
27.	Facilities are adequate for conducting my duties	5	4	3	2	1
Overall Satisfaction						
28.	Considering everything, I am satisfied with my job.	5	4	3	2	1

APPENDIX C

A GUIDE FOR INTERVIEW WITH THE HEAD OF THE PHARMACY DEPARTMENT OF THE HOSPITAL

S.No.	Question	Response	
Profile of the respondent			
1	Gender	Male □ Female □	
2	Qualification (check all that apply)	BPharm□ MPharm□ Other(s) (specify)_____	
3	How many years of experience do you have working in the field of pharmacy?	_____ years	
4	How long have you worked at your current position?	_____ years	
5	Have you taken in-service trainings that were helpful for your managerial activities?	Yes □ No □	
6	Does the hospital have a written job description for professionals working in the pharmacy?	Yes □ No □	
Human resources profile of the pharmacy department			
7	How many of the following supporting staff is working under your department? (number)	Cashiers _____ Data clerks/stock card clerks____ Pharmacy accountants_____ Porters_____ Janitors/cleaners_____ Security guards_____	
Pharmaceutical transactions and services of the hospital			
8	Which of the following services are provided in the pharmacy department?		
		Presence of separate setup	
		yes	no
	Outpatient pharmacy		
	Inpatient pharmacy		
	ART pharmacy		
	Emergency pharmacy		
	Pharmacy store		
	Chronic care pharmacy		

	Pharmacy compounding		
	DSM office		
	Drug information center		
	Other (specify) _____		
9	Have you ever taken training on Auditable Pharmacy Transaction and Services (APTS)?		Yes □ No □
10	Was baseline assessment done in your hospital prior to implementation of APTS? (check document)	Yes □ No □ DK□	
11	If yes, what were the major problems identified? Probe: Ask about human resources, infrastructure, workflow, auditability, and transparency of pharmaceutical transactions.		
12	Were there human resource gaps?	Yes □ No □	
13	If yes, has there been hiring of pharmacy professionals?	Yes □ No □	
14	Number of newly hired pharmacy professionals	Pharmacists ____ Pharmacy technicians ____	
15	Number of newly hired other support staffs	Cashiers _____ Data/stock card clerk ____ Pharmacy accountants ___ Porters_____ Janitors/cleaners_____ Security/ guards_____	
16	Do you think the current human resources in your department are sufficient for APTS implementation?	Yes □ No □	
17	If no, which category/ies of personnel need to be added?	Pharmacists Yes □ No □ Cashiers Yes □ No □ Stock card clerks Yes □ No □ Accountants Yes □ No □ Porters Yes □ No □ Cleaners Yes □ No □ Guards Yes □ No □	
18	Do you think attrition of pharmacy professionals is a problem in your hospital?	Yes □ No □	
19	If yes, what do you think are the most probable reasons (in order of importance)? First _____ Second _____ Third _____	Probe: Ask about workload, shift system, lack of incentives, inadequate salary, lack of policy on indemnity,	

		shared responsibility.
20	Has workload analysis of pharmacy professionals working in the hospital ever been performed? (check document)	Yes □ No □
21	If yes, for which category	OPD Yes □ No□ Inpatient Yes □ No□ ART Yes □ No□ Chronic care Yes □ No□ Emergency Yes □ No□ DSM Yes □ No□ Clinical Yes □ No □ DIS Yes □ No□ Store Yes □ No□
22	If yes, what mechanism was followed in the analysis? (check all that apply) No. of patient served□ No. of counseling patients □ No. of beds (for clinical) □ No. of stores □ No. of other units (DIS, Compounding etc.) □	
23	Have new forms like cash sales tickets, registers, new types of model 19 and 22 been introduced?	Yes □ No □
24	If yes, has their introduction improved traceability of products?	Yes □ No □
25	Do you conduct a patient care indicator survey (using WHO indicators) at least once a year?	Yes □
26	Do you conduct a regular patient satisfaction survey? (quarterly)	Yes □
27	Has APTS been used for performance evaluation of staff?	Yes □
28	Do you conduct regular assessment of key medicine availability? (quarterly)	Yes □
29	Is there indemnity insurance/protection for professionals involved in the APTS implementation?	Yes □ No □
If No, What is the reason for not initiating a protection policy? What problems do you encounter due to the absence of this policy?		
30	Do you undertake APTS implementation and outcome monitoring and evaluation?	Yes □
31	If yes, how often? Monthly □ Q	
32	Do you report the monitoring and evaluation results to the management of the hospital? Yes □ No □	
33	Is there supervision by the health bureau on the state of the implementation of APTS?	Yes □
34	Is there a mechanism for reporting the status of APTS implementation to the health bureau?	Yes □ No □
35	If yes, which mechanism is used? • Report and feedback • Review meeting and share best experience and challenges	Yes □ No □ Yes □ No □

36	Do you regularly receive feedback on your hospital's APTS reports from the health bureau?	Yes □ No □
37	What were the achievements recorded by the implementing APTS in your hospital?	
38	What are the challenges the department faced in the implementation of APTS? What are the limitations of the system APTS?	
39	What is your opinion of the overall implementation of APTS in your hospital?	Poorly implemented □ Progressing well to full implementation □ Successfully implemented □
40	If there is anything you would like to add, your comments are welcome.	

APENDIX D

GUIDE FOR INTERVIEW WITH AUDITOR OF THE HOSPITAL ON AUDITING PHARMACEUTICAL SERVICES

1. Background characteristics of the respondents

• Position _____
• Total years of work experience_____
• Total years of work experience at current positions_____

2. Have you received training on APTS? If yes, can you please tell me the objectives of APTS?

_____
_____

3. Do you conduct auditing of pharmaceutical transaction in your hospital? Yes □ No □

Probe: Ask about financial audits, service audits, and sample audits.

_____
_____

4. How do you evaluate the availability of organized and complete information on all forms of pharmaceutical transactions while you undertake auditing?

_____
_____

Probe: Ask about vouchers (model 19, model 22, model 20), cash/credit sales tickets, financial reports, physical inventory counts, and updated bin cards and stock cards.

_____
_____

Was auditing of the hospital pharmacy conducted last year? Yes □ No □
5. Has any discrepancy been discovered? Yes □ No □

6. If yes, what type of discrepancy was discovered?

_____
_____

7. If yes, has any action been taken as a result of the last identified discrepancy? Yes □ No □

8. Anything you want to add?

APENDIX E

GUIDE FOR INTERVIEW WITH FINANCE HEAD OF THE HOSPITAL ON PHARMACY BUDGET UTILIZATION AND TRANSPARENT AND ACCOUNTABLE TRANSACTIONS

1. Background characteristics of the respondent

- Position_____
- Total years of work experience_____
- Total years of work experience at current position_____

2. How do you plan, manage, and control accounting functions of your hospital pharmacy?

_____
_____

3. Which body provides the forms/tools (model 19/1, model 22/1, cash sales tickets, and others) used for APTS implementation? Probe: Ask about the appropriateness of vouchers and sales tickets for gathering the necessary information.

_____
_____

4. How do you ensure that the pharmacy transaction is up-to-date?

Probe: Ask about preparation of accurate monthly reports of pharmaceutical transactions and timely delivery of reports to concerned authorities.

_____
_____
_____

5. How do you see pharmacy budget allocation and utilization in your hospital?

_____
_____

6. What are the challenges in terms of financing and accounting functions?

---

7. What do you recommend to solve the current challenges (if any) of pharmacy financial transactions?

_____
_____

8. Anything you want to add?

_____
_____

APENDIX F

OBSERVATION CHECKLIST

1. Availability and expiry status of the key medicines in the store during day of visit

No.	Medicine Name	Availability in store	Expired medicine
		Yes=1 No=0	Yes=1 No=0
1.	Amoxicillin 250mg/500mg cap/tab		
2.	Amoxicillin 125mg/5ml syrup/suspension		
3.	Ceftriaxone 500mg/ 1g inj		
4.	Ciprofloxacin 500mg caps/tab		
5.	Sulphamethoxazole + Trimethoprim 200mg + 40mg in 5ml		
6.	Arthmeter + Lunfanthrine		
7.	Mebendazole oral suspension,100mg/5ml		
8.	Metronidazole 250mg cap/tab		
9.	Atenolol 50mg tab		
10.	Enalapril 5/10mg tab		
11.	Hydrochlorothiazide 25mg tab		
	Metformin 500mg tab		

12.			
13.	Simvastatin 20mg tab		
14.	Diazepam 5mg tab		
15.	Amitriptyline 25mg tab		
16.	Fluoxetine 20mg cap		
17.	Phenobarbitone 100mg tab		
18.	Haloperidol tab		
19.	Omeprazole 20mg cap		
20.	Salbutamol inhalers		
21.	Oral rehydration salts (ORS)/zinc		
22.	Diclofenac Sodium 50mg tab		
23.	Paracetamol 120mg/5ml		
24.	Sodium chloride 0.9% (normal saline)		
25.	Oxytocin 10 IU		
26.	Magnesium sulphate inj.		
27.	Ferrous sulphate + folic acid tab		

28.	Oral contraceptives tab		
29.	EFV/3TC/ TDF tab combination		
30.	RHZE tab		
31.	Vitamin K 10 IU		
32.	Tetracycline eye ointment		

2. Stock Records

	Yes	**No**
Does the pharmacy produce a monthly service report? (Check availability of the recent report.)		
Does the pharmacy produce a monthly financial report? (Check availability of the recent report.)		
Does the pharmacy produce a daily summary service report? (Check availability of the recent report.)		
Does the hospital use bin cards?		
If yes, are bin cards updated by product?		
Are the stock balances recorded on bin cards accurate? (Randomly select a product, count, and check with record.)		
Amoxicillin 250mg/500mg cap/tab		
Amoxicillin 125mg/5ml syrup/suspension		
Ceftriaxone 500mg/ 1g inj		
Ciprofloxacin 500mg caps/tab		
Sulphamethoxazole + Trimethoprim 200mg + 40mg in 5ml		
Is the hospital utilizing Internal Facility Report and Resupply Form (IFRR) reports in major dispensing units? (See recently completed and submitted IFRR report.)		

3. Wastage records

Variable	Time/year (E.C.)			
	2008			
	1st quarter	2nd quarter	3rd quarter	4th quarter
Wastage rate (%)				
Monetary value (ETB)				
Expiry (%)				

DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of ----------.All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or full to any other higher learning institution for the purpose of earning degree

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Name Signature

St. Mary's University College, Addis Ababa June, 2017

ENDORSEMENT

This thesis has been submitted to St. Marry University Collage, School of Graduate Studies for examination with my approval as a university adviser.

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AdvisorSignature

St. Mary's University, Addis Ababa June, 2017