

December 2008

**SURVEY
REPORT***

**DEMOCRATIC REPUBLIC OF
SÃO TOMÉ AND PRÍNCIPE**

**Monitoring essential medicine prices,
availability and affordability |**

Author: Joana Martinho do Rosário

*Report from national field survey carried out from the ninth of June until the third of July of 2008 covering all medicine outlets of São Tomé and Príncipe Islands

Ilha Nua (Naked Island)

Coqueiros e palmares da Terra Natal
Mar azul das ilhas perdidas na conjuntura dos séculos
Vegetação densa no horizonte imenso dos nossos sonhos.
Verdura, oceano, calor tropical
Gritando a sede imensa do salgado mar
No deserto paradoxal das praias humanas
Sedentas de espaço e devida
Nos cantos amargos do ossobô
Anunciando o cair das chuvas
Varrendo de riço a terra calcinada
Saturada do calor ardente
Mas faminta da irradiação humana
Ilhas paradoxais do Sul do Sará
Os desertos humanos clamam
Na floresta virgem
Dos teus destinos sem planuras...

*From Alda Espírito Santo
(São Tomé and Príncipe's poet)*

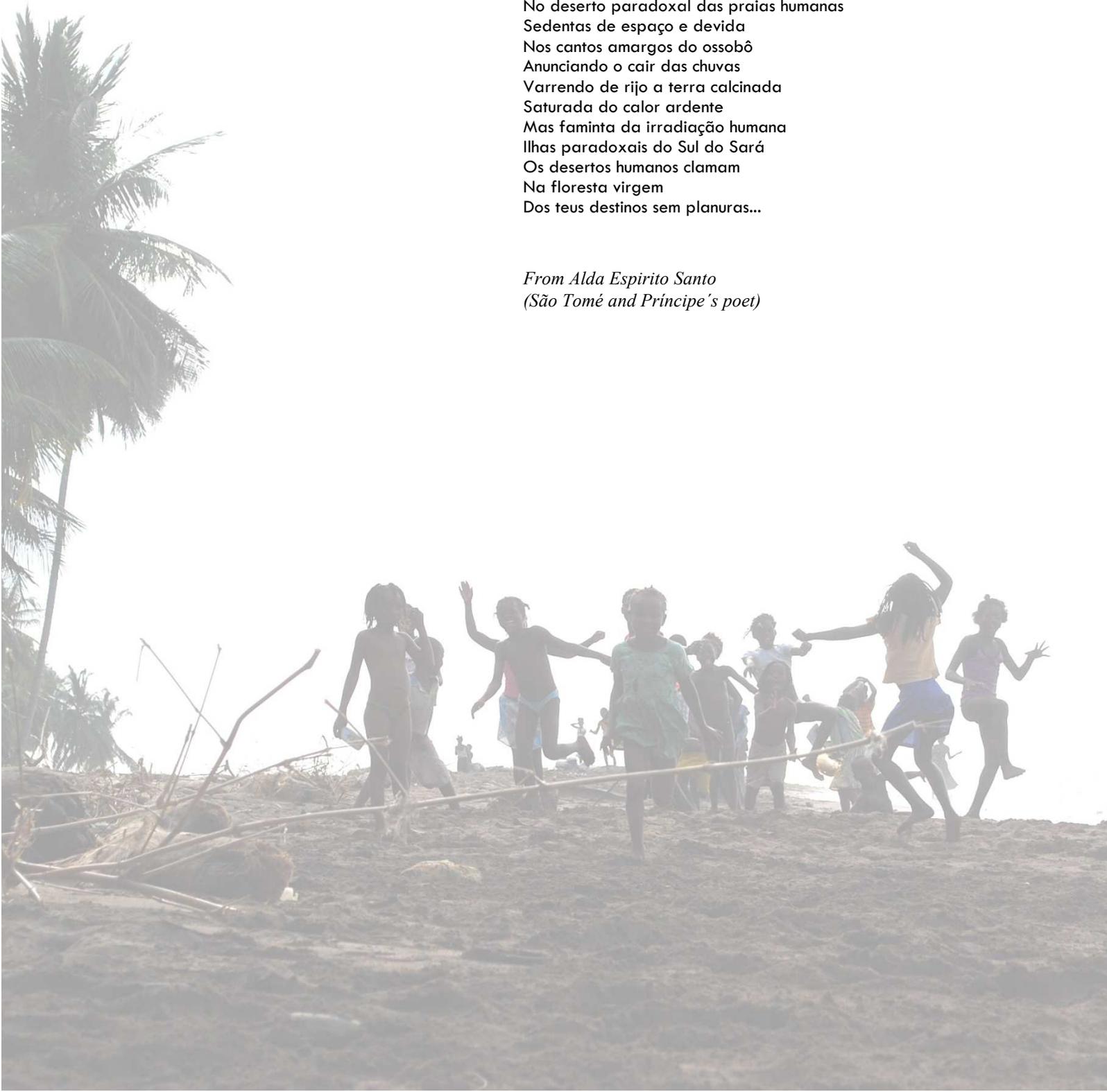


TABLE OF CONTENTS

	<p>LIST OF ABBREVIATIONS EXECUTIVE SUMMARY LIST OF FIGURES LIST OF TABLES ACKNOWLEDGEMENT</p>
Chapter 1	<p>INTRODUCTION Background Country Information Major medical conditions Healthcare services National pharmaceutical policy Public medicines procurement Retail private sector Survey rationale Survey objectives</p>
Chapter 2	<p>METHODS 2.1 Methodology design 2.2 Areas and Sectors surveyed 2.3 Medicines surveyed 2.4 Data collection 2.5 Data entry and statistical analysis 2.6 Ethical considerations</p>
Chapter 3	<p>RESULTS 3.1 Procurement prices in the public sector 3.2 Availability of medicines across sectors 3.3 Public sector prices 3.4 Private sector prices 3.5 NGO sector prices 3.6 Inter-sector comparison of patient prices & availability 3.7 Treatment affordability 3.8 Medicine price components, cumulative mark up</p>
Chapter 4	<p>DISCUSSION 4.1 Medicines availability 4.2 Public procurement efficiency 4.3 Medicines prices 4.4 Treatment affordability 4.5 Medicine price components & hidden costs 4.6 Survey Limitations</p>
Chapter 5	<p>POLICY OPTIONS AND LINES FOR FUTURE ACTIONS</p>
Chapter 6	<p>CONCLUSIONS</p>
	<p>REFERENCES ANNEXES 1. Structures and processes of pharmaceutical situation 2. Medicines surveyed list 3. Medicines collection forms 4. Medicines availability results in all sectors 5. Median price ratios results in all sectors 6. Field consolidation results for the NGO facility 7. Field consolidation sector summary results 8. Standard treatment affordability results 9. Price components along private supply chain</p> <p>DECLARATION OF ORIGINALITY OF WORK</p>

ABBREVIATIONS

CIF	Cost Insurance and Freight
DRSTP	Democratic Republic of São Tomé and Príncipe
EML	Essential Medicines List
FOB	First on Board
GDP	Gross Domestic Product
HAI	Health Action International
IDA	International Dispensary Association
INF	Insurance and Freight
IPAD	Institute of Portuguese Assistance for Development
IRP	International Reference Price
LPG	Lowest Price Generics
MDGs	Millennium Development Goals
MPR	Median Price Ratio
MoH	Ministry of Health
MRP	Maximum Retail Price
MSH	Management Sciences for Health
NEML	National Essential Medicines List
NGO	Non Governmental Organization
NPRS	National Poverty Reduction Strategy
NMP	National Medicine Police
N/A	Not Available
OB	Originator Brand
STP	São Tomé e Príncipe
STG	Standard Treatment Guidelines
USD	United States Dollar
VS	Versus
VAT	Value Added Tax
WHO	World Health Organization

LIST OF FIGURES

1	Administrative map of São Tomé and Príncipe	4
2	Public procurement Median Price Ratios of lowest price generics	20
3	Examples of procurement price differences in public procurement agencies	21
4	Examples of generic medicines procured at non competitive prices through the three central procurement stores expressed in MPR >1.	22
5	Percent of available medicines surveyed included in STP essential medicines list in public, private and NGO sector	23
6	Mean % availability of antihypertensive generics in public and private sector	24
7	Mean % availability of antimicrobial in public and private sector.	25
8	Regional variation of availability of LPG in public, private and NGO sector.	25
9	Lowest price generics with median price ratios superior to 1,5.	27
10	Lowest price generics median price ratios from different survey areas	28
11	Median price ratios of originator brand and equivalent lowest price generics clustered into four intervals	30
12	Generics with median price ratios lower then 1,5 in NGO sector	32
13	Generics with median price ratios higher then 3 in the NGO Sector	32
14	Median price ratios of public procurement through Fundo nacional do Medicamento and public patient price of 40 matched pairs.	33
15	Median of median price ratio differentials between public and private sector median prices versus public sector availability	34
16	Cost of different alternatives to the lowest price generic treatments for selected illnesses expressed as the number of day wages	38

LIST OF TABLES

1	São Tomé and Príncipe Health indicator trends	6
2	Distribution and Number of facilities surveyed	14
3	Availability of medicines across sectors	22
4	Median prices ratios for the public sector	26
5	Median price ratios for medicines found in one or more private retail pharmacies (N=9)	28
6	Median MPRs of matched paired data in the private sector for originator brands and equivalent lowest price generics.	30
7	Median price ratios for medicines found in the NGO medicine outlet	31
8	Availability vs. median price ratios across public and private sector for all LPG with availability lower then 25 % in the public sector	35
8	Availability vs. median price ratios across public and private sector for all LPG with availability higher then 80% in the public sector	35
9	Affordability and availability of standard treatments across sectors with originator brands and lowest price generics	36
11	Ciprofloxacin 500mg tablets' components price and add on mark-ups across four health facilities with different supply chains	40
10	Theoretical expenses for treatment of a family with two chronic and one acute condition in the public and private sector expressed in number of days wages	50
12	Hidden costs on pharmaceutical procurement in eight other countries	51

ACKNOWLEDGEMENTS

This medicine prices survey was conducted as part of a data collection required for my master's thesis, submitted to the Charité Universitätsmedizin Berlin, Freie Universität and Humboldt Universität Berlin in partial fulfilment of the requirements for the award of a Master of Science degree in International Health.

I would like to express my gratitude to Dr Peter Tinnemann for his supervision and challenges set.

I am grateful to Martin Auton consultant from Health action international (HAI) who provided valuable critical commentary along the work and to Marg Ewen, from HAI Global, for her initial support and survey material.

I would also like to acknowledge all people who contributed with their time and expertise to carry out this survey in the São Tomé and Príncipe. In particular I would like to mention the following: Prof Dr. Maria do Céu de Madureira for all her initial help and mediation contacts in the field; Marcelina Costa, on behalf of Ministry of Health of São Tomé and Príncipe; Dr Feliciano Almeida (Clinical director of Hospital Dr. Ayeres de Menezes), Alda Melo dos Santos and Edgar Torres from São Tomean Embassy in Portugal; Dr Ahmed Zaky on behalf of the team from Instituto Marquês e Vale Flor-NGO; Guiomar Costa (Fundo Nacional do Medicamento), Joelse Luis (Cooperation of Taiwan), Claudina Cruz (WHO-STP); Emitério Costa (District Hospital procurement department). Finally, I am very grateful to all the health care personal from public, private and NGO health facilities surveyed, for their genuine motivation to help, to Emerson Lima for his logistical support and enthusiasm while collecting data and to Edite for her warm welcoming.

Joana Martinho do Rosário

EXECUTIVE SUMMARY

Access to essential medicines is a fundamental human right and accessible and affordable medicines are critical to the success of health care delivery services, leading to a substantial reduction in morbidity and mortality. One third of the world's population lacks reliable access to medicines, and generally, high prices of medicines constitute the major obstacle (WHO 2004). Effective and quality medicine needs to be available at the right quantities and at affordable prices regardless of personal income. Reliable information about country pharmaceutical situation is scarce and needed (UNDP 2006). The aim of the present study was to evaluate access to essential medicines in Democratic Republic of São Tomé and Príncipe by evaluating medicine prices, availability, affordability, and the medicine structure to obtain reliable information that would call for evidence-based national policies and suggest appropriate lines of action.

From the ninth of June until the third of July a national field survey covering all medicine outlets of São Tomé and Príncipe Islands was carried using the standard methodology developed by the WHO and Health Action International (2008) to monitoring medicine prices, availability and affordability. For each medicine, data on availability and price were collected for the originator brand (OB) and lowest priced generic (LPG). Medicine prices were compared with an international reference price and expressed as median price ratio (MPR). The three central public procurement stores were surveyed to attain the procurement price. The daily wage of the lowest paid unskilled government worker was used to study the cost of treatment for selected conditions to estimate affordability of medicines. Price component data were identified throughout the supply chain to examine medicine price structure.

KEY FINDINGS

The overall availability of the medicines surveyed was low in the public sector and very low in the private sector. Generic medicines were generally more available than originator brands in all medicines outlets of all sectors. Geographical inequities to access were found across district regions, both in terms of availability and affordability. Public procurement efficiency presented a wide degree of variations both within and across each central procurement stores despite purchased at the same reliable and non profit supplier.

The median values of prices at public sector facilities were 2,36 times more expensive than international reference price with 76% of medicines described as expensive. Price of generics and originator medicines in the private sector were very expensive: in total almost 450 % higher than public prices.

In general a wide variation in prices of the individual medicines was found between facilities sectors and type of product.

Affordability was largely dependent on the therapeutic class choice, however effective treatments for various major country's acute and chronic conditions were unaffordable for the majority of the São Tomeans.

Finally, it was found that the high overall mark in public and private sector, government tariffs, taxes, port charges, duties, operational costs and mark-ups, usually contributed more to the final medicine price than the actual manufactures price.

Increase access to affordable and available medicines is required. Survey results demonstrated high prices of medicines in public, private and NGO sector. There is a urgent need to address this issue. Government intervention is needed on several different fronts. Eliminating all duties and taxes from essential medicines in all sectors, controlling mark-ups, increasing procurement efficiency, should reduce medicine prices, improve availability and start addressing medicine affordability.

Essential medicines are medicines that satisfy the priority health needs of the population. They are the base of the majority of public health programs aiming to reduce morbidity and mortality in the world and access to them is seen as a fundamental Human Right.

According to the World Health Organization (WHO):

“Essential medicines are intended to be available within the context of functioning health systems at all times in adequate amounts, in the appropriate dosage forms, with assured quality, and at a price the individual and the community can afford” (WHO, 2002).

Access to essential medicines is also one of the UN Millennium Development Goals (MDGs) MDG-8 Target 8E, and without access to these medicines goals 4,5 and 6 cannot be achieved.

The WHO estimates that one third of the world's population lacks reliable access to medicines (2004). In Sub-Saharan Africa more than 50% of the population without this access die of causes for which effective treatment already exists.

The availability of medicines in health facilities and their public access is directly related to the quality of the health care delivered. There are several reasons why access to effective treatment is limited, both in terms of availability and affordability, one of them being price. Price influences both what the government can provide as available treatments and the kind of treatment individual people can afford to pay.

The link between poverty and health is evident. Simultaneously illness and the need for respective drugs are key reasons for household impoverishment (WHO, 2005), meaning that poverty is both a reason for people lack access to medicines, and is consecutively caused by its lack of access.

The WHO up-to-date on São Tomé and Príncipe National Poverty Reduction Strategy (NPRS) shows access to basic care as one of the major direction for poverty reduction targets (WHO 2005). National policies, pricing and procurement strategies are required to ensure affordable medicines and adequate health care (WHO, 2004). Therefore, a true understanding of the real

access, price and price components is essential to allow effective strategies to be developed to improve the situation.

BACKGROUND

The Democratic Republic of São Tomé and Príncipe conventionally denominated as São Tomé and Príncipe (STP) is an Island state in the Gulf of Guinea, off West Africa. The country is composed of two main islands and four small isles. Approximately 95.7% of the population lives on São Tomé Island, where the capital with the same names is situated, and 4.3% on Príncipe. Administratively the country is divided in seven districts: District of Água Grande, Mé-Zochi, Lembá, Lobata, Caué, Cantagalo and Pagué (in the Island of Príncipe).



Figure 1- Administrative Map of São Tomé and Príncipe (Mapoftheworld.com 2007)

According to the most recent country census (INE-STP, 2003), 37,7% of the population lives in the district of Água Grande and 60% of the total population are concentrated in the two districts of Água Grande e Mé-Zochi which only represent 13.8% of the national territory (surface area of 1 thousands sq km)

reflecting high differences among the geographical distribution (and isolation) of the STP population.

COUNTRY PROFILE

São Tomé and Príncipe is one of the smallest countries in the world both in terms of population, approximately 200.000 (with an annual population growth of 2,6%) (WHO, 2006.) and in terms of economy is the smallest of all African countries with one of the highest debts in the world with a debt to GDP ratio of over 600 percent. (World Bank, 2008). According to the Human Development Report of UNDP (UNDP, 2005) has a human development index of 0,604, ranking 126th out of 177th. Poverty has been growing progressively for the last 20 years. São Tomé and Príncipe national data from 2001 estimates 53,8 per cent of its population lives below the international poverty line of less than 1 \$USD a day. The figures also showed that 15 per cent were living in extreme poverty and that poverty is higher in female-headed households (55,7%)(UNDP, 2006).

MAJOR HEALTH CONDITIONS

The major medical problems are from preventable causes such as acute Infectious diseases like respiratory tract infections and diarrhoeal diseases which continue to be common causes of morbidity and mortality in São Tomé and Príncipe. The Incidence of chronic diseases such as hypertension, diabetes, and asthma have been increasing and constitute serious public health concern . They normally require long term therapy, and when untreated or when inefficiently treated , can lead to danger complications and death.

Malaria has been the major public health problem and the leading cause of death. However, due to successful national multi- sector strategy intervention, a significantly reduction in malaria deaths was possible (see table 1 below). The number of malaria deaths reported by hospitals (inpatients) decreased more than 90% when compared with 2002 maximum number Prevalence rates declined from to 51% in 2001 to 9% in 2007¹ (WHO 2008). Results showed an

¹ The national multi- sector strategy intervention was coordinated by national centre of endemic diseases of MoH and included mix of bednet distribution, indoor spraying, improved access to treatment and advances in disease surveillance (WHO 2008).

high association between well coordinated intervention and positive public health impact.

The country has one of the lowest rates of HIV infection in Africa. Previous data describe a prevalence of 1% (UNDP, 2001). However the number of cases of HIV infection has been rising in recent years and the potential danger that the country could face in a few years should not be underestimated. Available data report an increase in HIV prevalence rate among pregnant women from 0,1% (2001) to 1,5 % (2005) (INF 2008).

Table 1 - São Tomé and Príncipe Health indicator trends

<i>INDICATORS</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	2006
Life Expectancy at birth, total (years)	66	65	65	65,2
Infant mortality rate (per 1000 live births)	55,9	59	59	47
Under-five child mortality rate (per 1000)	98,7	96	94,6	53,8
Percentage of children vaccinated against measles	86,4%	86,4%	n/a	83,8%
Maternal mortality rate (per 100 000)	148,6	28,9	n/a	75,7
Total Fertility Rate (births per woman)	n/a	4	4	n/a
Rate births of attended by skilled health staff (%)	76,4%	79,8%	n/a	90%
HIV-AIDS prevalence rates among pregnant women aged 15-24	0,1%		1,5%	1,5%
Malaria prevalence rate	446	464	n/a	57,8/000
Malaria mortality rate	1,4	1,2	n/a	0,16%
Inhabitants/physician	n/a	2284	2284	2284
Inhabitants/nurse	n/a	908	800	800
Total Pharmacist number	1	1	1	1
Total Pharmacy technicians				24

Source: International Monetary Fund (2008) *São Tomé and Príncipe: Poverty Reduction Strategy Paper Progress report*; World Development Indicators (2005)

HEALTH CARE SERVICES

The national health system (NHS) is divided into two levels: district and central level. The district level is divided in accordance with the country's administrative areas and is directed to primary health care services. The central level is focused on secondary care as access to specialized (tertiary) care is very deficient and more differentiated care is dependent on a patient's evacuation to Portuguese hospitals.

Public health care service provision has been improving throughout the country (IMF, 2008). Health centres are the fundamental structure of the NHS and its activities are mainly directed to primary health care. The project "Saúde para todos" (Health for all) partnership with the government, NGO Instituto Marquês

de Valle Flor (IMVF), financed by the Portuguese development institute (IPAD) made an important contribution by disseminating health care service provision in all districts of the country. In total the country's infrastructure network now has (2008) two hospitals (one on each Island) and 32 Health units (6 District health centres, 28 health posts) which are geographical accessible to the population.

Important progress can be observed in several health indicators (see table 1) such as malaria prevalence rate, under five, adolescent, maternal mortality rate and longer life expectancy (UN-STP 2006). Nevertheless, health care services remain characterized by inequities in availability and access. Despite the improvements mentioned in the paragraph above, infrastructure remains poor, there is a shortage of medicine and medical material. There are too few health professionals (see Table1), with limited training and they are sometimes unable to deliver all basic services (UN-STP 2006; IMF 2008).

NATIONAL PHARMACEUTICAL SECTOR POLICY

A National Medicines Policy was not established and according to the WHO survey on structures and processes of the pharmaceutical situation, carried out by the Ministry of Health in July, 2007 (see Annexe 1) a national evaluation or analysis of pharmaceutical indicators has not been done.

PUBLIC MEDICINES PROCUREMENT

All medicines are imported. The official national essential medicines list was last revised in 1997. A new draft, waiting to be approved, has been the guide to public procurement.

Fundo Nacional de Medicamentos (FNM) is a governmental organization although semi-autonomous. It is responsible for procuring, stocking and distributing essential medicines for all the public sector on behalf of MOH.

IMVF and the Cooperative of Taiwan also procure and supply for the public sector. *IMVF* supplies medicines for the District of Caué, Cantagalo, Mé-Zochi, or for any other health facility when needed, including the district hospital in cases of stock -interruptions. The cooperative of Taiwan is the main supplier of the district of Água Grande.

Drugs are procured directly through a single non-profit supplier, the International Dispensary Association (IDA) which guarantees low prices and quality (MSH 2007). In case of emergency or stock interruption Cooperative of Taiwan purchases essential medicines from FHC Pharmaceutical in Portugal at more expensive prices.

RETAIL PRIVATE SECTOR

There are nine independent private pharmacies in total. The spread of these pharmacies is uneven with five of them located in the district of Água Grande, and two in the district of Mé-Zochi. The other two are located in the district of Pagué and in Cantagalo. Ownership by a pharmacist is a prerequisite for the operating license be granted. However, since there is only one pharmacist in the country (see table 1), these prerequisite has not being taken in consideration. Due to the lack of personnel there is little control over the quality of the medicines imported and sold by the private sector. Finally, despite the existence of a medicine pricing regulation defining maximum on profit margins for retail medicines, monitoring of prices and cross-country comparisons have not been effectively controlled.

NATIONAL HEALTH SYSTEM FINANCING AND MEDICINE PRICE

There are four components of national health system funding :STP general government expenditure, the public health investment plan², expenditure financed by donors, and revolving funds replenishment³.

According to the World Bank (World Bank, 2004) general government expenditure on health has been increasing. The percentage allocated to the health sector has been around 13% of total government expenditure in the past five years, which is considered high. However, the distribution of those resources, has been neither efficient or enough to meet the national needs (OMS 2004). Moreover government expenditure on health has been of an ad hoc nature depending on available funds being a large highly dependent on international assistance (World Bank, 2004).

² Funds from Internal and external origin designated to strategic public interventions in sectors from its responsibility accountability (IPAD, 2005)

³ Health centres revenues are locally managed by the charging of fees for health services and through medicines mark-ups. Decree-law nº90/96 defines prices, applicability and exemption criteria.

National public and private expenditure on medicines or total value of international aid in the past year could not be obtained.

Medicines are not free in the public sector. The majority of the population pay for their medicine. A few categories are specified for exemption such as children under five and pregnant women. Anti-retroviral, Tuberculosis, and family planning medicines are free.

SURVEY RATIONAL

Despite the progress being made in primary and secondary health care in São Tomé and Príncipe, there are still several issues to overcome such as weak financial management, weak procurement and deficient supply systems (UNDP 2006). National policies and pricing and procurement strategies are required to ensure available and affordable medicines (WHO, 2004). While São Tomé and Príncipe national policies are important for improvement on health (i.e. in infrastructures, in financing, in rational use of medicine), high medicine prices are still one of the biggest obstacles to access. Data on availability and prices of essential medicines in STP are as scarce as for other several health indicators of the country (IPAD, 2005).

Pricing of medicines can be affected by many factors and vary enormously for several reasons, such as volume of consumption, financial stability, tender format, patented status, etc. Frequently pharmaceutical companies or intermediary suppliers sell the same medicines at different prices in different countries depending on country purchasing power. According to Wagner and McCarthy (2004), usually low income countries are unable to pay for effective medicines and only by breaking down medicines prices components and by evaluating the factors that make countries able to afford effective treatments, medicines price could be greatly decreased. Generic medicines are subject to different criteria. The available medicine prices indicators, that can guide government and wholesalers to effective procurement practices of generic medicines, do not guide on their own on fair patient prices nor include new patented essential medicines (MSH,2007). Levison L. (2003) describes several common hidden costs that often increase prices within the supply chain from the manufacturer to the patient price and decrease a country's purchasing power. Despite the exorbitant prices of many manufactures of essential

medicines, governments also share a big part of the responsibilities since they are the ones accountable for taxation policies, procurement practices, health systems management and operation procedures, etc.

Reliable information about medicine prices is therefore imperative and should lead to more favourable purchasing agreements, fair market prices, changes in trade regulations and national and international price comparisons can be made, which in the end will have an important impact in medicine access and affordability.

A study assessing availability, affordability and prices of essential medicines in the country is required and will call for evidence-based national policies and programs.

STUDY OBJECTIVES

Overall objective: Evaluate access to essential medicines by studying medicine prices, availability, affordability on the public and private pharmacy level and in health facilities run by NGO in São Tomé e Príncipe

Specific objectives:

1. Assess availability of medicines listed in an Essential Medicines List (EML) selectively approved for the country.
2. Describe and compare availability and prices of these essential medicines to international references in the public, private and NGO sector.
3. Determine whether availability and prices vary within different sectors and within different regional areas of the country
4. Compare public procurement prices with international references and local retail prices
5. Evaluate affordability of medicines used in standard treatment formulations.
6. Present possible policy recommendations to address the problem

2.1- Methodology design

From 16th of June 2008 to 2nd of July a mixed qualitative and quantitative survey was administered following the methodology developed by WHO and Health Action International (HAI). The methodology provided a systematic survey of availability and prices of a list of medicines up to 50 in total, and enabled collection, analysis, and interpretation to be carry out in a standardized format (HAI, 2008).

For each medicine, prices and availability were collected for two products: the originator brand (OB) and equivalent lowest price generic (LPG) found in public, private and in NGO pharmacies on the day of the visit to the health facilities, and on cost of procuring medicine for the public sector.

Availability of individual medicines was defined as the percentage of individual medicines available at the medicine outlet on the day of data collection;

Medicine availability was analysed in terms of percent availability of individual medicines, mean percent availability across sectors, geographical areas, variations between product types (originator brand versus lowest price generic) and when relevant across a group of medicines.

Availability was described as:

- Extremely low: <10%
- Very Low: <25%
- Low: 20% - 49%
- Moderate: 50-69%
- High: 70- 89%
- Very High: > 90%

Medicine prices were collected and expressed as median price ratio (MPR). MPR is the median local price for each medicine surveyed divided by an International Reference price (IRP) obtained from MSH's International Drug Price Guide (MSH 2007) converted in to the local currency (Dobra).

The International reference price (available at <http://erc.msh.org>) are the median of procurement or tender prices from the previous year of a list of large non-profit generic suppliers of multi-source products (MSH, 2007). They intend to represent efficient procurement in public sector before costs of shipping and

insurance. Therefore public procurement prices were considered efficient when equal to or below 1.

Affordability was measured using the cost of course of treatment in relation to people's income, measuring their real ability to purchase the selected standard treatment course. The daily wage of the lowest paid unskilled government worker was used along with pricing data of medicines for a selection of treatments. Treatments of selected chronic and acute conditions were chosen on the basis of their therapeutic importance, high morbidity and availability in the three sectors surveyed. Despite difficulty in assessing an accurate affordability, treatments were describe as affordable when costing less then one day of wage

Medicine price components along the supply chain were also identified in the public, private, NGO sector to assess pricing structure and in order to estimate the level of the total mark-ups and add on costs in the distribution chain. Due to space and time limitations only one medicine available in all sectors was studied and compared, and four medicines in the private sector chosen. All the five medicines studied were chosen randomly using the program openepi (Dean , Sullivan & Soe 2008).

2.2 - Areas and sectors surveyed

The study was a national survey covering Príncipe and São Tomé and data was collected at central public procurement stores and in all licensed medicine outlets.

The survey measured prices, availability and affordability of medicines in the following sectors:

1. *Public sector* – procurement prices and prices paid by patients in public sector health facilities, availability and affordability
2. *Private sector* – prices paid by patients in retail pharmacies, availability and affordability
3. *NGO sector* – prices paid by patients in NGO medicine outlet, availability, affordability and procurement price.

Public sector procurement data were collected only on medicine prices and not on availability since procurement could be based on a single medicine order or

multiple set of orders from different points in time. Procurement data were collected at the three central procurement agencies: *Fundo Nacional do Medicamento* (Public), *Instituto Marquês de Valle Flor* (NGO) and *Cooperation of Taiwan* central store. Following WHO/HAI methodology procurement data from different sectors were then analysed separately (WHO/HAI,2008).

The country was divided in five survey areas corresponding to regional health districts (see table 2).

Table 2- Distribution and Number of facilities surveyed

AREAS	DISTRICTS	HOSPITAL	HOSPITAL RETAIL PHARMACY	DISTRICT HEALTH CENTRE	HEALTH POST	PRIVATE PHARMACY	NGO RETAIL OUTLET
Area I	Água Grande	1	1	1	4	5	1
Area II	Mé-Zochi	--	--	1	6	2	--
Area III	Caué	--	--		4	--	--
	Cantagalo	--	--	1	2	1	--
Area IV	Lembá	--	--	1	3	--	--
	Lobata	--	--	1	4	--	--
Area V	Pagué	1 ^a	1		2	1	--
TOTAL		2	2	5	25	9	1

^a District Hospital of Pagué is at the same time the 6th district health center.

2.3 - Medicines surveyed

In accordance with WHO/HAI manual for “*measuring medicines prices, availability, affordability and price components*” (HAI, 2008) the survey documented the prices of only 50 medicines, majority from WHO model list In order to make the survey manageable and to enable comparability (WHO, 2007), in the public sector, private pharmacies, and NGO sector.

Among the list of 50 medicines included in the survey, 28 belong to the core list of global and regional medicines (Sub- Saharan Africa region) suggested by WHO–HAI for international comparison and 22 were included as supplementary medicines. The core list of medicines were selected on the basis of global and regional disease burden to cover a range o treatments for common acute an chronic conditons. The supplementary list of 22 medicines, was selected at country level according to:

- i) STP burden of disease, national and local treatment priorities, and with respect to strength and form

- ii) Global and national treatment guidelines
- iii) Expected availability in most of the public sector sample
- iv) Existence of market authorization in STP
- v) Existence of an International Reference price

The supplementary list also included medicines that were pharmaceutically equivalent to the ones on the core list but that are more frequently used in STP.

The originator brand products are standard for the country and do not vary from outlet to outlet. The equivalents lowest-price generic are defined as the “generically equivalent products with the lowest unit price available at each medicine outlet” (HAI, 2008).

Medicines provided largely through donations or vertical programs such as anti-tuberculosis, antiretroviral and family health planning medicines were not included since they would not reflect a typical function of the pharmaceutical sector.

The complete medicines surveyed list is attached in Annex 2

2.4 - Data Collection

Health facilities level

Using the Medicine standard data collection form shown in Annex 3 for each of the health facilities, data were collected on OB and LPG availability in that facility on the day of data collection and unit price of those reported as available in the same day. Data were only collected for the exact dosage form and strength listed. For medicines that were dispensed free of charge, only availability data was collected.

At the end of each day all collection forms (Annex 3) were revised and signed certifying data quality and allowing easier follow up of possible errors.

National level

For the price component survey, face to face and phone interviews with relevant people and authorities were completed, allowing the amalgamation of information on manufacturer’s selling price, FOB, Ex-Works, Cost Insurance and Freight (CIF), port inspection charges, import tax, retail mark-ups. Data on mark-ups, taxes and other costs that contributed to the final price of a medicine

were collected by tracking the prices of selected medicines backwards from medicine outlets to central procurement stores in São Tomé and Príncipe.

For the calculation of affordability, the monthly wage of the lowest paid unskilled government worker was obtained at the Ministry of Finances department.

2.5 Data entry and statistical analysis

For data collection and analysis MS Excel Computerised Workbook from WHO/HAI (version 5) was used (WHO/HAI, 2008). Medicine unit prices were entered in the field consolidation pages for procurement, public, private sector and NGO sector. The workbook allowed a double entry procedure followed by auto-checking, used to ensure data entry accuracy and an automated analysis description. For the propose of statistical analysis the same software application automatically calculated: median unit price for each individual medicine, ratios of median local price to reference price (MPR), “median-median price ratios” across a group of medicines, summarized and compared data within and across sectors, geographical areas, health facilities and pharmacies; generating information for all medicines, median and inter-quartile ranges, availability and treatment affordability.

Median values were used for a better representation of the midpoint value avoiding possible distortions of average values by outlying or peak values. The *interquartile* range (between 25th percentile and 75th percentile) showed the middle 50 percent of the distribution of all prices and was unaffected by extreme values.

For data analyse local MPRs were considerable acceptable for:

- Public sector procurement MPR < 1
- Public sector patient MPR < 1, 5
- Private pharmacies retail MPR <2,5

Availability was analysed describing:

- the percentage of individual medicines available at the medicines outlet on the day of the collection;
- mean percentage availability across a group of medicines;
- variations between product types (OB versus LPG), sectors and geographical areas.

The standard deviation was used to measure the dispersion around the mean assessing the distribution variation.

Data collected on the components of medicine prices were analyzed along the five categories in the supply chain common to all medicines starting from manufacturer prices being the final category the price sold to the patient.

2.6 Ethical Considerations

Permission to conduct this study was obtained from the Ministry of Health, private retail pharmacies and the NGO-IMVF director prior to the survey. Letters of Introduction and explanation of the survey were signed and sent by Ministry of Health services to the public health facilities, where a date of visit to public health facilities was agreed. Introductory letters with survey manager contact numbers were physically presented in private pharmacies and permission and convenient dates agreed.

Confidentiality was ensured for all information collected by using codes of identification in all the pharmacies and health facilities surveyed.

All data will be publicly available and shared with the government of São Tomé and Príncipe.

In order to evaluate access to essential medicines in São Tomé and Príncipe, summary results for availability, affordability and price will be presented.

Data collected will be shown in median price ratios rather than national currency units in order to facilitate international comparisons and as external standard for allowing comparisons of prices within different medicines. For the median price ratio calculations, reference prices taken from the 2007 Management Science for Health international Drug Price Indicator guide (MSH, 2007) were used and compared with the local currency dobra. The exchange rate from USD to Dobra utilized was the one of the first day of data collection 9th of June, 2008 (1 USD = 14533 dobra) (Oanda currency converter, 2008).

For medicines availability two measures will be reported: mean per cent availability and standard deviation (SD). The standard deviation will measure the dispersion around the mean quantifying the distribution variation.

Treatment affordability will be assessed in terms of number of day's wages, the monthly wage of the lowest paid government worker identified was 544500 Dobra⁴, 18150 dobra a day⁵, (\$ 1,25 USD/ day).

Components of medicines prices, add on costs and cumulative mark ups were investigated and will be presented, to a better understanding of medicine price structure, different sum of additional costs and reasons for price disparities. Information required for correct suggestion of effective policy actions.

Following a pilot study at one public and one private pharmacy of STP the initial list of 50 of medicines was modified as some medicines were either not available at all, or the strength, was not commonly used in the country. From the 30 core list of essential medicines two were excluded for not being anymore in use in STP: Amodiaquine 200mg cap/tab and Chloroquine 150 mg cap/tab.

From the total of 50 medicines surveyed 32 were from the STP national essential list (see Annexes 1a and 1b). However, results and findings from this survey are likely to be extrapolated to the rest of the medicines and pharmaceutical situation of the country.

⁴ Net salary after all compulsory deductions of charges and taxes

⁵ WHO/HAI, 2008 defines in monthly to daily translation, one month as having 30 days;

The more relevant results will be presented under the following sub-topics:

- ◆ Procurement prices in the public sector
- ◆ Availability of medicines
- ◆ Public sector patient prices
- ◆ Private sector patient prices
- ◆ NGO patient prices
- ◆ Inter-sector comparison of patient prices and availability
- ◆ Treatment affordability
- ◆ Prices components & mark ups

3.1 - Procurement prices in the public sector

Procurement prices for the public sector were collected from the three different central procurement stores. Data obtained from tender documents of past procurement orders and from different sectors were always considered separately. This allowed not only the comparison of purchase prices of medicines (individual and basket) with the IR price but also purchasing efficiency in between sectors.

Fig. 2 - Public procurement Median Price Ratios of lowest priced generic (N^a =1 procurement price)

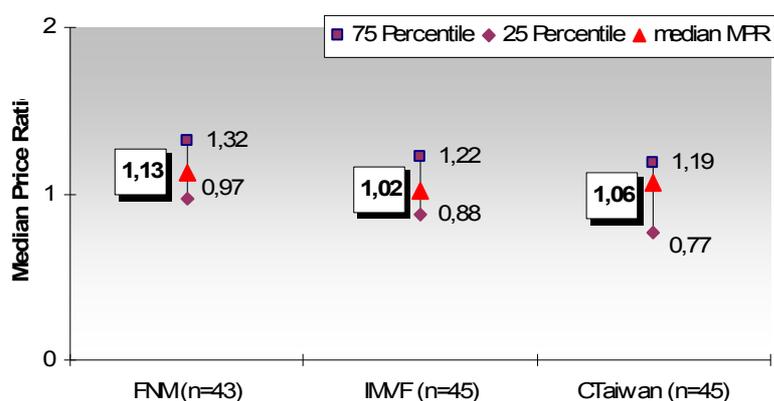


Fig.2a) Public procurement median MPR of lowest price generics across the three central public procurement agencies, and Interquartile MPR range between 75th and 25th percentile

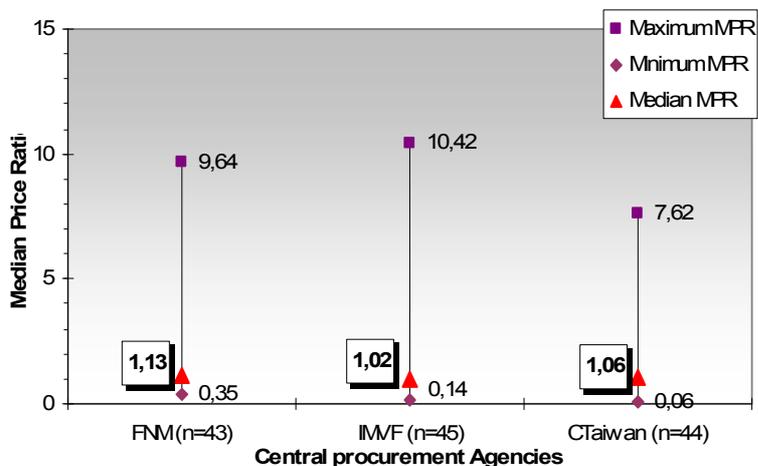


Fig.2b) Median MPR, minimum and maximum MPRs found in each of the three central procurement agencies. Results show wide variability in the range of prices across medicines both within the same and across the different agencies procurement in individual medicines.

^a N --1 single medicine price for each medicine found in the three procurement store

^b n -- number of medicines found in the procurement agency

Figure 2a) shows that the IMVF-NGO and C. Taiwan have been purchasing medicine at prices approximately equal to the International reference price (MPRs =1). Fundo Nacional do Medicamento has a MPR (1,13) slightly higher International reference price but without statistical difference. A large degree of variability in procurement prices was found in the three agencies with a number of medicines being bought at very competitive prices (MPR <1) and others like

Promethazine tablets 25mg presenting an MPR more than ten times higher than the International reference price (see Fig. 2b).

In addition, there were medicines where the prices were substantially different across sectors and in several cases much greater than the international reference price despite being purchased at the same non-profit supplier IDA, Figure 3 shows examples.

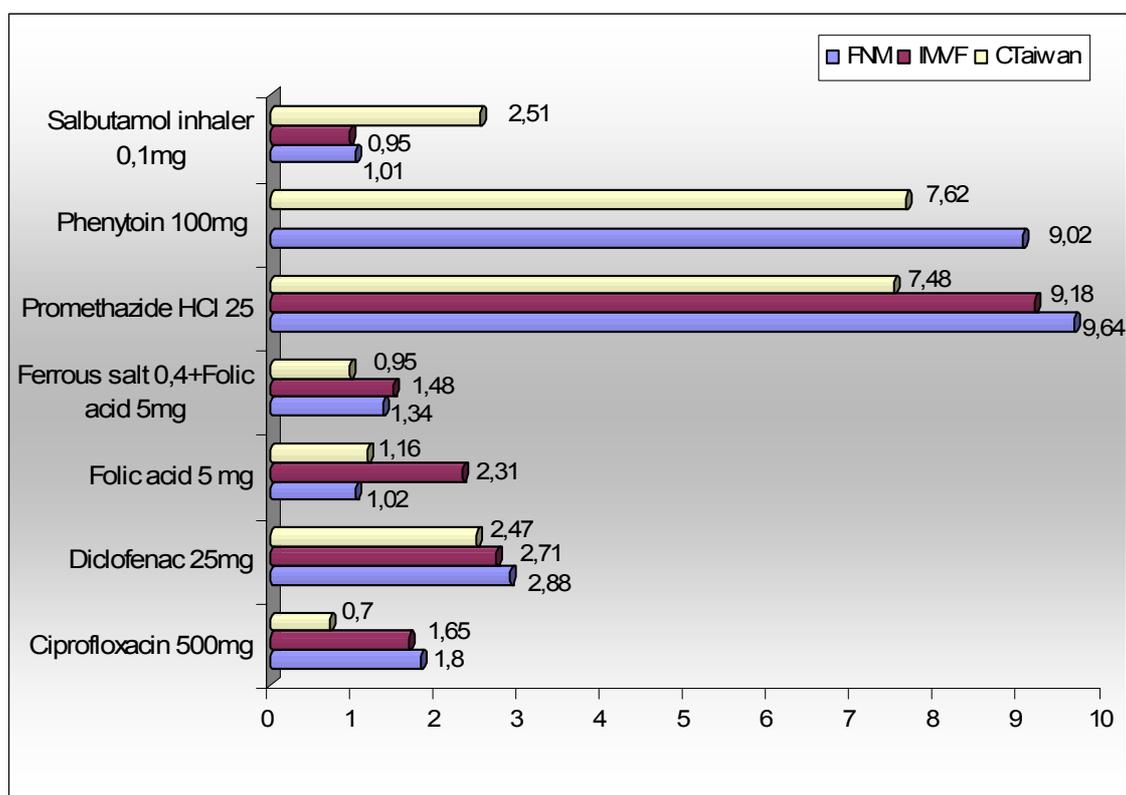


Fig. 3 – Examples of procurement prices differences in the public procurement agencies

Figure 3 shows for example that FNM and IMVF acquired Salbutamol inhaler at competitive prices while cooperative of Taiwan obtained it for 2,5 times higher than international reference price. On the other hand Ciprofloxacin tablets 500mg were procured by Cooperation Taiwan 2,4 times cheaper than IMVF and 2,6 then FNM. Promethazine, has been purchased at a very expensive price in all sectors but IMVF-NGO was charge 1,4 times then C. Taiwan.

Figure 4 presents other generic medicines were inefficient procurement with median price ratio higher than 1 was found.

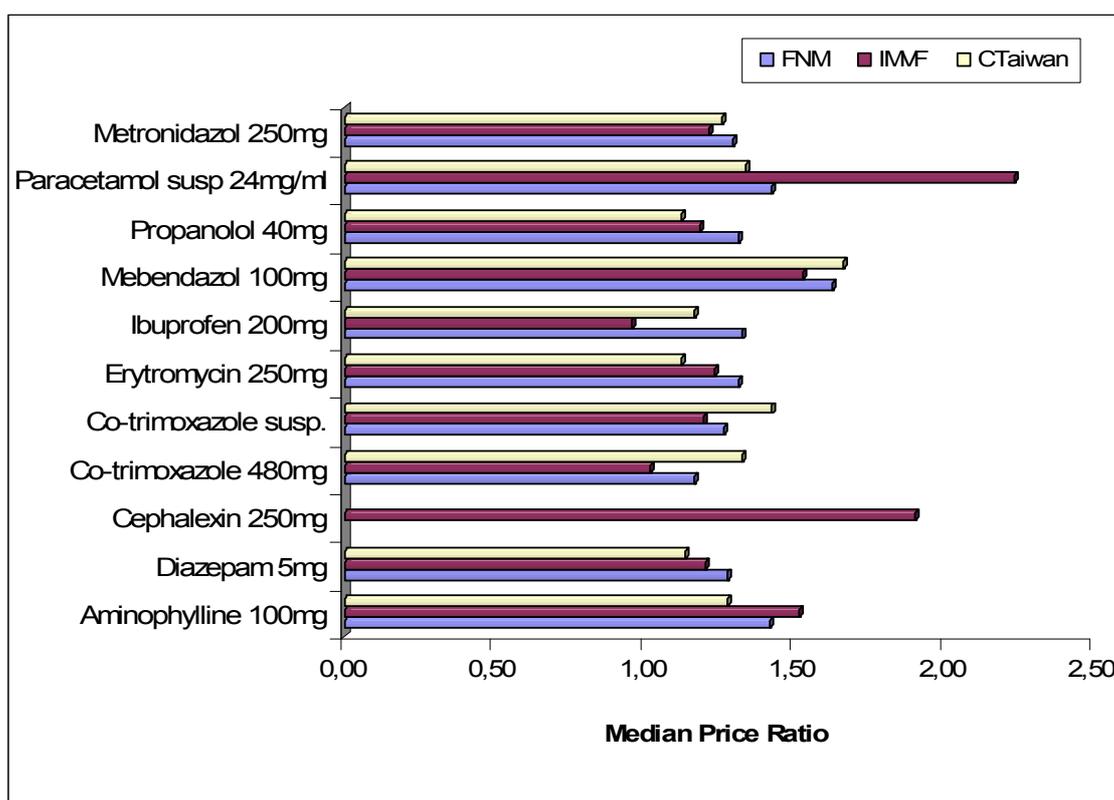


Fig.4 – Examples of generic medicines procured at non competitive prices through the three central procurement stores expressed in MPR >1.

3.2 - Availability of medicines across sectors

Availability results are valuable however they need to be analysed carefully particularly with an understanding of the context since they can be affected by several factors. One of them is the fact that they refer only to availability on the day of the data collection.

Table 3 – Availability of medicines across sectors

	PUBLIC SECTOR (n ^a =32)		PRIVATE SECTOR (n ^a =9)		NGO SECTOR (n ^a =1)	
	OB	LPG	OB	LPG	OB	LPG
Mean availability^b	2 %	55,1%	9,8%	24,3%		82 %
Standard deviation	8,2 %	28,8%	14,0%	18,4%		^c

^a number of medicines outlets surveyed in the sector

^b overall mean percent availability of medicines found on day of data collection in each sector.

^c NGO sector did not have an standard deviation value since is composed of a single medicine outlet.

In all sectors surveyed lowest price generics were the predominant type of product available, with percent availability significantly higher than of originator brand medicines. The NGO IMVF--one of the procurement agencies which also had one licensed retail pharmacy-- had the highest lowest price generics mean availability (82%) and did not stock any of the originator brand products

surveyed. This result was followed by the public sector (55,1%) and the private sector (24,3%).

Values for *standard deviation* (S.D.) showed large variations indicating a high amount of variability in individual medicines in each sector and for both product types (generic and originator brand)..

The percent availability of Medicines from São Tomé and Príncipe national essential medicines list found across sectors is presented in Fig. 5.

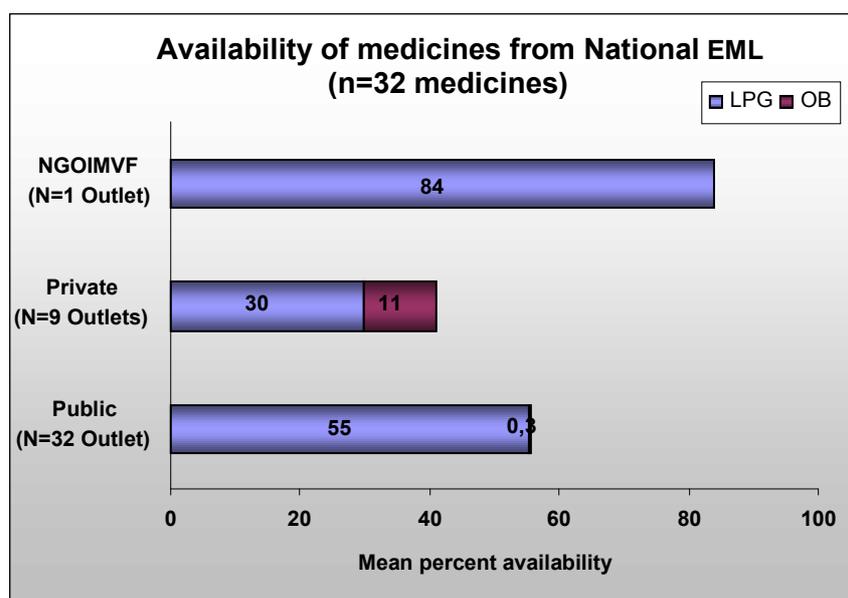


Fig.5- Percent availability of medicines surveyed included in STP essential medicines list in public, private and NGO sector

The mean percent availability data of all individual medicines surveyed in the public, private retail pharmacy and NGO sectors can be found in Annexes 4.

A further analysis on availability of the lowest price generics in the public and private sector according to important therapeutic classes of medicines focusing on the management of hypertension, microbial infections is presented in Fig. 6, Fig 7.

Availability of anti-hypertensive medicines was always higher in the public than in the private sector. Only four medicines in the public sector presented “high” or “very high” availability, Captopril, Furosemide, hydrochlorothiazide and Nifedipine retard, all the rest of the antihypertensive medicines presented “low” or “very low” availability.

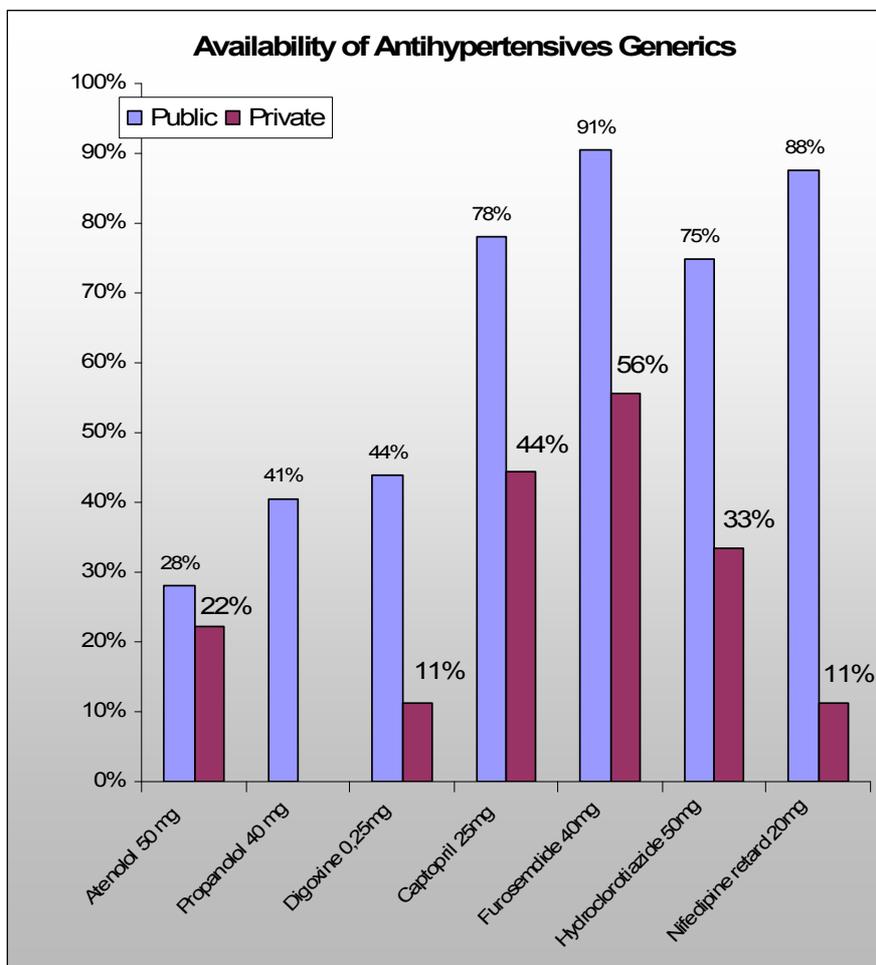


Fig.6 - Mean percent availability of antihypertensive generics in public and private sector

As seen in Figure 7, the availability of lowest price generic antimicrobials was generally “low” to moderate. Only co-trimoxazole was widely available with mean per cent availability over 90%. Metronidazol, Ciprofloxacin, paediatric co-trimoxazole suspension, tetracycline ointment, doxycycline presented an availability considered “high” and all the others medicines in both sectors showed below 70%.

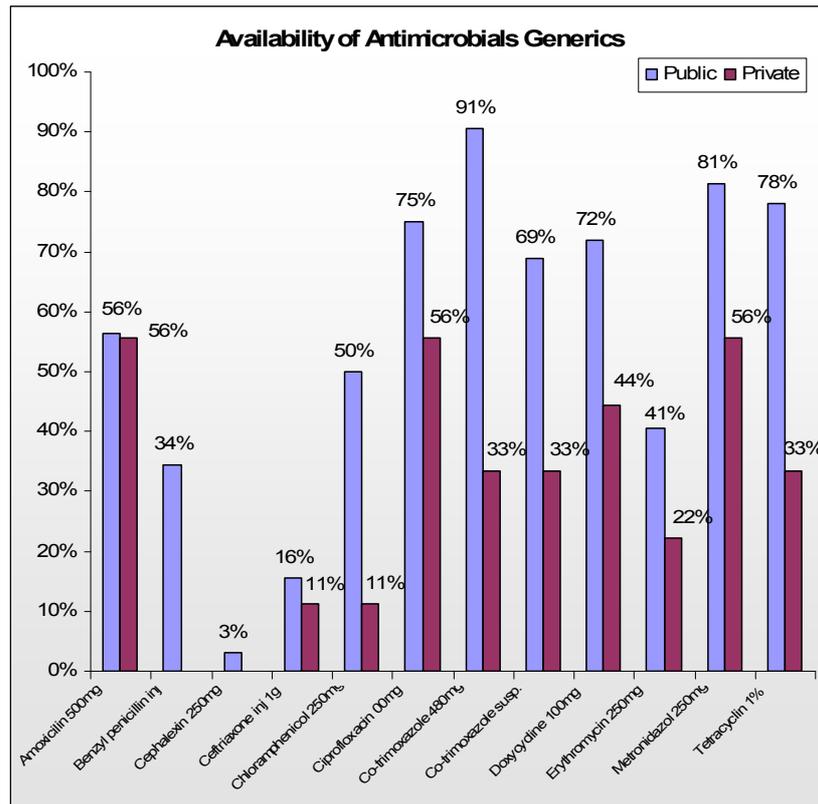
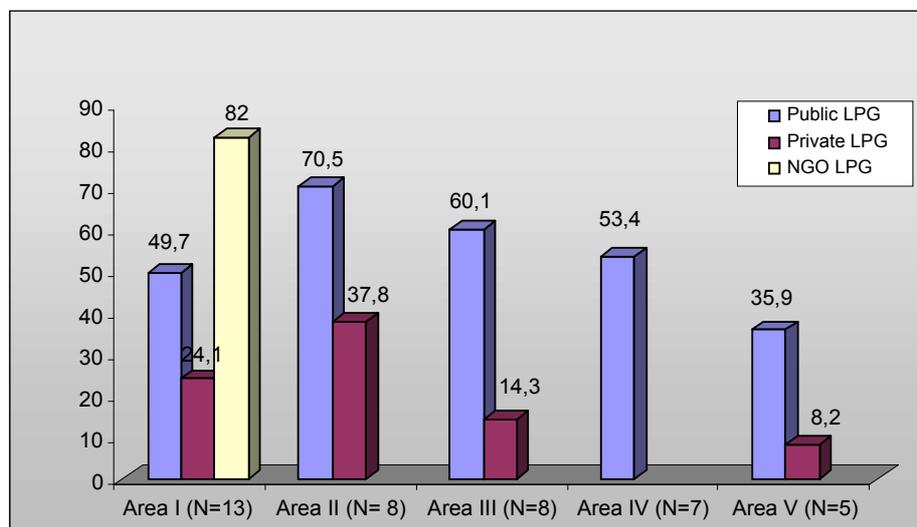


Fig.7- Mean per cent availability of antimicrobial in public and private sector.

The availability of medicines across the five surveyed areas was not uniform suggesting geographical inequities to access. The regional variation expressed as mean per cent availability can be seen in Figure 8.



⁶Fig.8 Regional variation of availability of Lowest price generic in public, private and NGO sector. Results are expressed in terms of mean percent availability of LPG found in each sector differentiated by survey area. Each area has different number (N) of medicines outlets and sectors included.

⁶ Area I – District of Água Grande; Area II-district of Mé-Zochi, Area III- District of Caué and Cantagalo; Area IV – district of Lembá and Lobata; Area V- district of Pagué;

Overall mean availability of medicines found in public health facilities of the district of Água Grande (Area I) where the main district hospital is located, was low for both: LPG (49,7% s.d. \pm 37%) and OB (2 % s.d. \pm 5,1%). The availability found over the 5 private pharmacies situated in the same area was considered “very low” (24,1% of LPG and 16,8% of OB). The only sector situated in this area presenting high availability was the NGO IMVF with 82% of the medicines in stock. Survey area V (Island of Príncipe- District of Pagué) had the lowest availability of medicines, both in Public and Private Facilities.

Area II (District of Mé-Zochi), was the only area presenting high availability of lowest priced generics in the public sector. Its private sector, consisting of two retail pharmacies, despite presenting low availability of medicines had still the highest percent availability for the private sector in all areas.

All individual medicines availability results are presented in Annex 4

3.3 Public Sector Prices⁷

Data collected from the 32 public health facilities visited, which were then converted and presented in terms of median price ratios are included in Annex 5. Summary of the median MPR and dispersion measurements are shown in Table 4.

Table 4 - Median prices ratios for patient prices in the public sector

MEDICINES		ORIGINATOR BRAND (n ^a = 1)	LOWEST PRICE GENERIC (n ^a = 46)
Patients price	Median MPR	2,9	2,36
	25th percentile	2,9	1,6
	75th percentile	2,9	3,23
	Minimum MPR	2,9	0,09
	Maximum MPR	2,9	14,15

^a n= number of medicines found

The median MPR attained for the 46 lowest price generics found was 2,36, while for the only originator brand median MPR price at public facilities (Coartem) was 2,90 which is under patent.

⁷ Unlike procurement MPR, prices in public and private prices at this stage are expected to be higher than International reference price since this MPR reflect final prices after all intermediates charges and distribution costs.

Median price ratios data of lowest price generic showed a wide range of values, varying from 0,09 (Artesunate + Amodiaquine)⁸ to 14,15 (Promethazide).

Among the LPG available in the public sector, 76% (36 out 46) were considered expensive (MPR >1,5) as shown in Figure 9.

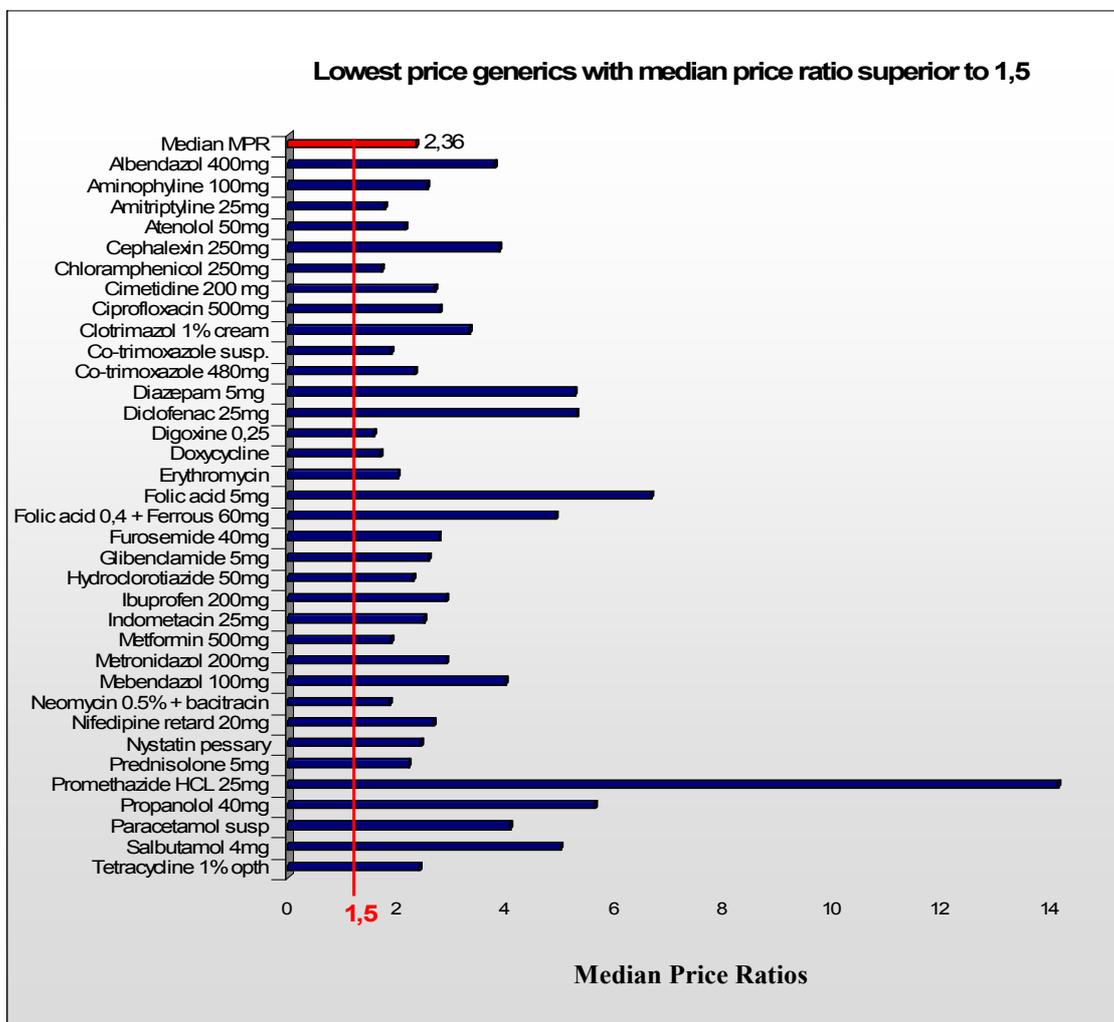


Fig. 9- Lowest price generics available presenting MPR superior to 1,5. Patients prices in the public sector for these 36 medicines were considered 1,5 times more expensive then their International reference price.

A further analysis comparing lowest price generic prices variations among the five areas surveyed is presented in Figure 10 and showed that medicines in the area V (District of Pagué-Príncipe) were generally more expensive, followed by survey area II (district of Mé-Zochi).

⁸ Artesunate + Amodiaquine is procured through Centre of Endemic Disease which explains its low price.

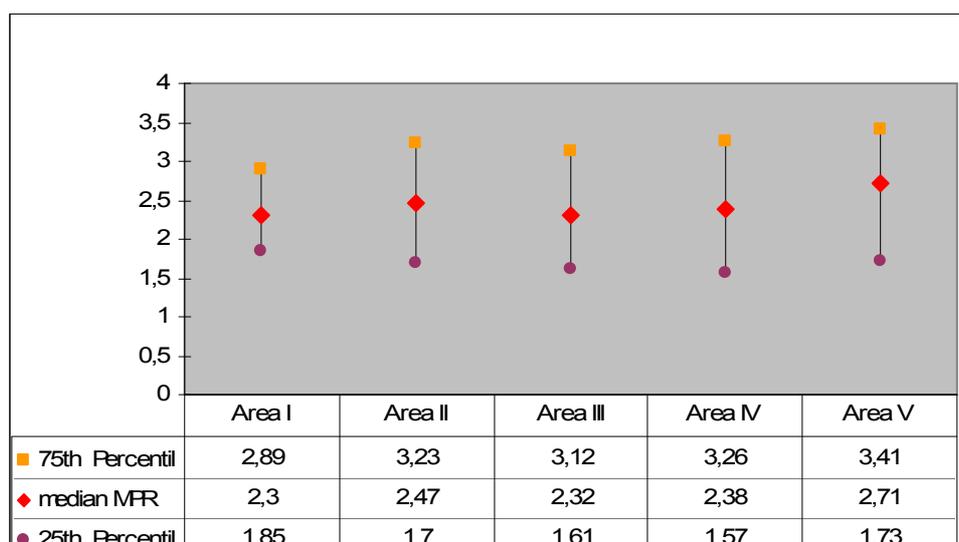


Fig.10- Lowest price generic median price ratios from different survey areas

3.4 - Private Sector Prices

Field summary data for all medicines surveyed (n=50) in the private sector formed of nine retail pharmacies are presented in table 5. In Annexes 4 and 5 a full data collection results for patient prices and medicines availability for OB and LPG in the private sector is shown.

Table 5- Median price ratios for medicines found in one or more private retail pharmacies (N=9)

MEDICINES		ORIGINATOR BRAND (n ^a = 21)	LOWEST PRICE GENERIC (n ^a = 39)
Retail price	Median MPR	53,27	13,76
	25th percentile	21,85	7,31
	75th percentile	98,30	24,12
	Minimum MPR	2,10	0,09
	Maximum MPR	266,70	107,51

^a number of private retail pharmacies

^b number of medicines found

The overall median MPR for OB medicines found was 53,27 and 13,76 for the LPG, reflecting an incredibly degree of difference compared with the reference prices.

A wide variation was found between prices at the different retail pharmacies for both OB and LPG. In the basket of medicines surveyed 50% were being sold at prices significantly higher prices then their international reference price:

Originator brands between 21,81 to 98,30 and 7,31 to 24,12 in lowest price generics, i. e, Daonil (MPR of 90,54), Erythromycin (MPR of 21,25).

A large variation between prices within the private sector could also be seen when analysing individual medicines. One could give as example Omeoprazole generic with minimum MPR of 3,24 and a maximum MPR of 56,67 and a or Tetracycline ophthalmic ointment LPG with MPR ranging from 4,81-14,44.

The overall maximum MPR found was for OB 266,7 (16667 dobra/unit) for Pantelmin ® (Mebendazol 100mg cap/ tab), where the OB alternative available was Zental ® (Albendazol 400 cap/tab) with MPR of 135,45 (50000 dobra/unit). In LPG the maximum MPR found was of ciprofloxacin capsules 500mg with MPR of 107,51 (50000 dobra/unit).

In all medicines outlets of São Tomé and Príncipe (including both district hospitals), Simvastatin was only found at one private retail pharmacy and its price (27500 dobra/unit) was 46,49 higher than its International reference price.

From 50 medicines surveyed only 21 originator brand medicines 39 lowest price generics were found. However, out of these, only 17 could be compared as matched prices⁹ of pairs of OB and equivalent LPG. Analysing OB and equivalent LPG a large difference in price was noted. Originator brand products were approximately five times more expensive than their equivalent LPG. Table 6 presents the MPR found and their OB/LPG per cent ratio.

All OBs were at least over 100% more expensive than equivalent LPG and except for Albendazol 400mg all the other 16 medicines belong to the STP essential drug list. Some medicines such as Mebendazol and Albendazol OB were more than 2000% more expensive than equivalent LPG.

The only medicine being sold at a lower price than its international reference price was Ceftriaxone injection, lowest price generic.

⁹ Match pairs refer to medicines found in both baskets under analysis from different categories (i.e. generic vs. brand; private vs. public) generating comparable results.

Table 6- median MPRs of matched paired data in the private sector for originator brand and equivalents lowest price generic

MEDICINES	Median Median Price Ratio		% Ratio OB/LPG
	OB	LPG	
Albendazol 400mg	135,45	5,42	2499%
Captopril 25 mg	25,48	10,92	233%
Ceftriaxone injection	2,1	0,23	913%
Cimetidine 200mg	141,39	9,43	1499%
Clotrimazol 1% cream	53,66	15,88	337%
Co-trimoxazole suspension	20,64	8,6	240%
Diclofenac 50mg	122,33	91,75	133%
Digoxine 0,25 mg	10,53	7,02	149%
Folic acid 5 mg	161,90	40,48	400%
Furosemide 40mg	65,53	16,38	400%
Glibenclamide 5 mg	90,53	36,21	250%
Mebendazol 100 mg	266,7	13,34	2000%
Metronidazol 200-250mg	98,3	16,38	600%
Neomycin 0.5% + Bacitracin 500iu/g ointment	21,81	6,46	337%
Nifedipine retard 20 mg	34,40	17,2	242%
Prednisolone 5 mg	47,45	15,82	300%
Salbutamol 4 mg	83,4	10,43	800 %

Results described in the Table 6 for the matching pairs of OB and LPG in the private sector were clustered in four categories of MPR to provide a better picture of the results found (Figure 11).

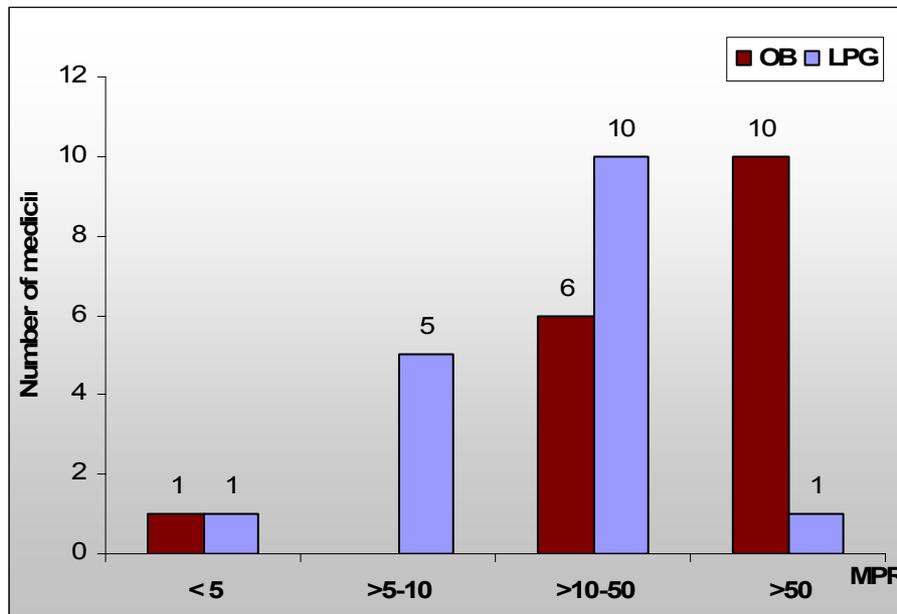


Fig.11 - Median price ratios of originator brand and equivalent lowest price generics clustered into four intervals

As described in Figure 11, ten of the OB show prices more than 50 times higher than IR price and 16 out of these 17 originator brand medicines cost more than

10 times their IR price. Likewise, 11 medicines among the lowest price generics are more than 10 times more expensive than their IR price. An example of an extreme result found was for Diclofenac 50mg tablets (included in the national EML), which was 90 times more expensive than the International reference price.

3.5 - NGO sector prices

It was already mentioned that this sector was confined to one medicine outlet at Instituto Marquês de Valle Flor facilities where 41 (82%) generic medicines were available. Field summary data for all medicines surveyed (n=50) in the NGO sector are presented in table 7.

Table 7- Median price ratios for medicines found in the NGO medicine outlet (N^a=1)

MEDICINES		ORIGINATOR BRAND (n ^b =0)	LOWEST PRICE GENERIC (n ^b =41)
Retail price	Median MPR		2,50
	25 th percentile		1,72
	75 th percentile		3,33
	Minimum MPR		0,27
	Maximum MPR		14,15

^anumber of medicine outlet

^b number of medicines found

These medicines presented a median MPR of 2,50 and prices in general were therefore considered expensive in comparison with International reference prices.

Among the basket of medicines surveyed 50% presented MPR between 1,7 and 3,3 times higher than IR price. Median price ratios for individual medicines varied from 0,27 (Benzathine benzyl penicillin injection) to 14,15 (Promethazide HCl 25mg).

Only 20% (n=8) of the medicines available at NGO prices exhibit a reasonable price (MPR<1,5). These medicines are presented in Figure 11. The rest of the individual medicine prices were much higher than their International Reference Price meaning patients are paying expensive prices for their medicines.

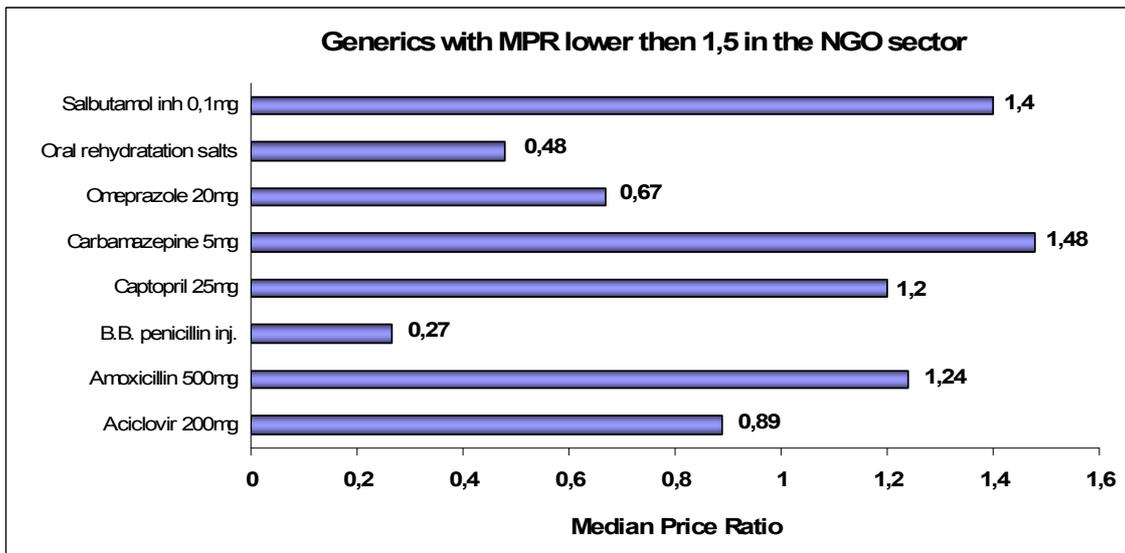


Fig. 12- Generics with median price ratio lower then 1,5 in the NGO sector

All field data collection summaries for NGO sector: patient prices, medicine availability are presented in Annexes 4, 5, 6.

Selected LPG where prices were more than three times their IR price are shown in Figure 13.

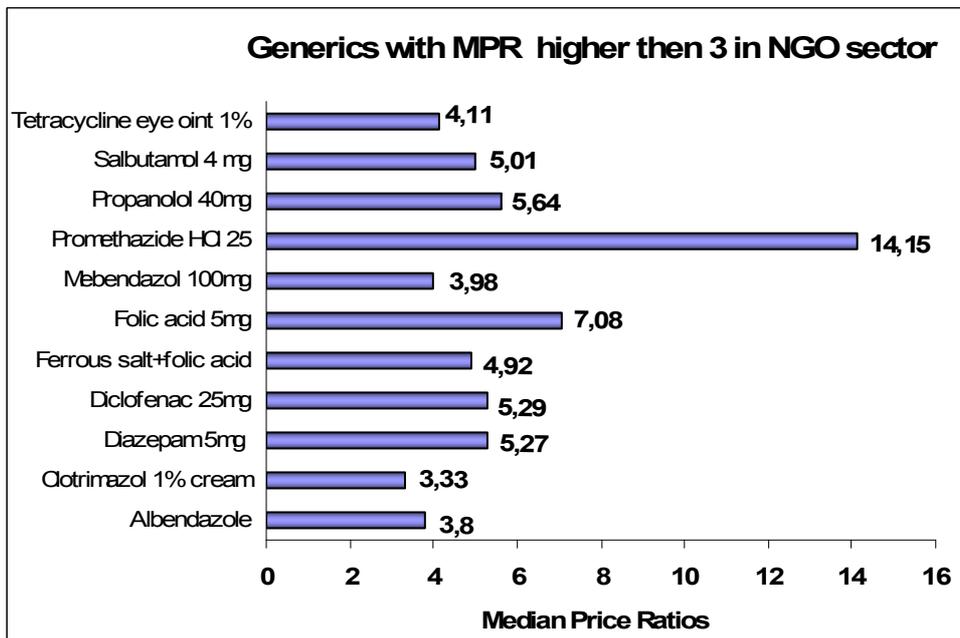


Fig 13 - Generic with median price ratios higher then 3 in the NGO sector

3.6. Inter-sector comparison of patient prices and availability

Comparisons across sectors also can be made by analysing two different types of data: individual medicines or the all basket of medicines in the sector summary reports. However, since the medicines found in each sector differ, inter-sector comparison must be made again based on matched pairs analysis only (HAI, 2008).

a) Cross-sector comparison of price results for each sector

The difference between procurement prices and the public sector prices constitute the total government mark up for medicine prices.

The government mark up found in public sector prices with procurement through Fundo Nacional do Medicamento was 118,7 % (n=40 medicine pairs), **as shown in Fig. .**

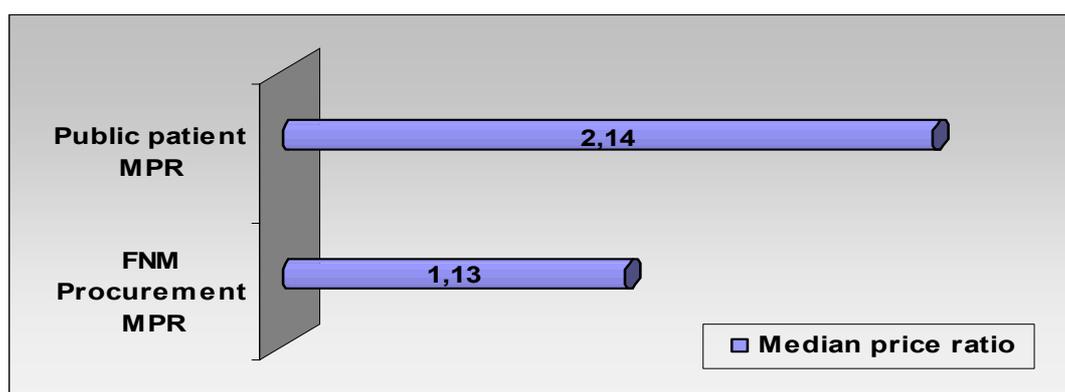


Fig._14_-Median price ratios of public procurement through Fundo nacional do Medicamento (FNM) and public patient price of 40 matched pairs. The Government mark up found was more than double the procurement price.

IMVF-NGO mark up between its procurement prices to its health facility prices was 145,1% (n=41 medicine pairs). The government mark up found for the health facilities supplied by Cooperation of Taiwan¹⁰ was 96,3 % (n=32 medicine pairs).

Private sectors prices were 432,8% more expensive than prices from public sector (n= 37).

¹⁰ For this analysis was used data collected from all public health facilities of Água Grande (Area I) except the hospital pharmacy which is supplied by Fundo Nacional do Medicamento.

A further analysis comparing medicine availability and price increase across the public and private sectors for LPG is presented in Fig.15. The aim was to identify any correlation between low availability and price increase.

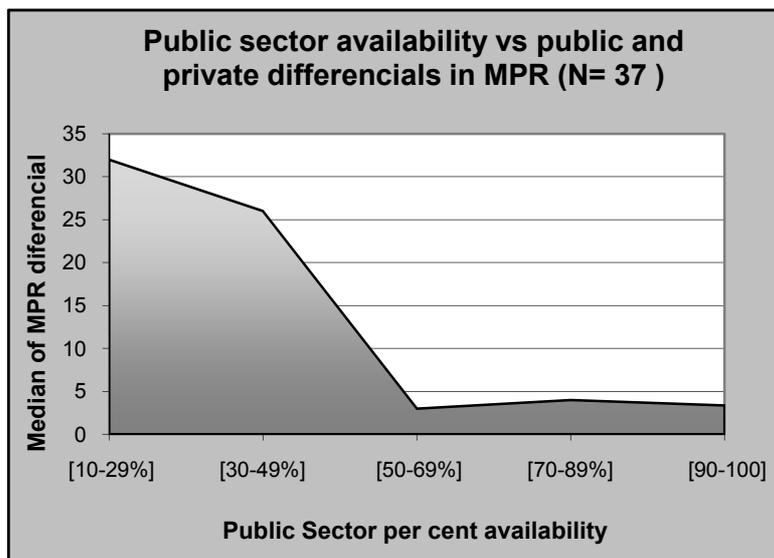


Fig.15- Median of median price ratio differentials between public and private sector median prices versus public sector availability for the 37 matched pairs found. Differences in prices between public and private sector were significantly higher when availability in the public sector was below 69 %

b) Cross-sector comparison of results for individual medicines

All medicines in the private sector were more expensive than in the public and NGO sector except for the Ceftriaxone injection.

Certain medicines with lower or non existent availability in public and private sector were very expensive in the private sector. A good example is Diclofenac 50 mg included in the national essential medicines list which was not available in any public or NGO health facility and is being sold at 91 times the IR price in the alternative private sector. Another example is Simvastatin already mentioned previously as only available in the private sector and costing 46,49 higher than its IR price.

Table 8 describes LPG where availability was lower than 25% in public sector and when available in the private sector, were more expensive by 40-92 times the international reference price.

Table 8 Availability versus median price ratios across public and private sector for all LPG with availability lower than 25 % in the public sector

SECTOR		PUBLIC (N ^a =32)		PRIVATE (N ^a =9)		RATIO
MEDICINES		AVAILABILITY	MPR	AVAILABILITY	MPR	PRIVATE/PUBLIC
Lowest Price Generic	Aciclovir	18,8%	0,89	22,2%	58,03	6520%
	Amitriptyline	9,4%	1,77	0,0%		
	Ceftriaxone injection	15,6%	0,70	11,1%	0,23	33%
	Cephalexin	3,1%	3,88	0,0%		
	Diclofenac 50	0,0%		22,2%	91,75	
	Phenytoin	6,3%		0,0 %		
	Metformin	18,8%	1,88	0,0%		
	Omeoprazole	25,0%	0,67	55,6%	40,48	6042%
	Simvastatin	0,0%		22%	46,6	

^a N= number of medicines outlets

On the other hand, LPG which were highly available in public sector continued to show wide range of disparity in MPR across sectors as Table 9 demonstrates. A price decrease in the private sector prices was not observed and MPR were all at least 4,8 times IR price¹¹.

Table 9- Availability versus median price ratios across public and private sector for all LPG with availability higher than 80% in the public sector

SECTOR		PUBLIC (N=32)		PRIVATE (N=9)		% RATIO
MEDICINES		AVAILABILITY	MPR	AVAILABILITY	MPR	PRIVATE/ PUBLIC
Lowest Price Generic	Aminophylline	96,9%	2,56	33,3%	13,76	538%
	Artesunate + amodiaquine ¹	87,5%	0,09	11,1%	0,09	100%
	Co-trimoxazole tablets	90,6%	2,32	33,3%	7,40	319%
	Diclofenac 25	84,4%	5,30	33,3%	11,47	216%
	Furosemide	90,6%	2,77	55,6%	16,38	591%
	Ibuprofen	87,5%	3,80	66,7%	18,11	477%
	Indometacin	75,0%	2,50	33,3%	9,17	367%
	Mebendazol	93,8%	4,28	44,4%	14,34	335%
	Nifedipine retard	87,5%	2,66	17,1%	17,20	647%
	ORL	90,6%	0,48	22,2%	4,79	998%
	Promethazide	81,3%	14,15	22,2%	14,15	100%

¹¹ Artesunate + Amodiaquine is procured through Centre of Endemic Disease which explains the low price in all sectors.

3.7 - Treatment Affordability

Results will be reported in the form of number of daily wages needed to pay for a full course of treatment. Table 10 describes results of number of daily wages required and percent availability of ten treatments for chronic and acute conditions common in São Tomé and Príncipe across sectors and for originator brand and lowest price generic.

Full standard treatment affordability results are described in Annex 8.

Table 10 - Affordability and availability of standard treatments across sectors with originator brand and lowest price generics

CONDITION	TREATMENT		AVAILABILITY (%)			N° OF DAILY WAGES		
			Public	Private	NGO	Public	Private	NGO
Adult Respiratory infection	Amoxicillin 500mg 1 tab/ 3 x day/ 7days	OB	0,0%	0,0%	0,0%	---	---	---
		LPG	56,3%	55,3%	100%	1	2,3	1
Diabetes	Glibenclamide 5mg 1tab 2 times / day / 30 days	OB	3,1%	33,3%	0,0%	F ¹²	16,5	0,5
		LPG	50,0%	11,1%	100%	0,5	6,6	0,5
Asthma	Salbutamol 0.1 mg/ dose inhaler 200 doses / 30 days	OB	0,0%	22,2%	0,0%	---	7,2	--
		LPG	37,5%	0,0%	100 %	2,0	---	2,0
Hypertension	Captopril 25mg 1 tab/day/30 days	OB	0,0%	11,1%	0,0 %	---	11,6	---
		LPG	78,1%	44,4%	100%	0,5	9,9	0,5
	Nifedipine Retard 20mg once daily	OB	0,0%	55,6%	0,0%		16,5	
		LPG	87,5%	11,1%	100%	1,3	8,3	1,3
Arthritis, pain/ inflammation	Diclofenac 25mg 2tab/2 xday/30days	OB	0,0%	0,0%	0,0%	--	--	--
		LPG	84,4%	33,3%	100%	1,5	3,3	1,5
Paediatric Respiratory infection	Co-trimoxazole susp 8+40 mg/ml 10ml /day/7 days	OB	0,0%	11,1%	0,0%	---	4,6	---
		LPG	68,8%	33,3%	100%	0,4	1,9	0,5
Gonorrhoea	Ciprofloxacin 500mg 1 tab/2xday/7 days	OB	0,0%	0,0%	100%	--	--	--
		LPG	75%	55,6%	100%	1	38,6	1
Protozoa Infections	Metronidazol 200- 250mg 1 tab/ 3 times/day for 7days	OB	0,0%	11,1%	0,0%	---	6,9	---
		LPG	81,3%	55,6%	100%	0,2	1,2	0,3
Peptic Ulcer	Cimetidine 200mg 2d x 30d	OB	0,0%	33,3%	0,0%	---	49,6	---
		LPG	65,6%	33,3%	100%	0,9	3,3	0,9

Results show that as expected, affordability expressed as number of daily wages needed to pay a cost of treatment in private pharmacies was much lower than in public health facilities, an extreme example is Ciprofloxacin lowest price generic. LPG in all the selected medicines for this medical conditions were more affordable then for OB. An example where particularly high difference was

¹² "F" means Daonil was available for free at the hospital for interned patients.

found was for Cimetidine where the lowest paid government worker with a daily salary of \$1,25 US would needed 49,6 days of work to pay for a monthly treatment with an OB as oppose to 3,3 days to afford the same treatment with the LPG.

However, for the majority with any of these 10 medical conditions, patients had the chance to choose between buying LPG and to acquire them in the public and NGO health facilities, since availability was normally higher for LPG in public sector and NGO then in private sector.

It can be observed that single treatments were reasonably affordable in the public and NGO sector for the treatments with lowest price generic for conditions such as adult and child's respiratory infection, diabetes, peptic ulcer and protozoa infections. However WHO standard asthma treatment Salbutamol inhaler was unaffordable in all sectors. The same for the anti-hypertensive Nifedipine retard.

Generic medicines to treat protozoa infections were the most affordable and were highly available across the country.

Figure 16 compares affordability in public/NGO and private sectors in common national acute and chronic medical conditions. Different treatment alternatives are compared and expressed in terms of number of days wage needed to afford a full course of treatment.

In the case of asthma, the affordability of one month of treatment with Salbutamol (one inhaler, 200 doses) was not only lower than with Salbutamol (4 mg tablets) or Aminophylline (100 mg tablets), but the inhaler was also less available (12 out of 32 public facilities) than the other two options.

Purchasing one month of diabetes management treatment with Metformin would required 2,4 days wage in the public sector (as opposed to Glibenclamide 0,5days) which is unaffordable.

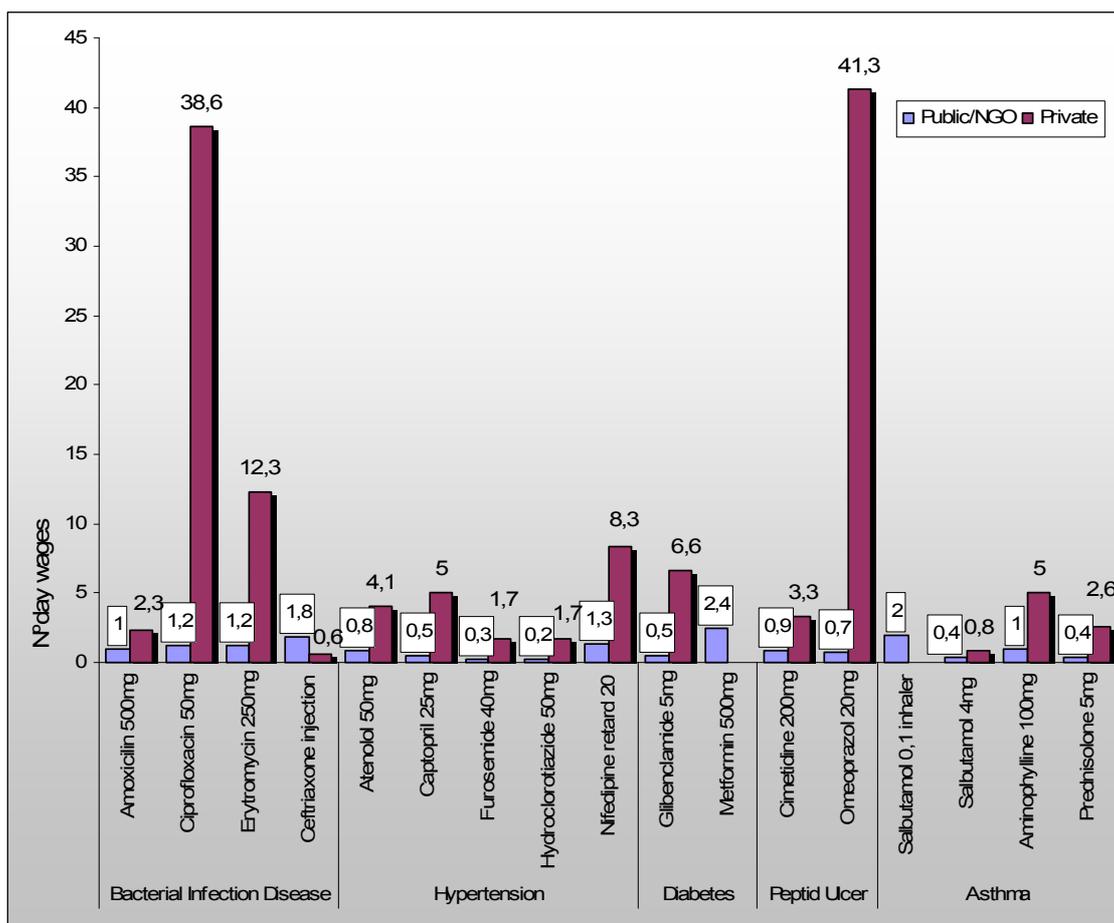


Fig. 16- Cost of different alternatives to the lowest price generic treatments for select illnesses expressed as number of day wages

Median treatment costs for peptic ulcer across sectors with treatment alternatives were very different. The number of days wages required in the public and NGO sector were very similar with Cimetidine or Omeoprazole treatment and generally considered affordable. In contrast, acquiring Cimetidine or Omeoprazole generic in the private sector for a monthly course of therapy would required 3,3 days wage for the first or 41,3 for the second.

All antibacterial medicines were unaffordable (all more than 1 day of wages) except for the Ceftriaxone injection in the private sector, and amoxicillin 500mg tablets in the public/NGO sector.

3.8- Prices components and cumulative mark-ups

A total breakdown of the medicines price components across the three sectors was not established since a complete national survey of medicine price components was not directly related to the specific objectives of this thesis. A mini-pharmaceutical policy investigation was made across the three sectors to

understand the impact of the high variations in the prices found of certain add on costs and mark-ups in São Tomé and Príncipe such as port, clearing and handling fees, customs fees, banking, transport and others, which are suspected to be crucial factors and causes of low availability and possible evidence for adequate advocacy on policy changes.

WHO/HAI (2008) divide medicines price along the supply chain in to 5 stages: Starting from the manufacturer selling price (Stage 0); Stage1: manufacturer's selling price, after adding insurance and freight; Stage 2 referring to the landing add on cost which includes all dispenses after arriving in the STP (customs taxes, port and clearing charges , handling and clearance, finance, banking fees; national drug inspections, stamps, customs agent, customs agency); Stage 3 after the wholesaler's mark-up; Stage 4 where retailers' or health facilities mark-ups are added; and finally Stage 5 or patient price where other charges such as value added tax (VAT), general sales tax (GST), dispensing fees are add.

Table 11 shows a case study of a component price, in the four sectors. Ciprofloxacin was chosen randomly from a list of medicines existing in all sectors.

Major quantity of add on costs were found specially after the medicines arrived in the country and before going to the warehouse described as land costs. These costs differed between the sectors surveyed. All sectors need to pay a fee of 1% of the procured CIF when arrival in the country to the port Authority ENAPOR, SA (Port authority), or to ENASA (Security company of aerial traffic).The Public and NGO sector are afterwards exempt from paying any import tariff on pharmaceutical. Private sector pay a fee of 5% of the total of medicines plus 0,5% for the service, plus fixed fee for handling, and stamp duty of 56500 dobra (3,13 \$USD). Port and clearing charges at the border to the customs agent also differ: the public and NGO sector pay 2% tariff and the private sector pays 3% of the total of the expenses.

While interviews indicate a theoretical margin of 30% for the public and NGO importer to cover the expenses mentioned before and 30% for the retailer to cover all distribution costs, in practice in all sectors these mark ups varied and were then reflected in the final patient price (see table 10)

Furthermore, prices in all sectors of STP are also very influenced by the volatility of STP currency, volume of sales which can differ between shipments and orders.

Table 11- Ciprofloxacin 500mg tablets components price and add on mark ups across four health facilities with different supply chains.

CIPROFLOXACIN 500MG (Lowest Price Generic) ^{a,b}								
SUPPLY CHAIN	PUBLIC VIA FNM		PUBLIC VIA IMVF		PUBLIC VIA C. TAIWAN		PRIVATE PHARMACY	
	Price ^c Dobra	Mark up						
CIF (MSP+ F&I) Warehouse	837,22		765,02		325,54		286403	
Retail Price	955,50	12%	994,54	23%	1100	24%	419759	32%
Patient Price ^d	1242,15	23%	1292,89	23%	1500	28%	631895	34%
	1242,15	0%	1292,89	0%	1500	0%	800000	21%
Cumulative mark up		33%		41%		78%		64%

^a Ciprofloxacin LPG supplier for the public sector was IDA ^b

^b Private pharmacy supplier of this specific LPG: Ciprofloxacin Labesfal® was Alliance in Portugal.

^c Price refer to unit price

^d There are no dispensing fees in any of the four sectors.

Additionally, the level of taxes and mark ups that add up along the medicine supply chain from the manufacturing selling price to the final dispensed price was analysed for four medicines in one retail establishment of the private sector (see Annex 9). The total final mark up for these four medicines, of one of the nine retail pharmacy among the private sector, varied from 61-68%.

According to the world medicine situation (WHO, 2004a) there are several factors that limit access in terms of availability and affordability to effective treatment. Some of these are failures in health financing mechanisms, adoption of ineffective medicine policies, unreliable distribution systems, with the major obstacle remaining cost. Penchansky & Thomas (1981) describe the term access as a general concept with several dimensions such as availability, accessibility, accommodation, affordability and acceptability, between the patient and the health system. This survey aimed to identify access in the level of availability and affordability of essential medicines and to evaluate medicine prices in order to understand to what extent medicine prices are affecting access to essential medicines in São Tomé and Príncipe and to highlight possible approaches.

4.1- Medicines availability

The national essential medicines list concept could be resumed to a limited range of medicines adapted to the local and national environment needs, selected in order to meet priority health care problems with the aim to increase access, efficiency, better health and equity. The survey in São Tomé and Príncipe identified that only 55% and 24% of medicine outlets, respectively in the public and private sector, stocked these priority and in some cases life saving medicines. Just the NGO sector formed of single medicine outlet presented a high (82%) availability on the day of the data collection of the essential medicines studied. When analysing percent availability of essential medicines belonging to the National EML (n=32) similar results were found with a slight increase in the lowest price generics availability and a decrease in originator brand products in the private sector.

Furthermore the large variations of standard deviation values illustrate there were large variation in percent availability of individual medicines across medicine outlets.

The “very low” availability of originator brand products as opposed to higher availabilities of lowest price generics in all sectors reflected larger familiarity with generics products. The fact that only 2% originator brand products were available in the 32 medicines outlets in the public sector, none in the NGO

sector and less than 10% in the private sector suggested that generic policy guideline has been followed both by public procurement and potentially doctors prescribing.

Further analysis on medicine availability across the areas surveyed showed important regional inequalities in access not only in terms of availability but also in terms of economical and geographical barriers as it will be discussed below. Except for the district of Mé-Zochi (Area II), presenting the highest public (70%) and private (37,8%) sector per cent availability of all health districts areas (Figure 8); all the other geographical areas had shown low or moderate availability of the essential medicines surveyed in the public sector and low or very low availability in the private sector. Survey area V representing the Island of Príncipe, presented the poorest availability of all country districts both in Public (35%) and Private Facilities (8,2%). This area is as well the one more isolated (150 km from Island of São Tomé), only accessible by boat or airplane twice a week which increases their limitations of access to effective treatments. Furthermore, and also related to this geographical (in)accessibility, this was the district presenting the most expensive medicines with median prices ratios almost three times (2,71) higher than the International reference price. These findings are even more dramatic when taking in consideration that according to the United Nations STP country assessment (UN 2005) this district has 60 % of its population living below the poverty line.

In the district of Água Grande (survey Area I) where the capital city São Tomé is located and 37% of the country's population lives, only 49,7 % of the essential medicines surveyed were found in its seven public health facilities. Since the country's biggest hospital is included in area I, to understand if these results would be reflecting the hospital reality, a separate analysis was done which showed that the hospital availability on generic products was 69% and therefore did not follow the striking results found in the rest of the District. This result can be a potential insight, due to the hospital's financing, procurement and supply system which are different from the rest of the public health facilities. The hospital pharmacy is financed directly by the MoH and makes an annual estimation order and procures its medicines directly from the procurement central stores.

The other two survey areas III (district of Caué and Cantagalo) and Area IV (district of Lembá and Lobata) presented around 60 and 53 % of availability. According to IPAD (IPAD, 2005) districts of Lobata, Lembá and Água Grande have an autonomous management of medicines and remaining health care services. Districts of Mé-Zochi and Cantagalo expenditures and cost recovery funds are managed by the IMVF-NGO within the umbrella of the Health for all Project. In order to develop a closer understanding of a possible correlation of these health care services management differences and the low availability found, the availability of the district of Cantagalo was analysed separately from Caué. The percent availability found was considered “moderate” in the district of Cantagalo as opposite of “low” in the district of Caué.

Therefore, major differences between the two types of health system recovery cost management are evident, but why do these differences exist?

Several different causes are likely to exist. One of the options could be that the management of those three healthcare systems where lower availability was found, prioritize funds for other health services or recurrent expenses instead of primary care medicines. Nevertheless, is important to mention that medicine prices already include mark ups to cover overhead expenses and medicine costs, therefore, even if under budgeted, medicines should be self-sustained, specially because the majority of the population pays for their medicine.

Another possibility, could be that there was a lower demand which would lead medicine outlets not to stock several of the products surveyed or to have their stock loss increased, for example, due to expiring medicine dates. Supporting this possibility is the fact that in the north of the country (Area IV) at least 70, 6% of the population lives on less then 1 \$USD a day (UNDP 2005). Nonetheless this would not explain the big discrepancies also found in the survey Area I district of Água Grande.

4.2- Public procurement efficiency

In order to analyse procurement efficiency, medicine prices were expressed as a ratio of reference prices from the MSH drug prices indicator which according to WHO/HAI (HAI/2008) use the most standard, frequently up to date, available and relatively stable prices data.

In general, public procurement systems were considered efficient at the central procurement stores IMVF-NGO and C. Taiwan. In contrast, Fundo Nacional do Medicamento's median ratio of procurement prices were approximately 13% higher than MSH International Reference (MSH, 2007), which according to WHO/HAI methodology reflects an inefficient procurement (MPR>1).

In all central procurement stores a big proportion of medicines were found to be procured at expensive prices with median price several times higher than 1 (Figure 3 and 4). Large differences on procurement prices of the same medicines were observed despite medicine procurement tender documents collected attested that procurement was made from the same non-profit supplier IDA. Figure 3 showed examples of seven of these medicines. While this form of analysis include assumptions that may affect its outcome, these comparisons should work as indicators that need to be analysed as a course for further action. Reasons which could be behind this result will be discussed in the next paragraphs.

Management of Sciences for Health (MSH, 2007) describes three critical factors in pharmaceutical procurement: quality, supplier reliability and medicine prices. All the procurement agencies of São Tomé and Príncipe use as main supplier IDA meaning they already warrant quality and in most of the times reliability without having to choose between one or the other, so why are medicines procurement prices high in the medicines described?

According to Levison L. (2003), the base price¹³ of medicines varies and it is dependent of several determinants such as market intelligence (buyer familiarity with international prices, knowledge of associated costs and ability to discuss and demand for fair prices), volume of consumption, tender format/ level of competitiveness, financial stability, and national policy on subjects like medicines under patent.

São Tomé and Príncipe, with a small purchasing power due to their limited resources and population size use a single or limited source of tender as opposed to larger countries that can procure through mixed sources where the lowest price along with quality assured medicine can be efficiently procured. The selection of which medicines to procure and in which quantities and frequency, in order to decrease the number of stock outs, expensive

¹³ Base price refers to the manufacturing selling price

emergency orders or to limit the number of wasted medicines, is directly related to more than one of the determinants of the base price mentioned and is an example of possible explanations for the differences and high procurement prices found.

The burden of disease and drug use pattern can also be reasons for medicines such as Phenytoin (procurement MPR of 9), not so frequently prescribed, to be purchased in both procurement stores at such higher prices. However this would not explain the non competitive price (MPR>1) found for medicines such as metronidazol 250mg tablets, mebendazol100 mg tablets or paracetamol 24mg/ml suspension first line treatments for different medical conditions in STP.

In maximum values of procurement price ratios the differentials found were 9,64, 10,42 and 7,62 times higher than the International reference price, respectively for FNM, IMVF and C. Taiwan. The high ratios of medicines like Promethazine tablets may indicate that a less expensive source is available or that as in this specific case a high increase in supplier price from 2007 (\$0,0046) to 2008 (\$0,0287) occurred, and not necessarily that IMVF, C Taiwan and FNM are not being efficient in procuring these (see Limitations section).

4.3 - Medicines Prices

According to the results obtained from this national survey, a large degree of price variation was found in each sector, between the three sectors surveyed and between originator brand products and their equivalent lowest price generics.

Unlike procurement analysis where the cut off value of MPR is easy to define. In the public, private and NGO sectors there is not a standard MRP cut off point for each patient and prices are defined as high, low or correct. In this survey the MPR superior to 1,5 were regarded as expensive following previous survey's from WHO/HAI where a large number of countries results were compared (Geldes et al 2005) and from which methodology were already field-tested in many other countries and validated in various studies (HAI, 2008).

Therefore, public sector lowest price generics prices analysed in comparison with international reference presented a median of 2,36 times the international reference price and ranged from being 0,09 times cheaper to significantly more

expensive, 14,15 times higher, than the reference price. In total 76% of the medicines surveyed were considered expensive.

The regional variation found in median MPR started to be discussed along with the regional availability results above. The large variations found between 25th and 75th percentiles price ratios among the different survey areas may indicate that public facilities are not charging the same prices for the same medicines and that different mark ups are likely to exist, national and regional wide. Since procurement efficient prices were not reflected in final retail price in the public sector, these large mark ups also raise questions whether all public facilities are committed to providing medicines at the lowest possible prices or if some of the high differences imply that many public facilities are generating income through essential medicines.

In the end, these results confirm the absence of effective price monitoring and control mechanisms to ensure price equity in the public sector.

In the Private sector all, medicines prices found (including generic and originator brand) products, except for Ceftriaxone 1g injection, were to a great extent higher than the acceptable MPR of 2,5 with median MPR medicines superior to 53 for OB and 13,76 for the LPG. The retail price results revealed extreme variations between individual medicines, and maximum MPR of superior to 286 (OB) and 107(LPG) higher than MSH reference price. OB products, five times more expensive than their equivalent LPG, with cases where they cost 2000% more, are largely unaffordable for the majority of the population and mixed with the low availability of medicines found in this sector, call for urgent further investigations and show the inexistence of governmental control on medicine mark up, profits and retail prices.

However, if individual private sector data regarding number of products available on the survey date ranged from having 4 to 33 (median value was 15) products in stock (considered very low in international terms), with higher and much cheaper similar medicines available in the public sector why are private prices so high in resource-poor settings like São Tomé ?

Do the higher ratios represent high private procurement selling price or high add on/ mark ups cost or both? In the four medicines where price structure was investigated in one of private retail pharmacies surveyed (table 12), the answer

was both since expensive private procurement price along with the increased mark-ups and increased profit margins were observed.

Regardless of the rationale for these high prices they assume greater importance in terms of the restriction of access to essential medicines with very low availability in the public sector like the ones presented in Table 6 or in examples like Diclofenac 50mg (91 times more expensive than international reference price) and Simvastatin 20mg (46,49 higher than its IR price) which were only available in the private sector.

The government of São Tomé and Príncipe established a ceiling price of 40% maximum of retail mark up on selling price¹⁴, however since this is not controlled increased percentages were found instead.

The antimalarial combination treatment Artesunate 50mg+ Amodiaquine 153mg was described as highly available in the public sector presenting a per cent availability of 87% and very cheap, each tablet costing 0,09 times less than the international reference price both in public and private sector. These findings make explicit what was already known that a well coordinated malaria control intervention, funded by Global Fund and supported by bilateral and multilateral organizations in São Tomé and Príncipe was effective and led to remarkably progress towards the ending of malaria morbidity and malaria deaths (WHO 2008). This shows that access to effective treatment coordinated with effective interventions can really result in important public health impacts in São Tomé and Príncipe.

The other two anti-malarial medicines surveyed are both under patent, one is Fansidar®, which was found to be dispensed for free in all facilities which only pregnant women are entitled to, the second one is Coartem® sold only as second line treatment and costing 2,9 times higher than international reference price, which was considered expensive.

4.4 - Treatment affordability

Analysing affordability by comparing the cost of a full course of treatment with the daily wage of the lowest unskilled government worker is particularly important especially because it studies individual ability to pay rather than

¹⁴ Retail selling price – refer to the total cost of the medicine to private or public pharmacies including overhead costs and profit margins.

making a comparison with an international Indices price. The monthly wage of the lowest paid government worker identified was 544500 Dobra¹⁵, 18150 dobra a day¹⁶, (\$ 1,25 USD/ day). However since approximately 54% of São Tomé and Príncipe population lives on less the \$ 1 US dollar a day, even treatments that “this” lowest paid government worker could afford will not be affordable for more than half of the population. Treatment affordability was analyzed in conjunction with availability data to understand if treatments identified as affordable in one sector wouldn’t need to be purchased in another more expensive sector due to low availability. Usually patients had the option to chose between procuring lowest price generics and to purchase them in the public sector where they were considerably more affordable, except for Hypercholesteremia management since Simvastatin tablet were only available in the private sector costing 45,5 days wage and for treatments with Omeoprazole. Omeoprazole 20mg tablets lowest price generic was considered affordable among the public and NGO sector (0,7 days wage) although its availability was half of the availability in the private sector where the cost of one month of treatment of a peptid ulcer would required 41days of work. Its alternative, Cimitidine tablets had a higher availability in the public sector where they were also affordable however it has been shown that to reduce gastric acid production Omeoprazole was more effective and heals duodenal and peptic ulcers more rapidly than Cimetidine. These example could bring into discussion a very important issue: access to treatment versus access to the most effective treatment in developing countries context.

The results observed with the antibacterial medicines included in the survey are of big concern since bacterial related diseases are major causes of morbidity and mortality in São Tomé and Príncipe and the majority of the antibiotics surveyed normally used to treat major infection diseases were unaffordable for a large proportion of the population since all antibacterial cost more then one day wage.

Affordability studies are also particularly important in São Tomé and Príncipe for chronic diseases such as hypertension, diabetes and asthma which are major conditions of infirmity and required long term monthly treatment and often multiple medications for adequate management. Anti- hypertensive’s were

¹⁵ Net salary after all compulsory deductions of charges and taxes

¹⁶ WHO/HAI,2008 defines in monthly to daily translation, one month as having 30 days;

generally considered affordable except for treatments with Nifedipine retard. However, since normally effective blood pressure control required multi-therapy, treatment cost were then equivalent to more than one day of wages of the lowest-paid government worker; and therefore, unaffordable. Considering for example Atenolol 50 mg and Hydrochlorothiazide 50 mg, one tablet of each per day for 30 days, for high blood pressure control, the cost will increase to a median of 1 day wage for lowest price generic and 5,8 days for originator brands.

Simultaneously, regarding the drug management of asthma, Salbutamol inhaler was unaffordable for the large majority of the country's population, and while its alternative Salbutamol 4mg tablets was more available and affordable costing 0,4 days of wage to procure a full monthly treatment, it is less efficient with larger side effects (BNF, 2005). Furthermore, asthma control is also common to require a combination of steroids with short-acting beta2 agonists like Salbutamol which would increase the number of day wages required to afford a full treatment resulting in decreased access to effective treatment.

Monthly diabetes management with Metformin had an increased difficulty in access both in terms of affordability and availability since it would require 2,4 days wage in the public sector (as opposed to Glibenclamide 0,5days) present "very low" percent availability.

The situation is aggravated when more than one medical condition requires treatment or when the same daily wage needs to pay other family members chronic or acute conditions.

An hypothetical situation of a family with more than one health condition such as a father with diabetes and hypertension and an asthmatic child with an acute asthma crisis is demonstrated in Table 12.

Table 12 - Theoretical expenses for treatment of family with two chronic and one acute condition in the public and private sector expressed in number of days wages

MEDICAL CONDITION		TREATMENT	NUMBER OF DAYS WAGES	
			<i>Public LPG</i>	<i>Private LPG</i>
Father	Diabetes	Glibenclamide 5 mg 2 tab/day x 30 days	0,5	6
	Hypertension	Captopril 25 mg 1 tab/day 30 days	0,5	9,9
		Nifedipine Retard 20mg once daily	1,3	8,3
Child (20kg)	Acute asthma exacerbation	Salbutamol 0,1 mg inhaler (200 doses)	2	n/a
		Prednisolone 5 mg 2mg/kgx3days	0,4	2,6
Total			4,7	26,8+2=28,8

Treatment with the lowest price generic was clearly unaffordable with 5 and 29 days of wages required to purchase the full treatment, respectively on the public and private sector.

For a more realistic analysis of the economic impact of essential medicines in a family of São Tomé and Príncipe, other factors should be acknowledged. Firstly, the analyzed costs were only referring to medicine purchase but since the public sector is organized on a cost recovery system consultation fees and diagnostic tests would considerably increase the total treatment expenditure. Thus according to last country census (INE, 2001) 54% of the household do not have any family member employed. The situation is worse in the rural areas and the areas more distance from the city of São Tomé where the number of people per household is higher, unemployment rates are higher and medicine prices were found to be higher at the same time that mean percent availability found was lower. Finally, adding to the fact mentioned that 54% of National population lives on the poverty line level, according to UNDP Country Assessment (UNDP, 2005) 74,8% of family income is for food expenses, and 79,1% of the extreme poor's income, can indicate that even what was defined in the study as affordable treatment (less than one day wage \$1,25 USD, approximately 18355 dobra/day) is not affordable for more than half of the countries population.

4.5 - Medicine price components, cumulative mark ups & hidden costs

The small breakdown on private sector component prices and the comparative analysis of Ciprofloxacin tablets mark up and add on costs made in the three different procurement and supply chain system, despite being very small and non representative of the country's situation have shown that at the same time, the existence of differences already suspected among government mark ups and the private pharmacy surveyed, and in addition that the mark-ups found both in LPG and OB products despite being very high (61-68%) were not of the same degree as differences in prices discussed before regarding private prices suggesting the existence of high private procurement costs.

Levison (2003) explains that medicine costs are a combination of manufacturing's base price with hidden costs. These hidden costs include cost of international transports, insurance and freight, storage, customs duties, import tariffs and taxes, domestic handling, financial charges, wholesalers and retails mark ups, stock losses, and inefficient procurement practices. Table 13 shows examples of hidden costs in eight different developing countries where a complete medicine component price survey was made.

Table 13-- Hidden costs on pharmaceutical procurement in eight other countries

	Sri Lank ^a	Kenya	Tanzania	South Africa	Brazil	Armenia	Kosovo	Pune, India	Mauritius
Import tariff	0%	0%	10%		11.7%	0%	1%	0%	5%
Port charges	4%	8%	1%				4%	0%	
Clearance and freight		1%	2%						5%
Pre-shipment inspection		2.75%	1.2%						
Pharmacy board fee			2%						
Importer's margins	25%						15%	25%	
VAT				14%	18%	20%	0%		
Central govt tax								4%	
State govt tax					6%			9%	
Local town duty								1.5%	
Wholesaler	8.5%	15%	0%	21.2%	7%	25%	15%	10%	14%
Retail	16.25%	20%	50%	50%	22%	25%	25%	15%	27%
Total markup	63.97%	54.22%	74.3%	74.05%	82.38%	87.5%	73.64%	81.94%	59.26%

Source: Levison & Laing 2003; *The hidden cost of essential medicines*; Essential Drugs monitoring, Vol. (33)

Perez-Casas & Herranz (2001) states that these hidden costs can double the manufacture's price. In fact this was what was found in São Tomé and Príncipe where there was a wide variation in governmental mark-ups and patient final price. Public mark ups ranged from 31% to 78% in the case study presented (Table 11) and from 96% to approximately 145% in general for the matched pairs surveyed. Thus, although local agents (pharmacy technicians or nurses) have officially published price lists with recommended patient prices, the final price is left at the discretion of the retailer in the public sector.

While certain constraints over manufacturing's base price are outside São Tomé and Príncipe government the majority of the costs incurred within the hidden costs arise from two sources: government policies or/and procurement practices (Levison, & Laing, 2003). Both are the governments' responsibility to control and are either government imposed or government regulated. This fact can be seen as an advantage since this means that the São Tomé and Príncipe government have the opportunity (and moral duty) to improve access on essential medicines, by significantly decreasing or eliminating the local price inflators such as eliminating taxes and tariffs on medicines, port charges, CIF, handling and clearing fees, duty taxes, etc. By reducing this hidden costs the government would be able to increase its purchasing power parity and in consequence improve access to essential medicines to a greater number of people.

4.6 - Survey Limitations

The sample chosen could be one of the key methodological issues, since international medicine comparisons are extremely sensitive to choices like sample selection, unit of measurement for price, weight given to consumption patterns, representative sample of products (Danzon 1998). However, Madden, (2006), validation study results confirmed the strength and appropriateness of the WHO/HAI standard approach and the WHO/HAI “core list” of medicines seems to be well selected and adequate for the purposes of medicine price surveys. The supplement list was pre-tested to increase accurateness with the STP situation and since major comparisons were used to draw conclusions about price differentials within the country the only major impact of this limitation would be regarding availability data.

Two methodology limitations were encountered regarding procurement efficiency certification related to the reference price comparisons. The first one was the fact that the MSH reference prices used were the ones gathered from the previous year (2007), which means that for a limited number of medicines where procurement is done from a single tender, like in São Tomé and Príncipe public procurement, if supplier price suffers a high increase, medicines which made have been procured efficiently are compared with lower international reference price and will present higher procurement MPR. These was the case of Promethazine tablets which price had increased from (\$0,0042/unit to \$0,0287/unit).

Even low cost bulk generics on the international market vary in price. The fact that procurement was made only from a single tender IDA, and that IDA prices can be sometimes higher other times much lower than MSH International price references (which are the median of all prices reported from qualified sources), these MSH procurement median reference prices can be slightly altered, which could introduce bias in survey procurement ratios analysis.

However, In spite of both of the limitations described above, according to WHO/HAI (2008) MSH has been considered the most reliable and relatively stable source of reference prices.

Other limitations were related to the investigation regarding the price components where greater difficulty was found compiling the required data.

Inconsistencies in the information collected were common depending on the person interviewed, which led to the need to interview different people on the same issue for more accurate information. The fact that prices differed between shipments, orders, urgency, level of stock, instability in STP currency (dobra) made it more difficult to express accurate evaluations on unit prices. To overcome this limitation component total prices and percent mark-up of each stage was presented and not all operational costs were completely discriminated.

This survey highlighted the urgent need for future reflection and priority areas for action by ministry of health and relevant stakeholders. The following priority lines of action were identified:

⇒ TO ESTABLISH AND IMPLEMENT A NATIONAL MEDICINE POLICY

A national medicine policy will increase level of transparency and uniformity in prices and should include other related actions guided towards improving equity in access; better quality and rational use of essential medicines. National medicine policy should focus on:

1) Effective selection of essential medicines for the NEL:

Collect epidemiological information about the incidence or prevalence of national conditions and available treatments; promotion and increasing number of standard treatment guidelines specially for high prevalence diseases where standard treatment should be guided through cost-effectiveness choices;

2) Increase public procurement efficiency

- Improve procurement and supply chain management by implementing an accurate needs assessment which will allow i) accurate product selection; ii) optimum quantities to order; iii) decreasing continuing costs on emergency orders due to previous ordering of insufficient or wrong quantities; iv) decreasing the number of orders will increasing volume expertise of medicines in each order, decreasing costs with transporting, insurance handling fees, overheads, and will increase procurement store purchasing power.
- Institute a competitive tendering using a restricted tender system of prequalified suppliers with price transparency.
- Linkages and potential benefits of a national pooled procurement system including supply and procurement for the private sector in order to reduce procurement prices and increase medicine availability should be further investigated.

3. Strengthen the distribution system

- Improve capacity building and training of human resources;

- Improve the exchange of information between health facilities and procurement offices on medicine availability, consumer patterns and improve the level of transparency. This will help both to avoid out of stock out problems in the public health facilities and decrease spending on expired data medicines;
- Monitor and control mark-ups to ensure economic viability of the supply chain.

4. *Reliable Financing*

- Revision of public procurement sector financing providing a stable and independent financing mechanism to Fundo Nacional do Medicamento central store;
- Government needs to allocate funds on time to prevent stock outs that will affect all the supply chain and decrease access.
- Implement a regular monitoring of medicine prices, availability and affordability system of public, private and NGO sector.
- Investigate about possible alternative health system schemes, increasing of exemptions or differential fee systems to cover unaffordable or unavailable medicines for the poorer and for treating, in particularly, chronic diseases.

⇒ TO IMPLEMENT NEW PRICE REGULATIONS AND STRUCTURE

Government should improve medicine price regulations and decrease prices in the public and private sector reducing burden with medicines by controlling mark ups and removing medicines taxes and tariffs in all sectors.

⇒ FURTHER RESEARCH

Further studies need to be undertaken, such as:

- i) In-depth studies to determine other reasons for poor availability of medicines in STP especially due to the fact that this survey focused narrowly on availability at a single point in time rather than collecting a medicine data portfolio over time.
- ii) A broader look at medicine price components surveyed to include more than on private pharmacies and where cumulative mark ups of each medicine stage are more detailed.

- iii) Increase availability of statistical public health data to decrease the scarce information available on communicable and non communicable diseases data, which will help increase more accurate knowledge of diseases and essential medicine needs.
- iv) Repeat surveys such this one at suitable intervals where monitoring new policies effectiveness and realistic pictures of population access to essential medicines are assessed.
- v) Further research is needed on the best way to control mark-ups and how to streamline all add-ons in all the public and private sector. While some developing countries have implement what is described as regressive mark-ups for both wholesalers and retailers (i.e. as the medicine price increases, the mark-up decreases), others choose to charge a low fixed dispensing fee with a regressive mark up. São Tomé and Príncipe government and stakeholders should investigate which type of price mark up regulation will work better.

The present study has shown that in the Democratic Republic of São Tomé and Príncipe there is a large degree of difference in terms of access to essential medicines. Poor availability of medicines in the public health facilities, as well as many unaffordable prices in the three sectors surveyed, for both generic and originator brand medicines, are barriers to accessing effective treatments for a very high proportion of the population of São Tomé and Príncipe.

The excessive cost of essential medicine prices indicates that this important obstacle needs to be tackled since it affects all the other components of medicine access. From the results of this survey it can be concluded that 76%, 80% and 98% of lowest price generics in the public sector, NGO and private were considered expensive with median MPR of 2,4, 2,5 and 13,8, times respectively higher than the international reference price.

Efficient public procurement was not always reflected in patient prices. High procurement prices were found in all the three central medical stores in addition, there was a large degree of variability in terms of several individual medicines and large gaps between minimum and maximum ratios. The magnitude of these variations was difficult to explain, however, it was concluded that manufacturing selling price was not always the most relevant factor for the final price of a medicine. Distribution costs were considered very high, with mark-ups sometimes more than doubling the procurement price in the public sector and private sector. High medicine prices were thought to be related with unregulated add on costs and accumulated mark ups along the distribution chain.

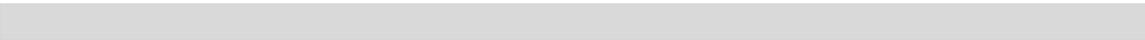
Urgent improvements in medicine availability are needed in public and private sectors. While generic medicines have been accepted in the country; they were more available than originator brands in all sectors, availability remains poor and substantial regional inequities were found.

Thus, several of the essential medicines surveyed (generics and originator brands) were unaffordable not only to the lowest paid government worker but for the majority of the population of São Tomé. Low affordability was observed for treatments of common medical conditions like hypertension, asthma, and bacterial diseases. This situation was aggravated for medicines which were not available or had lower availability in the public sector.

São Tomeans are affected twice; by high prices of medicines and by lack of social protection which inevitably leads them to have to pay for their medicines something that is not feasible for the majority.

Ensuring public sector availability and affordability of essential medicines is the government's responsibility. There are a variety of policy and technical options that STP government and health system can develop and implement to address its population needs. Coherent medicines procurement strategies supported by national policies and review of the essential medicine supply chain can allow more reliable and consistent access to available and affordable medicines. Prices should be reduced by improving purchasing efficiency, eliminating taxes and regulating mark-ups which would result in enlarged public health savings, increased purchasing power parity, decrease of preventable morbidities and mortalities causes (Mendis 2007). Adequate funds for procurement, distribution and quality assurance is critical and public procurement should not be done in *ad hoc* nature.

Furthermore, It is essential to assess the contributing factors before deciding on the best option to implement. Measuring and monitoring price; availability; affordability of essential medicines; and cooperation among the relevant stakeholders, NGO and private sector will be critical when deciding the best strategies to develop, implement, and enforce realistic policies. These policies should address the widespread need to attain equitable access to affordable essential medicine prices in São Tomé and Príncipe.



REFERENCES

- Ahmad, K. (2002); *Access denied to essential medicines in developing world*; The Lancet (02):2711
- *British National Formulary* 50 2005; British Medical Association & Royal Pharmaceutical Society of Great Britain, London.
- Dean AG, Sullivan KM, Soe MM 2006. *OpenEpi: Open Source Epidemiologic Statistics for Public Health, Version 2.2.1*, [online] available at: www.OpenEpi.com, accessed May, 2008.
- Danzon PM; Kim, JD 1998; *International price comparisons for pharmaceuticals. Measurement and policy issues*; *Pharmacoeconomics*; Vol:14 supp1:115-28,
- Foster, S. 1991; *Supply and use of essential drugs in sub-Saharan Africa: some issues and possible solutions*; *Social Science & Medicine*; Vol.32; N°11; pp.1201-1218
- Gelders S, et al 2006 *Price, availability and affordability; An international comparison of chronic disease medicines*, World Health Organization and Health Action International.
- Health Action International 2008; *The Medicine Prices and Availability survey manual; WHO/HAI; 2nd Edition*;
- International Monetary Fund 2008; *São Tomé and Príncipe: Poverty Reduction Strategy Paper Progress report*; IMF Publications; Washington, D.C; May 2008;
- *International WHO regional office for Africa; Afro essential medicines price indicator*; Available from: www.afro.who.int/dsd/afro-essential_med_price_indicator.pdf (accessed Nov, 2008).
- IPAD (2005); *Indicative Cooperation Programme Portugal/S. Tomé e Príncipe 2005-2007*;
- Instituto Nacional de Estatística, São Tomé e Príncipe, 2003, *III Recenseamento Geral da População de 2001*, INE, INE-Portugal, São Tomé.
- Levison, L. 2003; *Policy and Programming options for reducing the procurement costs of essential medicines in developing countries*; Concentration Paper, [online] Available at: http://dcc2.bumc.bu.edu/richard/IH820/Resource_materials/Web_Resources/Levison_hiddencosts.pdf (accessed Sep, 2008) ;
- Levison, L.; Laing, R. 2003; *The hidden cost of essential medicines*; *Essential Drugs monitoring*, Vol 33.
- Maps of the world (2007); São Tomé and Príncipe map; [online] available at: <http://www.mapsoftheworld.com> [accessed Nov, 2008].
- Madden, J 2006; *WHO/HAI Project on Medicine Prices and Availability- Peru Validation study report*; Harvard Medical School, USA; [online] Available at: www.haiweb.org/medicineprices/manual/18042008/PeruValidationReportfinal.pdf; (accessed Sep, 2008)
- Mendis S. et al; *The availability and affordability of selected essential medicines for chronic diseases in six low- and middle-income countries*; *Bull World Health Organ*. 2007 Apr;85(4):279-88
- MSH 2007; *Management Sciences for Health International Drug Price Indicator, 2007*; MSH & WHO, UK-DIFID, Medicines Transparency Alliance, [online] available: erc.msh.org/mainpage.cfm?file=1.0.htm&module=Dmp&language=English
- Olcay, M; Laing, R. 2005 *Pharmaceutical Tariffs: What is their effect on prices, protection of local industry and revenue generation?*; Paper Prepared for The Commission on Intellectual Property Rights, Innovation and Public Health;
- Penchansky R., Thomas, JW, (1981); *The concept of access: definition and relationship to consumer satisfaction*; *Med Care*; 1981 Feb, 19 (2):127-40

- Perez-Casas C, Herranz E, Ford N. *Pricing of drug and donations: options for sustainable equity pricing*. Trop.Med.Int.Health, 2001; 6(11): 960–964.
- Oanda.com São Tomé currency converter; [online] available at <http://www.oanda.com/convert/classic>; assessed (9/06/2008)
- World health organization 2004, *The World Medicines Situation*, WHO, [online] available at: <http://www.who.int/medicinedocs/en/d/Js6160e.7/#Js6160e.7> (accessed April, 2008)
- UN--São Tomé and Príncipe 2006; United Nations Development Assistance Framework in São Tomé and Príncipe (2007 – 2011); São Tomé;
- UNDP 2006, *Country programme document for São Tomé and Príncipe 2007-2011*, Geneva, [online] available at: [www.undp.org/africa/programmedocs/Sao%20Tomé%20and%20Príncipe%20-%202007-2011%20\(English\).pdf](http://www.undp.org/africa/programmedocs/Sao%20Tomé%20and%20Príncipe%20-%202007-2011%20(English).pdf); (accessed August, 2008);
- UNDP 2005, *Human development reports*; [online] available at URL: <http://hdr.undp.org/en/statistics/>; (accessed August, 2008)
- Wagner, JL.; McCarthy, E. 2004, *International Differences in Drug Prices*; Annual review of Public Health; Vol. 25, pp 475-495;
- WHO 2004b; *WHO Medicines Strategy 2004-2007*. Geneva, available at URL http://whqlibdoc.who.int/hq/2004/WHO_EDM_2004.5.pdf, (accessed April, 2008)
- WHO 2005; *São Tomé: update of national poverty reduction strategy*, [online] available www.who.int/hdp/database/country.aspx?iso=STP, (accessed April, 2008)
- WHO 2005; *Estratégia de cooperação da OMS com República Democrática de São Tomé e Príncipe 2006-2009*; Available at URL: www.who.int/countryfocus/cooperation_strategy/ccs_stp_pt.pdf (accessed April, 2008)
- WHO 2007, *Model List of Essential Medicines*, [online] available at: <http://www.who.int/medicines/publications/essentialmedicines/en/index.htm> (accessed April, 2008)
- World Bank 2008; *World Development Indicators database*, [online] Available at URL: www.ddp-ext.worldbank.org; (accessed August, 2008);
- World Bank (2005), *Country Assistance Strategy for the Democratic Republic of São Tomé and Príncipe 2000-05*. Washington DC; May 2005 (Report N° 32078)
- WHO 2008, *The world malaria report 2008*, WHO Press, Switzerland

ANNEXES

ANNEX 1

- QUESTIONNAIRE: STRUCTURES & PROCESSES OF COUNTRY PHARMACEUTICAL SITUATIONS¹⁷

Country: São Tomé and Príncipe (AFRO)		Date (dd/mm/yyyy) : 17/7/2007
Name of coordinator/principal respondent : Marcelina Quaresma José da Costa		E-mail address : marcelina.costa@yahoo.com
Position : MOH Chief of pharmaceutical department		Postal address : B.P. 23 Ministerio da Saúde
Questions	Responses	Explanations
1. NATIONAL MEDICINES (DRUGS) POLICY (NMP) Please consult the health ministry, medicines regulatory authority and/or medicine service in answering the questions in this section.		
1.1 Is there a National Medicines Policy (NMP) document? <i>If no, skip to 2.</i>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	A national medicines (drug) policy document is a written expression of the government's medium to long term goals and priorities for the pharmaceutical sector and the main strategies for attaining them.
a) If yes, is it an official or draft document?	<input type="checkbox"/> Official <input type="checkbox"/> Draft <input type="checkbox"/> Don't Know	Mark "official" if the NMP document has been endorsed or officially adopted by the government otherwise mark "draft".
b) What year was it last updated?	Year <input style="width: 50px;" type="text"/>	Indicate the year of last update whether the document is still in draft form or has been officially adopted.
1.2 Is there an NMP implementation plan that sets activities, responsibilities, budget and timeline?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	
a) If yes, when was it last updated?	Year <input style="width: 50px;" type="text"/>	

¹⁷ Translation from the original document in French into to English

Questions	Responses	Explanations
2. REGULATORY SYSTEM Please consult the medicines regulatory authority in answering the questions in this section. Specific information regarding medicines tested for quality control purposes and monitoring of adverse drug reactions may need to be obtained from the quality control laboratory or the responsible agency/department.		
Regulatory authority		
2.2 Is there an existing formal medicines regulatory authority?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	<p>This question is asking if there is a formal regulatory body with existing staff and a specific budget for conducting relevant medicines (drug) regulatory functions.</p> <p>Mark "no" if medicines regulatory functions, such as registration and licensing, are performed on an ad-hoc basis by an office, group or department that performs other pharmaceutical service functions, such as supply management and procurement.</p>
2.3 What are the sources of funding for the medicines regulatory authority: Regular budget from the government:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	
Fees from registration of medicines:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	
Other:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	
2.4 Are there legal provisions requiring transparency and accountability and promoting a code of conduct in regulatory work?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	<p>This question is asking whether there are legal provisions (or legislation) requiring the regulatory authority to:</p> <ul style="list-style-type: none"> - Define its policies and procedures in writing and publish the written documentation, - Give reasons for decisions to affected parties, - Account for its conduct and actions to individuals or groups and ultimately to the public, and - Follow a code of conduct in conducting its regulatory functions.

Questions	Responses	Explanations
2.6 Is there a medicines regulatory authority website providing publicly accessible information on any of the following: legislation, regulatory procedures, prescribing information (such as indications, counterindications, side effects, etc.), authorised companies, and/or approved medicines?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	
Marketing authorization		
2.7 Are there legal provisions for marketing authorization?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	<p>This question is asking if there are legal provisions (or legislation) that describe the legal conditions under which marketing authorization should be conducted.</p> <p>Marketing authorization is an official document issued by the medicines regulatory authority for the purpose of marketing or free distribution of a product after evaluation for safety, efficacy and quality and/or after registration of a product for marketing.</p>
2.8 How many medicinal products have been approved to be marketed? (<i>count total number of unique dosage forms and strengths</i>)	Number DK	Tablets, capsules, injections, elixirs and suppositories should be counted in different strengths. For example, if Paracetamol (Brand X) 250 mg and 500 mg have been approved to be marketed, they count as two medicinal products because they are two unique strengths. Paracetamol (Brand Y) 250 mg and 500 mg are another two unique products.
2.9 Is a list of all registered products publicly accessible?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	Registered products are medicine products that have been evaluated for quality, safety and efficacy and thence authorised for marketing. In order to be publicly accessible, it should be available on the web or to anyone contacting the responsible authority.

Questions	Responses	Explanations
Licensing		
2.14 Are there legal provisions for licensing of the following:		This question is asking if there are legal provisions (or legislation) that describe the legal conditions under which manufacturers, wholesalers and distributors and importers and exporters are subjected to evaluation against a set of requirements and issued a permit to operate (license) authorising them to undertake specific activities.
<p>Manufacturers:</p> <p>Wholesalers or distributors:</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know</p>	<p>A wholesaler is a company that buys goods from a manufacturer or importer and sells them to retailers. The wholesaler may be an agent for one company only or deal with products from several companies. Manufacturers may also be wholesalers for their own products. In some countries, pharmacies may also have a wholesaler license.</p> <p>Distributors include wholesalers, retail pharmacies and medicine outlets.</p>
Importers or exporters of medicines:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	
Quality control		
2.19 Is there a quality management system in place?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	This question is asking if there is an officially defined protocol for ensuring the quality of medicines, including testing of medicines to be registered, collection and testing of samples, reporting results, corrective actions to be taken when poor results are found and preventative measures to be taken to reduce future incidence of poor results.
2.20 Are medicine samples tested for the following regulatory purposes:	<p>Medicines registration: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know</p> <p>Post-marketing surveillance: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know</p>	Post-marketing surveillance is testing medicine samples to assess the quality of medicines that have already been licensed for public use.
2.22 What is the total number of samples quality tested in the last calendar year?	Number <u>0</u>	This should include all samples tested whether in a quality assurance laboratory within the country or outside the country.

Questions	Responses	Explanations
2.23 What is the total number of samples tested in the last calendar year that failed to meet quality standards?	Number 0	This should include all samples tested that failed to meet quality standards whether the testing was done in a quality assurance laboratory within the country or outside the country.
2.24 Are there regulatory procedures to ensure quality control of imported medicines?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	This question is asking if there are standard operating procedures for ensuring the quality of imported medicine, such as reviewing dossiers, product evaluation and testing of imported medicine products. This may include donated medicines.
Dispensing and prescribing		
2.30 Are there legal provisions for the following:		<p>This question is asking if there are legal provisions (or legislation) that describe the legal conditions under which prescribers and the practice of pharmacy are licensed.</p> <p>Licensing is a system that subjects all persons to evaluation against a set of requirements before they may be authorized to prescribe medicines/practice pharmacy. It may include issuing an official permit and granting authorization to prescribe medicines/practice pharmacy by either the governing authority or the body regulating the exercise of the profession.</p>
Licensing and practice of prescribers:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	
Licensing and practice of pharmacy:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	
2.31 Is prescribing by generic name obligatory in the:		A generic name (international non-proprietary name - INN) is a non-proprietary or approved name rather than a proprietary or brand name under which a generic medicine is marketed. If prescribing by generic name is obligatory then prescribers are required to prescribe by generic name.
Public sector:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	
Private sector:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	

Questions	Responses		Explanations
2.32 Is generic substitution permitted at:			Generic substitution is the practice of substituting a product, whether marketed under a trade name or generic name, by an equivalent product, usually a cheaper one, containing the same active ingredient at the dispensing level. Mark “yes” if either generic substitution is required or if the dispenser is allowed to make a generic substitution in at least some instances.
Public pharmacies:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know		
Private pharmacies:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know		
2.33 Are there incentives to dispense generic medicines at:			Incentives may include dispensing fees or mark-ups which provide financial incentive for dispensers to dispense lower-priced generic medicines.
Public pharmacies:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know		
Private pharmacies:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know		
Promotion and advertising			
2.34 Are there provisions in the medicines legislation/regulations covering promotion and/or advertising of medicines?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know		<p>This question is asking if there are legal provisions (or legislation) that describe the conditions under which the promotion and/or advertisement of medicines may be conducted.</p> <p>Promotion and advertisement are activities that provide health workers and consumers with information about medicine products, particularly with the intent of encouraging health workers and consumers to use a particular product.</p>
3. MEDICINES SUPPLY SYSTEM			
Please consult the agency/department responsible for the procurement and supply of medicines in answering the questions in this section.			
3.1 Is public sector procurement pooled at the national level (i.e. there is centralised procurement for the regions/provinces)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know		Mark “yes” if public sector procurement is centralised and medicines are procured for the entire public sector by a national procurement body even if in some instances, such as cases of stock outages, public sector facilities procure medicines through other means.
3.2 Who is responsible for public sector medicines procurement and distribution:	<i>Procurement</i>	<i>Distribution</i>	
Ministry of Health:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK	

Questions	Responses		Explanations
Non-governmental organization (NGO):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK	<p>Mark “yes” for non-governmental organization (NGO) if government funds or foreign contributions are allocated to NGOs to procure or distribute medicines for the public sector.</p> <p>Non-governmental organizations (NGOs) are non-governmental, non-profit organizations, networks and voluntary associations including charities, community groups, faith-based organizations, professional associations, academia and trade unions.</p>
Private institution contracted by the government:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK	Mark “yes” for private institution contracted by the government if the government contracts or makes an agreement with a private entity to procure or distribute medicines for the public sector, e.g. if an agreement is made with a private company to distribute medical items and supplies to public sector district warehouses and health facilities.
Individual health institutions:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK	
3.3 What type of tender process is used for public sector procurement and what is the percentage of the total cost for each:		<i>Percentage of total cost</i>	Competitive tender is a procedure for procuring medicines which puts a number of suppliers into competition. Purchasing is done on the basis of
National competitive tender:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	_____%	National competitive tender is open to all or a limited number of local suppliers only.
International competitive tender:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK	_____%	International competitive tender is open to all or a limited number of local and international suppliers though sometimes conditions give preference to either local or international suppliers.

Questions	Responses		Explanations
Negotiation/direct purchasing:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> DK	_____ %	In negotiation/direct purchasing the buyer approaches one or a small number of suppliers and either buys at the quoted prices or bargains for a specific service arrangement.
3.6 Is public sector procurement limited to medicines on the Essential Medicines List (EML)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know		<p>An Essential Medicines List (EML) is a government-approved selective list of medicines or national reimbursement list.</p> <p>Essential medicines are those that satisfy the priority health care needs of the population. They are selected with due regard to disease prevalence, evidence on efficacy and safety, and comparative cost-effectiveness. Essential medicines are intended to be available within the context of functioning health systems at all times in adequate amounts, in the appropriate dosage forms, with assured quality, and at a price the individual and the community can afford.</p>
<p>4. MEDICINES FINANCING <i>Please consult the budget/ finance division of the health ministry and/or the pharmaceutical supply group in answering the questions in this section. The hospital/health facility service and/or the national social and insurance services may also need to be consulted.</i></p>			
4.1 What is the total public or government expenditure for medicines in US\$ for the most recent year for which data are available?	US\$ _____ Year _____		This question is asking for the total amount the government has spent on medicines, including government allotment, health ministry expenditure, donor contributions channelled through the government, etc.
4.2 Is there a national policy to provide at least some medicines free of charge (i.e. patients do not pay out-of-pocket for medicines) at public primary care facilities?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know		<p>If medicines are provided for free but patients must pay service fees, mark "yes" here.</p> <p>If some facilities provide medicines for free but there is not a consistent national policy that applies to all primary public health facilities, mark "no" here.</p> <p>If there is a national policy to provide medicines for free at primary public health facilities, but facilities are not required to abide by the policy and not all facilities provide medicines for free, mark "no" here.</p>

Questions	Responses	Explanations
b) Which of the following types of patients receive medicines for free: Patients who cannot afford them:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	
Children under 5 years of age:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	
Older children:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	Mark "yes" for "older children" if children over 5 years of age receive medicines for free, regardless of the age limit, for example mark "yes" if children under 12 receive medicines for free.
Pregnant women:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	
Elderly persons:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	
4.3 Which fees are commonly charged in public primary care facilities: Registration/consultation fees:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know	Registration and consultation fees are fees patients must pay for seeing a health professional for a health check-up and/or diagnosis regardless of whether or not medicines are prescribed.
Dispensing fees:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	A dispensing fee is a fixed fee that pharmacies are allowed to charge per prescribed item or per prescription instead of or in addition to a percentage mark-up. The dispensing fee is paid to the dispenser and is in addition to the cost of the medicine. Both the dispensing fee and the cost of the medicine may be paid in part or whole by the patient, insurer or government.

Questions	Responses	Explanations
Flat fees for medicines:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	<p>Mark "yes" for "flat fees" if either a flat fee for medicines or a flat fee per medicine item is commonly charged.</p> <ul style="list-style-type: none"> - A flat fee for medicines is a fee which remains the same irrespective of the number of medicines or the quantity of each medicine dispensed. Thus, for example, a patient receiving 3 medicines would pay the same as one receiving 1 medicine. Also a patient receiving 20 tablets of one medicine would pay the same as a patient receiving 100 tablets each of 2 medicines. - A fee per drug item is a fee where the patient pays one set fee per each medicine irrespective of the number of units (tablets) of that medicine dispensed. Thus, for example, a patient receiving one medicine would pay \$1 and a patient receiving 2 medicines would pay \$2 and a patient receiving 3 medicines would pay \$3 and so on. However, a patient receiving 10 tablets of one medicine would pay the same as a patient receiving 100 tablets of one medicine.
Flat rate co-payments for medicines:	Yes <input type="checkbox"/> <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	<p>A flat rate co-payment is a fixed amount that a patient must pay either per medicine or per prescription to cover part of the cost of medicines, the other part being paid by an insurer or government.</p>
Percentage co-payments for medicines:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	<p>A percentage co-payment is a fixed percentage of the cost of prescribed medicines that a patient must pay to cover part of the cost of medicines, the other part being paid by an insurer or government. The amount a patient pays will depend on the medicine and the number of units of that medicine prescribed.</p>

Questions	Responses			Explanations
4.4 Is revenue from fees or the sale of medicines used to pay the salaries or supplement the income of public health personnel in the same facility?	<input type="checkbox"/> Always <input type="checkbox"/> Frequently <input type="checkbox"/> Occasionally <input type="checkbox"/> XDK <input type="checkbox"/> Never			Mark “yes” if any percentage of collected fees or medicines sales is used to pay salaries, expenses and/or in any way supplement the income of public health personnel in the same facility.
4.5 Do prescribers dispense medicines?	<i>Public sector</i> <input type="checkbox"/> Always <input type="checkbox"/> Frequently <input type="checkbox"/> Occasionally <input type="checkbox"/> Never <input checked="" type="checkbox"/> DK	<i>Private sector</i> <input type="checkbox"/> Always <input type="checkbox"/> Frequently <input type="checkbox"/> Occasionally <input type="checkbox"/> Never <input checked="" type="checkbox"/> XDK	In answering this question, mark the degree of frequency doctors or other authorised prescribers dispense medicines in the public and private sectors irrespective of laws permitting or disallowing authorised prescribers to dispense medicines.	
4.6 What proportion of the population has health insurance?	<input type="checkbox"/> All <input type="checkbox"/> Some <input checked="" type="checkbox"/> None <input type="checkbox"/> DK	<input type="checkbox"/> All <input type="checkbox"/> Some <input type="checkbox"/> None <input type="checkbox"/> DK	Health insurance is any prepayment scheme for health care costs additional to but excluding subsidies funded through the health ministry budget. The purpose of questions 4.6 and 4.7 are to identify how much protection the population has against exposure to the cost of medicines at the time people are sick. This includes: <ul style="list-style-type: none"> - Prepaid financing and - Public funding through the (prepaid) health ministry budget. 	
4.7 Are medicines covered by health insurance?	<input type="checkbox"/> All <input type="checkbox"/> Some <input checked="" type="checkbox"/> None <input type="checkbox"/> DK	<input type="checkbox"/> All <input type="checkbox"/> Some <input type="checkbox"/> None <input type="checkbox"/> DK		
4.8 Is there a policy covering medicine prices that applies to the public sector, the private sector, or non-governmental organisations?	<i>Public sector</i> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	<i>Private sector</i> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	<i>NGO</i> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	<p>In some countries, NGOs, such as faith-based missions, provide non-profit or not-for-profit health services. The third column should be completed by ticking any policies applicable to this sector.</p> <p>Non-governmental organizations (NGO) are non-governmental non-profit organizations, networks and voluntary associations including charities, community groups, faith-based organizations, professional associations, academia and trade unions.</p>
a) If yes, which of the following policies covering medicine prices apply:				

Questions	Responses			Explanations
Maximum wholesale mark-up:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	A wholesale mark-up is a certain percentage added to a purchasing price to cover the cost and profit of the wholesaler.
Maximum retail mark-up:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> DK	A retail mark-up is a certain percentage added to a purchasing price to cover the cost and profit of the retailer.
Duty on imported raw pharmaceutical materials:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK	A duty/tax on imported raw pharmaceutical materials is a fee assessed by customs or other responsible national authority on imported starting materials, reagents, intermediates, process aids, and solvents intended for use in the production of intermediates or active pharmaceutical ingredients.
Duty on imported finished pharmaceutical products:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> DK	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> DK	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> DK	A duty/tax on imported finished pharmaceutical products is a fee assessed by customs or other responsible national authority on medicinal products that require no further processing and are already in their final containers.
4.9 Is a national medicine prices monitoring system for retail/patient prices in place?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	A national medicine prices monitoring system for retail/patient prices is any means of regularly tracking and comparing over time retail/patient medicine prices in the public, private and/or NGO sectors.
4.10 Are there regulations mandating retail/patient medicine price information to be made publicly accessible?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	In order for retail/patient medicine price information to be considered publicly accessible, one or more of the following or similar measures should be taken: prices should be available on the web or to anyone contacting the responsible authority, prices should be periodically published in national newspapers or official publications, prices should be posted in health facilities/pharmacies, etc.
4.11 Are there official written guidelines on medicine donations that provide rules and regulations for donors and provide guidance to the public, private and/or NGO sectors on accepting and handling donated medicines?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> DK	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> DK	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> DK	Countries may have differing definitions for medicine donations which may include not only products but also monetary gifts earmarked for a particular product from a named source (e.g. manufacturer, organization or other country).

Questions	Responses			Explanations
6. RATIONAL USE OF MEDICINES Please consult the health ministry (hospital division), professional bodies and/or the education ministry in answering the questions in this section.				
6.1 Is there a national Essential Medicines List (EML)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know			A national Essential Medicines List is a government-approved selective list of medicines or national reimbursement list from which most prescriptions should be made. Essential medicines are those that satisfy the priority health care needs of the population. They are selected with due regard to disease prevalence, evidence on efficacy and safety, and comparative cost-effectiveness.
a) If yes, how many unique medicine formulations does the national EML contain?	Number: 150			Count similar formulations registered or approved as different products as one formulation, for example Brand X 500 mg Paracetamol tablets and Brand Y 500 mg Paracetamol tablets are counted as one formulation whereas Brand X 250 mg Paracetamol tablets and Brand X 500 mg Paracetamol tablets are counted as two formulations.
c) When was the national EML last updated?	Year: 1997			
d) Is the national EML being used in the following:				Mark "yes" if the EML is currently being used.
Public sector procurement:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know			
Public insurance reimbursement:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know			
Private insurance reimbursement:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know			
e) Is there a committee responsible for the selection of products on the national EML?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know			This refers to a formally recognised committee with members of different expertise and from different agencies/organizations.
6.2 Are the following types of standard treatment guidelines (STG) produced by the health ministry for major conditions?	National STG <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	Hospital level STG <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	Primary care STG <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> DK	Mark "yes" if the health ministry or similar national authority produces a collection of treatment guidelines covering prevalent/common disease conditions in the country for use at the national, hospital or primary care levels. If treatment guidelines are produced separately for each disease/condition or organ system, mark "no".
a) If yes, when were the STGs last updated?	Year _____	Year _____	Year _____	

Questions	Responses	Explanations
6.16 How frequently are the following types of medicines sold over the counter without any prescription:		This question is asking how often antibiotics and injections which require a prescription to be dispensed are sold without a prescription, regardless of laws prohibiting such practice.
Antibiotics:	<input type="checkbox"/> Always <input type="checkbox"/> Frequently X <input type="checkbox"/> Occasionally <input type="checkbox"/> Never XDK	
Injections:	<input type="checkbox"/> Always <input type="checkbox"/> Frequently X <input type="checkbox"/> Occasionally <input type="checkbox"/> Never XDK	

ANNEX 2

LIST OF MEDICINES SURVEYED

a) Core List of medicines

NU	GENERIC NAME	MEDICINE STRENGTH	DOSAGE FORM	MEDICINE LIST	NATIONAL EML
1	Aciclovir	200 mg	cap/tab	Regional	No
2	Albendazole	400 mg	cap/tab	Regional	No
3	Amitriptyline	25 mg	cap/tab	Global	Yes
4	Amoxicillin	500 mg	cap/tab	Global	Yes
5	Artemether+lumefantrine	20+120 mg	cap/tab	Regional	No
6	Atenolol	50 mg	cap/tab	Global	Yes
7	Benzathine benzyl penicillin injection	2.4 MIU/ml	Injection (millilitre)	Regional	No
8	Captopril	25 mg	cap/tab	Global	Yes
9	Carbamazepine	200 mg	cap/tab	Regional	No
10	Ceftriaxone injection	1 g/vial	vial	Global	Yes
11	Cephalexin	250 mg	cap/tab	Regional	No
12	Ciprofloxacin	500 mg	cap/tab	Global	Yes
13	Co-trimoxazole	80+400 mg	cap/tab	Regional	No
14	Co-trimoxazole	8+40 mg/ml	suspension	Global	Yes
15	Diazepam	5 mg	cap/tab	Global	Yes
16	Diclofenac	50 mg	cap/tab	Global	Yes
17	Erythromycin	250 mg	cap/tab	Regional	No
18	Ferrous salt+folic acid	200mg (60mg iron)+ 0.4mg	cap/tab	Regional	No
19	Glibenclamide	5 mg	cap/tab	Global	Yes
20	Metronidazole	200-250mg	cap/tab	Regional	Yes
21	Nystatin	100,000 IU	pessary	Regional	No
22	Omeprazole	20 mg	cap/tab	Global	Yes
23	Oral rehydration salts	WHO formulation	powder sachet (1L)	Regional	No
24	Paracetamol suspension	24 mg/ml	millilitre	Global	Yes
25	Salbutamol inhaler	100 mcg/dose	dose	Global	Yes
26	Simvastatin	20 mg	cap/tab	Global	Yes
27	Sulphadoxine+pyrimethamine	500+25 mg	cap/tab	Regional	No
28	Tetracycline eye ointment	1 %	cream (g)	Regional	No

b) Supplementary List

No.	GENERIC NAME	MEDICINE STRENGTH	DOSAGE FORM	NATIONAL EML
1	Aminophylline	100 mg	cap/tab	Yes
2	Artesunate + amodiaquine	50 +153	cap/tab	No
3	Chloramphenicol	250 mg	cap/tab	yes
4	Cimetidine	200mg	cap/tab	yes
5	Clotrimazol 1% cream	1%	gram	yes
6	Diclofenac	25 mg	cap/tab	no
7	Digoxine	0,25 mg	cap/tab	yes
8	Doxycycline	100 mg	cap/tab	yes
9	Folic acid	5 mg	cap/tab	yes
10	Furosemide	40 mg	cap/tab	yes
11	Hydrochlorotiazide	50 mg	cap/tab	yes
12	Ibuprofen	200 mg	cap/tab	yes
13	Indometacin	25 mg	cap/tab	yes
14	Mebendazol	100 mg	cap/tab	yes
15	Metformin	500 mg	cap/tab	no
16	Neomycin 0.5% + bacitracin 500iu/g oint	0,5% +500iu/g	oint (g)	yes
17	Nifedipine retard	20 mg	cap/tab	no
18	Phenytoin	100 mg	cap/tab	yes
19	Prednisolone	5 mg	cap/tab	yes
20	Promethazide HCl 25	25 mg	cap/tab	Yes
21	Propanolol	40 mg	cap/tab	No
22	Salbutamol 4 mg	4 mg	cap/tab	Yes

ANNEX 3

- MEDICINES PRICE COLLECTION FORM

Medicine Price Data Collection Form

Lowest priced generic equivalent product: determined at facility

A	B	C	D	E	F	G	H	I	J
Generic name, dosage form, strength	Medicine Type	Brand or product name(s)	Manufacturer	Available yes/no	Pack size recommended	Pack size found	Price of pack found	Unit price (4 decimal places)	Comments
Aciclovir 200 mg cap/tab	Originator brand	Zovirax	GSK		25			per cap/tab	
	Lowest-priced generic				25			per cap/tab	
Albendazole 400 mg cap/tab (non-chewable)	Originator brand	Zentel	GSK		1			per cap/tab (non-chewable)	
	Lowest-priced generic				1			per cap/tab (non-chewable)	
Aminophylline 100 mg cap/tab	Originator brand	Filotempo	Meda Pharma					per cap/tab	
	Lowest-priced generic							per cap/tab	
Amitriptyline 25 mg cap/tab	Originator brand	Tryptizol	MSD		100			per cap/tab	
	Lowest-priced generic				100			per cap/tab	
Amoxicillin 500 mg cap/tab	Originator brand	Amoxil	GSK		21			per cap/tab	
	Lowest-priced generic				21			per cap/tab	
Artemether+lumefantrine 20+120 mg cap/tab	Originator brand	Coartem	Novartis		24			per cap/tab	
	Lowest-priced generic				24			per cap/tab	
Artesunate + amodiaquine 50 +153 cap/tab	Originator brand	Arsucam	Sanofi-Aventis		24			per cap/tab	
	Lowest-priced generic				24			per cap/tab	
Atenolol 50 mg cap/tab	Originator brand	Tenormin	AstraZeneca		60			per cap/tab	
	Lowest-priced generic				60			per cap/tab	
Benzathine benzyl penicillin injection 2.4 MIU/ml millilitre	Originator brand	Penadur	Wyeth		1			per millilitre	
	Lowest-priced generic				1			per millilitre	
Captopril 25 mg cap/tab	Originator brand	Capoten	BMS		60			per cap/tab	
	Lowest-priced generic				60			per cap/tab	
Carbamazepine 200 mg cap/tab	Originator brand	Tegretol	Novartis		100			per cap/tab	
	Lowest-priced generic				100			per cap/tab	
Ceftriaxone injection 1 g/vial vial	Originator brand	Mesporin	Mepha		1			per vial	
	Lowest-priced generic				1			per vial	
Cephalexin 250 mg cap/tab	Originator brand	Keflex	Eli Lilly		28			per cap/tab	
	Lowest-priced generic				28			per cap/tab	
Chloramphenicol 250 mg cap/tab	Originator brand							per cap/tab	no originator brand
	Lowest-priced generic							per cap/tab	
Cimetidine 200mg cap/tab	Originator brand	Tagamet	GSK					per cap/tab	
	Lowest-priced generic							per cap/tab	
Ciprofloxacin 500 mg cap/tab	Originator brand	Ciproxin	Bayer		10			per cap/tab	
	Lowest-priced generic				10			per cap/tab	
Clotrimazol 1% cream 0,01 gram	Originator brand	Canestan	Bayer					per gram	
	Lowest-priced generic							per gram	
Co-trimoxazole 80+400 mg cap/tab	Originator brand	Bactrim	Roche		28			per cap/tab	
	Lowest-priced generic				28			per cap/tab	
Co-trimoxazole suspension 8+40 mg/ml millilitre	Originator brand	Bactrim	Roche		100			per millilitre	
	Lowest-priced generic				100			per millilitre	
Diazepam 5 mg cap/tab	Originator brand	Valium	Roche		100			per cap/tab	
	Lowest-priced generic				100			per cap/tab	
Diclofenac 50 mg cap/tab	Originator brand	Voltarol	Novartis		100			per cap/tab	
	Lowest-priced generic				100			per cap/tab	

Medicine Price Data Collection Form

Lowest priced generic equivalent product: determined at facility

A	B	C	D	E	F	G	H	I	J
Generic name, dosage form, strength	Medicine Type	Brand or product name(s)	Manufacturer	Available yes/no	Pack size recommended	Pack size found	Price of pack found	Unit price (4 decimal places)	Comments
Diclofenac 25 mg cap/tab	Originator band	Voltadol	Novartis					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Digoxine 0,25 mg cap/tab	Originator band	Lanoxin	GSK					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Doxycycline 100 mg cap/tab	Originator band	Vitramicina	Pfizer					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Erythromycin 250 mg cap/tab	Originator band	Erythrocin	Abbott		28			per cap/ tab	
	Lowest-price d generic				28			per cap/ tab	
	Originator band				28			per cap/ tab	no originator brand
	Lowest-price d generic				28			per cap/ tab	
Ferrous salt+6 lic acid 200mg(60mg iron)+0.4mg cap/tab	Originator band	Folicil	Bal					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Folic acid 5 mg cap/tab	Originator band	Folicil	Bal					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Furosemide 40 mg cap/tab	Originator band	Lasix	Sanofi-Aventis					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Glibenclamide 5 mg cap/tab	Originator band	Daonil	Sanofi-Aventis		60			per cap/ tab	
	Lowest-price d generic				60			per cap/ tab	
Hydrochlorothiazide 50 mg cap/tab	Originator band							per cap/ tab	no originator brand
	Lowest-price d generic							per cap/ tab	
Ibuprofen 200 mg cap/tab	Originator band	Brufen	Abbott					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Indometacin 25 mg cap/tab	Originator band	Dolovin	Lab. Atral					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Mebendazol 100 mg cap/tab	Originator band	Pantelmin	Janssen-Cilag					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Metformin 500 mg cap/tab	Originator band	Glucophage	Merck					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Metronidazole 200-250mg cap/tab	Originator band	Flagyl	Sanofi-Aventis		28			per cap/ tab	
	Lowest-price d generic				28			per cap/ tab	
Neomycin 0.5% + bacitracin 500iu/g oint 0.5% + 500u/g oint (g)	Originator band	Baciderma	Conifar		15			per oint (g)	
	Lowest-price d generic				15			per oint (g)	
Nifedipine retard 20 mg cap/tab	Originator band	Adalat AP	Bayer					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Nystatin 100,000 IU pessary	Originator band	Mycostatin	BMS		10			per pessary	
	Lowest-price d generic				10			per pessary	
Omeprazole 20 mg cap/tab	Originator band	Losec	AstraZeneca		30			per cap/ tab	
	Lowest-price d generic				30			per cap/ tab	
	Originator band				1			per powder sachet (1L)	no originator brand
	Lowest-price d generic				1			per powder sachet (1L)	
Paracetamol suspension 24 mg/ml millilitre	Originator band				60			per millilitre	no originator brand
	Lowest-price d generic				60			per millilitre	
Phenylephrin 100 mg cap/tab	Originator band	Hidantina	Lab. Vitória					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Prednisolone 5 mg cap/tab	Originator band	Deltacortil						per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Promethazine HCl 25 2.5 mg cap/ tab	Originator band	Phenergan	Wyeth					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Propafenolol 40 mg cap/tab	Originator band	Inderal	AstraZeneca					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Salbutamol 4 mg 4 mg cap/tab	Originator band	Ventilan	GSK					per cap/ tab	
	Lowest-price d generic							per cap/ tab	
Salbutamol inhaler 100 mcg/dose dose	Originator band	Ventilan	GSK		200			per dose	
	Lowest-price d generic				200			per dose	
Simvastatin 20 mg cap/tab	Originator band	Zocor	MSD		30			per cap/ tab	
	Lowest-price d generic				30			per cap/ tab	
Sulphadoxine+ pyrimethamine 500+25 mg cap/tab	Originator band	Falsidar	Roche		3			per cap/ tab	
	Lowest-price d generic				3			per cap/ tab	
Tetracycline eye ointment 1 % cream (g)	Originator band	Adhomycin	Lederle		5			per cream (g)	
	Lowest-price d generic								

ANNEX 4

MEDICINES AVAILABILITY RESULTS IN ALL SECTORS

Medicine Name	Strength	Medicines Availability in Outlets					
		Brand			Lowest Price Generic		
		Public (n=32)	Private (n=9)	NGO (n=1)	Public (n=32)	Private (n=9)	NGO (n=1)
1 Aciclovir	200 mg	0,00%	0,00%	0,00%	18,80%	22,20%	100,00%
2 Albendazole	400 mg	0,00%	33,30%	0,00%	65,60%	33,30%	100,00%
3 Aminophylline	100 mg	0,00%	0,00%	0,00%	96,90%	33,30%	100,00%
4 Amitriptyline	25 mg	0,00%	0,00%	0,00%	9,40%	0,00%	0,00%
5 Amoxicillin	500 mg	0,00%	0,00%	0,00%	56,30%	55,60%	100,00%
6 Artemether+lumefantrine	20+120 mg	34,40%	0,00%	0,00%		0,00%	0,00%
7 Artesunate + amodiaquine	50 +153	0,00%	0,00%	0,00%	87,50%	11,10%	0,00%
8 Atenolol	50 mg	0,00%	0,00%	0,00%	28,10%	22,20%	100,00%
9 Benzathine benzyl penicillin injection	2.4 MIU/ml	0,00%	0,00%	0,00%	34,40%	0,00%	100,00%
10 Captopril	25 mg	0,00%	11,10%	0,00%	78,10%	44,40%	100,00%
11 Carbamazepine	200 mg	3,10%	0,00%	0,00%	28,10%	0,00%	100,00%
12 Ceftriaxone injection	1 g/vial	3,10%	11,10%	0,00%	15,60%	11,10%	0,00%
13 Cephalexin	250 mg	0,00%	0,00%	0,00%	3,10%	0,00%	0,00%
14 Chloramphenicol	250 mg	0,00%	0,00%	0,00%	50,00%	11,10%	100,00%
15 Cimetidine	200mg	0,00%	33,30%	0,00%	65,60%	33,30%	100,00%
16 Ciprofloxacin	500 mg	0,00%	0,00%	0,00%	75,00%	55,60%	100,00%
17 Clotrimazol 1% cream	1%	0,00%	22,20%	0,00%	59,40%	22,20%	100,00%
18 Co-trimoxazole	80+400 mg	0,00%	0,00%	0,00%	90,60%	33,30%	100,00%
19 Co-trimoxazole suspension	8+40 mg/ml	0,00%	11,10%	0,00%	68,80%	33,30%	100,00%
20 Diazepam	5 mg	0,00%	0,00%	0,00%	56,30%	11,10%	100,00%
21 Diclofenac	50 mg	0,00%	33,30%	0,00%	0,00%	22,20%	0,00%
22 Diclofenac 25	25 mg	0,00%	0,00%	0,00%	84,40%	33,30%	100,00%
23 Digoxine	0,25 mg	0,00%	22,20%	0,00%	43,80%	11,10%	100,00%
24 Doxycycline	100 mg	0,00%	0,00%	0,00%	71,90%	44,40%	100,00%
25 Erythromycin	250 mg	0,00%	0,00%	0,00%	40,60%	22,20%	100,00%
26 Ferrous salt+folic acid	200mg(60mg iron)	0,00%	0,00%	0,00%	46,90%	11,10%	100,00%
27 Folic acid	5 mg	0,00%	33,30%	0,00%	68,80%	33,30%	100,00%
28 Furosemide	40 mg	0,00%	33,30%	0,00%	90,60%	55,60%	100,00%
29 Glibenclamide	5 mg	3,10%	33,30%	0,00%	50,00%	11,10%	100,00%
30 Hydrochlorotiazide	50 mg	0,00%	0,00%	0,00%	75,00%	33,30%	100,00%
31 Ibuprofen	200 mg	0,00%	0,00%	0,00%	87,50%	66,70%	100,00%
32 Indometacin	25 mg	0,00%	0,00%	0,00%	75,00%	33,30%	100,00%
33 Mebendazol	100 mg	0,00%	33,30%	0,00%	93,80%	44,40%	100,00%
34 Metformin	500 mg	3,10%	0,00%	0,00%	18,80%	0,00%	100,00%
35 Metronidazole	200-250mg	0,00%	11,10%	0,00%	81,30%	55,60%	100,00%
36 Neomycin 0.5% + bacitracin 500iu/g oint	0,5% +500iu/g	0,00%	11,10%	0,00%	31,30%	22,20%	100,00%
37 Nifedipine retard	20 mg	0,00%	55,60%	0,00%	87,50%	11,10%	100,00%
38 Nystatin	100,000 IU	0,00%	0,00%	0,00%	56,30%	0,00%	100,00%
39 Omeprazole	20 mg	0,00%	0,00%	0,00%	25,00%	55,60%	100,00%
40 Oral rehydration salts	WHO formulation		0,00%	0,00%	90,60%	22,20%	100,00%
41 Paracetamol suspension	24 mg/ml	0,00%	0,00%	0,00%	46,90%	22,20%	100,00%
42 Phenytoin	100 mg	0,00%	11,10%	0,00%	6,30%	0,00%	0,00%
43 Prednisolone	5 mg	0,00%	11,10%	0,00%	53,10%	33,30%	100,00%
44 Promethazine HCl 25	25 mg	3,10%	0,00%	0,00%	81,30%	22,20%	100,00%
45 Propranolol	40 mg	0,00%	22,20%	0,00%	40,60%	0,00%	100,00%
46 Salbutamol 4 mg	4 mg	0,00%	11,10%	0,00%	93,80%	33,30%	100,00%
47 Salbutamol inhaler	100 mcg/dose	0,00%	22,20%	0,00%	37,50%	0,00%	100,00%
48 Simvastatin	20 mg	0,00%	0,00%	0,00%	0,00%	22,20%	0,00%
49 Sulphadoxine+ pyrimethamine	500+25 mg	46,90%	22,20%	0,00%			0,00%
50 Tetracycline eye ointment	1 %	0,00%	0,00%	0,00%	78,10%	33,30%	100,00%

ANNEX 5 .

MEDIAN PRICE RATIOS IN ALL SECTOR

Medicine Name	Medicines Median Price Ratios (MPRs) in Procurements and Outlets (Reference Price Data Used = MSH 2007)						
	Brand			Lowest Price Generic			
	Public (n=32)	Private (n=9)	Instituto Marqués de Valle Flor (n=1)	Procurem ent (n=1)	Public (n=32)	Private (n=9)	Instituto Marqués de Valle Flor (n=1)
Aciclovir				0,53	0,89	58,03	0,89
Albendazole		135,45		0,75	3,80	5,42	3,80
Aminophylline				1,52	2,56	13,76	2,56
Amitriptyline				0,88	1,77		
Amoxicillin				0,66	1,24	2,94	1,24
Artemether+lumefantrine	2,90						
Artesunate + amodiaquine					0,09	0,09	
Atenolol				0,52	2,14	10,68	2,14
Benzathine benzyl penicillin injection				0,14	0,19		0,27
Captopril		25,48		0,71	1,20	10,92	1,20
Carbamazepine				0,71	1,48		1,48
Ceftriaxone injection		2,10		0,43	0,70	0,23	
Cephalexin				1,91	3,88		
Chloramphenicol				0,99	1,72	3,91	1,72
Cimetidine		141,39		1,20	2,70	9,43	2,70
Ciprofloxacin				1,65	2,78	107,51	2,78
Clotrimazol 1% cream		53,67		1,14	3,33	15,88	3,33
Co-trimoxazole				1,02	2,32	7,40	2,32
Co-trimoxazole suspension		20,64		1,20	1,89	8,60	2,02
Diazepam				1,21	5,27	26,98	5,27
Diclofenac		122,33				91,75	
Diclofenac 25				2,71	5,30	11,47	5,29
Digoxine		10,53		1,02	1,57	7,02	1,57
Doxycycline				0,82	1,69	3,82	1,69
Erythromycin				1,24	2,02	21,25	2,02
Ferrous salt+folic acid				1,48	4,92	34,40	4,92
Folic acid		161,90		2,31	6,67	40,48	6,67
Furosemide		65,53		1,01	2,77	16,38	2,77
Glibenclamide		90,54		0,94	2,59	36,22	2,59
Hydrochlorotiazide				0,91	2,30	14,64	2,30
Ibuprofen				0,96	2,89	13,76	2,89
Indometacin				0,60	2,50	9,17	2,50
Mebendazol		266,70		1,53	3,98	13,34	3,98
Metformin				1,11	1,88		1,88
Metronidazole		98,30		1,22	2,91	16,38	2,91
Neomycin 0.5% + bacitracin 500iu/g ointment		21,81		1,17	1,86	6,46	1,86
Nifedipine retard		34,40		1,19	2,66	17,20	2,66
Nystatin				1,00	2,44		2,44
Omeprazole				0,39	0,67	40,48	0,67
Oral rehydration salts				1,24	0,48	4,79	0,48
Paracetamol suspension				2,26	4,07	14,73	2,75
Phenytoin		59,32			1,54		
Prednisolone		47,45		1,12	2,22	15,82	2,22
Promethazine HCl 25				10,42	14,15	27,90	14,15
Propranolol		51,93		1,19	5,64		5,64
Salbutamol 4 mg		83,40		0,99	5,01	10,43	5,01
Salbutamol inhaler		4,97		0,95	1,40		1,40
Simvastatin						46,49	
Sulphadoxine+ pyrimethamine		5,76		1,18			
Tetracycline eye ointment				1,01	2,41	7,22	4,11

ANNEX 6-

FIELD CONSOLIDATION RESULTS FOR NGO SECTOR

All

Global

Regional

Supplementary

Global + Regional

EML

Instituto Marqués de Valle Flor Sector Medicines Outlets (n=1 in survey)

Includes all medicines (n=50 on list)

Analysis Includes All Meds.

Brand		Lowest Price
-------	--	--------------

Analysis Includes Only Medicines With Prices Found for Both Types in Pair

Brand		Lowest Price
-------	--	--------------

Overall Percent Availability of Medicines on List in Outlets Included in Analysis

Mean availability	0.0%		82.0%
Std dev availability	0.0%		38.8%

Number of Listed Medicines For Which Prices Were Found in 1+ Outlets

No. of meds. included	0		41		0		0
-----------------------	---	--	----	--	---	--	---

Summary of Medicine-specific Median Price Ratios (MPRs) For Meds. Found in 1+ Outlets

Median MPR		2.50			
25 %ile MPR		1.72			
75 %ile MPR		3.33			
Minimum MPR		0.27			
Maximum MPR		14.15			

Reference Price Data Used = MSH 2007

ANNEX 7

- FIELD CONSOLIDATION SECTOR SUMMARY RESULTS

(a)

Comparisons of Median MPRs for Medicines With Prices in Both Sectors									
Includes all medicines (n=50 on list)									
FNM									
	Procurement (n=1 orders)	Public Sector (n=32 outlets)	# of Meds. in Both Sectors	% difference Public to Procurement		Procurement (n=1 orders)	Private Sector (n=9 outlets)	# of Meds. in Both Sectors	% difference Private to Procurement
Brand			0		Brand			0	
Lowest Price	1,13	2,47	40	118,7%	Lowest Price	1,19	13,34	33	1022,2%
Instituto Marqués de Valle Flor					Instituto Marqués de Valle Flor				
	Procurement (n=1 orders)	Public Sector (n=1 outlets)	# of Meds. in Both Sectors	% difference Instituto Marqués de Valle Flor to Procurement		Public Sector (n=32 outlets)	Private Sector (n=9 outlets)	# of Meds. in Both Sectors	% difference Private to Public
Brand			0		Brand			0	
Lowest Price	1,13	2,58	38	128,3%	Lowest Price	2,50	13,34	37	432,8%
Sector (n=32 outlets)					Sector (n=32 outlets)				
	Procurement (n=1 orders)	Public Sector (n=1 outlets)	# of Meds. in Both Sectors	% difference Instituto Marqués de Valle Flor to Procurement		Private Sector (n=9 outlets)	Marqués de Valle Flor Sector (n=1 outlets)	# of Meds. in Both Sectors	% difference Instituto Marqués de Valle Flor to Procurement
Brand			0		Brand			0	
Lowest Price	2,44	2,50	41	2,8%	Lowest Price	13,76	2,59	35	-81,2%
Procurement (n=1 orders)					Procurement (n=1 orders)				
	Procurement (n=1 orders)	Other2 Sector (n=32 outlets)	# of Meds. in Both Sectors	% difference Other2 to Procurement		Public Sector (n=32 outlets)	Other2 Sector (n=9 outlets)	# of Meds. in Both Sectors	% difference Other2 to Public
Brand			0		Brand			0	
Lowest Price			0		Lowest Price			0	
Private Sector (n=9 outlets)					Private Sector (n=9 outlets)				
	Procurement (n=1 orders)	Other2 Sector (n=32 outlets)	# of Meds. in Both Sectors	% difference Other2 to Private		Instituto Marqués de Valle Flor (n=32 outlets)	Other2 Sector (n=9 outlets)	# of Meds. in Both Sectors	% difference Other2 to Instituto
Brand			0		Brand			0	
Lowest Price			0		Lowest Price			0	

Reference Price Data Used = MSH 2007

(b)

Comparisons of Median MPRs for Medicines With Prices in Both Sectors									
Includes all medicines (n=50 on list)									
IMVF									
	Procurement (n=1 orders)	Public Sector (n=32 outlets)	# of Meds. in Both Sectors	% difference Public to Procurement		Procurement (n=1 orders)	Private Sector (n=9 outlets)	# of Meds. in Both Sectors	% difference Private to Procurement
Brand			0		Brand			0	
Lowest Price	1,02	2,42	44	137,1%	Lowest Price	1,07	13,55	36	1167,6%
Instituto Marqués de Valle Flor					Instituto Marqués de Valle Flor				
	Procurement (n=1 orders)	Public Sector (n=1 outlets)	# of Meds. in Both Sectors	% difference Instituto Marqués de Valle Flor to Procurement		Public Sector (n=32 outlets)	Private Sector (n=9 outlets)	# of Meds. in Both Sectors	% difference Private to Public
Brand			0		Brand			0	
Lowest Price	1,02	2,50	41	145,1%	Lowest Price	2,50	13,34	37	432,8%
Sector (n=32 outlets)					Sector (n=32 outlets)				
	Procurement (n=1 orders)	Public Sector (n=1 outlets)	# of Meds. in Both Sectors	% difference Instituto Marqués de Valle Flor to Procurement		Private Sector (n=9 outlets)	Marqués de Valle Flor Sector (n=1 outlets)	# of Meds. in Both Sectors	% difference Instituto Marqués de Valle Flor to Procurement
Brand			0		Brand			0	
Lowest Price	2,44	2,50	41	2,8%	Lowest Price	13,76	2,59	35	-81,2%
Procurement (n=1 orders)					Procurement (n=1 orders)				
	Procurement (n=1 orders)	Other2 Sector (n=32 outlets)	# of Meds. in Both Sectors	% difference Other2 to Procurement		Public Sector (n=32 outlets)	Other2 Sector (n=9 outlets)	# of Meds. in Both Sectors	% difference Other2 to Public
Brand			0		Brand			0	
Lowest Price			0		Lowest Price			0	
Private Sector (n=9 outlets)					Private Sector (n=9 outlets)				
	Procurement (n=1 orders)	Other2 Sector (n=32 outlets)	# of Meds. in Both Sectors	% difference Other2 to Private		Instituto Marqués de Valle Flor (n=32 outlets)	Other2 Sector (n=9 outlets)	# of Meds. in Both Sectors	% difference Other2 to Instituto
Brand			0		Brand			0	
Lowest Price			0		Lowest Price			0	

Reference Price Data Used = MSH 2007

(c)

Comparisons of Median MPRs for Medicines With Prices in Both Sectors									
Includes all medicines (n=50 on list)									
C.Taiwan									
	Procurement (n=1 orders)	Public Sector (n=5 outlets)	# of Meds. in Both Sectors	% difference Public to Procurement		Procurement (n=1 orders)	Private Sector (n=9 outlets)	# of Meds. in Both Sectors	% difference Private to Procurement
Brand			0		Brand			0	
Lowest Price	1,14	2,24	33	96,3%	Lowest Price	1,06	13,34	37	1163,2%
	Procurement (n=1 orders)	Instituto Marqués de Valle Flor Sector (n= outlets)	# of Meds. in Both Sectors	% difference Instituto Marqués de Valle Flor to		Public Sector (n=5 outlets)	Private Sector (n=9 outlets)	# of Meds. in Both Sectors	% difference Private to Public
Brand			0		Brand			0	
Lowest Price			0		Lowest Price	2,35	13,34	27	466,5%
	Public Sector (n=5 outlets)	Instituto Marqués de Valle Flor Sector (n= outlets)	# of Meds. in Both Sectors	% difference Instituto Marqués de Valle Flor to		Private Sector (n=9 outlets)	Marqués de Valle Flor Sector (n=	# of Meds. in Both Sectors	% difference Instituto Marqués de Valle Flor to
Brand			0		Brand			0	
Lowest Price			0		Lowest Price			0	
	Procurement (n=1 orders)	Other2 Sector (n= outlets)	# of Meds. in Both Sectors	% difference Other2 to Procurement		Public Sector (n=5 outlets)	Other2 Sector (n= outlets)	# of Meds. in Both Sectors	% difference Other2 to Public
Brand			0		Brand			0	
Lowest Price			0		Lowest Price			0	
	Private Sector (n=9 outlets)	Other2 Sector (n= outlets)	# of Meds. in Both Sectors	% difference Other2 to Private		Instituto Marqués de Valle Flor	Other2 Sector (n= outlets)	# of Meds. in Both Sectors	% difference Other2 to Instituto
Brand			0		Brand			0	
Lowest Price			0		Lowest Price			0	

Reference Price Data Used = MSH 2007

ANNEX 8 –

STANDARD TREATMENT AFFORDABILITY RESULTS

Standard Treatment Affordability

Daily wage of lowest paid government worker (in local currency): 18150

						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Asthma											
Salbutamol inhaler	100 mcg/dose	dose	as needed	200	Brand			130000.00	7.2		
					Lowest Price	36744.00	2.0			36744.00	2.0
Diabetes											
Glibenclamide	5 mg	cap/tab	30	60	Brand			300000.00	16.5		
					Lowest Price	8580.00	0.5	120000.00	6.6	8580.00	0.5
Hypertension											
Atenolol	50 mg	cap/tab	30	30	Brand						
					Lowest Price	15007.20	0.8	75000.00	4.1	15007.20	0.8
Hypertension											
Captopril	25 mg	cap/tab	30	60	Brand			420000.00	23.1		
					Lowest Price	19777.80	1.1	180000.00	9.9	19755.00	1.1
Hypercholesterolaemia											
Simvastatin	20 mg	cap/tab	30	30	Brand						
					Lowest Price			825000.00	45.5		
Depression											
Amitriptyline	25 mg	cap/tab	30	90	Brand						
					Lowest Price	15750.00	0.9				
Adult respiratory infection											
Ciprofloxacin	500 mg	cap/tab	7	14	Brand						
					Lowest Price	18100.46	1.0	700000.00	38.6	18100.46	1.0
Paediatric respiratory infection											
Co-trimoxazole suspension	8+40 mg/ml	millilitre	7	70	Brand			84000.00	4.6		
					Lowest Price	7706.65	0.4	35000.00	1.9	8234.80	0.5
Adult respiratory infection											
Amoxicillin	500 mg	cap/tab	7	21	Brand						
					Lowest Price	17745.00	1.0	42000.00	2.3	17745.00	1.0
Adult respiratory infection											
Ceftriaxone injection	1 g/vial	vial	1	3.5	Brand						
								96600.00	5.3		

Anxiety						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Diazepam	5 mg	cap/tab	7	7	Brand						
					Lowest Price	2733,29	0,2	14000,00	0,8	2733,29	0,2

Arthritis						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Diclofenac	50 mg	cap/tab	30	60	Brand			480000,00	26,4		
					Lowest Price			360000,00	19,8		

Pain/inflammation						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Paracetamol suspension	24 mg/ml	millilitre	3	45	Brand						
					Lowest Price	10125,00	0,6	36595,58	2,0	6843,60	0,4

Ulcer						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Omeprazole	20 mg	cap/tab	30	30	Brand						
					Lowest Price	12346,20	0,7	750000,00	41,3	12346,20	0,7

Ulcer						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Cimetidine	200mg	cap/tab	30	60	Brand			900000,00	49,6		
					Lowest Price	17160,00	0,9	60000,00	3,3	17160,00	0,9

Viral Infections						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Aciclovir	200 mg	cap/tab	5	25	Brand						
					Lowest Price	13384,25	0,7	875000,00	48,2	13384,25	0,7

Protozoa Infections						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Metronidazole	200-250mg	cap/tab	7	21	Brand			126000,00	6,9		
					Lowest Price	3726,45	0,2	21000,00	1,2	3726,45	0,2

Cardiovascular insuf						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Nifedipine retard	20 mg	cap/tab	30	1	Brand			10000,00	0,6		
					Lowest Price	774,40	0,0	5000,00	0,3	774,40	0,0

Helminths infection						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Mebendazol	100 mg	cap/tab	3	6	Brand			100000,00	5,5		
					Lowest Price	1493,34	0,1	5000,00	0,3	1493,34	0,1

Hypertension						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Furosemide	40 mg	cap/tab	30	30	Brand			120000,00	6,6		
					Lowest Price	5068,80	0,3	30000,00	1,7	5068,80	0,3

Bacterial Infections						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Erythromycin	250 mg	cap/tab	7	28	Brand						
					Lowest Price	21257,32	1,2	224000,00	12,3	21257,32	1,2

Diabetes						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Metformin	500 mg	cap/tab	30	90	Brand						
					Lowest Price	44249,40	2,4			44249,40	2,4

Asthma						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Prednisolone	5 mg	cap/tab	3	24	Brand			144000,00	7,9		
					Lowest Price	6744,72	0,4	48000,00	2,6	6744,72	0,4

* 70kg child = 7mg/kg

Asthma						Public Sector		Private Sector		Flor	
Select Medicine Name	Medicine Strength	Dosage Form	Treatment Duration (in Days)	Total # of Units per Treatment	Product Type	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages	Median Treatment Price	Days' Wages
Salbutamol 4 mg	4 mg	cap/tab	10	30	Brand			120000,00	6,6		
					Lowest Price	7203,00	0,4	15000,00	0,8	7203,00	0,4

ANNEX 9

PRICE COMPONENTS OF FOUR MEDICINES ALONG ONE PRIVATE SUPPLY CHAIN

PRIVATE SECTOR			DESCRIPTION: LPG					
Medicine 1	Form	Pack size					Dobra	Mark up
Ciprofloxacin 500 mg	Cap/tab	16	Stage1: CIF	FOB			286403	0%
				I&f	varies			
			Stage 2 (landed cost) ^a				419759	32%
			Stage 3 (wholesale)	---	----		----	----
			Stage 4 (Maximum Retail Price)				631895	34%
			Stage 5 (Patient Price)				800000	21%
			Total Mark Up (stage 5-1)					64%
PRIVATE SECTOR			DESCRIPTION: L P G					
Medicine 2	Form	Pack size					Dobra	Mark up
Acyclovir 200mg	Cap/tab	25	Stage1: CIF	FOB			283623	
				I&f	varies			
			Stage 2 (landed cost) ^a				415687	32%
			Stage 3 (wholesale)	---	----		----	---
			Stage 4 (Maximum Retail Price)				625765	34%
			Stage 5 (Patient Price)				875000	28%
			Total Mark Up (stage 5-1)					68%
PRIVATE SECTOR			DESCRIPTION: OB					
Medicine 3	Form	Pack size					Dobra	Mark up
Zentel 400mg	Cap/tab	2	Stage1: CIF	FOB			36582	
				I&f	varies			
			Stage 2 (landed cost) ^a				53616	32%
			Stage 3 (wholesale)	---	----		----	----
			Stage 4 (Maximum Retail Price)				80711	34%
			Stage 5 (Patient Price)				100000	19%
			Total Mark Up (stage 5-1)					63%
PRIVATE SECTOR			DESCRIPTION: OB					
Medicine 4	Form	Pack size					Dobra	Mark up
Pantelmin 100mg	Cap/tab	6	Stage1: CIF	FOB			38897	
				I&f	varies			
			Stage 2 (landed cost) ^a				45301	14%
			Stage 3 (wholesale)	---	----		---	---
			Stage 4 (Maximum Retail Price)				57009	21%
			Stage 5 (Patient Price)				100000	43%
			Total Mark up (stage 5-1)					61%

^a Landed cost includes all dispenses after arriving in the STP, such us: Port authority fee (Enapor/enasa)-- 1% Cif; Traffic fee (61,60 USD for each container), Banking fees: varies; National Drug inspections (53%of CIF); Other costs such us customs taxes: 5% of total, stamp duty (6000 dobra), service (500 dobra), Informatics fee:50000 dobra, customs agent: 3% of costumes clearing expenses; customs agency (1%), etc.

DECLARATION OF ORIGINALITY OF WORK

This report is the result of independent investigation. Where my work is indebted to the work of others, I have made appropriate acknowledgements.

24th of November 2008

Joana Martinho do Rosário

