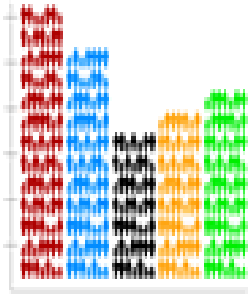

Medicine Prices
a new approach to measurement

Medicine Prices, Availability and Affordability Survey
Haiti
August 2011

Undertaken in collaboration with

Ministry of Public Health and Population of Haiti
State University of Haiti-Faculty of Medicine and Pharmacy/ School of Pharmacy
University of California, San Francisco/WHO Collaborating Center for Pharmaceutical Research and Science Policy
Pan American Health Organization/World Health Organization

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Abbreviations

Cap	capsule
GDP	Gross domestic product
HAI	Health Action International
OB	Originator brand
Inh	Inhaler
Inj	Injection
LPG	Lowest priced generic equivalent
MPR	Median price ratio
MSH	Management Sciences for Health
EML	Essential Medicines List
Susp	Suspension
Tab	Tablet
UCSF SOP	University of California, San Francisco – School of Pharmacy
UEH FMP	State University of Haiti – Faculty of Medicine and Pharmacy
USD	United States dollars (also $)
PAHO	Pan American Health Organization
WHO	World Health Organization

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Conflict of Interest Statement

None of the authors of this survey or anyone who had influence on the conduct, analysis or interpretation of the results has any competing financial or other interests.

"The views expressed in this paper do not necessarily represent the decisions, policy or views of the University Of California"

I. Executive summary

A field study to measure the price, availability, affordability and price components of selected medicines was undertaken in Haiti in August 2011 using a standardized methodology developed by the World Health Organization and Health Action International.

The survey of medicine prices and availability was conducted in the ten regions. Data on 59 medicines and 1 device (60) was collected in 54 public, 35 private, 39 non-profit, and 35 mixed sector medicine outlets, selected using a validated sampling frame. For each medicine in the survey, data was collected for the originator brand, highest priced generic equivalent and lowest priced generic equivalent. Medicine prices are expressed as ratios relative to Management Sciences for Health international reference prices for 2010 (median price ratio or MPR). Using the salary of the lowest-paid unskilled government worker, affordability was calculated as the number of days' wages this worker would need to purchase standard treatments for common conditions.

The survey shows poor availability across all sectors and affordability highly limited for majority of the Haitian population (54% lives on less than US$1.00/day and 78% lives on less than US$2.00/day)

However, the medicines prices are more affordable in the public, mixed and non-profit sectors.

The mean availability of originator brand and lowest generic medicines was:

- ✓ 4.9% and 37.3%, respectively in the private sector
- ✓ 1.8% and 23.8%, respectively in the non-profit sector
- ✓ 1.9% and 19.5%, respectively in the public sector
- ✓ 1.5% and 23.2%, respectively in the mixed sector

Final patient prices for originator brands and lowest priced generics are about

- ✓ 34.81 and 7.25 times their international reference prices, respectively in the private sector
- ✓ 1.63 and 4.77 times their international reference prices, respectively in the public sector
- ✓ 4.33 times their international reference prices in the non-profit sector (lowest priced generics)
- ✓ 4.00 times their international reference prices in the mixed sector (lowest priced generics)

- ✓ Lowest priced generic medicines in the private sector were 52% higher priced than in the public sector, 28.6% higher priced than in the non-profit sector and 54.8% higher than in the mixed sector

In treating 16 common conditions using standard regimens, the lowest paid unskilled government worker would need between:

- ✓ **0.2** (anxiety) and **2.5** (adult respiratory infection) days' wages to purchase lowest priced generic medicines from the **public sector**
- ✓ **0.1** (anxiety) and **3.5** (adult respiratory infection) days' wages to purchase lowest priced generic medicines from the **mixed sector**
- ✓ **0.1** (anxiety) and **4.2** (adult respiratory infection) days' wages to purchase lowest priced generic medicines from the **non-profit sector**
- ✓ **0.4** (anaerobic bacterial infection) and **2.1** (hypercholesterolemia) days' wages to purchase lowest priced generic medicines from the **private sector**. If originator brands are prescribed/dispensed, costs escalate to between **2.6** and **13.7** days' wages, respectively. Some treatments were clearly unaffordable, e.g. the treatment of adult respiratory infection with originator brand ceftriaxone injection 1g would cost **28** days' wages

Sumaryzed Recommendations:

- ✓ To adopt a rational use policy by adopting officially and disseminating the NEML.
- ✓ To assure medications provision according to this NEML at public facilities reaching 100% availability of these medications over the next 2 years and enforce the NEML to be used by all registered health agencies in all sectors responsible for production and/or importation of medications in Haiti
- ✓ To adopt a pricing policy in a comprehensive National Pharmaceutical Policy. Therefore, a comprehensive assessment of the supply chain should be undertaken to identify areas where reductions and regulations of the procurement chain are appropriate. All policy measures should be carefully developed and evaluated for Haiti specific settings to ensure applicability and success
- ✓ Price in private sector must be reduced. A possible political option will be to convert the national central wherhouse to wholesaler of essential drugs, for both the public as well as the private sectors: for example by transforming it to autonomous official wholesaler
- ✓ To establish a routine monitoring of medicines price in Haiti to evaluate medicines availability and affordability.

II. Introduction

In August 2011, the Ministry of Public Health and Population, the Pan American Health Organization, the University of California, San Francisco – School of Pharmacy and State University of Haiti – Faculty of Medicine and Pharmacy conducted a nationwide study on the prices, availability, and affordability of a selection of medicines in Haiti. The main goals of the study were to document the prices, availability and affordability of medicines and compare them across products types (originator brands and generics), sectors, and other countries.

This study was conducted using the standardized methodology developed by the World Health Organization (WHO) and Health Action International (HAI). The WHO/HAI methodology is described in the manual *Measuring Medicine Prices, Availability, Affordability and Price Components* (WHO/HAI, 2008) and is accessible on the HAI website (http://www.haiweb.org/medicineprices).

The main objectives of the study were to answer the following questions:

- ✓ What is the availability of originator brand and generic medicines in the public, non-profit, mixed and private sectors?
- ✓ What is the price of originator brand and generic medicines in the public, non-profit, mixed and private sectors, and how does this compare with international reference prices?
- ✓ What is the difference in price of originator brand products and their generic equivalents?
- ✓ How affordable are medicines for the treatment of common conditions for people with low income?
- ✓ How do the prices of medicines in Haiti compare to those in other countries?

III. Country background

Haiti is a small sized country, covering an area of 27,750 km^2.[1] It is divided into 10 administrative areas. The total population is 9,993,247;[2] a large percentage of the population, approximately 2.143 million lives in Port-au-Prince, the capital of Haiti and the surrounding urban areas.[3]

Haiti is a low income country with a GDP of US $1,200 per capita (2010 est.).[4] About 54% of the population lives on less than US $1/day, and 78% live on less than US $2/day.[5] Of the total labor force, approximately 40.6% of persons are unemployed (2010 est.) while more than two-thirds of the labor force do not work in formal job sectors.[6]

1. Health sector

Haiti is the poorest country in the Western Hemisphere and after the January 12th, 2010 earthquake has been facing significant challenges in meeting the health care needs of its citizens.[7] Life expectancy at birth is 59 years for males and 63 years for females while the expectancy for a *healthy* life is 43 and 44 years for males and females respectively.[8]

In 2008, Haiti ranked 148th out of 179 nations surveyed in the UN's Human Development Index, the lowest in the Western Hemisphere[9]. At 61.3 years on average, Haitians have the lowest life expectancy in the Western Hemisphere compared with the composite average of 73.4 years for people living in Latin America and the rest of the Caribbean[10]. Haiti has a 6% of the population over the age of 60 years.[11] Infant and maternal mortality rates in Haiti are equally appalling: 57 per 1,000 live births and 630 per 100,000 live births respectively.[12] This is compared to an average infant mortality rate of 20.2 per 1,000 live births and 89.2 maternal deaths per 100,000 live births respectively for the rest of Latin America and the Caribbean.[13]

Today, Haiti is also burdened by the highest HIV prevalence in the hemisphere, representing nearly 50 percent of the known HIV infections in the Caribbean.[14] Tuberculosis remains endemic and is a significant cause of mortality.[15] Malaria, nearly non-existent in many other Caribbean countries, remains a deadly problem in Haiti.[16] In 2004, diarrhea was found to be the third leading cause of death for children under 5 in Haiti, accounting for 17.9 percent of deaths.[17] Even simple prevention measures, like childhood vaccinations, are woefully lacking.[18]

There are only 2.5 doctors and 1.1 nurses per 10,000 people,[19] compared to the 19 doctors and 18 nurses available per every 10,000 people in the

neighboring Dominican Republic.[20] Additionally, most of these doctors and nurses are concentrated in urban areas.[21]

The Haitian health system[22] includes: a) the public sector (Ministry of Public Health and Population and Ministry of Social Affairs); b) the private for-profit sector (all health professionals in private practice); c) the mixed nonprofit sector (Ministry of Health personnel working in private institutions (NGOs) or religious organizations; d) the private nonprofit sector (NGOs, foundations, associations); and e) the traditional health system. A number of central bureaus execute the health programs (except AIDS and tuberculosis, directly under the Office of the Director General). There are also 10 directorates (one for each department). All health system institutions are coordinated by the Ministry of Health, however it has been unable to assume its leadership role in the recent past, as donators directed resources toward the nonprofit sector. The health services reach 60% of the population. There are 371 health posts, 217 health centers and 49 hospitals. It is estimated that 40 % of the population relies on traditional medicine, mostly in rural areas.

The public health sector is composed of 4 levels of care - tertiary hospitals, secondary hospitals, primary health care centers, rural health posts called dispensaries. Dispensaries offer consultations and dispense medicines, while the primary health care centers also offer pharmacy services, consultations but they may or may not have beds for hospitalization for minor illnesses. Secondary hospitals, the main departmental hospitals, offer hospitalization services, dispensing of medications, emergency services and limited surgery capabilities. Public tertiary level hospitals based only in the capital Port-au-Prince, offer all services listed under secondary level care facilities with the addition of surgical and specialty medical services not available elsewhere in Haiti. The public health sector is complemented by private clinics and hospitals, and by non-profit clinics, primary health care centers and hospitals as well as mixed health centers, dispensaries and hospitals.

In 2009, the per capita total expenditure on health was US$ 71 (average exchange rate).[23] In 2003, approximately 7.5% of the GDP is spent on health. Of the total expenditure on health, 38.1% is government expenditures, which represents 23.8% of all government expenditures. The remaining 61.9% of total expenditures on health is private expenditures, of which 69.5% are out-of-pocket expenditures.[24]

2. Pharmaceutical sector

There are three pharmaceutical laboratories that have been officially designated to produce drugs for national use and they cover 30 to 40% of

the Haitian market. Medications are dispensed at numerous sites (some unauthorized). The public sector has no essential drug program. The purchasing warehouse that supplies the public pharmacies is a PAHO/WHO project: "PROMESS" that has been set up in 1992 by donors to address a humanitarian crisis. Haiti has no official NEML (still in its draft form). Eighty percent of the country's expenditure on drugs is made by the private sector. With the problems involved in regulating the sector, it is impossible to know the precise volume of pharmaceutical products available on the market.[25]

According to the Ministry of Health registry, there are approximately 120 of licensed private retail medicine outlets in the country (while more than 300 are operating without authorization); most of which are registered in the Port-au-Prince area, while only 31 are registered in the provinces. Sectors which dispense a substantial proportion of medicines to patients include the public sector, the private sector, the non-profit sector, and the mixed (health facilities managed by the government and non-profit organization) sector. In public health facilities medicine outlets sell medicines to patients.

National Pharmaceutical Policy

In Haiti, there is no National Pharmaceutical Policy (NPP) document.

Regulatory system

In Haiti, there is a formal medicines regulatory authority which is not funded through the regular budget from the government. This medicines regulatory authority has neither the human nor material nor financial resources, nor technical capacity to fulfill its role. Legal provisions are very old and not applied. No medicines regulatory authority exists in Haiti to provide information on various aspects of medical practice such as legislation, regulatory procedures, prescribing information (such as indications, contraindications, side effects, etc.), authorized companies, and/or approved medicines.

In Haiti, there are no legal provisions for marketing authorization. Approximately 1,200 medicinal products have been approved for marketing. However, the registration of medications with the regulatory authority is voluntary, therefore, not all the medications sold in Haiti are specifically authorized by this list. A list of all registered products is publicly accessible upon request from the regulatory authority.

Legal provisions are in place for the licensing of manufacturers/wholesalers, distributors/importers and exporters of medicines, however, entities responsible for importing, selling or

distributing medications do not always adhere to the legal provisions and are therefore not generally registered or licensed by the government of Haiti.

A quality management system with an officially defined protocol for ensuring the quality of medicines is not in place in Haiti. Legal provisions are in place for the licensing and practice of prescribers, pharmacists and pharmacies, however, most retail pharmacies are not registered with the government of Haiti nor are they owned or operated by a licensed prescriber or pharmacist.

There is no obligation to prescribe by generic name in the public or private sector. There are no incentives to dispense generic medicines at public or private pharmacies. There are no provisions in the medicines legislation/regulations covering promotion and/or advertising of medicines.

Medicines financing

There is no universal national policy to provide medicines free of charge at public primary care facilities. However, some public facilities, at all levels of care (primary, secondary and tertiary) provide medications free of charge, whiles most sell medications to patients. At all levels of care in Haitian healthcare system, no standardization was found regarding which fees are charged to the patients. The fees at all levels may include consultation fees, dispensing fees or flat fees for medicines/flat rate co-payments for medicines or percentage co-payments for medicines. While at some facilities no fees are charged at facilities for any level of care.

Prescribers in the public sector frequently dispense medicines when available at the institution's pharmacy, while prescribers in the private sector occasionally dispense medicines.

In Haiti, some of the population, mostly government employees, has public health insurance, which covers some medicines. Some of the population has private health insurance, which covers some medicines.

The government does not set the price of any originator brand products or any generic products.

The national Essential Medicines List (currently in draft form) is not being used for public nor private supply. Setting prices is not part of market authorization.

Haiti does not have a national medicine price monitoring system for retail/patient prices. There are no regulations mandating retail/patient medicine price information to be made publicly accessible. There are no official written guidelines on medicine donations that provide rules and regulations for donors and provide guidance to the public, private or NGO sectors on accepting and handling donated medicines.

Rational use of medicines

Haiti's National Essential Medicines List (NEML), last updated in 2011, is currently in draft form. There is no officially adopted NEML. The daft NEML contains approximately 325 unique medicine formulations. The national EML is not currently being used for public sector procurement/public insurance reimbursement/private insurance reimbursement. There is no committee responsible for the selection of products on the national EML.

The health ministry does not produce national, hospital or primary care standard treatment guidelines (STG) for major conditions.

Antibiotics are frequently sold over the counter without a prescription.

IV. Methodology

1. Overview

The survey of the prices, availability and affordability of medicines in Haiti was conducted using the standardized WHO/HAI methodology (WHO/HAI 2008). Data on the availability and final (patient) prices of medicines were collected in medicine outlets in the public and private sectors. Government procurement prices were also surveyed.

A total of 59 medicines and 1 device (60) were surveyed – 30 from the WHO/HAI core list (14 global medicines and 16 regional medicines), and 29 supplementary medicines and 1 device (spacer) from the Better Medicines for Children Project. For each medicine in the survey, up to three products were monitored, namely:

- ✓ Originator brand (OB) - the original pharmaceutical product
- ✓ Highest-priced generic equivalent (HPG) - the highest-priced generic product compared with generic products in the facility at the time of the survey
- ✓ Lowest-priced generic equivalent (LPG) - the lowest-priced in the facility at the time of the survey

All prices were converted to US dollars using the exchange rate (buying rate) on 8/4/2011, the first day of data collection, i.e. 1 USD = 39.6862.

2. Selection of medicine outlets

Sampling was conducted in a manner consistent with the WHO/HAI methodology, which has been shown through a recent validation study to yield a nationally representative sample[1].

In the first step, all 10 provinces of Haiti were selected as "survey areas" for data collection. The major urban centre of Port-au-Prince was selected as one survey area. This resulted in the following six survey areas:

1. Port-au-Prince (Ouest Department) (major urban centre)
2. Sud-Est
3. Centre
4. Sud
5. Grand-Anse
6. Nippes

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1 The WHO/HAI sampling methodology was validated in 2005 when a medicine prices survey conducted in Peru. In this survey, a much larger selection of public and private medicine outlets, from a greater number of geographical regions, were included than is required in the standard sample. Results from the expanded sample were consistent with those from the standard sample, showing that the standard sampling frame is nationally representative.

7. Artibonite
8. Nord-Ouest
9. Nord
10. Nord-Est

Figure 1: Geographic location of the 10 survey areas sampled in the survey[26]

In each survey area, the sample of public sector medicine outlets was identified by first selecting the main public hospital. An additional four to five public medicine outlets (e.g. hospital out-patient medicine outlets, dispensaries) per survey area were then selected at random from those within a 4 hour's drive from the main hospital. Annex 8 shows a detailed list of outlets surveyed in each department for each sector, as well as the number of medications found in each outlet and the care-level of the outlet.

In Haiti, this selection was made from all public facilities expected to stock most of the medicines in the survey, namely tertiary and secondary hospitals, primary health care centres and dispensaries. The public sector

sample therefore contained two to ten public medicine outlets in each of the 10 survey areas, for a total of 54 public outlets.

The retail sector sample was selected using the Ministry of Health registration directory; for the major urban area five retail pharmacies were selected at random. For the remaining departments the number of registered pharmacies varied from two to eight. The retail sector sample contained two to seven pharmacies, yielding a total of 35 private outlets.

Sample for the dispensaries in the non-profit sector were selected based on lists from the regional health departments. Selection was based on accessibility and travel distance from the main public hospital (within 4 hours). This yielded a sample of one to six non-profit sector outlets in each department, resulting in a total of 39 outlets.

The sample for the mixed sector was also selected based on lists from regional health departments. Selection was based on accessibility and travel distance from the main public hospital. The sample for the mixed sector contained zero to ten facilities in each department of Haiti. The only sample area to not have any mixed outlets surveyed was the urban department of Port-au-Prince, all other sample areas contained facilities from the mixed sector. This yielded a sample of 35 outlets.

3. Selection of medicines to be surveyed

The WHO/HAI methodology specifies a core list of 14 global medicines and 16 regional medicines to be surveyed, representing medicines commonly used in the treatment of a range of chronic and acute conditions. The methodology also includes the specific dosage form and strength that is to be collected for each medicine. This ensures that data on comparable products are collected in all surveys, thereby allowing international comparisons to be made.

In Haiti, all 14 global core medicines, and all 16 regional medicines, from the WHO/HAI core list were included in the survey. An additional 29 supplementary medicines and 1 device were selected from the Better Medicines for Children Project (BMCP) for inclusion in the survey. One medication from the BMCP survey was substituted with another medication: Artemether+Lumefantrine for treatment of malaria was substituted with Chloroquine 150mg tablet as Chloroquine is the first-line treatment used for combating malaria in Haiti. Supplementary medicines were selected in order to evaluate and ensure improved access and availability of life-saving medications for children of Haiti and according to epidemiological context in Haiti. Enalapril 5mg (more used), was also

added to the survey to be evaluated alongside the Enalapril 10mg from regional list. The full list of survey medicines is provided in Annex 1.

4. Data Collection

The survey team consisted of a survey manager, 3 supervisors, 12 data collectors and 2 data entry personnel. 10 of the 12 data collectors were pharmacy students from University of California, San Francisco – School of Pharmacy (UCSF-SOP) and State University of Haiti – Faculty of Medicine and Pharmacy (UEH-FMP). Other 2 data collectors were students of medicine from UEH-FMP. One of the supervisors was a pharmacist licensed in Haiti and another physician in Haiti. The data entry personnel consisted of the survey manager for primary entry and a UCSF student data collector for double-entry. All survey personnel received training in the standard survey methodology and data collection/data entry procedures. As part of the workshop, two data collection pilot tests were conducted at private (retail) medicine outlets which did not form part of the survey sample.

Data collection took place between 8/4/2011 and 8/16/2011. Data collectors visited medicine outlets in pairs whenever possible and collected information on medicine availability and price using a standard data collection form specific to the medicines being surveyed in Haiti. Supervisors checked all forms at the end of each day of data collection, and validated the data collection process by collecting data at 20% of the medicine outlets and comparing their results with those of the data collectors. Upon completion of the survey the survey manager conducted a quality control check of all data collection forms prior to data entry. Not all data collection was conducted by 2 data collectors due to limited resources and time; in four of the 10 departments data collection was conducted by one data collector for some of the outlets, while in all other departments data collection was conducted in pairs.

When data collectors did not find at least 50% of the targeted medicines in any given medicine outlet, whenever possible an additional outlet was surveyed. This was not the case for all sectors in every department due to limitations on registered outlets and accessibility.

5. Data Entry

Survey data was entered by trained personnel into the pre-programmed *Workbook* provided as part of the WHO/HAI methodology. Data entry was checked using the 'double entry' and 'data checker' functions of the *Workbook*. *Workbook* was reviewed by HAI technical adviser for erroneous entries and potential outliers were verified and corrected as necessary.

6. Data Analysis

The availability of individual medicines is calculated as the percentage (%) of medicine outlets where the medicine was found. Mean (average) availability is also reported for the overall 'basket' of medicines surveyed. The availability data only refers to the day of data collection at each particular facility and may not reflect average monthly or yearly availability of medicines at individual facilities. The availability of individual medicines in the public sector was limited to those facilities where the medicine was expected to be available. For example, if a survey medicine is only provided through secondary or tertiary hospitals, the calculation of the medicine's % availability was limited to these facilities.

To facilitate cross-country comparisons, medicine prices obtained during the survey are expressed as ratios relative to a standard set of international reference prices:

$$\textit{Medicine Price Ratio (MPR)} = \frac{\textit{median local unit price}}{\textit{international reference unit price}}$$

The ratio is thus an expression of how much greater or less the local medicine price is than the international reference price e.g. an MPR of 2 would mean that the local medicine price is twice that of the international reference price. Median price ratios for patient prices were only calculated for medicines with price data from at least 4 medicine outlets. The exchange rate used to calculate MPRs was 1 US$ = 39.6862; this was the commercial "buy" rate on the first day of data collection taken from www.oanda.com.

The reference prices used were the 2010 Management Sciences for Health (MSH) reference prices, taken from the International Drug Price Indicator Guide. These reference prices are the medians of recent procurement prices offered by for-profit and not-for-profit suppliers to international not-for-profit agencies for generic products. These agencies typically sell in bulk quantity to governments or large NGOs, and are therefore relatively low and represent efficient bulk procurement without the costs of shipping or insurance. No MSH2010 prices were available for 11 of the survey medicines (therefore for these 11 medicines only availability could be analysed and median price in local currency).

Price results are presented for individual medicines, as well as for the overall 'basket' of medicines surveyed. Summary results for the basket of medicines have been shown to provide a reasonable representation of medicines in the country and price conditions on the market. As averages can be skewed by outlying values, median values have been used in the

price analysis as a better representation of the midpoint value. The magnitude of price and availability variations is presented as the interquartile range. A quartile is a percentile rank that divides a distribution into 4 equal parts. The range of values containing the central half of the observations, that is, the range between the 25th and 75th percentiles, is the interquartile range.

Finally, the affordability of 9 medicines for treating 9 common conditions for adults (acute and chronic diseases) and 7 medicines for common acute conditions for children was assessed by comparing the median cost of treatment medicines prescribed at a standard dose, to the daily wage of the lowest paid unskilled government worker US $5.04 (Ministry of Economics and Finance, January 2011) Though it is difficult to assess true affordability, treatments costing one days' wage or less (for a full course of treatment for an acute condition, or a 30-day supply of medicine for chronic diseases) are generally considered affordable.

V. Results

1. Availability of medicines on the day of data collection

Table 1: Mean availability of medicines in public, private, non-profit and mixed sectors

Medicines	Public sector	Private sector	Non-Profit sector	Mixed sector
Originator brand	1.9%	4.9%	1.8%	1.5%
Lowest price generic	19.5%	37.3%	23.8%	23.2%

- ✓ Average availability was very low in all sectors at 1.9% for originator brands and 19.5% for lowest priced generics in the public sector; 4.9% and 37.3% in private sector; at 1.8% and 23.8% in the non-profit sector and at 1.5% and 23.2% in the mixed sector
- ✓ However, In the private sector, medicine availability was higher that of the other sectors for both originator brands and generic medications. The availability was similar in public, non-profit and mixed sectors
- ✓ Generics were the predominant product type available in all sectors

Example of medicines availability in the public, private, non-profit and mixed sectors (tablets/capules unless specified):

In the public sector, medicines (generics) with particularly low availability (less than 5%) include:

- ✓ Amoxicillin/Clavulanic dispersible tablet (0%),
- ✓ Amoxicillin/Clavulanic suspension (0%),
- ✓ Beclometasone inhaler, 100mcg and 250mcg (0%),
- ✓ Carbamazepine suspension (0%),
- ✓ Clonazepam (0%),
- ✓ Diazepam rectal solution (0%),
- ✓ Isoniazid (0%),
- ✓ Morphine dispersible tablet and solution (0%), Morphine and phenobarbital formulations were not expected to be available at primary or clinic level of care, however, these forms of morphine were also not found at secondary level regional hospitals or tertiary level hospitals; morphine in injection form was found at the tertiary level public hospitals (although it was not included in the survey).
- ✓ Oral rehydration solution 500ml (0%),
- ✓ Phenobarbital injection (0%), Phenobarbital oral liquid was found at 2 of the 27 secondary and tertiary level care facilities surveyed

- ✓ Phenytoin chewable tablet and suspension (0%),
- ✓ Simvastatin (1.9%),
- ✓ Spacer (0%),
- ✓ Amitriptyline (1.9%),
- ✓ Procaine penicillin injection (3.7%),
- ✓ Ferrous salt suspension (3.7%),
- ✓ Atorvastatin (0%),
- ✓ Benzyl penicillin injection (3.7%),
- ✓ Carbamazepine chewable tablet (3.7%)

<u>In the private sector, medicines (generics) with particularly low availability (less than 5%) include:</u>

- ✓ Beclometasone inhaler 100mcg (0%),
- ✓ Benzyl penicillin injection (0%),
- ✓ Diazepam rectal solution (0%),
- ✓ Gentamycin injection (0%),
- ✓ Isoniazid (0%),
- ✓ Morphine dispersible tablet and solution (0%),
- ✓ Oral rehydration solution 500ml (0%),
- ✓ Phenobarbital injection (0%),
- ✓ Phenytoin chewable tablet and suspension (0%),
- ✓ Spacer (0%),
- ✓ Zinc dispersible tablet (2.9%),
- ✓ Co-trimoxazole dispersible tablet (2.9%),
- ✓ Beclometasone inhaler 250mcg (2.9%),
- ✓ Amoxicillin/Clavulanic dispersible tablet (2.9%),
- ✓ Carbamazepine chewable tablet (0%)

<u>In the non-profit sector, medicines (generics) with particularly low availability (less than 5%) include:</u>

- ✓ Amoxicillin/Clavulanic dispersible tablet (0%),
- ✓ Amoxicillin/Clavulanic suspension (0%),
- ✓ Atorvastatin (0%),
- ✓ Clonazepam (0%),
- ✓ Diazepam rectal solution (0%),
- ✓ Isoniazid (0%),
- ✓ Morphine oral solution (0%), Morphine and phenobarbital formulations were not expected to be available at primary or clinic level of care, however, these forms of morphine or phenobarbital were also not found at most of the secondary level or tertiary level non-profit hospitals; morphine in injection form was found at the tertiary level non-profit hospitals.
- ✓ Oral rehydration solution 500ml (0%),
- ✓ Phenobarbital injection and oral liquid (0%),

- ✓ Phenytoin chewable tablet and suspension (0%),
- ✓ Procaine penicillin injection (0%),
- ✓ Fluoxetine (0%),
- ✓ Ferrous salt suspension (0%),
- ✓ Beclometasone inhaler, 100mcg and 250mcg (2.6% originator brand),
- ✓ Carbamazepine suspension (2.6% originator brand),
- ✓ Gentamycin injection (2.6%),
- ✓ Spacer (2.6%),
- ✓ Simvastatin (2.6%),
- ✓ Benzyl penicillin injection (2.6%),
- ✓ Carbamazepine chewable tablet (2.6%)

In the mixed sector, medicines with particularly low availability (less than 5%) include:

- ✓ Amoxicillin/Clavulanic dispersible tablet (0%),
- ✓ Gentamycin injection (0%),
- ✓ Beclometasone inhaler, 100mcg and 250mcg (0%),
- ✓ Atorvastatin (0%),
- ✓ Carbamazepine chewable tablet (0%),
- ✓ Carbamazepine suspension (0%),
- ✓ Clonazepam (0%),
- ✓ Diazepam rectal solution (0%),
- ✓ Isoniazid (0%),
- ✓ Morphine dispersible tablet and oral solution (0%),
- ✓ Phenobarbital injection and oral liquid (0%),
- ✓ Phenytoin chewable tablet and suspension (0%),
- ✓ Simvastatin (0%),
- ✓ Spacer (0%),
- ✓ Procaine penicillin injection (2.9%),
- ✓ Ceftriaxone 500mg injection (2.9%),
- ✓ Amoxicillin/Clavulanic suspension (2.9% originator brand and 2.9% generics),
- ✓ Amitriptyline (2.9%),
- ✓ Fluoxetine (2.9%)

Table 2: Availability of medicines in the public, private, non-profit and mixed sectors (generics unless stated, tab/cap unless stated)

	Pubic Sector	Private Retail Sector	Non-Profit	Mixed
Medicines not found in any outlets	✓ Amox/Clav disp. tab ✓ Amox/Clav Suspension ✓ Atorvastatin ✓ Beclometasone Inhaler (100mcg) ✓ Beclometasone inhaler (250mcg) ✓ Carbamazepine Susp ✓ Diazepam Rectal Sol ✓ Isoniazid ✓ Morphine disp. Tablet ✓ Morphine Oral Solution ✓ Phenobarbital Injection ✓ Phenytoin chewTablet ✓ Phenytoin Suspension ✓ Spacer (for Inhalers) ✓ Clonazepam ✓ ORS 500ml	✓ Beclometasone Inhaler (100mcg) ✓ Carbamazepine chew Tab ✓ Gentamycin Injection ✓ Isoniazid ✓ Morphine disp Tablet ✓ Morphine Oral Solution ✓ Phenobarbital Inj ✓ Phenytoin chew Tablet ✓ Phenytoin Suspension ✓ Spacer (for Inhalers) ✓ Benzyl Penicillin inj ✓ Diazepam rectal soln ✓ ORS 500ml	✓ Amox/Clav disp tab ✓ Amox/Clav Suspension ✓ Atorvastatin ✓ Clonazepam ✓ Diazepam Rectal Sol ✓ Ferrous Salt Suspension ✓ Fluoxetine ✓ Isoniazid ✓ Morphine Oral Solution ✓ Phenobarbital Injection ✓ Phenobarbital Oral Liq ✓ Phenytoin chew Tablet ✓ Phenytoin Suspension ✓ Procaine Penicillin Inj ✓ ORS 500ml	✓ Amox/Clav disp tab ✓ Atorvastatin ✓ Beclometasone inhaler (100mcg) ✓ Beclometasone inhaler (250mcg) ✓ Carbamazepine chew Tab ✓ Carbamazepine Susp ✓ Clonazepam ✓ Diazepam Rectal Sol ✓ Gentamycin Injection ✓ Isoniazid ✓ Morphine disp Tablet ✓ Morphine Oral Sol ✓ Phenobarbital Inj ✓ Phenobarbital Oral Liq ✓ Phenytoin chew Tablet ✓ Phenytoin Suspension ✓ Simvastatin ✓ Spacer (for inhalers)
Medicines found in less than 25% of outlets	✓Amitriptyline ✓Amlodipine ✓Amoxicillin disp. Tab ✓Atenolol ✓Azithromycin ✓Benzyl Penicillin Inj ✓Carbamazepine chew Tab ✓Ceftriaxone inj 500mg ✓Chloramphenicol Inj ✓Clotrimazole cream ✓co-trimoxazole disp.Tab ✓Enalapril (5mg) ✓Ferrous Salt Susp ✓Fluoxetine ✓Gentamycin Inj ✓Ibuprofen (200mg) ✓Metformin ✓Phenobarbital Oral Liq ✓Phenytoin ✓Procaine Penicillin Inj ✓Ranitidine	✓ Amitriptyline ✓ Amoxicillin disp.Tab ✓ Amoxicillin/Clavulanic disp. tab ✓ Amoxicillin/Clavulanic Susp ✓ Atorvastatin ✓ Beclometasone inh 250mcg ✓ Carbamazepine Susp (originator brand) ✓ Ceftriaxone inj 500mg (originator brand) ✓ Chloramphenicol Inj ✓ Clonazepam ✓ co-trimoxazole disp Tab ✓ Ferrous Salt Susp ✓ Fluoxetine ✓ Phenytoin ✓ Vitamin A ✓ Zinc Dispersible Tablet ✓ Phenobarbital oral liq	✓ Amitriptyline ✓ Amoxicillin disp Tab ✓ Azithromycin ✓ Beclometasone inh 100mcg (generic) & 250mcg (originator brand) ✓ Carbamazepine chew Tab ✓ Carbamazepine Susp (originator brand) ✓ Ceftriaxone inj 500mg ✓ Chloramphenicol Inj ✓ co-trimoxazole disp Tab ✓ Enalapril 5mg ✓ Gentamycin Inj ✓ Metformin ✓ Morphine disp Tab ✓ Spacer (for Inhalers) ✓ Vitamin A	✓ Amitriptyline ✓ Amlodipine ✓ Amoxicillin disp Tab ✓ Amoxicillin/Clavulanic Suspension ✓ Azithromycin ✓ Benzyl Penicillin Inj ✓ Ceftriaxone inj ✓ Chloramphenicol Inj 500mg ✓ Clotrimazole cream ✓ co-trimoxazole disp Tab ✓ Ferrous Salt Susp ✓ Fluoxetine ✓ Metformin ✓ Phenytoin ✓ Vitamin A ✓ ORS 500ml ✓ Procaine Penicillin inj

	✓Simvastatin	✓ Procaine Penicillin inj	✓ Benzyl penicillin inj ✓ Simvastatin	
Medicines found in 25 to 50% of outlets	Captopril Diazepam Diclofenac Enalapril Furosemide Glibenclamide Hydrochlorothiazide Metronidazole Omeprazole Oral Rehydration Solution (1L) Paracetamol suspension (120mg/5ml or 125mg/5ml) Salbutamol inhaler Vitamin A	Clotrimazole topical cream Diazepam Ibuprofen (200mg) Oral Rehydration Solution (1L) Metformin	Amlodipine Amoxicillin suspension 250mg/5ml Atenolol Azithromycin Captopril Clotrimazole topical cream Diclofenac Enalapril 10mg Furosemide Glibenclamide Hydrochlorothiazide Omeprazole Phenytoin Ranitidine Salbutamol inhaler Zinc Dispersible Tablet (originator brand) Diazepam	Amoxicillin suspension 125mg/5ml Atenolol Captopril Diazepam Diclofenac Enalapril (10mg) Enalapril (5mg) Hydrochlorothiazide Ibuprofen (200mg) Metronidazole Omeprazole Salbutamol inhaler
Medicines found in 50 to 75% of outlets	Amoxicillin Amoxicillin suspension (250mg/5ml) Amoxicillin Suspension (125mg/5ml) Ceftriaxone injection (1g/vial) Chloroquine Ciprofloxacin Co-trimoxazole suspension Ibuprofen (400mg) Zinc Dispersible Tablet (originator brand)	Amlodipine Amoxicillin suspension 250mg/5ml Atenolol Azithromycin Captopril Ceftriaxone injection (1g/vial) Co-trimoxazole suspension Hydrochlorothiazide Simvastatin	Amoxicillin Suspension 125mg/5ml Ceftriaxone injection (1g/vial) Chloroquine Co-trimoxazole suspension Ibuprofen (200mg) Ibuprofen (400mg) Metronidazole Oral Rehydration Solution (1L) Paracetamol suspension (120mg/5ml or 125mg/5ml)	Amoxicillin Ceftriaxone injection (1g/vial) Chloroquine Co-trimoxazole suspension Furosemide Glibenclamide Paracetamol suspension (120mg/5ml or 125mg/5ml) Ranitidine Zinc Dispersible Tablet (originator brand)
Medicines found in over 75% of outlets	None	Amoxicillin tablet Amoxicillin Suspension 125mg/5ml Chloroquine Ciprofloxacin Diclofenac Enalapril (10mg) Enalapril (5mg) Furosemide Glibenclamide Ibuprofen (400mg) Metronidazole Omeprazole Paracetamol suspension (120mg/5ml or 125mg/5ml) Ranitidine Salbutamol inhaler	Amoxicillin Ciprofloxacin	Amoxicillin Suspension 125mg/5ml Ciprofloxacin Ibuprofen (400mg) Oral Rehydration Solution (1L)

2. Patient Prices

A comprehensive analysis of patient prices using MSH international reference price (median price ration or MPR) was conducted for public, private, non-profit and mixed sectors in Haiti. Minimum of 4 prices per medicine was required for analysis, less were excluded.

2.1: Public sector patient prices

Table 3: Public sector patient prices

Ratio of median unit price to MSH international reference price (median price ratio or MPR), median for all medicines found.

Product type	Median MPR	25th percentile	75th percentile
Originator brand (n=1 medicine)	**1.63**		
Lowest price generic (n = 24 medicines)	**4.77**	**3.42**	**9.05**

The results above show that in the public sector:

- ✓ Lowest price generic medicines are generally sold at 4.77 times their international reference price. Half of the lowest priced generic medicines were priced at 3.42 (25th percentile) to 9.05 (75th percentile) times their international reference price. Some lowest price generic medicines priced several times higher than international reference prices include Diazepam 5mg (MPR = 20.65), Glibenclamide (MPR = 18.53), Furosemide and Diclofenac (MPR = 11.72), The 25th and 75th percentiles for individual medicines show that, for generic medicines, prices vary significantly between public sector medicine outlets.
- ✓ Few originator brand medicines were found in the public sector

2.2: Private sector patient prices

Table 4: Private sector patient prices

Ratio of median unit price to MSH international reference price (median price ratio or MPR), median for all medicines found

Product type	Median MPR	25 %ile	75 %ile
Originator brand (n = 14 medicines)	**34.81**	**11.15**	**47.39**
Highest price generic (n = 17 medicines)	**14.17**	**8.00**	**20.51**
Lowest price generic (n = 34 medicines)	**7.25**	**4.38**	**14.30**

The results above show that in the private sector:

- ✓ Originator brand medicines are generally sold at 34.81 times their international reference price. Half of the originator brand medicines were priced at 11.15 (25th percentile) to 47.39 (75th percentile) times their international reference price. Some originator brand medicines

priced several times higher than international reference prices include Diclofenac (MPR = 175.80), Furosemide (MPR = 87.02), and Clotrimazole topical cream (MPR = 51.02). The 25th and 75th percentiles for individual medicines show that, for originator brands, prices vary significantly between private sector medicine outlets.

- ✓ Highest price generic medicines are generally sold at 14.17 times their international reference price. Half of the lowest priced generic medicines were priced at 8.00 (25th percentile) to 20.51 (75th percentile) times their international reference price. Some highest price generic medicines priced several times higher than international reference prices include Glibenclamide (MPR = 37.06), Diclofenac (MPR = 32.23), and Ciprofloxacin (MPR = 30.30), The 25th and 75th percentiles for individual medicines show that, for generic medicines, prices vary significantly between private sector medicine outlets.
- ✓ Lowest price generic medicines are generally sold at 7.25 times their international reference price. Half of the lowest priced generic medicines were priced at 4.38 (25th percentile) to 14.30 (75th percentile) times their international reference price. Some lowest price generic medicines priced several times higher than international reference prices include Fluoxetine (MPR=49.57), Phenytoin (MPR 30.22), Diclofenac (MPR = 25.20), Diazepam (MPR = 20.65), and Hydrochlorothiazide (MPR = 20.43), The 25th and 75th percentiles for individual medicines show that, for generic medicines, prices vary significantly between private sector medicine outlets.

Table 5: Comparison of the prices of originator brands, highest priced generics and lowest priced generics in the private sector

Median MPRs for medicines found as both product types.

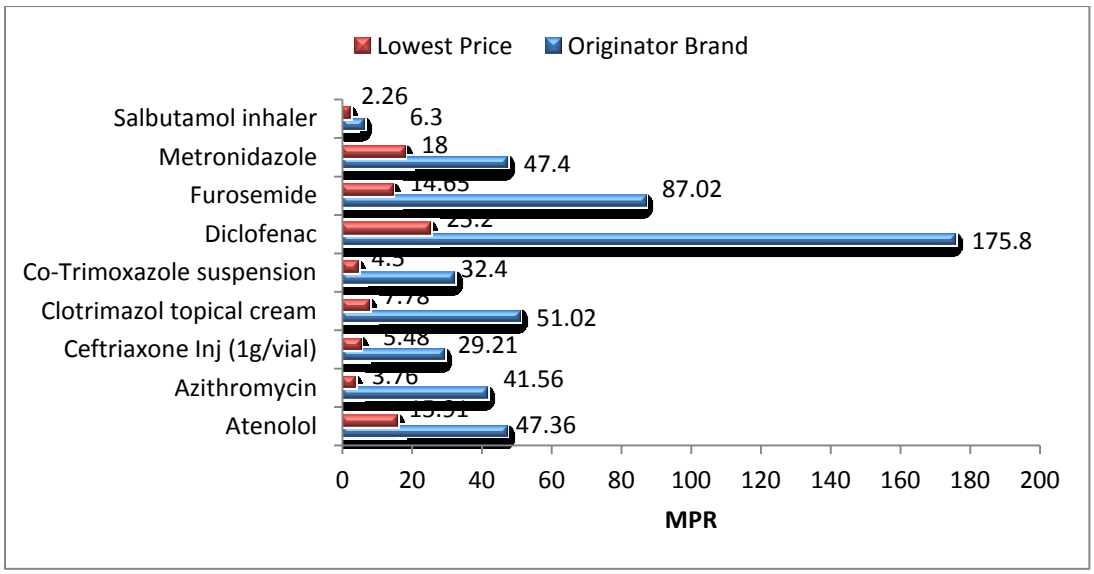
Type (n = 11 medicines)	**Median MPR**	**Med 25 %ile**	**Med75 %ile**
Originator brand	**41.56**	**30.81**	**49.21**
Lowest price generic	**7.78**	**4.13**	**15.28**

Type (n = 4 medicines)	**Median MPR**	**25 %ile**	**75 %ile**
Originator brand	**58.12**	**23.49**	**109.21**
Highest price generic	**13.22**	**5.13**	**23.44**

Type (n = 17 medicines)	**Median MPR**	**25 %ile**	**75 %ile**
Highest price generic	**14.17**	**8.00**	**20.51**
Lowest price generic	**5.48**	**4.20**	**8.65**

In the above table, only those medicines, for which both the originator brand and a generically equivalent product were found, were included in the analysis to allow for the comparison of prices between the two product types. Results show that in the private sector, originator brands cost 5.3 times more, on average, than their lowest pricedgeneric equivalents. Thus, patients are paying substantially more to purchase originator brand medicines when lower-cost generics are available. Overall, across 17 medicines, highest priced generics cost 2.6 times more than lowest priced generics.

Figure 2: Median price ratios for selected medicines, originator brand and lowest priced generic equivalents, private sector



2.3: Non-profit sector patient prices

Table 6: Non-profit sector patient prices

Ratio of median unit price to MSH international reference price (median price ratio or MPR), median for all medicines found.

Product type	Median MPR	25th percentile	75th percentile
Lowest price generic (n = 26 medicines)	**4.33**	**3.29**	**10.15**

The results above show that in the non-profit sector:

- ✓ Lowest price generic medicines are generally sold at 4.33 times their international reference price. Half of the lowest priced generic medicines were priced at 3.29 (25th percentile) to 10.15 (75th

percentile) times their international reference price. Some lowest price generic medicines priced several times higher than international reference prices include Diazepam 5mg (MPR = 16.52), Metronidazole (MPR = 16.20), Furosemide and Diclofenac (MPR = 11.72), The 25th and 75th percentiles for individual medicines show that, for generic medicines, prices vary significantly between non-profit sector medicine outlets.

- ✓ Originator brand medicines are not readily available in the non-profit sector.

2.4: Mixed sector patient prices

Table 7: Mixed sector patient prices

Ratio of median unit price to MSH international reference price (median price ratio or MPR), median for all medicines found.

Product type	Median MPR	25th percentile	75th percentile
Lowest price generic (n = 24 medicines)	**4.00**	**3.10**	**6,91**

The results above show that in the public sector:

- ✓ Lowest price generic medicines are generally sold at 4.00 times their international reference price. Half of the lowest priced generic medicines were priced at 3.10 (25th percentile) to 6.91 (75th percentile) times their international reference price. Some lowest price generic medicines priced several times higher than international reference prices include Glibenclamide (MPR = 14.82), Atenolol (MPR = 13.26), Furosemide (MPR = 11.72), The 25th and 75th percentiles for individual medicines show that, for generic medicines, prices do not vary significantly between mixed sector medicine outlets.
- ✓ Originator brand medicines are not readily available in the non-profit sector.

3. Comparison of patient prices in the public, private, non-profit and mixed sectors

Originator products were rarely encountered in public, non-profit and mixed sectors and generally the number of data points in each sector was less than 4 prices, therefore, the analysis below only covers lowest priced generic medications.

Table 8: Median MPRs for medicines found in public and private sectors

Product type	Median MPR Public sector patient prices	Median MPR Private sector patient prices	% difference private to public
Lowest price generic (n = 26 medicines)	**4.77**	**7.25**	**52.0%**

9: Median MPRs for medicines found in public and non-profit sectors

Product type	Median MPR Public sector patient prices	Median MPR Non-profit sector patient prices	% difference non-profit to public
Lowest price generic (n = 25 medicines)	**4.16**	**4.71**	**13.30%**

Table 10: Median MPRs for medicines found in both public and mixed sectors

Product type	Median MPR Public sector patient prices	Median MPR Mixed sector patient prices	% difference mixed to public
Lowest price generic (n = 24 medicines)	**4.16**	**4.00**	**-3.80%**

Table 11: Median MPRs for medicines found in non-profit and private sectors

Product type	Median MPR Private sector patient prices	Median MPR Non-profit sector patient prices	% difference private to non-profit
Lowest price generic (n = 25 medicines)	**5.57**	**4.33**	**-22.4%**

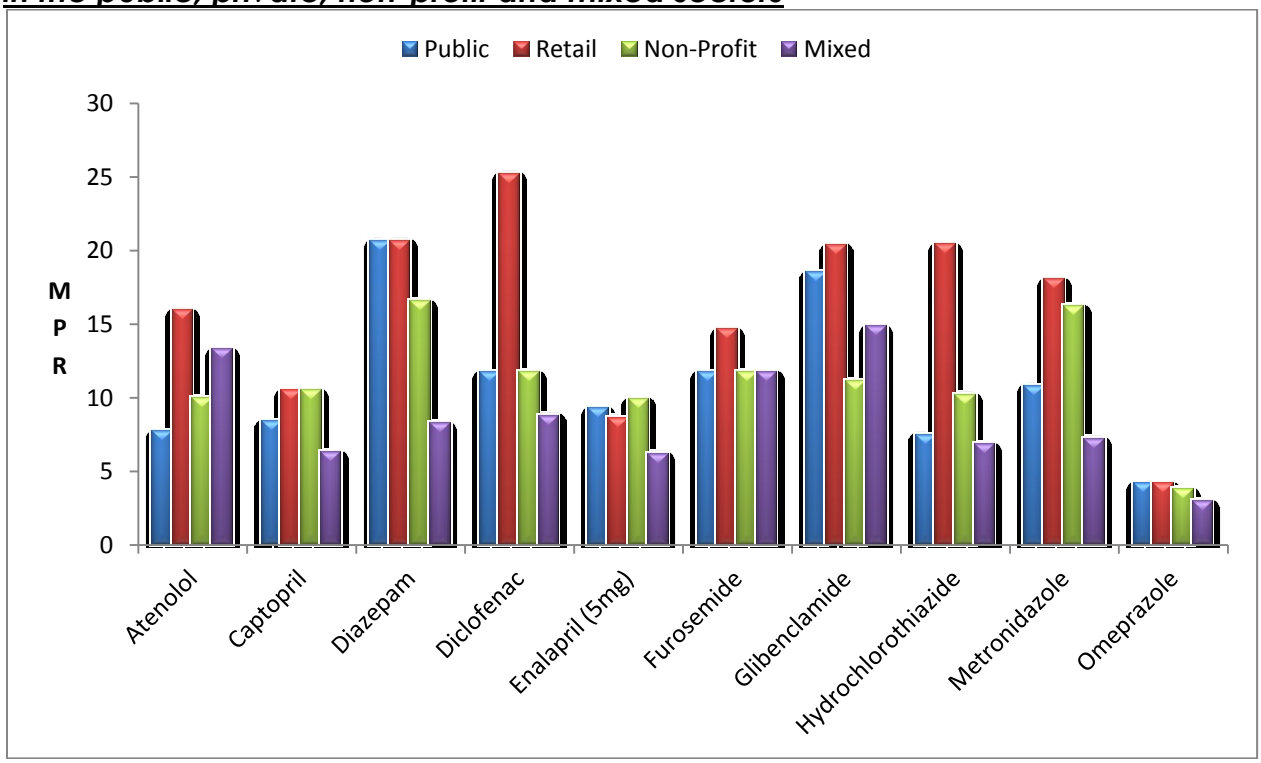
In table 8, only those medicines found in both public and private sector medicine outlets were included in the analysis to allow for the comparison of prices between the two sectors. Results show that final patient prices in the private sector are 52% higher than in the public sector for lowest priced generic medications. Given that overall availability of medicines in the public sector is low, patients are paying substantially higher prices to purchase medicines from the private sector.

In table 9, comparing public sector to the non-profit sector, results show that final patient prices in the non-profit sector are 13.30% higher than in the public sector for lowest priced generic medications.

In table 10, results also show that final patient prices in the mixed sector are 3.80% lower than in the public sector for lowest priced generic medications.

In table 11, when looking at the patient prices between the private sector and the non-profit sector, results show that non-profit prices are 22.4% lower than the private (retail) sector prices.

Figure 3: Median Price Ratios for selected lowest priced generic medicines in the public, private, non-profit and mixed sectors



4. Affordability of standard treatment regimens

The affordability of treatment for 9 common conditions for adults (Table 12) and 7 common conditions for children (Table 13) was estimated as the number of days' wages of the lowest-paid unskilled government worker needed to purchase medicines prescribed at a standard dose. For acute conditions, treatment duration was defined as a full course of therapy, while for chronic diseases, the affordability of a 30-days' supply of medicines was determined. The daily wage of the lowest-paid unskilled government worker used in the analysis was US$ 5.04.

For Adults			**Daily wage: 200 HTG (US$5.04/day)**				
Disease condition and 'standard' treatment			Day's wages to pay for treatment				
Condition	Drug name, strength, dosage form	Treatment schedule	Lowest price generic - public sector	Lowest price generic - private sector	Lowest price generic – non-profit sector	Lowest price generic - mixed sector	Originator brand - private sector
Asthma	Salbutamol 100 mcg/dose inhaler	1 inhaler of 200 doses	**0.7**	**0.8**	**0.6**	**0.8**	2.1
Diabetes	Glibenclamide 5 mg cap/tab	1 cap/tab x 2 x 30 days = 60	0.8	0.8	0.5	0.6	n/a
Diabetes	Metformin 850mg cap/tab	1 cap/tab x 2 x 30 days = 60	1.5	1.7	n/a	n/a	5.4
Hypertension	Atenolol 50 mg cap/tab	1 cap/tab x 30 days = 30	0.4	0.9	0.6	0.8	2.7
Hypertension	Captopril 25 mg cap/tab	1 cap/tab x 2 x 30 days = 60	1.2	1.5	1.5	0.9	n/a
Hypertension	Amlodipine 5 mg cap/tab	1 cap/tab x 30 days = 30	n/a	1.5	1.1	n/a	n/a
Hyperlipidemia	Simvastatin 20 mg cap/tab	1 cap/tab x 30 days = 30	n/a	2.1	n/a	n/a	n/a
Hyperlipidemia	Atorvastatin 10mg cap/tab	1 cap/tab x 30 days = 30	n/a	2.6	n/a	n/a	n/a
Depression	Amitriptyline 25 mg cap/tab	1 cap/tab x 3 for 30 days = 90	n/a	1.8	n/a	n/a	n/a
Depression	Fluoxetine 20mg cap/tab	1 cap/tab x 30 days = 30	n/a	3.6	n/a	n/a	n/a
Adult respiratory infection	Ciprofloxacin 500 mg cap/tab	1 cap/tab x 2 for 7 days = 14	0.4	0.4	0.4	0.4	n/a
Adult respiratory infection	Amoxicillin 500mg cap/tab	1 cap/tab x 3 for 7 days = 21	0.3	0.5	0.4	0.4	n/a
Adult respiratory infection	Ceftriaxone 1 g/vial injection	1 vial X 7 days = 7 vials	2.5	5.3	4.2	3.5	28.0
Anxiety	Diazepam 5mg cap/tab	1 cap/tab x 7 days = 7	0.2	0.2	0.1	0.1	n/a
Arthritis	Diclofenac 50mg cap/tab	1 cap/tab x 2 x 30 days = 60	0.6	1.3	0.6	0.5	9
Ulcer	Omeprazole 20mg cap/tab	1 cap/tab x 30 days = 30	0.8	0.8	0.7	0.5	n/a
Ulcer	Ranitidine 150mg cap/tab	1 cap/tab x 2 x 30 days = 60	0.9	1.4	0.9	0.8	n/a

Table 13: Affordability of standard treatments for children
Number of days' wages of the lowest paid government worker needed to purchase standard treatments for children

Children			**Daily wage: 200 HTG (US$5.04/day)**				
Disease condition and 'standard' treatment			Day's wages to pay for treatment				
Condition	Drug name, strength, dosage form	Treatment schedule	Lowest price generic - public sector	Lowest price generic - private sector	Lowest price generic – non-profit sector	Lowest price generic - mixed sector	Originator brand - private sector
Respiratory Tract Infections, UTIs	Amoxicillin Suspension 125 mg/5 mL	Child up to 10 years: 125mg (=5ml) x 3 x 7 days= 105 ml	0.3	0.3	0.3	0.3	n/a
Respiratory Tract Infections, UTIs	Amoxicillin Suspension 250 mg/5 mL	Child over 10 years: 250mg (=5ml) x 3 x 7 days= 105 ml	0.3	0.4	0.3	0.3	n/a
Respiratory Tract Infections, Otitis Media	Amoxicillin-Clavulanic Acid Suspension 125-31.25mg/ 5 ml	Child 1-6 years: 125mg (=5ml) x 3 x 7 days= 105 ml	n/a	n/a	n/a	n/a	3.7
Respiratory Tract Infections	Co-trimoxazole 8+40 mg/ml suspension	5ml twice a day for 7 days = 70 ml	0.2	0.3	0.2	0.2	1.9
Seizure Disorder	Carbamazepine Suspension 100mg/5ml	Maintenance treatment: 5mg/kg x 20 kg* x 3 x 30 days = 9000mg or 450 mL for 1 month.	n/a	n/a	n/a	n/a	6.6
Infections due to Susceptible Organisms	Ceftriaxone 500 mg vial	Child under 50 kg: Maximum 1 gram daily x 7 days. 1vial x7 = 7 vials (3.5 grams, minimum)	n/a	n/a	n/a	n/a	24.6
Dehydration	Oral Rehydration Solution, powder to make 1000 mL	Moderate Dehydration: 75mL/kg x 20 kg= 1500 (1.5 sachets)	n/a	0.1	n/a	n/a	n/a
Pain/inflammation	Paracetamol 24mg/ml suspension	5 year old child: 15mg/kg x 20 kg x 4 x 3=3600 mg (=150 mL)	0.5	0.6	0.4	0.5	n/a

Table 12 and 13: Affordability of standard treatments for adults and for children
Number of days' wages of the lowest paid unskilled government worker needed to purchase standard treatments for adults

*Weight of average 5 year old child = 20 kg (Centre for Disease Control, United States)

The affordability of lowest price generics in the public sector was good for most conditions, with standard treatment costing a less than a days' wage. Treatments costing over a days' wage of the lowest paid government worker include diabetes with metformin 850mg (1.5 days' wages) and hypertension with captopril 25mg (1.2 days' wages). However, given the low availability of medicines in the public sector, many patients must purchase medicines from the private sector.

In the private sector, the affordability of lowest price generics was reasonable for some conditions, with standard treatment costing a between 0.2 to 2 days' wage. Treatments costing over a days' wage of the lowest paid government worker include diabetes with metformin 850mg (1.7 days' wage), hypertension with captopril 25mg (1.5 days' wage), hyperlipidemia with simvastatin 20mg and atorvastatin 10mg (2.1 and 2.6 days' wage, respectively). Depression treatment with fluoxetine 20mg cost 3.6 days' wage, while treatment of respiratory infection with ceftriaxone 1g/vial cost 5.3 days' wage. The most affordable standard treatments were those for treating chronic conditions such as asthma with salbutamol 100mcg (0.8 days' wage) and diabetes with glibenclamide 5mg (0.8 days' wage). The most affordable standard treatments were those for treating acute conditions like respiratory infection with ciprofloxacin 500mg and amoxicillin 500mg (0.4 and 0.5 days' wage, respectively).

When originator brand medicines are prescribed and dispensed in the private sector, several treatments cost well over one days' wage. For example, treating respiratory infection with ceftriaxone 500mg and ceftriaxone 1g costs 24.6 and 28.0 days' wages, respectively, while treating arthritis with diclofenac 50mg costs 9.0 days' wages.

It should be noted that treatment costs refer to medicines only and do not include the additional costs of consultation and diagnostic tests. Further, many people in Haiti earn less that the lowest government wage; as such even treatments which appear affordable are too costly for the poorest segments of the population. Finally, even where individual treatments appear affordable, individuals or families who need multiple medications may quickly face unmanageable drug costs. In table 14, an example is provided below of a family where the mother has diabetes and the child has asthma. If the family is earning the equivalent of the lowest-paid government worker's salary, total treatment costs are 2.2 days' wages in the public sector and 2.5 days' wages in the private sector if the lowest price generics are purchased. If originator brands are purchased, treatment costs are 7.5 days' wages.

Table 14: Affordability of treatment for a family with diabetes and asthma

Number of days' wages of the lowest paid government worker needed to purchase standard treatments

	Lowest price generic - public sector	Lowest price generic - private sector	Originator brand - private sector
Mother - metformin	1.5	1.7	5.4
Child – salbutamol inhaler	0.7	0.8	2.1
Total days' wages for one month treatment	2.2	2.5	7.5

5. International comparisons

In every WHO/HAI survey, data is collected on the same core medicines with the same dosage forms and strengths, which allows for comparisons to be made across countries. A series of 4 countries were selected for international comparisons of the availability, medicines price ratios and affordability found in this survey. Countries were selected from the Latin American region. Country data were obtained from the global database of survey results available on the HAI website: (http://www.haiweb.org/MedPriceDatabase). Given the wide variation in the public health systems of different countries, results are presented for the private sector.

5.1: International comparisons of private sector prices

An international comparison was conducted to compare the private sector patient prices of 8 WHO/HAI global core originator brand medications (Table 15, Figure 4) in 4 countries and 12 lowest priced generic medications (Table 16, Figure 5). Core medications that were not in the Haiti survey were excluded from analysis. It must be noted that the comparator surveys were conducted in different years to the Haiti survey. Price data was not adjusted for inflation/deflation, or purchasing power parity.

Results for individual medicines show that originator brand medicine prices in Haiti are similar to those in Nicaragua, higher than those in Mexico and less than Colombia (Table 15, Figure 4). With respect to generic medicines, Haiti's prices are higher than those in Nicaragua, Mexico, Colombia and Bolivia (Table 16, Figure 5). Overall, Haiti's medicine prices in the private sector rank poorly compared to the other countries in the comparison.

Table 15: Ratio of local price to international reference price for 8 common core originator brand medications in 4 countries (tab/cap unless stated)

Medicine	Haiti 2011 Originator	Nicaragua 2008 Originator	Mexico City 2009 Originator	Colombia 2008 Originator
Atenolol 50 mg	47.36	23.67	30.85	68.76
Captopril 25 mg	8.40	N/A	45.92	11.81
Ceftriaxone 1 g/vial inj	29.21	25.09	44.23	33.55
Ciprofloxacin 500 mg	90. 92	91.57	51.71	218.32
Co-trimoxazole 8+40 mg/ml suspension	32.40	27.27	15.86	30.54
Diclofenac 50 mg	175.80	130.24	107.25	173.22
Glibenclamide 5 mg	138.34	93.88	45.92	N/A
Salbutamol 100 mcg/dose inhaler	6.30	N/A	9.80	5.52
Median MPR	32.4	59.42	45.08	37.14

Note : Haiti data for captopril, ciprofloxacin and glibenclamide is based on less than 4 data points (all other data in the table is based on 4 or more data points)

Figure 4: Ratio of local price to international reference price for 8 common core originator brand medications in 4 countries

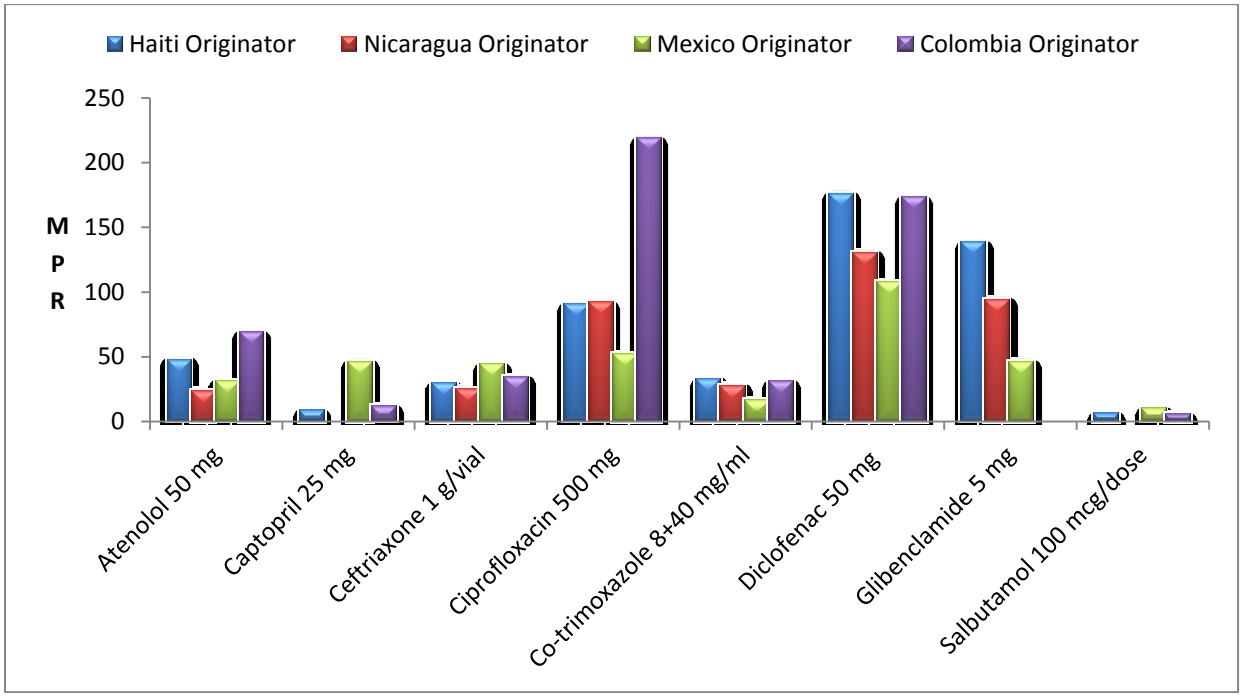
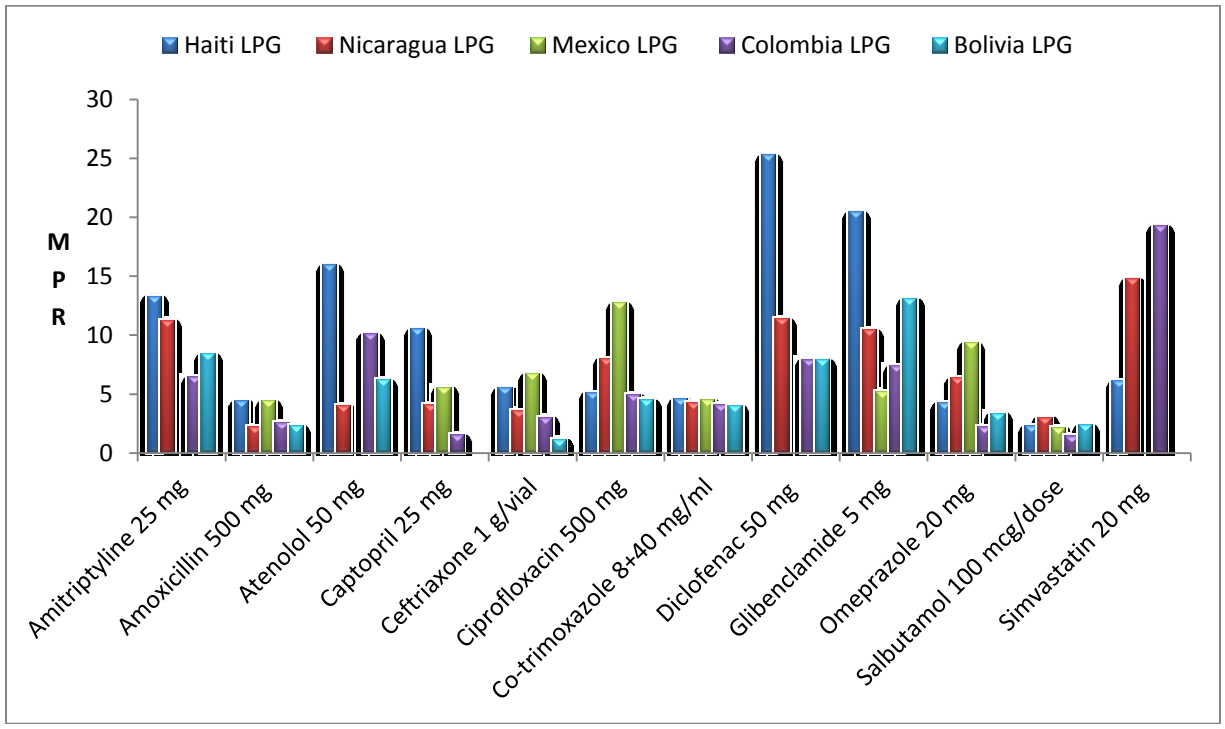


Table 16: Ratio of local price to international reference price for 12 common core lowest priced generic (LPG) medications in 5 countries (tab/cap unless stated)

Medicine	Haiti 2011 LPG	Nicaragua 2008 LPG	Mexico City 2009 LPG	Colombia 2008 LPG	Bolivia 2008 LPG
Amitriptyline 25 mg	13.26	11.24	N/A	6.36	8.32
Amoxicillin 500 mg	4.34	2.18	4.32	2.52	2.27
Atenolol 50 mg	15.91	3.96	N/A	10.05	6.15
Captopril 25 mg	10.50	4.04	5.49	1.48	N/A
Ceftriaxone 1 g/vial inj	5.48	3.58	6.62	3.01	1.88
Ciprofloxacin 500 mg	5.08	7.96	12.66	4.84	4.42
Co-trimoxazole 8+40 mg/ml suspension	4.50	4.17	4.45	4.01	3.98
Diclofenac 50 mg	25.20	11.33	N/A	7.90	7.86
Glibenclamide 5 mg	20.38	10.39	5.18	7.34	13.03
Omeprazole 20 mg	4.20	6.30	9.30	2.16	3.33
Salbutamol 100 mcg/dose inhaler	2.26	2.99	2.09	1.39	2.36
Simvastatin 20 mg	6.08	14.71	N/A	19.22	N/A
Median	5.78	5.24	5.63	4.43	4.20

Figure 5: Ratio of local price to international reference price for 12 common core lowest priced generic (LPG) medications in 5 countries



5.2: International comparisons of private sector availability

International comparison of 9 WHO/HAI global core originator brand medications (Table 17, Figure 6) and 12 core lowest priced generic medications (Table 18, Figure 7) was undertaken across 5 countries. Core medications that were not available in Haiti were excluded from analysis.

Results for individual medicines with respect to originator brands shows that (Table 17, Figure 6):

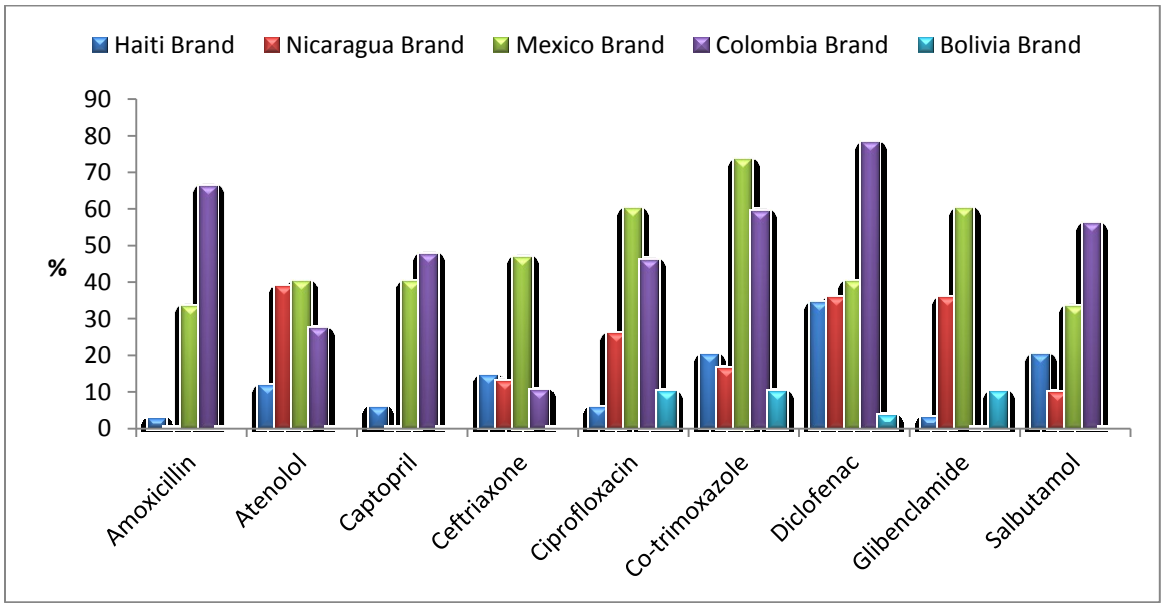
- ✓ The availability of originator brand captopril 25mg, and co-trimoxazole (8/40mg/ml) in Haiti was less than in Mexico City and Colombia, while greater than in Nicaragua and Bolivia.
- ✓ The availability of atenolol 50mg was less in Haiti compared to Nicaragua, Mexico City, and Colombia, while greater when compared to Bolivia.
- ✓ The availability of ceftriaxone 1g/vial was greater in Mexico City and less in Nicaragua, Colombia and Bolivia.
- ✓ The availability of glibenclamide 5mg was greater in Nicaragua, Mexico City and Bolivia.
- ✓ The availability of the originator brand of salbutamol 100mcg/dose (200 doses) inhaler was greater in Mexico City and Colombia, while less in Nicaragua and Bolivia when compared to Haiti.

- ✓ Ciprofloxacin 500mg was found more often in Nicaragua, Mexico City Colombia and Bolivia.
- ✓ Finally, the availability of diclofenac 50mg in Haiti was similar to Nicaragua, less than that in Mexico City and Colombia and greater than that in Bolivia.

Table 17: Availability of 9 common core originator brand medications in private retail pharmacies in 5 countries

Medication - Dose	Haiti 2011 Originator (%)	Nicaragua 2008 Originator (%)	Mexico City 2009 Originator (%)	Colombia 2008 Originator (%)	Bolivia 2008 Originator (%)
Amoxicillin 500 mg	0	0	33.3	66.1	0
Atenolol 50 mg	11.4	38.7	40.0	27.1	0
Captopril 25 mg	5.7	0	40.0	47.5	0
Ceftriaxone 1 g/vial	14.3	12.9	46.7	10.2	3.3
Ciprofloxacin 500 mg	5.7	25.8	60.0	45.8	10.0
Co-trimoxazole 8+40 mg/ml	20.0	16.1	73.3	59.3	10.0
Diclofenac 50 mg	34.3	35.5	40.0	78.0	3.3
Glibenclamide 5 mg	2.9	35.5	60.0	NA	10.0
Salbutamol 100 mcg/dose	20.0	9.7	33.3	55.9	0
Average	12.99	19.35	47.4	43.32	3.7

Figure 6: Availability of 9 common core originator brand medications in private retail pharmacies in 5 countries



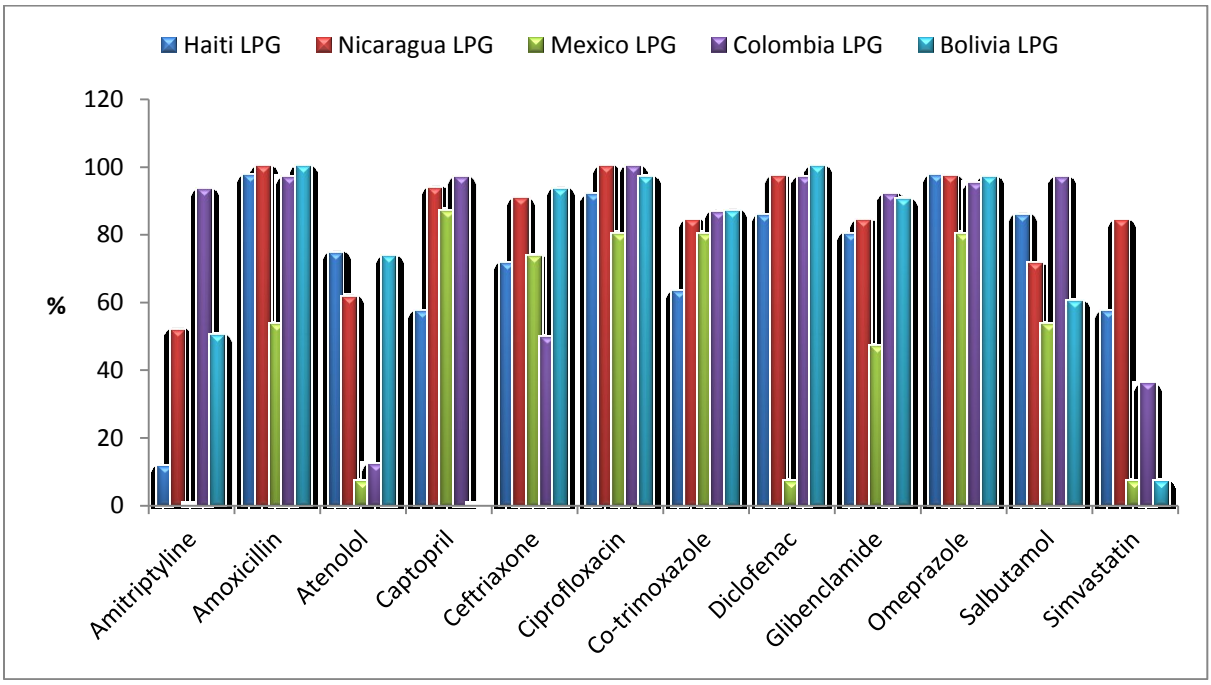
With respect to lowest priced generic, results for individual medicines show that (Table 18, Figure 7):

- ✓ The availability of amitriptyline 25mg in Haiti is less than that in Nicaragua, Colombia and Bolivia but greater than that in Mexico City.
- ✓ The availability of amoxicillin 500mg and glibenclamide 5 mg in Haiti was similar to that in Nicaragua, Colombia and Bolivia, while greater than that is Mexico City.
- ✓ The availability of ciprofloxacin 500mg and Omeprazole 20mg was similar across all countries.
- ✓ The availability of atenolol 50mg in Haiti was similar to that in Bolivia and greater than that in Nicaragua, Mexico City and Colombia.
- ✓ The availability of captopril 25mg in Haiti was less than that in Nicaragua, Mexico City and Colombia b ut greater than that in Bolivia.
- ✓ The availability of ceftriaxone 1g/vial was similar to that in Mexico City, less than that in Nicaragua and Bolivia but greater than that in Colombia.
- ✓ The availability of co-trimoxazole 8+40mg/ml in Haiti was less than that in all other countries being compared.
- ✓ The availability of diclofenac 50mg in Haiti was less than that in Nicaragua, Colombia and Bolivia, while greater than that in Mexico City.
- ✓ The availability of salbutamol 100mcg/dose (200 doses) inhaler was less than that in Colombia and greater than that in Nicaragua, Mexico City and Bolivia.
- ✓ The availability of simvastatin 20mg was less than that in Nicaragua but greater than that in Mexico City, Colombia and Bolivia.

Table 18: Availability of 12 common core LPG medications in private retail pharmacies in 5 countries; core medications that were not available in Haiti were excluded from analysis.

Medication - Dose	Haiti 2011 LPG (%)	Nicaragua 2008 LPG (%)	Mexico City 2009 LPG (%)	Colombia 2008 LPG (%)	Bolivia 2008 LPG (%)
Amitriptyline 25 mg	11.4	51.6	0	93.2	50
Amoxicillin 500 mg	97.1	100	53.3	96.6	100
Atenolol 50 mg	74.3	61.3	6.7	11.9	73.3
Captopril 25 mg	57.1	93.5	86.7	96.6	0
Ceftriaxone 1 g/vial	71.4	90.3	73.3	49.2	86.7
Ciprofloxacin 500 mg	91.4	100.0	80.0	100.0	96.7
Co-trimoxazole 8+40 mg/ml	62.9	83.9	80.0	86.4	86.7
Diclofenac 50 mg	85.7	96.8	6.7	96.6	100.0
Glibenclamide 5 mg	80	83.9	46.7	91.5	90.0
Omeprazole 20 mg	97.1	96.8	80.0	94.9	96.7
Salbutamol 100 mcg/dose	85.7	71.0	53.3	96.6	60.0
Simvastatin 20 mg	57.1	83.9	6.7	35.6	6.7
Average	72.60	84.42	47.78	79.09	71.12

Figure 7: Availability of 12 common core lowest priced generics (LPG) medications in private retail pharmacies in 5 countries



5.3: International comparisons of private sector affordability

International comparison for private sector affordability was undertaken for 3 disease states to be treated with 3 medications. The analysis looked at asthma treated with salbutamol 100 mcg/dose inhaler, 1 inhaler 200 doses; diabetes treated with glibenclamide 5 mg cap/tab, (1 cap/tab x 2 x 30 days = 60); and adult respiratory infection treated with ceftriaxone 1 g/vial injection, (1 vial X 7 days = 7 vials). The results are shown in Table 19, Figure 8, 9 and 10.

Table 19: Number of days' wages of the lowest paid government worker needed to buy the following three medications in the private sector in 5 countries:

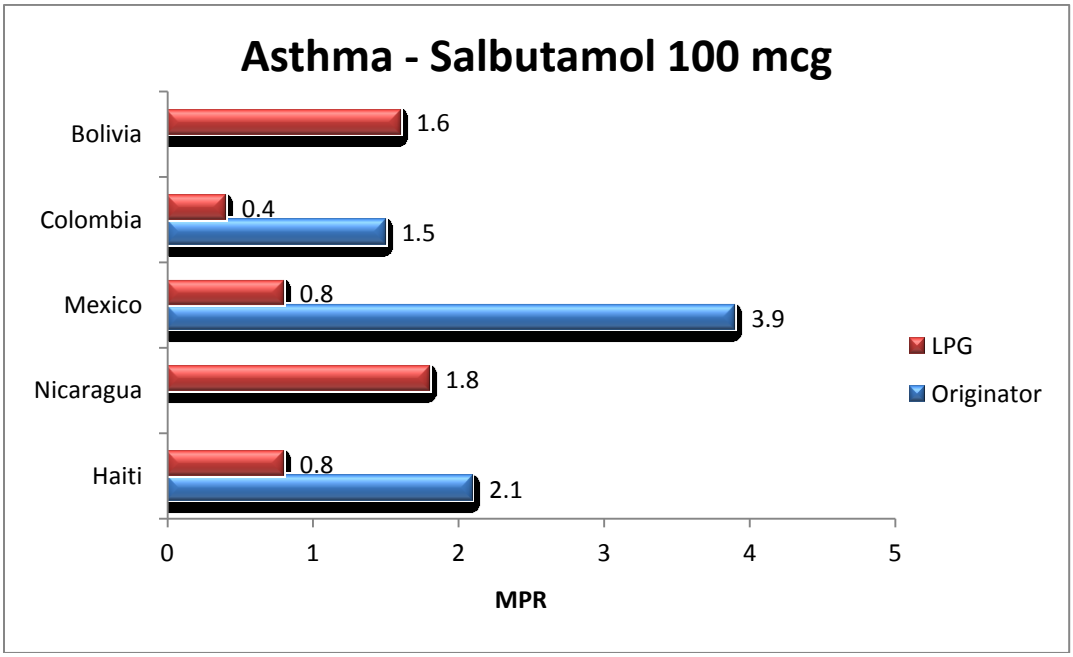
1. Asthma - Salbutamol 100 mcg/dose inhaler, 1 inhabler 200 doses
2. Diabetes - Glibenclamide 5 mg cap/tab, 1 cap/tab x 2 x 30 days = 60
3. Adult respiratory infection - Ceftriaxone 1 g/vial injection, 1 vial X 7 days = 7 vials

	Asthma - Salbutamol 100 mcg/dose inhaler, PRN 200 doses		Diabetes - Glibenclamide 5 mg cap/tab, 1 cap/tab x 2 x 30 days = 60		Adult respiratory infection - Ceftriaxone 1 g/vial injection, 1 vial X 7 days = 7 vials	
Country (Asthma)	Originator	LPG	Originator	LPG	Originator	LPG
Haiti 2011	2.1	0.8	5.6	0.8	28.0	5.3
Nicaragua 2008	N/A	1.8	7.0	0.8	7.4	1.1
Mexico City 2009	3.9	0.8	2.8	0.3	7.5	1.1
Colombia 2008	1.5	0.4	N/A	0.3	4.7	0.4
Bolivia 2008	N/A	1.6	N/A	1.1	N/A	0.6

1. Asthma:

Results show (Table 19, Figure 8) that in the selected countries, treatment of asthma using salbutamol 100mcg/dose (200 doses) inhaler costs between 0.4 and 1.8 days' wages when lowest price generics are purchased from the private sector. In the Haiti, the lowest paid government worker would need to spend 0.8 days' wages to purchase the lowest price generic, which is similar to the affordability observed in most other countries. When the originator brand is purchased, the affordability ranges from 1.5 to 3.9 days' wages across the selected countries. In Haiti, the lowest paid government worker would need to spend 2.1 days' wages to purchase the originator brand, which is similar to the affordability observed in most other countries.

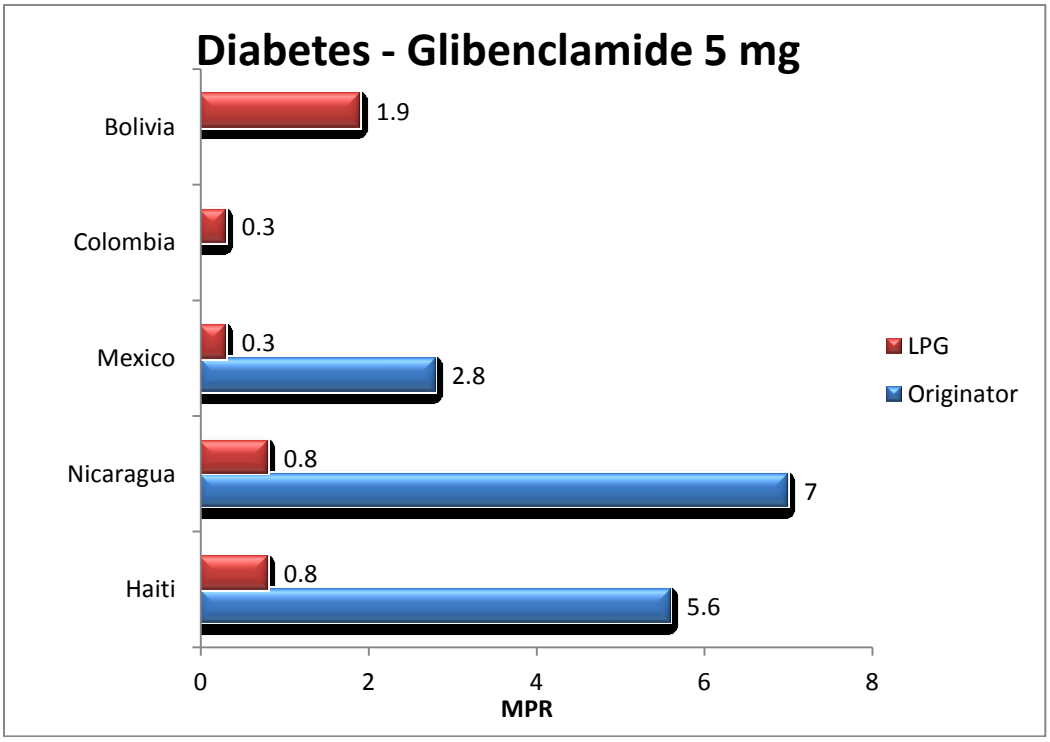
Figure 8: Number of days' wages of the lowest paid government worker needed to buy the Asthma medication - Salbutamol 100 mcg/dose inhaler, 1 inhabler 200 doses in the private sector in 5 countries:



2. ***Diabetes:***

The results show (Table 19, Figure 9) that in the selected countries, treatment of diabetes using glibenclamide 5mg costs between 0.3 and 1.9 days' wages when lowest price generics are purchased from the private sector. In Haiti, the lowest paid government worker would need to spend 0.8 days' wages to purchase the lowest price generic, which is similar to the affordability observed in most other countries. When the originator brand is purchased, the affordability ranges from 2.8 to 7 days' wages across the selected countries. In Haiti, the lowest paid government worker would need to spend 5.6 days' wages to purchase the originator brand, which is average compared to the affordability observed in most other countries.

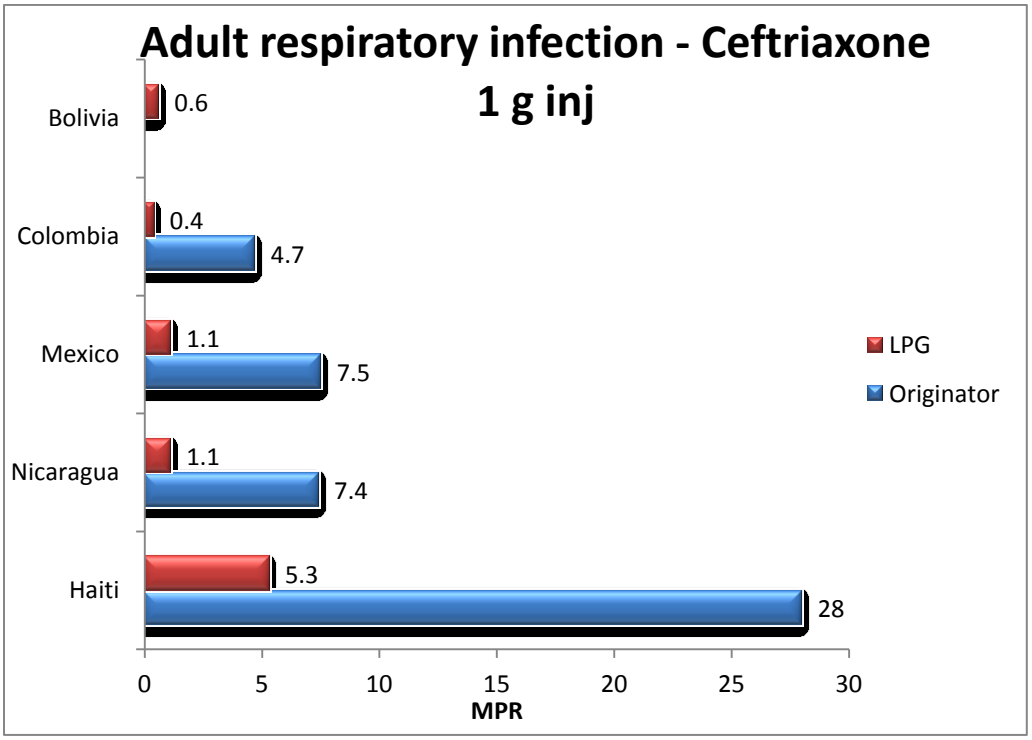
Figure 9: Number of days' wages of the lowest paid government worker needed to buy the Diabetes medication - Glibenclamide 5 mg cap/tab (1 cap/tab x 2 x 30 days = 60 tablets) in the private sector in 5 countries:



3. *Adult Respiratory Infection:*

The results show (Table 19, Figure 10) that in the selected countries, treatment of adult respiratory infection using ceftriaxone 1gram/inj costs between 0.4 and 5.4 days' wages when lowest price generics are purchased from the private sector. In Haiti, the lowest paid government worker would need to spend 5.3days' wages to purchase the lowest price generic, which is more than the affordability observed in most other countries. When the originator brand is purchased, the affordability ranges from 4.7 to 28 days' wages across the selected countries. In Haiti, the lowest paid government worker would need to spend 28 days' wages to purchase the originator brand, which is more than the affordability observed in most other countries.

Figure 10: Number of days' wages of the lowest paid government worker needed to buy the Adult respiratory infection medication - Ceftriaxone 1 g/vial injection (1 vial X 7 days = 7 vials) in the private sector in 5 countries:



VI. Discussion

Availability of generic medicines in the public sector is poor. The average availability across all survey medicines was 19.5% for lowest priced generic medicines. Given the low availability of medicines in the public sector, it can be concluded that many patients must purchase medicines from the private sector.

In the private sector, generic equivalents were the predominant product type found. Mean availability in the private sector was 37.3% for lowest price generic medicines and 4.9% for originator brands.

In the non-profit sector, generic equivalents were the predominant product type found. Mean availability in this sector was 23.8% for lowest price generic medicines and 1.8% for originator brands

In the mixed sector, generic equivalents were the predominant product type found. Mean availability was 23.2% for lowest price generic medicines and 1.5% for originator brands

Final patient prices for lowest price generic medicines in the public sector were priced at 4.77 times higher than their international reference. Compared with the public sector, private sector patient prices were priced at 7.25 times their international reference price for lowest price generic medicines, while originator brand medicines were priced at 34.81 times their international reference price. Patients in the retail sector, on average pay 52% more for generic medications then they do in the public sector.

Compared with the public sector, non-profit sector patient prices were, on average, 13.3% higher for generic equivalents. Final patient prices for lowest priced generics in the non-profit sector 4.33 times their international reference prices.

Compared with the public sector, mixed sector patient prices were, on average, 3.8% lower for generic equivalents. Final patient prices for lowest priced generics in the mixed sector 4.00 times their international reference prices.

These results show that patients are paying significantly more for medicines in the private sector than in the public sector. Given the low availability in the public sector, this is a cause for concern.

Medicines were not found to be priced consistently with respect to their international reference price.

- ✓ In the public sector, half of the lowest priced generic medicines were priced at 3.42 (25th percentile) to 9.05 (75th percentile) times their international reference price; there is therefore important variation in MPRs across individual generic medicines in the public sector.

- ✓ In the retail sector, half of the originator brand medicines were priced at 21.55 (25th percentile) to 47.40 (75th percentile) times their international reference price; there is therefore substantial variation in MPRs across individual originator brand medicines in the private sector. Also in the retail sector, half of the lowest priced generic medicines were priced at 4.38 (25th percentile) to 14.30 (75th percentile) times their international reference price; there is therefore substantial variation in MPRs across individual generic medicines in the private sector.

- ✓ In the non-profit sector, half of the lowest priced generic medicines were priced at 3.29 (25th percentile) to 10.15 (75th percentile) times their international reference price; there is therefore important variation in MPRs across individual generic medicines in the non-profit sector.

- ✓ In the mixed sector, half of the lowest priced generic medicines were priced at 3.10 (25th percentile) to 6.91 (75th percentile) times their international reference price; there is therefore moderate variation in MPRs across individual generic medicines in the mixed sector.

The interquartile range for the median price ratios of individual medicines shows the variability in the medicine price across medicine outlets in all sectors. In the private sector, a wide amount of variation in price across outlets is observed. The high degree of variability observed between outlets is likely the result of low market competition (as is the case outside of the capital city) and the absence of price regulations of pharmaceutical products throughout the country.

In the public sector, the affordability of lowest price generics was good for most conditions, with standard treatment costing a days' wage. However, low public sector availability obliges many patients to purchase medicines from the private sector. In the private sector, some of treatments cost close to the daily wage of the lowest paid government worker when lowest price generics are used. Treatments costing over a days' wage of the lowest paid government worker include diabetes with metformin 850mg (1.7 days' wage), hypertension with captopril 25mg (1.5 days' wage), hyperlipidemia with simvastatin 20mg and atorvastatin 10mg (2.1 and 2.6 days' wage, respectively). Depression treatment with fluoxetine 20mg cost 3.6 days' wage, while treatment of respiratory infection with ceftriaxone 1g/vial cost 5.3 days' wage. When originator brand medicines are prescribed and dispensed in the private sector, several treatments cost well over one days' wage. For example, treating respiratory infection with ceftriaxone 500mg and ceftriaxone 1g costs 24.6 and 28.0 days' wages, respectively, while treating arthritis with diclofenac 50mg costs 9.0 days' wages. The majority of standard treatments are unaffordable when originator brand medicines are purchased in the private sector.

It should be noted that most people in Haiti earn much less that the lowest government wage; as such even treatments which appear affordable are too costly for the poorest segments of the population. Given that 54% of the population are living below the international poverty line of less than $1/day and 78% of the population in Haiti live on less than $2/day, even treatments which appear affordable are financially out-of-reach for a substantial number of people.

The results of the international comparison suggest that Haiti, the lowest priced generics, generally has comparable availability, greater prices, and worse affordability, than the other countries included in the analysis.

More in-depth analysis, considering additional factors like size of the markets; capabilities of the national pharmaceutical manufacturing sector; the effect of taxes; duties and mark-ups at national and local levels; and economic indicators; is needed to reveal the reasons for variation between different countries. Such information can be useful for policymakers and governments in deciding whether any appropriate interventions can be made to make medicines more affordable and accessible in each country. Further studies and comparisons between high and low-income countries can also provide an evidence base for equity or differential pricing strategies by multinational manufacturers whereby less wealthy populations pay less than wealthier countries for essential medicines.

The results of this medicine price survey provide insight into the availability, price and affordability of medicines in Haiti. The use of the WHO/HAI medicine prices survey has allowed for the measurement of medicine prices and availability in a reliable and standardized way that enables valid international comparisons to be made. A further strength of the methodology are the multiple steps taken to ensure data quality: training of survey personnel including a data collection pilot test; pairs of data collectors to cross-check results; double entry and verification of data into the computerized survey *Workbook*; data checker function in *Workbook* that identifies outlier or erroneous entries; and quality control checks at multiple stages.

Study results may be limited by the fact that data are inherently subject to outside influences such as market fluctuations and delivery schedules. In addition, the reliability of median price ratios is dependant on the number of supplier prices used to determine the median MSH international reference price of each medicine. In cases where very few supplier prices are available, or where there is no supplier price and the buyer price is used as a proxy, MPR results can be skewed by a particularly high/low international reference price. A further limitation is that availability is determined for the list of survey medicines, and therefore does not account for the availability of alternate strengths or dosage forms, or of therapeutic alternatives. Finally, the methodology does not include informal sectors, such as markets and general stores, as the quality of the medicines found in such sectors cannot be assured.

VII. Recommendations and conclusion

The results of this preliminary analysis suggest that a mix of policies need to be implemented to make medicines more affordable and available. Although further investigation is required to obtain a more in-depth understanding of the causes and consequences of medicine pricing and availability, the results of this survey provide broad directions for future research and action. It is therefore recommended that the following steps be taken to improve medicine prices, availability and affordability:

The survey showing poor availability in the public sector and low affordability for majority of the patients in Haiti who live less than $2/day indicate the importance of the Haitian government and partners to adopt several new policies. First, the government of Haiti must adopt:

- A rational use policy by adopting and disseminating the NEML and commit to providing these medications free of charge at public facilities and must aim to reaching 100% availability of these medications over the next 2 years. The NEML should be updated every 2 years, according to WHO recommandations, under the guidance of a committee consisting of partners committed to improving access to essential medications in Haiti. The government of Haiti must enforce the NEML to be used by all registered health agencies in the non-profit and mixed sectors as well non-profit and for-profit organizations responsible for production and/or importation of medications in Haiti.
- A pricing policy to harmonize and reduce prices. In public, non-profit and mixed sectors, the lowest priced generic medications are about 4 times more expensive than the international reference price. Therefore, a comprehensive assessment of the supply chain should be undertaken to identify areas where reductions and regulations of the procurement chain are appropriate. All policy measures should be carefully developed and evaluated for Haiti specific settings to ensure applicability and success. Price in private sector must be reduced. A possible political option will be to convert the national central wherhouse to wholesaler of essential drugs, for both the public as well as the private sectors: for example by transforming it to autonomous official wholesaler
- And finally, a routine assessment of medicines price must be undertaken on a regular basis to monitore and evaluate medicines availability and affordability.

This study has helped to provide broad insight into current issues related to the price, availability and affordability of key medicines for the treatment of common conditions. The results highlight priority areas for action for the Ministry of Health and others in improving access to affordable medicines. Broad debate and dialogue are now needed to identify how best different players can contribute to the prospect of enhancing accessibility and affordability to essential medicines.

Annex 1: List of Core and Supplementary Medicines

List	No.	Disease	Name	Strength	Dosage form
Global core list	1	Asthma	Salbutamol	100 mcg/dose	inhaler
	2	Diabetes	Glibenclamide	5 mg	cap/tab
	3	Cardiovascular disease	Atenolol	50 mg	cap/tab
	4	Cardiovascular disease	Captopril	25 mg	cap/tab
	5	Cardiovascular disease	Simvastatin	20 mg	cap/tab
	6	Depression	Amitriptyline	25 mg	cap/tab
	7	Infectious disease	Ciprofloxacin	500 mg	cap/tab
	8	Infectious disease	Co-trimoxazole	8+40 mg/ml	suspension
	9	Infectious disease	Amoxicillin	500 mg	cap/tab
	10	Infectious disease	Ceftriaxone	1 g/vial	injection
	11	CNS	Diazepam	5 mg	cap/tab
	12	Pain/inflammation	Diclofenac	50 mg	cap/tab
	13	Pain/inflammation	Paracetamol	24 mg/ml	syrup/susp
	14	Ulcer	Omeprazole	20 mg	cap/tab
Regional core list	15	Infectious disease	Amoxicillin suspension	50 mg/ml (250mg/5ml)	Syrup/susp
	16	Hypertension	Amlodipine	5mg	Cap/tab
	17	Hypercholesterolemia	Atorvastatin	10mg	Cap/tab
	18	Infectious disease	Azithromycicn	500mg	Cap/tab
	19	Asthma	Beclometasone inhaler	250mcg/dose	Inhaler
	20	Anxiety	Clonazepam	2 mg	cap/tab
	21	Fungal Infection (topical)	Clotrimazole topical cream	1%	cream
	22	Hypertension	Enalapril	10 mg	cap/tab
	23	Depression	Fluoxetine	20 mg	cap/tab
	24	Hypertension	Furosemide	40 mg	cap/tab
	25	Hypertension	Hydrochlorothiazide	25 mg	cap/tab
	26	Pain/inflammation	Ibuprofen	400 mg	cap/tab
	27	Diabetes	Metformin	850 mg	cap/tab
	28	Infectious disease	Metronidazole	500 mg	cap/tab
	29	Seizure Disorder	Phenytoin	100 mg	cap/tab
	30	Ulcer	Ranitidine	150 mg	cap/tab
Supplementary list	31	Infectious disease	Amoxicillin	125mg/5ml	Suspension
	32	Infectious disease	Amoxicillin	250mg dispersible tablet	Dispersible tablet
	33	Infectious disease	Amoxicillin/Clavulanic acid	125mg+31.25mg/5ml	Suspension
	34	Infectious disease	Amoxicillin/Clavulanic acid	250mg + 125mg	Dispersible tablet
	35	Malaria	Chloroquine	150mg	Cap/tab
	36	Asthma	Beclomethasone	100mcg/dose	Inhaler
	37	Infectious disease	Benzyl penicillin	600mg = 1 million IU	Injection
	38	Seizure Disorder	Carbamazepine	100mg/5ml	Suspension
	39	Seizure Disorder	Carbamazepine	100mg	Chewable tablet

	40	Infectious disease	Ceftriaxone	500mg vial	Injection
	41	Infectious disease	Chloramphenicol	1 gram vial	Injection
	42	Infectious disease	Cotrimoxazole	100mg + 20mg (also expressed as 400mg + 80mg)	Dispersible tablet
	43	Anxiety	Diazepam	2.5mg/ml	Rectal solution
	44	Anemia	Ferrous salt	30mg Fe/5ml	Suspension
	45	Infectious disease	Gentamycin	10mg/ml	Injection
	46	Pain/inflammation	Ibuprofen	200mg	Tablet
	47	Tuberculosis	Isoniazid	50mg	Scored tablet
	48	Pain	Morphine	10mg/5ml	Oral solution
	49	Pain	Morphine	10 mg	Immediate release tablet
	50	Dehydration	Oral rehydration solution (ORS)	To make 500ml	Sachet
	51	Dehydration	Oral rehydration solution (ORS)	To make 1 liter	Sachet
	52	Seizure Disorder	Phenobarbital	200mg/ml	Injection
	53	Seizure Disorder	Phenobarbital	3mg/ml (also expressed as 15mg/5ml)	Oral liquid
	54	Seizure Disorder	Phenytoin	25 or 30mg/5ml	Suspension
	55	Seizure Disorder	Phenytoin	50mg	Chewable tablet
	56	Infectious disease	Procaine penicillin	1 gram = 1 million IU	Injection
	57	Xerophthalmia	Vitamin A	100,000IU	Capsules
	58	Dehydration	Zinc	20mg	Tablet (dispersible)
	59	Hypertension	Enalaril	5mg	Cap/tab
	60	Asthma (device)	Spacer for Inhalers	n/a	n/a

Annex 2. Medicine data collection form

Medicine Price Data Collection Form

Use a separate form for each medicine outlet

Date : _____ Survey area number : _____

Name of town/village/district : _____

Name of medicine outlet (optional): _____

Medicine outlet unique survey ID (mandatory): _____

Distance in km from nearest town (population >50 000): _____

Type of medicine outlet :

q Public sector facility (specify level of care below):
- q Primary care facility
- q Secondary care facility
- q Tertiary care facility

q Private sector medicine outlet
q Other sector medicine outlet (please specify): _____

Type of price :
q Procurement price q Price the patient pays

Type of data:
q Sample outlet q back-up outlet q validation visit

Name of manager of the medicine outlet: _____

Name of person(s) who provided information on medicine prices and availability (if different from manager):

Name of data collectors :

Verification

To be completed by the area supervisor at the end of the day, once data have been verified
Signed:_____ Date:_____

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**
Amitriptyline 25 mg cap/tab	Originator brand	Tryptizol	MSD		100			per cap/tab	
	Générique le plus cher				100			per cap/tab	
	Lowest-priced generic				100			per cap/tab	
Amlodipine 5 mg cap/tab	Originator brand	Norvasc	Pfizer		30			per cap/tab	
	Générique le plus cher				30			per cap/tab	
	Lowest-priced generic				30			per cap/tab	
Amoxicillin 500 mg cap/tab	Originator brand	Amoxil	GSK		21			per cap/tab	
	Générique le plus cher				21			per cap/tab	
	Lowest-priced generic				21			per cap/tab	
Amoxicillin Dispersible	Originator brand	Moxatag	GSK		21			per tab	

Tab 250mg tab	Générique le plus cher				21			per tab	
	Lowest-priced generic				21			per tab	
Amoxicillin suspension 50 mg/ml (250mg/ml) millilitre	Originator brand	Amoxil	GSK		100			per millilitre	
	Générique le plus cher				100			per millilitre	
	Lowest-priced generic				100			per millilitre	
Amoxicillin Suspension 125mg/5ml 125mg/5ml millilitre	Originator brand	Amoxil	GSK		100			per millilitre	
	Générique le plus cher				100			per millilitre	
	Lowest-priced generic				100			per millilitre	
Amoxicillin/Clavulanic Dispersible tab 250mg+125mg tab	Originator brand	Augmentin	GSK		21			per tab	
	Générique le plus cher				21			per tab	
	Lowest-priced generic				21			per tab	
Amoxicillin/Clavulanic Suspension 125mg+31.25mg/5ml millilitre	Originator brand	Augmentin	GSK		100			per millilitre	
	Générique le plus cher				100			per millilitre	
	Lowest-priced generic				100			per millilitre	
Atenolol 50 mg cap/tab	Originator brand	Tenormin	AstraZeneca		60			per cap/tab	
	Générique le plus cher				60			per cap/tab	
	Lowest-priced generic				60			per cap/tab	
Atorvastatin 10 mg cap/tab	Originator brand	Lipitor	Pfizer		30			per cap/tab	
	Générique le plus cher				30			per cap/tab	
	Lowest-priced generic				30			per cap/tab	

Azithromycin 500 mg cap/tab	Originator brand	Zithromax	Pfizer		3			per cap/tab	
	Générique le plus cher				3			per cap/tab	
	Lowest-priced generic				3			per cap/tab	
Beclometasone Inhaler (100mcg) 100mcg/dose dose	Originator brand	Becotide	GSK		200			per dose	
	Générique le plus cher				200			per dose	
	Lowest-priced generic				200			per dose	
Beclometasone inhaler (250mcg) 250 mcg/dose dose	Originator brand	Becotide	GSK		200			per dose	
	Générique le plus cher				200			per dose	
	Lowest-priced generic				200			per dose	
Benzyl Penicillin Injection 600mg/vial milligram	Originator brand				1			per milligram	no originator brand
	Générique le plus cher				1			per milligram	
	Lowest-priced generic				1			per milligram	
Captopril 25 mg cap/tab	Originator brand	Capoten	BMS		60			per cap/tab	
	Générique le plus cher				60			per cap/tab	
	Lowest-priced generic				60			per cap/tab	
Carbamazepine Chewable Tablet 100mg tab	Originator brand	Tegretol	Novartis		20			per tab	
	Générique le plus cher				20			per tab	
	Lowest-priced generic				20			per tab	
Carbamazepine Suspension 100mg/5ml milligram	Originator brand	Tegretol	Novartis		100			per milligram	
	Générique le plus cher				100			per milligram	

	Lowest-priced generic				100			per milligram	
Ceftriaxone injection (1g/vial) 1 g/vial gram	Originator brand	Rocephin	Roche		1			per gram	
	Générique le plus cher				1			per gram	
	Lowest-priced generic				1			per gram	
Ceftriaxone injection (500mg/vial) 500mg/vial gram	Originator brand	Rocephin	Roche		.5			per gram	
	Générique le plus cher				.5			per gram	
	Lowest-priced generic				.5			per gram	
Chloramphenicol Injection (1g/vial) 1g/vial gram	Originator brand	Chloromycetin	Parkdale Pharmaceut.		1			per gram	
	Générique le plus cher				1			per gram	
	Lowest-priced generic				1			per gram	
Chloroquine 150mg cap/tab	Originator brand	Nivaquine	Sanofi-Aventis		10			per cap/tab	
	Générique le plus cher				10			per cap/tab	
	Lowest-priced generic				10			per cap/tab	
Ciprofloxacin 500 mg cap/tab	Originator brand	Ciproxin	Bayer		10			per cap/tab	
	Générique le plus cher				10			per cap/tab	
	Lowest-priced generic				10			per cap/tab	
Clonazepam 2 mg cap/tab	Originator brand	Rivotril	Roche		60			per cap/tab	
	Générique le plus cher				60			per cap/tab	
	Lowest-priced generic				60			per cap/tab	
Clotrimazole topical	Originator brand	Canesten	Bayer		20			per gram	

cream 1% gram	Générique le plus cher				20			per gram	
	Lowest-priced generic				20			per gram	
co-trimoxazole Dispersible Tablet 100mg+20mg tab	Originator brand	Bactrim	Roche		15			per tab	
	Générique le plus cher				15			per tab	
	Lowest-priced generic				15			per tab	
Co-trimoxazole suspension 8+40 mg/ml mililitre	Originator brand	Bactrim	Roche		100			per mililitre	
	Générique le plus cher				100			per mililitre	
	Lowest-priced generic				100			per mililitre	
Diazepam 5 mg cap/tab	Originator brand	Valium	Roche		100			per cap/tab	
	Générique le plus cher				100			per cap/tab	
	Lowest-priced generic				100			per cap/tab	
Diazepam Rectal Solution 2.5mg/ml millilitre	Originator brand	Diestat			0.5			per millilitre	
	Générique le plus cher				0.5			per millilitre	
	Lowest-priced generic				0.5			per millilitre	
Diclofenac 50 mg cap/tab	Originator brand	Voltarol or Voltaren	Novartis		100			per cap/tab	
	Générique le plus cher				100			per cap/tab	
	Lowest-priced generic				100			per cap/tab	
Enalapril 10 mg cap/tab	Originator brand	Renitec	MSD		30			per cap/tab	
	Générique le plus cher				30			per cap/tab	
	Lowest-priced generic				30			per cap/tab	

Enalapril (5mg) 5mg cap/tab	Originator brand	Renitec	MSD		30			per cap/tab	
	Générique le plus cher				30			per cap/tab	
	Lowest-priced generic				30			per cap/tab	
Ferrous Salt Suspension 30mg/5ml millilitre	Originator brand				200			per millilitre	no originator brand
	Générique le plus cher				200			per millilitre	
	Lowest-priced generic				200			per millilitre	
Fluoxetine 20 mg cap/tab	Originator brand	Prozac	Eli Lilly		30			per cap/tab	
	Générique le plus cher				30			per cap/tab	
	Lowest-priced generic				30			per cap/tab	
Furosemide 40 mg cap/tab	Originator brand	Lasix	Sanofi-Aventis		30			per cap/tab	
	Générique le plus cher				30			per cap/tab	
	Lowest-priced generic				30			per cap/tab	
Gentamycin Injection 10mg/1ml millilitre	Originator brand				1			per millilitre	no originator brand
	Générique le plus cher				1			per millilitre	
	Lowest-priced generic				1			per millilitre	
Glibenclamide 5 mg cap/tab	Originator brand	Daonil	Sanofi-Aventis		60			per cap/tab	
	Générique le plus cher				60			per cap/tab	
	Lowest-priced generic				60			per cap/tab	
Hydrochlorothiazide 25 mg cap/tab	Originator brand	Dichlotride	MSD		30			per cap/tab	
	Générique le plus cher				30			per cap/tab	

	Lowest-priced generic				30			per cap/tab	
Ibuprofen (200mg) 200mg cap/tab	Originator brand	Brufen	Knoll		24			per cap/tab	
	Générique le plus cher				24			per cap/tab	
	Lowest-priced generic				24			per cap/tab	
Ibuprofen (400mg) 400 mg cap/tab	Originator brand	Brufen	Knoll		30			per cap/tab	
	Générique le plus cher				30			per cap/tab	
	Lowest-priced generic				30			per cap/tab	
Isoniazid 50mg cap/tab	Originator brand	Nydrazid			56			per cap/tab	
	Générique le plus cher				56			per cap/tab	
	Lowest-priced generic				56			per cap/tab	
Metformin 850 mg cap/tab	Originator brand	Glucophage	BMS		100			per cap/tab	
	Générique le plus cher				100			per cap/tab	
	Lowest-priced generic				100			per cap/tab	
Metronidazole 500 mg cap/tab	Originator brand	Flagyl	Sanofi-Aventis		14			per cap/tab	
	Générique le plus cher				14			per cap/tab	
	Lowest-priced generic				14			per cap/tab	
Morphine Dispersible Tablet 10mg tab	Originator brand				56			per tab	no originator brand
	Générique le plus cher				56			per tab	
	Lowest-priced generic				56			per tab	
Morphine Oral	Originator brand				100			per millilitre	no originator brand

Solution 10mg/5ml millilitre	Générique le plus cher				100			per millilitre	
	Lowest-priced generic				100			per millilitre	
Omeprazole 20 mg cap/tab	Originator brand	Losec	AstraZeneca		30			per cap/tab	
	Générique le plus cher				30			per cap/tab	
	Lowest-priced generic				30			per cap/tab	
Oral Rehydration Solution (1L) To make 1L Sachet	Originator brand	No Brand Name	WHO/UNICEF/UN		1			per Sachet	
	Générique le plus cher				1			per Sachet	
	Lowest-priced generic				1			per Sachet	
Oral Rehydration Solution (500ml) To make 500ml Sachet	Originator brand	No Brand Name	WHO/UNICEF/UN		1			per Sachet	
	Générique le plus cher				1			per Sachet	
	Lowest-priced generic				1			per Sachet	
Paracetamol suspension (120mg/5ml or 125mg/5ml) 24 mg/ml or 25mg/ml mililitre	Originator brand	Panadol	GSK		60			per mililitre	
	Générique le plus cher				60			per mililitre	
	Lowest-priced generic				60			per mililitre	
Phenobarbital Injection 200mg/1ml mililitre	Originator brand	Luminal			1			per mililitre	
	Générique le plus cher				1			per mililitre	
	Lowest-priced generic				1			per mililitre	
Phenobarbital Oral Liquid 15mg/5ml (3mg/1ml) millilitre	Originator brand	Luminal			100			per millilitre	
	Générique le plus cher				100			per millilitre	
	Lowest-priced generic				100			per millilitre	

Phenytoin 100 mg cap/tab	Originator brand	Epanutin	Pfizer		100			per cap/tab	
	Générique le plus cher				100			per cap/tab	
	Lowest-priced generic				100			per cap/tab	
Phenytoin Chewable Tablet 50mg tab	Originator brand	Dilantin	Pfizer		90			per tab	
	Générique le plus cher				90			per tab	
	Lowest-priced generic				90			per tab	
Phenytoin Suspension 25mg/5ml or 30mg/5ml millilitre	Originator brand	Dilantin	Pfizer		500			per millilitre	
	Générique le plus cher				500			per millilitre	
	Lowest-priced generic				500			per millilitre	
Procaine Penicillin Injection 1g/vial (1 million IU) gram	Originator brand				1			per gram	no originator brand
	Générique le plus cher				1			per gram	
	Lowest-priced generic				1			per gram	
Ranitidine 150 mg cap/tab	Originator brand	Zantac	GSK		60			per cap/tab	
	Générique le plus cher				60			per cap/tab	
	Lowest-priced generic				60			per cap/tab	
Salbutamol inhaler 100 mcg/dose dose	Originator brand	Ventoline	GSK		200			per dose	
	Générique le plus cher				200			per dose	
	Lowest-priced generic				200			per dose	
Simvastatin 20mg cap/tab	Originator brand	Zocor	MSD		30			per cap/tab	
	Générique le plus cher				30			per cap/tab	

	Lowest-priced generic				30			per cap/tab	
Spacer (for Inhalers) n/a Device	Originator brand				1			per Device	no originator brand
	Générique le plus cher				1			per Device	
	Lowest-priced generic				1			per Device	
Vitamin A 100,000IU capsules	Originator brand				50			per capsules	no originator brand
	Générique le plus cher				50			per capsules	
	Lowest-priced generic				50			per capsules	
Zinc Dispersible Tablet 20mg tab	Originator brand	ZincFant	Nutriset		14			per tab	
	Générique le plus cher				14			per tab	
	Lowest-priced generic				14			per tab	

Before leaving the facility :

Data collectors should check that the data collection form is legible, accurate and complete before leaving the facility and returning completed forms to the area supervisor. They should report any problems as soon as possible. They should also check to see whether at least half of the survey medicines were available, to determine whether a visit to a back-up facility is required.

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