Prices, availability and affordability of medicines in Pakistan

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Abbreviations

BHU	Basic Health Unit
Cap	capsule
CIF	Cost, Insurance and Freight
DHQ	District Headquarter Hospitals
DFID	Department for International Development, UK
GDP	Gross Domestic Product
GNI	Gross National Income
HAI	Health Action International
IB	Innovator Brand
IMF	International Monetary Fund
ICT	Islamabad Capital Territory
Inh	Inhaler
Inj	Injection
IQR	Interquartile Range
LPG	Lowest Priced Generic Equivalent
MPR	Median Price Ratio
MSG	Most Sold Generic Equivalent
MSH	Management Sciences For Health
NEDL	National Essential Drug List
NWFP	North West Frontier Province
PKR	Pakistani Rupees
PSLM	Pakistan Social and Living Standards Measurement Survey
RHC	Rural Health Centre
Susp	Suspension
Tab	Tablet
THQ	Tehsil Headquarter Hospitals
USD	United States dollars (also $)
WHO	World Health Organization

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Conflict of Interest Statement

The survey has been conducted with technical support from WHO / HAI and funding support from Department for International Development – UK.

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, apart from academic, in the study.

Executive summary

Background: A survey of the availability and prices of 29 medicines was undertaken in the public and private sector pharmacies in Pakistan in 2004 using the HAI/WHO medicines price survey methodology.

Methods: Public procurement prices were obtained from two Provincial Medical Stores. Availability of surveyed medicines was measured in 30 public health facilities. Both availability and prices were measured in 48 private retail pharmacies. For each medicine data was collected for the innovator brand (IB) and lowest priced generic equivalent (LPG; generic product with the lowest price at each facility).

Results: Public health facilities had extremely low median availability of generic medicines (3.3%). Innovator brands were more likely to be found in private retail pharmacies than generics (IB 54.2%, LPG 31.3%).

The public procurement median price ratio (MPR) to MSH reference prices was 2.24 for IB and 0.57 for generic equivalents; in the private pharmacies, the median MPRs for IB and LPG were 3.36 and 2.26, respectively. In private pharmacies, IB salbutamol inhaler had the lowest MPR (0.72) whereas IB ciprofloxacin had the highest MPR of 26.2. Brand premium compared to LPG price varied widely between 0 and 600%.

The lowest paid government worker would need between 0.2 and 23.7 days' pay to afford the standard treatments (for example using innovator brand omeprazole for duodenal ulcer 23.7 day's wage, atenolol for hypertension 2.9 day's wage and cotrimoxazole for paediatric respiratory infection 0.4 day's wage) from private pharmacies.

Adherence to regulated maximum prices was high, however evidence of overpricing was found in several cases. Private pharmacy medicines prices included a total cumulative mark-up of about 25% for locally produced generics.

Key findings:

- Public procurement of medicines is efficient in getting low priced medicines but inadequate in supplying needed quantities in government health facilities.
- Prices of medicines in private pharmacies in Pakistan are generally lower than in other developing countries, but higher than in India.
- Certain medicines are unaffordable to the poor and comprehensive interventions are needed to reduce inequity in access to basic

Conclusions: Public sector procurement procedures in Pakistan can achieve lower prices than international reference prices, but chronic shortages and lack of basic essential medicines in the public sector facilities is a major barrier to access. Limited availability of low priced generics for certain disease in private pharmacies means some medicines would be unaffordable to low income segment of the society and generally they are unaffordable the poor living below the poverty line.

Recommendations: Multi-faceted interventions are needed to improve medicine availability in the public sector and reduce inequity in access to basic medical treatments especially for the rural poor. Review and refocusing of policies, regulations and educational interventions are needed to improve affordability, availability and acceptability of low cost, good quality medicines in the private sector.

Introduction and background

The Network for Consumer Protection has conducted a nationwide study on prices, availability and affordability of essential medicines in Pakistan in 2004.

The main goal of the study was to document and compare the prices of medicines in the public and private health sector and to compare them with those in other countries.

This study was conducted based on the standardized methodology developed by the World Health Organization (WHO) and Health Action International (HAI) that was developed to conduct similar surveys in different countries that would allow valid international comparisons. The WHO/HAI methodology is described in the manual "Medicine Prices: A new approach to measurement" (WHO/HAI, 2003) and is accessible on the website of HAI:
(http://www.haiweb.org/medicineprices/manual/documents.html).

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

- What is the availability of innovator brand products and generic equivalents of selected essential medicines in public and private health sectors?
- What is the difference in the prices of innovator brand products and generic equivalents in the private sector?
- How affordable are medicines for treatment of common conditions for people with low income in Pakistan?
- What pricing policies, mechanisms and tariffs exist for medicines in Pakistan?
- How do prices of medicines in Pakistan compare to the same products in other countries?

This study was carried out by The Network for Consumer Protection with the support of Health Action International and Department for International Development-UK.

Country background

Demographics

Pakistan is the sixth most populous country in the world with a currently estimated population of approximately 158 million people[1], 66% of whom live in rural areas (PDS 2003 [2]). Pakistan is administratively divided into four provinces (see Figure 1.), namely, Punjab, Sindh, North West Frontier Province (NWFP) and Balochistan. The population of Pakistan is unevenly distributed with 78.6% of the population is clustered in the eastern provinces of Punjab and Sindh. Balochistan though it is the largest province with about 44% t of total land area of the country, it has only 5% of the population (PDS 2003).

[1] Population Census Organization, http://www.statpak.gov.pk/depts/pco
[2] Pakistan Demographic Survey 2003, http://www.statpak.gov.pk/depts/fbs/statistics/pds2003/pds2003.html

Figure 1. Administrative map of Pakistan

Economic, Social & Health Indicators

In recent years Pakistan has experienced some robust economic growth achieving 8.4%, GDP growth in 2005, which was the highest in the last two decades. Though the GNI per capita on Pakistan is higher than other low income countries (US$ 690 in 2005), still approximately one third (29.2 %)[3] of the population or about 45 million people live below the official national poverty line. Poverty varies significantly among rural (34%) and urban areas (19.1%) and from province to province, for example from 24% percent in urban Sindh to 51% percent in rural Sindh, with pockets of extreme poverty in some places..

Socioeconomic development in Pakistan in overall is low, with low levels of literacy i.e. 50% national adult literacy rate in 2005. Literacy is particularly low among women and in rural areas, for example 86% of women above the age of 15 was illiterate in Balochistan according to the "Pakistan social and living standards measurement survey" (2004-05)[4]. The same survey found that the majority of the population (61%) has no access to good quality potable water and again this problem being more severe in rural areas where only 23% of people has access to tap water. About 19 % of the population is malnourished and 30 % of children under age of five are malnourished. This means that the poor and rural inhabitants of Pakistan are still being left behind with respect to socioeconomic development.

[3] World Bank Estimate http://www.google.com/search?hs=OkC&hl=en&lr=&client=opera&rls=en&q=povertyHCR2000-2005.pdf&btnG=Search

[4] PSLM 2004 2005 http://www.statpak.gov.pk/depts/fbs/statistics/pslm2004-05/pslm2004-05.html

Communicable diseases are the most prevalent and leading causes of sickness and death include gastroenteritis, respiratory infections, congenital abnormalities, tuberculosis, malaria, and typhoid fever.

Structure of health sector

Since Pakistan has a federal political system, health care provision is decentralized and is primarily the responsibility of the provincial governments. The Federal Ministry of Health is responsible for national policy, planning, coordination and the implementation of the six national health programs on family planning, immunization, HIV/AIDS; tuberculosis, malaria and nutrition. The public health sector facilities providing services at provincial and district levels are categorized as:

- ***Primary level health care facilities*** – Basic Health Units, Rural Health Centers, Mother & Child Health Centres, TB Clinics and dispensaries.
- ***Secondary level health care facilities*** – Tehsil Headquarter hospitals and district headquarter hospitals
- ***Tertiary level health care facilities*** (Autonomous bodies) - Tertiary hospitals, Post Graduate Medical Institutes, Teaching Hospitals.

Public heath sector expenditure by the government is low (2.4% of GDP in 2003) and chronic shortages of trained staff, essential drugs, medical and other supplies is common in all government health facilities. As a result patients frequently have to seek medical care in the private health sector, demonstrated by the fact that 70% of total health care cost is out-of-pocket expenditure in Pakistan[5]. Private sector health care facilities are concentrated in main urban areas and can be difficult to access and afford for the rural poor.

Patients increasingly turn to seek health care in the private health sector or alternative sources (herbalists, hakeems) as observed in the latest Pakistan Social and Living Standards Measurement Survey (PSLM)[6] 2004-2005. For example in 2004-2004, government hospitals/dispensaries were consulted in case of childhood diarrhea only 15% of cases in rural Pakistan compared to 25% of cases in 1998-1999 and in urban Sindh 79% patient looked for care in private facilities in case of sickness or injury.

Pharmaceutical sector

The National Drug Policy[7], 1997, promotes the essential drug concept and the use of the National Essential Drug List[8] (NEDL), 2003, for example by mandating all government and semi-government health institutions to conduct bulk procurement in accordance with NEDL. However, there is poor adherence to this list in the actual provincial or district procurement practice.

Pakistan has a rapidly growing pharmaceutical industry with a market value of approx. US$ 1.72 billion consisted of nearly 400 local manufacturing companies

[5] Country Profile, Pakistan, WHO, http://www.emro.who.int/emrinfo/index.asp?Ctry=pak
[6] PSLM 2004 2005 http://www.statpak.gov.pk/depts/fbs/statistics/pslm2004-05/pslm2004-05.html
[7] National Drug Policy, Ministry of Health http://www.dcomoh.gov.pk/publications/ndp.php
[8] National Essential Drug List of Pakistan, 2003 http://www.dcomoh.gov.pk/publications/nedl.php

including 30 multinationals, which are meeting around 95% of the country's pharmaceutical requirements. Pakistan also exports pharmaceutical regionally and world-wide. The number of currently registered pharmaceutical formulations exceeds 45000.

Medicine prices and regulations

Pakistan has medicine pricing policy and pricing regulations. The Price Review Committee, a subcommittee of the Drug Registration Boar formed under the Drug Act 1976 sets the maximum wholesale and retail price for each product. The maximum retail price is printed on the individual medicine package. The system of pricing of medicines was been changed in 1993 when all drugs have been divided into two categories of controlled and decontrolled drugs with regard to pricing. About 800 medicines that have been considered essential for this purpose have been placed on the controlled list. Periodic across-the-board price increases on account of the general rate of inflation and changes in the exchange rate of the rupee, etc. is applied for these 800 controlled medicines. In case of decontrolled category, a more liberal system is in operation through which higher price increases are allowed at regular intervals compared to the controlled category of drugs[9].

The Drug Control Organization though uses inspectors to visit facilities involved in production, distribution and sale and dispensing of medicines to ensure adherence to relevant regulations regarding drug price controls does not have sufficient capacity to regularly and comprehensively monitor adherence to price controls.

Access to medicines – cost considerations

It is well-known that chronic shortages and non-availability of essential medicines is prevalent in government health facilities in Pakistan. This is partly the reasons why most patient, 67%, consult a private physician or would seek treatment almost three times more often from a private pharmacy rather than from an basic health unit or rural health center (PSLM 2004-2005). Physicians have dispensing rights and it is a very common practice that patients receive their medicines from their dispensing physician as part of the consultation instead of filling a prescription in the pharmacy. The physician usually charges a global fee for the consultation including dispensed/administered medications and there is no transparency (no separate billing) on what patients pay for their medicines to their doctors.

Very small proportion of the population has access to any form of health insurance that covers medicine costs and therefore it is evident that most expenditure is out-of pocket payment for medicines. This can often mean no or very limited access to basic essential treatments for the approx. 45 million people (29% of population of Pakistan) who live below the national poverty line.

[9] Booklet of Drug Controles Organization http://www.dcomoh.gov.pk/downloads/booklet.pdf

Methods

This survey of the prices, availability and affordability of medicines in the public and private sector of Pakistan was conducted using the WHO/HAI methodology (WHO/HAI 2003). A total of 29 medicines were sampled – all from the WHO/HAI core list and prices and/or availability data was collected in three sectors:

1. Public Procurement sector
2. Public sector
3. Private sector

For each selected medicine in the specific dosage form, with a predetermined strength, up to three products were monitored, namely:

- Innovator brand (IB) - the original patented pharmaceutical product
- Most sold generic equivalent - the one with the highest private sector sales on a national basis
- Lowest price generic equivalent (LPG) - the lowest priced in the facility at the time of survey

Although the WHO/HAI 2003 methodology required data collection on the "Most sold generic equivalent" (MSG) – the one with the highest sales on a national basis it was difficult to obtain this information on national sales of different brands of generics in Pakistan and as result there was no pre-determined most sold generic name included in data collection form. Consequently most of the time when data collector filled this row the data in the most sold generic row and the lowest price generic row was identical.

Due to similar difficulties in other countries the WHO/HAI methodology was updated as well to determine only the prices of innovator brand and the lowest priced generic equivalent only[10]. Therefore this report is presenting results only on these two types of prices.

Public sector procurement prices were obtained centrally from two provinces NWFP and Sindh, from the provincial health departments[11] and public sector pharmacies/stores were visited to verify these prices and check availability of surveyed medicines. Dispensaries in government health facilities were only surveyed for the availability of the selected medicines since patients do not pay directly for medicines in public health sector facilities.

Private sector pharmacies were surveyed on both availability and the price of the medicine which the patient would pay. An analysis of price components was also conducted for 12 medicines.

All prices were converted to US dollars using the exchange rate (buying rate) on 3 July 2004, the first day of the survey, i.e. 1 USD = PKR 60.5.

Finally, in order to find out how affordable common treatments are we expressed affordability as the cost of therapy the compared measured in the daily wage of the lowest paid government worker. The salary of the lowest paid government worker was 1870 Pakistani Rupees/month in 2004.

[10] See http://www.haiweb.org/medicineprices/manual/updates.html

[11] The other two provinces i.e. Punjab and Balochistan refused to provide procurement prices.

Medicine Selection

All surveyed medicines were included in the WHO/HAI core list only artesunate was removed as sulfadoxine+pyrimethamine is still the most commonly used antimalarial agent in Pakistan. Most of the selected medicines were also included in the National Essential Drug List of Pakistan. No other medicines with different active ingredients were added, however the strength of some of selected medicines were different from those on the NEDL (see table 1). Table 1. shows the medicines surveyed, their status in the NEDL and the level of availability as recommended by the NEDL.

Table 1. Medicines surveyed in Pakistan

	Generic name	Strength/ dosage form	Included in NEDL	To be used at health service level		
				Primary	Secondary	Tertiary
1	Aciclovir	200mg tablet	✓	no	no	✓
2	Amitriptyline	25mg tablet	✓	no	✓	✓
3	Amoxicillin	250mg capsule/tablet	✓	✓	✓	✓
4	Atenolol	50mg tablet	✓	no	✓	✓
5	Beclometasone	50 mcg/dose [a]	✓	no	✓	✓
6	Captopril	25mg tablet	✓	no	no	✓
7	Carbamazepine	200mg tablet	✓	✓	✓	✓
8	Ceftriaxone	1g injection	✓	no	no	✓
9	Ciprofloxacin	500mg tablet [b]	✓	✓	✓	✓
10	Cotrimoxazole	8+40mg/ml suspension	✓	✓	✓	✓
11	Diazepam	5mg tablet	✓	no	✓	✓
12	Diclofenac	25mg tablet [c]	✓	no	no	✓
13	Fluconazole	200mg tablet	no	no	no	no
14	Fluoxetine	20mg capsule tablet	✓	no	✓	✓
15	Fluphenazine	25 mg/ml injection	✓	no	✓	✓
16	Glibenclamide	5mg tablet	✓	✓	✓	✓
17	Hydrochlorothiazide	25mg tablet [d]	✓	no	✓	✓
18	Indinavir	400mg capsule	✓	no	no	✓#
19	Losartan	50mg tablet [e]	✓		✓	✓
20	Lovastatin	20mg tablet	no	no	no	no
21	Metformin	500mg tablet	✓	✓	✓	✓
22	Nevirapine	200mg tablet	✓	no	no	✓#
23	Nifedipine retard	20mg tablet	no	no	no	no
24	Omeprazole	20mg capsule	✓	✓	✓	✓
25	Phenytoin	100mg tablet	✓	✓	✓	✓
26	Pyrimethamine+ Sulfadoxine	25+500mg tablet	✓	✓	✓	✓
27	Ranitidine	150mg tablet	no	no	no	no
28	Salbutamol	100mcg/dose inhaler	✓	✓	✓	✓
29	Zidovudine	100mg capsule	✓	no	no	✓#

NEDL contains: [a] only 250mcg/dose; [b] only 250mg tab; [c] only as 25mg/ml injection, [d] only as 50mg tab; [e] only 25 mg tab, #Specialized Centers only

SAMPLING - GEOGRAPHICAL COVERAGE

The drug pricing survey was conducted at national level in the four provinces of North Western Frontier Province (NWFP), Balochistan, Sindh and Punjab as well as in the Islamabad Capital Territory (ICT).

All the four provincial capitals and one other district were surveyed from each province (except for ICT, which was taken as a separate entity). These districts were chosen randomly from a list of districts that can be reached in one day from the provincial capitals. Provincial capitals and randomly selected districts included:

- **Islamabad** (ICT)
- **NWFP**
  - District Peshawar (Provincial capital)
  - District Kohat
- **Balochistan**
  - District Quetta (Provincial capital)
  - District Pishin
- **Sindh**
  - District Karachi (Provincial capital)
  - District Hyderabad
- **Punjab**
  - District Lahore (Provincial capital)
  - District Chakwal

A total of nine districts were selected in all four provinces, including federal capital, provincial capitals. Districts are the next tier of the administrative units after provinces in Pakistan, which are further administrated through Tehsils[12].

Selection of public health facilities / private retail pharmacies

The following strategy was used to select health facilities/pharmacies included in the survey.

Public sector (total 30 facilities):

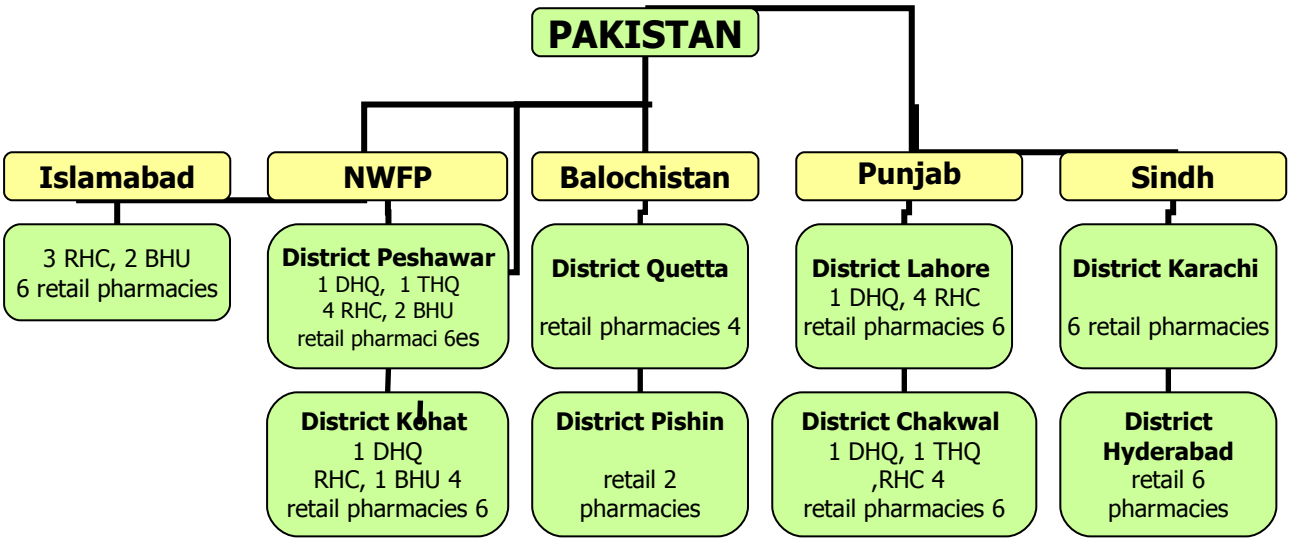
- Four District Headquarter Hospitals (DHQ) in 4 randomly selected districts
- Two secondary level public pharmacies at Tehsil Headquarter Hospitals (THQ) in 2 randomly selected districts
- At least 4-6 primary level public pharmacies located at Rural Health Centres/Basic Health Units (RHC/BHU) in four districts where the DHQ was selected for data collection.

Private sector pharmacies (total 48 pharmacies):

- Three private pharmacies located close to the district headquarter hospital (DHQ) hospital in selected districts.
- Three tertiary level private retail pharmacies close to the tertiary hospital in ICT/provincial capitals.
- Two private pharmacies located close to THQ hospitals (where available)
- One private pharmacy located close to RHCs/BHUs (where available)

[12] A tehsil is typically part of a larger District and as an entity of local government, tehsils have fiscal and administrative powers roughly equivalent to the division of counties found in many non-Asian countries. A tehsil usually contains villages and/or municipalities.

Figure 2. Geographic distribution of selected health facilities



Data Collection

Field visits were conducted in July – September 2004. NWFP, ICT and Punjab were covered in the first phase and Sindh and Balochistan were visited in the second phase. Endorsement letters were sent to provincial health departments (Director General Health) and the chief executives of all tertiary hospitals regarding the survey. Central provincial lists of medicines available were checked for procurement prices, in NWFP and Sindh. Survey teams visited Executive District Officer (EDO) and collected information on prices and procurement. Data were collected from the autonomous tertiary care hospitals in provincial capitals, while private pharmacies data collected as well. Data collection in each district took 3-5 days, depending on the distances covered.

Data analysis

Price data obtained at health facilities was entered as unit price into the pre-programmed MS Excel workbook provided by the WHO/HAI methodology (http://www.haiweb.org/medicineprices/manual/documents.html).

Data entry was checked using the double entry into a MS Excel spreadsheet provided by HAI/WHO. The pre-programmed workbook automatically calculated availability, median price ratios along with the interquartile range and affordability. Comparisons of innovator brand and generic medicine prices and investigation of compliance with pricing regulations were determined separately also using Microsoft Excel.

The computerized workbook uses the US$ as the currency for recording reference prices. The Pakistan Rupees exchange rate for the US$ prevailing on 3 July, 2004 (first day of data collection) was US$ = PKR 60.5 based on ABN-AMRO-Islamabad bank rate.

Medicines needed to be found in at least 4 pharmacies for their price data to be included in the analysis to allow for robust determination of median price ratios, except for procurement prices where a single data point was accepted.

Presentation of results

The data from the survey are not presented in actual currency units but, rather, results are expressed as median price ratios (MPRs) calculated using international reference prices. Reference prices are internationally available lists of prices against which the local prices are compared by means of a ratio where:

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

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 facilitate cross-country comparisons of medicine price surveys.

The reference prices used were the Management Sciences for Health (MSH) reference prices, taken from the International Drug Price Indicator Guide (2003). These reference prices are the medians of recent procurement or tender prices offered by for-profit and not-for-profit suppliers to international not-for-profit agencies for generic products. These agencies typically do not sell the medicines to individual pharmacies or consumers but sell or donate in bulk quantity to governments or large NGOs. The MSH reference prices are therefore relatively low and represent efficient bulk procurement without the costs of shipping or insurance.

Interpreting the MPR

Until more information is gathered through similar studies in other countries, there are no hard and fast rules in the interpretation of MPRs since factors such as market size and penetration, competition and therapeutic alternatives, consumption, economies of scale, national wealth and wealth distribution, health system structure and accessibility, distribution and storage charges, local taxation and regulation need to be considered. However, when taking into account economic indicators and the fact that Pakistan has significant local manufacturing capacity, i.e. most multinational original brand and generic finished products are manufactured in the country, we considered local prices as acceptable when:

- MPR ≤ 1 in case of public sector procurement prices
- MPR ≤ 2.5 in case of retail pharmacy prices

Results and Discussions

Results are presented in the following order:

1. Availability of medicines in the public and private sectors
2. Median medicine price ratios for innovator brand and lowest priced generics in the public and private sector
3. Brand premium of innovator brands compared to generic equivalents
4. The affordability of standard treatment regimens
5. Comparison of medicines prices in Pakistan to other countries
6. Price composition of medicine prices
7. Compliance with pricing regulations

1. Availability of medicines in the public and the private sector

It must be kept in mind that 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. Overall public sector availability was very low while private sector availability was relatively higher for the surveyed medicines (see Table 2). None of the antiretrovirals were found in either public sector facilities or in retail pharmacies.

Table 2. Median availability and interquartile ranges (n=29 medicines)

	Public sector		Private sector	
	Innovator Brand	Lowest Price Generic	Innovator Brand	Lowest Price Generic
Median availability	0%	3.3%	54.2%	31.3%
25%ile availability	0%	0%	14.6%	6.3%
75%ile availability	0%	33.3%	83.3%	50.0%

Public sector availability

No innovator brand products were found in public sector facilities visited. Availability of generic equivalents for the 29 surveyed medicines in public sector facilities was extremely low with a median percent availability of 3.3%. If we excluded the medicines that are not on the NEDL i.e. fluconazole, lovastatin, nifedipine, ranitidine, and the antiretrovirals indinavir, nevirapine and zidovudine which are available only in specialized public health centers[13] median percent availability is still only a very low 15.5% for the remaining 22 essential medicines.

None of the essential medicines that are supposed to be present at all primary, secondary and tertiary health facilities according to the NEDL had a desirable level of above 80% availability and only six of them had an acceptable, between 50-79% availability (i.e. at least every other facility had the medicine) namely metformin (73.3%), amoxicillin (66.7%), atenolol (66.7%) diazepam (60%), captopril (56.7%) and ciprofloxacin (50%).

[13] The National Aids Control Program maintains a stock of ARVs for registered patients visiting special units in designated tertiary level hospitals in the federal as well as provincial capitals. The program is operated vertically for control, diagnosis and treatment of AIDS. Therefore even if the visited health facilities did have ARVs they would not be on the stock of the main store and therefore would not appear in the survey.

Some other important essential medicines that should be available universally at all levels of care according to the NEDL, had very low or non-availability like sulfadoxine+pyrimethamine (3.3%), salbutamol inhaler (3.3%) while no carbamezapine or phenytoin was found in any of the public health facilities visited.

Private sector availability

Overall private sector availability of the selected 29 medicines in retail pharmacies was satisfactory, with 54.2% median percent availability in case of innovator brands but relatively low 31.3% median percent availability for generic equivalents.

Frequently brand products were much more widely available in retail pharmacies then generic equivalents. For example IB diclofenac was found 2.6 times, IB nifedipine 9.3 times and sulfadoxine+pyrimethamine 2.3 more often as their respective generic equivalents. This trend of brand product dominance in retail pharmacies illustrated in Figure 2., where frequently a large gap between brand and lowest price generic availability can be observed. Several factors may contribute to this phenomenon, i.e. patient demand, prescribing patterns favouring innovator brands possibly associated with local marketing practices of manufacturers, higher profit margins for retail pharmacists, suspicion/mistrust of quality of generics or lack of knowledge of generics, etc..

Low availability of certain medicines in both public and private sector (Table 3.) was also possibly due to low demand like in case of antiretrovirals because of low prevalence of the disease in the country or due to the local prescribing habits as in case of hydrochlorothiazide and fluconazole.

Figure 2. Availability of individual medicines in retail pharmacies

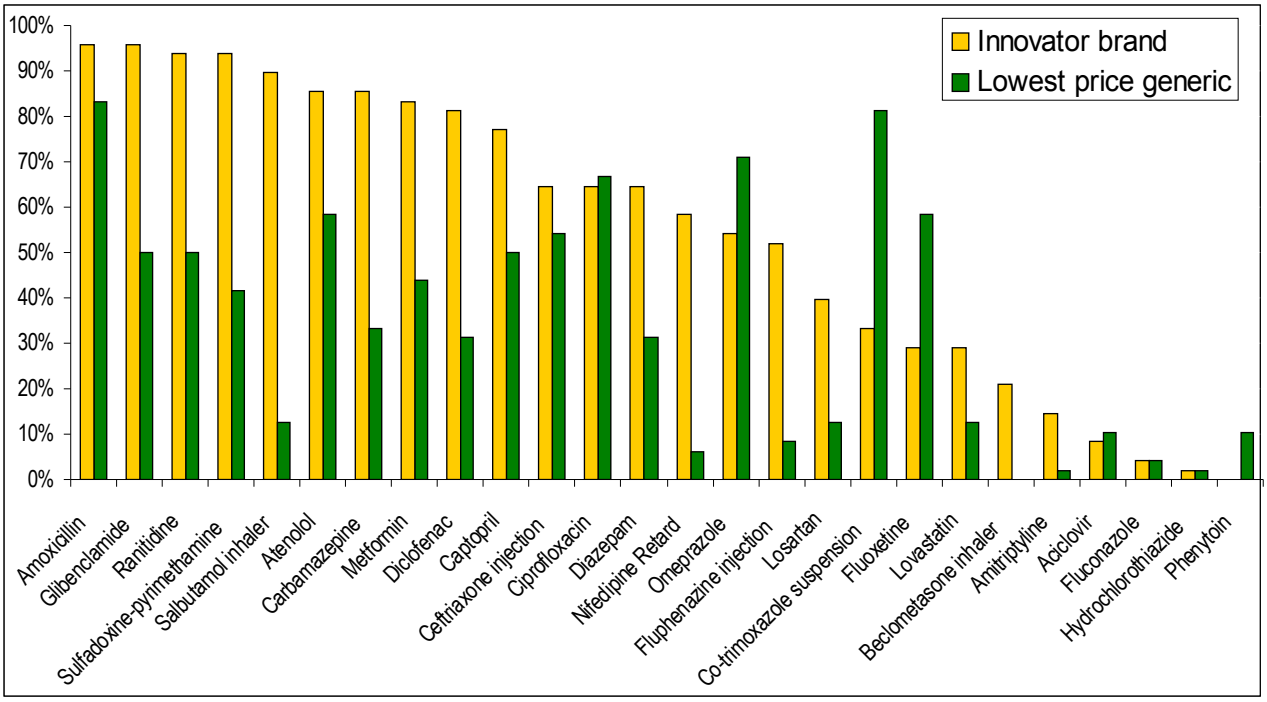


Table 3. Availability of individual medicines

Medicine Name	Innovator Brand		Lowest Price Generic	
	Public (n=29)	Private (n=48)	Public (n=29)	Private (n=48)
Aciclovir 200mg tab	Nil	8.3%	3.3%	10.4%
Amitriptyline 25mg tab	Nil	14.6%	26.7%	2.1%
Amoxicillin 250mg tab/cap	Nil	95.8%	66.7%	83.3%
Atenolol 50mg tab	Nil	85.4%	66.7%	58.3%
Beclometasone inhaler 50mcg/dose	Nil	20.8%	Nil	Nil
Captopril 25mg tab	Nil	77.1%	56.7%	50.0%
Carbamazepine 200mg tab	Nil	85.4%	Nil	33.3%
Ceftriaxone 1g injection	Nil	64.6%	16.7%	54.2%
Ciprofloxacin 500mg tab	Nil	64.6%	50.0%	66.7%
Co-trimoxazole 8+40mg suspension	Nil	33.3%	30.0%	81.3%
Diazepam 5mg tab	Nil	64.6%	60.0%	31.3%
Diclofenac 25mg tab	Nil	81.3%	33.3%	31.3%
Fluconazole 200mg tab	Nil	4.2%	3.3%	4.2%
Fluoxetine 20mg cap/tab	Nil	29.2%	6.7%	58.3%
Fluphenazine 25mg/ml injection	Nil	52.1%	3.3%	8.3%
Glibenclamide 5mg tab	Nil	95.8%	40.0%	50.0%
Hydrochlorothiazide 25mg tab	Nil	Nil	Nil	Nil
Indinavir 400mg cap	Nil	Nil	Nil	Nil
Losartan 50mg tab	Nil	39.6%	Nil	12.5%
Lovastatin 20mg tab	Nil	29.2%	Nil	12.5%
Metformin 500mg tab	Nil	83.3%	73.3%	43.8%
Nevirapine 200mg tab	Nil	Nil	Nil	Nil
Nifedipine Retard 20mg tab	Nil	58.3%	Nil	6.3%
Omeprazole 20mg cap	Nil	54.2%	13.3%	70.8%
Phenytoin 100mg tab	Nil	Nil	Nil	10.4%
Ranitidine 150mg tab	Nil	93.8%	3.3%	50.0%
Salbutamol 100mcg/dose inhaler	Nil	89.6%	3.3%	12.5%
Sulfadoxine-pyrimethamine 25+500mg tab	Nil	93.8%	3.3%	41.7%
Zidovudine 100mg cap	Nil	Nil	Nil	Nil

2. *Median medicine price ratios for innovator brand and lowest priced generics in the public and private sector*

Results are presented as the median price ratio (MPR) of the local price compared with the international reference price e.g. a MPR of 2 would indicate that the local price is two times greater than the international reference price. When using the MSH 2003 reference prices, for procurement prices a MPR of less than 1 would indicate efficient procurement achieving internationally competitive prices whereas for retail prices a MPR of greater than 2.5 might indicate excessive medicine prices. Medians of individual median medicine price ratios in sectors are shown in Table 4. and individual Medicine Price Ratios are shown in Table 5.

Table 4. Median MPRs for innovator brands and lowest priced generics in the public (procurement only) and private sector (patient price only)

			Median Price Ratio (MPR) to Reference Price (MSH, 2003)		
Reference price	**Sector**	**Type and No. of medicines**	**Median MPR (25% - 75% IQR)**	**Minimum MPR**	**Maximum MPR**
MSH, 2003	Public	Brand (n=2)	2.24 (1.60 – 2.87)	0.96	3.51
		Lowest priced Generic (n=14)	0.57 (0.38 – 0.74)	0.24	1.04
	Private	Brand (n=23)	3.36 (2.20 – 5.88)	0.72	26.20
		Lowest priced Generic (n=21)	2.26 (1.15 – 3.60)	0.20	7.02

Procurement prices in public sector

Procurement price data was available for 14 surveyed medicines (all as generics and 2 also as IB) and as a total 19 price data point from the two provincial medical stores. The median MPRs calculated for two innovator brand medicines was 2.24 i.e. MPR = 3.51 for captopril and MPR = 0.96 for metformin. It was a unexpected to find procurement prices for brand products at government medical stores as public health facilities visited only stocked generic equivalents. The MPR for generic medicines ranged from 0.24 to 1.04 with a median MPR of 0.57. The 75% interquartile range showed that 75% of generic medicines procured had an MPR of 0.74 or less when compared to MSH 2003 prices, providing evidence of efficient procurement practices achieving low procurement prices compared to existing international procurement prices. Procurement prices for lowest priced generics were on average 4.8 times (median 4) less than prices of LPGs in retail pharmacies. This difference indicates the possibility of getting substantial discounts on bulk procurement or it might be due to different generics being procured in the public sector.

However, the low number of price data available at provincial medical stores levels shows again the problem of very limited access to essential medicines in the public sector. Limited procurement may be due to insufficient funds and/or inefficient allocation of funds for essential medicines at provincial level.

Patient Prices in public sector

Patients usually pay only a consultation fee and do not directly pay for medicines dispensed to them in government health facilities. Therefore no data was available for this analysis as only availability data was collected in public sector health facilities. Due to low availability of essential medicines most patients would need to purchase their medicines in a retail pharmacy after consultation at the public health facility.

Table 5. Individual Medicine Price ratios for surveyed medicines in public (procurement only) and private sector

	Public Procurement MPR (n=2)		Private Retail Pharmacy MPR (n=48)#		
	IB	LPG	IB	LPG	LPG as % of IB
Aciclovir 200mg tab		0.43	11.94	1.71	14%
Amitriptyline 25mg tab	-	0.70	2.04	-	
Amoxicillin 250mg tab/cap	-	-	2.98	2.87	96%
Atenolol 50mg tab	-	0.80	10.79	4.06	38%
Beclometasone inhaler 50mcg/dose	-	-	0.95	-	
Captopril 25mg tab	3.51	0.31	4.16	2.76	66%
Carbamazepine 200mg tab	-	0.63	2.36	1.57	67%
Ceftriaxone 1g injection	-	0.24	3.09	0.97	31%
Ciprofloxacin 500mg tab	-	1.04	26.20	7.02	27%
Co-trimoxazole 8+40mg suspension	-	0.45	1.84	1.15	63%
Diazepam 5mg tab	-	0.25	3.31	2.83	86%
Diclofenac 25mg tab	-	-	15.23	5.67	37%
Fluconazole 200mg tab	-	-	-	-	
Fluoxetine 20mg cap/tab	-	-	21.18	4.48	21%
Fluphenazine 25mg/ml injection	-	0.71	3.36	2.51	75%
Glibenclamide 5mg tab	-	0.75	5.91	3.60	61%
Hydrochlorothiazide 25mg tab	-	-	-	-	
Indinavir 400mg cap	-	-	-	-	
Losartan 50mg tab	-	-	0.90	0.20	22%
Lovastatin 20mg tab	-	-	3.65	1.56	43%
Metformin 500mg tab	0.96	0.37	1.21	1.03	86%
Nevirapine 200mg tab	-	-	-	-	
Nifedipine Retard 20mg tab	-	-	3.78	-	
Omeprazole 20mg cap	-	-	4.14	0.84	20%
Phenytoin 100mg tab	-	-	-	1.33	
Ranitidine 150mg tab	-	0.51	5.84	4.45	76%
Salbutamol 100mcg/dose inhaler	-	-	0.72	0.72	100%
Sulfadoxine-pyrimethamine 25+500mg tab	-	0.80	2.50	2.26	91%
Zidovudine 100mg cap	-	-	-	-	

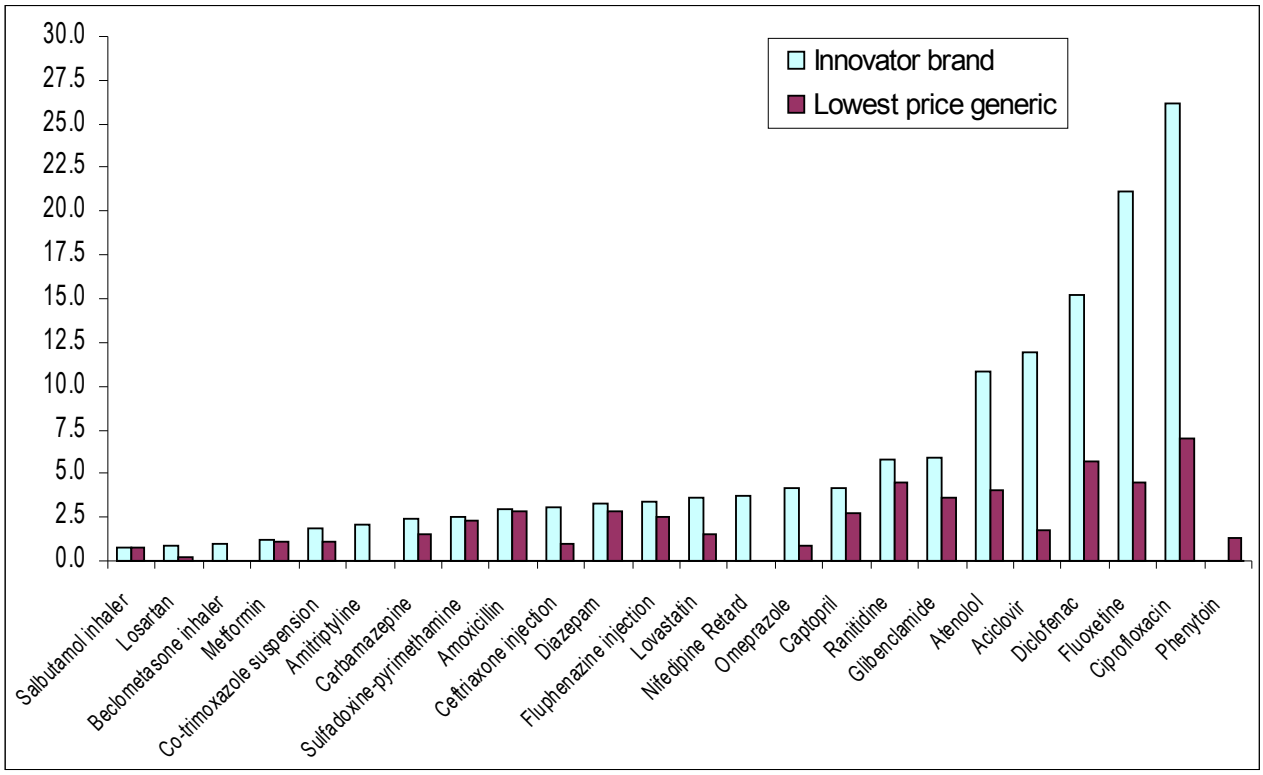
IB = innovator brand, LPG = lowest priced generic, # = median MPR was calculated only, if price was collected in minimum 4 retail pharmacies

Private sector retail prices

Overall median price ratios for surveyed medicines to the MSH 2003 reference prices varied between 0.20 to 26.20 i.e. the prices of the medicines to a patient in Pakistan varied between 5 times less to 26 times more the price listed by the MSH (a bulk procurement price). Brand products MPRs showed a great variation between 0.72 to 26.2 while the MPR for generic versions of surveyed medicines varied

between 0.2 and 7.02. In general, medicine prices were about 2-3 times more than the MSH bulk procurement reference price (Table 4). This price range for retail prices on overall does not appear to be excessive, however some medicines had very high prices both as innovator brand and/or as generic products. If we use the cut off point of MPR ≥ 2.5 as to determine excessive prices then 16 out of the 23 innovator brand products (70%) and 10 out of the lowest priced generics (48%) fell into this category of excessively priced medicines (Figure 3).

Figure 3. Individual MPRs of surveyed medicines in retail pharmacies



Individual medicine price comparisons

Medicine-specific MPRs can be found in Table 5. Interesting observations include:

- The top five innovator brand products with the highest MPR included ciprofloxacin 26.2, fluoxetine 21.2, diclofenac 15.2, aciclovir 11.9 and atenolol 10.8 and for the lowest priced generics the top highest MPRs were found for ciprofloxacin 7, diclofenac 5.7, fluoxetine 4.5, ranitidine 4.4 and atenolol 4.1.
- Interestingly the two asthma inhaler products and losartan had very low MPR i.e. MPR ≤1 which means that retail price for these three products were same or lower than the median bulk procurement price (MSH supplier price) usually offered to public sector in developing countries. It appears that local pharmaceutical industry is able to bring these products to the market at a very competitive price.
- Other products available at a reasonable price in the private pharmacies (MPR ≤ 2.5) included amitriptyline, carbamazepine, sulfadoxine-pyrimethamine as

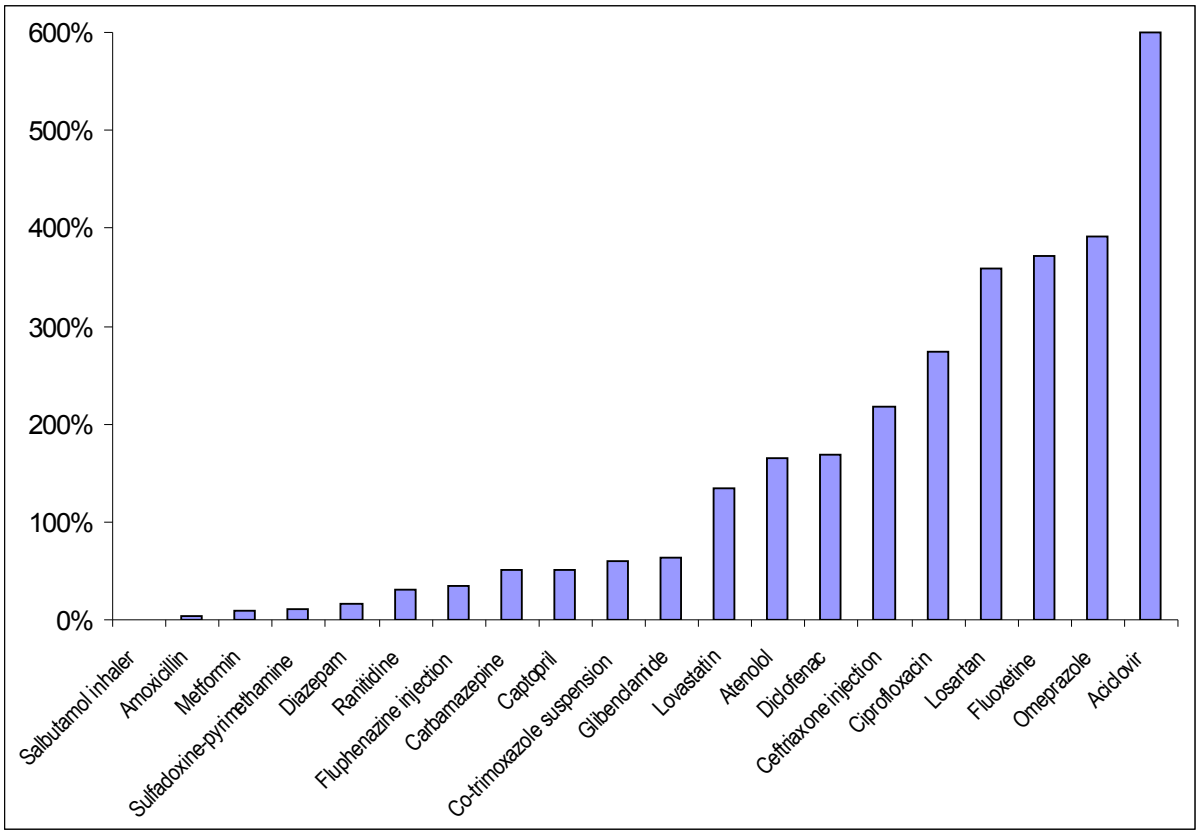
innovator brand products and omeprazole, ceftriaxone injection, phenytoin, lovastatin, carbamazepine, acyclovir, sulfadoxine-pyrimethamine.

3. Brand premiums in the private sector

For those medicines available both as innovator brand and a generic equivalent in private pharmacies (n=20), the price of the LPG was expressed as a percentage of the brand price ([generic price/brand price] x 100) (see Table 5). The median was 62% (IQR 30 – 79%) i.e. on average, the cost of a generic equivalent was 62% that of its innovator brand product (Table 5).

When the brand premium, i.e. what would be the extra price to pay for IB above the median generic prices as percentage, was calculated as brand premium = [(brand median price – generic median price) / generic median price] x100 we found that median brand premium awarded to innovator brand products was 62% with IQR 28% - 232%. There were extensive variations in brand premiums between no difference in price in case of brand and generic salbutamol inhaler to 600% brand premium awarded for aciclovir tablet. Since majority of these prices followed the maximum retail price set by the Price Review Committee these trends reflects the official price control practices in Pakistan.

Figure 4. Brand premiums (%) of innovator brand products compared to lowest price generic equivalent



Generic medicines are usually expected to be sold at much lower prices as the manufacturer do not have to cover the same research and development costs as innovator brand medicines. In the United States of America (USA), first entry generics are usually at 70-80% of the innovator's price, while the entry of more

generic products lowers this to around 40% or less, depending on the number of competing products[14],[15]. Pakistan has a substantial domestic manufacturing industry and a large domestic market that should encourage local generic competition. Majority of marketed innovator brand and generic pharmaceuticals in Pakistan are manufactured locally using imported raw materials by subsidiaries of multinational or local generic manufacturing companies.

While the price controls imposed the Drug Controllers Office has successfully lowered prices by setting maximum wholesale/ retail prices for some innovator brand and for nearly half of the generic products surveyed there is still room for improvement to make medicines more affordable in Pakistan. For example, in cases of medicines when the MPRs are high i.e. prices are significantly above international reference prices and in addition a very high brand premium is awarded to innovator brand like in case of ciprofloxacin, fluoxetine, diclofenac and atenolol lowering both innovator brand and generic prices, considering the competitive ability of local industry to produce low cost medicines, should be possible. In these examples price controls may keep prices of these medicines artificially high not taking advantage of the potentially beneficial effect of existing market competition. The Price Review Committee should regularly review both brand and generic prices especially when more than five generic equivalents exist in the market because evidence from other countries shows that decreases in both brand and generic prices over time usually occur when more than five competitor products from different sources exist due competition for the market between the different manufacturers.

Since both the public and the prescribers seemed to have a tendency for favouring brand products as shown by generally higher availability of brand products in retail pharmacies interventions, other than price adjustment, are also needed to create higher demand for low cost generics and to improve access to medicines, i.e.

- Promotion of generic prescribing by physicians and generic substitution by pharmacists
- Ensuring the quality of all marketed generic products by the relevant authorities to build trust in generic medicines on part of prescribers and patients
- Educating the public about availability of safe, effective low cost generic products.

4. The affordability of standard treatment regimens

The affordability of standard treatments using the survey medicines, when patients have to purchase their medicines from private retail pharmacies, was calculated based on the salary of the lowest paid government worker in Pakistan in 2004, i.e. 1870 Pakistani Rupees/month. The standard treatments and the results of the

[14] Congressional Budget Office. How Increased Competition from Generic Drugs Has Affected Prices and Returns in the Pharmaceutical Industry. Chapter 3: Pricing and Competition in the Pharmaceutical Market. July 1998.

[15] FTA Task Force on Pharmaceutical Prices (1999) Study 6: Prices Of Generic-To-Brand Name Prescription Drugs In Five Provincial Drug Plans 1990-1997. Federal/Provincial/Territorial Task Force on Pharmaceutical Prices April, 1999.

affordability calculations are shown in Table 6. Since patients do not pay for medicines in the public sector affordability was not calculated using procurement prices because those prices would not be available to patients.

Table 6. Affordability of standard treatments purchased in private retail pharmacies by lowest paid unskilled government worker

Disease condition and 'standard' drug treatment			Day's wages to pay for treatment	
Condition	**Drug name**	**Dosage and duration**	**IB**	**LPG**
Arthritis	Diclofenac	25mg twice daily x 30 days	4.5	1.7
Asthma	Salbutamol inhaler	As needed x 1 pack	1.4	1.4
Depression	Amitriptyline	25mg three times daily x 30 days	1.4	-
Depression	Fluoxetine	20mg twice daily x 30 days	36.4	7.7
Diabetes	Glibenclamide	5mg twice daily x 30 days	1.4	0.9
Gonorrhoea	Ciprofloxacin	500mg single dose	0.8	0.2
Hypertension	Atenolol	50mg daily x 30 days	2.9	1.1
Hypertension	Captopril	25mg daily x 30 days	3.2	2.1
Hyper-lipidemia	Lovastatin	20mg daily x 30 days	10.5	4.5
ARI[3] (adult)	Amoxicillin	250mg three times daily x 7 days	1.0	1.0
ARI[3] (child)	Co-trimoxazole susp	5mL twice daily x 7 days	0.4	0.3
Ulcer (peptic)	Ranitidine	150mg twice daily x 30 days	8.5	6.5
Ulcer (duodenal)	Omeprazole	20mg daily x 30 days	23.7	4.8

IB = innovator brand, LPG = lowest price generic

On average the cost of standard treatment regimens in daily wages was 2.9 day's wage (median) (IQR 1.4 - 8.4) if using innovator brands and 1.5 day's wages (IQR 1-4) if using lowest price generic equivalents. The most affordable standard treatments were those for treating acute conditions like respiratory infections and sexually transmitted diseases, costing one day's wage or less, while medicines for chronic treatment of depression using innovator brand fluoxetine cost as much as 36.4 day's wages.

If we assume that spending more than two day's of wages (>7% of monthly salary) on one treatment for one person would place a heavy financial burden on a person/family earning the salary of the lowest paid unskilled government worker, then we can see that using the innovator brands for treatment of hypertension (captopril, atenolol), arthritis (diclofenac), depression (fluoxetine), hyperlidideamia (lovastatin) and ulcer (omeprazole, ranitidine) is clearly not affordable on this wage. Even if one would purchase only the generic equivalents, the chronic treatment of depression with fluoxetine, hyperlipidemia with lovastatin, hypertension with captopril and ulcer with ranitidine or omeprazole will still remain unaffordable for a person/family who receives this wage as their main income.

It is important to note that the poverty threshold line for 2004-2005 in Pakistan was Pak Rs 878.6/month/adult (World Bank data) i.e. less than half of the monthly wage

used for the affordability calculations above. Considering the reality that most of these drugs are never or hardly ever available in government health facilities and approx. 30% of the population lives below and a substantial proportion near to the poverty line, especially in the rural areas, we can conclude that basic essential treatments for these selected chronic diseases would be completely out of reach of many millions of people in Pakistan. For those areas where pockets of extreme poverty still exist even medicines for the treatment of short term acute illnesses can be unaffordable to purchase from retail pharmacies.

Affordability of innovator brand-based treatments in Pakistan is comparable to other countries though it is noticeable that in neighboring India selected treatment cost is considerably more affordable for most of the diseases. Although Pakistan has a smaller but similarly competitive local manufacturing capability as India one would expect similarly competitive prices. Differences may point again in difference in the way of setting of controlled prices by the Price Review Committee of the Drug Controllers office, not only economic differences in salary levels.

Table 7. Comparison of affordability, using innovator brand medicines from private retail pharmacies for common treatments in different countries

Condition (drug)	Affordability (No. of days' wages required)							
	Country and survey date[1]							
	Pakistan 2004	India West Bengal 2004	India Maharashtra 2004	India Haryana 2004	Lebanon 2004	Peru 2002	South Africa 2001	Sri Lanka 2001
Diabetes (glibenclamide)	**1.4**	0.3	0.3	0.3	1.3	4.4	-	-
Asthma, (salbutamol inhaler)	**1.4**	0.6	0.6	0.5	-	2.6	1.1	2.1
Depression (amitriptyline)	**1.4**	1.3	1.2	1.1	0.9	6.4	4.6	1.9
Gonorrhoea (ciprofloxacin)	**0.8**	≤0.1	<0.1	0.1	0.6	0.9	0.5	0.1
Hypertension (atenolol)	**2.9**	0.5	0.5	0.5	1.8	3.8	-	-
Ulcer, peptic (ranitidine)	**8.5**	0.3	0.2	0.2	-	7.9	6.4	5.5

Notes:

[1]from http://www.haiweb.org/GlobalDatabase/Main.htm

5. Comparison of medicines prices in Pakistan to other countries

A few countries and medicines were selected for international comparisons of medicines price ratios found in this survey in Pakistan (see Table 8.) using the data available on the website of Health Action International. Further details of the surveys can be found on the HAI website. Since patient prices were not applicable for the public sector in Pakistan this comparison is focused on retail pharmacy prices for innovator brand and lowest price generic products.

Median price ratios for innovator brands of the eleven sample medicines (amoxicillin, atenolol, captopril, ceftriaxone injection, ciprofloxacin,cotrimoxazole, fluoxetine,

lovastatin, omeprazole, ranitidine and salbutamol) in Pakistan were comparable to those in India and generally were lower compared other Asian and Middle-East countries.

Table 8. International comparison of prices paid by patients (expressed as median price ratio) in retail pharmacies in Pakistan and other Asian and Middle Eastern countries

Medicine	Strength	Dosage Form	Price type	**Pakistan, 2004**	India-Maharashtra 2004	India-West Bengal 2004	Indonesia 2004	Jordan 2004	Malaysia 2004	Morocco 2004
Amoxicillin	250 mg	cap/tab	IB	**2.98**	4.6		15.22	26.39		20.13
Amoxicillin	250 mg	cap/tab	LPG	**2.87**	5.3	5.43	2.31	10.74	4.57	16.65
Atenolol	50 mg	cap/tab	IB	**10.79**	5.45	5.59	75.07	45.75	33.98	
Atenolol	50 mg	cap/tab	LPG	**4.06**	4.58	4.75	20.44	18.39	9.57	
Captopril	25 mg	cap/tab	IB	**4.16**			22.78	12.38	14.54	16.51
Captopril	25 mg	cap/tab	LPG	**2.76**	2.93		1.71	8.24	7.44	13.12
Ceftriaxone	1 g/vial	injection	IB	**3.07**			13.02	10.69		11.4
Ceftriaxone	1 g/vial	injection	LPG	**0.97**	0.64	0.62	1.49	6.81		7.13
Ciprofloxacin	500 mg	cap/tab	IB	**26.2**	4.53	4.45	90.08	100.32	111.63	130.36
Ciprofloxacin	500 mg	cap/tab	LPG	**7.02**	2.67	6.06	7.78	22.06	16.46	82.76
Co-trimoxazole	8+40 mg/ml	suspension	IB	**1.84**	1.21	1.23	43.81	15.06		8.65
Co-trimoxazole	8+40 mg/ml	suspension	LPG	**1.15**	1.23	1.23	2.27	4.66		5.77
Diclofenac	25 mg	cap/tab	IB	**15.23**			59.09	63.52	30.8	26.23
Diclofenac	25 mg	cap/tab	LPG	**5.67**			6.99	28.72	10.27	18.38
Fluoxetine	20 mg	cap/tab	IB	**21.8**			54.1	51.61	62.99	58.56
Fluoxetine	20 mg	cap/tab	LPG	**4.48**	2.17	2.17	18.98	20.56		23.48
Lovastatin	20 mg	cap/tab	IB	**3.65**						
Lovastatin	20 mg	cap/tab	LPG	**1.56**	1.26		8.16		3.19	
Omeprazole	20 mg	cap/tab	IB	**4.14**		0.46	9.48	14.27	10.56	12.78
Omeprazole	20 mg	cap/tab	LPG	**0.84**	0.48	0.4	1.73	5.56	2.54	2.82
Ranitidine	150 mg	cap/tab	IB	**5.84**	0.46	0.49	25.89	24.29	21.03	34.1
Ranitidine	150 mg	cap/tab	LPG	**4.45**	0.46	0.49	3.43	13.12	8.41	12.37
Salbutamol	0.1 mg/dose	inhaler	IB	**0.72**	0.87	0.93	4.99	2.6	2.7	3.27
Salbutamol	0.1 mg/dose	inhaler	LPG	**0.72**	0.88	0.89		1.1	1.48	2.92

IB = innovator brand, LPG = lowest price generic

Prices of innovator brand atenolol, ciprofloxacin, omeprazole and ranitidine were several fold higher in Pakistan compared to India (Maharashtra, West Bengal), though it is likely that in both countries the innovator brand is produced locally. The same observation was made in case of lowest price generic ciprofloxacin, ranitidine

and fluoxetine where generic prices were significantly higher in Pakistan compared to India. The wide disparity between prices compared to India (some similar some very much higher in Pakistan) raises the question of how prices are set by the Drug Controller's office and whether revision of certain medicine prices would be possible and could make medicines more affordable in Pakistan.

Only the lowest price generic amoxicillin, captopril and ranitidine were cheaper in Indonesia compared to Pakistan, but in all other cases the medicine price ratios were higher and often substantially higher in the other Asian and Middle-Eastern countries compared to Pakistan.

Although in this international comparisons medicine prices appeared to be second lowest after India, the above described affordability comparison shows that they are still unaffordable to a very significant proportion of the population in Pakistan (Table 7. above). Bearing in mind the very poor availability of essential medicines in the public sector this translates into very limited or no access to medicines by the poor.

The assessments above demonstrate how the results of these surveys can be used for international medicine price comparisons. Further more in-depth analysis, considering additional factors like size of the markets, capabilities the national pharmaceutical manufacturing sector, the effect of taxes, duties and mark-ups at national and local level and economic indicators could reveal the reasons for variation between different countries. Such information can be useful for policymakers and governments for decision on 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 according to which less wealthy populations should pay less than wealthier countries for essential medicines.

6. Price composition of medicine prices

To gain an insight into what factors influence medicine prices in Pakistan several interviews were conducted with the followings:

- Representatives of the Ministry of Health,
- Representative of the Network for Consumer protection (non-governmental organization)
- Local representatives of multinational companies
- An independent tax attorney, who explained the Pakistani tax code,
- A pharmaceutical importer and a general importer who provide information on importation policy.

The law regarding pricing of pharmaceuticals

The Drugs Act of 1976 which is the law to regulate the import, export, manufacture, storage, distribution and sale of drugs in Pakistan gives the power to the federal government to regulate prices, i.e. according to Chapter II. Section 12:

"12. Power to fix maximum prices of drug, etc.: (1)
The Federal Government may, by notification in the official Gazette,--

a) *fix the maximum price at which any drug specified in the notification is to be sold; and*
b) *specify a certain percentage of the profits of manufacturers of drugs which shall be utilised, in accordance with the rules for purposes of research in drugs.*

(2) For the purpose of the exercise of its powers under sub-section (1), the Federal Government may require a manufacturer, stockist, importer, exporter, retailer or other dealer in drugs to furnish such relevant information as may be necessary.

(3) The Federal Government may, by notification in the official Gazette, delegate any of its powers under this section.to any Board or other authority."

According to section 10 of the same Chapter the Price Review Committee is responsible for setting prices of medicines. The composition of this committee includes:

(1) Director General HealthEx-Officio Chairman
(2) Cost Accountant Ex-Officio Member
(3) Drug Controller Ex-Officio Member
(4) Representative of PPMA Member
(5) Representative of Pharma Bureau Member

Price components

The following taxes, duties and exemptions apply to pharmaceuticals in finished dosage form:

Imported medicines:

- Full import tariff exemptions are provided to UNICEF, and on AIDS medicines when brought in by a donor program.
- Accurate data on the importer's markup could not be found; medicine prices in Pakistan are set using a formula that allocates 6% for the importer's markup, but this was not confirmed.
- Retail markup for imported medicines is 15%.

Locally manufactured medicines

- Research fund tax: Every pharmaceutical manufacturer is suppose to contribute 1% of his gross profit, before deduction of income tax, towards a Central Research Fund maintained by the Federal Government. An Expert Committee is responsible for fund allocation to individuals and/ or Institutions, which are engaged in research in the field of pharmacy and medicine
- By law, wholesalers can mark up goods by maximum 2% of the final price. This amount derives from a pricing formula established in 1993 by the pricing unit of the Ministry of Health and applied to 821 "controlled" substances.
- The retail markup for locally produced medicines is 15% of the final price.

All regulated maximum retail price must be printed on each medicine box. However, when medicines are bulk packaged for example 50 strips of 10 tab/foil strip, the controlled price is printed only on the main carton not on the individual strips, therefore patient will usually not see the maximum retail price. Packs can also be split up, and informants reported that single generic tablets can be sold at similar prices as innovator brand product prices.

7. Compliance with pricing regulations

The Ministry of Health has inspectors visiting various licensed pharmaceutical outlets, wholesaler and manufacturers and these inspectors as part of their job supposed to check adherence to price regulations along the supply chain. The capacity of these inspectors to comprehensively monitor prices and adherence to officially set prices is limited and no official data exist on levels of adherence. There is little known about adherence by unlicensed drug seller at bazaars or markets to regulated prices and by dispensing doctors who charge a global consultation fee without providing a breakdown of medicine prices to patients.

Regulated prices are published annually in the Pharmaguide, a pharmaceutical industry supported publication. Using price data from this source we examined compliance with official prices for selected innovator brand products by comparing median unit price found to published unit price for innovator brand products that were present at least in four pharmacies (n=20).

For most medicines the median unit price found was identical to the published unit price, only in three cases co-trimoxazole suspension, diclofenac and nifedipine retard we found that the median unit price was 35%, 50% and 17% higher than published price, respectively. The reasons for these deviations from controlled prices are unclear. Further investigations and more regular monitoring of prices that patients pay would be needed to determine the rate of deviation form officially regulated prices.

Table 11. Rate of violations of maximum retail prices for selected products

Name	No. of private pharmacy with brand product	No. of pharmacies selling brand product above maximum retail price	% of pharmacies selling above maximum retail price
co-trimoxazole susp. as Bactrim (Roche)	16	9	33%
diazepam as Valium (Roche)	31	12	39%
nifedipine retard as Adalat Retd (Bayer	28	28	100%

Summary and Conclusions

The Network for Consumer Protection has carried out a nation-wide study to measure the prices of medicines in Pakistan using an international standardized methodology. Data on prices for 29 medicines were collected in the public and private for-profit sector in the capital in four provinces Punjab, Sindh, North West Frontier Province (NWFP) and Balochistan and the federal capital of Islamabad.
Though dispensing physician are an important point of access to medicines to many in the private sector they were not included in this survey as there is no clear information on how and what they charge for medicines in their consultation fees. The availability of the surveyed medicines was also measured in all facilities visited. The cost of treatment was calculated for thirteen medicines and compared to the daily wage of the lowest paid government worker. In addition, we also identified the different components contributing to the full medicine price.

The results showed that in Pakistan, where 30% of the population live on less than a US dollar a day, the prices of medicines are unaffordable in the private sector for the poor, making essential medicines inaccessible for nearly 50 million people. Though prices may be affordable to people in middle and higher income segments of society the gap in inequity is large and access to medicines is very poor in the public sector where indigents could receive medicine free if they would be available. Most essential drugs were rarely available in the public sector, demonstrated by the extremely low 3.3% median availability of the surveyed 29 medicines in government health facilities.

Private sector prices though compared to other developing countries are relatively low but are considerably higher then in several states in India, the direct neighbour of Pakistan with comparable economic, pharmaceutical industry characteristics. Private sector pharmacies tend to stock innovator brand products more commonly then generic equivalents. Affordability, using the lowest-paid government worker's capacity to pay for standard treatment in private retail pharmacies was limited for certain conditions. To make basic essential medicines more affordable for the poor it would be important to reduce prices of certain essential medicines or use methods that would facilitate the purchase of these medicines at a lower cost (e.g. at manufacturer's selling price) by the poor and reimbursing or rewarding pharmacies in a way that would motivate them to provide these low cost medicines.

Adherence to controlled maximum retail prices was high in pharmacies visited, though some cases of overpricing above the maximum regulated prices were detected. There is little known about adherence to controlled medicines prices by dispensing doctors and by informal sellers in markets or bazaars. Since many patients will purchase their medicines from these sources they should be regularly monitored to check whether medicines are not sold above the regulated maximum prices.

Recommendations

The following recommendations are made based on conclusions and observations made form the findings of this study

1. Interventions are urgently needed to improve access to essential medicines in the public sector, especially for the poorest who cannot afford access to basic treatments through the private sector. These efforts to reduce inequity in access to medicines may include:
    - Increase transparency and efficiency of procurement procedures by focusing purchasing of products based on Essential Drug List recommendations and setting clear priorities for improving access to medicines.
    - Review procurement methods and build capacity of staff at critical management levels to better manage drug supplies and related logistics procedures.
    - Strengthen distribution systems to achieve better availability of essential medicines at primary health care level (RHC, BHU).
    - Maximize purchasing power of available funds by pooling (large scale bulk procurements) procurement of basic essential drugs at district, provincial and federal government level, whenever possible.
    - Increase budget allocation for procurement of medicines.
    - Consider innovative financing mechanisms to improve funding of essential medicines in public sector (public-private partnerships, social or community based health insurance etc.).

2. Improve affordability of and access to medicines in the private sector by
    - Creating further incentives for production and sales of good quality locally produced medicines.
    - Creating incentives to operate more medicine outlets adhering to national standards (i.e. selling registered products at controlled prices, etc.) in rural areas to improve physical access to good quality and affordable medicines.
    - Consider innovative financing mechanisms that can support the sale of a small group of essential medicines (used for treatment of most common diseases) at manufacturer's cost price in private retail pharmacies or use other methods that can increase access to these basic essential medicines by the poor.

3. Regulations, laws and policies related to access to medicines should be reviewed or introduced as needed including:
    - Medicines pricing policies and individual medicines prices (where evidence of excessive prices for IB, LPG exists) should be regularly reviewed.

- Monitoring of adherence to maximum retail prices and trends of price changes should be conducted.
- Drug promotion practices should be reviewed and regulated to improve access to unbiased and appropriate information about different medicines and treatments both for the public and health professional. Medicine pricing practices of dispensing physicians should be assessed to create more transparency about prices charged by dispensing doctors in a separate study. Review of regulations to deal with any unethical practices may be necessary.
- Generic prescribing and substitution should be allowed and promoted.
- Drug regulatory authority functions should be strengthened to ensure quality of all marketed medicines and regular monitoring of manufacturers, importers to maintain quality standards.

4. Education of public and health professionals is needed about:
   - Acceptability of good quality generics instead of higher priced innovator brands. This is necessary in order to build trust and create demand for low cost alternatives.
   - Medicine prices information, which should be more widely and regularly disseminated to both public and health professionals to facilitate informed decision making about prescribing and purchase of medicines in retail pharmacies.
   - Rational treatment choices and evidence-based treatment options. Clinical guidelines, formularies and independent and unbiased continuing education of health professionals can be used to improve rational used of drugs.

5. Establish a nation-wide system to regularly monitor medicine prices[16], make them public and initiate legal action against those selling at higher than the approved prices.

[16] Pilot testing of a simple method for monitoring medicine prices has been started by The Network for Consumer Protection in August 2006.

Appendix 1. National Pharmaceutical Sector form of Pakistan

Date: August 2006

Population: 158 million

Daily wage of lowest paid government worker: 1870 Pakistani Rupees/month in 2004

Rate of exchange (commercial "buy" rate) to US dollars on the first day of data collection: 60 PKR = 1 USD

Sources of information:

Ministry of Health

General information on the pharmaceutical sector

Is there a formal National Medicines Policy document covering both the public and private sectors? ☒ Yes ❑ No

Is an Essential Medicines List (EML) available? ☒ Yes ❑ No

If yes, state total number of medicines on national EML: 452

If yes, year of last revision: 2003

If yes, is it (tick all that apply):

- ☒ National
- ❑ Regional
- ❑ Public sector only
- ☒ Both public and private sectors – *in theory but not in practice*
- ❑ Other (please specify):

If yes, is the EML being used (tick all that apply):

- ❑ For registration of medicines nationally
- ☒ Public sector procurement only
- ❑ Insurance and/or reimbursement schemes
- ❑ Private sector
- ❑ Public sector

Is there a policy for generic prescribing or substitution? ❑ Yes ☒ No

Are there incentives for generic prescribing or substitution? ❑ Yes ☒ No

Public procurement[17]

Is procurement in the public sector limited to a selection of essential medicines? ❑ Yes ☒ No

If no, please specify if any other limitation is in force:

Type of public sector procurement (tick all that apply):

- ❑ International, competitive tender
  - ❑ Open
  - ❑ Closed (restricted)
- ☒ National, competitive tender
  - ❑ Open
  - ☒ Closed (restricted)
  - ☒ Negotiation/direct purchasing

Are the products purchased all registered? ☒ Yes ❑ No

Is there a local preference?[18] ☒ Yes ❑ No

17 If there is a public procurement system, there is usually a limited list of items that can be procured. Products procured on international tenders are sometimes registered in the recipient country only by generic names. Import permits to named suppliers are issued based on the approved list of tender awards. An open tender is one that is publicly announced; a closed one is sent to a selection of approved suppliers.

18 A local preference means that local companies will be preferred even if their prices are not the cheapest. Local preference is normally in the range of 10–20%.

Are there public health programmes fully implemented by donor assistance which also provide medicines? (e.g. TB, family planning, etc.) ☒ Yes ❑ No

If yes, please specify:

Bilateral partners support different programmes: the German Technical Cooperation (GTZ) supports tuberculosis control, human resource (HR) development and health structure reform; the Japan International Cooperation Agency (JICA) supports tuberculosis control; the United Kingdom Department for International Development (DFID) supports the National Health Facility (NHF) initiative, reproductive health, primary health care and consumer protection; the United States Agency for International Development (USAID) contributes to NHF, communicable disease control, reproductive and maternal health; Health Management Information System, and maternal and child activities through UNICEF. The Australian Agency for International Development (AusAID) and the Canadian International Development Agency (CIDA) are also important partners.

Multilateral assistance in women's health and reproductive health is provided by the Asian Development Bank; the World Bank supports maternal and child health through the LHWs programme, HIV/AIDS and public health surveillance.

Other financial and technical partners contributing to maternal and reproductive health include the Aga Khan Foundation, the European Commission (EC) and Save the Children USA. The Global Alliance for Vaccines and Immunizations (GAVI) and the Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM) contribute to communicable disease control. United Nations (UN) agencies such as FAO, UNAIDS, UNDP, UNFPA and WFP also work in the health sector.

Coordination of work between partners was demonstrated during the response to the earthquake disaster; WHO led the health cluster in emergency relief activities.

Source: The Country Cooperation Strategy briefs, WHO/CCO/06.04/Pakistan; World Health Organization 2006,

Distribution[19]

Is there a public sector distribution centre/warehouse? ☒ Yes ❑ No

If yes, specify levels: provincial, federal

Are there private not-for-profit distribution centres: ☒ Yes ❑ No
e.g. missions/nongovernmental organizations?

If yes, please specify:

Number of licensed wholesalers:

Retail

	Urban	Rural	Overall
Number of inhabitants per pharmacy (approx.)			
Number of inhabitants per qualified pharmacist (approx.)			19500
Number of pharmacies with qualified pharmacists			
Number of medicine outlets with pharmacy			

19 The public sector often has a central storage and distribution centre which may have at least one sublevel. The private not-for-profit sector may be dominated by one type of NGO (e.g. church missions), but may also comprise others such as Bamako Initiative type projects, Red Cross or Red Crescent Society, Médecins Sans Frontières.

technician

Number of other licensed medicine outlets

Private sector[20]

Are there independent pharmacies? ☒ Yes ❑ No Number:

Are there chain pharmacies? ❑ Yes ☒ No Number:

Do doctors dispense medicines?[21] ☒ Yes ❑ No

If yes, approximate coverage or % of doctors who dispense: 80- 90%

Are there pharmacies or medicine outlets in health facilities? ☒ Yes ❑ No

Financing

(Give approximate figures, converted to US dollars at current exchange rate: commercial "buy" rate on the first day of data collection)

Type of expenditure	**Approximate annual budget (US dollars)***
National public expenditure on medicines including government insurance, military, local purchases in past year	
Estimated total private medicine expenditure in past year (out of pocket, private insurance, NGO/mission)	
Total value of international medicine aid or donations in past year	

What percentage of medicines by value are imported? 50 %

* See WHO statisticson next page from http://www3.who.int/whosis/core/

Total expenditure on health as percentage of gross domestic product (?)	2.4 (2003)
General government expenditure on health as percentage of total expenditure on health (?)	27.7 (2003)
Private expenditure on health as percentage of total expenditure on health (?)	72.3 (2003)
General government expenditure on health as percentage of total government expenditure (?)	2.6 (2003)
External resources for health as percentage of total expenditure on health (?)	2.5 (2003)
Social security expenditure on health as percentage of general government expenditure on health (?)	53.3 (2003)
Out-of-pocket expenditure as percentage of private expenditure on health (?)	98.00 (2003)
Private prepaid plans as percentage of private expenditure on health (?)	n/a (1998)
Per capita total expenditure on health at average exchange rate (US$) (?)	13 (2003)
Per capita total expenditure on health at international dollar rate (?)	48 (2003)
Per capita government expenditure on health at average exchange rate (US$) (?)	4 (2003)
Per capita government expenditure on health at international dollar rate (?)	13 (2003)

Government price policy

Is there a medicines regulatory authority? ☒ Yes ❑ No

Is pricing regulated? ☒ Yes ❑ No

Is setting prices part of market authorization/registration? ☒ Yes ❑ No

Do registration fees differ between:

20 Retail outlets may be called pharmacies, medicine outlets, drug stores, chemists, etc. They may be run/owned by a qualified pharmacist (with diploma) or another category: e.g. pharmacy technician, or a lay person with short training.

21 Many countries allow doctors to dispense and sell medicines.

- Innovator brand and generic equivalents ☒ Yes ❑ No
- Imported and locally produced medicines ☒ Yes ❑ No

see http://www.dcomoh.gov.pk/regulations/fee.php

Public sector

Are there margins (mark-ups) in the distribution chain? ❑ Yes ☒ No

- Central medical stores %
- Regional store %
- Other store (specify) %
- Public medicine outlet %

Are there any other fees or levies? ❑ Yes ☒ No

If yes, please describe:

Private retail sector

Are there maximum profit margins? ☒ Yes ❑ No

If yes (if they vary, give maximum and minimum):

- Wholesale 2 %
- Retail 15 %

Is there a maximum retail price (sales price)? ☒ Yes ❑ No

(If it varies, give maximum and minimum)

- Maximum: ☒
- Minimum:

Do patients pay professional fees (e.g. dispensing fee)? ❑ Yes ☒ No

If yes, please describe:

"Other" sector

Are there maximum profit margins? ❑ Yes ❑ No

If yes (if they vary, give maximum and minimum):

- Wholesale %
- Retail %

Is there a maximum sales price? ❑ Yes ❑ No

Insurance, risk-sharing or prepayment schemes

Are there any health insurance, risk-sharing or prepayment schemes or revolving medicine funds? ☒ Yes ❑ No

If yes, please describe:

Are all medicines covered? ❑ Yes ❑ No

If no, state which medicines are covered (e.g. EML, public health programmes):

Are some patients / groups of patients exempted, regardless of insurance coverage? (e.g. children < X yrs, war veterans) ❑ Yes ❑ No

If yes, please specify:

Estimated percentage of population covered %

Is it official policy to supply all medicines free at primary health care level? ☒ Yes ❑ No ***in public sector only***

If no, are some free? ❑ Yes ❑ No

If yes, tick all that apply:

- θ Tuberculosis ☒
- θ Malaria ☒
- θ Oral rehydration salts ☒
- θ Family planning ☒
- θ Others, please specify:

Are there official user charges/patient co-payments/fees? ❑ Yes ❑ No

Are all medicines supplied free at hospitals? ❑ Yes ❑ No

If no, are some free? ❑ Yes ❑ No

If yes, please specify: