

Medicine Prices and Affordability in the State of West Bengal, India

Authors:

Prof. Santanu Kumar Tripathi

Chairperson, Pharmaceutical Committee, Community Development Medicinal Unit [CDMU], West Bengal and Medical Superintendent cum Vice Principal, Institute of Postgraduate Medical Education & Research [IPGME&R] and SSKM Hospitals, Kolkata.

Ms. Dalia Dey

Programme Officer
Consumer Unity & Trust Society, Calcutta Resource Centre, Kolkata

Dr. Avijit Hazra

Honorary Unit Coordinator, CDMU, West Bengal and
Lecturer in Pharmacology, IPGME&R, Kolkata.

Report of a survey supported by World Health Organization and Health Action International

The material in this publication may be reproduced in whole or in part and in any form for education or non-profit uses, without special permission from the copyright holders, provided acknowledgement of the source is made. The publishers would appreciate receiving a copy of any publication, which uses this publication as a source.

No use of this publication may be made for resale and other commercial purposes without prior written permission of CUTS & CDMU.

Contents

List of Tables	3
List of Figures	3
Acknowledgements	4
Conflict of Interest Statement	4
Project Execution Team.....	5
List of Abbreviations Used in the Report.....	6
Executive Summary	7
1. Introduction and Objectives	9
1.1 Background to the Study	9
1.2 West Bengal Demography, Health System and Access to Medicines Situation.....	9
1.3 Objectives	11
2. Methods	12
2.1 Survey Planning and Preparation	12
2.2 Sampling	13
2.3 Selection of Indicator Medicines	13
2.4 Reference Price Lists and the Median Price Ratio.....	16
2.5 Most Sold Generic Equivalent.....	16
2.6 Affordability	17
2.7 Price Components and Cumulative Mark-up.....	18
2.8 Data Collection.....	19
2.9 Data Analysis	19
3. Results	20
3.1 Availability of Medicines in the Public and Private Sectors.....	20
3.2 Comparison of Medicine Prices with International Reference Prices.....	26
3.3 Affordability of Model Treatment Regimens.....	35
3.4 Comparison between States/Regions	37
3.5 Cost Component Data.....	39
4. Discussion	40
4.1 Implication of the Results.....	40
4.2 Limitations of the Study.....	42
5. Conclusion and Recommendations	43
6. References	44
7. Annexes	45
Annex 1. National Pharmaceutical Sector form.....	46
Annex 2. International Reference Medicine Price Data.....	53
Annex 3. Data Collection Forms (incorporating list of brands in the survey).....	55
Annex 4. Median Price Ratio of Individual Medicines in Public Procurement.....	62
Annex 5. Median Price Ratio of Individual Medicines in Private Retail Sector.....	63

List of Figures

- Figure 1. Map of West Bengal indicating the surveyed districts and diagram indicating facilities selected.
- Figure 2. Intersectoral comparison of the availability of low priced generic products.
- Figure 3. Availability comparison across sectors and product categories for antibacterials in the survey.
- Figure 4. Availability comparison across sectors and product categories for other anti-infective drugs in the survey.
- Figure 5. Availability comparison across product categories for medicines indicated in chronic illnesses.
- Figure 6. MPR in comparison to international reference (MSH) price of individual medicines being publicly procured and available at more than 4 public health facilities.
- Figure 7. Median price ratio comparison across sectors and product categories for antibacterials in the survey.
- Figure 8. Median price ratio comparison across product categories for medicines indicated in chronic illnesses.
- Figure 9. Stock-plot showing price variation of branded medicines in the private sector.
- Figure 10. Stock-plot showing price variation of most sold generic equivalent (upper panel) and lowest priced generic equivalent (lower panel) medicines in the private sector.
- Figure 11. Ceftriaxone in meningitis showing appreciable difference between affordability of treatment to government worker vis-à-vis his counterpart in the unorganized sector.

List of Tables

- Table 1. Medicines dropped from the WHO/HAI core list in the present survey.
- Table 2. Supplementary indicator medicines included in the present survey.
- Table 3. Availability of surveyed medicines in public and private sectors.
- Table 4. Summary of medicine prices in public and private sectors in comparison to reference prices.
- Table 5. Ratio of private retail price to public procurement price encountered in the survey.
- Table 6. Brand premiums in the private sector.
- Table 7. Affordability of standard treatments in select conditions to the lowest paid unskilled worker in government employment and a worker in the unorganized sector.
- Table 8. Regional comparison of medicine availability, price and affordability.

Acknowledgements

We are grateful to Dr. Prabhakar Chatterjee, the Director of Health Services, Government of West Bengal, for granting permission to conduct the survey at selected public health facilities of the state. The superintendents, pharmacists or medical officers in charge of medicine procurement in these facilities deserve our appreciation and gratitude for facilitating the collection of data. Similarly we thank the proprietors, pharmacists and retail store salespersons at the private retail outlets that agreed to participate in the survey at short notice.

Without the guidance and technical advice of the following individuals, the survey would not have been possible:

- Dr. Andrew Creese of the Policy, Access and Rational Use Team, Department of Essential Drugs and Medicines Policy, World Health Organization, Geneva
- Ms. Margaret Ewen of Health Action International Europe, Amsterdam
- Dr. Anita Kotwani of the Department of Pharmacology, Vallabhbai Patel Chest Institute, University of Delhi, Delhi
- Dr. Richard Laing of Department of Essential Drugs and Medicines Policy, World Health Organization, Geneva
- Ms. Kirsten Myhr of the Regional Centre for Medicines Information and Adverse Drug Reaction Monitoring, Oslo
- Mr. Martin Auton, Consultant of Health Action International, Pretoria
- Dr. Krisantha Weerasuriya of Department of Essential Drugs and Medicines Policy, World Health Organization South East Asia Regional Office, New Delhi
- Mr. Sunil Nandraj of World Health Organization India Country Office, New Delhi

In addition, we received constant encouragement from our colleagues to go ahead with this challenging study and bring it to a successful conclusion. In particular, we would like to thank the following individuals:

on behalf of CUTS:

Mr. Santanu Banerjee, Ms. Mita Dutta, Mr. Ranajit Dey and Dr. Pranabesh Chakraborty.

on behalf of CDMU:

Mr. Amitava Guha, Dr. Amitava Sen, Mr. Sushanta Roy and Mr. Sitaram Sawkota.

Conflict of Interest Statement

The survey has been conducted with funding support from WHO / HAI.

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.

Project Execution Team with Job Responsibilities

Survey Manager

Ms. Dalia Dey

Planning and Logistics

Ms. Dalia Dey

Prof. S. K. Tripathi

Dr. Avijit Hazra

Mr. Santanu Banerjee

Training

Dr. Avijit Hazra

Ms. Dalia Dey

Prof. S. K. Tripathi

Dr. Amitava Sen

Mr. Sushanta Roy

Data Collection

Mr. Saurav Mitra (Area Supervisor)

Mr. Sumanata Biswas

Mr. Abhijit Kumar Shaw

Mr. Santanu Das (Area Supervisor)

Mr. Manish Arora

Mr. Gourab Bhattacharya

Data Management and Analysis

Ms. Dalia Dey

Dr. Avijit Hazra

Presentations and Report Writing

Dr. Avijit Hazra

Ms. Dalia Dey

Prof. S. K. Tripathi

List of Abbreviations Used in the Report

Cap – Capsule
CMOH – Chief Medical Officer of Health
CMS – Central Medical Stores
DPCO – Drug Prices Control Order (DPCO)
FOC – Free of Charge
g – gram
GoWB – Government of West Bengal
HAI – Health Action International
IB – Innovator Brand
Inh – Inhaler
Inj – Injection
INR – Indian rupees
IQR – Interquartile Range
LPG – Lowest Price Generic Equivalent
mcg – Microgram
mL = Milliliter
mg – Milligram
MPR – Median Price Ratio
MRP – Maximum Retail Price
MSG – Most Sold Generic Equivalent
MSH – Management Sciences For Health
NGO – Non-government Organization
Susp – Suspension
Tab – Tablet
US\$ – United States dollars
WHO – World Health Organization

Note:

1. The generic names of medicines used in the report are their International Non-Proprietary Names (INN).
2. Mention of brand names of medicines is avoided in the text of the report. These may be found in the annexes.
3. When referring to the survey medicines in the text, often only the generic name of the medicine is used. It should be recognized that this implies the medicine in the strengths and dosage form as required by the WHO/HAI methodology, and not necessarily to other forms and strengths.
4. When the term 'brand' is used in the text, it should be taken to mean the innovator brand.

Executive Summary

Background: Availability and affordability are key components in equitable access to essential medicines. There is lack of data on these key components in West Bengal and this is a limiting factor for the development of any people-oriented medicine policy. To address this lacuna, two non-government organizations, Consumer Unity & Trust Society, Calcutta Resource Centre (CUTS), and Community Development Medicinal Unit, West Bengal (CDMU), jointly undertook a survey on availability and pricing of essential medicines in the state of West Bengal. The study was funded and technically supported by World Health Organization (WHO) and Health Action International (HAI).

Methods: The survey followed the WHO/HAI methodology on determination of medicine prices in comparison to the Management Sciences for Health (MSH) 2003 international reference prices (which is based on bulk generic procurement). Thirty two medicines (21 from the core list of the WHO/HAI methodology) were surveyed in 26 public facilities (down to the rural hospital level) and 35 private retail outlets spread over Kolkata and 6 other districts of West Bengal. The facilities were selected through convenience sampling. The data collection was undertaken during Sep - Dec, 2004 by 6 data collectors who had received training for this purpose. To some extent procurement price for the medicines found available at the public health facilities were obtained at the facility itself, but mostly this price had to be ascertained from the state government's Central Medical Stores listing. In private retail shops, prices that patients would pay were ascertained through questioning for 3 categories of each medicine – innovator brand (IB), most sold generic (MSG; generic product with the highest sales nationally) and lowest priced generic (LPG; generic product with the lowest price at each facility) equivalents. Affordability calculations were based on simple model treatments and the minimum daily wages of the lowest paid unskilled worker in government employment (Indian rupees 132/-) and his counterpart in the unorganized sector (INR 97/-) in West Bengal. An attempt was made to verify existing knowledge on medicine price components and mark-ups during the field survey.

Results: Public procurement of essential medicines in West Bengal is limited to generics and the procured medicines are distributed free of cost at public health facilities. However, availability of medicines at public facilities during the period of the survey was poor – just 13 of the 32 medicines (40.6%) were encountered, with only amoxicillin 250 mg tablets/capsules showing over 90% availability. Only 4 of the 7 antibacterials were available. Albendazole was available, but aciclovir, fluconazole and sulfadoxine-pyrimethamine were not. These are dismal trends for the treatment of bacterial and other infections at public hospitals. Isosorbide dinitrate, which is a very cheap emergency medicine for acute anginal attacks, was not available. The treatment of epilepsy would not be possible at public hospitals as neither phenytoin nor carbamazepine (or for that matter, other antiepileptics) were available. Diazepam tablets were missing. There was no inhalers for asthmatics and also no drug to calm acutely agitated psychiatric patients.

Availability was adequate in the private sector, with median availability of 40.0% for IB medicines, 70.0% for MSGs and 77.1% for LPGs. Medicines for all therapeutic categories in the survey were encountered in the private sector, although the innovator brands may be unavailable. On the other hand there is widespread availability of generic equivalents. In a few instances, such as with aciclovir,

albendazole, diclofenac, glibenclamide and ibuprofen, the innovator brand had better availability than generic equivalents.

Regarding public procurement, a median price ratio (MPR) of 0.75 in comparison to the MSH 2003 reference price indicated efficient procurement in economic terms. In contrast, patients who purchased medicines from retail shops paid a much higher price, as indicated by median MPRs of 2.86 and 2.17 respectively, for IB and LPG products. The 75th percentile of MPRs for both product categories exceeded 5.0, suggesting that retail pricing is substantially high in comparison to international reference price. Pricing of a few products, like albendazole, diazepam and doxycycline, were prohibitively expensive. However, there were also some encouraging trends in the private sector. Eight of the 30 (26.7%) available MSG products and 8 of the 31 (25.8%) available LPG products, had MPR less than or close to 1, indicating that patients are likely to purchase these medicines at very reasonable prices. Interestingly, 4 of the 22 (18.2%) available innovator brands also showed this pattern, indicating that private patients in India do not have to pay a brand premium for all medicines.

From the affordability calculations based on minimum daily wages, it was observed that since the prices obtained in public procurement were low, no patient would have had to pay more than one days' wage to obtain any of the model treatments, if these were offered at procurement price. Intravenous ceftriaxone treatment of meningitis was the only exception. The picture was different in the private sector, as treatment here was 4 to 6 times as costly as in the public sector. However, the variation here, between innovator brands and generic equivalents, or that between acute and chronic conditions, was not remarkable so far as the model treatments are concerned. Such simple treatment regimens are also by and large affordable by the 'less than 5 days' wages' criterion. Once again, ceftriaxone treatment for meningitis was an exception, one course of which consumes more than 7 days wages for the lowest paid government worker and more than 10 days wages for his counterpart in the unorganized sector. The affordability assessment in this study has certain weaknesses. For instance, it excludes large sections of the population and does not take into consideration the effect of multiple illnesses in the family or illness affecting the earning member.

The field survey did not add anything substantial to the existing knowledge on medicine price components and cumulative mark-ups.

Conclusions: The present survey on the availability, pricing and affordability of medicines in West Bengal has attempted to obtain reliable data on these aspects, limiting itself to a select basket of essential medicines. It has shown that medicines that are obtained from public hospitals free of cost by patients are procured economically, but the overall availability in the public sector is disheartening and needs immediate redress. Medicines are readily available from private retail counters but this comes at a price higher than international reference prices, with some brand premium for many items. Standard treatments are mostly affordable, provided that the earning member of a family draws minimum daily wages at rates specified by the government. The study has not covered all therapeutic categories or all sectors that distribute medicines to the people, but these do not detract from the importance of the above results as basis for action and as baseline for future studies.

1. Introduction and Objectives

1.1 Background to the study

India is a vast country with diverse and complex sociocultural, economic and political fabric. Notwithstanding this complexity, within a few decades since independence in 1947, the nation has become self-sufficient in catering to the medicine needs of its people and transformed itself from a high medicine price nation to one with relatively low drug prices. However, contemporary challenges like industrial policy reform, economic liberalization and globalization, decontrol measures, and, above all, the World Trade Organization agreement obligations, tend to make the cherished matter of equitable access to essential medicines elusive. The issue of inequitable access and affordability of essential medicines is one of global concern and is being increasingly voiced in India in the backdrop of the ongoing economic changes. The pharmaceutical situation in India is summarized in Annex 1. Further information may be obtained in 'The World Medicines Situation' report.¹

At the international level organizations like World Health Organization (WHO) and Health Action International (HAI) have been actively pursuing policies to facilitate universal access to essential medicines. Indeed, access to essential medicines has been viewed as an integral component of the right to health, which is a basic human right.² Therefore it is a global obligation to ensure availability and affordability of essential medicines. Worldwide, there are a multitude of medicines with a multitude of prices. The same medicine has different prices depending upon the source from which it is procured, the form in which it is marketed (e.g. brand or generic, oral or parenteral, course of treatment pack or bulk pack, etc.), the taxes and duties that are levied by governments and the facilities from which it is procured by patients. It is an extremely complex task, whether for individuals or for governments, to ascertain the optimum availability and best prices for medicines. Therefore it is necessary to monitor these parameters on a regular basis. WHO and HAI have collaborated to develop a methodology for measuring medicines prices and availability.³ This has already been field tested in a number of countries and is being refined in the process.

Studies are now being undertaken in India, following this methodology, to provide the baseline data for assessing medicine availability and affordability in the country. The current study on medicine prices in West Bengal is a component of a multi-state survey. Chennai, Haryana, Karnataka, Maharashtra and Nagpur are the other states or regions where similar surveys have been undertaken simultaneously. The availability and pricing of essential medicines in the state of Rajasthan has been assessed earlier following the same methodology.⁴

1.2 West Bengal demography, health system and access to medicines situation

West Bengal is located in the eastern part of India. Although with an area of 88,752 square km it is a medium-size state, it is one of the largest in population – 80.22 million [Source: 2001 Census of India] with a density of 904 individuals per square km [Source: 2001 Census of India]. The state is divided into 19 districts, including the capital city of Kolkata and its greater metropolitan area. About three quarters of the population lives in the villages. Apart from the mainstream population, there are

about 40 recognized tribal communities that make up less than one-tenth of the total population. Bengali is the language of most of the people, with Hindi, Urdu, Nepali, and English as minority languages. English, however, is the language of administration and lingua franca for business purposes. Agriculture plays a pivotal role in the state's income, and nearly three out of four persons in the state are directly or indirectly dependent on agricultural activities.

The wide disparity in the geography of the state implies that many areas are remote and not readily accessible, such as the mountainous terrain in the north and the estuarine islands in the south. This has created disparities in the public services infrastructure. Development of the various districts has also not been equitable, lagging behind in districts that do not possess major urban centers.

The healthcare infrastructure in West Bengal is a mix of public, private and non-government organization (NGO) facilities. The annual per capita expenditure on health is INR 170.44 [Source: GoWB publication Health on the March, 2003]. The government subsidizes a major share of people's healthcare expenditure through a vast, albeit not optimally utilized, network of public health facilities. West Bengal is probably a pioneer state in India in promulgating the central medical stores (CMS) concept and practicing the pooled procurement system for drug supplies in government hospitals. A carefully selected list of medicinal items, the CMS Catalogue list, akin to the WHO model list of essential medicines, is given priority in such procurement. Limited freedom is given to large secondary and tertiary care hospitals for local purchase. Patients do not have to pay for drugs dispensed from public hospitals. It is estimated that around 70% of the population avail public healthcare services and therefore have access to essential drugs. The health department spends about 7% of the total health budget on drugs – the health budget constitutes 3.9% of the government's total budget [Source: Draft State Drug Policy - West Bengal, 2004]. However, it is an obvious fact that there is a lot of scope for improvement in the drug supply management system in public hospitals in West Bengal.

A large section of the population, particularly in urban areas, also patronize private healthcare facilities because of the weaknesses of the public health system. There is a vast number of private retail pharmacies, about 40000 by current estimates, from which patients can procure medicines. However, most such procurement would be as purchases from personal funds. Public or private drug cost reimbursement schemes cover only a tiny fraction of the population at the current juncture.

Finally, there are a large number of NGOs, many of them highly committed, that cater to the healthcare needs of the people. However, majority of NGOs have budgetary constraints that prevent regular or optimal supply of drugs, on free of charge (FOC) or subsidized cost basis, to their clientele.

Thus, despite a large number of facilities from which medicines may be obtained, it is a general perception that people's access to essential medicines in West Bengal has remained unsatisfactory.

Health remains primarily a state subject in India. Although health policy and drug policy are formulated and revised periodically by the Government of India, the major responsibility of their implementation lies with state governments. Pricing of drugs is regulated to a limited extent by the Government of India through its Drug Prices Control Order (DPCO). The state Drug Control Authority is entrusted with the regulatory mandates of the Drugs and Cosmetics Act of 1940, the National

Pharmaceutical Policy 2002 and the successive DPCOs. However, with an operating strength of only about 50% of its sanctioned strength of 148 drug inspectors at present [Source: Draft State Drug Policy - West Bengal, 2004], the state drug control is not in a position to monitor medicine availability and pricing on a regular, or even occasional, basis. This vital job therefore must be undertaken from other quarters.

1.3 Objectives

It is against the backdrop outlined above that the present survey has been planned to obtain the following data:

- a. Availability of medicines in the public and private sectors.
- b. Public and private sector medicine prices (procurement price in the public sector and the price to patient in private sector).
- c. Affordability of medicines in the public and private sectors.
- d. Components of medicine prices.

It is expected that the data generated would provide:

- a. Baseline information to ascertain the need or effectiveness of policies relating to pricing of medicines.
- b. Advocacy tool to health professionals, consumers and other stakeholders while negotiating for equity in access to essential medicines.
- c. Baseline information to ascertain medicine availability and affordability trends in future.

2. Methods

The Survey was conducted jointly by two non-government organizations – Community Development Medicinal Unit, West Bengal (hereinafter referred to as CDMU) and Consumer Unity & Trust Society, Calcutta Resource Centre (hereinafter referred to as CUTS). The operational modalities were spelt out in a mutually agreed memorandum of understanding. CUTS undertook the major share of the field work and logistical responsibilities of the study, while CDMU took care of the training and technical aspects.

The survey covered medicines in the public sector and private retail pharmacies based on the methodology developed by WHO/HAI for the collection, analysis and interpretation of data on medicine availability and pricing.⁵ A total of 32 medicines were sampled. The basis for selection has been mentioned below. For each medicine, up to three formulations were monitored, namely:

- Innovator brand (IB) – The formulation original patented by the innovator company and being marketed by the same company or its successor in India.
- Most sold generic equivalent (MSG) – the one with the highest sales on a national basis.
- Lowest priced generic equivalent (LPG) – the one with the lowest price in the facility at the time of survey.

Apart from a few public hospitals that had information on procurement price, public sector procurement prices were obtained centrally from the Central Medical Stores of the Department of Health & Family Welfare, GoWB. Private sector prices were obtained at the retail facility itself by querying to know the price the patient would have to pay or verifying the same from the medicine strips and adding the tax component that was being charged. Availability was assessed at both public and private facilities.

A similar survey was undertaken simultaneously by 5 other groups in the country covering Haryana, Maharashtra, Nagpur in Maharashtra, Karnataka and Chennai in Tamil Nadu. The central coordinators on behalf of WHO/HAI provided technical support and also provided the names of MSG formulations to maintain parity between the different surveys.

2.1 Survey planning and preparation

The preparatory groundwork for the survey was carried out in Sep, 2004 while the actual fieldwork was done between Sep - Nov, 2004. Some residual data was gathered in Dec, 2004.

Six data collectors were selected through interview. All were graduates with past experience of market survey. Two of them, from medical representative background, were designated as Area Supervisors. The data collectors were familiarized with the methodology of the survey through a 2-day training program on Sep 4-6, 2004. The training included a pilot survey in 1 public facility and 2 retail pharmacies.

A letter of endorsement was sought from the Director of Health Services, GoWB, who is the controlling authority for all public health facilities in the state. Copies of these letters were dispatched to the CMOH of the individual districts to be surveyed and

were also carried by the data collectors. Also letters of introduction to Superintendents of individual public health facilities were prepared and the data collectors were provided with photo-identity cards.

A tour plan was chalked out in advance and sufficient copies of data collection forms were made.

2.2 Sampling

West Bengal is a densely populated state with health facilities varying widely in scope, infrastructure and clientele. Of the 19 districts in the state, the city of Kolkata (administratively considered equivalent to a district) was kept in the survey and 6 other districts were selected randomly.

In each district, from the list of public health facilities down to the rural hospital level, 3 health facilities were selected by convenience sampling and 3 others were kept as standby facilities (to be visited if a primary facility could not provide data or did not fulfill the minimum availability criterion for selected medicines). Five retail pharmacies located near the public facilities surveyed were selected on the spot and sampled. Very small private retail counters (catering to less than 20 patients per day on average) were not selected.

The map of West Bengal in Figure 1 depicts the surveyed districts and the facilities surveyed have been indicated in the accompanying diagram.

2.3 Selection of Indicator Medicines

The full list of medicines surveyed and their IB and MSG equivalents are provided in the Medicine Price Data Collection Forms (Core and Supplementary Lists) in Annex 3.

The WHO/HAI manual provides a core list of 30 medicines.⁵ However, some core medicines were removed from the survey because of known limited availability in West Bengal. For instance, it was known at the commencement of the project that antiretroviral drugs (e.g. zidovudine, nevirapine and indinavir) are available only from a few private retail outlets in urban areas and are distributed from only 1 public health facility, namely the School of Tropical Medicine in Kolkata (not included in the survey as it caters to only tropical diseases and HIV/AIDS patients). The medicines affected and the reasons for non-inclusion are summarized in Table 1.

Annex 2 provides the list of sampled medicines with their international reference prices in terms of MSH 2003 index price.

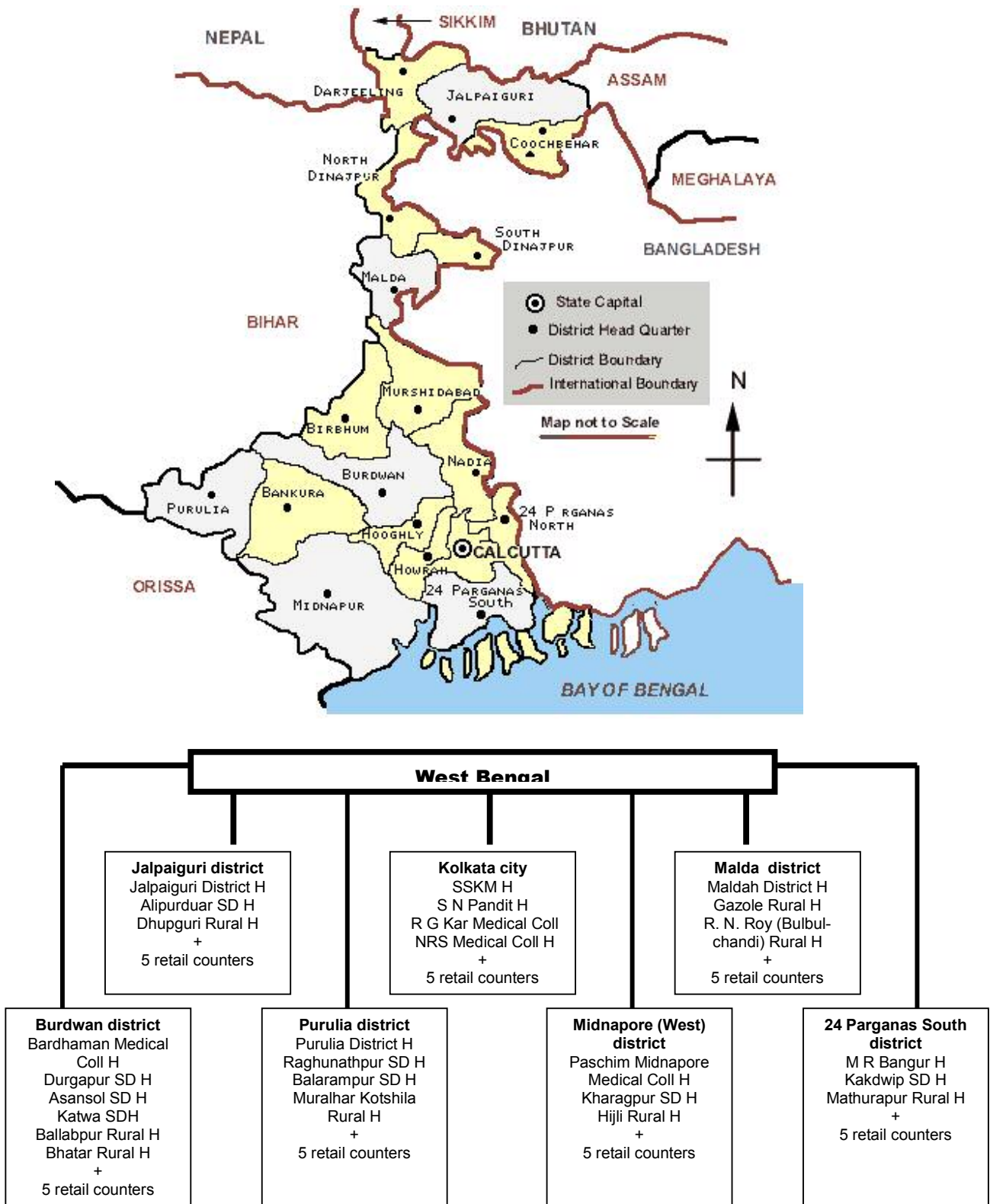


Figure 1. Map of West Bengal indicating the surveyed districts (lighter shade) and diagram indicating facilities selected.

Table 1. Medicines dropped from the WHO/HAI core list in the present survey

Drug	Dosage form and strength	Reason for non-inclusion
1. Artesunate	100 mg tab	A and B
2. Beclometasone	50 mcg/dose inh	A and B
3. Captopril	25 mg tab	A and C
4. Diclofenac	25 mg tab	A and B
5. Fluphenazine decanoate	25 mg/ml inj	A
6. Indinavir	400 mg tab	A and C
7. Lovastatin	20 mg tab	A and C
8. Nevirapine	200 mg tab	A and C
9. Zidovudine	100 mg tab	A and C

Reason A: Drug and strength known not to be available in public facilities; Reason B: Strength not readily available in private facilities; Reason C: Drug not readily available in private facilities

The WHO/HAI methodology also provides for inclusion of up to 20 supplementary medicines reflecting local morbidity patterns. Accordingly, 11 such medicines were selected as indicated in Table 2. The selected supplementary medicines fulfilled the following criteria:

- They are used to treat common health problems
- They are expected to have high level of use
- Generic equivalents are available in the market
- Likely to be available across all levels of care
- They have an international reference price (mandated by the survey methodology as outlined in the following section).

Table 2. Supplementary indicator medicines included in the present survey

Drug	Dosage Form and Strength
1. Albendazole	400 mg tab
2. Diclofenac sodium	50 mg tab (enteric coated)
3. Doxycycline	100 mg cap
4. Enalapril	5 mg tab
5. Fluconazole	150 mg cap / tab
6. Furosemide	40 mg tab
7. Gentamicin	80 mg / 2 mL inj
8. Haloperidol	5 mg / mL inj
9. Ibuprofen	400 mg tab
10. Isosorbide dinitrate	5 mg tab (sublingual)
11. Metronidazole	400 mg tab

Note: Fluconazole 200 mg is already there in the Core List. However, 150 mg is the strength most commonly used and available in West Bengal and was therefore included in the Supplementary List.

Thus the final survey list contained 32 medicines - 21 core and 11 supplementary drugs. Overall this basket of drugs was expected to provide a reasonable representation of the medicine situation in West Bengal, with respect to availability

and affordability to consumers suffering from common health problems. Drugs for rare diseases are not represented.

It should also be noted that the WHO/HAI survey methodology requires strict adherence to the specified dosage form and strength of a medicine. Therefore this report does not consider alternative strengths or forms which may have been available in West Bengal during the study period.

2.4 Reference Price List and the Median Price Ratio

The results from the survey are not presented in actual currency units but, rather, 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 the median price ratio, whereby:

$$\text{MPR} = \text{median local unit price} / \text{reference unit price} \quad (\text{both expressed in the same currency})$$

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-region or 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).⁶ 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, the following convention can be applied for the time being using MSH reference prices – when comparing public procurement prices, a MPR of 2 or less is indicative of efficient medicine procurement; when comparing private retail prices, a MPR of 5 or more might be considered as exorbitant.

2.5 Most Sold Generic Equivalents

The WHO/HAI methodology indicates that a survey should be conducted to determine the most sold generic equivalent (MSG) for the study medicines on a national basis. Since it was extremely difficult to do this on a regional (state) basis, this data was obtained centrally from the national coordinators for the study.

Initially an attempt was made to draw up the list of MSG products by using the opinion of pharmaceutical market experts and then verify this provisional list locally

by visiting a small number of private pharmacies dispersed geographically. However, it was quickly realized that the wide disparity in the availability of brands selected made this exercise futile and the provisional list was discarded. Also there is an obvious fallacy in using the most commonly available generic equivalent locally as a surrogate of the MSG. It was therefore decided to obtain this data from the national coordinators.

2.6 Affordability

The WHO/HAI methodology incorporates affordability indications based on how many days' wages of an unskilled government worker would be required to purchase standard or model treatments using the survey medicines. A model treatment was considered "affordable" if it cost less than 5 days' wages although this is an arbitrary threshold and is open to debate.

Daily salary of lowest paid unskilled government worker in West Bengal currently stands at INR 132 approximately (Source: Labor Department, GoWB). This was therefore the baseline for affordability calculations. The limitations of using this baseline needs to be borne in mind. West Bengal is a densely populated state with only a minority of the population being government employees. The minimum prescribed daily wage of unskilled labor, in the unorganized sector, is INR 97 (Source: Labor Department, GoWB). Minimum wages of workers in certain sectors, e.g. tea garden workers in the North Bengal districts, are governed by separate acts and agreements which specify different rates of minimum daily wages. There is also large scale unemployment or only partial employment. Therefore this affordability baseline provides only general trends and not a true reflection of affordability across various sectors.

Incidentally, to place these figures in the national perspective, the World Bank in its 2004 Development Report states that 79.9% of the Indian population lives on less than US\$ 2.00 (i.e. INR 92) per day.⁷

2.7 Price components and cumulative mark-up

The study sought to verify the prevailing knowledge regarding medicine price components from retailers during the field survey. Retail price of medicines in India is determined by the pricing norms promulgated in the Drug Prices Control Orders (DPCO) of the Government of India, the taxes levied by the central and state governments (e.g. central and state sales taxes) and the profit margins levied at successive tiers in the trade channels.

The prevalent formula used for price determination is:

$$RP = (MC + CC + PM + PC) \times (1 + MAPE/100) + ED$$

where, RP is Retail price

MC is Material cost (includes cost of the active pharmaceutical ingredients and excipients used)

CC is Conversion cost

PM is Packing materials cost

PC is Packing charges

MAPE is Maximum allowable post-manufacturing expenses (not to exceed 100% for indigenously manufactured formulations)

ED is Excise duty charged by the central government (16% at the time of the survey)

Retail price often varies from batch to batch for obvious reasons and it is difficult to ascertain components of the maximum retail price (MRP) without access to the manufacturers production and marketing data.

Sales Tax charged by the GoWB at the time of the survey was a single point tax, meaning that the first seller in West Bengal will collect sales tax on the net value of medicines sold. The subsequent seller is authorized to collect only the tax, which he has already paid. Thus, if the wholesaler is purchasing from the manufacturer, tax paid by him on that manufacturer's ex-factory price will be collected from the retailer and retailer in turn is entitled to collect only that amount from the consumer.

DPCO mentions 16% margin for retailers for schedule H drugs; it does not specify any wholesale margin. Though the wholesale margin is not specified in the DPCO (for non-controlled items), trade practice and the agreement reached between the pharmaceutical industry and the pharmaceutical trade bodies in India, generally earmarks 8% & 10% margin for wholesaler on scheduled and non-scheduled category of medicines respectively. In other words, the margins to the wholesalers is not statutorily protected but the trade norms and agreements from time to time between the industry and trade organizations specifies the margins that are to be allowed.

The following key points are to be noted in this regard:

- a. The retailer is eligible to collect the tax paid by him on the purchase value from the consumer.
- b. Sale value is inclusive of profit margin allowed to a retailer (as per DPCO or industry-trade agreements).
- c. DPCO and sales tax act prohibits a retailer from collecting additional taxes on MRP.
- d. State sales tax on medicines vary from state to state. In West Bengal this tax at the time of survey was 9.78% for most medicinal items.

2.8 Data collection

Data was gathered by the data collectors during their visits to the individual facilities. However, public procurement prices could not be obtained at most public facilities and were obtained later from the Central Medical Stores (CMS) Approved Prices List of the GoWB. This data pertained generally to the 2004-2005 procurement year. Patient prices were not applicable at the public facilities as at all these facilities patients did not have to pay for any medicines dispensed.

At private pharmacies, availability and the price on the medicine strips/containers were surveyed at each selected facility. Since medicines sold in West Bengal, at the time of the survey, generally had the maximum retail price (MRP) printed on the strip/container with the statement 'Local taxes extra', the data collectors had to query the retailers as to the patient price. A state sales tax of 9.78% was applicable to most pharmaceutical products at the time of the survey. However, the price obtained by adding this component to the MRP often varied from the actual patient price at different facilities, because of small variations in the margins being kept by the retailers and rounding off of the tax component. The extent of such discrepancies was not fully investigated.

Initial plan was to survey 3 public facilities in each of the 7 districts. Accordingly a list of 3 + 3 facilities, not below the level of rural hospital, was drawn up for each district through convenience sampling. It was decided a priori that if < 50% of the target number of medicines (total 32) were available at any facility that would be dropped and replaced by a standby facility. Later this figure was modified to < 25%. Even then this minimum availability criterion could not be fulfilled for all facilities. For the private retail sector, 5 retail pharmacies were identified in and around the public facilities selected and surveyed. The selection was done on spot. Minimum availability criterion was fulfilled for all retail outlets surveyed.

All price data was recorded on the predesigned data collection forms and was cross-checked by the Area Supervisors. Annex 3 provides a sample data collection form.

2.9 Data analysis

For data analysis, the data entry was done by a single operator in the predesigned computerized WHO/HAI Medicine Prices Workbook designed in the Microsoft Excel software. Cross-checking was done, with actual double data entry, by another individual on different dates.

The computerized workbook uses the US\$ as the currency for recording reference prices. The Indian Rupees exchange rate for the US\$ prevailing on Sep 27, 2004 (1 US\$ = INR 45.777) was initially entered in the workbook before querying the database. Subsequently, in consultation with the central coordinating body for the study, the exchange rate was taken to be 1 US\$ = INR 45.320.

3. Results

The following analysis have been presented:

- 3.1 Availability of medicines in the public and private sectors
- 3.2 Comparison of medicine prices with international reference prices
- 3.3 Affordability of model treatment regimens
- 3.4 Availability and affordability comparisons with other regions / states surveyed
- 3.5 Cost component data

3.1 Availability of medicines in the public and private sectors

It must be kept in mind that the availability data, as summarized in Table 3, only refers to the day of data collection at each particular facility. LPG availability is simply a measure of availability of any low-cost generic medicine, whereas MSG availability refers to specific products identified on a national basis.

Table 3. Availability of surveyed medicines in public and private sectors

Medicine Name	Innovator Brand		MSG		LPG	
	Public (n=26)	Private (n=35)	Public (n=26)	Private (n=35)	Public (n=26)	Private (n=35)
1. Aciclovir Tab 200 mg	Nil	68.6%	Nil	20.0%	Nil	31.4%
2. Amitriptyline Tab 25 mg	Nil	85.7%	Nil	42.9%	19.2%	65.7%
3. Amoxicillin Cap/Tab 250 mg	Nil	5.7%	Nil	77.1%	96.2%	94.3%
4. Atenolol Tab 50 mg	Nil	65.7%	Nil	94.3%	15.4%	94.3%
5. Carbamazepine Tab 200 mg	Nil	91.4%	Nil	25.7%	Nil	25.7%
6. Ceftriaxone Inj 1 g (powder)	Nil	Nil	Nil	85.7%	19.2%	85.7%
7. Ciprofloxacin Tab 500 mg	Nil	54.3%	Nil	68.6%	Nil	68.6%
8. Co-trimoxazole susp (8 + 40) mg/mL	Nil	54.3%	Nil	88.6%	3.8%	88.6%
9. Diazepam Tab 5 mg	Nil	85.7%	Nil	80.0%	Nil	80.0%
10. Fluconazole Cap/Tab 200 mg	Nil	22.9%	Nil	42.9%	Nil	42.9%
11. Fluoxetine Cap/Tab 20 mg	Nil	Nil	Nil	74.3%	Nil	77.1%
12. Glibenclamide Tab 5 mg	Nil	82.9%	Nil	40.0%	3.8%	42.9%
13. Hydrochlorothiazide Tab 25 mg	Nil	Nil	Nil	8.6%	Nil	14.3%
14. Losartan Tab 50 mg	Nil	Nil	Nil	65.7%	Nil	74.3%
15. Metformin Tab 500 mg	Nil	11.4%	Nil	91.4%	Nil	97.1%
16. Nifedipine Tab 20 mg sustained release	Nil	Nil	Nil	71.4%	Nil	77.1%
17. Omeprazole Cap 20 mg	Nil	11.4%	Nil	88.6%	38.5%	100.0%
18. Phenytoin Cap/Tab 100 mg	Nil	Nil	Nil	91.4%	Nil	91.4%
19. Ranitidine Tab 150 mg	Nil	97.1%	Nil	100.0%	Nil	100.0%
20. Salbutamol Inh 100 mcg/dose	Nil	60.0%	Nil	85.7%	Nil	85.7%
21. Sulfadoxine-pyrimethamine Tab (500 + 25) mg	Nil	Nil	Nil	45.7%	Nil	45.7%
22. Albendazole Tab 400 mg	Nil	91.4%	Nil	22.9%	73.1%	74.3%
23. Diclofenac sodium Tab 50 mg enteric coated	Nil	94.3%	Nil	8.6%	Nil	20.0%
24. Doxycycline Cap/Tab 100 mg	Nil	48.6%	Nil	88.6%	57.7%	97.1%
25. Enalapril Tab 5 mg	Nil	20.0%	Nil	60.0%	11.5%	80.0%
26. Fluconazole Tab 150 mg	Nil	31.4%	Nil	40.0%	Nil	62.9%
27. Furosemide Tab 40 mg	Nil	91.4%	Nil	2.9%	34.6%	5.7%
28. Gentamicin Inj 40 mg/mL	Nil	Nil	Nil	97.1%	84.6%	97.1%
29. Haloperidol Inj 5 mg/mL	Nil	2.9%	Nil	22.9%	Nil	25.7%
30. Ibuprofen Tab 400 mg	Nil	97.1%	Nil	37.1%	15.4%	40.0%
31. Isosorbide dinitrate Tab 5 mg sublingual	Nil	17.1%	Nil	91.4%	Nil	91.4%
32. Metronidazole Tab 400 mg	Nil	94.3%	Nil	94.3%	Nil	94.3%

Note: MSG = most sold generic equivalent; LPG = lowest priced generic equivalent; medicines up to serial number 21 are in the core list.

Public sector procurement in West Bengal adheres to a generics policy and therefore there is complete absence of any innovator brand and MSG products in this sector. The median availability of LPG medicines was 0% (3.80; the interquartile range) for core medicines and 0% (17.3) for supplementary medicines. Thus overall availability was poor. As many as 19 medicines (14 from the core list) were not encountered at all, while only amoxicillin 250 mg capsules or tablets showed over 90% availability.

While concluding about the low availability of medicines in the public sector, certain observations made during the course of the study are pertinent.

- Some of the selected medicines, e.g. aciclovir tablets, fluconazole capsules/tablets (both strengths), losartan tablets and salbutamol inhaler, are currently not publicly procured or distributed in West Bengal.
- Fluoxetine capsules and haloperidol injection are likely to be obtained by psychiatric facilities through local purchases and therefore were not encountered in the general public facilities surveyed.
- The non-availability of ciprofloxacin, diazepam, ranitidine and metronidazole tablets was surprising as they are known to be publicly procured and distributed in West Bengal and their public procurement prices are available from the current CMS Price List. Therefore, their non-availability at the time of survey could be due to a stockout situation reflecting drawbacks in the distribution system.

At the private pharmacies, of the core list of medicines, median availability was 22.9% (68.60) for innovator brand medicines, 74.3% (45.70) for MSGs and 77.1% (45.70) for LPGs. When supplementary medicines are added to the calculation, the corresponding figures are 40% (84.25), 70% (50.05) and 77.1% (49.95). The difference is thus only in some increase in availability of innovator brands. Poor (< 25%) availability was encountered for the LPG version of only three medicines, namely furosemide tablets, hydrochlorothiazide tablets and diclofenac sodium enteric coated tablets. As can be seen from the current issue of Indian Drug Review,⁸ a widely used commercial drug formulary, there are not many manufacturers of the former two medicines but the poor availability of generic equivalent versions of diclofenac was surprising and inexplicable.

Figure 2 depicts the public versus private sector comparison of the availability of low priced generic products. It is obvious from the figure that, so far as the sampled medicines are concerned, people of West Bengal are more likely to obtain them from private retail outlets rather than from public health facilities. This of course will be true only if the price charged by retail counters can be borne by the consumer.

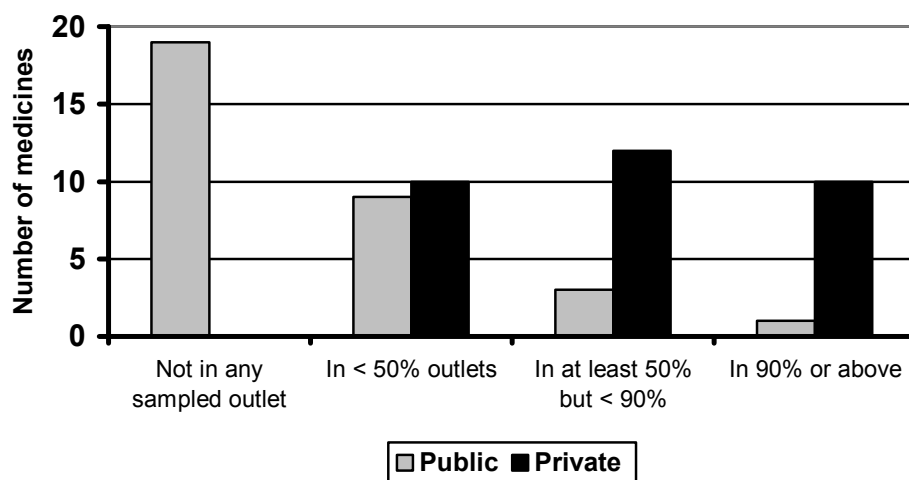


Figure 2. Intersectoral comparison of the availability of low price generic products.

Availability of individual medicines

Figures 3 and 4 denote availability comparison across sectors and product categories for antibacterials and other anti-infection drugs, respectively, in the survey, while Figure 5 depicts availability comparisons across product categories in the private retail sector for drugs indicated in chronic illnesses, namely, epilepsy, asthma, depression, peptic ulcer disease, osteoarthritis, diabetes, and hypertension.

In public health facilities, only 4 of the 7 antibacterials (metronidazole has been considered as an antibacterial) were available. Albendazole was available, but aciclovir, fluconazole and sulfadoxine-pyrimethamine were not encountered. These are dismal trends for the treatment of bacterial and other infections at public hospitals.

Isosorbide dinitrate, which is a very cheap emergency medicine for acute anginal attacks, was not available in the public sector. The treatment of epilepsy would not be possible at public hospitals as neither phenytoin nor carbamazepine (or for that matter, other antiepileptics) were available. Diazepam tablets were missing. There was also no drug to calm acutely agitated psychiatric patients.

Medicines for all therapeutic categories in the survey are available in the private sector, although the innovator brands may be unavailable. On the other hand there is widespread availability of generic equivalents. In a few instances, such as with aciclovir, albendazole, diclofenac, glibenclamide and ibuprofen, the innovator brand had better availability than generic equivalents.

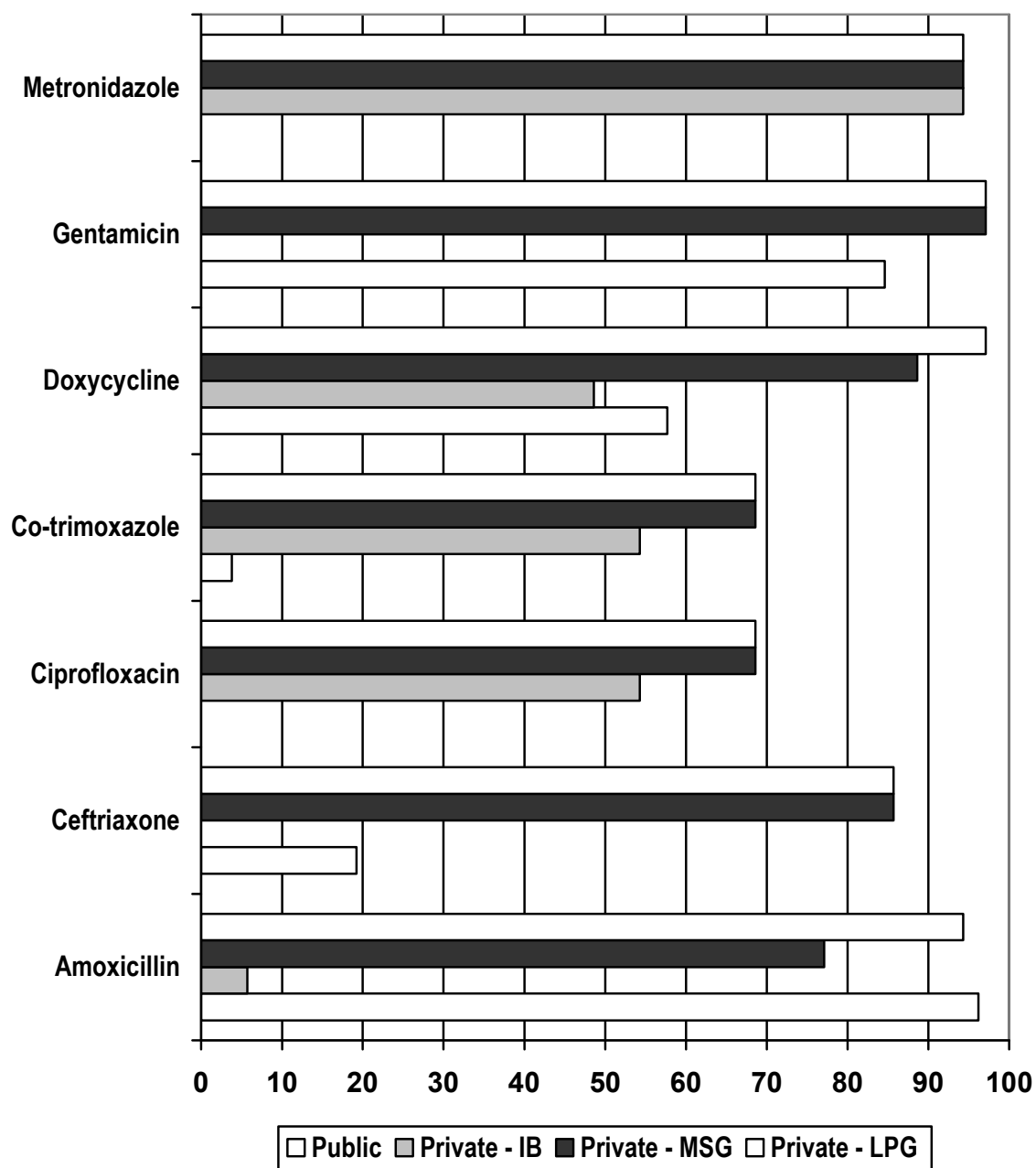


Figure 3. Availability comparison across sectors and product categories for antibacterials in the survey.

Note that gaps denote non-availability of a particular product category or in a particular sector. Co-trimoxazole was in suspension form and ceftriaxone and gentamicin were injections in the survey. Public denotes public procurement, IB denotes innovator brand, MSG denotes most sold generic equivalent, and LPG denotes lowest priced generic equivalent.

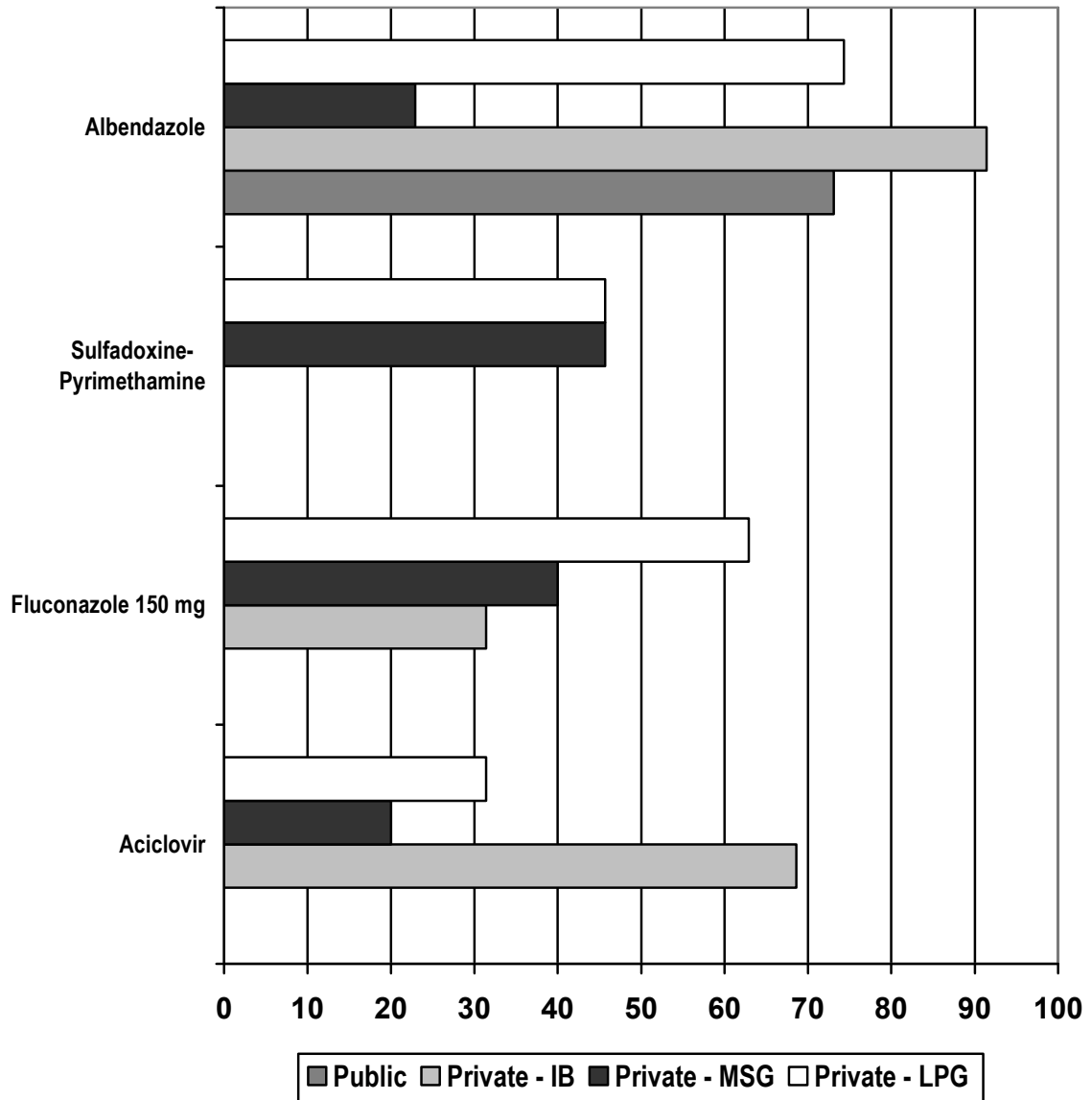


Figure 4. Availability comparison across sectors and product categories for other anti-infective drugs in the survey.

Note that gaps denote non-availability of a particular product category or in a particular sector. Public denotes public procurement, IB denotes innovator brand, MSG denotes most sold generic equivalent, and LPG denotes lowest priced generic equivalent.

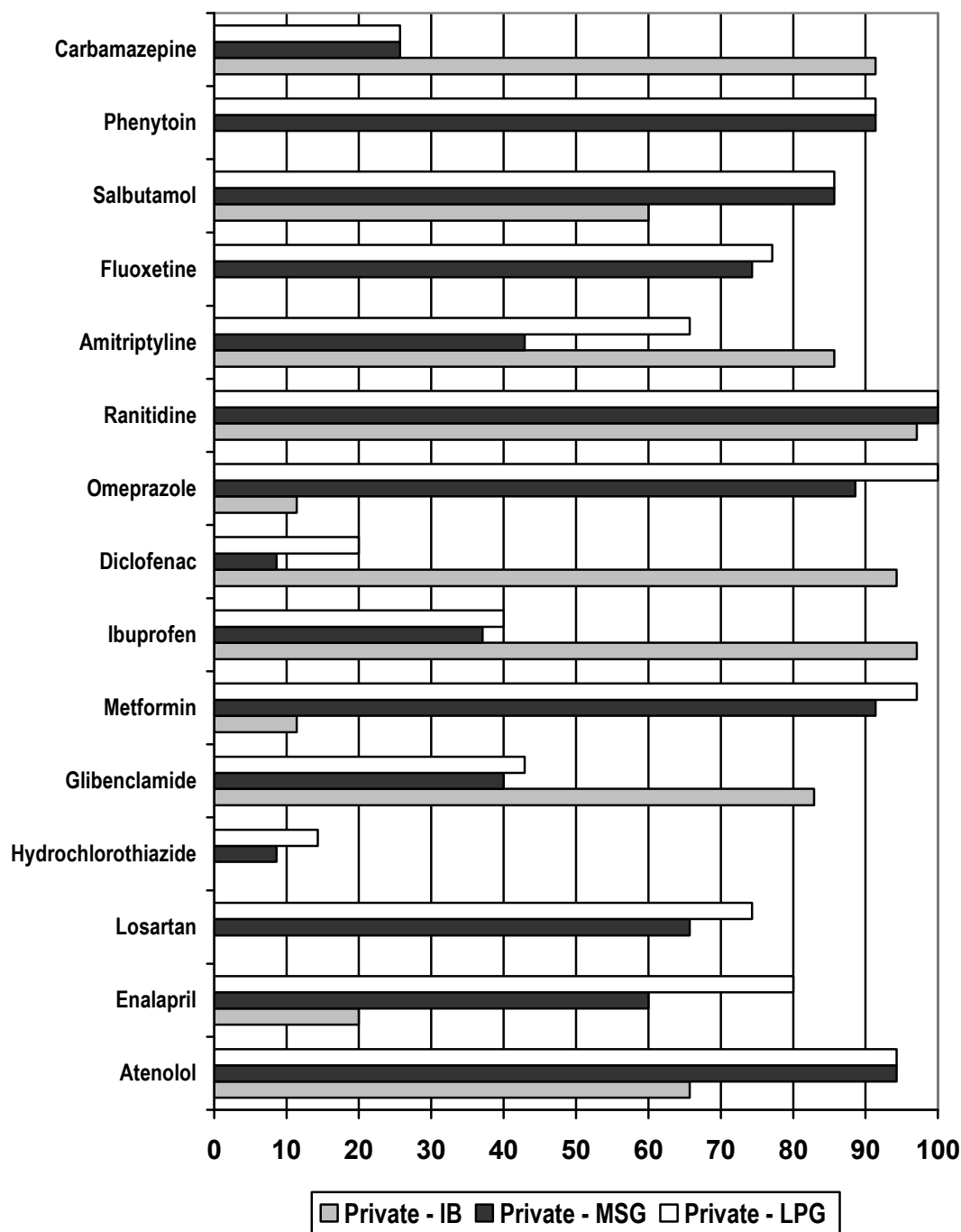


Figure 5. Availability comparison across product categories for medicines indicated in chronic illnesses.

Note that gaps denote non-availability of a particular product category. Salbutamol was in inhalation form in the survey. The public sector is not represented in this figure as majority of these medicines were not available at public health facilities. IB denotes innovator brand, MSG denotes most sold generic equivalent, and LPG denotes lowest priced generic equivalent.

3.2 Comparison of medicine prices with international reference prices

The comparison is presented as the median price ratio (MPR) of the local price with the Management Sciences for Health (MSH) reference prices. For instance, MPR of 2.0 would indicate that the local price is two times greater than the international reference price. For procurement, MPR of less than 2 would probably indicate efficient procurement pricing whereas for retail sale, MPR of greater than 5 might indicate prohibitive pricing.

Before interpreting medicine prices two things should be borne in mind:

- In the public sector in West Bengal, procurement is done centrally through an open tender system. Procurement prices are therefore uniform from one public health facility to another. However, small variations in price were encountered, presumably because medicines were procured in different financial years and in case of some manufacturers in the small scale sector, tax components (e.g. Excise Duty and Sales Tax) were not applicable.
- In the private retail sector, procurement is by individual outlet from preferred stockists / distributors (wholesalers). Price of same product could vary because of procurement of different batches, differences in retail margins, or rounding off of tax components.

Table 4 summarizes the MPR for public procurement and private retail trade along with corresponding measures of dispersion.

Table 4. Summary of medicine prices in public and private sectors in comparison to reference prices.

	Price summary measures	Public procurement price	Private IB price	Private MSG price	Private LPG price
Core medicines (n = 21 in list)	Median MPR	0.38	1.86	1.69	1.84
	25th percentile MPR	0.16	1.23	1.01	1.03
	75th percentile MPR	0.59	5.40	4.10	4.75
	Minimum MPR	0.09	0.46	0.11	0.11
	Maximum MPR	0.93	11.66	9.46	9.46
All medicines (n = 32 in list)	Median MPR	0.75	2.86	1.84	2.17
	25th percentile MPR	0.43	1.27	1.13	1.18
	75th percentile MPR	1.02	6.59	4.75	5.29
	Minimum MPR	0.09	0.46	0.11	0.11
	Maximum MPR	1.44	17.13	11.97	9.62

- Abbreviations: IB = innovator brand; LPG = lowest priced generic equivalent; MPR = median price ratio; MSG = most sold generic equivalent
- Reference price data used is Management Sciences for Health (MSH) prices as explained in the methods section.
- Although the number of medicines in the lists are large, MPR has been calculated only with medicines found in more than 4 outlets of a particular type. The median MPR calculations in the private sector were thus based on 13, 20 and 21 medicines for IB price, MSG price and LPG price respectively when considering the core list of medicines; and on 22, 29 and 31 medicines when considering the entire list. For public procurement, the summary data is based on 5 medicines when considering the core list and 10 when considering the complete list.

Careful scrutiny of Table 4 reveals that, economically, procurement in the public sector is quite efficient with the median and 25th and 75th percentile values, all less than 1.0, so far as the core medicines are concerned. The same holds true for the entire list of medicines, except the 75th percentile value that has just exceeded 1.00. Even the relatively costliest medicine, whether in the core list or in the complete list, indicated by the maximum MPR, has this value less than 2.00. The Government is therefore procuring medicines at a modest cost for free public distribution.

In the private retail sector, the picture is different. Patients pay for the medicines they purchase from such outlets and the median MPR is 1.86 (25th and 75th percentiles being 1.23 and 5.40) for IB medicines when the core list is considered, or 2.86 (1.27 and 6.59) when the complete list is taken. Similar patterns are seen for MSG and LPG medicines. Thus medicines in the private sector are definitely costlier in comparison to government procurement prices. Since the 75th percentile values are either close to or exceed 5.00, the cost factor is also high in comparison to the international reference of generic procurement.

Also, within the private sector the IB medicines cost more than their generic equivalents, although this difference is not remarkable for either core medicines or the entire list. Surprisingly, the median MPR for LPG medicines has turned out to be marginally greater than that for MSG medicines. A possible explanation for this anomaly is that in many of the private retail counters, the MSG medicines (whose brand names were identified centrally by the national coordinators for this survey) were also the lowest priced ones. However, because of the methodological conventions of the survey, the MSG name could not be repeated for the LPG product and therefore the data of the next lowest priced product had to be taken.

The differences between public procurement price and private retail price is brought out more strikingly in Table 5 which depicts median MPR for private retail sale as ratio of public procurement price.

Table 5. Ratio of private retail price to public procurement price encountered in the survey.

	Number of medicines common to both sector	Median MPR in public procurement	Median MPR of private LPG price	Ratio in percentage terms
Core medicines (n = 21 in list)	5	0.38	3.89	1023.7%
All medicines (n = 32 in list)	9	0.71	3.89	547.9%

- Abbreviations: LPG = lowest priced generic equivalent; MPR = median price ratio
- Reference price data used is Management Sciences for Health (MSH) prices as explained in the methods section.

However, when interpreting Table 5 it must be borne in mind that this comparison has been based on the relatively few medicines whose price was found in more than 4 outlets in both the public and the private sectors.

Price of individual medicines

Figure 6 depicts the median MPR of medicines available at more than 4 outlets in the public sector. It is reiterated here, that patients visiting public health facilities in West Bengal do not actually pay for medicines dispensed from them. The figures here are therefore based on the medicine procurement price.

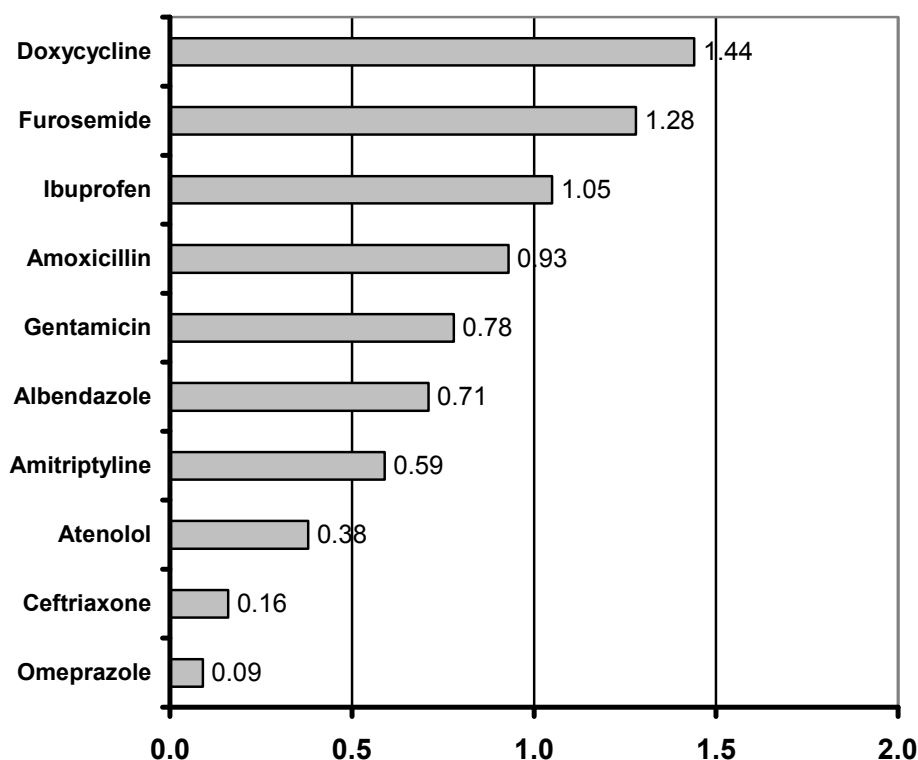


Figure 6. MPR in comparison to international reference (MSH) price of individual medicines being publicly procured and available at more than 4 public health facilities.

The entire set of medicine-specific MPRs can be found in Annexes 5 and 6. Interesting observations include:

In the public sector

- 80% of the medicines publicly procured and available at more than 4 outlets at the time of the survey have a procurement price less than or close to the international reference price (IRP). This is quite encouraging.
- Omeprazole, a medicine whose formulation is pharmaceutically sophisticated (capsules containing enteric-coated pellets) has the lowest MPR (0.44) in public procurement indicating its availability at a very economical rate.
- On the other hand, doxycycline has a median procurement price nearly one and half times the IPR. This is an interesting observation and the reason for this merits exploration.

In the private sector

- The small difference between innovator brand and generic equivalent MPRs is possibly an indication of generic medicines having their selling price based on the selling price of the brand medicine rather than on the actual cost of manufacture. It could be argued that this is a result of low prices of brand medicines, but the range of the innovator brand median MPRs (0.46 to 17.13 with median 2.86) suggests that the medicines are in fact expensive compared to the international reference price.
- Innovator brand doxycycline has the highest MPR (17.13), followed by albendazole (13.16) and diazepam (11.16). For MSG products, the 'distinction' of having the highest MPR goes to albendazole (11.97) followed by diazepam (9.46) and doxycycline (8.75). For LPG medicines, the story is repeated with the costliest products being albendazole (9.62), diazepam (9.46) and doxycycline (8.40).
- At the other end of the scale, 8 of the 30 (26.7%) available MSG products and 8 of the 31 (25.8%) available LPG products, have MPR less than or close to 1, indicating that patients are likely to purchase these medicines at very reasonable prices. Interestingly, 4 of the 22 (18.2%) available brands also show this pattern, indicating that private patients in India do not have to pay a brand premium for all medicines. This again is an encouraging trend.
- Nine of the 22 (40.9%) available brands, 8 of the 30 (26.7%) available MSG products and 9 of the 31 (29%) available LPG products have MPR in excess of 5.00. These are mostly the same basket of medicines. The need for the high pricing of these drugs needs exploration.
- Salbutamol inhaler is a technologically sophisticated product but its brand and generic versions both have MPR less than 1.0.
- Sulfadoxine-pyrimethamine, the only antimalarial in the survey, is eminently affordable with MPR of 1.55.
- Aciclovir, the only antiviral drug in our basket (and one likely to be required fairly often), has MPR less than 2.0 in all its versions.
- Both strengths of fluconazole, the only antifungal in the survey, have MPR greater than 5.00 and are therefore generally unaffordable.

Figure 7 denotes the MPRs for antibiotics in the private sector, contrasted with that in public procurement. It may be noted that amoxicillin, a very commonly used antibiotic, has an unacceptably high LPG price in the private sector while ceftriaxone, a major reserve antibiotic, has a reasonable price. More of such anomalies are likely to be present in the Indian market. The price of doxycycline, as already mentioned earlier, is inexplicably high across all sectors and formulations.

Figure 8 denotes the MPRs for medicines used in chronic conditions, namely, epilepsy, asthma, depression, peptic ulcer disease, osteoarthritis, diabetes, and hypertension. Here the variation in MPR is less than for antibiotics. Diclofenac does appear to be a costly medicine. Relationships are not consistent across the various medicines displayed, but there appears to be little difference between generic equivalent prices.

Variations in the medicine specific MPRs in the private sector have been depicted graphically in Figures 9 and 10. Obviously, dispersion is greater in the prices of lowest priced generic equivalent medicines. As expected, variation in innovator brand prices is low.

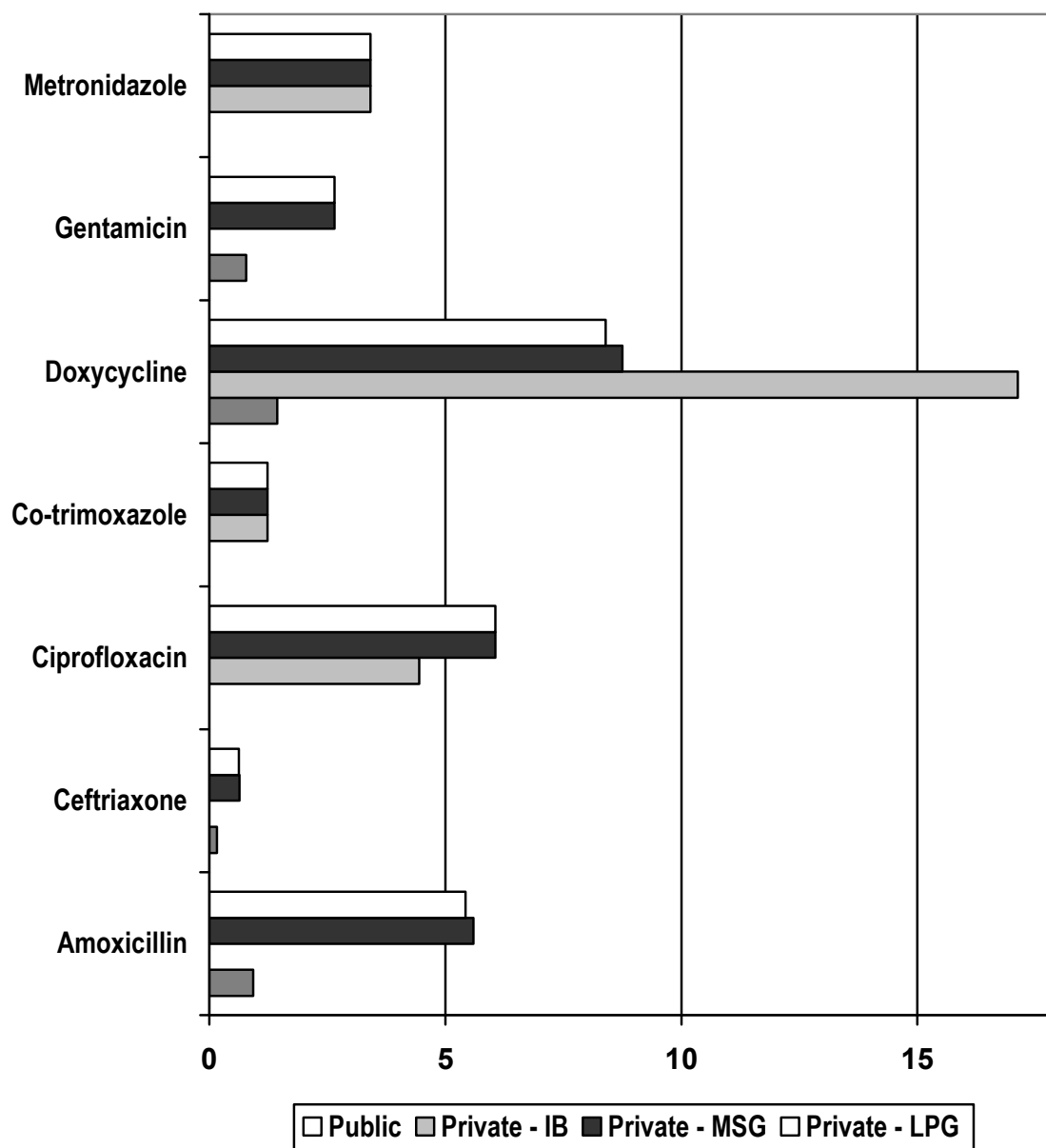


Figure 7. Median Price Ratio comparison across sectors and product categories for antibacterials in the survey.

Note that gaps denote non-availability of a particular product category or in a particular sector. Co-trimoxazole was in suspension form and ceftriaxone and gentamicin were injections in the survey. Public denotes public procurement, IB denotes innovator brand, MSG denotes most sold generic equivalent, and LPG denotes lowest priced generic equivalent.

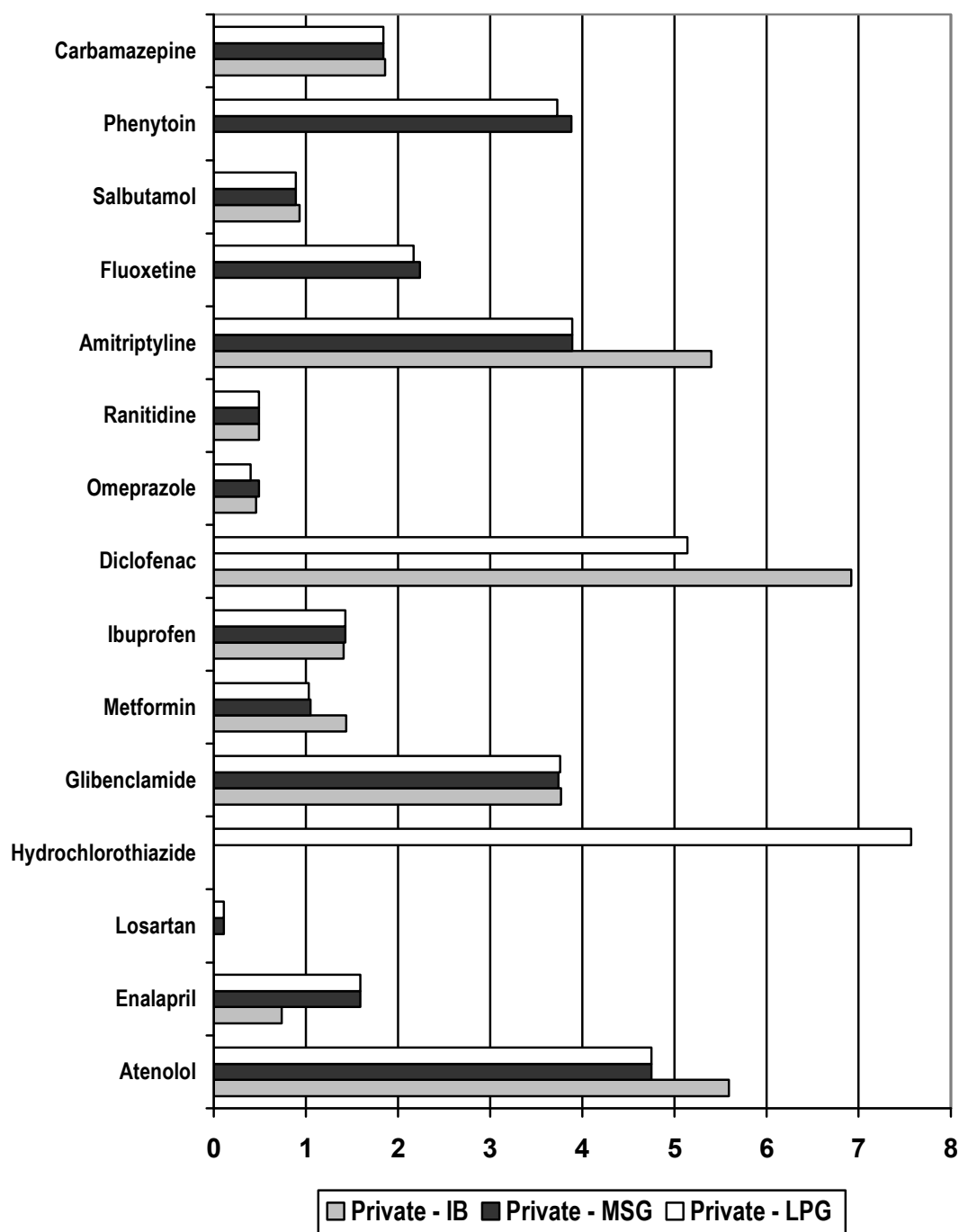


Figure 8. Median Price Ratio comparison across product categories for medicines indicated in chronic illnesses.

Note that gaps denote non-availability of a particular product category. Salbutamol was in inhalation form in the survey. The public sector is not represented in this figure as majority of these medicines were not available at public health facilities. IB denotes innovator brand, MSG denotes most sold generic equivalent, and LPG denotes lowest priced generic equivalent.

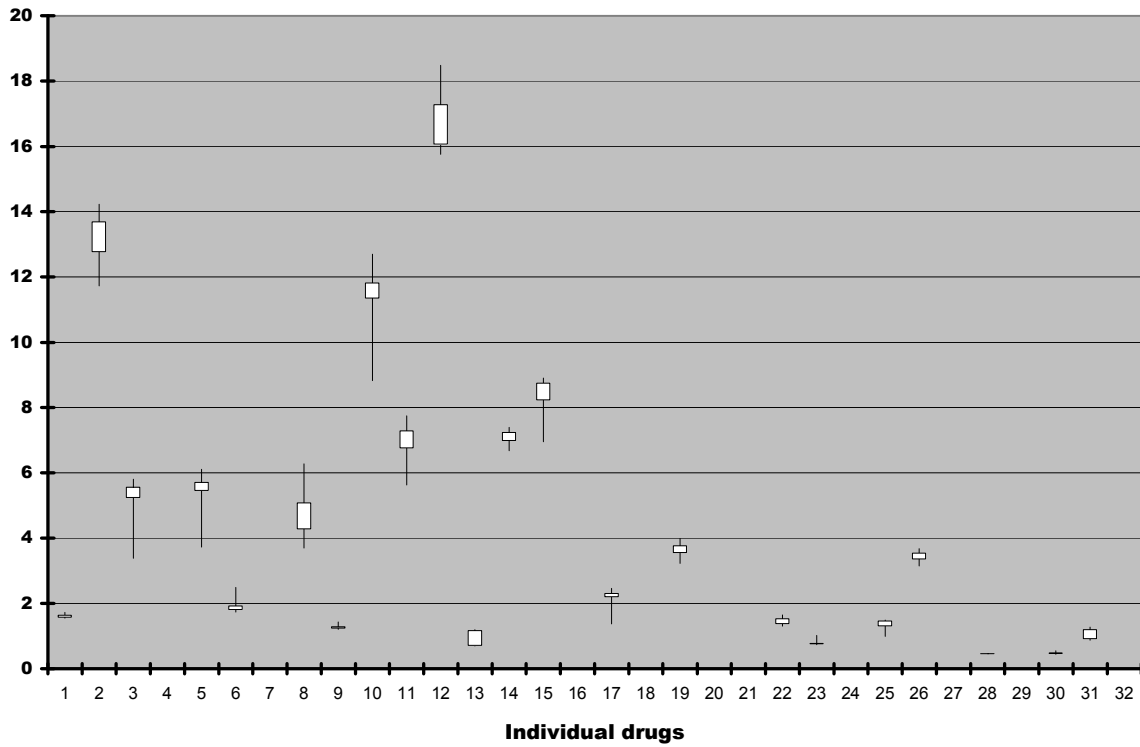


Figure 9. Stock-plot Showing Price Variation of Branded Medicines in the Private Sector.

The x-axis data points represent the 32 individual medicines as listed in Table 3 and in that order. The y-axis denotes Median Price Ratio (MPR). For individual drugs, the total height of the icon denotes range of MPRs, while the box height denotes 25th to 75th percentile MPRs. Note that there are gaps because of non-availability of some of the innovator brands.

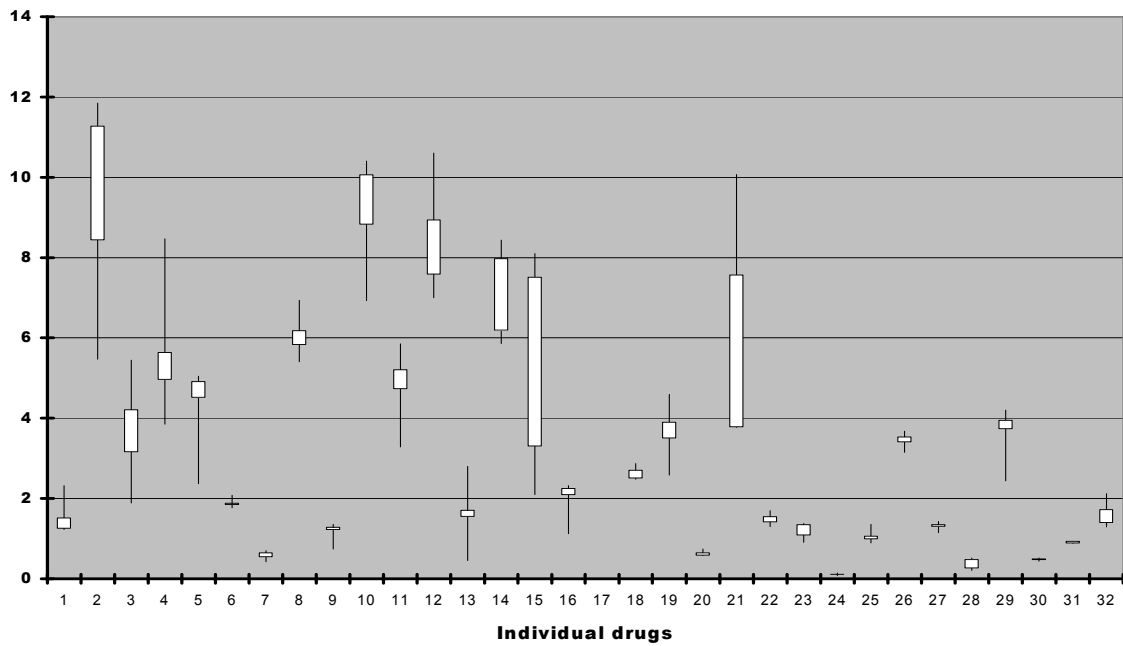
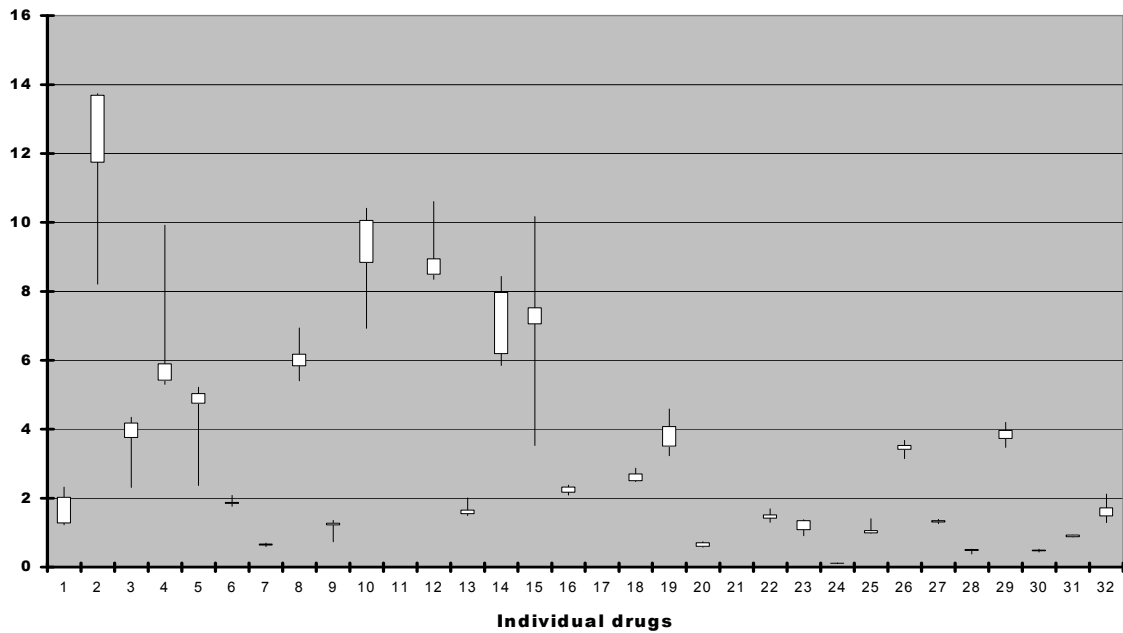


Figure 10. Stock-plot showing price variation of most sold generic equivalent (upper panel) and lowest priced generic equivalent (lower panel) medicines in the private sector.

The x-axis data points represent the 32 individual medicines as listed in Table 3 and in that order. The y-axis denotes Median Price Ratio (MPR). For individual drugs, the total height of the icon denotes range of MPRs, while the box height denotes 25th to 75th percentile MPRs.

Brand premiums in the private sector

It was also interesting to compare the brand premium, denoting the increased cost to be borne by the consumer in choosing an innovator brand over the corresponding low price generic equivalents, for various medicines. This varied from 0 to over 100%, though the majority were in the 10 - 40% range (Table 6). Interestingly, the innovator brand prices for ciprofloxacin, enalapril, ibuprofen and isosorbide dinitrate, were actually less than those of their generic equivalents. This apparently anomalous, situation needs further analysis.

Statistical analysis showed a strong direct correlation between brand price and generic price (Spearman's rank order correlation coefficient $\rho = 0.948$) and a good correlation between brand price and brand premium ($\rho = 0.602$). Other associations, such as between brand and generic availability, were poorly correlated and not statistically significant. If only the core medicines are considered, however, the correlation between brand price and brand premium ($\rho = 0.248$), does not hold.

Table 6. Brand premiums in the private sector

Medicine	In core list	Brand availability (%)	Generic availability (%)	Brand price	Generic price	Brand premium
Aciclovir Tab 200 mg	yes	68.6	31.4	1.62	1.26	28.57
Amitriptyline Tab 25 mg	yes	85.7	65.7	5.40	3.89	38.82
Atenolol Tab 50 mg	yes	65.7	94.3	5.59	4.75	17.68
Carbamazepine Tab 200 mg	yes	91.4	25.7	1.86	1.84	1.09
Ciprofloxacin Tab 500 mg	yes	54.3	68.6	4.45	6.06	- 26.57
Co-trimoxazole susp (8 + 40) mg/mL	yes	54.3	88.6	1.23	1.23	0.00
Diazepam Tab 5 mg	yes	85.7	80.0	11.66	9.46	23.26
Fluconazole Cap/Tab 200 mg	yes	22.9	42.9	7.14	6.34	12.62
Glibenclamide Tab 5 mg	yes	82.9	42.9	3.77	3.66	3.01
Metformin Tab 500 mg	yes	11.4	97.1	1.44	1.03	39.81
Omeprazole Cap 20 mg	yes	11.4	100	0.46	0.4	15.00
Ranitidine Tab 150 mg	yes	97.1	100	0.49	0.49	0.00
Salbutamol Inh 100 mcg/dose	yes	60.0	85.7	0.93	0.89	4.49
Albendazole Tab 400 mg	no	91.4	74.3	13.16	9.62	36.80
Diclofenac sodium Tab 50 mg enteric coated	no	94.3	20.0	6.92	5.14	34.63
Doxycycline Cap/Tab 100 mg	no	48.6	97.1	17.13	8.4	103.93
Enalapril Tab 5 mg	no	20.0	80.0	0.74	1.59	- 53.46
Fluconazole Tab 150 mg	no	31.4	62.9	8.50	6.93	22.66
Ibuprofen Tab 400 mg	no	97.1	40.0	1.41	1.53	- 7.84
Isosorbide dinitrate Tab 5 mg sublingual	no	17.1	91.4	0.77	1.13	- 31.86
Metronidazole Tab 400 mg	no	94.3	94.3	3.41	3.41	0.00

- Table includes only those medicines for which brands (innovator brands) and generics (lowest priced generic equivalents) were located in at least 4 outlets each.
- Availability is expressed as the percentage of the total number of outlets surveyed where the product was available.
- Price is expressed as the median price ratio in comparison to international reference (MSH 2003) price.
- Brand premium denotes the difference between brand and generic price expressed as percentage of generic price.
- Spearman's rank order correlation coefficient $\rho = 0.602$ for association between brand price and brand premium and $\rho = 0.948$ for association between brand price and generic price, both associations being statistically significant at $p < 0.05$ level.

3.3 Affordability of model treatment regimens

The WHO/HAI methodology incorporates affordability calculations based on how many days' wages of an unskilled government worker would be required to purchase standard or model treatments using the survey medicines. A model treatment was considered 'affordable' if it cost less than 5 days' wages although, as mentioned earlier, this is an arbitrary, and therefore, debatable, threshold.

In West Bengal, the minimum daily wage of unskilled labor, employed by the Government is Rs. 131.73 (rounded off to Rs. 132/- in our calculations) while that of unskilled labor in the unorganized sector, should be Rs. 97/- [Source: Labor department, GoWB]. These figures were taken as the baseline for determination of affordability. Table 7 summarizes the affordability calculations, taking the treatment duration of the six chronic conditions as 30 days for calculation purpose.

Table 7. Affordability of standard treatments in select conditions to lowest paid unskilled worker in government employment (GW) and a worker in unorganized sector (USW).

Disease condition and standard treatment			No. of day's wages required to purchase this treatment							
Condition	Drug	Dosing regimen	Public		Private - IB		Private - MSG		Private - LPG	
			GW	USW	GW	USW	GW	USW	GW	USW
ARI (adult)	Amoxicillin	500 mg thrice daily PO X 7 d	0.2	0.3	—	—	1.4	1.9	1.3	1.8
ARI (child)	Co-trimoxazole	5 mL twice daily PO X 7 d ¹	—	—	0.1	0.1	0.1	0.1	0.1	0.1
Dysentery, amebic	Metronidazole	400 mg thrice daily PO X 5 d	—	—	0.1	0.1	0.1	0.1	0.1	0.1
Meningitis, bacterial (adult)	Ceftriaxone	1 g daily IV X 14 d	2.0	2.7	—	—	7.9	10.8	7.7	10.4
Gonorrhoea	Ciprofloxacin	500 mg PO single dose	—	—	0.1	0.1	0.1	0.1	0.1	0.1
Diabetes mellitus	Glibenclamide	10 mg once daily PO X 30 d	—	—	0.3	0.4	0.3	0.4	0.3	0.4
Hypertension	Hydrochlorothiazide	25 mg once daily PO X 30 d	—	—	—	—	—	—	0.3	0.4
Hypertension	Atenolol	50 mg once daily PO X 30 d	< 0.1	< 0.1	0.5	0.7	0.5	0.6	0.5	0.6
Osteoarthritis	Diclofenac sodium	50 mg thrice daily PO X 30 d	—	—	1.1	1.4	—	—	0.8	1.1
Depression	Amitriptyline	50 mg thrice daily PO X 30 d	0.1	0.2	1.3	1.7	0.9	1.2	0.9	1.2
Asthma (chronic)	Salbutamol	100 mcg / Inh prn (up to 2 puffs thrice daily) X 30 d ²	—	—	0.6	0.8	0.6	0.8	0.6	0.8
Peptic ulcer	Ranitidine	150 mg twice daily PO X 30 d	—	—	0.3	0.3	0.3	0.3	0.3	0.3

Abbreviations: ARI = acute respiratory infection; d = days; g = gram; Inh = by inhalation from metered dose aerosol inhaler; IV = by intravenous route; mcg = microgram; mg = milligram; PO = by oral route; prn = on as needed basis

1. Each mL of co-trimoxazole suspension contains 40 mg sulfamethoxazole and 8 mg trimethoprim.
2. A 200 metered dose unit is considered to be required for one month treatment

Although patients in the public sector do not need to pay for the medicines they receive since these are fully subsidized by the government, it is clear that the prices obtained in public procurement are low and no patient would have had to pay more than one days' wage to obtain any of the model treatments, if these were offered at procurement price. Ceftriaxone treatment of meningitis was the only exception (Figure 11).

The picture is different in the private sector, as treatment here is 4 to 6 times as costly as in the public sector. However, the variation here, between innovator brands and generic equivalents, or that between acute and chronic conditions, is not remarkable so far as the model treatments are concerned. Such simple treatment regimens are also by and large affordable by the 'less than 5 days' wages' criterion. The only exception was ceftriaxone injection for meningitis, one course of which consumes more than 7 days wages for the lowest paid government worker and more than 10 days wages for his counterpart in the unorganized sector (Figure 11).

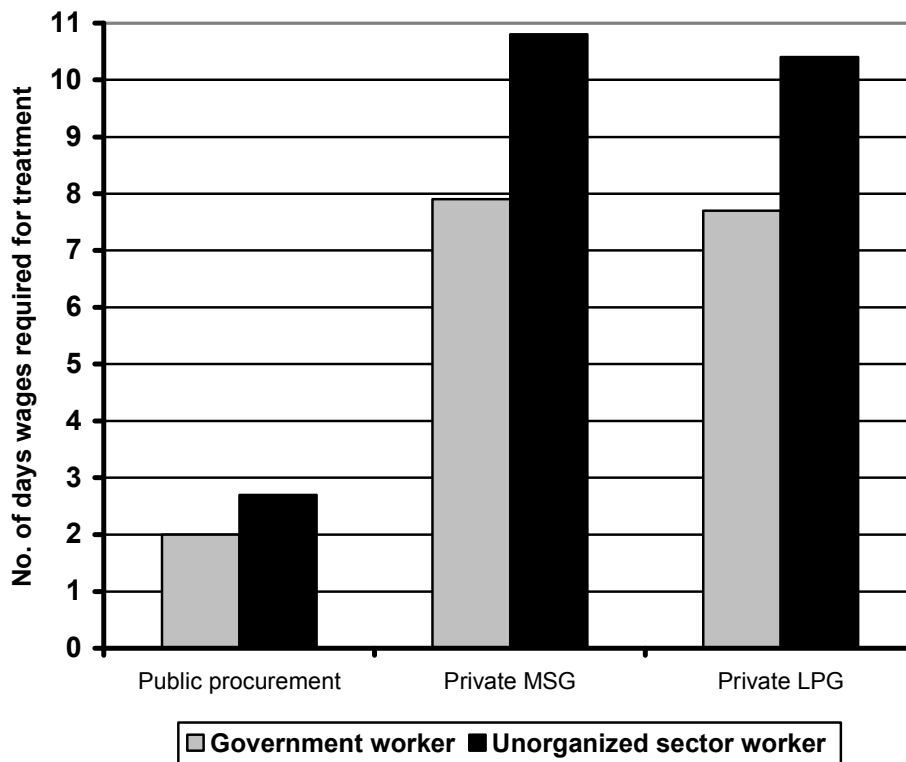


Figure 11. Ceftriaxone in meningitis showing appreciable difference between affordability of treatment to government worker vis-à-vis his counterpart in the unorganized sector.

This was an exception among the model treatments. However, the comparable affordability between most sold generic (MSG) and lowest priced generic (LPG) equivalents, as seen in this case, was the rule. Note also the four to six-fold difference between procurement price in the public sector and patient price in the private sector. This applied to other model treatments too.

Choice of drugs may make a small difference to affordability, as is evident in the case of hypertension treatment with hydrochlorothiazide vis-à-vis atenolol and peptic ulcer treatment with ranitidine vis-à-vis omeprazole.

3.4 Availability and affordability comparisons with other regions/states surveyed

This has been summarized in the following table.

Table 8. Regional comparison of medicine availability, price and affordability.

REGION	BACKGROUND				CORE MEDICINES													
					Median of median price ratios				Diabetes - Glibenclamide		Hypertension - Atenolol		Adult ARI - amoxicillin		Child ARI - Co-trimoxazole		Gonorrhea - Ciprofloxacin	
	Number of medicines		Minimum daily wage	Public	Private			Public	Private	Public	Private	Public	Private	Public	Private	Public	Private	
	Core	Supplementary		Total	Procurement	MPR-IB	MPR-MSG	MPR-LPG	%Availability	Affordability	%Availability	Affordability	%Availability	Affordability	%Availability	Affordability	%Availability	Affordability
Chennai	27	20	47	137	0.27	1.74	1.36	1.36	95	0.2	100	0.4	100	0.6	50	0.1	60	0.1
Haryana	27	5	32	144	0.33	1.77	1.3	1.52	83.3	0.3	90	0.3	73.3	0.3	6.7	0.1	80	0.1
Karnataka	27	11	38	137	0.48	2.89	1.4	1.4	100	0.4	4.2	0.4	45.8	0.6	29.2	0.1	83.3	0.1
Maharashtra	27	9	36	126	0.41	2.71	1.4	1.3	15	0.3	46.7	0.5	87	0.6	78.3	0.1	63.3	0.1
Nagpur	29	8	37	120	0.41	4.38	1.68	1.62	42.1	0.4	47.4	0.4	52.6	0.5	31.6	0.1	42.1	0.1
West Bengal	21	11	32	132	0.38	1.86	1.69	1.84	3.8	0.3	15.4	0.5	96.2	0.7	3.8	0.1	0	0.1
Median	27	10	36.5	134.5	0.395	2.285	1.4	1.46	62.7	0.3	47.05	0.4	80.15	0.6	30.4	0.1	61.65	0.1
Minimum	21	5	32	120	0.27	1.74	1.3	1.3	3.8	0.2	4.2	0.3	45.8	0.3	3.8	0.1	0	0.1
Maximum	29	20	47	144	0.48	4.38	1.69	1.84	100	0.4	100	0.5	100	0.7	78.3	0.1	83.3	0.1

As has been mentioned earlier, the survey in West Bengal was actually part of a nationwide survey in which 5 other regions / states participated. All component studies were based on the WHO/HAI methodology and the results are expected to be available on the HAI website [www.haiweb.org/medicineprices].

In all cases, affordability assessment was based on the minimum daily wage of the lowest paid government worker. This was more or less similar, ranging from INR 120 in the Nagpur region to INR 144 in Haryana state. The figure for West Bengal is close to the median value of INR 134.50.

From the core list, the number of medicines surveyed was the least in West Bengal, since 9 medicines, including the three antiretroviral drugs (zidovudine, nevirapine and indinavir), were excluded at the very outset. The survey execution team had definite information that these medicines were not being publicly procured in West Bengal and are also scarce in the private sector. Addition of supplementary medicines made up the numbers to 32, though this was still below the national median of 36.5.

Comparison of the median MPRs indicate that public procurement in West Bengal, though quite economic, still has scope for improvement as some of the other regions are getting better deals. The Chennai and Haryana regions are showing the most economical public procurement, whether the core list of medicines or the total list is considered.

In the private retail sector, the innovator brand price expectedly has the highest median MPR. However, unlike Nagpur and Karnataka, the ratio between innovator brand and low priced generic equivalent MPR is not so high in West Bengal. Also, the variation in the brand price revealed by this comparison is surprising, particularly when one considers the core list. In case of both core and complete lists, the brand MPRs in West Bengal are less than the corresponding national medians, while the low priced generic equivalent MPRs are higher than the national medians. This could imply that patients in West Bengal are getting brand medicines at good price but the market penetration of low priced generic equivalents is less than satisfactory.

The overall availability situation of essential medicines in West Bengal is poor if one considers public procurement and distribution. Quite a few essential medicines were not found at all during the survey period, as has been detailed earlier. The best availability situation in the public sector has been found in Chennai and Haryana regions. Considering the fact that most states in India are now following the pooled procurement system with a central body (analogous to the government Central Medical Stores in West Bengal) coordinating the process, this is a matter of serious concern as it reflects poorly on the performance of the system in West Bengal. The reasons for this, budgetary or otherwise, requires urgent exploration and redress if the public medicine availability situation in West Bengal is to be improved. Not only individual molecules, but availability of appropriate dosage forms will have to be ensured to avoid situations like no co-trimoxazole suspension (included in the survey) for managing pediatric acute respiratory infections while co-trimoxazole tablets (not included in the survey) are generally known to be available.

Some of the innovator brands were not available in West Bengal and the situation is uniform across the states and regions in this regard because these brands are not being marketed in India.

In the private retail sector, availability is not a problem although one must bear in mind that such availability would be restricted to patients with purchasing capacity. Given this caveat, most standard treatments are affordable in West Bengal and the differences between states or regions is negligible in this regard.

3.5 Cost component data

The field survey did not reveal any additional information regarding medicine price components and mark-ups beyond what has already been presented in Section 2.7.

Although the personnel at retail outlets generally agreed that the retail margin is 16%, there was some variance of opinion. For instance, some retailers opined that the margin varied from 15 – 25%. A few said that the 16% margin applied to fast moving products. For slow moving products or new products, to bolster sales, suppliers often offered much larger margins. It also transpired that apart from the regular margins, retailers could benefit from special promotional schemes offered by manufacturers. For example, a scheme might be offered that if a retailer is able to sell 100 strips of a particular product within a specified time period, 5 additional strips would be offered free of cost.

It was thus evident that the issue of medicine price components and mark-ups was neither clear-cut nor transparent, and it is not possible to obtain this information from field surveys alone. Access to manufacturers production and marketing cost data, as well as to trade channels, is needed to correctly ascertain medicine price components and cumulative mark-ups. The survey execution team lacked such access.

4. Discussion

4.1 Implication of the results

The present cross-sectional survey of availability and public procurement or private retail prices in West Bengal is perhaps the only one of its kind in recent times. The methodology utilized has already been field-tested in a number of countries and may be considered to be standardized, although it is still undergoing refinement. The associated data management software and analysis templates are publicly available.⁹ One important feature of this methodology, and one which ensures direct comparability between studies over different geographical areas, is a fixed core list of medicines. At the same time, the provision for addition of a supplementary list allows local morbidity patterns to be better represented. We utilized a basket of 32 indicator drugs (21 from the core list), all of which are essential medicines intended for common health problems.

Public health facilities in West Bengal use only low-priced generic equivalents for free distribution. The availability situation in the public sector was found to be dismal, with 19 of the 32 medicines (59.4%) not being available at all. The unsatisfactory public availability of essential medicines in West Bengal is common knowledge but the extent has not been documented prior to this survey. This study is therefore expected to provide valuable baseline data against which the situation in future may be compared and the effectiveness of rectification measures assessed. The reason for the poor availability can only be speculated on at the moment, but is likely to be multifactorial with reference to the following list:

- Inadequate selection of essential medicines.
- Inability to attract enough suppliers to participate in the CMS open tender bidding.
- Channelization of supplies to particular types of facilities (e.g. haloperidol injection to psychiatric units only)
- Failure of the distribution system.
- Budgetary constraints limiting the extent of public procurement.

It is also reiterated that the availability situation in the public sector may be a little distorted by the survey methodology's insistence on fixed dosage forms and strengths. Thus, co-trimoxazole suspension had poor availability, but tablets are generally known to be available. Diazepam tablets were not available for distribution to ambulatory patients but diazepam injection is known to be available for indoor patients in public hospitals.

For the available medicines, procurement in the public sector is quite economical with the median MPR (in comparison with MSH 2003 international reference prices for generic procurement) for all medicines being 0.75 and the 25th to 75th percentile range being 0.43 to 1.02. The competition fostered by the open tender bidding system therefore appears to be working well, though there is still scope for improvement as is apparent from comparison with other regions. Tax components do not differ grossly across states and therefore are probably not responsible for the difference. Differences in the number of bidders participating in the process, and every state government's policy of encouraging the local industry may account for a part of the difference.

In marked contrast to public facilities, availability is much better in the private retail sector, with the median availability of all the 32 medicines being 40% in terms of innovator brands, 70% in terms of MSG and 77.1% as LPG products. The generic

equivalent penetration is thus high and supplementary medicines are as likely as the core medicines to be available as generic equivalent versions. This is an indirect reflection of the price-sensitive nature of the market, as pharmacies are not simply stocking only higher priced innovator brands.

When it comes to pricing in the private sector, it was seen that price of same product could vary to some extent because of procurement of different batches, differences in retail margins, or rounding off of tax components. Medicines in the private sector are definitely costlier in comparison to government procurement prices. Since the 75th percentile values are either close to or exceed 5.00, the cost factor is also high in comparison to the international reference of generic procurement.

Since the cost of production is unlikely to be grossly different for companies supplying to the government and those feeding the retail trade, other reasons will have to be sought to explain the higher prices in the private sector like:

- Profit margin of the manufacturer
- Wholesale and retail trade margins.
- Addition of promotional cost to production and packaging cost.

The poor availability in the public sector also may indirectly push up prices in the private sector by forcing patients, who would have otherwise procured their medicines from public health facilities, to depend on private prescriptions. Any demand-supply gap that occurs as a result is likely to be exploited by suppliers by keeping prices high to maximize their profits. Pharmaceutical manufacturers also keep a promotional pressure on doctors to generate demand for the drug, beyond that mandated by scientific evidence of effectiveness and safety. However, at the moment these are speculative explanations that merit study.

On the other hand, it is also to be noted that brand premiums are not extraordinarily high for most medicines, and in some instances, as mentioned earlier, innovator brands actually cost less than generic equivalents. This situation is not surprising when one considers the fact that truly generic medicines are seldom available from private retail counters in West Bengal or other parts of India. What is available instead are branded equivalents of the innovator brands, and these 'branded generics' are not necessarily cheaper. The concept of generic prescribing and dispensing in the private sector is yet to take off in India and is one of the major constraints that stand in the way of consumers obtaining lower priced medicines in this sector. The tendency for most retailers would be to stock those 'branded generics' that offer them higher trade margins or other financial inducements, ignoring other products that may be priced lower but do not offer such inducements.

Assessment of affordability in this study suffers from the drawbacks mentioned earlier. Given these caveats, one may conclude that standard treatments, with few exceptions (e.g. ceftriaxone treatment of meningitis) are likely to be affordable to individuals who draw at least the minimum daily wages specified by the government. Unfortunately, since the major portion of the working population are not government employees and the government does not have control over the unorganized sector, it is difficult to estimate what proportion of the state's population is actually receiving remuneration at these levels. Affordability can be severely strained by multiple illnesses in the family or if the earning member is the one to fall ill.

The survey failed to obtain adequate information to ascertain the cost component of medicines, apart from verification of wholesale and retail margins. The authors feel

that it is difficult to assess price mark-ups and price components through field surveys alone, without access to manufacturers' production information,

4.2 Limitations of the study

In addition to the limitations mentioned earlier in relevant sections of this report, it must be remembered that interpretation of the results of this survey should be undertaken only with the following drawbacks in mind.

People in West Bengal can obtain medicines from sources other than public hospitals and private medicine shops. NGOs cater to a large section of the population, the extent of which has never been accurately estimated. Large autonomous bodies like railways, employee's state insurance (ESI) corporation and the armed forces, as well as many private employers supply medicines to their clientele or workforce. Large sections of the population also depend upon practitioners of indigenous systems of medicine, who often prescribe and dispense to their patients at the same time. Finally, in rural and interior areas, there are many unqualified practitioners who dispense medicines. For a complete picture of availability and affordability, these sections should be addressed which has not been done by the present study.

For obvious reasons, availability and affordability picture would be influenced by the basket of medicines selected. In our study, we could not include some of the proposed supplementary medicines that are highly relevant to the health scenario on West Bengal because we did not have innovator brands or MSH reference price for these. This includes oral rehydration salts, iron and folic acid tablets, paracetamol, chloroquine and tetanus toxoid.

The issue of quality of medicines was not addressed in this survey although this is an issue of global concern.¹⁰ Indeed quality lapses can defeat the very purpose of an essential drugs program. Not only does the consumer suffer and develop mistrust in the system that has offered substandard products, the governments efforts in enhancing access to medicines for the undeserved comes to naught from the wastage. The quality issue needs serious consideration as there is a popular reservation regarding the quality of medicines supplied from public hospitals and trade in counterfeit medicines is high in India.

5. Conclusions and Recommendations

The present survey on the availability, pricing and affordability of medicines in West Bengal has attempted to obtain reliable data on these aspects, limiting itself to a select basket of essential medicines. It has shown that medicines that are obtained from public hospitals free of cost by patients are procured economically, but the overall availability in the public sector is disheartening and needs immediate redress. Medicines are readily available from private retail counters but this comes at a price higher than international reference prices, with some brand premium for many items. Standard treatments are mostly affordable, provided that the earning member of a family draws minimum daily wages at rates specified by the government.

The study has not covered all therapeutic categories or all sectors that distribute medicines to the people. Nevertheless, the results that have been obtained can serve as baseline for future studies and point to issues that need further investigation or rectification. Following recommendations can be made:

1. Urgent steps are needed to assess the functioning of the public distribution system for medicines in West Bengal for rectification of shortcomings.
2. Enhancing the efficiency of Central Medical Stores public procurement mechanisms. This could include broadening the base of bulk purchasing and/or wider use of regional and national alternatives.
3. Developing and promoting the concept of state level essential medicines list, based on evidence-based selection, to be used in conjunction with national and/or hospital clinical guidelines. This will help to focus procurement and increase efficiency of the supply system.
4. Public education to increase awareness of the interchangeability of generic and brand products so as to improve affordability. This would need to be preceded by research into medical practitioner and consumer attitudes towards generic medicines so as to appropriately design educational interventions to address concerns.
5. Monitoring quality along with availability and price. Samples can be collected following randomization schemes and submitted to a government approved drug testing laboratory. Results of testing may be provided as feedback to the concerned facilities.
6. Setting up a regular machinery for medicine availability and price monitoring to evaluate the effects of policies on medicine prices. The WHO/HAI survey methodology may be use but the survey should be widened to include private hospital medicine prices (to get a better picture of the private sector) and other sectors, such as NGOs.

6. References

1. World Health Organization. The world medicines situation. Geneva: WHO, 2004.
2. Hogerzeil H. Access to essential medicines as a human right. *Essential drugs monitor* 2003; (33): 25-6.
3. Myhr K. Measuring medicine prices and availability. *Essential drugs monitor* 2003; (33): 13-4.
4. Madden J, Kotwani A. Availability of essential medicines: an example from Rajasthan, India. *Essential drugs monitor* 2003; (33): 17.
5. Medicine prices: a new approach to measurement – Working draft for field testing and revision. Geneva: Department of essential Drugs and Medicines Policy, World Health Organization and Health Action International Europe, 2003.
6. Management Sciences for Health. The International Drug Price Indicator Guide 2003. Boston: MSH, 2003.
7. Barchfield V. [Letter]. *Newsweek* 2005 May 23; CXLV(21): 10.
8. *Indian Drug Review* 2005 May-Jun; XI(3): 285-7, 340-1.
9. The medicine prices manual [Online]. 2005 [accessed 2005 Jul 24]; Available from: URL: <http://www.haiweb.org/medicineprices/manual>.
10. Counterfeit medicines - don't fake concern [Online]. 2005 June [accessed 2005 Jul 24]; Available from: URL: <http://www.medsafe.govt.nz/Profs/PUarticles/counterfeit.htm>.

Medicine Prices and Affordability in the State of West Bengal, India

**Report of a survey supported by World Health
Organization and Health Action International**

**ANNEXES
TO REPORT**

Annex 1

National Pharmaceutical Sector Form

Date: Apr 27, 2005

Population: 1048.3 million [2002 mid-year estimate]

Rate of exchange (commercial “buy” rate) to US dollars on the first day of data collection: [27th Sep, 2004] INR 45.777

Sources of information:

- Indian Pharma Reference Guide. New Delhi: Kongposh Publications Pvt. Ltd., 2004.

General information on the pharmaceutical sector

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

However, the National Pharmaceutical Policy 2002 does not cover the private sector.

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

If yes, state total number of medicines on national EML: 385 (including 3 contraceptive devices)

If yes, year of last revision: 2003

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

- National [but not specified for which sector – positioned as a guiding list]
- Regional
- Public sector only
- Both public and private sectors
- Other (please specify):

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

- For registration of medicines nationally
- Public sector procurement only
 - Public sector procurement is being done through EML developed individually by a few states and autonomous bodies. The National EML has not been promoted for wide use.
- 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 procurement¹

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:

Public sector procurement by individual states and autonomous bodies (e.g. Employees' State Insurance Corporation) is done on the basis of their own lists that are tantamount to EML.

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

¹ 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.

- 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?² Yes No
- Are there public health programmes fully implemented by donor assistance which also provide medicines? Yes No
(e.g. TB, family planning, etc.)

If yes, please specify:

Public health programs (e.g. family planning, TB, malaria, leprosy, universal immunization, iodine deficiency disorder, etc.) are run by the Government of India through its own resources. Medicines are supplied free to patients as part of these programs. However, funding by international donor agencies may be accepted at the central or state levels to strengthen the infrastructure through which these programs are implemented.

Distribution³

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

If yes, specify levels:

Central government has central medical stores (CMS) in various regions of the country.
Individual states have respective CMS.

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

If yes, please specify:

Many non-governmental organizations (including missionary organizations) distribute medicines free or at nominal cost to their beneficiaries. They often maintain small medicine stores of their own at peripheral and regional levels.

- Number of licensed wholesalers:
Data could not be obtained (DCNBO).

² 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%.

³ 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.

Retail

	Urban	Rural	Overall
Number of inhabitants per pharmacy (approx.)	DCNBO	DCNBO	DCNBO
Number of inhabitants per qualified pharmacist (approx.)	DCNBO	DCNBO	DCNBO
Number of pharmacies with qualified pharmacists	DCNBO	DCNBO	DCNBO
Number of medicine outlets with pharmacy technician	DCNBO	DCNBO	DCNBO
Number of other licensed medicine outlets	DCNBO	DCNBO	DCNBO

Private sector⁴

Are there independent pharmacies?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Number:
Are there chain pharmacies?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Number:
Do doctors dispense medicines? ⁵	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	

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

Doctors practicing in modern medicine usually do not dispense medicines on their own. However, it is common knowledge that many practitioners of indigenous systems of medicines (e.g. Ayurveda, Unani, Siddha) compound and dispense medicines on their own.

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	DCNBO
Estimated total private medicine expenditure in past year (out of pocket, private insurance, NGO/mission)	DCNBO
Total value of international medicine aid or donations in past year	DCNBO
What percentage of medicines by value are imported?	% DCNBO

⁴ 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.

⁵ Many countries allow doctors to dispense and sell medicines.

Government price policy

Is there a medicines regulatory authority? Yes No

Yes. There is a Central Drugs Standard Control Organization [CDSCO] headed by the Drugs Controller General of India [DCGI] with deputy drugs controllers in the various regions. In addition, the larger states have individual drug control offices headed by respective state drug controllers.

Is pricing regulated? Yes No

Yes, for selected drugs. A 3-tier control is exerted (selected bulk drugs, formulations of selected molecules and maximum profitability) through the instrument of the Drugs Prices Control Order [DPCO]. Implementation is overseen by the National Pharmaceutical Pricing Authority. Currently 74 drugs are under price control. If the recommendations of the National Pharmaceutical Policy 2002, currently under judicial review, is accepted the basket of drugs under price control will come down to 25.

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

Do registration fees differ between:

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

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:

Public sector hospitals and bodies do not charge for medicines supplied to the patients. However, modest user fees may be levied as part of the overall cost of treatment.

Private retail sector

Are there maximum profit margins? Yes No

There are no maximum profit margins for the majority of formulations, except those which fall under price control as per the DPCO.

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

- Wholesale %
- Retail %

Is there a maximum retail price (sales price)? Yes No
(If it varies, give maximum and minimum)

- Maximum:

- Minimum:

Additional local taxes may be charged on maximum retail price.

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

The 'other' sector comprising autonomous public sector bodies (e.g. armed forces, railways, port trusts, etc.) and non-governmental organizations (NGOs) do not sell medicines to their beneficiaries. However, NGOs may charge small user fees.

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: Health insurance schemes run by autonomous public sector bodies as well as private players are in operation. The MEDICLAIM scheme of the public sector New India Assurance Co. Limited is one of the largest such schemes currently in operation.

Are all medicines covered? Yes No

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

Medicines are not covered as such by health insurance schemes currently in operation. However, reimbursement of treatment cost, inclusive of medicines is done, for selected diseases / disorders subject to a ceiling that depends upon the premium paid.

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

If yes, please specify:

Individuals aged above a certain limit (e.g. 65 years or 70 years) are often excluded from these health insurance schemes. Patients of specific disorders may also be exempt.

Estimated percentage of population covered < 5%

Is it official policy to supply all medicines free at primary health care level? Yes No

If no, are some free? Yes No

If yes, tick 3 all that apply:

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

Vaccines covered by the Universal Immunization Program, Iron and folic acid, simple time-tested antibiotics e.g. amoxicillin, metronidazole; simple analgesics like paracetamol, etc.

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

The situation varies in different parts of the country. In some states, primary healthcare is offered totally free of cost. In some states, a nominal user fee is charged. Treatment costs are often borne by the patients, although this may be subsidized, at referral hospitals.

Many non-governmental organizations offer healthcare services at nominal cost. In the private sector, however, all treatment costs have to be borne by patients or their insurers.

Are all medicines supplied free at hospitals? Yes No

If no, are some free? Yes No

If yes, please specify:

Again, the situation varies from region to region. Public hospitals often supply selected essential medicines free of cost. Rest of the medicines have to be purchased / procured by the patients from the outside.

Many non-governmental organizations also offer medicines for free or at subsidized cost. As already mentioned, in the private sector, however, all treatment costs have to be borne by patients or their insurers.

Annex 2

International Reference Price (Management Sciences for Health 2003 Index Price) Data for Survey Medicines

	Exchange Rate: \$US 1.00 in local currency =	45.3200
	Name of local currency:	INR [Indian Rupees]
	Date of exchange rate:	Sep - Dec, 2004
	Source of exchange rate:	Average of 6 study groups - India 2004

Med. No.	Medicine Name (Name must be unique)	Medicine Strength	Dosage Form	Target Pack Size	Core List (yes/no)	2003 MSH* Unit Price (\$US)	Price of Target Pack (\$US)	Price of Target Pack (local currency)	Reference Unit Price (local currency)
1	Aciclovir	200 mg	cap/tab	25	yes	\$0.0969	\$2.4225	109.7877	4.3915
2	Albendazole	400 mg	tab	2	no	\$0.0242	\$0.0484	2.1935	1.0967
3	Amitriptyline	25 mg	cap/tab	100	yes	\$0.0076	\$0.7600	34.4432	0.3444
4	Amoxicillin	250 mg	cap/tab	21	yes	\$0.0172	\$0.3612	16.3696	0.7795
5	Atenolol	50 mg	cap/tab	60	yes	\$0.0093	\$0.5580	25.2886	0.4215
6	Carbamazepine	200 mg	cap/tab	150	yes	\$0.0199	\$2.9850	135.2802	0.9019
7	Ceftriaxone injection	1 g/vial	inj powder (g)	1	yes	\$2.5573	\$2.5573	115.8968	115.8968
8	Ciprofloxacin	500 mg	cap/tab	1	yes	\$0.0318	\$0.0318	1.4412	1.4412
9	Co-trimoxazole suspension	8+40 mg/ml	susp (mL)	70	yes	\$0.0036	\$0.2520	11.4206	0.1632
10	Diazepam	5 mg	cap/tab	100	yes	\$0.0035	\$0.3500	15.8620	0.1586
11	Diclofenac sodium 50	50 mg	tab	10	no	\$0.0049	\$0.0490	2.2207	0.2221
12	Doxycycline	100 mg	cap/tab	8	no	\$0.0104	\$0.0832	3.7706	0.4713
13	Enalapril	5 mg	tab	30	no	\$0.0330	\$0.9900	44.8668	1.4956
14	Fluconazole	200 mg	cap/tab	30	yes	\$0.1205	\$3.6150	163.8318	5.4611
15	Fluconazole 150	150 mg	tab	1	no	\$0.1000	\$0.1000	4.5320	4.5320

Continued

International reference price (Management Sciences for Health 2003 index price) data for survey medicines

	Exchange Rate: \$US 1.00 in local currency =	45.3200
	Name of local currency:	INR [Indian Rupees]
	Date of exchange rate:	Sep - Dec, 2004
	Source of exchange rate:	Average of 6 study groups - India 2004

Med. No.	Medicine Name (Name must be unique)	Medicine Strength	Dosage Form	Target Pack Size	Core List (yes/no)	2003 MSH* Unit Price (\$US)	Price of Target Pack (\$US)	Price of Target Pack (local currency)	Reference Unit Price (local currency)
16	Fluoxetine	20 mg	cap/tab	30	yes	\$0.0295	\$0.8850	40.1082	1.3369
17	Furosemide	40 mg	tab	10	no	\$0.0048	\$0.0480	2.1754	0.2175
18	Gentamicin	80 mg / 2 mL	inj (mL)	1	no	\$0.0333	\$0.0333	1.5092	1.5092
19	Glibenclamide	5 mg	cap/tab	60	yes	\$0.0041	\$0.2460	11.1487	0.1858
20	Haloperidol	5 mg/mL	inj (mL)	1	no	\$0.1898	\$0.1898	8.6017	8.6017
21	Hydrochlorothiazide	25 mg	cap/tab	30	yes	\$0.0035	\$0.1050	4.7586	0.1586
22	Ibuprofen	400 mg	tab	10	no	\$0.0085	\$0.0850	3.8522	0.3852
23	Isosorbide dinitrate	5 mg	tab	50	no	\$0.0082	\$0.4100	18.5812	0.3716
24	Losartan	50 mg	cap/tab	30	yes	\$0.9449	\$28.3470	1284.6860	42.8229
25	Metformin	500 mg	cap/tab	100	yes	\$0.0178	\$1.7800	80.6696	0.8067
26	Metronidazole	400 mg	tab	10	no	\$0.0042	\$0.0420	1.9034	0.1903
27	Nifedipine retard	20 mg	tab	100	yes	\$0.0216	\$2.1600	97.8912	0.9789
28	Omeprazole	20 mg	cap/tab	30	yes	\$0.1961	\$5.8830	266.6176	8.8873
29	Phenytoin	100 mg	cap/tab	100	yes	\$0.0071	\$0.7100	32.1772	0.3218
30	Ranitidine	150 mg	cap/tab	60	yes	\$0.0249	\$1.4940	67.7081	1.1285
31	Salbutamol inhaler	0.1 mg/dose	dose	200	yes	\$0.0097	\$1.9400	87.9208	0.4396
32	Sulfadoxine-pyrimethamine	500+25 mg	cap/tab	3	yes	\$0.0257	\$0.0771	3.4942	1.1647

Annex 3

Medicine Price Data Collection Form

Use one form for each health facility and pharmacy

Date:

Area number:

Name of town/village/district:

Name of health facility/pharmacy (optional):

Health facility / pharmacy ID (mandatory):

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

Type of health facility:

Public

Private retail pharmacy

Type of price in public sector:

Procurement price

Price the patient pays

Name and designation of manager of the facility:

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

Data collectors:

Verification

To be completed by the area supervisor at the end of the day

Signed:

Date:

MEDICINE PRICE DATA COLLECTION FORM

Core List

Most sold: determined nationally

Lowest price: determined at facility

A	B	C	D	E	F	G	H	I
Generic name, dosage form, strength	Brand name(s)	Manufacturer	Available tick ✓ for yes	Pack size recommended	Pack size found	Price of pack found	Unit price (4 digits)	Comments
Aciclovir tab 200 mg	ZOVIRAX	GSK		25			/tab	
<i>Most sold generic equivalent</i>	ACIVIR	Cipla		25				
<i>Lowest price generic equivalent</i>				25				
Amitriptyline tab 25 mg	TRYPTOMER	Merind		100			/tab	
<i>Most sold generic equivalent</i>	SAROTENA	CFL/Lundbeck		100				
<i>Lowest price generic equivalent</i>				100				
Amoxicillin caps/tab 250 mg	AMOXIL	German Remedies		21			/tab	
<i>Most sold generic equivalent</i>	MOX	Rexcel		21				
<i>Lowest price generic equivalent</i>				21				
Atenolol tab 50 mg	TENORMIN	ICI/Nicholas		60			/tab	
<i>Most sold generic equivalent</i>	ATEN	Kopran		60				
<i>Lowest price generic equivalent</i>				60				
Carbamazepine tab 200 mg	TEGRETOL	Novartis		100			/tab	
<i>Most sold generic equivalent</i>	ZEPTOL	Sun		100				
<i>Lowest price generic equivalent</i>				100				
Ceftriaxone Inj 1 g powder	ROCEPHIN	Roche		1 vial			/vial	Not available
<i>Most sold generic equivalent</i>	MONOCEF	Aristo		1 vial				
<i>Lowest price generic equivalent</i>				1 vial				
Ciprofloxacin tab 500 mg	BAYCIP	Bayer		1			/tab	
<i>Most sold generic equivalent</i>	CIPLOX	Cipla		1				
<i>Lowest price generic equivalent</i>				1				

A	B	C	D	E	F	G	H	I
Generic name, dosage form, strength	Brand name(s)	Manufacturer	Available tick ✓ for yes	Pack size recommended	Pack size found	Price of pack found	Unit price (4 digits)	Comments
Co-trimoxazole paed suspension (8+40) mg/mL	BACTRIM	Nicholas Piramal		100 mL			/mL	
<i>Most sold generic equivalent</i>	SEPTRAN	GSK		100 mL				
<i>Lowest price generic equivalent</i>				100 mL				
Diazepam tab 5 mg	VALIUM	Nicholas Piramal		100			/tab	
<i>Most sold generic equivalent</i>	CALMPOSE	Ranbaxy		100				
<i>Lowest price generic equivalent</i>				100				
Fluconazole caps/tab 200 mg	FUMYCIN	Pfizer		30			/tab	
<i>Most sold generic equivalent</i>	ZOCON	FDC		30				
<i>Lowest price generic equivalent</i>				30				
Fluoxetine caps/tab 20 mg	PROZAC	Lilly		30			/tab	Not available
<i>Most sold generic equivalent</i>	FLUDAC	Zydus Cadila		30				
<i>Lowest price generic equivalent</i>				30				
Glibenclamide tab 5 mg	DAONIL	Aventis		60			/tab	
<i>Most sold generic equivalent</i>	EUGLUCON	Nicholas Piramal		60				
<i>Lowest price generic equivalent</i>				60				
Hydrochlorothiazide tab 25 mg	DICHLOTRIDE	MSD		30			/tab	Not available
<i>Most sold generic equivalent</i>	HYDRIDE	Micro Labs		30				
<i>Lowest price generic equivalent</i>				30				
Losartan tab 50 mg	LOZITAN	Wockhardt		30			/tab	
<i>Most sold generic equivalent</i>	LOSAR	Unisearch		30				
<i>Lowest price generic equivalent</i>				30				
Metformin tab 500 mg	GLUCOPHAGE	Merck		100			/tab	
<i>Most sold generic equivalent</i>	GLYCIPHAGE	Franco-Indian		100				
<i>Lowest price generic equivalent</i>				100				

A	B	C	D	E	F	G	H	I
Generic name, dosage form, strength	Brand name(s)	Manufacturer	Available tick ✓ for yes	Pack size recommended	Pack size found	Price of pack found	Unit price (4 digits)	Comments
Nifedipine Retard tab 20 mg	ADALAT RETARD	Bayer		100			/tab	
<i>Most sold generic equivalent</i>	NICARDIA RETARD	Unique		100				
<i>Lowest price generic equivalent</i>				100				
Omeprazole caps 20 mg	LOSEC	AstraZeneca		30			/caps	
<i>Most sold generic equivalent</i>	OCID	Cadila		30				
<i>Lowest price generic equivalent</i>				30				
Phenytoin caps/tab 100 mg	EPANUTIN/ DILATIN	Pfizer		100			/tab	EPANUTIN Not available
<i>Most sold generic equivalent</i>	EPTOIN	Abbott		100				
<i>Lowest price generic equivalent</i>				100				
Pyrimethamine with Sulfadoxine tab (25 + 500) mg	FANSIDAR	Nicholas		3			/tab	
<i>Most sold generic equivalent</i>	PYRALFIN	Lupin		3				
<i>Lowest price generic equivalent</i>				3				
Ranitidine tab 150 mg	ZINETAC	GSK		60			/tab	
<i>Most sold generic equivalent</i>	ACILOC	Cadila		60				
<i>Lowest price generic equivalent</i>				60				
Salbutamol inhaler 0.1 mg per dose	VENTORLIN	GSK		1 inhaler: 200 doses			/dose	
<i>Most sold generic equivalent</i>	ASTHALIN	Cipla		1 inhaler: 200 doses				
<i>Lowest price generic equivalent</i>				1 inhaler: 200 doses				

MEDICINE PRICE DATA COLLECTION FORM: Supplementary List

Most sold: determined nationally

Lowest price: determined at facility

A	B	C	D	E	F	G	H	I
Generic name, dosage form, strength	Brand name(s)	Manufacturer	Available tick ✓ for yes	Pack size recommended	Pack size found	Price of pack found	Unit price (4 digits)	Comments
Albendazole tab 400 mg	ZENTEL	GSK		2			/tab	
<i>Most sold generic equivalent</i>	BENDEX	Cipla		2				
<i>Lowest price generic equivalent</i>				2				
Diclofenac sodium tab 50 mg	VOVERAN	Novartis		10			/tab	
<i>Most sold generic equivalent</i>	DICLONAC	Lupin		10				
<i>Lowest price generic equivalent</i>				10				
Doxycycline cap / tab 100 mg	VIBAZINE DT	Pfizer		8			/cap	
<i>Most sold generic equivalent</i>	DOXY-1	USV		8				
<i>Lowest price generic equivalent</i>				8				
Enalapril tab 5 mg	ENPRIL	Wockhardt		30			/tab	
<i>Most sold generic equivalent</i>	ENVAS	Cadila		30				
<i>Lowest price generic equivalent</i>				30				
Fluconazole tab 150 mg	FUMYCIN	Pfizer		1			/cap	
<i>Most sold generic equivalent</i>	ZOCON	FDC		1				
<i>Lowest price generic equivalent</i>				1				
Frusemide tab 40 mg	LASIX	Aventis		10			/tab	
<i>Most sold generic equivalent</i>	FRUSENEX	Geno		10				
<i>Lowest price generic equivalent</i>				10				

Continued

A	B	C	D	E	F	G	H	I
Generic name, dosage form, strength	Brand name(s)	Manufacturer	Available tick ✓ for yes	Pack size recommended	Pack size found	Price of pack found	Unit price (4 digits)	Comments
Gentamicin inj 80 mg/2 mL	GARAMYCIN	Fulford		1 ampoule			/mL	
<i>Most sold generic equivalent</i>	GENTICYN	Nicholas		1 ampoule				
<i>Lowest price generic equivalent</i>				1 ampoule				
Haloperidol inj 5mg/ml	HALOPIDOL	Johnson		1 ampoule			/mL	
<i>Most sold generic equivalent</i>	SERENACE	RPG		1 ampoule				
<i>Lowest price generic equivalent</i>				1 ampoule				
Ibuprofen tab 400 mg	BRUFEN	Abbott		10			/tab	
<i>Most sold generic equivalent</i>	IBUGESIC	Cipla		10				
<i>Lowest price generic equivalent</i>				10				
Isosorbide dinitrate tab sublingual 5 mg	ISORDIL	Wyeth		50			/tab	
<i>Most sold generic equivalent</i>	SORBITRATE	Nicholas		50				
<i>Lowest price generic equivalent</i>				50				
Metronidazole tab 400 mg	FLAGYL	Nicholas		10			/tab	
<i>Most sold generic equivalent</i>	METROGYL	Unique		10				
<i>Lowest price generic equivalent</i>				10				

Annex 4

Medicine Specific Median Price Ratios (in comparison to MSH 2003 median price) and Availability in the Public Sector

No.	Medicine Name	Median (MPR)	25%ile	75%ile	Min	Max	Number of outlets where found
1	Aciclovir						0
2	Albendazole	0.71	0.60	0.80	0.58	0.86	19
3	Amitriptyline	0.59	0.49	0.59	0.49	0.59	5
4	Amoxicillin	0.93	0.93	0.99	0.80	1.20	25
5	Atenolol	0.38	0.34	0.41	0.34	0.41	4
6	Carbamazepine						0
7	Ceftriaxone injection	0.16	0.16	0.16	0.16	0.16	5
8	Ciprofloxacin						0
9	Co-trimoxazole suspension						0
10	Diazepam						0
11	Diclofenac 50 mg						0
12	Doxycycline	1.44	1.44	1.67	1.44	1.74	15
13	Enalapril						0
14	Fluconazole 200 mg						0
15	Fluconazole 150 mg						0
16	Fluoxetine						0
17	Furosemide	1.28	1.28	1.28	1.10	1.33	9
18	Gentamicin	0.78	0.55	0.93	0.53	1.08	22
19	Glibenclamide						0
20	Haloperidol						0
21	Hydrochlorothiazide						0
22	Ibuprofen	1.05	1.02	1.06	0.91	1.10	4
23	Isosorbide dinitrate						0
24	Losartan						0
25	Metformin						0
26	Metronidazole						0
27	Nifedipine retard						0
28	Omeprazole	0.09	0.09	0.09	0.07	0.09	10
29	Phenytoin						0
30	Ranitidine						0
31	Salbutamol inhaler						0
32	Sulfadoxine-pyrimethamine						0

Note: Only low priced generic equivalents are available in the public sector.

Annex 5

Medicine Specific Median Price Ratios (in comparison to MSH 2003 median price) and Percentage Availability in the Private Sector

No.	Medicine Name	Medicine Type	Median (MPR)	25%ile	75%ile	Min	Max	% with med.
1	Aciclovir	Brand	1.62	1.57	1.64	1.55	1.73	68.6%
		Most Sold	1.32	1.28	2.03	1.23	2.32	20.0%
		Lowest Price	1.26	1.25	1.52	1.23	2.32	31.4%
2	Albendazole	Brand	13.16	12.77	13.69	11.73	14.23	91.4%
		Most Sold	11.97	11.74	13.69	8.21	13.74	22.9%
		Lowest Price	9.62	8.44	11.28	5.47	11.85	74.3%
3	Amitriptyline	Brand	5.40	5.24	5.56	3.39	5.81	85.7%
		Most Sold	3.89	3.76	4.18	2.31	4.35	42.9%
		Lowest Price	3.89	3.16	4.21	1.89	5.45	65.7%
4	Amoxicillin	Brand						5.7%
		Most Sold	5.60	5.42	5.90	5.30	9.92	77.1%
		Lowest Price	5.43	4.96	5.64	3.85	8.47	94.3%
5	Atenolol	Brand	5.59	5.45	5.71	3.73	6.11	65.7%
		Most Sold	4.75	4.75	5.04	2.37	5.22	94.3%
		Lowest Price	4.75	4.51	4.91	2.37	5.05	94.3%
6	Carbamazepine	Brand	1.86	1.80	1.92	1.74	2.49	91.4%
		Most Sold	1.84	1.84	1.88	1.77	2.08	25.7%
		Lowest Price	1.84	1.84	1.88	1.77	2.08	25.7%
7	Ceftriaxone injection	Brand						0.0%
		Most Sold	0.64	0.63	0.67	0.60	0.70	85.7%
		Lowest Price	0.62	0.54	0.64	0.42	0.70	85.7%
8	Ciprofloxacin	Brand	4.45	4.28	5.08	3.70	6.28	54.3%
		Most Sold	6.06	5.83	6.18	5.41	6.94	68.6%
		Lowest Price	6.06	5.83	6.18	5.41	6.94	68.6%
9	Co-trimoxazole suspension	Brand	1.23	1.23	1.29	1.21	1.43	54.3%
		Most Sold	1.23	1.22	1.28	0.74	1.36	88.6%
		Lowest Price	1.23	1.22	1.28	0.74	1.36	88.6%
10	Diazepam	Brand	11.66	11.35	11.82	8.83	12.70	85.7%
		Most Sold	9.46	8.83	10.06	6.93	10.41	80.0%
		Lowest Price	9.46	8.83	10.06	6.93	10.41	80.0%
11	Diclofenac 50 mg	Brand	6.92	6.75	7.29	5.63	7.75	94.3%
		Most Sold						8.6%
		Lowest Price	5.14	4.73	5.21	3.29	5.85	20.0%
12	Doxycycline	Brand	17.13	16.07	17.28	15.76	18.49	48.6%
		Most Sold	8.75	8.49	8.95	8.35	10.61	88.6%
		Lowest Price	8.40	7.58	8.94	7.00	10.61	97.1%
13	Enalapril	Brand	0.74	0.71	1.17	0.70	1.20	20.0%
		Most Sold	1.59	1.55	1.66	1.50	2.01	60.0%
		Lowest Price	1.59	1.55	1.71	0.45	2.80	80.0%
14	Fluconazole 200 mg	Brand	7.14	6.99	7.24	6.68	7.40	22.9%
		Most Sold	6.34	6.19	7.97	5.86	8.44	42.9%
		Lowest Price	6.34	6.19	7.97	5.86	8.44	42.9%
15	Fluconazole 150 mg	Brand	8.50	8.23	8.75	6.95	8.91	31.4%
		Most Sold	7.33	7.05	7.52	3.53	10.17	40.0%
		Lowest Price	6.93	3.30	7.51	2.10	8.10	62.9%

Continued

No.	Medicine Name	Medicine Type	Median (MPR)	25%ile	75%ile	Min	Max	% with med.
16	Fluoxetine	Brand						0.0%
		Most Sold	2.24	2.17	2.32	2.09	2.38	74.3%
		Lowest Price	2.17	2.09	2.25	1.12	2.32	77.1%
17	Furosemide	Brand	2.30	2.20	2.30	1.38	2.46	91.4%
		Most Sold						2.9%
		Lowest Price						5.7%
18	Gentamicin	Brand						0.0%
		Most Sold	2.65	2.50	2.70	2.48	2.87	97.1%
		Lowest Price	2.65	2.50	2.70	2.48	2.87	97.1%
19	Glibenclamide	Brand	3.77	3.55	3.77	3.23	3.99	82.9%
		Most Sold	3.74	3.50	4.08	3.23	4.59	40.0%
		Lowest Price	3.66	3.50	3.90	2.58	4.59	42.9%
20	Haloperidol	Brand						2.9%
		Most Sold	0.64	0.60	0.71	0.58	0.74	22.9%
		Lowest Price	0.62	0.58	0.64	0.58	0.74	25.7%
21	Hydrochlorothiazide	Brand						0.0%
		Most Sold						8.6%
		Lowest Price	7.57	3.78	7.57	3.77	10.07	14.3%
22	Ibuprofen	Brand	1.41	1.37	1.53	1.30	1.65	97.1%
		Most Sold	1.43	1.41	1.51	1.30	1.69	37.1%
		Lowest Price	1.43	1.41	1.55	1.30	1.70	40.0%
23	Isosorbide dinitrate	Brand	0.77	0.75	0.78	0.74	1.02	17.1%
		Most Sold	1.13	1.08	1.35	0.91	1.38	91.4%
		Lowest Price	1.13	1.08	1.35	0.91	1.38	91.4%
24	Losartan	Brand						0.0%
		Most Sold	0.11	0.10	0.11	0.10	0.12	65.7%
		Lowest Price	0.11	0.10	0.11	0.08	0.14	74.3%
25	Metformin	Brand	1.44	1.31	1.46	0.99	1.49	11.4%
		Most Sold	1.05	0.99	1.06	0.99	1.40	91.4%
		Lowest Price	1.03	0.99	1.06	0.89	1.36	97.1%
26	Metronidazole	Brand	3.41	3.36	3.54	3.15	3.68	94.3%
		Most Sold	3.41	3.41	3.53	3.15	3.68	94.3%
		Lowest Price	3.41	3.41	3.53	3.15	3.68	94.3%
27	Nifedipine retard	Brand						0.0%
		Most Sold	1.32	1.30	1.35	1.27	1.39	71.4%
		Lowest Price	1.32	1.30	1.35	1.15	1.43	77.1%
28	Omeprazole	Brand	0.46	0.46	0.46	0.46	0.47	11.4%
		Most Sold	0.49	0.48	0.51	0.38	0.52	88.6%
		Lowest Price	0.40	0.26	0.48	0.21	0.52	100.0%
29	Phenytoin	Brand						0.0%
		Most Sold	3.88	3.73	3.97	3.48	4.20	91.4%
		Lowest Price	3.73	3.73	3.95	2.44	4.20	91.4%
30	Ranitidine	Brand	0.49	0.47	0.49	0.44	0.55	97.1%
		Most Sold	0.49	0.47	0.49	0.44	0.52	100.0%
		Lowest Price	0.49	0.47	0.49	0.44	0.52	100.0%
31	Salbutamol inhaler	Brand	0.93	0.92	1.20	0.87	1.28	60.0%
		Most Sold	0.89	0.88	0.93	0.88	0.93	85.7%
		Lowest Price	0.89	0.88	0.93	0.88	0.93	85.7%
32	Sulfadoxine-pyrimethamine	Brand						0.0%
		Most Sold	1.55	1.48	1.72	1.29	2.12	45.7%
		Lowest Price	1.55	1.40	1.72	1.29	2.12	45.7%