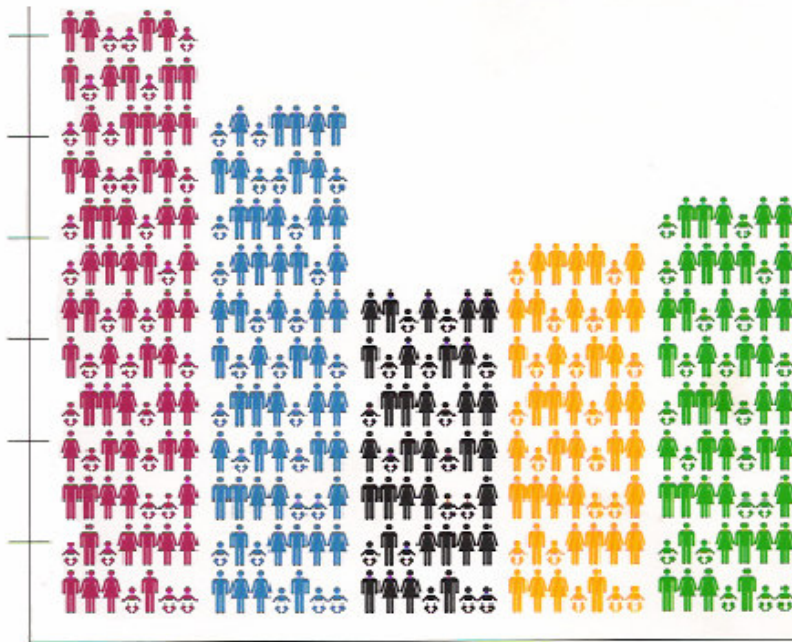




World Health Organization



Health Action International



Medicine Pricing, Availability and Affordability

Report of Four Regions, Maharashtra, India

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MEDICINE PRICING: MAHARASHTRA
SURVEY REPORT BY NAGPUR GROUP

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ACRONYMS

CHC	Community Health Centre
CII	Cost Inflation Index
EML	Essential Medicine List
ESIC	Employee State Insurance Corporation
FDA	Food and Drug Administration
Govt.	Government
HAI	Health Action International
IB	Innovator Brand
LPG	Lowest Priced Generic
MPDC	Medicine Price Data Collection
MPR	Medicine Price Ratio
MRP	Maximum Retail Price
MSG	Most Sold Generic
MSH	Management Sciences for Health
PHC	Primary Health centre
PPP	Price Patient Pays
R&D	Research And Development
RH	Rural Hospital
SC	Sub-Centre
VAT	Value Added Tax
WHO	World Health Organisation

FOREWORD

In India, most medicines are paid out-of-pocket by patients. High prices of medicines are a major barrier to the use of medicines, better health and quality of life. Globally, need for greater transparency and information on prices of medicines was felt. The Health Action International (HAI) and the World Health Organisation (WHO) developed an international standardized method for collection and analysis of medicine prices in different countries in 2001-02. This resulted in the preparation of the working draft of manual (WHO/EDM/PAR/2003.2), for collection of medicine prices in 2003. The methodology was designed using software application to facilitate data analysis.

In April 2004 a pre-survey workshop on Medicine Prices was conducted by WHO and HAI at Hyderabad in India to standardize the method of data collection across different states in this country. We collected data from four districts of Maharashtra State of India, to understand the availability of medicines and their price variation in the retail and different government procurement sector. An understanding of the price variation would help in making recommendations to make the medicines less variable in cost, more affordable and accessible. The affordability of medicines for common acute and chronic ailments was measured based on the daily wages of an unskilled government worker in these districts, to understand the burden of these prices on the daily earning of a low paid government employee. The price composition of the medicines was also evaluated to be able to assess the margin of the retailers. This study group puts forth recommendations to improve availability and affordability of medicines used for common ailments.

EXECUTIVE SUMMARY

Availability and affordability are key components in equitable access to essential medicines. This was a survey to measure prices of medicines and their availability using WHO - HAI methodology published in the manual, "Medicine prices: a new approach to measurement", 2003. We surveyed the price and availability of 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 of a core list of drugs in this manual, and, 8 supplementary medicines commonly used. Tablets of diclofenac sodium and artesunate were dropped from the core list as they are not available in India in the strength of 25 mg and 100mg respectively. Using systematic sampling 20 public procurement (govt teaching hospitals, employee state insurance corporations, municipal corporation hospitals, primary health center and rural hospitals) and 48 private retail sectors at four cities of Maharashtra state in India viz. Nagpur, Akola, Nanded and Aurangabad, were sampled. Price results of the three types (IB, MSG, LPG) for each medicine are presented in terms of automatically computer generated Median Price Ratio (MPR), which is the ratio of the median price for each medicine across facilities divided by an international reference price converted into local currency (Madden, 2003). The international reference price or MSH (the Management Sciences for Health (MSH), *International Drug Price Indicator Guide, 2003*) was median prices from not-for-profit wholesalers to developing countries. Affordability calculations were based on simple model treatments and the minimum daily wages of the lowest paid unskilled worker in government service (Indian rupees 120/-).

Our findings indicate that availability of medicines in the public procurement sector was low and ranged between 8 to 45 % with median availability of 15.8%. This includes common antibacterials, antihypertensive, antidiabetic and anticonvulsant medications, indicating a poor stocking of essential medicines in government hospitals. The essential drug list of the procurement sectors contained 50% of

those in the core list surveyed resulting in underreporting of availability of medicines. The only medicines that were present in most facilities were chloroquine (78.9%) and paracetamol (94.7%). In Maharashtra State 4.4 million people live below poverty line in the rural areas and rely on government services more than in urban areas. The availability of medicines in the government sector was < 10 % in rural hospitals and primary health centres. Almost all medicines were low price generics and the median price ratios or MPR (the ratio of local unit price of the medicine to an international reference unit price which is a tender not for profit unit price) was < 1 indicating efficient procurement price. For most ailments, treatment affordability was less than half a day's wage, if patients were to purchase lowest price generics from private retail pharmacy.

In the private retail sector median availability for brand, most sold and lowest priced was 2.1, 50 and 57.3 respectively. In 1/4th of the facilities surveyed, the availability of IB was nil (25th %ile being 0). Medicines (IB or MSG or LPG) for treatment of common conditions such as hypertension, diabetes, malaria, respiratory infections, epilepsy were available in > 75% of private sector facilities. Availability of anti retroviral and antipsychotic medicines was poor. The median MPR for brand medicines was nearly 4 (i.e 4 times international reference or not for profit tender price) and for most sold generic and lowest price generics 1.9. The ratio of the lowest price in the private sector to procurement sector was over 400%. The treatments of common ailments were affordable by the lowest paid government employee if lowest priced generic medicines from the private retail sector were used. The cost was less than a day's wage in all except for antidepressant amitriptyline for a 30 day treatment regime. However this assumes affordability for one ailment at a time in the household and not multiple illnesses in many members of the family including in the earning member. The price components of the medicines could not be determined. The mark up for two sample medicines was approximately 9% and 20% for whole sale and retail respectively.

CONCLUSIONS & RECOMMENDATIONS

1. Medicine availability in the govt sector under the departments of Medical Education and Drug, and, the Ministry of Public Health needs improvement. The Employee State Insurance hospitals are better stocked but have scope for improvement as well. The essential drug list of government sectors should include the drugs recommended in the WHO as the core list of drugs needed for treatment.
2. An efficient and computerized central purchasing system and decentralized distribution by warehousing in each district (based on Tamil Nadu State model) has the potential to improve availability at govt facilities.
3. The retail pharmacies need better stocking with, antiretroviral drugs and drugs for mental illness as they are major health problems.
4. Generic prescription needs to be encouraged so that retailers can also stock low priced generics. Teaching and training in generic prescription can begin during undergraduate education and should be continued for practising physicians.
5. Legislation is required to empower the pharmacists in generic substitution. Incentives and rewards are required to promote generic practice.
6. Consumer awareness needs to be increased in generic medicines, so that it creates the demand, which will drive the retail pharmacies to stock low priced generics.
7. There should be ceiling on profit margins, especially on essential and scheduled medicines. It can be a defined percentage of manufacturing price.

The MRP should include local tax as for any other consumer item and prices should not vary according to demand.

8. Greater consumer awareness is required for checking and paying the right price based on MRP.
9. The list of medicines under drug price control order should include the medicines on the national essential medicine list (EML). Their prices should be monitored on ongoing basis and method should be transparent and published.
10. Medicines need to be considered different from consumer products. To improve the affordability, taxes on EML medicines should be waived.

INTRODUCTION & BACKGROUND

Health is a fundamental right guaranteed by the Constitution of India. Unfortunately the health services are not able to cope up and extend all the health facilities to the ever growing population, 25% of which earns below a dollar a day (World Bank 2004) ¹. Ten percent of illness episodes remain untreated in India. Approximately 60% of the rural and 70 % of the urban population utilize private facilities for health care and their per capita annual health care expenditure of an household is Indian rupees 334 ². The out of pocket (OOP) payments comprise 80% of the total expenditure on health in India. Health insurance in India is in nascent stage, so most of the population ends up paying for their own treatment. The share that goes in medicines is 74.72% due to greater prevalence of self medication in economically poor and particularly rural societies in which access to health services is constrained by income and distance. Thus medical expenditures can be impoverishing ³. Due to this catastrophic impact of health care expenditure on families, the World Health Organization (WHO) and the Health Action International (HAI) are attempting to generate data on availability and pricing of different types of medicines from different countries, so that policy makers are informed and can suitably intervene. This data is collected by using a standardized methodology across countries and their regions. This study also is a part of several international surveys on medicine availability and pricing using a standardized WHO-HAI methodology of data collection on 30 core medicines of specified strength, dosage and formulations for common conditions. It was previously conducted in the state of Rajasthan followed by two studies including this in Maharashtra, West Bengal, Chennai in Tamil Nadu, Haryana and, Karnataka.

THE NATIONAL MEDICINE POLICY (NMP)

The pharmaceutical sector in India is globally competitive and under two ministries- viz. Ministry of Industry (Department of Chemicals and Petrochemicals) and Ministry of Health and Family Welfare (the Directorate of Drugs Control). Medicine

pricing is the responsibility of the Ministry of Industry, whereas licensing and standards is that of the Ministry of Health. The basic objectives of the NMP for the pharmaceutical sector were framed in 1986 and revised as the Pharmaceutical Policy – 2002 to address the new challenges of globalization and obligations undertaken by India under the WTO Agreements. The main objectives are to ensure abundant availability at reasonable prices of good quality essential medicines of mass consumption; to strengthen the indigenous capability for cost effective quality production and exports of pharmaceuticals by reducing barriers to trade in the pharmaceutical sector; to make quality an essential attribute of the Indian pharmaceutical industry; to promote rational use of pharmaceuticals; to encourage R&D in the pharmaceutical sector in a manner compatible with the country's needs and with particular focus on diseases endemic or relevant to India.

The Drugs Price Control Order (DPCO), 1995 is an order issued by the Govt of India under Section 3 of the Essential Commodities Act, 1955 to regulate the prices of drugs. The order inter alia provides the list of price controlled medicines, procedures for fixation of prices of medicines, method of implementation of prices fixed by Govt and penalties for contravention of provisions among other things. For the purpose of implementing provisions of DPCO, powers of the Govt have been vested in the National Pharmaceutical Pricing Authority (NPPA), under the department of chemicals and fertilizers. Only 74 out of 500 commonly used bulk medicines (used as single or combined formulations) are kept under statutory price control using a standard formula. However, the prices of other medicines can be regulated, if warranted in public interest.

A national drug authority on the lines of the Food and Drug Administration in the United States under the Drugs Controller-General of India has been proposed. It will be a regulatory body which will lay down standards for medicines, pharmaceuticals and cosmetics.

The study of medicine pricing is of importance in generating the hard and factual data, which can be effectively utilized by the NPPA as well as the Ministry of Health

for jointly framing the policy to improve medicine availability and affordability. This information can be used to free resources for improving health, access and equity in health. It is also difficult to accurately monitor and assess inflationary trends in medicine prices due to absence of a medicine price index. General information on the pharmaceutical sector is provided in the **Annexure 1**.

THE HEALTH CARE SYSTEM IN INDIA AND MAHARASHTRA STATE

The Health care delivery system in India is complex, overlapping and add to redundancy in some services. Broadly it is delivered by the govt (central and state), the private Allopathic practitioners and the alternative forms of treatment such as Ayurveda, Homoeopathy, Unani etc. Although government health services are highly subsidized and free for those below poverty line, 70% of the people still use the private health care system. The public health care delivery system in India is delivered by the States with an exception of national health programs which are financed and implemented by the Central govt. The public health system in Maharashtra is a three-tier structure under two separate ministries, the first two under the State Ministry of Health and the tertiary care under the Ministry of Medical Education and Drugs. The first tier provides health care services to the vast majority of rural people. It comprises three types of health care institutions: Sub-Centre (SC), Primary Health Centre (PHC) and Community Health Centre (CHC) or Rural Hospitals (RH). SC is the first contact point between health workers and village community. PHC is the first contact point between village community and doctor. CHCs work as referral centres for PHCs (GOI 1997). The secondary tier, which is primary to the urban mass, includes medical care provided by the specialists at the district and sub-divisional hospitals. These also include urban municipal hospitals. Tertiary health care encompasses sophisticated services provided at medical colleges and specialised hospitals. Additionally secondary and tertiary care are also provided by urban government municipal corporations hospitals financed by the town's municipal corporation which receive state funding. The police, military, railways and other central (federal) govt employees have hospitals administered by their respective ministries such as State Home ministry, Central Defence Ministry, Central Railway Ministry and the Central Government

Health Scheme. The State Govt. employees have free care at any state hospital. Employees of private enterprise have access to State Govt Employee State Insurance Corporation (ESIC) Hospitals. The medicines are procured by state hospitals by central tender and supplied for the rural health care delivery of the state. In Maharashtra, the medical colleges obtain the medicines for their hospitals through central tender fixed by the state or a quotation system and rarely purchase them from local shops in times of emergency. The ESIC hospitals tender them centrally but also have the option of quotation and purchase from local shops when the need arises. In this study we have determined the availability of medicines and their prices of procurement by the State funded rural hospitals, primary health care facilities, the municipal hospitals, the ESIC and the tertiary Medical Colleges.

The private sources of care are very uneven in both quantity and quality but their presence is parallel to the public health care system. They exist as small private care clinics to large speciality city corporate hospitals where payment is largely OOP and some city corporate hospitals have developed private insurance schemes. The medicines for private care are mostly purchased by the patients with prescriptions and very often even without prescriptions from the retail pharmacies. These pharmacies have been surveyed for availability of a common list of medicines and the prices patients pay for them.

METHODOLOGY

This was a survey to measure prices of medicines and their availability using WHO - HAI methodology published in the manual, "Medicine prices: a new approach to measurement", 2003. The core list consisted of 28 medicines and the supplementary of 8. Two medicines, tablets diclofenac sodium and artesunate were dropped from the core list as they are not available in India in the strength of 25 mg and 100mg respectively. The technical advisor provided the names of the innovator brand (IB) and the generic product with the highest sales nationally i.e the most sold generic equivalent (MSG) to be surveyed by all survey teams to enable regional comparison for the same medications. **Annexure 2.** The supplementary list was added based on the prevalence of common diseases and medicine usage for these diseases in our area. **Annexure 3.**

THE OBJECTIVES

The objectives of this survey were to find:

1. The availability of the core and supplementary list medicines in public and private sector
2. The price patients pay (PPP) for surveyed medicines.
3. The price variability in surveyed medicines in two different sectors viz. private retail pharmacies and state procurement facilities, in four different regions of the state.
4. The difference in price of innovator brand (IB) and the most sold generic (MSG) and lowest priced generic (LPG) equivalents medicines.
5. The comparison of procurement price and private retail prices with international reference price
6. The taxes and duties levied on medicines, level of mark up contributing to the retail pricing.
7. The affordability of medicines for low-income group of govt sector employee for standard treatment of common diseases.

The steps involved with survey included:

1. ADMINISTRATIVE

1.1. STUDY SANCTIONS

The sanction for the study was obtained from the Principal Secretary, Medical Education and Drugs Department, Govt. of Maharashtra, Mumbai, the Director, Medical Education and Research and from the head of all public procurement facilities (**Annexure 4**). Letter of introduction (**Annexure 5**) and identity cards were given to the data collectors.

1.2. SELECTION OF MEDICINES FOR CORE AND SUPPLEMENTARY LIST

The technical advisor provided the core list of 30 medicines present in the manual, their IB and MSG. OF these we surveyed 28 medicines (Annexure 2) as Tab Artensunate 100 mg and Tab Diclofenac 25 mg was dropped due to non availability in that strength. The supplementary list was prepared after discussing with the advisory group **Annexure 3**. The pack size, dosage form and strength was decided for nine medicines based on the prevalence of common diseases, their medicine utilization and availability of their International Medicine Reference Price in database of Management Science for Health Research (MSH), for calculation of the MPR.

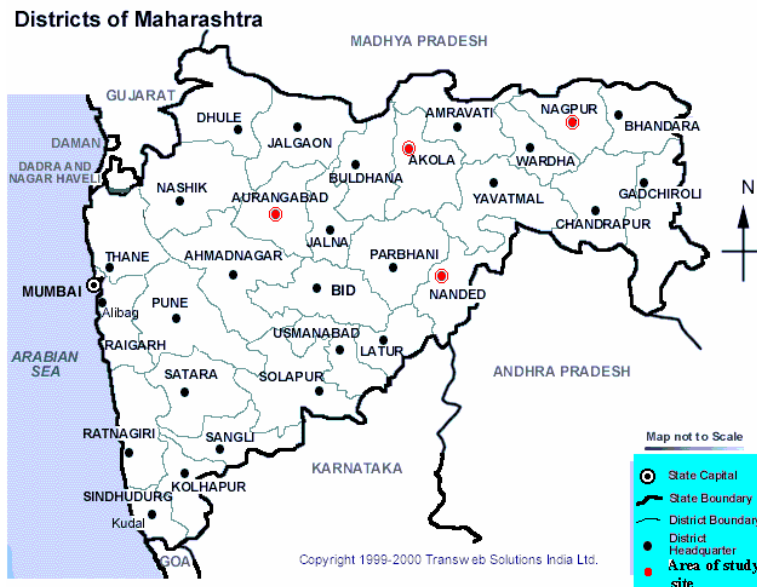
1.3. PREPARATION AND TRAINING OF THE TEAM

The two investigators trained at the Pre-survey workshop at Hyderabad were the survey managers. A research pharmacist was trained to be the survey supervisor. Then four data collectors, 2 medical students and 2 graduate pharmacists familiar with pharmaceuticals and different dosage forms were trained for seven days in overall purpose of the survey, the data collection procedure and filling of the medicine price data collection (MPDC - **Annexure 2**) form in accordance with the manual. They were given simulated training and they collected pilot data from

procurement sector of a medical college and from private retail shops. Supervision and adequate daily communication was established for ensuring quality during data collection

1.4. SAMPLING

Four districts Nagpur, Aurangabad, Akola and Nanded representative of categories specified by the UNDP, *Human Development Report, Maharashtra, 2002* as richest, upper middle, lower middle and poor quarter respectively were systematically sampled. Their populations are 4051444, 2920548, 1629305 and 2868158 respectively.



In each district there were two sectors – public and private. Each sector had three levels - Urban, Semi-urban, Rural. We did not include the “other” sector since the sampling design assured enough cross sectional coverage. Our survey areas have been shown by red dots in the given map:

Our sampling scheme for each of the four districts was:

Level		Public	Private
Urban	Govt. Medical College (GMC)	1	7
	ESIC	1	
	Corporation Hospital	1	
Semi urban	RH	1	3
Rural	PHC	1	2
Total		5	12

Total of $5 \times 4 = 20$ Public and

$12 \times 4 = 48$ Private facilities

2. DATA COLLECTION

2.1. STANDARD OPERATIVE PROCEDURES

These (**Annexure 6**) were framed for collection of data and tested in the pilot survey. Necessary modifications were made for their field application. The data collectors were then trained to follow them. The US Dollar “buy” rate on first day of the survey i.e 9th December 2004 was obtained from State Bank of India, Main Branch, Nagpur for computation of MPR to compare the local prices with the international reference price in the same local currency.

This survey was conducted from 9th December 2004 to 31st January 2005. Data was first collected from Nagpur, during which the quality of data and associated problems were reviewed. Subsequently data was collected from Akola, Nanded and Aurangabad. The data collectors were constantly supervised by the survey supervisor who periodically informed the investigators. All data was collected by actually visiting the sampling source/site. Prior appointments were taken from the respondents so that they were given adequate time for the collection of data.

Some price components were identified from procurement facilities and also by interview method from a manufacturer.

2.2. FINDING THE AVAILABILITY AND MEDICINE PRICING

For each medicine listed in the core list and supplementary list three products were monitored viz.:

- Innovator Brand (IB) – holders of first patent, the name, pack size and dosage forms were provided by the technical advisor.
- Most Sold Generic equivalent (MSG) - the details for medicines in core list were provided centrally by the technical advisor for the supplementary list.
- Lowest Priced Generic equivalent (LPG) – information was collected during the survey from each facility surveyed (Govt. facilities and private pharmacies).

Surrogate patients were also sent with names of IB, MSG and LPG to determine the actual price paid by the patient for a few sample drugs. In private facility the maximum printed price on the pack was also recorded, to determine the difference between the price demanded from patient and the printed price. In public sector the procurement price and availability was obtained. For components of the medicine prices, various duties, taxes and cost of delivery etc. were identified.

2.3. AFFORDABILITY

The salary of lowest paid govt. worker was identified from the Govt. source. Affordability was determined from this information for the given common ailments. It determines the number of days of wages required by this worker for purchasing medicines for a standard duration of treatment for a common condition. It is considered “affordable” if it cost less than 5 days wages. The daily salary of lowest paid unskilled government worker in Nagpur was Rs.120 per day. The lowest paid unskilled worker in private sector or unorganized sector could be earning much less.

3. ETHICAL ISSUES

In the letter of introduction, confidentiality was assured to all respondents. The data collectors were explained the need of maintaining the confidentiality of the data, not to make any photocopies and return all the documents to the survey manager after data collection. To authenticate the survey, all letters were sent on official stationary of Govt. Medical Colleges. There was no endorsement of any commercial company on any other document and we vouch safe all the documents relating to this survey from any conflict of interest. No leakage of the information has occurred.

4. DATA ENTRY

The filled data forms were faxed to Nagpur on the same day for quality checking by the survey manager / investigators. The data entry operators entered the data the same day. Data entry was done twice by two separate data entry operators and a check for discrepancies run after completion. The software for data entry were standardized MPDC forms programmed in Microsoft Excel with the manual. It allowed double data entry, cross checking, default calculations of all aspects of availability, pricing and composition of pricing.

5. DATA ANALYSIS

The principal investigator and survey supervisor did the data analysis. For international comparison, the existing local median prices of medicines were converted to MPR. The reference price list (**Annexure 7**) and the median local unit price were both expressed in Rupees using the dollar exchange rate.

$$\text{MPR} = \text{Median Local Unit Price} / \text{Reference Unit Price (MSH)}$$

The reference prices used were the Management Sciences for Health (MSH) reference prices, taken from the International Drug Price Indicator Guide (2003). These are considered as reasonable prices for medicines as they are based on the

tender prices offered by manufacturers to international non-for-profit agencies for generic products. They represent efficient bulk procurement without the cost of shipping or insurance. It indicates to some extent the profit margins and the scope for reduction for benefit of the consumer. For international comparison, conventionally a MPR of 2 or less indicates efficient medicine procurement and >5 is exorbitant.

The analysis was done for comparison across sectors (private and procurement), within sector, for median price ratios (MPR), availability, treatment affordability and price composition. The within sector comparison in public sector was done by stratification into teaching, corporation, ESIS, rural and public health center, in each of the four districts, as they have different administration even though they are all state funded. The retail sector of different districts and the MPR variations of medicines in each sector was assessed.

The availability data was analyzed for representative medicines for few common conditions in the private and procurement sectors. A comparison between the MRP actually printed on the pack and that quoted by the retailers was done. Treatment affordability was assessed and price composition information used to compare the final pricing with ex-factory prices in the different sectors.

RESULTS

1. AVAILABILITY

Table 1 shows the comparison of summary of availability of all medicines in private and procurement sector. The core medicine availability is provided for international comparison.

Table 1: Median percent availability of medicines across sectors

	CORE (n=28)				ALL MEDICINES (n=36)			
	Private			Procurement	Private			Procurement
	Brand	Most Sold	Lowest Price	Lowest Price	Brand	Most Sold	Lowest Price	Lowest Price
Median availability	2.1	47.9	51.0	10.5	2.1	50.0	57.3	15.8
25 %ile availability	0.0	10.4	12.0	0.0	0.0	13.5	35.9	0.0
75 %ile availability	37.0	65.1	75.0	31.6	41.7	65.1	75.0	38.2

Tablet Hydrochlorthiazide 25mg (IB, MSG or LPG) was not available in any of the facilities. The medicines with poor availability in retail and none in procurement were Captopril (12.5% in retail, IB unavailable), Beclomethasone inhaler (10.4%), Fluphenazine (4.2%, IB unavailable), Indinavir (2.1%), Lovastatin (10.4%, IB unavailable), Nevirapine (8.3 %, IB unavailable) and Zidovudine (6.3%, IB unavailable).

In the procurement sector, one IB (Phenytoin) and one MSG (Salbutamol) were found at 1 site only while the rest of the medicines available were LPG. The LPG procurement was a fifth of the median percent availability of the private retail facilities. There were 18 medicines (48.64%) available at minimum 4 procurement facilities as compared 32 medicines (86.48%) available at minimum 4 private

facilities. The brand medicines were less frequently available as compared to most sold and lowest price (50%) even in the private sector. The median availability was 2.1% and more than a quarter of the brand products were not found in any outlets. 51.35% of the MSG medicines available in private facilities were also the lowest priced.

Table 2: Percent availability of any one type (IB or MSG or LPG) of representative medicines of common conditions in private and procurement sectors

Class of Medicine	Medicine	Private	Procurement
Antiviral	Acyclovir	66.7	0
	Zidovudine	6.3	0
Antibacterial	Amoxicillin	91.7	52.6
	Ceftriaxone	75	10.5
	Ciprofloxacin	95.8	62.5
Antifungal	Fluconazole	39.6	0
Antihypertensive	Enalapril	72.9	21.1
	Atenolol	97.9	47.4
Antimalarial	Chloroquine	97.9	78.9
Antidiabetic	Glibenacamide	85.4	45.8
Antiepileptic	Carbamazepine	77.1	42.1
Antacid	Ranitidine	83.3	42.1
Analgescic	Diclofenac 50mg	66.7	52.6
Bronchodilator	Salbutamol inhaler	72.9	10.5
Antipsychotic	Diazepam	52.1	21.1
	Fluoxetine	47.9	0

This shows the availability of the representative medicines for common conditions in private and Govt. sectors. The availability of Tablet Atenolol and Tablet Chloroquine in both the sectors was very good.

Figure 1: Proportion of medicine with poor, average and good availability in private and procurement sector, for 11 conditions and 16 medicines in table 2

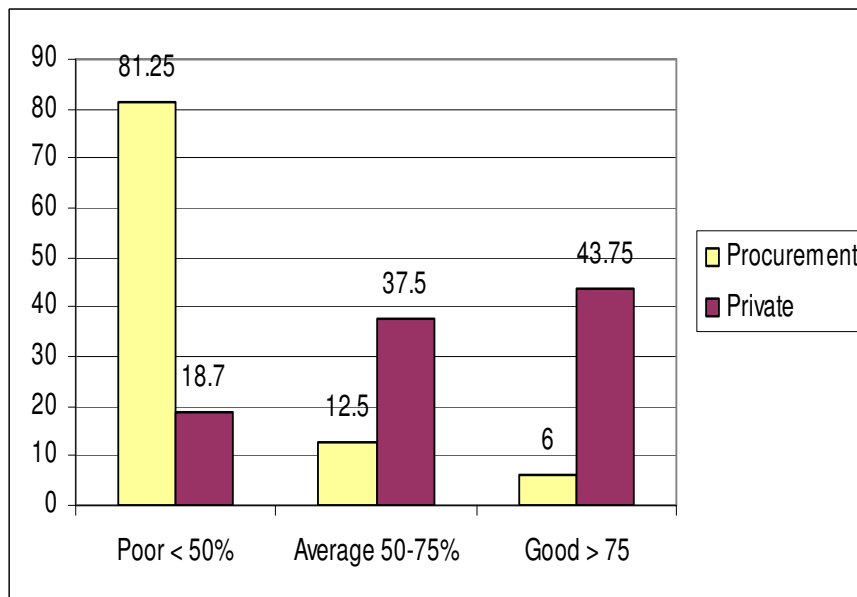
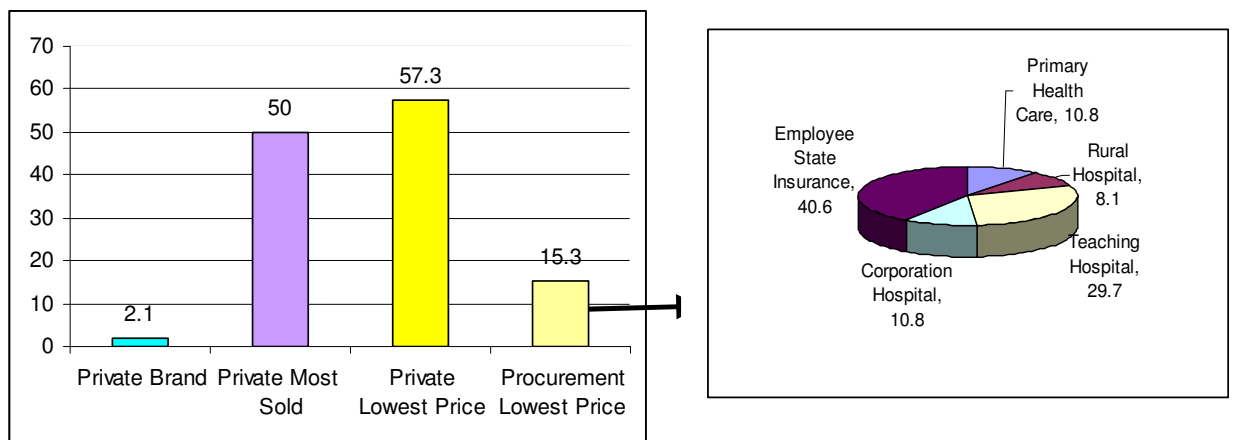
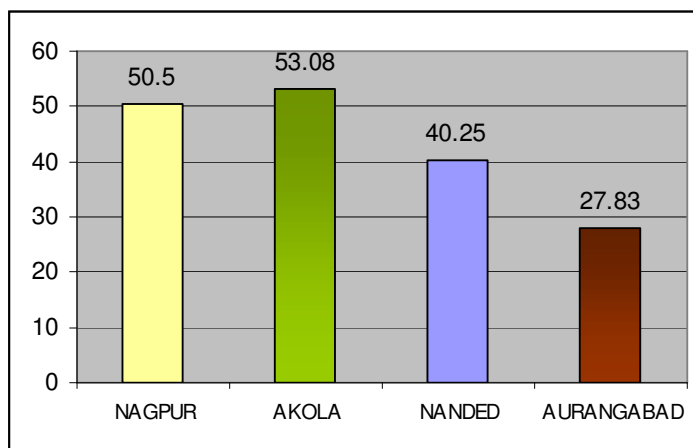


Figure 2: Median availability of medicines in different procurement sectors



It shows the availability of all medicines (n=37) in the procurement sector stratified into teaching, corporation, ESIS, PHC and rural hospital. No medicine of the survey list was available in the PHC at Aurangabad. The average availability in RH was the least while in ESIC hospitals it was highest.

Figure 3: Medicine availability (IB or MSG or LPG) in private sector in different districts



The population in the 4 districts Nagpur, Akola, Nanded and Aurangabad are 40,51444, 1629305, 2868158, and 2920548 respectively. However the availability of medicines was maximum in Akola and least in Aurangabad.

2. PRICING

A summary of MPR of individual medicines in the Govt. and private sector is attached in **Annexure 9**.

2.1. Private or Retail Sector :

Table 3 shows overall results from paired data analysis for the private sector. The paired data have been compared where 'IB and MSG', 'IB and LPG' and 'MSG and LPG' median ratios were available for the same medicines. Such pairing gives the best comparison of medicine prices for the IB, MSG and LPG. It shows a comparison of MPR for a) core medicines and b). all medicines. Adding the supplementary list reduced the median MPR of brand to lower than that of the median MPR for most sold, with little differences in median MRP of the other two types.

Table 3: Comparison of MPR between the IB, MSG and LPG of core (a) and all (b) medicines in private sector

No. of Medicines ^a	13	13	13	13	24	24
	Brand	Most Sold	Brand	Lowest Price	Most Sold	Lowest Price
Median	4.38	4.28	4.38	3.39	1.68	1.62
25 %ile	1.69	1.34	1.69	1.33	1.19	1.18
75%ile	5.80	5.64	5.80	4.35	4.29	3.60
Min	0.49	0.49	0.49	0.49	0.11	0.11
Max	13.24	9.46	13.24	9.46	9.46	9.46

No. of Medicines ^b	17	17	17	17	32	32
	Brand	Most Sold	Brand	Lowest Price	Most Sold	Lowest Price
Median	3.77	4.26	3.77	3.39	1.85	1.79
25 %ile	1.69	1.34	1.69	1.33	1.27	1.25
75%ile	5.80	5.64	5.80	4.35	4.50	4.25
Min	0.49	0.49	0.49	0.49	0.11	0.11
Max	13.24	9.46	13.24	9.46	9.46	9.46

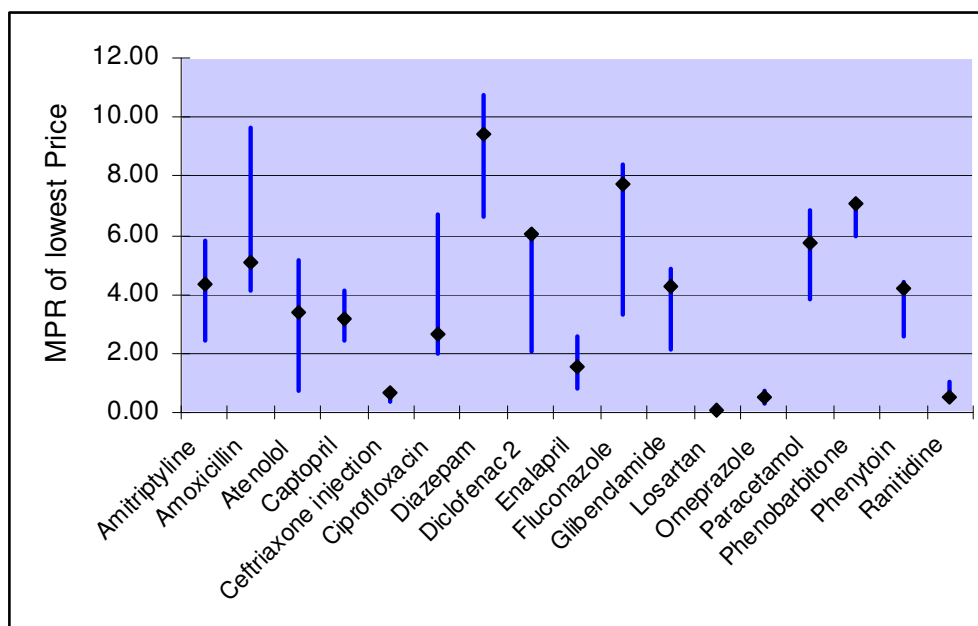
a: Core list of medicines

b: All medicines

The median MPR of IB was more than 400 % higher than MSH reference price for the core group. For medicines with brand and lowest price, the latter was also more than 300% the MSH and 77% of the brand. For medicines with both MSG and LPG, the median MPR was 68% and 62% higher than MSH. These were mostly medicines without brand availability.

In 14 of 18 (77%) core and supplementary medicines where brand was available, the brand price was either same or less than the lowest priced medicines. These were mostly medicines used for common conditions with market presence for many years eg., Amoxicillin, ciprofloxacin, Co-trimoxazole suspension, Diazepam, Carbamazepine, Dilantin, Ranitidine, Rifampicin, Paracetamol, Metronidazole etc.

Figure 4: Price variation for few lowest priced generics

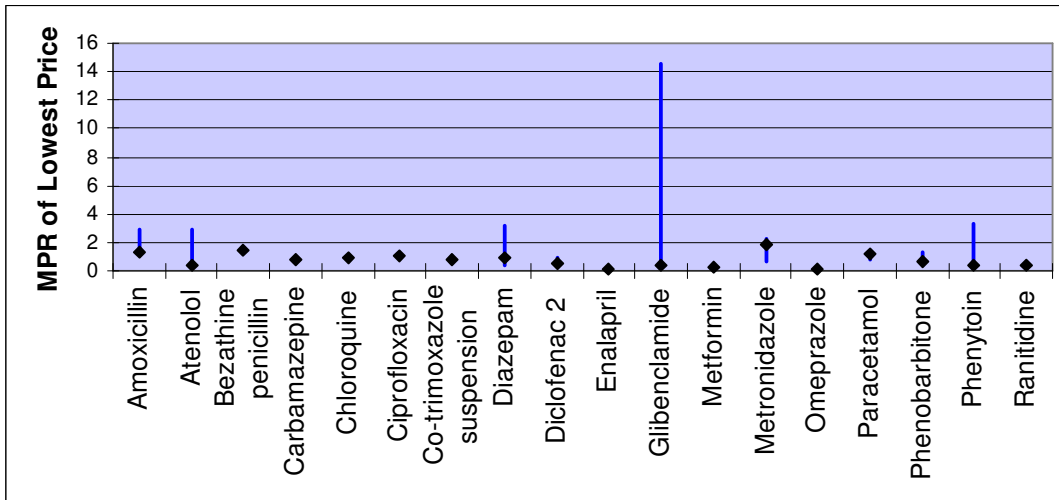


This figure shows interesting price variability of lowest price of some interesting medicines with very high, very low or wide range of MPR. The medicines that had low MPR were Losartan (MPR 0.11), Inj. Ceftriaxone (MPR 0.66) Omeprazole and Ranitidine (MPR 0.49). Atenolol was also available in some retail facilities with prices as low as that paid by the procurement facilities. The maximum MPR was for Diazepam being 13.24 for IB, 9.46 for MSG and for LPG, which was an outlier.

2.2. Procurement Price or Price in Government Sector :

The MPR of most medicines were less than 1. This is shown in figure 5.

Figure 5. Price variation in procurement sector (All LPG)



Only one brand (Tab Phenytoin) was available with an MPR of 4.18. Some medicines with ranges of MPR from less than 1 to greater than 2 (amoxicillin, atenolol, diazepam, glibenclamide, metronidazole, phenytoin) were due to system of “local purchase”. In this system, medicines are purchased from local whole sale only when they are required urgently and central tender supply is pending.

Table 4: Comparison of number of medicines with different range of median MPR in both sectors.

MPR	Brand		MSG		LPG	
	Private	Procurement	Private	Procurement	Private	Procurement
≤ 1	2 (5.4%)	0	5 (13.5%)	1 (2.7 %)	5 (13.5%)	19 (51.5%)
>1 to 2	4 (10.8%)	0	12 (32.4%)	0	13 (35.1%)	6 (16.2%)
≥2	11 (29.7%)	1 (2.7 %)	15 (40.5%)	0	14 (37.8%)	1 (2.7%)

Diazepam which had a high MPR 9.46 in private sector had a median MPR of 0.9 in the procurement sector. Overall the MPR in private sector was 646 % more than procurement sector, for core medicine and 402% more for all medicines as can be seen in table no.5

Table 5: Comparison of MPR of LPG in private and procurement sector.

N=36	Procurement (n=19 orders)	Private Sector (n=48 outlets)	# of Medicins in Both Sectors	Ratio Private to Procurement
Lowest Price	0.75	3.03	18	402.4%

3. AFFORDABILITY

Table 6: Affordability of lowest price medicines for common medical Conditions

Condition	Medicine	Daily Dose	Duration	Treatment Cost	Daily Wage
Diabetes	Glibenclamide	5 mgX2	30 days	48.00	0.4
Depression	Amitriptyline	25 mgX3	30 days	135.00	1.1
Arthritis	Diclofenac 2	50 mgX2	30 days	80.10	0.7
Adult Respiratory Infection	Amoxicillin	250 mgX3	7 days	58.50	0.5
Pead Respiratory Infection	Cotrimoxazole Sus	8+40 mg/mlX10	7 days	10.25	0.1
Hypertension	Atenolol	50 mgX1	30 days	42.86	0.4
Epilepsy	Carbamazepine	200 mgX2	30 days	96.00	0.8
Gonorrhoea	Ciprofloxacin	500 mgX1	1 day	3.85	0.1
Peptic ulcer	Ranitidine	150 mgX2	30 days	33.00	0.3
Asthma	Salbutamol	0.1 mg/dose	As needed	82.00	0.7
Amoebiasis	Metronidazole	400 mgX3	7 days	14.70	0.1
Malaria	Chloroquine	250 mgX10	1 course	6.00	0.1

This shows the affordability of medicines for various acute and chronic conditions of a daily wage worker earning Rs.120 per day. It can be seen that a patient spends more than a day's wage for a treatment of depression (Amitriptyline – 1.1 day) and 0.8 days wage for treatment for epilepsy, which are unfortunately chronic conditions demanding longer duration of therapy. For other conditions the cost of medicines was less than a half-day's wage.

4. ADDITIONAL ANALYSIS :

Comparison between the printed pack price and the actual price paid by the patients has been shown in table 7. This data was collected to show that local taxes over the printed price contribute to price variation and usually we would expect the patient to consistently pay more (approximately 8%) than the printed price. The median calculated from price patient paid for brands was 12.7% more,(table 7) and, that of the most sold and lowest price was less than (9%) the printed price on the pack. This indicates that the retailer alters his margins based on the demand for the medicine in the retail sector.

Table7: Comparison between price paid and printed price

	Brand		MSG		LPG	
	Price paid	Price on pack	Price paid	Price on pack	Price paid	Price on pack**
Median MPR	4.25	3.77	1.67	1.85	1.57	1.79
25 %ile MPR	1.62	1.69	1.16	1.27	1.16	1.25
75 %ile MPR	5.66	5.80	4.23	4.50	3.57	4.25
Minimum MPR	0.48	0.49	0.11	0.11	0.11	0.11
Maximum MPR	12.82	13.24	9.21	9.46	9.21	9.46

5. PRICE COMPONENTS

Complete and factual information on manufacturers' price was difficult to obtain. Hence the actual mark up on the medicines could not be calculated. However we have calculated the price at which the wholesaler gets the medicine, the price at which the retailer buys it from the wholesaler and the final price which the patient pays. Overall in this chain of manufacturer- wholesaler - retailer - patient, the average mark up was 30%. In the govt sector the various component heads, which add to the billed price are freight charges, excise duties, education cess and sales tax.

Table 8: Example of price mark up

	LPG eg. Atenelol		IB eg. Diazepam	
	%	Total	%	Total
Carting & forwarding pack price in local currency	-	83.65	-	64.8
Import agent's fee	-	-	-	-
Wholesaler's mark up	9.73	91.79	9.57	71
Retailer's mark up	20.29	110.41	20.06	84

DISCUSSION

We used purposeful sampling to collect data from 4 districts of different population sizes and income levels to represent the Maharashtra State. From each district 5 procurement facilities representative of 5 different Govt. facilities and 12 retail shops were selected to capture the variability in availability as well medicine prices between districts, between Govt. procurement facilities and between procurement and retailers.

The reference prices used were the Management Sciences for Health (MSH) reference prices, taken from the International Drug Price Indicator Guide (2003). This allows comparisons of cost of medicines across different countries. No IB name had to be changed during the study, which indicates that in spite of takeovers / mergers and acquisitions the pharmaceutical companies preferred to cash on the existing brand name and its advantage. To standardize the information on availability and pricing between the states, names of MSGs were provided.

1. AVAILABILITY

The overall availability of medicines in the government procurement sector was poor (median percent availability 15.8 for all and 10.5 for core list). They were all reasonably priced LPG. Despite the reasonable price the median availability was one third of that in the retail sector. Even within the Govt. sector the rural health sector and the primary health care facilities which cater to the poorest had the least availability of medicines. On the other hand the ESIC Hospitals had better availability perhaps due to better consumer awareness and presence of trade unions, as compared to the less informed unorganized rural population who are beneficiaries of the RH or PHCs. The overall availability of drugs in the procurement sector in Nagpur and rest of Maharashtra, even of medicines for common illness such as diabetes, hypertension and antimicrobials such as amoxicillin, cotrimoxazole and ciprofloxacin was significantly low as compared to other states in India where the survey was conducted ⁴. Poor availability of

medicines in these health centers is also one of the reasons for poor utilization of the public health care and for seeking private health care where most of the payment is OOP and prices of medicines are higher ⁵. The factors that affect availability of medicines in public sector and the variability in availability between the different Govt. procurement facilities are complex and not merely price dependant. The Govt. sector also purchases limited number of medicines as required by them and the national disease programs. Their priorities and selection of drugs for purchase i.e essential drug list (EDL) are different from the core list used in this study eg. The EDL of a teaching hospital contained only 50% of the drugs of the core list. The availability of drugs of EDL and also in the core list was 71% as compared to overall availability 10.5% of the core list drugs. A central procurement, distribution system and monitoring systems are more efficient but do not necessarily alleviate the problems of availability of medicines in government sector. For example, Tamil Nadu state has this system in place, which improves the availability but is still much lower than the availability in retail sector ⁴. Health systems research would help to determine the different factors that affect the efficiency of medicine availability in this sector. Except analgesics (Paracetamol and Diclofenac) and Chloroquine, the availability of supplementary list of medicines in the Govt. sector was also poor. This study highlights the dismal situation of availability of medicines in the procurement sector.

The availability of medicines at the retail facilities reflect to some extent the prescription pattern and in turn the prevalence of different medical conditions in the area surveyed. In the retail facilities, the median availability of IB was small (2.1) and that of MSG was better indicating that the retailers stock medicines based on common prescriptions. Interestingly MSGs were also the LPGs in majority of the facilities. The LPGs available in the retail facilities were different and more expensive as compared to the generics available in the procurement facilities. Medicines availability for common conditions such as infection, fever, hypertension and diabetes was good in the retail sector. Hydrochlorothiazide was also not available in any of the facilities surveyed, which may be because of the fact that it is no more preferred as a single medicine in the management of hypertension.

Similarly the availability of Captopril was low but that of Enalapril was good, perhaps due to the shift of the prescriptions to newer ACE inhibitors. Although today the statins are a multi billion dollar industry in the developed economics, Lovastatin was poorly stocked by the retailers. It is a medicine that is primarily prescribed by specialists and routine checking of lipids of patients is still not done in India.

Mental illness and their prescription receive a low priority as indicated by the poor availability of Fluphenazine in the private sector. Chloroquine was available in both private as well as Govt. sector indicating need-based availability since malaria is widely prevalent. Similarly the availability of antimicrobials was good in both sectors. Although HIV is an emerging epidemic in India, the availability of anti retroviral drugs in retail sector was poor. These medicines are expensive and seldom affordable by the patient, so the demand is less, even if the person has been prescribed. The availability of medicines in retail sector differed between districts but we were not able to determine its reason.

2. MEDICINE PRICING

Although the brand availability was low, the median MPR of IB was more than 400 % higher than MSH reference price. For medicines with brand and lowest price, the latter MPR was also more than 300% i.e 77% of the brand. For many medicines the brand was either same or less than the lowest priced medicines eg. Amoxicillin, Gibenclamide, Metronidazole. This could be one of the reasons for high MPR of the LPG for these medicines. There is also a possibility that higher priced brands reflect the demand of that medicine and competition has failed to drive down the prices of LPG. The prices of these medicines can potentially be regulated by the NPPA. Medicines without brand availability and with both MSG and LPG, the median MPR was 68% and 62% higher than reference price. They were similar because the lowest priced in 72.5% of the medicines available in the private retail were also the most sold generics. Medicines such as Amoxicillin, Amitriptyline, Diclofenac, Flucanazole, Gibenclamide, Paracetamol, Phenytoin and Phenobarbitone had lowest price generics with MPRs greater than 4 in the retail facilities. Their MPRs in the procurement facilities was less than 2. In comparison to Amoxicillin, Ceftriaxone

and Ciprofloxacin were reasonably priced. Diazepam was available in procurement sector for an MPR of less than 1 but in the private retail it was exorbitantly high of nearly 10. Medicines for mental illness and for epilepsy have a high MPR which could be because they are seldom sold without prescription and have low turnovers. Of all the lowest priced generics surveyed, 37.8% had MPR of > 2 in the retail sector compared to 2.7% in the procurement. In the procurement sector the median MPR was 41% of the reference price which indicates a very efficient procurement price, usually due to a tender system. In these facilities medicines with MPR greater than 2 was Gibenclamide which showed a wide range due to a system of “local purchase” when medicines acquired by tender were not available. Medicines obtained by local purchase which is simply buying of medicines by the govt. center from a known whole sale supplier, rather than by tender, are more expensive. Overall the MPR in private sector was 646 % more than procurement sector for the lowest price generics. The median MPR of medicines in procurement as well as private retail sector in the 4 districts surveyed by us was representative of rest of Maharashtra state and of other surveyed states in India ⁴. This indicates that low cost generics are manufactured in this country, but not stocked with the retail pharmacist as medicines are not generically prescribed as there is little demand for them, due to lack of consumer awareness. So there is potential for further lowering of prices without compromising on the profitability of the retailers. The retail pharmacist is not empowered to substitute the brand prescription with the lowest price generics. There is also a belief by practitioners and patients that brands or medicines manufactured by reputed companies are of better quality. Medicines with low MPR in retail were Losartan (10% of MSH), Inj. Ceftriaxone (34% of MSH) Omeprazole and Ranitidine (both 50% of MSH), and these have a potential for an export market.

We also assessed the difference in median price of all types medicines by comparing the maximum printed price and that demanded from the patient (market operating price). The market operating price differed from the printed pack price. This difference for brands was less and for the medicines with greater turnover, such as the MSG and LPG, it was more.

3. AFFORDABILITY

In the Govt. sector where it is expected that medicines be made available free to the patient, all these medicines were not available. So seeking care in Govt. facilities are very often buying medicines from retailers. For the selected clinical conditions of the commonly prevalent diseases like malaria, hypertension, gonorrhoea, peptic ulcer, diabetes and amoebiasis the treatment was affordable in terms of daily wages employed in the government sector, even when the lowest priced generics of these medicines were purchased from the retail outlets. Since the median MPR of medicines in retail were not significantly different across different states, the affordability of medicines for common chronic illness and infection was similar ⁴. This affordability was calculated for the lowest paid govt. employee who is usually paid twice as much as the lowest paid in the unorganized sector particularly in the rural areas. Additionally if more than one member of the family suffers from a chronic condition, it is unaffordable for the lone wage earner and impoverishes the family. Therefore this information on affordability is to be interpreted with caution and should not impact on the potential for rationalizing the cost of medicines in India.

4. COMPONENTS OF MEDICINE PRICING

We accept our limitations in not finding the medicine price components in private sector. In Govt. sector the components were specified in the invoices and could be known. In private sectors the retailers were reluctant to disclose this. When pressed hard for divulging the details, some showed reluctance to participate. This was obviously to conceal the information which otherwise would have become evident in their practice of adding any vague amount in the name of “Local Taxes Extra”, which is used to inflate the prices to patients.

CONCLUSIONS

This study showed that the procurement price of medicines in government sector was low and the MPR was efficient. However this advantage is offset by dismally low availability. In the retail sector pair wise comparison showed availability of medicines in retail is much superior to that provided by the government but they do not stock the very low priced generics and often the MSG was also the LPG in the retail sector. The retail pharmacies need better stocking with, antiretroviral drugs and drugs for mental illness as they are major health problems. 'Paired data' analysis revealed that there is little difference in the price of the IB, MSG and LPG for the same pairs of medicines in the retail sector, so the MPR were similar. The overall retail MPR of LPG was 402% more than of procurement sector indicating poor stocking of low priced generics at retail shops. For the lowest paid government employee treatment for most common conditions was possible for less than a days wage with an exception being mental illness. However this is not the case for the large majority of laborers of the unorganized sector particularly in the rural areas, who are paid only a fraction of the government employee. Transparency in price component was lacking so it hampered collection of quality data. This survey was started in December 2004 when India was yet to amend its patent laws to comply with WTO directives. Since the amendment to the patent laws was brought in 2005, after the survey finished, it has not affected our data. Similarly, the impact of value added tax (VAT) on medicine pricing in the country has not affected this study since this was also not implemented at the time of survey.

RECOMMENDATIONS

The national Govt. must implement Essential Medicine Policy to reduce the number of medicines available in the country and bring the available preparations to a manageable number, which can be effectively supplied, supervised, monitored and controlled. Irrational medicines, medicines banned in other countries, non-essential combination preparations should be weeded out. Their availability should be ensured at all times in Govt. sector. Stress should be given on generic prescription and accounting. Consumer awareness needs to be increased in this respect. Pharmacists need to be given the authority to dispense generic equivalent. Incentives and rewards are required to motivate generic practice. Some control on medicine pricing needs to be enforced to control the price range. The mark ups on medicines need to be examined and a ceiling on mark up is needed.

The medicine pricing needs to be rationalized and only MRP should be printed. Allowing addition of Local Taxes provides leeway in inflating the medicine prices. The Food and Drug Administration (FDA) should enforce the existing rules to ensure that all medicines are sold on cash memos and prescription medicines, scheduled medicines are not available without prescription.

Medicines need to be considered different from consumer products. To improve the affordability, all vital and life saving medicines should be grouped in one category and taxes should be waived on these. There should be transparency in their mark up and it should be the bare minimum for a viable industry. Information on the calculated affordability in this study is to be interpreted with caution and should not impact on the potential for rationalizing the cost of medicines in India, as the unorganized sector with families below poverty line comprise 25% of the population and is far greater than those earning govt wages.

A central purchasing and distribution system for all Govt. facilities could be introduced instead of the presently practiced system of each facility. This will

reduce the workload and the managers can bargain for low prices of the medicines being purchased. Cooperative medicine pharmacies could be another method of offering medicines at lower prices than the market ⁶.

POLICY IMPLICATIONS OF THE STUDY

The findings of this survey will form the advocacy for Maharashtra State Health and Medical Education departments for informed decisions regarding medicine procurement and for price comparisons so that cheaper medicine purchase deals can be negotiated. Demonstrable savings on medicine purchase based on these guidelines can be achieved. The results will be put on the public domain for consumer education and NGOs. The data will also be shared with the clinicians at the public hospitals and with students to rationalize medicine prescription patterns. This methodology of unit pricing of medicines will be incorporated in future Pharmaco-economic studies. It is hoped that this study may contribute to suggest changes in improvising the methodology for Medicine Pricing for the country.

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Annexure I : Completed data on National Pharmaceutical sector

General information on the pharmaceutical sector

- Is there a formal National Medicines Policy document covering both the public and private sectors? Yes No
- Is an Essential Medicines List (EML) available? Yes No
- If yes, state total number of medicines on national EML: . . . 194
- If yes, year of last revision: - 1999
- If yes, is it (tick all that apply):
- National
 - 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
 - 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: —
- Type of public sector procurement (tick all that apply):
- International, competitive tender
 - Open
 - Closed (restricted)
 - National, competitive tender
 - Open
 - Closed (restricted)
 - Negotiation/direct purchasing
- Rate Contract System by Directorate of Medical Education & Research (DMER) and State Public health dept. Employee State Insurance, Municipal Corporations follow competitive tender/ quotation
- This is applicable to state purchases
- In absence of Rate Contract competitive tender list, direct purchasing when drugs needed urgently

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.

Are the products purchased all registered? Yes No

Is there a local preference?² **For Ocotation /** Yes No

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

If yes, please specify: **Partially medicines are supplied for TB, HIV But not fully**

Distribution³

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

If yes, specify levels: **State Government** _____
State Government

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

If yes, please specify: _____

Number of licensed wholesalers: _____

Retail

	Urban	Rural	Overall
Number of inhabitants per pharmacy (approx.)			1397.66
Number of inhabitants per qualified pharmacist (approx.)			1027.83
Number of pharmacies with qualified pharmacists			All(56478)
Number of medicine outlets with pharmacy technician			All(56478)
Number of other licensed medicine outlets			None

Private sector⁴

Are there independent pharmacies? Yes No Number: _____

Are there chain pharmacies? Yes No Number: _____

Do doctors dispense medicines?⁵ Yes No

If yes, approximate coverage or % of doctors who dispense: - 50%

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

**Eg. Co-operative Medical Stores exist in virtually all Govt.
Health Facilities as well as private hospitals**

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.

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.

Financing

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

Type of expenditure

Approximate annual budget (US dollars)

National public expenditure on medicines including government insurance, military, local purchases in past year

Estimated total private medicine expenditure in past year (out of pocket, private insurance, NGO/mission)

Total value of international medicine aid or donations in past year

What percentage of medicines by value are imported? _____ %

Government price policy

This is determined at the national level and

Is there a medicines regulatory authority? Yes No

Is pricing regulated? Yes No

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

Do registration fees differ between:

■ 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: **Registration fee of Rs.5 for OPD consultation charged. Medicines not being charged**

Private retail sector

Are there maximum profit margins? Yes No

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 _____

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

If yes, please describe: _____

“Other” sector

Are there maximum profit margins? Yes No

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

■ Wholesale _____ %

■ Retail _____ %

Is there a maximum sales price? Yes No

Insurance, risk-sharing or prepayment schemes

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

If yes, please describe: _____ **ESIS, Private insurance companies, Jeevandayi - for poor patients** **monthly** **nonthly**

Are all medicines covered? Yes No

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

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

If yes, please specify: _____ Freedom fighters, senior citizens, BPL, Central & State Govt.-20%

Estimated percentage of popula:

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 all that apply:

Tuberculosis

Malaria

Oral rehydration salts

Family planning

Others, please specify: _____

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

Are all medicines supplied free at hospitals? Yes No

If no, are some free? Yes No

If yes, please specify: **Whatever medicines are available from hospital formulary**

Annex 2

National Pharmaceutical Sector form

Date _____

Population _____

Daily wage of lowe 2nd June 2005

Rate of exchange to US dollars on the first day of data collection

Sources of inform. Nagpur – 4051444: Akola-1629305: Nanded – 2868158: Aurangabad -
120 (State govt office)

43.45Rs to 1 Dollar (State Bank of
India, 9th December 2004)
Started work on 2nd June, 2005
Food and drug administration, Nagpur.
Maharashtra State Pharmacy Council,
State government offices,
Pharmacologist from State
Government Teaching Hospital, State
government diary-Government
printing and stationary and
publication dept.

Annexure 3 : Core List

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				
Artesunate tab 100 mg	Arsumax	Sanofi		20				
<i>Most sold generic equivalent</i>	Lorinate			20				
<i>Lowest price generic equivalent</i>				20				
Atenolol tab 50 mg	Tenormin	ICI/Nicholas						
<i>Most sold generic equivalent</i>	Aten	Copran		60				
<i>Lowest price generic equivalent</i>				60				
Beclometasone inhaler 50 mcg/ dose	Becoride Junior	GSK		1 inhaler: 200 doses			/dose	
<i>Most sold generic equivalent</i>	Beclate	Cipla		1 inhaler: 200 doses				
<i>Lowest price generic equivalent</i>				1 inhaler: 200 doses				
Captopril tab 25 mg	Capoten	BMS		60			/tab	
<i>Most sold generic equivalent</i>	Acetan	Wockhardt		60				
<i>Lowest price generic equivalent</i>				60				
Carbamazepine tab 200 mg	Tegrital	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	
<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				
Co-trimoxazole paed suspension (8+40) mg/mL	Bactrim	Nicholas		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		100			/tab	
<i>Most sold generic equivalent</i>	Calmpose	Ranbaxy		100				
<i>Lowest price generic equivalent</i>				100				

Diclofenac tab 25 mg	Voltarol	Novartis					
<i>Most sold generic equivalent</i>	Diclonac	Lupin					
<i>Lowest price generic equivalent</i>							
Fluconazole caps/tab 200 mg	Fumycin	Pfizer					
<i>Most sold generic equivalent</i>	Zocon	FDC					
<i>Lowest price generic equivalent</i>							
Fluoxetine caps/tab 20 mg	Prozac	Lilly		30			/tab
<i>Most sold generic equivalent</i>	Fludac	Zydus Cadila		30			
<i>Lowest price generic equivalent</i>				30			
Fluphenazine decanoate inj 25 mg/mL	Modecate	Sanofi-Winthrop/ BMS		1 ampoule			/mL
<i>Most sold generic equivalent</i>	Prolinate	Sun Pharma		1 ampoule			
<i>Lowest price generic equivalent</i>				1 ampoule			
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
<i>Most sold generic equivalent</i>	Hydride	Micro Labs		30			
<i>Lowest price generic equivalent</i>				30			
Indinavir caps 400 mg	Crixivan	MSD		180			/caps
<i>Most sold generic equivalent</i>	Indivan	Cipla		180			
<i>Lowest price generic equivalent</i>				180			
Losartan tab 50 mg	Lozitan	Wockhardt		30			/tab
<i>Most sold generic equivalent</i>	Losar	Unisearch		30			
<i>Lowest price generic equivalent</i>				30			
Lovastatin tab 20 mg	Pro HDL	Wockhardt		60			/tab
<i>Most sold generic equivalent</i>	Lostatin	Dr. Redy's		60			
<i>Lowest price generic equivalent</i>				60			
Metformin tab 500 mg	Glucophage	Merck		100			/tab
<i>Most sold generic equivalent</i>	Glyciphage	Franco-Ihdian		100			
<i>Lowest price generic equivalent</i>				100			
Nevirapine tab 200 mg	Viramune	Boehringer		60			/tab
<i>Most sold generic equivalent</i>	Nevimune	Cipla		60			
<i>Lowest price generic equivalent</i>				60			
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	Dilantin	Pfizer(PD)		100			/tab
<i>Most sold generic equivalent</i>	Eptoin	Knoll		100			
<i>Lowest price generic equivalent</i>				100			
Pyrimethamine with sulfadoxine tab (25+500) mg	Fansidar	Roche		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	Ventrolin	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			
Zidovudine caps 100 mg	Retrovir	GSK		100			/caps
<i>Most sold generic equivalent</i>	Zidovir	Cipla		100			
<i>Lowest price generic equivalent</i>				100			

*** 100 mg Artesunate and 25 mg Diclofenac was subsequently deleted**

Annexure 4 : Supplementary Drug List (8 drugs)

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
Chloroquin tab 250 mg	Resochin	Bayer					/tab	
<i>Most sold generic equivalent</i>	Lariago	IPCA						
<i>Lowest price generic equivalent</i>								
Benzathine Penicillin Inj 12 lac							/tab	
<i>Most sold generic equivalent</i>								
<i>Lowest price generic equivalent</i>								
Diclofenac Tab 50 mg	Voltarol	Novartis		100			/dose	
<i>Most sold generic equivalent</i>	Diclonac	Lupin		100				
<i>Lowest price generic equivalent</i>				100				
Enalapril Tab 5mg	Empril	Wokhardt					/tab	
<i>Most sold generic equivalent</i>	Envas	Cadila						
<i>Lowest price generic equivalent</i>								

Paracetamol Tab 500mg							/mL	
<i>Most sold generic equivalent</i>								
<i>Lowest price generic equivalent</i>								
Phenobarbitone Tab 30mg	Luminal	Bayer					/tab	
<i>Most sold generic equivalent</i>								
<i>Lowest price generic equivalent</i>								
Metronidazole Tab 400mg	Flagyl	Nicholas					/tab	
<i>Most sold generic equivalent</i>	Metrogyl	Unique						
<i>Lowest price generic equivalent</i>								
Rifampicin Cap 300mg	Rimactane	Novartis					/tab	
<i>Most sold generic equivalent</i>	R-cin	Lupin						
<i>Lowest price generic equivalent</i>								

Annexure 5: Letter from the Dean for extending help

To:

The Dean
Government Medical College,

Maharashtra.

1) Re: Request for data collection from medical stores / retail pharmacy of the hospital

Medicines, unlike other medical services, are sold commercially and most people pay for them out of their own pockets in absence of health insurance. There is little information about the costs of medicines and how they are priced in this country. Information on reasonable pricing will also help to free resources for improving health, widen access and improve health equity.


Therefore the World Health Organization(WHO) and the Health Action International(HAI) has funded a study “Monitoring Medicine Pricing – Maharashtra” proposed by Clinical Epidemiology Unit(CEU), Indira Gandhi Government Medical College(IGGMC), Nagpur. The data on costs of medicines when procured by public facilities and when sold in the retail pharmacies, will be collected. This work will contribute to better knowledge about the price differences in the country and internationally.

The survey team from IGGMC will consist of interviewing staff of 2 persons who will have a list of 30-40 important medicines. They will check the availability of the medicines and the prices they were procured or sold at. It will take an hour and the interviewers will come when the pharmacy is not busy.

This work is in accordance with methods promoted by the WHO and HAI and with the knowledge of the Director of Medical Education and Research, Mumbai and the Secretary, Medical Education and Drugs, Mantralay, Mumbai. The results of the survey will be made publicly available and the anonymity of individual pharmacies, medical stores and individual respondents will be strictly maintained.

I sincerely request you to help us collect this information by informing the appropriate authority of the pharmacy/medical stores or of your retail shop.

Sincerely

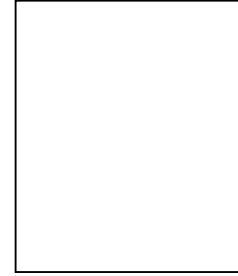

Dr.P.S.Pendharkar
Dean
Indira Gandhi Government Medical College,
Nagpur

Annexure 6: Letter of Introduction

To
The Pharmacists
Retail Shop / Medical Stores

Re: Request for data collection from medical stores / retail pharmacy of the hospital

Attached : Letter from Dean, Indira Gandhi Government Medical College, Nagpur.



Dear Sir or Madam:

A study “MonitotingMedicine Pricing – Maharashtra” supported by the World Health Organization (WHO) and the Health Action International (HAI) is being carried out by Clinical Epidemiology Unit (CEU), Indira Gandhi Government Medical College, (IGGMC) Nagpur.

In this study, information on costs of medicines will be obtained from your store. This work will contribute to better knowledge about the price differences in the country and internationally. It will also provide information on affordability of medicines.

This work is in accordance with methods promoted by the WHO and HAI and with the knowledge of the Director of Medical Education and Research, Mumbai and the Secretary, Medical Education and Drugs, Mantralay, Mumbai. The results of the survey will be made publicly available.

The anonymity of individual pharmacist, medical stores and individual respondents will be strictly maintained.

The above person Mr. _____ is a part of the team. He will ask you information on the availability and prices of 30-40 medicines. It will take an hour.

We request you to please help him in collecting this information.

Sincerely

Dr. Archana B. Patel
Director, Clinical Epidemiology Unit
Indira Gandhi Government Medical College,
Nagpur

Annexure 7: Standing/ Standard Operative Procedures

1. Protect confidentiality of all sources, documents and data under all circumstances.
2. All data collection has to be done personally at the specified facility and not delegated.
3. Always wear your ID on the person. Show the letter of introduction on arrival at the facility.
4. Do not visit any facility without prior local liaison and appointment of the convenience of the respondent.
5. Do not leave MPDC form with the respondent and do not provide photocopy of any filled document.
6. Do not change any name, formulation, and concentration in the MPDC form. Sign all overwriting/corrections on the MPDC form. Do not leave anything to memory. Write extra information in the diary.
7. Note the availability of surveyed medicine only if you actually see it in the facility. Note the price if it is in the specified dosage form and strength.
8. Remember that IB can **not** be LPG or MSG.
9. MSG name is provided in the MPDC form. If no other generic cheaper than MSG is available, note the MSG as LPG.
10. Even if MSG is costly than IB note the price in MSG.
11. Enter the data of LPG, which is actually available in the facility.
12. If no other generic other than IB is available then leave LPG blank.
13. Complete the MPDC form during the same visit. Protect the form in the plastic bag. FAX the completely filled form the same day of data collection.

14. Remember to contact Survey Supervisor or Survey Managers in case of any problem. It will be worthwhile to talk on mobile than going back to the facility again later.

15. Collect all the bills as the expenditure occurs, for reimbursement.

Annexure 8 : Reference Price list

Med. No.	Medicine Name (Name must be unique)	Medicine Strength	Dosage Form	Target Pack Size	Core List (yes/no)	2003 MSH* Unit Price (\$US)	Other 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			105.2576	4.2103
2	Amitriptyline	25 mg	cap/tab	100	yes	\$0.0076			33.0220	0.3302
3	Amoxicillin	250 mg	cap/tab	21	yes	\$0.0172			15.6941	0.7473
4	Artesunate	100 mg	cap/tab	20	yes	\$0.5599			486.5531	24.3277
5	Atenolol	50 mg	cap/tab	60	yes	\$0.0093			24.2451	0.4041
6	Beclometasone inhaler	0.05 mg/dose	dose	200	yes	\$0.0169			146.8610	0.7343
7	Bezathine penicillin	1.2 MU/vial	inj	1	no	\$0.1519			6.6001	6.6001
8	Captopril	25 mg	cap/tab	60	yes	\$0.0264			68.8248	1.1471
9	Carbamazepine	200 mg	cap/tab	150	yes	\$0.0199			129.6983	0.8647
10	Ceftriaxone injection	1 g/vial	inj	1	yes	\$2.5573			111.1147	111.1147
11	Chloroquine	250 mg	tab/cap	100	no	\$0.0080			34.7600	0.3476
12	Ciprofloxacin	500 mg	cap/tab	1	yes	\$0.0318			1.3817	1.3817
13	Co-trimoxazole suspension	8+40 mg/ml	suspension	70	yes	\$0.0036			10.9494	0.1564
14	Diazepam	5 mg	cap/tab	100	yes	\$0.0035			15.2075	0.1521
15	Diclofenac 2	50 mg	cap/tab	100	no	\$0.0049			21.2905	0.2129
16	Enalapril	5mg	cap/tab	100	no	\$0.0330			143.3850	1.4339
17	Fluconazole	200 mg	cap/tab	30	yes	\$0.1205			157.0718	5.2357
18	Fluoxetine	20 mg	cap/tab	30	yes	\$0.0295			38.4533	1.2818
19	Fluphenazine injection	25 mg/ml	inj	1	yes	\$0.4866			21.1428	21.1428
20	Glibenclamide	5 mg	cap/tab	60	yes	\$0.0041			10.6887	0.1781
21	Hydrochlorothiazide	25 mg	cap/tab	30	yes	\$0.0035			4.5623	0.1521
22	Indinavir	400 mg	cap/tab	180	yes	\$0.3479			2720.9259	15.1163
23	Losartan	50 mg	cap/tab	30	yes	\$0.9449			1231.6772	41.0559
24	Lovastatin	20 mg	cap/tab	60	yes	\$0.0986			257.0502	4.2842
25	Metformin	500 mg	cap/tab	100	yes	\$0.0178			77.3410	0.7734
26	Metronidazole	400 mg	cap/tab	100	no	\$0.0042			18.2490	0.1825
27	Nevirapine	200 mg	cap/tab	60	yes	\$0.2344			611.0808	10.1847
28	Nifedipine Retard	20 mg	cap/tab	100	yes	\$0.0216			93.8520	0.9385
29	Omeprazole	20 mg	cap/tab	30	yes	\$0.1961			255.6164	8.5205
30	Paracetamol	500 mg	cap/tab	100	no	\$0.0029			12.6005	0.1260
31	Phenobarbitone	30mg	cap/tab	100	no	\$0.0037			16.0765	0.1608
32	Phenytoin	100 mg	cap/tab	100	yes	\$0.0071			30.8495	0.3085
33	Ranitidine	150 mg	cap/tab	60	yes	\$0.0249			64.9143	1.0819
34	Rifampicin	300mg	cap/tab	100	no	\$0.0703			305.4535	3.0545
35	Salbutamol inhaler	0.1 mg/dose	dose	200	yes	\$0.0097			84.2930	0.4215
36	Sulfadoxine-pyrimethamine	500+25 mg	cap/tab	3	yes	\$0.0257			3.3500	1.1167
37	Zidovudine	100 mg	cap/tab	150	yes	\$0.1855			1208.9963	8.0600

Annexure 9 : Summary of availability of all medicines in private and procurement sector

Medicine Name	Core List (yes/no)	Brand		Most Sold		Lowest Price	
		Public (n=19)	Private (n=48)	Public (n=19)	Private (n=48)	Public (n=19)	Private (n=48)
Aciclovir	yes	0.0%	27.1%	0.0%	62.5%	0.0%	66.7%
Amitriptyline	yes	0.0%	58.3%	0.0%	8.3%	10.5%	31.3%
Amoxicillin	yes	0.0%	14.6%	0.0%	66.7%	52.6%	91.7%
Atenolol	yes	0.0%	35.4%	0.0%	93.8%	47.4%	97.9%
Beclometasone inhaler	yes	0.0%	0.0%	0.0%	10.4%	0.0%	10.4%
Bezathine penicillin	no	0.0%	0.0%	0.0%	50.0%	21.1%	52.1%
Captopril	yes	0.0%	0.0%	0.0%	10.4%	0.0%	12.5%
Carbamazepine	yes	0.0%	77.1%	0.0%	25.0%	42.1%	37.5%
Ceftriaxone injection	yes	0.0%	0.0%	0.0%	66.7%	10.5%	75.0%
Chloroquine	no	0.0%	41.7%	0.0%	91.7%	78.9%	97.9%
Ciprofloxacin	yes	0.0%	12.5%	0.0%	62.5%	42.1%	95.8%
Co-trimoxazole suspension	yes	0.0%	41.7%	0.0%	68.8%	31.6%	75.0%
Diazepam	yes	0.0%	45.8%	0.0%	47.9%	21.1%	52.1%
Diclofenac 2	no	0.0%	0.0%	0.0%	22.9%	52.6%	66.7%
Enalapril	no	0.0%	0.0%	0.0%	62.5%	21.1%	72.9%
Fluconazole	yes	0.0%	8.3%	0.0%	31.3%	0.0%	39.6%
Fluoxetine	yes	0.0%	0.0%	0.0%	43.8%	0.0%	47.9%
Fluphenazine injection	yes	0.0%	0.0%	0.0%	4.2%	0.0%	4.2%
Glibenclamide	yes	0.0%	85.4%	0.0%	45.8%	42.1%	47.9%
Hydrochlorothiazide	yes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Indinavir	yes	0.0%	0.0%	0.0%	2.1%	5.3%	2.1%
Losartan	yes	0.0%	2.1%	0.0%	50.0%	5.3%	50.0%
Lovastatin	yes	0.0%	0.0%	0.0%	10.4%	10.5%	10.4%
Metformin	yes	0.0%	2.1%	0.0%	77.1%	21.1%	85.4%
Metronidazole	no	0.0%	81.3%	0.0%	66.7%	21.1%	68.8%
Nevirapine	yes	0.0%	0.0%	0.0%	8.3%	0.0%	8.3%
Nifedipine Retard	yes	0.0%	0.0%	0.0%	75.0%	15.8%	75.0%
Omeprazole	yes	0.0%	0.0%	0.0%	56.3%	36.8%	91.7%
Paracetamol	no	0.0%	81.3%	0.0%	12.5%	94.7%	43.8%
Phenobarbitone	no	0.0%	0.0%	0.0%	60.4%	21.1%	62.5%
Phenytoin	yes	5.3%	43.8%	0.0%	60.4%	31.6%	60.4%
Ranitidine	yes	0.0%	81.3%	0.0%	64.6%	42.1%	83.3%
Rifampicin	no	0.0%	8.3%	0.0%	54.2%	0.0%	54.2%
Salbutamol inhaler	yes	0.0%	31.3%	10.5%	70.8%	10.5%	72.9%
Sulfadoxine-pyrimethamine	yes	0.0%	0.0%	0.0%	47.9%	10.5%	64.6%
Zidovudine	yes	0.0%	0.0%	0.0%	6.3%	0.0%	6.3%

Annexure 10: Comparison of Procurement and Retail of all medicines (n=37): MPRs* of Brand, Most Sold and Lowest Price

Medicine Name	Core List (yes/no)	Brand		Most Sold		Lowest Price	
		Procurement (n=19)	Private (n=48)	Procurement (n=19)	Private (n=48)	Procurement (n=19)	Private (n=48)
Aciclovir	yes		1.69		1.34		1.33
Amitriptyline	yes		5.81		4.28		4.35
Amoxicillin	yes		4.62		5.64	1.34	5.10
Atenolol	yes		5.80		5.08	0.41	3.39
Beclometasone inhaler	yes				1.24		1.24
Bezathine penicillin	no				1.82	1.45	1.82
Captopril	yes				3.15		3.16
Carbamazepine	yes		1.88		2.04	0.81	1.77
Ceftriaxone injection	yes				0.67		0.66
Chloroquine	no		1.93		1.65	0.93	1.65
Ciprofloxacin	yes		4.49		6.24	1.10	2.67
Co-trimoxazole suspension	yes		1.29		1.29	0.83	1.26
Diazepam	yes		13.24		9.46	0.90	9.46
Diclofenac 2	no				5.40	0.57	6.01
Enalapril	no				1.67	0.16	1.57
Fluconazole	yes		6.32		8.24		7.74
Fluoxetine	yes				2.36		2.24
Fluphenazine injection	yes						
Glibenclamide	yes		3.77		4.31	0.38	4.31
Hydrochlorothiazide	yes						
Indinavir	yes						
Losartan	yes				0.11		0.11
Lovastatin	yes				1.32		1.32
Metformin	yes				1.05	0.22	0.99
Metronidazole	no		3.55		3.68	1.81	3.68
Nevirapine	yes				1.89		1.89
Nifedipine Retard	yes				1.47		1.47
Omeprazole	yes				0.52	0.13	0.49
Paracetamol	no		6.59		6.09	1.14	5.71
Phenobarbitone	no				7.01	0.69	7.08
Phenytoin	yes		4.38		4.26	0.35	4.23
Ranitidine	yes		0.49		0.49	0.35	0.49
Rifampicin	no		1.41		1.22		1.22
Salbutamol inhaler	yes		0.94		0.93		0.93
Sulfadoxine-pyrimethamine	yes				1.40		1.40

