Measuring Medicine Prices and Availability – a new Methodology and few Indian Survey Results

Dr. Anita Kotwani
Department of Pharmacology
Vallabhbhai Patel Chest Institute
University of Delhi, Delhi
Global problems of medicines prices

• Medicines have variable and generally high prices, are unaffordable by poor patients and a major burden on government budget.

• Unlike people in developed countries, people in developing countries pay 'out of pocket' for health care.

• Price of a medicine has impact on affordability and therefore access to essential medicines.

• Many low income countries do not have pricing policies.

….but, the prices of medicines are well above their production costs - so there is great scope for reduction
Need to measure the price of medicines

• Little is known about the prices people pay for medicines and how the retail prices are set

• Reliable information is required for more favourable purchasing agreements, better domestic distribution and pricing policies implementation/monitoring

• Improved price transparency empowers actors concerned with health and medicines policy

• Sound data influence sound policies and more affordable medicines
Background to the WHO-HAI project on Medicine Prices

- Absence of a standard methodology to monitor medicine prices, to obtain reliable, up-to-date information on drug prices and price comparison within countries

- Methodological difficulty of making international comparisons

- WHO-Public Interest NGO Roundtable on opportunity to launch such an initiative

- WHO in collaboration with Health Action International (HAI) published a manual in 2003 “Medicine Prices: a new approach to measurement” after field testing it in 9 countries
Designed to inform on:

• What price do people pay for essential medicines (core drugs)?

• Do the prices of these drugs vary in different sectors, e.g., public, private and other sector?

• Do the prices of medicines vary in different regions of a State/country?

• What is the difference in prices of originator brands and generically equivalent medicines?

• How do the prices of medicines in the different sectors of the State compare to international reference price (IRP)?

• What is the availability of the medicines in different sectors?

• How affordable are medicines for ordinary people?

• What is the level of various mark-ups which contribute to their retail prices?
Methodology – technical basis of the survey

- Collecting National Pharmaceutical Sector Data – to have a clear understanding of how pharmaceutical services are organized

- Identifying Sectors – The survey measures medicine prices in different sectors, public, private and ‘other’ sectors

- Sampling – Systematic sampling of medicine outlets in at least 4 areas, with a minimum of 10 pharmacies per area
• **Selecting medicines** – A short list of 30 “core” list of commonly used medicines in a predetermined strength and dosage form has been selected

• **Supplementary list of medicines** – to be included as per the local needs

• **Collecting data on the price and availability** of medicines. For each medicine data collectors collect for Innovator Brand (IB), Most Sold Generic (MSG) and Lowest Priced Generic equivalent (LPG, available at each facility) in each health facility and pharmacy

• **Affordability** is measured in terms of the daily wage of the lowest paid government worker

• **Price components** – All components of price from manufacturer to retailer are identified
<table>
<thead>
<tr>
<th>Generic name</th>
<th>Dose</th>
<th>Dosage form</th>
<th>Medicine category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aciclovir</td>
<td>200 mg</td>
<td>tablet</td>
<td>Antiviral</td>
</tr>
<tr>
<td>Amitriptyline</td>
<td>25 mg</td>
<td>tablet</td>
<td>Antidepressant</td>
</tr>
<tr>
<td>Amoxicillin</td>
<td>250 mg</td>
<td>capsule/tablet</td>
<td>Antibacterial</td>
</tr>
<tr>
<td>Artesunate</td>
<td>100 mg</td>
<td>tablet</td>
<td>Antimalarial</td>
</tr>
<tr>
<td>Atenolol</td>
<td>50 mg</td>
<td>tablet</td>
<td>Antihypertensive</td>
</tr>
<tr>
<td>Beclometasone</td>
<td>50 mcg per dose</td>
<td>inhaler</td>
<td>Antiasthmatic</td>
</tr>
<tr>
<td>Captopril</td>
<td>25 mg</td>
<td>tablet</td>
<td>Antihypertensive</td>
</tr>
<tr>
<td>Carbamazepine</td>
<td>200 mg</td>
<td>tablet</td>
<td>Antiepileptic</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>1 g</td>
<td>powder for injection</td>
<td>Antibacterial</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>500 mg</td>
<td>tablet</td>
<td>Antibacterial</td>
</tr>
<tr>
<td>Co-trimoxazole</td>
<td>(8 + 40) mg/mL</td>
<td>paediatric suspension</td>
<td>Antibacterial</td>
</tr>
<tr>
<td>Diazepam</td>
<td>5 mg</td>
<td>tablet</td>
<td>Anxiolytic</td>
</tr>
<tr>
<td>Diclofenac</td>
<td>25 mg</td>
<td>tablet</td>
<td>Antiinflammatory</td>
</tr>
<tr>
<td>Fluconazole</td>
<td>200 mg</td>
<td>tablet/capsule</td>
<td>Antifungal</td>
</tr>
<tr>
<td>Fluoxetine</td>
<td>20 mg</td>
<td>tablet/capsule</td>
<td>Antidepressant</td>
</tr>
<tr>
<td>Fluphenazine decanoate</td>
<td>25 mg/ml</td>
<td>injection</td>
<td>Antipsychotic</td>
</tr>
<tr>
<td>Glibenclamide</td>
<td>5 mg</td>
<td>tablet</td>
<td>Antidiabetic</td>
</tr>
<tr>
<td>Hydrochlorothiazide</td>
<td>25 mg</td>
<td>tablet</td>
<td>Antihypertensive</td>
</tr>
<tr>
<td>Indinavir</td>
<td>400 mg</td>
<td>capsule</td>
<td>Antiviral</td>
</tr>
<tr>
<td>Losartan</td>
<td>50 mg</td>
<td>tablet</td>
<td>Antihypertensive</td>
</tr>
<tr>
<td>Lovastatin</td>
<td>20 mg</td>
<td>tablet</td>
<td>Serum lipid reducing</td>
</tr>
<tr>
<td>Metformin</td>
<td>500 mg</td>
<td>tablet</td>
<td>Antidiabetic</td>
</tr>
<tr>
<td>Nevirapine</td>
<td>200 mg</td>
<td>tablet</td>
<td>Antiviral</td>
</tr>
<tr>
<td>Nifedipine retard</td>
<td>20 mg</td>
<td>retard tablet</td>
<td>Antihypertensive</td>
</tr>
<tr>
<td>Omeprazole</td>
<td>20 mg</td>
<td>capsule</td>
<td>Antacid</td>
</tr>
<tr>
<td>Phenytoin</td>
<td>100 mg</td>
<td>tablet</td>
<td>Antiepileptic</td>
</tr>
<tr>
<td>Pyrimethamine with sulfadoxine</td>
<td>(500+25) mg</td>
<td>tablet</td>
<td>Antimalarial</td>
</tr>
<tr>
<td>Ranitidine</td>
<td>150 mg</td>
<td>tablet</td>
<td>Antacid</td>
</tr>
<tr>
<td>Salbutamol</td>
<td>0.1 mg per dose</td>
<td>inhaler</td>
<td>Antiasthmatic</td>
</tr>
<tr>
<td>Zidovudine</td>
<td>100 mg</td>
<td>capsule</td>
<td>Antiviral</td>
</tr>
</tbody>
</table>
Data analysis & interpretation

• Data entry is done in an excel workbook and it generates some automated analysis.

• Medicine prices are expressed in comparison to an IRP to facilitates international comparisons.

• Reference price acts as an external standard for evaluating the local price. WHO-HAI recommends using the MSH price (http://erc.msh.org).

• Price are expressed in Median Price Ratio (MPR).
• The MPR is the median unit price across the facilities surveyed in a sector (in local currency) divided by the international reference price (also in local currency)

• Hence, the MPR is a unit of measurement of price that ensures a standard approach for comparisons – the higher the MPR, the higher the price

• Automated summaries of data permit data analysis for price and availability comparison within sector, comparison between sector, treatment affordability and price composition
Rajasthan Survey

• The first survey was conducted (funded by WHO-HAI) in Rajasthan for measuring prices and availability of essential medicines from April-June 2003.

• Prices and availability of 36 medicines - 27 from the core list and 9 medicines as supplementary list were analyzed.

• For each medicine data was collected for IB, MSG and LPG.

• Data was collected from three sectors – public, private and co-operative sector.

• Data was collected from Jaipur (State capital) and three other randomly selected regions – Ajmer, Bikaner and Kota.
• In each area, 5 public facilities, 5 private and 5 co-operative pharmacies near the public facility were surveyed.

• Hence, a total of 20 public facilities, 20 private pharmacies and 20 co-operative pharmacies were surveyed in four regions of Rajasthan.
Rajasthan Results

• Public Sector – Mainly the LPG equivalents were available and the median MPR for procurement was acceptable – 0.96

• Only a few categories of patients, e.g., Below Poverty Line (BPL) card holders, senior citizens, freedom fighters, destitute, widows and ex-service men are entitled for free medicines in public sector

• Private Sector – The median MPR for IB, MSG and LPG was 2.81, 2.72 and 1.83.

• Not much difference in the price of IB and MSG but LPG was found to be 33% cheaper than MSG.
MPRs of few interesting medicines in Public and Private Sector

![Graph showing the procurement price of various medicines.](image-url)
Few of the drugs were priced very high in the Private sector compared to Procurement price.
# Median Availability of medicines in Public, Private and Co-operative Sectors

<table>
<thead>
<tr>
<th></th>
<th>Public sector (n=20)</th>
<th>Private sector (n=20)</th>
<th>Co-operative sector (n=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IB</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>MSG</td>
<td>0.0%</td>
<td>82.5%</td>
<td>72.5%</td>
</tr>
<tr>
<td>LPG</td>
<td>40.0%</td>
<td>95.0%</td>
<td>90.0%</td>
</tr>
</tbody>
</table>
Affordability was measured in terms of daily wage (INR130) of lowest government worker

- **Affordability of following 6 diseases in the private sector**
  
  - Peptic ulcer (ranitidine tab 150mg x 2 for 30 days)
  - Diabetes (glibenclamide tab 5 mg x 2 for 30 days)
  - Hypertension (hydrochlorothiazide tab 25 mg daily for 30 days)
  - Pediatric Respiratory Infection (co-trimoxazole susp 10ml daily for 7 days)
  - Gonorrhoea (ciprofloxacin 500mg tab)
  - Asthma (salbutamol inhaler 1 inhaler - 0.1 mg/dose, 200 doses)
Conclusions from Rajasthan Survey

• The government of Rajasthan purchases medicines at a reasonable price for patients who are eligible for free medicines at public health facilities but the availability of medicines is low.

• Majority of population purchase medicines from the private sector almost half the medicines surveyed were priced less than twice the international reference price.

• Price of albendazole, diazepam, and diclofenac in the private sector was 10, 26 and 14 times the procurement price in the public sector, indicating very high margins for wholesalers and retailers.

• In India, not much regulation on the prices of medicines and government rely mainly on the forces of market competition.
• The lowest price generics that are otherwise manufactured in the country were generally not found at the pharmacies surveyed.

• There was not much variation in price of the same medicine in different geographical areas of Rajasthan.

• Availability of drugs for HIV/AIDS was poor in all sectors.

• Treatment of diseases looks affordable but a very small percentage is employed in government sector, salary is very less in unorganized sector, treatment challenging for unemployed and if multiple illnesses in a family or the earning member is ill.
More surveys to validate the results

• WHO-HAI conducted a pre survey workshop at Hyderabad, India in April’04

• In 2.5 days workshop detail methodology and field work was conducted

• Participants submitted their proposal and 6 proposals were cleared and funded by WHO-HAI, Guided by Richard Laing (WHO), Marg Ewen (HAI) and Technical coordinator, Anita Kotwani
Six more surveys were conducted (Sept’04 – Jan’05) with WHO-HAI Methodology

<table>
<thead>
<tr>
<th>State/City</th>
<th>Districts</th>
<th>Public Facilities</th>
<th>Private Facilities</th>
<th>No. of Core Drugs Surveyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chennai</td>
<td>4</td>
<td>20</td>
<td>40</td>
<td>27</td>
</tr>
<tr>
<td>Harayana</td>
<td>6</td>
<td>30</td>
<td>30</td>
<td>27</td>
</tr>
<tr>
<td>Karnataka</td>
<td>8</td>
<td>24</td>
<td>40</td>
<td>27</td>
</tr>
<tr>
<td>Maharashtra(1)</td>
<td>12</td>
<td>60</td>
<td>60</td>
<td>27</td>
</tr>
<tr>
<td>Maharashtra(2)</td>
<td>4</td>
<td>20</td>
<td>48</td>
<td>28</td>
</tr>
<tr>
<td>West Bengal</td>
<td>7</td>
<td>26</td>
<td>35</td>
<td>21</td>
</tr>
</tbody>
</table>
Public Sector Procurement Price

• The median MPRs in ascending order were –
  • Chennai - 0.27
  • Haryana – 0.33
  • Maharashtra(1) – 0.41
  • Maharashtra (2) – 0.41
  • West Bengal - 0.38
  • Karnataka – 0.48
Availability in Public Sector

• The median availability for core medicines was –
  • West Bengal – 0.0%
  • Maharashtra (1) – 3.3%
  • Haryana – 10.0%
  • Maharashtra (2) – 10.5%
  • Karnataka – 12.5%
  • Chennai – 30.0%
Private Sector Medicine Price

- The median MPRs of -
  - IB ranged from 1.74 – 4.38
  - MSG ranged from 1.3 to 1.69
  - LPG ranged from 1.3 to 1.84

- There was not much variation in price of medicine from one state to another
- Difficult to find out the mark ups, not much transparency in the system
Availability in Private Sector

• The median availability of IB, MSG and LPG was found to be –

  • 0.0 %, 95.0 % and 95.0% in Chennai

  • 0.0%, 50.0% and 60.0 % in Haryana

  • 2.5 %, 50.0% and 62.5 % in Karnataka

  • 3.3%, 66.7 % and 73.3 % in Maharashtra (1)

  • 2 %, 47.9 % and 51.0 % in Maharashtra (2)

  • 22.9 %, 74.3 % and 77.1 % in West Bengal
Important findings observed for certain individual medicines

- The average MPRs for IB, MSG and the LPG of ciprofloxacin in private pharmacies was 4.47, 6.1 and 3.38 respectively; the average procurement price in the public sector was 1.1

- Ranitidine - another ‘scheduled’ drug
  The average MPR for all types - IB, MSG and LPG - was 0.48 and the average procurement MPR in the public sector was 0.31

- Procurement price of diazepam was 0.50, whereas the average MPR for the LPG in the private sector was 9.2
Conclusions of the surveys

• Procurement price is very good in public sector at all sites.
• Availability is poor in public sector.
• Poor patients are forced to buy medicines from private sector due to non availability in public sector.
• Prices of certain medicines are high in private sector.
• Margins of certain medicines in private sector are very high – needs further study.
Takeaways…

• Methodology is simple, reliable and robust for collecting and analyzing medicine prices across healthcare sectors both within and between countries.

• Surveillance of medicine prices using this methodology is a useful tool for international medicine price comparison.

• Baseline data generated from these surveillance could be used by regulatory authorities and policy makers for suitable interventions to decrease medicine prices and increase availability and affordability of essential medicines.

• Medicine prices should be published regularly so that people are informed about medicine prices.
Thank you!