Price components and access to medicines in Delhi, India

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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>API</td>
<td>active pharmaceutical ingredient</td>
</tr>
<tr>
<td>C&amp;F</td>
<td>carrying and forwarding</td>
</tr>
<tr>
<td>CG</td>
<td>central government</td>
</tr>
<tr>
<td>CGHS</td>
<td>Central Government Health Scheme</td>
</tr>
<tr>
<td>CPA</td>
<td>Central Procurement Agency</td>
</tr>
<tr>
<td>CST</td>
<td>central sales tax</td>
</tr>
<tr>
<td>DCGI</td>
<td>Drug Controller General of India</td>
</tr>
<tr>
<td>DIID</td>
<td>Department for International Development, UK</td>
</tr>
<tr>
<td>DHS</td>
<td>Directorate of Health Services</td>
</tr>
<tr>
<td>DPCO</td>
<td>Drug Price Control Order</td>
</tr>
<tr>
<td>EML</td>
<td>Essential medicines list</td>
</tr>
<tr>
<td>FDC</td>
<td>fixed dose combination</td>
</tr>
<tr>
<td>GMP</td>
<td>Good manufacturing practices</td>
</tr>
<tr>
<td>HAI</td>
<td>Health Action International</td>
</tr>
<tr>
<td>HSCC</td>
<td>Hospital Services Consultancy Cooperation</td>
</tr>
<tr>
<td>INN</td>
<td>International non-proprietary name</td>
</tr>
<tr>
<td>MAPE</td>
<td>maximum allowable post-manufacturing expenses</td>
</tr>
<tr>
<td>MCD</td>
<td>Municipal Corporation of Delhi</td>
</tr>
<tr>
<td>MoC&amp;F</td>
<td>Ministry of Chemicals and Fertilizers</td>
</tr>
<tr>
<td>MoH&amp;FW</td>
<td>Ministry of Health and Family Welfare</td>
</tr>
<tr>
<td>MRP</td>
<td>Maximum retail price</td>
</tr>
<tr>
<td>MSD</td>
<td>Medical Stores Depot</td>
</tr>
<tr>
<td>MSO</td>
<td>Medical Stores Organization</td>
</tr>
<tr>
<td>NA</td>
<td>not available</td>
</tr>
<tr>
<td>NCT</td>
<td>National Capital Territory</td>
</tr>
<tr>
<td>NDMC</td>
<td>New Delhi Municipal Corporation</td>
</tr>
<tr>
<td>NGO</td>
<td>nongovernmental organization</td>
</tr>
<tr>
<td>NPPA</td>
<td>National Pharmaceutical Pricing Authority</td>
</tr>
<tr>
<td>PTR</td>
<td>price to retailer</td>
</tr>
<tr>
<td>PTS</td>
<td>price to stockist</td>
</tr>
<tr>
<td>Rs</td>
<td>rupees</td>
</tr>
<tr>
<td>QA</td>
<td>quality assurance</td>
</tr>
<tr>
<td>RTS</td>
<td>refused to supply</td>
</tr>
<tr>
<td>S&amp;P</td>
<td>Stores &amp; Purchase office</td>
</tr>
<tr>
<td>VAT</td>
<td>value added tax</td>
</tr>
<tr>
<td>VED</td>
<td>Vital, Essential, Desirable</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
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EXECUTIVE SUMMARY

Background: India is well-known for its robust manufacturing sector, with dozens of manufacturers for each medicine. The government, at both central and state levels, shares responsibility for health care provision to the population. However, despite the fact that the government monitors the price of some medicines, WHO/HAI Medicine Price surveys conducted in six states in India between 2003 and 2005 showed low availability in the public sector and high out-of-pocket payments by patients and their families in the private sector (1, 2). These surveys also showed an unexpected variation in prices between sectors, among therapeutic equivalents, and between scheduled and non-scheduled medicines.

In order to investigate the relationship between medicine prices, price composition and pricing policy, a price components survey of medicine prices was conducted in Delhi in February and March 2007.

Methodology: Eight target medicines were selected: amoxicillin, atorvastatin, ciprofloxacin, diazepam, omeprazole, ranitidine, salbutamol and ceftriaxone injection.

Interviews were conducted with key informants in the Ministry of Health & Family Welfare (MoH&FW), Ministry of Chemicals and Fertilizers (MC&F), the Drug Controller General of India (DCGI), government officials in the National Capital Territory (NCT) of Delhi, Municipal Corporation of Delhi (MCD) and New Delhi Municipal Corporation (NDMC). Data on public sector procurement systems was collected from 4 public health care providers in NCT Delhi: Central Government (CG), the Directorate of Health Services (DHS) of the government of NCT Delhi, MCD and NDMC. In the private sector, medicines move from the manufacturer to either a forwarding agent or a super-stockist; they then go to wholesalers who sell them to retailers. Data was collected from 3 manufacturers, 1 super-stockist/wholesaler, 4 wholesalers and 7 retailers.

Findings: There was a high level cooperation from all contacts in the public and private sectors. Public sector procurement departments were transparent in sharing information; private sector shared their purchase price, their selling price and trade discount schemes.

In the public sector, the survey found that NCT Delhi, MCD and NDMC have functioning procurement systems. However NCT tertiary units reported erratic supply which result in more expensive local purchases to replace stock. Procurement for the central government is handled by outside entities who charge a processing fee. The Central Government dispensaries also use significant amounts of proprietary medicines, which results in large expenditures.

In the private sector, numerous trade schemes were found between manufacturer, wholesaler and retailer: these schemes chiefly benefit the manufacturer and the retailer; savings are not passed on to patients. Trade schemes take the form of “buy 10 get 1 free” (a 9.09% discount) or “buy 7 get 3 free” (a 30% discount). Schemes were found for 4 of the 8 medicines surveyed: amoxicillin, ciprofloxacin, ceftriaxone and omeprazole. Retail markups were found to be higher than the established margin; wholesale markups matched the established rates more closely.
Price variations in the manufacturer’s selling price between branded and branded-
generic equivalents suggest that some branded medicines are priced well above their 
true manufacturing cost; instead prices are set at what the market will bear.

Taxes are levied on medicines both during manufacturing and distribution; these include 
VAT, excise tax and an education cess. All public procurement systems pay 4% VAT; 
one also pays 4% city sales tax.

Recommendations: Priority recommendations arising from the survey include:
- Government to increase transparency in manufacturer-set MRP.
- Government to remove all tariffs on medicines to increase access.
- Develop a policy for generic substitution and generic prescribing.
- Establish a working group (from MoH&FW, MoC&F, DCGI, private sector, 
  academics, and NGOs) to explore ways to bring all essential medicines onto 
  scheduled list.
- Establish links between procurement offices of central government, DHS, MCD and 
  NDMC to share information on procurement and reduce replicated effort.
- Central government to investigate use of proprietary medicines and local purchases.
- All public procurement bodies to enforce reliable delivery from suppliers.
- Conduct a WHO-HAI Medicine Prices and Availability survey in NCT Delhi.
1. INTRODUCTION

The price paid for a medicine is made up of a number of price components, including the manufacturer's selling price and all costs for freight, taxes, wholesale and retail markups, and storage and distribution. Price components are a concern for all those involved in public health and access to medicines, whether the government, a nongovernmental organization (NGO), a social insurance plan, the prescribers or the patients. Price components come from a variety of sources, including: government-collected tariffs; markups collected by middlemen to meet their overheads and distribution expenses; and inefficient procedures in procurement.

India is well-known for its robust manufacturing sector, with dozens of manufacturers for each medicine. The government, at both central and state levels, shares responsibility for health care provision to the population. The prices of 74 medicines ("scheduled medicines") are set using a standard pricing formula and prices are monitored by the government. For other non-schedule medicines there is limited government price monitoring; open-market competition is believed to keep medicines prices 'in check'.

WHO/HAI Medicine Price Surveys conducted in six states in India showed low availability in the public sector and high out-of-pocket payments by patients and their families in the private sector (1, 2). These surveys also showed an unexpected variation in prices between sectors, among therapeutic equivalents, and between scheduled and non-scheduled medicines.

In order to investigate the relationship between medicine prices, price composition and pricing policy, a price components survey of medicine prices was conducted in Delhi.

1.1 Background: India

India has a population of approximately 1.1 billion (3), living in 28 states, 6 union territories, and the National Capital Territory of Delhi (NCT Delhi). The annual mean per capita income for India in 2004-2005 was Rs 19297 (4) (£234).

NCT Delhi's population is over 180 million. Food and waterborne diseases (bacterial diarrhea, hepatitis A and typhoid fever) and vector borne diseases (dengue fever, malaria) are widespread, and HIV/AIDS is a growing concern. Across the country, people are living longer: as life expectancy goes up, so does the incidence of chronic diseases such as diabetes and hypertension.

1.2 Healthcare in NCT Delhi and access to medicines

The National Capital Territory of Delhi (NCT Delhi) has its own elected government and a status between a state and a union territory. Public sector health care in NCT Delhi is delivered by four entities: the central government under the Ministry of Health and Family Welfare (MoH&FW), the Directorate of Health Services (DHS) in the government of NCT Delhi and two public sector providers in Delhi city – the Municipal Corporation of Delhi (MCD) and New Delhi Municipal Corporation (NDMC).

In all public sector facilities, medicines are provided for free. According to the WHO in India, only about 20% of the population access healthcare through the public sector (5). There is a small NGO sector, comprised mostly of faith-based facilities. The remaining
80% of the Indian health care system is characterized by high out-of-pocket payments by patients and their families.

The seven Indian Medicine Prices surveys conducted by WHO and HAI between 2003 and 2005 demonstrated that there is little or no transparency in medicine price components in India. They revealed significant mark-ups in the private sector and low availability in the public sector. The surveys also found significant pricing differences for some generic medicines between the private and public sectors.

1.3 Study objectives
The price component survey in NCT Delhi aimed to investigate the discrepancies discovered during the Medicine Prices surveys. In addition are the objectives listed below:

- At the central government level: to examine the relationship between medicine price components and pricing structures. Specifically of interest is the difference between medicines whose prices are set by the National Pharmaceutical Pricing Authority and those medicines whose prices are not regulated.
- At the Delhi state level: to examine how price components relate to pricing differences between the public and the private sector.
- To investigate what price components occur in the public sector supply chain.
- To study the efficiency of public sector procurement departments.
- To train local and international colleagues in the price component methodology.

1.4 Report outline
This report is organized in the following manner. Section 2 provides background information on medicines and medicine pricing in the Indian context. Section 3 describes the procurement system in each of the four, surveyed public sector health care providers. It also explains the distribution lines for medicines in the private sector, including between manufacturer, wholesaler and retailer. Section 4 describes the survey methodology. Section 5 reports on survey findings. Section 6 offers a discussion of several issues revealed during the surveys. Section 7 provides recommendations for action and suggestions of future research. Section 8 draws conclusions of the survey and the findings.
2. MEDICINES AND MEDICINE PRICING IN INDIA

This section provides background information on medicines, the use of brand names, and medicine pricing in India.

2.1 Branded and branded-generic medicines; combination medicines

India has a substantial and competitive drug manufacturing industry. Until 2005, the Indian regulatory system used a system of process patents which encouraged the growth of India’s generics industry. There are very few imported brands available – they are limited to recently developed, specialized medicines such as anti-cancer medicines.

Medicines in India are known as “branded” and “branded-generics”; because all companies want to generate name recognition for their product, all products carry a brand (trade) name. Branded medicines are manufactured by a multinational or an Indian manufacturer of good repute. They are marketed by the manufacturer’s medical representatives to prescribers, often by means of incentives. Branded medicines are more popular and are the most-sold brands in India.

“Branded-generics” more closely resemble what are globally referred to as ‘generics’. Branded-generic manufacturers sometimes choose not to market the medicines themselves, instead selling their medicines at a much lower rate to a distributor, who in turn sells to retail shops. Branded-generic medicines have less name recognition, and it falls on the retail pharmacy to promote the medicine. The retail profit is larger – but the pharmacist must do all the work of convincing the patient to buy the medicine.

It is not uncommon to find that a manufacturer makes two or more generic equivalents of a medicine – a branded medicine as well as a branded-generic, which are marketed under different brand names and at different prices.

In this report, the terms “branded” and “branded-generics” will be used.

India also has “combination medicines” on the market. While fixed dose combinations (FDC) for, e.g., HIV/AIDS are useful, many FDCs in India combine medicines that do not necessarily need to be combined in one tablet. Examples include: paracetamol + ibuprofen, diclofenac + paracetamol and many combinations containing two antihypertensives. Most FDCs are proprietary or branded medicines.

All medicines (strips and boxes) are printed with the non-proprietary names, as well as the company’s brand name.

2.2 Medicine production and marketing

There are more than 20,000 pharmaceutical manufacturers located across India. These companies vary in size from small scale industries, to large production units, and include 5 manufacturing units under public ownership. Until 2005 India had a system of process patents; these companies are engaged in mainly generic manufacturing.

There are two different routes that a medicine can take as it moves from the manufacturer along the supply chain; the route is determined by how the medicine is marketed. If a manufacturer chooses to market the medicine itself, the medicine moves from the manufacturer to a carrying and forwarding (C&F) agent. The C&F agent holds
a license to sell the medicines in the name of the manufacturer; they have their own depots and handle distribution of medicines to wholesalers. The manufacturer handles the marketing, which usually entails employing a number of medical representatives who promote the medicine – with doctors, pharmacists, etc. One medium-sized manufacturer with a variety of medicines (including but not limited to ciprofloxacin, amoxicillin, omeprazole, ceftriaxone, ranitidine) reported a team of 250 medical representatives.

When the manufacturer chooses not to market the medicine itself, the medicine moves to a “super-stockist”. This is a distributor who also does marketing. The super-stockist invests some of its own money to promote the medicine or sells the medicines on to retailers who must promote the medicines in the community. Whereas the C&F agent holds a license to sell in the name of the manufacturer, the super-stockist has its own license to sell and invests its own money in drug promotion.

In general, lower-priced branded-generics are distributed through super-stockists. The survey identified cases where the retailer-promoted medicine is a second generic equivalent made by a company with a well-known branded medicine already on the market.

Figure 1: Private sector distribution

This difference in distribution lines and marketing is fundamental to pricing structures in India. This is discussed in the following sections.

2.3 Pharmaceutical policy in India

The National Essential Medicine List (EML) is under the charge of the Ministry of Health and Family Welfare. The EML has been in place since 1996 and was last revised in 2003. There are 354 medicines on the list, in 663 formulations. (6)

The national EML is set by the central government; each state may establish a state-specific list. In NCT Delhi, there are leveled EMLs at the hospital and dispensary levels. First established in 1994, the Delhi EML has been revised 4 times, the last time in 2004. There are approximately 350 medicines on the list. Hospitals under NCT Delhi are limited to using the medicines on the NCT Delhi EML.
Pharmaceutical pricing falls under the Ministry of Chemicals and Fertilizers (MoC&F). The ministry has established an independent body of experts – the National Pharmaceutical Pricing Authority (NPPA) – that monitors prices of medicines in India.

There is no generic substitution policy in India. In the private sector, doctors prescribe by brand name and in most circumstances the chemist sells the specified medicine.

2.4 Medicine pricing in India

Medicine prices are set in one of two ways. The Drug Price Control Order (DPCO) identifies active pharmaceutical ingredients (APIs) for which a pricing formula is used to set the Maximum Retail Price (MRP). This formula is explained in Annex 1. Medicines whose price is set with this formula are called “scheduled medicines” and include a few essential medicines. The NPPA is tasked with monitoring that prices are consistent with the formula.

The DPCO was put into effect in the 1970s, several years before the first national EML was established. The APIs selected for the scheduled list are not essential medicines, but rather correlate to the manufacturer’s market share of the medicine: for example, a manufacturer controls more than 90% of the market, the medicine is placed on the scheduled list. The list of medicines has been updated several times in the past 20 years. The latest revision, in 1995, identified 74 APIs that result in approximately 1500 formulations.

For all other medicines – called “non-scheduled medicines” – the manufacturer sets the price and registers that price with the NPPA. In theory, market forces should control the prices of non-scheduled medicines; with over 20,000 generic manufacturers in India, there should be sufficient competition to keep prices down. The NPPA monitors the price of APIs in the market, and watches that the prices of non-scheduled medicines do not rise more than the allowed 20% in one year.

For scheduled medicines, the NPPA pricing formula sets the minimum mark-ups for wholesalers – 8% – and retailers – 16%. For non-scheduled medicines, these minimum markups are not set, but several informants reported that for branded medicines they average around 10% and 20% for wholesalers and retailers respectively. For non-scheduled, branded-generics the same average minimums are found, but the super-stockist and retail markups range much higher, as the responsibility for marketing the product is shifted from the manufacturer to other participants in the distribution chain.

The C&F agent receives an average 1-2% margin on all goods moved; the super-stockist receives 2-5%.

Table 1: Minimum average markups

<table>
<thead>
<tr>
<th>Mark-up</th>
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<tr>
<td>C&amp;F</td>
<td>1-2%</td>
</tr>
<tr>
<td>Super-stockist</td>
<td>2-5%</td>
</tr>
<tr>
<td>Scheduled</td>
<td>Non-scheduled</td>
</tr>
<tr>
<td>Wholesaler</td>
<td>8%</td>
</tr>
<tr>
<td>Retailer</td>
<td>16%</td>
</tr>
</tbody>
</table>
All products in India are printed with the Maximum Retail Price (MRP). Before October 2006 a state sales tax was collected on the MRP; this ranged from 4% in several states to 14%. A new policy calculates 4% value-added tax (VAT) as part of the MRP, so the price on the box is what the customer pays.
3. PROCUREMENT AND DISTRIBUTION OF MEDICINES IN NCT DELHI

This survey focused on the pharmaceutical supply chain in four public sector bodies in NCT Delhi, as well as the private sector. These are described below. The non-governmental sector contributes such a small percentage that they were not included in this survey.

3.1 Public sector procurement

The majority of health care in Delhi is provided by the central government and the government of NCT Delhi. The central government has 3 tertiary care hospitals, 1 specialist children’s hospital, and approximately 90 dispensaries (health centres) in Delhi. The Central Government Health Scheme (CGHS) dispensaries serve only central government employees (current and retired). All citizens benefit from services at the tertiary care hospitals. At the state level, the Government of NCT Delhi has two tertiary care hospitals, 2 specialist hospitals, around 14 secondary care hospitals and approximately 180 dispensaries; all citizens can use their services.

Within the city of Delhi there are two additional public sector providers: the Municipal Corporation of Delhi (MCD) runs 10 secondary care hospitals and 75 dispensaries; New Delhi Municipal Corporation (NDMC) runs 1 secondary-care hospital, 1 maternity hospital and 12 dispensaries.

Table 2: Four public sector health providers and services provided

<table>
<thead>
<tr>
<th></th>
<th>Tertiary</th>
<th>Specialist</th>
<th>Secondary</th>
<th>Other</th>
<th>Dispensary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Government</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td>~90</td>
</tr>
<tr>
<td>Government of NCT Delhi</td>
<td>2</td>
<td>2</td>
<td>~14</td>
<td></td>
<td>~180</td>
</tr>
<tr>
<td>Municipal Corporation of Delhi</td>
<td>10</td>
<td></td>
<td></td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>New Delhi Municipal Corporation</td>
<td></td>
<td>1</td>
<td>1</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

Each public sector entity has its own formulary and procurement system. Differences in procurement system and medicines provided result in variations in pricing and availability.

3.1.1 Central government procurement

Procurement is handled separately for hospitals and dispensaries within NCT Delhi. Procurement of medicines for hospitals is managed by Medical Stores Organization (MSO). Procurement for CG dispensaries in Delhi is shared between the Central Government Health Scheme (CGHS) and HSCC. HSCC is a public sector undertaking under the MoH&FW. (CGHS dispensaries outside of NCT Delhi use MSO to handle their orders.)

Central government health services have two formularies used in both tertiary-care hospitals and dispensaries: a generic formulary, based on the national EML, with 626 formulations on it, which specifies products by INN. The second is the “proprietary” formulary, which contains branded medicines and numerous combination medicines. The proprietary list has approximately 504 items, and is predominately used in dispensaries for CGHS beneficiaries. The proprietary list lists medicines by brand name. The tertiary-care hospitals rely principally on the generic list.
**Procurement of generic medicines**

Traditionally, both MSO and HSCC used the rate contracts of other public sector procurement agencies (the NCT Delhi rates). In 2006, MSO began testing a new two-bid tender system, with suppliers submitting a technical and a price bid. MSO’s technical bid specification includes GMP certification, evidence of market presence for the medicine for three years, 10 crore annual turnover in any of the last three years, and QA documentation for the medicines. MSO plans to award a 3-year supply contract to the lowest priced bid of all technically approved suppliers. The tender cycle took MSO 5-6 months, and the results of the first tender were poor: no bids were submitted for 236 of the 626 items on the generic list and 170 medicines had a single bid submitted. For the 2006-2007 year, MSO continues to use the rates established by NCT Delhi.

**Procurement of proprietary medicines**

The proprietary medicine formulary is developed by a committee with representation from the MoH&FW and government hospitals. A second committee is responsible for procurement, and includes members from MoH&FW, government tertiary hospitals, and representatives of the procurement offices occupied with central government supply. The Procurement Committee asks the manufacturers for a quote for each medicine, and then negotiates the rate. Proprietary medicine manufacturers do not undergo a technical bid, although all products are tested for quality assurance. One informant reported that the Procurement Committee buys proprietary medicines below the MRP: in general, the government is given a 20-25% discount when procuring scheduled medicines, and a 25-45% discount for non-scheduled medicines.

**Procurement for tertiary hospitals**

Procurement for hospitals under the MoH&FW is handled by the Medical Stores Organization (MSO). All hospitals provide MSO with a forecast of need and MSO compiles the requirements before announcing the tender.

MSO charges 10% “departmental charges” to cover the costs of their work. MSO runs several storage depots across India; there is an additional fee for delivery from the MSO depot to the tertiary-care hospitals.

In the case of stock outs, tertiary hospitals can do local purchases. Medicines bought as local purchases rarely undergo the same quality assurance checks, nor can prices be examined. In addition, the procurement offices of all government tertiary hospitals are doing the same work, trying to find suppliers of the same medicines. One Stores unit in a government hospital reported that close to 75% of the medicines they dispense are bought on local purchase.

**Procurement for CGHS dispensaries in NCT Delhi**

Procurement begins when CGHS calls for annual requirements from all units and consolidates the data. This information is then passed on to HSCC. HSCC contact the suppliers of generic medicines; because HSCC does not run a tender, they use the NCT Delhi rate list (DHS/CPA). If the supplier can fill the order, medicines are delivered quarterly directly to the CGHS. HSCC charges 4.5% processing fee; the 4.5% fee is subject to a 12% service tax and the 2% education cess.

In the case that HSCC can not fill the order or the patient needs a specialist medicine not on a formulary, the CGHS dispensary can procure the medicines on local purchase on a patient-by-patient basis from approved local chemists. These purchases come
from a special drug purchase budget; there is no limit on specialist purchases. One informant suggested that the total of all specialist drug purchases is double the regular drug budget.

Both MSO and CGHS collect 4% VAT on sales of medicines to their units.

3.1.2 NCT Delhi procurement

Procurement for NCT Delhi is handled by the Central Purchasing Agency (CPA) division of the Directorate of Health Services (DHS). NCT Delhi has one EML for all hospitals. The 350 medicines on the EML are generics, listed by INN.

CPA aggregates the requirements from all NCT hospitals and dispensaries, determines the total annual required quantity and announces the tender. The tender is a two-bid system, with suppliers submitting a technical bid and a price bid. When the tenders are opened suppliers are first evaluated on the technical criteria, including: GMP certification, 35 crore rupees a year turnover and QA documentation of the medicines. CPA awards the contract to the lowest-priced bid from amongst the suppliers that passed the technical bid (“L1”) and selects the second-lowest price (“L2”) as the alternate supplier.

CPA distributes a rate list to all DHS hospitals. The rate list lists each medicine, the approved supplier and the agreed on price. Hospitals place orders directly with suppliers, and medicines are delivered directly to hospitals stores. Dispensaries place their orders once a month through the Stores and Purchase (S&P) division of DHS, which runs a small storeroom on site. DHS has contracted out distribution to dispensaries: a local transport firm has two mini-trucks available at S&P every working day for the day’s deliveries. Distribution costs are a separate line item in the DHS budget.

When hospitals and S&P place orders with the supplier, the supplier has 42 days to deliver the order. There is a 2-week grace period, but the supplier is fined 5% of the order value the first week, and 10% the second week. If the supplier has still not delivered, CPA calls on the L2 supplier to fill the order. Hospitals must wait the 42 days before sending a memo to CPA asking them to investigate the delay from the supplier.

CPA does not charge DHS units for their service; 4% VAT is collected on top of the price listed on the rate list.

3.1.3 MCD procurement

Procurement for MCD is handled by the purchase committee of MCD. MCD has a formulary, developed by the MCD Inventory Board. Medicines on the formulary are generics, listed by INN. MCD provides 1500 items, but this figure includes lab items and medical supplies.

The tender is a two-bid system, with suppliers submitting a technical bid and a price bid. When the tenders are opened suppliers are first evaluated on the technical criteria; GMP certification, already supplying a government institution, 10 crore rupees a year turnover and QA documentation of the medicines. MCD awards the contract to the lowest-priced bid from amongst the suppliers that passed the technical criteria. Contracts are awarded for 2 years.
MCD distributes a rate list to MCD hospitals. The rate list lists each medicine, the approved supplier and the agreed-on price. A limited number of MCD officers are approved to place orders with suppliers for the health units. Suppliers deliver directly to hospitals, and to two MCD stores; costs for delivery are included in the rate contract. Dispensaries arrange transport from the MCD store to their health unit. Distribution costs are a separate line item in the DHS budget.

MCD does not charge their units for their service; 4% VAT is collected on top of the price listed on the rate list. In addition, MCD pays 4% central sales tax (CST) for medicines procured from manufacturers outside of Delhi; this price component is added to the cost the MCD procurement office charges their units for the medicines.

In the case that an item is out of stock, some MCD officers are allowed to make emergency local purchases. Dispensaries can spend 250 rupees per day on local purchases; hospitals can spend 5000 rupees per day.

3.1.4 NDMC procurement

Procurement for NDMC is handled by the purchase committee of NDMC. NDMC has a combined formulary for its hospitals and dispensaries based on the recommendations of department heads across NDMC. Almost all medicines (98%) on the formulary are generics; the rest are combination medicines. All 417 items are listed by INN. Doctors can prescribe medicines off-formulary, but they are not provided by NDMC. The formulary is reviewed annually by the Selection committee, made up of staff from all levels of care in the NDMC system.

Since 2001, NDMC has used a two-bid system, with suppliers first being prequalified through a technical bid. Suppliers are evaluated on the eight technical criteria, including: GMP certification, 3 years’ experience supplying a government institution, and QA documentation of the medicines. NDMC sets the supplier’s annual turnover in a unique way: the medicines on the formulary are categorized into Vital, Essential and Desirable (non-essential) (the VED categorization). Only companies with greater than a 100 crore turnover can bid on V, E or D medicines; a 50-99 crore turnover allows a company to bid on E or D medicines; and companies with a 20-49 crore annual turnover can only bid on D medicines. NDMC awards the contract to the lowest-priced bid from amongst the prequalified suppliers.

The NDMC procurement office produces a rate list with the approved supplier and the agreed-on price for each medicine. Suppliers deliver directly to hospitals, and to an NDMC depot; costs for delivery are included in the rate contract. The NDMC depot has one van for deliveries to health units.

NDMC does not charge their units for their service; 4% VAT is collected on top of the price listed on the rate list.

Both NDMC hospitals can do limited local purchases. Both have an annual “local purchase budget”. In most cases local purchases also come from suppliers: hospitals are required to get three quotations from reputable suppliers. In emergencies, hospitals can purchase medicines from a chemist. Emergency purchases have caps: the secondary hospital can spend 10,000 rupees per day.
Table 3: Four public sector health providers and their procurement office

- Central Government
  1. Tertiary care hospitals
     Procurement agency: Medical Stores Organization
     Local purchase: Stores offices of tertiary care hospitals
  2. CGHS dispensaries
     Procurement agency: HSCC
     Local purchase: CGHS Stores Office, CGHS dispensaries
- Government of NCT Delhi
  Procurement agency: Central Procurement Agency (CPA), Directorate of Health Services
  Local purchase: Stores offices of tertiary care hospitals; emergency purchase by secondary care hospitals
- Municipal Corporation of Delhi
  Procurement agency: Procurement office MCD
  Local purchase: Procurement office MCD, emergency purchase by secondary care hospitals
- New Delhi Municipal Corporation
  Procurement agency: Procurement office of NDMC
  Local purchase: Procurement office of NDMC, emergency purchase by secondary care hospitals

3.2 Private sector

In the private sector medicine distribution is characterized by a high number of generic equivalents, retailers and wholesalers with limited storage space, and high levels of competition at each level of the system.

Manufacturers can only sell to a licensed wholesaler; wholesalers can only sell to licensed retailers. There are 4500 licensed wholesalers and 11000 licensed retailers in NCT Delhi. (Across all of India there are more than 100,000 retail chemists.) PharmaSolutions, a drug information service, reports that there are approximately 95,000 products on the market in NCT Delhi.

Storage limitations are a factor in how medicines are distributed in the private sector in Delhi. An average chemist shop in Delhi stocks between 10,000 and 15,000 branded medicines in their shop (this number is lower in peri-urban and rural settings), with 5-50 versions of each medicine. Retailers work with 30 or 40 wholesalers. The high number of products means that the chemist can only stock small quantities of each medicine – sometimes only a single strip of tablets. Because of a lack of space, wholesalers deliver to retailers on a daily basis – often supplying within 6-8 hours, or when the retailer calls. Wholesalers are responsible for bearing the costs of local delivery to the retailer. Wholesalers maintain a small fleet of vehicles – scooters, small vans, cycles – or send parcels across town in taxis. Distribution costs are included in the wholesale margin.

One large wholesaler (8000 brands) reported working with 35-40 manufacturers and 500-600 retailers in Delhi. This wholesaler tries to keep 28 days of stock in their depot. Medicines arrive at the wholesaler via the manufacturer’s C&F agent or via the super-stockist, depending on the size of the wholesaler and the agreed-upon marketing terms.
Licenses are granted by the state Drug Controller and monitored at the state level (in NCT Delhi, by the Drug Controller of DHS). To obtain a retail chemist’s license, the applicant must be registered with the Pharmacy council; to obtain a wholesale license the applicant must either be a pharmacist or show adequate work experience. Across the country, 800 federal and state inspectors monitor wholesalers and retailers, as well as manufacturers and hospitals. It is possible for a company to hold both a wholesale and a retail license; retail shops that also hold a wholesale license can buy in bulk at the manufacturer and save the wholesaler margin. It is even possible for a manufacturer to hold all three licenses.
4. SURVEY METHODOLOGY

Survey preparation begin in January, with review of the seven WHO/HAI Medicine Price surveys, developing a list of potential survey participants, and making initial contact with those participants.

4.1 Medicines surveyed

The 8 medicines shown in Table 4 were selected for the survey. These medicines were chosen to represent a range of therapeutic categories, price control (scheduled or non-scheduled medicines), chronic and acute treatments, a relatively new medicine, and a variety of formulations, as well as including medicines for which pricing variations were found in Medicine Prices surveys in other Indian states.

Table 4: List of survey medicines

<table>
<thead>
<tr>
<th>Medicine, form</th>
<th>strength</th>
<th>Scheduled</th>
<th>Therapeutic class</th>
<th>Acute disease</th>
<th>Pricing variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxicillin tab</td>
<td>250 mg</td>
<td></td>
<td>antibiotic</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Atorvastatin tab</td>
<td>10 mg</td>
<td></td>
<td>lipid reducing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ciprofloxacin tab</td>
<td>500 mg</td>
<td>Yes</td>
<td>antibiotic</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Diazepam tab</td>
<td>5 mg</td>
<td>Yes</td>
<td>anxiolytic</td>
<td></td>
<td>Public/private</td>
</tr>
<tr>
<td>Omeprazole tab</td>
<td>20 mg</td>
<td></td>
<td>antacid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ranitidine tab</td>
<td>150 mg</td>
<td>Yes</td>
<td>antacid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salbutamol syrup</td>
<td>2 mg/5 ml</td>
<td>Yes</td>
<td>antiasthmatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceftriaxone inj</td>
<td>1g</td>
<td></td>
<td>antibacterial</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

4.2 Data collection methodologies

In the public sector, interviews were conducted with key players in administration, procurement, stores and delivery of: central government, NCT Delhi, MCD and NDMC. Interviews were open-ended, with the investigators asking questions to identify all possible costs. An interview in the 4th week with HSCC provided new information on service taxes incurred in the public sector supply chain. All public sector procurement agencies were re-contacted to verify if they incur the same costs.

In the private sector, the retail purchase price, the MRP and the name of the supplying wholesaler were collected at retail pharmacies for each medicine. Investigators next visited the wholesaler to collect the wholesale purchase price and selling price. With the help of a data collector, prices were collected at 5 wholesalers and 7 retailers, and 3 manufacturers were interviewed. Retailers were located in a variety of urban and peri-urban areas.

Table 5: Total institutions surveyed in private sector

<table>
<thead>
<tr>
<th>Mfg</th>
<th>Wholesaler</th>
<th>Retailer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principals</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Data collector</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>
A brief outline of the work agenda appears in Table 6 below. A detailed interview and appointment list is available in the Annex.

Table 6: Activities undertaken, by week

| Pre survey | Preparation of survey, document review, review of the 7 Indian state report, taking pre-interview meetings, appointment scheduling |
| Week 1 | Central government data collection, Delhi state central data collection: Ministry of Chemicals and Fertilizers, National Pharmaceutical Pricing Authority, Directorate of Health Services Delhi State, Drug Controller General of India, Dr. Ranjit Roy Chaudhury, National Rural Health Scheme procurement office, central government procurement, Pharma Solutions, tax consultant, bank. Visit manufacturer. |
| Week 2 | Field work: data collection. Visits: 1 manufacturer, 2 wholesalers, 2 retailers, 1 central government tertiary care hospital. Meetings with Data collection staff re data from 3 wholesalers and 4 retailers. Follow-up visit CG procurement. Preparation for Marg’s and Ali’s visit. |
| Week 3 | Marg Ewen and Ali Cameron training in Price Components. Interviews: Pharma Solutions, Medical Stores Organization, WHO, Directorate of Health Services Delhi State (procurement and drug controller), Ministry of Chemicals and Fertilizers, DfID Delhi and UK meeting, National pharmaceutical Pricing Authority; 1 manufacturer, 1 wholesaler, 1 retail pharmacy. |
| Week 5 | Lok Nayak hospital procurement office, DHS secondary hospital, DHS dispensary, Data analysis, data verification, report writing |

A change from the proposed implementation was necessary when data collected in Week 2 revealed that two additional entities – the Municipal Corporation of Delhi and the New Delhi Municipal Corporation – needed to be added to the study as they contribute significantly to health care provision in Delhi state. It was also learned that medicines for the Central Government are procured by two different entities; both were added to the interview list.

4.3 Data analysis methodology

In the public sector, procurement price data was collected from each procurement agency. The data was collated, and normalized to include taxes and handling charges on a per unit basis. This made it possible to compare prices across agencies.

In the private sector, supply chain markups were calculated for several (4-6) examples of each medicine. For some examples of each medicine, the exact wholesale and retail percentage markups were calculated, in addition to the actual profit. Pack sizes were normalized as needed to simplify comparisons. Medicines were paired (branded and branded-generic) and prices analyzed. The impact of marketing tactics such as trade schemes were calculated onto the wholesaler and retailer margins.
5. FINDINGS

Almost all interviewees expressed interest in the project and were willing to participate. On only two or three occasions was it necessary to motivate interviewees to talk: public officials granted meetings that lasted 1.5 – 2 hours out of their busy days, and generously offered to answer any subsequent clarification questions. In the public sector procurement departments there is a focus on reliably providing medicines to the patient and, in most agencies, on having as much transparency as possible.

The private sector was also extremely cooperative. One chemist shop refused to participate in the survey, but three others willingly answered the survey questions and revealed their purchase price for both the scheduled and non-scheduled medicines. The wholesalers visited also shared their business data, including their purchase price, their selling price and any trade discount schemes.

Despite there being only 8 medicines surveyed, enough data was discovered on medicine pricing structures in India to draw meaningful conclusions.

5.1 Public sector

Medicine prices in the public sector are determined, in various ways, by the effectiveness of the procurement department, as described in this section.

5.1.1 Prices in the public sector

Table 7 provides the prices found in the 4 public sector health systems. Tertiary hospitals under Central government and NCT Delhi can procure locally any supplies that the government procurement agency can not provide. These local purchase prices are given in the Tertiary hospital rows.

Table 7: Unit prices paid in all 4 public providers. Prices in rupees.

<table>
<thead>
<tr>
<th>Procurement agency</th>
<th>Amoxicillin</th>
<th>Atorvastatin</th>
<th>Cipro</th>
<th>Diazepam</th>
<th>Omeprazole</th>
<th>Ranitidine</th>
<th>Salbutamol</th>
<th>Ceftriaxone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Central Government</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSO</td>
<td>0.665</td>
<td>1.144</td>
<td>0.061</td>
<td>0.389</td>
<td>0.269</td>
<td>6.349</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertiary H</td>
<td>0.686</td>
<td>1.092</td>
<td>0.060</td>
<td>0.538</td>
<td>0.272</td>
<td>6.604</td>
<td>20.800</td>
<td></td>
</tr>
<tr>
<td>HSCC</td>
<td>0.638</td>
<td>RTS</td>
<td>0.058</td>
<td>NA</td>
<td>RTS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Government of NCT Delhi, Directorate of Health Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPA</td>
<td>0.604</td>
<td>0.000</td>
<td>0.859</td>
<td>0.055</td>
<td>0.354</td>
<td>0.244</td>
<td>5.772</td>
<td>17.649</td>
</tr>
<tr>
<td>Tertiary H</td>
<td>1.851</td>
<td>0.978</td>
<td>0.593</td>
<td>0.296</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Municipal Corporation of Delhi</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCD</td>
<td>0.67</td>
<td>1.87</td>
<td>0.92</td>
<td>0.08</td>
<td>NA</td>
<td>6.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>New Delhi Municipal Corporation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NDMC</td>
<td>1.129</td>
<td>1.560</td>
<td>1.820</td>
<td>NA</td>
<td>0.406</td>
<td>0.341</td>
<td>8.393</td>
<td>66.040</td>
</tr>
</tbody>
</table>

RTS: refused to supply; NA: not available
The HSCC data in the table is sparse because HSCC does not run a full tender but uses the rate list of CPA. For two medicines the supplier Refused to Supply (RTS) to HSCC at the CPA rate.

Three facts appear:
1. All local purchase prices (labeled “Tertiary H”) are higher than established rates.
2. NDMC’s prices are almost twice that of some of the other agencies with the exception of atorvastatin. Although NDMC uses a transparent system, their technical requirement that manufacturers of “Vital” medicines have a 100 crore (11.6m pound) turnover restricts the bidding pool, limits competition and results in higher prices.
3. Although some of the medicine prices listed by MSO and HSCC originated from prices negotiated by CPA, their overhead charges (10% and 4.5%, respectively) result in a higher unit cost for the medicines.

5.1.2 Central government procurement charges for service
Both procurement agencies that supply the central government health units charge overhead expenses. MSO charges 10% “departmental charges” and HSCC collects a 4.5% fee for processing orders. The HSCC fee is then subject to a service tax and the education cess. MSO also charges for transport when applicable.

In both cases, these charges are taken from the actual drug budget. Yet MSO is a government institution. HSCC is a government holding. The work done by HSCC (procurement for CGHS dispensaries in NCT Delhi) is work that until 2001 was done by MSO.

In 2005, with the threat of a bird flu pandemic, MSO was tasked with procuring Tamiflu®. Government officials noticed that the quantity purchased was less than expected due to 10% of the medicine budget being used to pay MSO departmental charges. In this situation, the government objected and the charges were waived.

5.1.3 Taxes in the public sector
NCT Delhi, MSO, HSCC, MCD and NDMC all pay 4% VAT when procuring medicines for their programs. In addition, MCD pays 4% CST for medicines that are manufactured outside of Delhi. Other supply chain taxes that are levied on public sector institutions is the 2% education cess that HSCC collects on top of their 4.5% service fee.

While all of these taxes are small percentages, they directly impact the total quantity of medicines that the medicines budget can buy. It is not clear why the government taxes itself on medicines (the VAT) – and why they add the additional administration required to exempt government procurement offices from paying CST. There is also a lack of transparency in funding education (2% education cess on HSCC service fee).

5.1.4 Significant quantities of local purchases
The two tertiary hospitals interviewed (one central government, one NCT Delhi) reported problems with suppliers delivering on time. As can be seen in Table 7, the CG tertiary hospital bought 7 of 8 survey medicines on local purchase; the NCT Delhi tertiary hospital locally purchased 4 of the 8 survey medicines. The CG tertiary hospital reported supply from the approved supplier so erratic that 75% of their medicines are local purchases. One stores clerk at the NCT Delhi tertiary hospital depot reported that one medicine – ciprofloxacin – had been out of stock for 6 months in 2006.
With the NCT Delhi system, the health unit places an order and the supplier has 42 days to deliver the order. The health unit must wait the full 42 days before sending a memo to CPA asking them for permission to buy the required medicine from an alternative supplier – including from “L2”. One informant at an NCT hospital reported that in the 2006-2007 fiscal year CPA could not supply 50% of the medicines on the EML.

The CGHS procures numerous medicines on local purchase for the central government dispensaries. There seem to be multiple reasons for this: first, as the sparse data in Table 7 showed, HSCC does not provide suppliers for all required medicines. Second, any CGHS beneficiary has the right to pickup their prescription – issued by any doctor – at any CGHS dispensary. When a prescribed medicine is not on either of the CGHS formularies or is out of stock, the CGHS Stores office procures the required medicine at a CGHS-approved chemist shop. Not only does CGHS Stores spend vast amounts of time buying medicines for individual patients, but these patient-by-patient purchases do not benefit from bulk discounts. Until recently, CGHS paid the chemist the full retail price; recently, some pre-approved chemists are giving CGHS a 5% discount.

5.1.5 Multiple entities using the CPA price list
Investigation into the tendering systems at MSO and HSCC revealed that when these entities can not find suppliers that meet the requirements of the technical bid, they list the NCT Delhi approved supplier of that medicine. It is not clear if CPA-approved suppliers prioritize NCT orders before CG orders (although the suppliers of ciprofloxacin and salbutamol syrup both refused to supply HSCC at the NCT rate). Rate contracts with suppliers are based on NCT Delhi forecasts of need in the contract period and will not include CG medicine needs estimates. If suppliers are filling CG health unit orders, it is possible that they are using stock earmarked for NCT facilities. The use by HSCC of the CPA price list could be related to shortages in NCT Delhi health units.

5.2 Private sector
Medicine prices in the private sector are determined by trade relationships between: manufacturer and wholesaler, manufacturer and super-stockist, and wholesaler and retailer.

5.2.1 Trade schemes predominate in the private sector
Trade schemes run between manufacturer, wholesaler and retailer. They take the form of “buy 10 get 1 free” (9.09% discount) or “buy 7 get 3 free” (30% discount); schemes were found for 4 of the 8 medicines surveyed: amoxicillin, ciprofloxacin, ceftriaxone, and omeprazole. Trade schemes in India run for extended periods of time: one informant reported schemes that run for all but 2 weeks per year.

<table>
<thead>
<tr>
<th>buy</th>
<th>get</th>
<th>% discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1</td>
<td>9.09%</td>
</tr>
<tr>
<td>19</td>
<td>1</td>
<td>5.00%</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>4.76%</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>30.00%</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>33.33%</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>16.67%</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>20.00%</td>
</tr>
</tbody>
</table>
Trade schemes benefit the retailer with larger profit margins, as the medicines that they “get” for free represent pure profit. There is a benefit to the wholesaler as well, as they have increased volume of sales for those products with trade schemes (Tables 8, 9). There is no evidence that patients benefit from trade schemes: retailers do not discount the medicines for patients.

5.2.2 Price components

The price component analysis is divided into scheduled and non-scheduled medicines.

Scheduled medicines

For the scheduled medicines (ciprofloxacin, ranitidine and salbutamol), the Drug Price Control Order (DPCO) established margins for wholesalers of 8% and for retailers of 16%. This should be true whether the medicine is a branded or a branded-generic. The survey found that:

- Wholesale margins are close to 8% (7-8.5%) except for one most-sold branded version of ciprofloxacin where the margin was 11.1%.
- Retail margins are higher than the required 16%: margins for branded medicines range from 17-30.0%. Margins for the branded-generics reflect their lower Price to Retailer (PTR) and that the retailer must “market” the medicine; margins range from 92-436% in the three medicines surveyed.
- Retailer margins increase with the schemes available: at the time of the survey trade schemes on branded ciprofloxacin gave an extra 5%, 20% or 30% margin to the retailer. Ciprofloxacin retailers benefited from a total cumulative margin of 26.5-60% (Table 9).

Table 9: Ciprofloxacin price components

<table>
<thead>
<tr>
<th></th>
<th>Ciplox</th>
<th>Cipla</th>
<th>Ciprobid</th>
<th>Cadilla</th>
<th>Zoxan</th>
<th>FDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTS</td>
<td>59.35</td>
<td></td>
<td>51.85</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTR</td>
<td>65.94</td>
<td>11.1%</td>
<td>56.36</td>
<td>8.7%</td>
<td>36.43</td>
<td>7.6%</td>
</tr>
<tr>
<td>MRP</td>
<td>85.73</td>
<td>30.0%</td>
<td>65.87</td>
<td>16.9%</td>
<td>44.25</td>
<td>21.5%</td>
</tr>
<tr>
<td>cumulative markup</td>
<td>44.4%</td>
<td></td>
<td>27.0%</td>
<td></td>
<td>30.7%</td>
<td></td>
</tr>
<tr>
<td>scheme, % impact</td>
<td>7+3</td>
<td>30.0%</td>
<td>4+1</td>
<td>20%</td>
<td>19+1</td>
<td>5%</td>
</tr>
<tr>
<td>Total cum. markup</td>
<td>74.4%</td>
<td></td>
<td>47.0%</td>
<td></td>
<td>35.7%</td>
<td></td>
</tr>
<tr>
<td>Retailer cum margin</td>
<td>60.0%</td>
<td></td>
<td>36.9%</td>
<td></td>
<td>26.5%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Gercip</th>
<th>German remedies</th>
<th>Cipdose</th>
<th>Plethico</th>
<th>Ciprodac</th>
<th>Cadilla</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTS</td>
<td>11.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTR</td>
<td>11.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRP</td>
<td>60.10</td>
<td>422.6%</td>
<td>59.50</td>
<td>436.0%</td>
<td>64.00</td>
<td>357.1%</td>
</tr>
</tbody>
</table>

PTS: Price to stockist; PTR: Price to retailer

The pricing patterns between branded and branded-generic equivalents of the same medicine show wide margins.

- Branded and branded-generic ranitidine have the same MRP (Rs 5) but different PTRs and therefore different retailer margins. In actual terms, a retailer willing to take the risk can make Rs 2.40 with the branded-generic ranitidine compared with Rs
0.88 profit with the branded version (Table 10; prices normalized to a uniform pack size.)

- Ciprobid and Ciprodac have MRPs of Rs 65.87 and Rs 64 respectively. Ciprobid is a branded medicine with a PTR of Rs 56.36, while Ciprodac has a PTR of Rs 14.00. If the wholesale markup on Ciprodac is 8%, the Price to Stockist (PTS) must be approximately Rs 13, compared with Rs 51.85 for Ciprobid. This suggests significant profit margins for the manufacturer (Table 9).

Table 10: Ranitidine price components

<table>
<thead>
<tr>
<th>ranitidine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Branded</td>
</tr>
<tr>
<td>Zinetac</td>
</tr>
<tr>
<td>GSK</td>
</tr>
<tr>
<td>Aciloc</td>
</tr>
<tr>
<td>Cadilla</td>
</tr>
<tr>
<td>collected percent</td>
</tr>
<tr>
<td>actual value</td>
</tr>
<tr>
<td>percent actual value</td>
</tr>
<tr>
<td>PTS</td>
</tr>
<tr>
<td>3.77</td>
</tr>
<tr>
<td>5.72</td>
</tr>
<tr>
<td>PTR</td>
</tr>
<tr>
<td>4.10</td>
</tr>
<tr>
<td>0.33</td>
</tr>
<tr>
<td>6.15</td>
</tr>
<tr>
<td>0.43</td>
</tr>
<tr>
<td>MRP</td>
</tr>
<tr>
<td>4.98</td>
</tr>
<tr>
<td>0.88</td>
</tr>
<tr>
<td>7.4</td>
</tr>
<tr>
<td>1.25</td>
</tr>
<tr>
<td>cumulative markup</td>
</tr>
<tr>
<td>32.1%</td>
</tr>
<tr>
<td>29.4%</td>
</tr>
<tr>
<td>Branded generic</td>
</tr>
<tr>
<td>Rantodac</td>
</tr>
<tr>
<td>Cyper</td>
</tr>
<tr>
<td>collected percent</td>
</tr>
<tr>
<td>value</td>
</tr>
<tr>
<td>PTS</td>
</tr>
<tr>
<td>2.60</td>
</tr>
<tr>
<td>PTR</td>
</tr>
<tr>
<td>5.00</td>
</tr>
<tr>
<td>MRP</td>
</tr>
<tr>
<td>92.3%</td>
</tr>
<tr>
<td>2.40</td>
</tr>
</tbody>
</table>

PTS: Price to stockist; PTR: Price to retailer

Non-scheduled medicines
For non-scheduled medicines there is an agreement between manufacturer and distributors that there will be a 10% margin for wholesalers and 20% for retailers. The 5 non-scheduled medicines showed:

- The wholesaler margins averaged 10% (9.7 – 11.5%).
- The manufacturer can choose to allow a larger retail margin: retail margins ranged from 21.5 - 32.7% for branded medicines, but from 39-58% when the benefits of the trade schemes are counted.
- No schemes were available for relatively new medicines (atorvastatin) nor for slow-moving products (diazepam).
- Two commonly-used branded versions of omeprazole had the same MRP. By offering a scheme of 10+1, one manufacturer made his product more financially interesting to the retailer.
- For injections the retail markups are high. With trade schemes included, one retailer had a margin of 58% on ceftriaxone injection. One branded-generic ceftriaxone injection had a total cumulative mark up of 694% from manufacturer to patient (Table 11).
- Looking at percent markups is not enough; actual profits must also be examined. One retailer could have a 294% margin on a Rs 37.50 branded-generic form of amoxicillin; the Rs 76 branded gives a 32.7% margin, plus a 10+2 scheme. If the actual profit is calculated the branded medicine nets Rs 31.39, while the branded-generic only gives Rs 28 (Table 12).
Table 11: Ceftriaxone price components

<table>
<thead>
<tr>
<th>ceftriaxone</th>
<th>Mahacef</th>
<th>Mankind</th>
</tr>
</thead>
<tbody>
<tr>
<td>collected</td>
<td>percent markup</td>
<td>actual value</td>
</tr>
<tr>
<td>PTS</td>
<td>39.59</td>
<td></td>
</tr>
<tr>
<td>PTR</td>
<td>43.99</td>
<td>11.1%</td>
</tr>
<tr>
<td>MRP</td>
<td>54.99</td>
<td>25.0%</td>
</tr>
<tr>
<td>cumulative markup</td>
<td>38.9%</td>
<td></td>
</tr>
<tr>
<td>scheme, % impact</td>
<td>2+1</td>
<td>33.00%</td>
</tr>
<tr>
<td>Total cum. Markup</td>
<td></td>
<td>71.9%</td>
</tr>
<tr>
<td>Retailer cum. Markup</td>
<td></td>
<td>58.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Branded generic</th>
<th>Monogee</th>
</tr>
</thead>
<tbody>
<tr>
<td>collected</td>
<td>percent markup</td>
</tr>
<tr>
<td>PTS</td>
<td>17</td>
</tr>
<tr>
<td>PTR</td>
<td>24.00</td>
</tr>
<tr>
<td>MRP</td>
<td>135.00</td>
</tr>
<tr>
<td>cumulative markup</td>
<td>694.1%</td>
</tr>
</tbody>
</table>

PTS: Price to stockist; PTR: Price to retailer

5.2.3 Margins are higher than established markups

For branded-generics, manufacturers set the PTR so that the retailer receives a significant margin – in actual terms, larger than the profit they would make selling a branded medicine.

Table 12 shows several versions of amoxicillin. Retailers who sell the branded amoxicillin Mox or Novamox make 18.72 rupees (32%) or 11.55 rupees (21%) per package (excluding trade schemes). Retailers that stock the branded-generics Mymox and Ozomox can make 28 rupees (294%) or 25.90 rupees (272%) per package. Amoxicillin is a non-scheduled medicine so there are no government enforced margins, but margins were much higher than informants suggested they would be.

Ciprofloxacin is a scheduled medicine, so the margins should be close to 8% for wholesale and 16% for retail. As Table 9 illustrates, retailers who sell the branded ciprofloxacin Ciplox can realize a 30% margin; Ciprobid, 16.9% and Zoxan 21.6%. In contrast, retailers who sell the branded-generics Gercip, Cipdose and Ciprodac reported margins of 422%, 436% and 357%.

The trade terms on branded-generics are not as favorable as those on branded medicines: there is no possibility to return about-to-expire medicines, etc. These factors have not been included in the calculation of the retailer’s margin.
Table 12: Amoxicillin price components

<table>
<thead>
<tr>
<th>amoxicillin</th>
<th>Mox</th>
<th>Rexcel</th>
<th>Novamox</th>
<th>Cipla</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTS collected percent actual value</td>
<td>percent actual value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTS</td>
<td>51.55</td>
<td>48.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTR</td>
<td>57.28</td>
<td>11.1%</td>
<td>53.70</td>
<td>11.1%</td>
</tr>
<tr>
<td>MRP</td>
<td>76.00</td>
<td>32.7%</td>
<td>18.72</td>
<td>65.25</td>
</tr>
<tr>
<td>cumulative markup scheme, % impact</td>
<td>47.4%</td>
<td>35.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRP</td>
<td>76.00</td>
<td>32.7%</td>
<td>18.72</td>
<td>65.25</td>
</tr>
<tr>
<td>Total cum. markup</td>
<td>64.1%</td>
<td>31.39</td>
<td>55.0%</td>
<td>13.86</td>
</tr>
<tr>
<td>Retailer cum. margin</td>
<td>49.4%</td>
<td>41.5%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Branded generic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mymox</td>
</tr>
<tr>
<td>PTS</td>
</tr>
<tr>
<td>PTR</td>
</tr>
<tr>
<td>MRP</td>
</tr>
</tbody>
</table>

PTS: Price to stockist; PTR: Price to retailer

5.2.4  How medicines are marketed determines the margins

Branded (also proprietary) medicines are manufactured by a multinational or an Indian manufacturer of good repute. They are marketed by the manufacturer’s medical representatives to prescribers who are offered incentives for prescribing. The wholesalers and retailers who sell them receive standard margins of approximately 8-10% (wholesale) or 16-20% (retail).

“Branded-generic” are a more traditional generic. Branded-generic manufacturers sometimes choose not to market the medicines themselves, instead selling their medicines at a much lower rate to a super-stockist, who in turn sells to retail shops. Branded-generic medicines have less name recognition, and it falls on the retail pharmacy to promote the medicine. The retail profit is larger – but the pharmacist must do all the work of convincing the patient to buy the medicine. Margins for branded-generics, as shown in Tables 9, 10 & 12, range from 92 – 436%.

5.2.5  No generic substitution

Patients buying their medicines in the private sector do not benefit from generic substitution. Doctors prescribe by brand name, whether branded or branded-generic medicine. Pharmacies near a doctor’s office know which medicines that doctor uses and stock the medicines the doctor prescribes.

In general, retailers only substitute one medicine for another if the retailer can make a larger profit. In some cases the retail pharmacist will make a substitution if it is the only way to save a sale. Finally, some patients buy medicines directly from a chemist without a prescription. In this case, when the chemist is both the prescriber and dispenser, he will sell the medicine that balances what the customer can afford and what gives the retailer the most profit – which is often a branded-generic. This practice is the most common in rural settings.
5.3 Taxes on medicines

The government levies an excise duty of 16% and education cess of 2% on medicines manufactured in India. Because of how medicine prices are determined in India, taxes on the active ingredients raise the base price from which the MRP is calculated. The excise tax, which is levied on medicines manufactured and sold in India, is exempted from medicines for export.

Medicines are also subject to a 4% VAT at all stages of the distribution line. Each level of VAT refunds the previous level, with the exception of the final point of sale – at the chemist’s when sold to the patient or when the public sector procurement office buys for their health units. As one informant said, “The customer is the only one penalized; these tariffs increase the revenue to the government.” In fact, patients are also penalized in the public sector, as the VAT reduces the purchasing power of the public sector entity.

Informants at all levels of the public and the private supply chain agreed that the tariff system is overly complicated, with abatements and tariffs levied multiple times. The 16% excise tax is applied to 57.5% of the MRP (after a 42.5% abatement). Abatements such as these are probably related to strong lobbying by pharmaceutical manufacturers.

There is a lack of transparency if the government is increasing revenue with multiple layers of taxes on all stages of pharmaceuticals. Funding of education in India is done through the education cess: again there is an aspect of lack of transparency as the government taxes itself to fund education, rather than funding it directly. During the time of the survey, the government announced that the Education cess will be raised from 2% to 3% in the 2007-2008 financial year.

5.4 Medicine pricing

5.4.1 Trade schemes illustrate large manufacturer margins

The fact that manufacturers can offer trade schemes for an entire year indicates that the Price to Stockist (PTS) provides the manufacturer with a large profit margin. A trade scheme of “4+1” means that there is enough profit in the standard manufacturer margin on four packs of the medicine to cover the manufacturer’s costs and profit for 5 packages. The largest trade margin found is on injectable ceftriaxone, with a scheme of “2+1”.

Manufacturers set the price of their products and submit the proposed price to the DCGI when the product is registered. For scheduled medicines, the NPPA pricing formula is used to confirm the price – however trade schemes were also found on ciprofloxacin.

The presence of trade schemes suggests that some medicine prices could be lowered.

5.4.2 Low correlation between manufacturing costs and MRP of branded medicines

Detailed discussion with 2 medium-sized manufacturers and an analysis of their production costs revealed a weak correlation between manufacturing costs and MRP of branded medicines.

One way to see this is to compare the PTR and the MRP for branded and branded-generic medicines. Several examples from the private sector data are given in Table 13;
for each medicine, two branded and two branded-generic examples are given (order of presentation is random).

Table 13: Comparison of branded and branded-generic prices (prices in rupees)

<table>
<thead>
<tr>
<th></th>
<th>amoxicillin</th>
<th>atorvastatin</th>
<th>ciprofloxacin</th>
<th>omeprazole</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ex 1</td>
<td>Ex 2</td>
<td>Ex 1</td>
<td>Ex 2</td>
</tr>
<tr>
<td>Branded</td>
<td>PTR</td>
<td>57.28</td>
<td>53.70</td>
<td>65.00</td>
</tr>
<tr>
<td></td>
<td>MRP</td>
<td>76.00</td>
<td>65.25</td>
<td>85.00</td>
</tr>
<tr>
<td>Branded-generic</td>
<td>PTR</td>
<td>9.50</td>
<td>9.50</td>
<td>22.00</td>
</tr>
<tr>
<td></td>
<td>MRP</td>
<td>37.50</td>
<td>35.40</td>
<td>28.00</td>
</tr>
</tbody>
</table>

For amoxicillin and atorvastatin there are significant price differences between the MRPs of the branded and branded-generic medicines (differences are almost 2 to 1). Given that these are generic equivalents, containing the same amount of active ingredients, the price difference draws attention to the market value of a branded medicine. The price variation can also be seen in the differences between the PTR for the branded and branded-generic medicines, and between the PTR and MRP for the branded-generic medicines.

The Rs 60.10 and Rs 44.25 ciprofloxacins and the Rs 64.80 and Rs 35.00 omeprazoles are branded-generics, but were found in peri-urban retail shops that did not stock branded medicines. It appears that the pharmacist is using high-priced branded-generics as branded medicines. In both cases, less expensive branded-generics were also stocked (Rs 36-44 for ciprofloxacin and Rs 35 for omeprazole). The price difference between the higher-priced branded-generics and the branded medicines was small. However, perhaps the trade terms influenced the retailer’s decision to stock branded-generics over branded medicines.

The difference between the PTR and the MRP of the branded-generics can be explained in terms of trade terms and the marketing that the retailer must do to promote and sell the medicine. However the PTR also suggests a large profit margin for the manufacturer of branded medicines.

5.4.3 High levels of competition for non-scheduled medicines does not guarantee lower prices

The NPPA does not set the price of non-scheduled medicines; in theory, market competition will bring medicine prices to their lowest possible value. In the survey, 5 versions of amoxicillin, 12 versions of atorvastatin and 7 versions of omeprazole were found. As Table 13 shows, the price of the branded versions of amoxicillin, atorvastatin and omeprazole remains much higher than that of the branded-generic versions of these medicines. (There was insufficient data for diazepam and ceftriaxone to draw any conclusions.)
The data in Graph 1 shows the prices for all atorvastatin in the survey. The even distribution of prices (5 below 50 rupees, 1 at 55 rupees, and 6 above 70 rupees, with a range from Rs 25 – Rs 90, shows that market competition does not necessarily result in the lowest possible prices. The data suggest that product marketing (to prescribers), brand loyalty and trade terms impede market action.
6. DISCUSSION

Several points deserve additional consideration for the issues they address.

6.1 NPPA pricing formula to cover all EML items

The NPPA pricing formula was developed before the national Essential Medicines List was established. Thirty-eight of the 74 scheduled medicines under price control are on the national EML. This leaves over 350 essential medicines not under price-control.

As the data show, market competition does not seem to be driving medicine prices as low as possible. In order to achieve the lowest possible price for essential medicines, the NPPA pricing formula and the EML should be reviewed, and the same medicines included on both.

In order to achieve this, greater collaboration and communication between the MoH&FW and the MoC&F might be required.

6.2 Changes in private sector distribution chains

The model of medicine distribution is changing in India. Apollo hospital now owns their own manufacturing unit, and retail shops in and near their hospitals, completely cutting out the intermediate wholesaler. Ranbaxy Pharmaceuticals just acquired their 12th hospital, and run a series of retail pharmacies across northern India. Over 30 multinational companies want to open retail chains in India. Reliance HealthCare wants to open shopping complexes every 3-4 kilometers in Delhi.

These plans are a multi-pronged threat to the current private sector distribution system. First, independent retail pharmacies will find it hard to compete with large companies such as Ranbaxy and Reliance, especially in terms of price negotiation and trade terms. One pharmacy chain store – Subhiksha – offers a 10% discount to patients; small retail shops can not afford to do the same. Second, the wholesalers will also feel themselves squeezed out, as major manufacturers supply direct to their own retail shops, leaving the wholesaler handling small quantities of less expensive branded-generic medicines. Since these are the medicines that are often distributed through super-stockists, there will likely be a reduction in the number of wholesalers. Third, the linkage between manufacturers and hospitals is a concern, as doctors will prescribe the medicines of the manufacturers, and patients will be forced to purchase medicines in the equivalent of a monopolistic situation.

All these changes in distribution lines will require re-evaluation of pricing structures and strict monitoring of medicine prices at the point of delivery. There is no guarantee that removing the wholesaler, without removing the wholesaler margin, will result in any perceptible savings for the patient.

6.3 Replication of effort among public sector procurement offices

CPA (NCT Delhi), MCD and NDMC all have two-stage tender processes with a technical qualification that precedes award on lowest price. MSO is in the process of establishing a similar system. All offices monitor suppliers for quality assurance and performance fulfilling contractual requirements. Given the different objectives of each system, a single procurement agency is impractical, but it is worth investigating whether any
institutional knowledge of these pre-qualification systems can be shared. Perhaps MSO can learn how CPA handles technical bid adjudication. The procurement agencies for DHS, MCD, NDMC and MSO should keep each other advised of their systems and identify information to be shared. A common list of “black-listed” companies is one possibility.

6.4 Purchase Preference Policy

In February 2007 the central government announced a new purchase preference policy whereby public sector procurement offices will be required to purchase 102 medicines from government undertakings (manufacturers). One informant thought that about 40 of these medicines are on his organization’s formulary.

The public sector will qualify for a government discount for medicines from these undertakings. The prices of the three survey medicines for which there are preferential prices are shown in Table 14. (The other five target medicines are not included in the preferential purchase policy as those medicines are not manufactured by the public undertakings.)

<table>
<thead>
<tr>
<th>Medicine</th>
<th>amoxicillin</th>
<th>ciprofloxacin</th>
<th>ranitidine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent discount</td>
<td>16%</td>
<td>65%</td>
<td>22%</td>
</tr>
<tr>
<td>Preferential purchase price, excluding 4% tax, per tablet</td>
<td>1.28</td>
<td>2.42</td>
<td>0.39</td>
</tr>
<tr>
<td>Current price, minimum</td>
<td>0.604</td>
<td>0.859</td>
<td>0.244</td>
</tr>
<tr>
<td>Current price, maximum</td>
<td>1.129</td>
<td>1.820</td>
<td>0.341</td>
</tr>
</tbody>
</table>

The preferential prices are higher than the prices currently being paid in the public sector. This discrepancy should be investigated.

6.5 Changes to NPPA pricing formula and a graded MAPE

Discussions with the MoC&F and NPPA revealed planned changes in the pricing formula. The NPPA plans to increase the number of active ingredients on the scheduled medicine list from 20% to 32% (pending Cabinet approval). In addition, the MAPE is being increased from 100% to 150% for most products; R&D intensive companies will receive 200% MAPE.

One informant explained that the increases in the MAPE are required to cover increased transport costs and that additional funds are required by the manufacturer to meet GMP certification. A second informant spoke of “heavy” lobbying by the pharmaceutical industry.

One variable discussed in several interviews is whether a single MAPE is fair, when medicines have such a range of price. 100% MAPE on a medicine that costs 1 rupee to manufacture is still affordable, but the same rate on a medicine that costs 200 rupees to manufacture might not be affordable. A fixed rate MAPE also encourages manufacturers to produce medicines with very expensive active ingredients, which are often some of the new molecules.
Just as some countries are shifting to graded retail markups – larger retail margins are allowed for lower priced medicines (e.g. South Africa) – the NPPA could consider a graded MAPE option in the pricing formula. This would support the production of lower priced medicines by guaranteeing manufacturers adequate profit margins. One contract manufacturer interviewed reported that the MRP of ranitidine is so low that they can no longer afford to manufacture it. (In the survey, of 19 data points, 3 packages of ranitidine were priced at 3.30 rupees, one was priced at 7.47 rupees, and the other 15 stores reported packages of 10 tablets priced between 4.98 and 5.00 rupees, or 0.50 rupees a tablet.)

6.6 Responsibility for essential medicine prices divided among several offices
Currently the MoH&FW is responsible for selecting medicines for the EML; the MoC&F and the NPPA set medicine prices; and the DCGI works at the central level on quality assurance, product registration and licensing. In discussions with these offices, we found that there is a need for better communication, sharing of knowledge and support for policy development between these separate branches of government.

6.7 Comparison of prices between sectors
Comparing medicine prices between sectors suggests that there is additional room for savings in the private sector supply chain. Because these comparisons are of the public sector procurement price (includes taxes and handling, and does not necessarily include transport) with the final cost of the medicine in the private sector retail pharmacy, exact comparisons can not be done.

### Table 15: Scheduled medicines: price comparison between sectors

<table>
<thead>
<tr>
<th></th>
<th>Ciprofloxacin</th>
<th>Ranitidine</th>
<th>Salbutamol syrup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>Minimum unit price</td>
<td>0.859</td>
<td>0.244</td>
</tr>
<tr>
<td></td>
<td>Maximum unit price</td>
<td>1.820</td>
<td>0.341</td>
</tr>
<tr>
<td>Private</td>
<td>Minimum unit price</td>
<td>3.60</td>
<td>0.333</td>
</tr>
<tr>
<td></td>
<td>Maximum unit price</td>
<td>9.66</td>
<td>0.747</td>
</tr>
</tbody>
</table>

In the scheduled medicines (Table 15), ciprofloxacin pricing clearly requires review, with price differences between sectors ranging from 1:4 to 1:5. This is due in part to a pending court case concerning ciprofloxacin, the outcome of which will determine if ciprofloxacin remains on the scheduled list. Because of the court case, NPPA has not revised the MRP of ciprofloxacin, even though the price of the active ingredients has gone down. The pricing differences for ranitidine and salbutamol are approximately 1:2, public to private.

### Table 16: Non-scheduled medicines: price comparison between sectors

<table>
<thead>
<tr>
<th></th>
<th>Amoxicillin</th>
<th>Atorvastatin</th>
<th>Diazepam</th>
<th>Omeprazole</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>Minimum unit price</td>
<td>0.604</td>
<td>1.560</td>
<td>0.055</td>
</tr>
<tr>
<td></td>
<td>Maximum unit price</td>
<td>1.129</td>
<td>1.867</td>
<td>0.078</td>
</tr>
<tr>
<td>Private</td>
<td>Minimum unit price</td>
<td>2.36</td>
<td>2.50</td>
<td>1.50</td>
</tr>
<tr>
<td></td>
<td>Maximum unit price</td>
<td>5.06</td>
<td>8.93</td>
<td>2.30</td>
</tr>
</tbody>
</table>

The non-scheduled medicines (Table 16) show much wider pricing differences between the sectors. Diazepam in particular shows a huge pricing difference. In fact, it almost
seems that regardless of the price of a medicine in the public sector, the private sector price charges a minimum of 1 or 2 rupees per tablet.

The government does benefit, for some medicines, from a purchase discount. However neither the discount, nor the difference in local distribution costs is enough to explain these pricing differences.

6.8 Defining margins as actual value or as percentages

It is easy to think that large percentage markups indicate huge profit margins for retailers. In fact, the retailer profit is also dependent on the base price – the retailer’s purchase price. A 300% markup on a medicine purchased for Rs 5 is Rs 15. A 50% markup on a medicine bought for Rs 100 gives the retailer a profit of Rs 50, a profit three times larger.

In analyzing the impact of price components, looking at percent markups is not enough; the actual profits must also be examined. In India, this is particularly true when considering branded and branded-generic medicines. One retailer reported a margin of 32.7% margin, plus a 10+2 scheme, on a Rs 76 branded version of amoxicillin; the branded-generic had a 294% margin on a Rs 37.50 version. However if the actual profit is calculated, the branded medicine nets Rs 31.39, while the branded-generic only a Rs 28 profit.
7. RECOMMENDATIONS AND FUTURE RESEARCH

As a result of this study, the following recommendations are proposed.

7.1 Transparency in procurement in the public sector

The Central Procurement Agency of DHS, NCT Delhi, has made great advances in improving the transparency of the NCT Delhi/DHS procurement system. The same can be said of the MCD procurement system. Both systems should be monitored and evaluated periodically to see if they are continuing to meet the need of the institutions they serve (in terms of availability and accessibility) or whether the systems need updating.

The NDMC procurement system, with medicines classified by VED stage and procurement for each level of medicines limited to companies of a certain level of financial turnover, introduces unnecessary restrictions into the system, and results in higher prices. DHS accepts companies with a 35 crore turnover; MCD companies with a 10 crore turnover; but NDMC requires some companies to have a 100 crore turnover. This restriction limits competition, makes it easier for bidding companies to know their competitors’ likely bids, and ultimately results in prices almost double those in DHS.

Last is the case of the central government, which uses MSO and HSCC to manage their procurement. Both MSO and HSCC use the NCT rate list, but because some manufacturers refuse to supply these agencies, supply is erratic. CG tertiary facilities use open-tender local procurement; dispensaries either substitute therapeutic equivalents or buy on a patient-by-patient basis – thus losing the benefit of bulk procurement.

Recommendations:

- NDMC to review their technical requirements for manufacturer pre-qualification, specifically the financial turnover of the company, to be more in-line with other procurement agencies.
- CGHS to re-evaluate their working relationship with HSCC: either HSCC provides the service they are paid for, or CGHS should identify an alternative procurement agency. MSO could be considered as an option once their procurement is operational and transparent but the cost lost to their handling fees must be considered.
- The Central Government should develop a rational Essential Medicines List to be used for procurement for CGHS dispensaries and tertiary hospitals. An EML selection committee should be formed, consisting of specialists in pharmaceuticals, rational use, health economics, etc, to develop a single unified list that focuses on single molecule medicines. A strict policy of generic or single molecule prescribing should be used in CGHS facilities, with a few exceptions granted for certain conditions and medicines. Procurement in the public sector should be limited to EML items.
- Establish links between procurement offices of central government, DHS, MCD and NDMC to share information on procurement and reduce replicated effort. A common list of “black listed” companies is one possibility.
- Establish periodic monitoring and evaluation of all public sector procurement agencies.
7.2 Improve public sector availability
Several DHS health care providers reported low or no availability of several essential medicines due to non-delivery by the contracted manufacturer. CG and DHS facilities also suggested a correlation between out-of-stock items and those medicines for which HSCC used the DHS supplier and rate.

Recommendations:
- All public procurement agencies to enforce reliable delivery from suppliers.
- DHS to monitor supplier performance closely.
- DHS to investigate if there is a correlation between low availability and rate sharing by MSO or HSCC.

7.3 Markups in the private sector supply chain
Whether a medicine is scheduled or non-scheduled, it is the manufacturer that determines the market price and the manufacturer, wholesaler and retail markups. The wide range of prices for generic equivalents and the proliferation of trade schemes indicate that there is still a large profit margin for the manufacturer.

Recommendations:
- Review the list of scheduled medicines, and ensure that all Essential Medicines have their price reviewed by the government.
- Review the NPPA pricing formula, specifically the Maximum Allowable Post-manufacturing Expenses. Investigate whether the MAPE should be a flat rate, or whether a staged MAPE could benefit retailer, patients and manufacturers. Develop systems to monitor scheduled medicine prices, especially with regard to reductions in the prices of active ingredients over time.

7.4 Taxes and tariffs
There are several layers of taxes levied on medicines, during manufacturing, as part of the calculation of the MRP, and as post-manufacturing transactions. These include: a manufacturing excise duty which is only levied on medicines sold in India – it is exempt from medicines for export to make them more competitive; education cess; state and federal sales taxes.

Recommendation: Government to remove all tariffs on medicines.

7.5 Medicine pricing
As the data show, the large variation in prices of equivalent items suggests that medicine pricing does not reflect manufacturing costs. For scheduled medicines, the NPPA price does not act as a maximum price, but as the given price.

Recommendations:
- Government to increase transparency in manufacturer-set MRP.
- Include all essential medicines under the NPPA drug price order.
- Establish a working group (from MoH&FW, MoC&F, DCGI, private sector, academics, and NGOs) to explore ways to bring all essential medicines onto scheduled list.
7.6 Promote generic substitution

The lack of a generic substitution policy means that brand name medicines control the market. Doctors prescribe the brand name medicine that give them the most benefit; pharmacists sell what the doctor prescribed; and patients are forced to buy the medicine regardless of price, even when lower-priced equivalents are available. The fragmentation of the market by brand name means that prices do not reach a natural equilibrium.

Recommendations:
- Develop policies for generic substitution and generic prescribing.
- Increase consumer awareness of the wide range of quality-controlled generic equivalents and the benefits of generic substitution.
- Train doctors, pharmacists and patients in generic substitution.

7.7 Future research

This work has revealed some interesting aspects of access to medicines in NCT Delhi. Additional areas for future research include:

1. Feasibility study on revising the NPPA Pricing formula to include all essential medicines. The 1995 Drug Price Control Order was established before a national EML, and could be revised to be based on the EML concept. In addition, investigate ways to increase transparency in setting the MRP of all medicines. The MRP should promote price competition rather than locking prices at a fixed rate.

2. Investigate the impact of taxes during manufacture. Taxes are levied several times during the production process. These taxes increase the base price of the medicines on which other fees are calculated. Some fees – such as the education cess – are levied multiple times.

3. Complete a WHO/HAI Medicine Prices & Availability survey in NCT Delhi. There have been seven Medicine Prices surveys conducted to date in 6 Indian states, but as yet no data has been collected for NCT Delhi. Given the erratic buying patterns discovered in the central government tertiary units, the high prices seen in NDMC, the abundance of combination medicines in the central government hospitals and dispensaries, the provision of care by at least 4 government institutions (CGHS, DHS, MCD, NDMC) and the reported low availability in tertiary hospitals, a Medicine Prices survey could shed light on how – and how well – medicines are delivered in NCT Delhi.
8. CONCLUSIONS

NCT Delhi is the most complicated setting in which price component data have been collected. Responsibility for medicine pricing and access to essential medicines is fragmented and distributed across different ministries. India has a prolific generic industry with hundreds of generic equivalents, but with medicines known only by their trade name and brand loyalty affecting the market. Several public sector departments provide health care to citizens; four were included in the survey.

The WHO/HAI Price Component data collection and analysis methodology is sufficiently robust that this case study of eight medicines, in two sectors, within NCT Delhi, has identified several key issues related to medicine pricing, availability and affordability. This includes several strengths and weaknesses in the public procurement systems, trade relationships in the private sector supply chain that skirt government pricing structures, and the cumulative impact that tariffs are having on medicine prices. This survey also sought to prioritize areas for future study and further inquiry.

Ultimately, the responsibility to make medicines available to the citizens of NCT Delhi is shared by government officials, by doctors and pharmacists, by manufacturers, by wholesalers and retailers, and by the patients themselves. With 80% of the population being forced to buy their medicines out-of-pocket, there is much that the government, the public and the private sectors can do to increase access to life-saving medicines. In addition to the additional research discussed in the previous section, this report prioritizes the following recommendations:

- Government to increase transparency in manufacturer-set MRP.
- Government to remove all tariffs on medicines to increase access.
- Develop a policy for generic substitution and generic prescribing.
- Establish a working group (from MoHFW, MoC&F, DCGI, private sector, academics, and NGOs) to explore ways to bring all essential medicines onto scheduled list.
- Establish links between procurement offices of central government, DHS, MCD and NDMC to share information on procurement and reduce replicated effort.
- Central government to investigate use of proprietary medicines and local purchases.
- All public procurement bodies to enforce reliable delivery from suppliers.
- Conduct a WHO-HAI Medicine Prices and Availability survey in NCT Delhi.

This investigation into the price components of medicines in NCT Delhi has shown that the lack of transparency in medicine prices is impeding access. Improving transparency in pricing and procedures through continued research and monitoring of systems, especially with the support of international organizations, will have a positive impact on access to medicines and the health of the people of NCT Delhi and of India.
REFERENCES


ANNEXES

Annex 1: The Indian scheduled medicine pricing formula

The Government of India has established an independent body of experts, the National Pharmaceutical Pricing Authority (NPPA), to determine the prices of certain medicines in the country. They fix the prices of 'scheduled' medicines as identified by the Drug Price Control Order of 1995. This schedule currently contains 74 APIs.

The maximum retail price is calculated using the following formula:

$$\text{MRP} = (\text{MC} + \text{CC} + \text{PM} + \text{PC}) \times (1 + \frac{\text{MAPE}}{100}) + \text{ED}$$

MRP: retail price; MC: material cost; CC: conversion cost; PM: cost of the packing material; PC: packing charges; and MAPE (Maximum Allowable Post-manufacturing Expenses): maximum allowed manufacturer markup after manufacturing costs; ED: excise duty.

The MAPE covers all post-manufacturing costs, including trade margins, as well as the manufacturer's own margin. MAPE is currently set to not exceed 100% of the MRP. There is a proposal now to increase the MAPE to 150% and at the same time to bring more medicines under price control.

For imported medicines, the landed cost forms the basis for fixing the price. Other costs, such as margins to cover selling and distribution expenses, including interest and the importer's margin, should not exceed 50% of the landed cost. The 'landed cost' includes customs duty and clearing charges.
Annex 2: Briefing paper

Briefing paper:
Price components of eight medicines in the public and private sector in NCT Delhi

Anita Kotwani & Libby Levison

March 24 2007

Background:
A Price component survey was conducted in February & March 2007 on 8 medicines in the public and private sectors of the National Capital Territory (NCT) of Delhi. These medicines were chosen to represent a range of characteristics, as in the table below.

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Scheduled</th>
<th>Therapeutic class</th>
<th>Acute disease</th>
<th>Pricing variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxicillin tab</td>
<td>250 mg</td>
<td>antibiotic</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Atorvastatin tab</td>
<td>10 mg</td>
<td>lipid reducing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ciprofloxacin tab</td>
<td>500 mg</td>
<td>Yes</td>
<td>antibiotic</td>
<td>Yes</td>
</tr>
<tr>
<td>Diazepam tab</td>
<td>5 mg</td>
<td>anxiolytic</td>
<td>Public/private</td>
<td></td>
</tr>
<tr>
<td>Omeprazole tab</td>
<td>20 mg</td>
<td>antacid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ranitidine tab</td>
<td>150 mg</td>
<td>Yes</td>
<td>antacid</td>
<td></td>
</tr>
<tr>
<td>Salbutamol syrup</td>
<td>2 mg/5 ml</td>
<td>Yes</td>
<td>antiasthmatic</td>
<td></td>
</tr>
<tr>
<td>Ceftriaxone inj</td>
<td>1g</td>
<td>antibiotic</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

Medicines are categorized as “branded” and “branded generics”: branded medicines are high-priced, proprietary medicines marketed by the manufacturer; branded generics have less name recognition and are marketed by the super-stockist or retailer. For each of the 8 medicines, data was collected on 3 or 4 branded and branded generic medicine.

Interviews were conducted with key informants in the Ministry of Health & Family Welfare (MoH&FW), Ministry of Chemicals and Fertilizers (MC&F), Drug Controller General of India (DCGI), government officials in NCT Delhi, Municipal Corporation of Delhi (MCD) and New Delhi Municipal Corporation (NDMC). Data on public sector procurement systems was collected from 4 public health care providers in NCT Delhi: Central Government (CG), DHS of the government of NCT Delhi, MCD and NDMC.

In the private sector, medicines move from the manufacturer to either a C&F agent or a super-stockist; they go to wholesalers who sell them to retailers. Data was collected from 3 manufacturers, 1 super-stockist/wholesaler, 4 wholesalers and 7 retailers.

There was a high level cooperation from all contacts in the public and private sectors. Public sector procurement departments were transparent in sharing information; private sector shared their purchase price, their selling price and trade discount schemes.

Findings:
Public sector:
- The NCT Delhi, MCD and NDMC have generic formularies and functioning procurement systems.
- The Central government has 2 medicine lists: one generic (600+ items), one proprietary (500+ items).
• Procurement for CG hospitals and dispensaries is done by external procurement agents MSO and HSCC; fees of 10% and 4.5% are charged.
• MSO and HSCC poor performance results in low availability; facilities resort to significant local purchase.
• Proprietary medicines and local purchases represent a large percentage of CGHS drug expenditure.
• NCT Delhi tertiary facilities report erratic supply requiring unplanned for local purchases.
• NDMC’s technical tender restricts eligible suppliers, limits competition and results in high unit prices.

Private sector:
• Trade schemes are common in pharmaceutical trade; savings not seen by patients.
• The retailer’s low purchase price of branded-generic equivalents indicates the real manufacturing cost of branded medicines.
• Detailed discussion with 2 medium-sized manufacturers shows weak correlation between cost and MRP of branded medicines.
• Evidence suggests that MRP is set significantly higher than cost.
• Data collected on C&F and wholesaler margins match established markups.

Taxes:
• Numerous taxes are levied on APIs and re-applied to finished products (e.g., excise tax, education cess, VAT).
• All four public procurement systems pay 4% VAT; MCD also pays 4% CST.
• HSCC collects service tax of 12% and education cess on orders.

Recommendations:
• Government to increase transparency in manufacturer-set MRP.
• Government to remove all tariffs on medicines to increase access.
• Develop a policy for generic substitution and generic prescribing.
• Establish a working group (from MoH&FW, MC&F, DCGI, private sector, academics, and NGOs) to explore ways to bring all essential medicines onto scheduled list.
• Establish links between procurement offices of central government, DHS, MCD and NDMC to share information on procurement and reduce replicated effort.
• Central government to investigate use of proprietary medicines and local purchases.
• All public procurement bodies to enforce reliable delivery from suppliers.
• Conduct a WHO-HAI Medicine Prices and Availability survey in NCT Delhi.

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Annex 3: Glossary

Crore: A counting term in India; 1 crore = ten million or 10,000,000

Stockist: Wholesaler