

**A SURVEY OF MEDICINE PRICES AVAILABILITY,
AFFORDABILITY AND PRICE COMPONENTS IN
MALAYSIA USING THE WHO/HAI METHODOLOGY**

Research Report

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IN COLLABORATION WITH

**WORLD HEALTH ORGANIZATION (WHO)
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Malaysia, October 2005

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Preface

Medicine pricing issues have always been of great concern for developed and developing countries due to the high cost incurred in pharmaceutical care. In developing countries the studies and data on medicine prices are scant. Despite the fact that several stakeholders recognize medicines prices are an issue; the issue could not be addressed in a systematic manner in the past due to lack of a reliable methodology. However, the World Health Organization and Health Action International have undertaken a commendable task to address methodological difficulties in surveying medicine prices.

This report is an outcome of a systematic study employing the World Health Organization/Health Action International (WHO/HAI) methodology and is an attempt to address the pricing situation in Malaysia. We strongly believe that the findings and suggestions given herein would be helpful and useful for devising an effective pricing policy. The policy so formed can positively influence health expenditures.

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Acknowledgements

We would like to thank the World Health Organization (WHO) and Health Action International (HAI) for funding and endorsing this project. Our heartfelt thanks to Margaret Ewen (HAI-Europe), Andrew Creese (WHO), Kirsten Myhr, (HAI-Europe and Ulleval Drug Information Centre, Norway), Libby Levison (USA), Richard Laing (WHO) and Pierrick Gonnet (France) for providing the technical assistance and support throughout the project. A special thanks goes to Dr Balasubramaniam (HAIAP) for encouragement in carrying out this project.

We are indebted to Tan Sri Datu Dr. Mohamad Taha Bin Arif, the Director General of Health, Ministry of Health, Malaysia for endorsing this project.

We are also thankful to Prof Dr. Norfadzillah and Mr. Andres Trianon of UCSI's Centre for Research Excellence (CRE) for providing logistic support and technical assistance. Prof. Dato' Dr. Mohd Roslani Abdul Majeed, Dr. Siew Wei Yeong, staff and students of School of Pharmacy, UCSI also deserves a special felicitation for their contribution.

Dr Jeyabalan of Consumer Association of Penang (CAP) also deserves special thanks for his support as Co-Coordinator in the study. We also appreciate our advisory group members for making this survey a success. This group consisted of Dr. Rokiah Alavi (International Islamic University), Prof Dr. Abu Bakar (Universiti Institute Teknologi MARA), Salmah Bahri (Universiti Sains Malaysia) Mr. Amrahi Buang (Universiti Malaya Medical Centre) and Chee Yoke Ling (Third World Network).

We are indebted to Mr. Khalid Ahmad Sheikh, Mr. Chee Yee Soon and Dr. Anthony Wong for their suggestions. We also appreciate Sunanthiny Krishnan, Pang Chee Harn, June Choon Wai Yee, Lee Hooi Ying, Jessica Chai, Wong Siew Kim, Uthayalaxmi, and all other data collectors who worked very hard for this project.

Last but not the least we would wish to thank all who have contributed in one way or another towards this project. We also recognize the contribution of all pharmacists, doctors and other healthcare professionals who cooperated during the survey.

Executive Summary

Objectives:

- To measure the procurement prices in the public sector.
- To compare the prices people pay for medicines, treatment affordability, and availability in the community pharmacy sector and the dispensing doctor sector.
- To measure the availability of a defined list of medicines in the public sector.
- To identify price components.
- To compare the prices with international reference prices (IRP).

Methods:

The survey was undertaken from October 2004 - Jan 2005. Forty-eight medicines, 28 from the WHO/HAI core list and 20 supplementary medicines were included in the study. For each medicine, its innovator brand (IB), most sold generic (MSG- determined nationally) and lowest price generic (LPG-determined at each facility) were included. A standard data collection form was developed and validated in a pilot study. A systematic sampling technique was used covering 4 geographical areas in West Malaysia. Data was collected from the Procurement for Public Sector (PPS), Private Sector Retail Pharmacies (PSRP) and the Dispensing Doctors Sector (DDS). Data from private hospitals and university hospitals were obtained as a case study. Data on price components were collected from those involved in the entire distribution chain including port/shipping authorities, banks, financial institutions, customs office, manufacturers, community pharmacies, wholesalers, distributors and dispensing doctors. Affordability was assessed by estimating the number of days an unskilled government worker would have to work to pay for a defined set of treatments. The availability of medicine was also assessed in all sectors.

Results

In the survey, prices are expressed as Median Price Ratios (MPR) rather than actual prices. The Median Price Ratio is the ratio of the local median unit price across the facilities surveyed to an international reference price. It is used to gauge whether the prices of drugs are high or low compared to an international standard. The Management Sciences for Health International Drug Price Indicator Guide 2003 was used as the reference source in this survey. Usually a MPR of 1 or less reflects that the procurement in the public sector is efficient. In the private sector, we consider a MPR more than 5 to be excessive.

For government procurement prices, the median MPR for innovator brands (IB) was 2.4 higher than the reference prices. The most sold generics (MSG) and lowest priced generics (LPG) were 1.56 and 1.09 times higher respectively. The median MPR was lower than 1 for 14 drugs. Of these, 12 were only available as generics. High variation across the facilities was noted for innovator brand drugs - median MPRs were 1.20 and 8.90 at 25th and 75th percentiles. The highest

median price ratio (MPR), 31.06, was found for IB fluoxetine whilst lowest, 0.25, was noted for generic lovastatin.

In private retail pharmacies the median MPR of IBs were 16 times higher than the IRPs, for MSG 6.89 and for LPG 6.57. The lowest and highest MPRs were 0.99, and 111.63 for IB losartan and IB ciprofloxacin, respectively. The comparison between IBs and LPGs showed that IBs were on average 2.5 times more expensive than their respective LPGs. Twenty three IBs had MPRs more than 10 and it was more than 20 for 14 drugs which included common drugs such as ranitidine, glibenclamide, propranolol, furosemide, diclofenac and atenolol. Out of 36 generics found, 22 had MPRs higher than 5, while a further 9 had MPRs higher than 10. These included ciprofloxacin, diclofenac, enalapril, fluconazole and furosemide. A large variation in the prices of IBs among pharmacies was found (25th percentile, 4.34 and 75th percentile, 30.91). For LPGs 25th and 75 percentiles were 2.64 and 9.69, respectively.

In the Dispensing Doctor Sector, the median MPR of IBs was 15 times higher and those of generics were 7.5 times higher than the IRPs. The IBs showed large variation in prices among dispensing doctors' clinics (4.72 at 25th percentile and 26.18 at 75th percentile). The price ratios varied from 0.83 for IB losartan to 52.36 for MSG diazepam. IBs were on average about 2 times more expensive than both MSGs and LPGs. The MPRs for the IBs atenolol, enalapril, furosemide, ibuprofen, omeprazole, ranitidine and simvastatin were more than 10. Twenty-seven generics had MPRs greater than 5 and of these, 18 were greater than 10. The generics also showed price variation (25th percentile, 4.3 and 75th percentile, 12.65).

In the PSRP, large variation in MPRs was observed across the 4 geographical regions. The highest median MPR was found in Kota Bahru pharmacies followed by Kuala Lumpur, Penang and Johore Bahru. The price variation in pharmacy sector was observed to have little linkage with the density of pharmacies with exemption of Kota Bahru. Similar trends were seen in DDS.

Low availability of medicines was noted in all sectors, being lowest in the public sector. In public sector, the availability of core and supplementary drugs was on average 25% for the generics drugs. When only core list drugs were evaluated, the availability was on average 22% for LPG and 5% for IBs. In PSRP the availability of any generic (= LPG) was 43%, MSG was 18% and IBs was 39%. In DDS, the availability was 45% for any generic (= LPG), and 10% for IBs. The retail pharmacies carried fewer generics and more IBs than the dispensing doctors. Generic versions of fluoxetine and amlodipine were not available in the market as these drugs are still under patent in Malaysia

Low affordability was noted in PSRP and DDS for all categories of drugs studied, even for the generics. An unskilled government worker needs to spend 4.9 and 4.1 days' wages to buy a 1 month treatment with IB amlodipine 5 mg, in PSRP and DDS respectively. Treatment with IB ranitidine required 7.5 days' wages in the PRSP, 8.1 in the DDS while buying LPG ranitidine required 3-4 day's wage in both sectors. Omeprazole IB required approximately 14 days' wages in both

sectors while for LPG the patients have to pay 3 - 4 days of their wages. The price of IB atenolol equals 2.3 and 2.1 days' wages for 1-month treatment in private pharmacies and dispensing doctors respectively, while for LPG atenolol it cost about half to one day's salary to buy the medicine from either sector.

The mark-up for IBs was lower than for the generic versions. The highest (98%) add-ons were observed in case of generic atenolol. Manufacturing sale price for IBs was higher than for generics in all sectors. The add-ons for generic omeprazole were highest in DDS. The retail prices were higher in community pharmacies and the profit margin was higher in dispensing doctor sector. The cost of insurance and freight, certain banking fees, port handling and clearance charges was noted to be minor. For some of the drugs mark-up was found to be more than 100%.

Conclusion

- Prices were found to be generally high in private sector retail pharmacies and dispensing doctor clinics, for innovator brands as well as generics.
- In the Government sector, innovator brands of off-patent medicines were often found but no generic equivalents, indicating the purchasing method might be inefficient. The prices of many innovator brands were high whereas the generics were generally reasonably priced.
- High availability of branded drugs and comparatively low availability of generic alternatives was seen in private pharmacies. This probably shows that innovators are widely prescribed and dispensed.
- Dispensing Doctors' Sector had high availability of generics compared to innovator brands.
- In the public sector availability was low even for the medicines on the NEDL.
- High variations in prices were found among different sectors and geographical areas. E.g., high price differences were observed for some identical products in private pharmacies and dispensing doctors' clinics.
- Low affordability was observed even for some common ailments, such as hypertension, asthma, respiratory disorders (and often for treatment with generics as well as innovator brands)
- Generics were found to be more expensive in dispensing doctors' clinics compared to the private pharmacies. Innovator brands were more expensive and more available in pharmacies than in doctors' clinics.
- Generally high mark-ups have been noted along the supply chain, which drives up the price and makes medicines less affordable to the people who need them.
- Profit margins and mark-ups are particularly high in dispensing doctors and private retail sectors for generics as compared to innovator brands. Add-on costs are most significant in the Dispensing Doctor sector.

- The cost of insurance and freight, banking fees, port handling and clearance charges do not have a significant impact on prices of most of the drugs. However for some of the drugs, high costs for insurance and freight were discovered.
- In the public sector some of the mark-ups were high and demands further investigation of the public procurement system.
- The Manufacturing Selling Price (MSP) was high for innovator brands as compared to their generics in all sectors.

Summary of Recommendations

- There is a need for a pricing policy and to incorporate that pricing policy into the national drug policy.
- A price monitoring system is needed in Malaysia. We recommend establishing this in the Ministry of Health and that a working group regularly monitor the results.
- The high price of generics demand immediate attention from the Government. There should be an investigation as to why generics are expensive and why generic availability is poor. There is a need for a generics policy; this should include campaigns to promote generics, increasing consumer awareness and to introduce incentives for pharmacist and doctors to prescribe and dispense generics. There is a need for a generic substitution policy as in USA.
- There is a need to investigate why procurement prices especially for innovator brands are high in public sector.
 - The Government should ensure the availability of the drugs on the NEDL in the public sector. The availability of other drugs that are supposed to be available, such as HIV-drugs, must also be ensured. A study should be undertaken to find out the reasons for the low availability of the medicines in the public sector.
 - The Malaysian pharmaceutical society and Malaysian medical association should join with the government to discuss the remuneration and professional roles of pharmacists and physicians in the context of improving access to medicines.
 - Innovator brands are being promoted and sold in Malaysia, which increases costs and acts as a hurdle to access therefore; this practice must be monitored.
 - Mark-ups must be reasonable and incentives be given such that generics are prescribed and sold. Currently, Malaysia has no maximum mark-ups for wholesalers, retailers and dispensing doctors. There are no other government policies, which impact prices because there are no price controls, import/export duties or taxes. The government should set and regulate the Stage 3 and Stage 4 mark-ups: fixed price margins for wholesalers and retailers.
 - The government should regulate the MSP for innovator brand products, as these are the main contributor to the retail price. Pharmacoeconomic analysis should be undertaken as occurs in a number of other countries.

Abbreviations and Acronyms

APPL	Approved Product Price List
CIF	Cost, Insurance and Freight
CPI	Consumer Price Index
DDS	Dispensing Doctors' Sector
DF	Drug Formulary
GST	Good and Services Tax
HAI	Health Action International
IB	Innovator Brand
IPRS	Intellectual Property Rights
IRP	International Reference Price
JPA	Jabatan Perkhidmatan Awam/Civil Service Department, Malaysia
LC	Letter of Credit
LPG	Lowest Price Generic equivalent
LPO	Local Purchase Order
MAC	Maximum Allowable Cost
MIER	Malaysian Institute of Economic Research
MPR	Median Price Ratio
MSG	Most Sold Generic equivalent
MSH	Management Sciences for Health
MSP	Manufacturer's Selling Price
NEDL	National Essential Drug List
NHIS	National Health Insurance Scheme
PhAMA	Pharmaceutical Association of Malaysia
PPS	Procurement for Public Sector
R & D	Research and Development
PSRP	Private Sector Retail Pharmacy
RM	Ringgit Malaysia
TRIPS	Trade-Related Aspects of Intellectual Property Rights
VAT	Value Added Tax
WTO	World Trade Organization

Glossary

Affordability

Affordability is the cost of treatment in relation to the consumers' income. In this survey, the daily wage of the lowest paid unskilled Malaysian government worker is used for comparison with the cost of a defined course of treatment for a specific condition.

Brand premium

A brand premium is the difference in price between the innovator brand and the lowest price generic equivalent.

Cost, insurance, freight (CIF)

Shipping term meaning the seller must pay the costs, insurance and freight charges necessary to bring the goods to the port of the destination.

Dispensing fee

Normally a fixed fee that pharmacies are allowed to charge per prescribed item instead of or in addition to a percentage mark-up is called the dispensing fee. The fee more accurately reflects the work involved in handling a prescription.

Dosage form

The administration form of the completed pharmaceutical products is its dosage form, e.g. tablet, capsule, mixture, and injection.

Essential medicines

Drugs intended to be available within the context of functioning health system at all times, in adequate quantities, in appropriate dosage forms, with assured quality and adequate information, and at affordable prices.

Free on board (FOB)

Shipping term meaning the buyer must pay all costs and insurance against risks of damage once goods are loaded for shipping.

Generic medicine

A pharmaceutical product usually intended to be interchangeable with the innovator brand product, manufactured without a license from the innovator manufacturer and marketed after the expiry of patent or other exclusivity rights.

Innovator brand

Innovator brand is generally the product that was first authorized world wide for marketing (normally as a patented product) on the basis of the documentation of its efficacy, safety and quality, according to requirements at the time of authorization. The innovator brand name may vary between countries.

Mark-up

A certain percentage added to a purchasing price to cover the cost and profit of the wholesaler or retailer is called the mark up.

Median

The median is the value that divides the distribution of data in half. If the observations are arranged in increasing order, the median is the middle observation. The median is a useful descriptive measure if there is an asymmetrical distribution of data or there are one or two extremely high or low values, which would make the mean unrepresentative of the majority of the data.

MSH (Management Science for Health) reference prices

The MSH issues an annual International Price Indicator Guide (<http://erc.msh.org>) that lists the prices from not-for-profit and for-profit suppliers to developing countries for multi-source generically equivalent products and calculates a mean and a median unit price, the latter being used in this survey.

Percentile

The range of values containing the central half of a set of observations: that is, the range between the 25th and 75th percentiles (the range including the values that are up to 25% higher or down to 25% lower than the median) is called the interquartile range.

Procurement price

In the context of this survey it is the price paid for procuring medicines for public sector.

Retailer

A company that sells goods to consumers is the retailer. In the context of this survey the retailer is the community retail pharmacy or the dispensing doctor.

Retail mark-up

A percentage added to the retailer's purchasing price to cover his expenses and profit.

Wholesaler

A company that buys goods from a manufacturer or importer and sells it to the retailers

Wholesale mark-up

A percentage added to the wholesaler's purchasing price to cover his expenses and profit.

Introduction, Background and Objectives

Medicine pricing and affordability has always been of great concern for the public and governments of developed and developing countries. For the public, the price of medicines is considered one of the most important obstacles to the access (WHO/HAI, 2003). The Medicine cost contributes significantly to the budget of developing countries and drug expenditure is second only to staff salaries and benefits, accounting for perhaps 50 – 90% of non-personnel costs (Quick, 1997). High priced medicine is not only a problem for public but also a major burden on government's budgets. Thus, despite higher GDP and more relative wealth of a country, emphasis on the principle of affordable healthcare is still required (CAP, 2004). It is therefore, required that the policies concerning medicine pricing and procurement strategies must ensure affordability of medicines.

Country data

Malaysia, comprises two states, the West and the East comprises the Peninsular Malaysia and the states of Sabah and Sarawak on the island of Borneo. The total land area is 330, 252 square kilometers. The population, as estimated in July 2004 is 23, 522,482. Infant mortality rate, in total is 18.35 deaths/1,000 live births. Life expectancy at birth is 71.95 years. Gross Domestic Product per capita is \$9,000 (2004 est.). Inflation rate (consumer prices) is 1.1% (2004 est.). The health expenditures are 3.8% of the GDP. The country was certified polio-free in 2000 and significant progress has been made to control other communicable diseases such as malaria, filariasis, typhoid, hepatitis A, leprosy and tuberculosis. New health programmes are being initiated to address non-communicable disease like lifestyle-related illnesses, environmental health and occupational diseases. There are about 117 government main and district hospitals, 864 community polyclinics, 95 maternal and child health centers, 168 mobile clinics and 1676 rural community health clinics, called klinik desa (CIA, Malaysia Country Information, 2004; World Pharmaceutical Market, 2004; WHO Country Health Information Profile, 2004).

Malaysian healthcare system

World Health Organization has described Malaysian healthcare system as one of the best in the world in terms of access to primary healthcare and in terms of distribution (The Star, 1993; WHO, 2000). This healthcare delivery system has been extremely effective in reaching out to provide medical and preventive health services even to the most disadvantaged groups in the Malaysian society (Helier,

1982). Malaysia has also adopted a number of measures to regulate pharmaceutical sector especially with respect to quality, safety and efficacy (Razak, 1998).

Government spends 800 million Malaysian Ringgits (1 US = 3.82 RM) annually on drugs to subsidize almost 97% of healthcare cost (New Straits Times, 2004) for the welfare of its public. At present, healthcare from public hospitals is not felt as a burden because the national health system had been heavily subsidized.

A price deregulation system is enacted in Malaysia and the drug prices have been reported to have escalated even faster than the drug prices in the developed world. An overall increase of 7 to 28% was noted for drug prices between 1990-1992 as compared to the United Kingdom where in the same period; in general the drug prices remained the same (Azmi & Alavi, 2001).

In 1994, the Government privatized the state-run drug distribution system in order to reduce administrative and financial burden as well as to improve efficiency of healthcare sector, and to facilitate economic growth (Balasubramaniam, 1996). After the privatisation of the Malaysian drug distribution system, a 3.3 fold increase was observed in medicine cost (Izham et al, 1997). A recent study of the prices of anti-infective drugs reported increasing price trend over the years after privatization (Babar et al, 2004). Another study on the prices of cardiovascular drugs also reflected the same price increasing trends (Babar et al, 2005a).

A remarkable difference was found in prices of some of the drugs as compared with Management Sciences for Health (MSH) reference prices (Babar et al, 2004), indicating high medical costs in Malaysia (CAP, 1996). Another study indicated that 37% of the patients obtained medicines from private hospitals or clinics, 42% from retail pharmacies, 13% from the government hospitals, and 8% bought from elsewhere (Baber & Izham, 2003) reflecting notable out-of-pocket expenditure on medicines. This, combined with the widespread use of branded medicines, as reflected by study participants in another study on drug pricing and utilization may lead further to high-out-of pocket expenditures (Babar et al, 2005b). Regarding the public perception about drug prices, 18% of consumers viewed drugs as cheap, 26% considered them priced fairly, and 56% regarded medicines as expensive (Baber & Izham, 2003). Systematic studies in Malaysia are scanty since most of the above studies are preliminary and do not address the issue in detail.

Annual increase in drug prices may pose new challenges for the Malaysian health care system. As one of the strategies to deal with this budgetary burden, government is planning to change the current system of free drugs into a pay-per-fee system, whereby private dispensaries in government hospitals will be set up, initially in 2 public hospitals, to reduce the annual subsidy cost. It is thus, expected that the public may have to pay for drugs from government hospitals next year (NST, 2004).

The results of the above studies are suggestive, on one hand of the need for addressing effectively the issue of access (Razak, 1998) since at present 35% of the Malaysians' average income is less than 1500 RM (Cruetz, 2004) and the cost of private insurance is increasing 20% per year (iBulletin, 2004). And on the other hand warrants undertaking of a systematic and well-planned study. A reliable analysis of medicines prices will facilitate devising an appropriate medicine pricing policy. A suitably devised medicine pricing policy, in turn dictates the affordability of medicines (WHO/HAI, 2003). In this context the study was planned employing the World Health Organization/Health Action International (WHO/HAI) methodology.

Objective of the Study

- To measure the procurement prices in the public sector.
- To compare the prices people pay for medicines, treatment affordability, and availability in the community pharmacy sector and the dispensing doctor sector.
- To measure the availability of a defined list of medicines in the public sector.
- To identify price components.
- To compare the prices with international reference prices (IRP).

2

Methodology

Methods

The WHO/HAI methodology (Medicine Prices/WHO/EDM, 2003) was followed for this study. A standard medicine price data collection form was developed based on the template given. The form was validated in a pilot study, undertaken in 11 community pharmacies, for correctness and as an effective means for data collection. However, the data in the pilot study was not included in the study results.

Selecting medicines

Among a total of 48 medicines included in the survey, 28 belonged to the core list of medicines suggested by WHO/HAI for international comparison and 20 were added as supplementary drugs. The core list medicines were selected based on the global disease burden. The supplementary list was prepared based on the local disease burden, local needs as determined by a pilot community survey, while taking other factors, such as the drug availability and utilization patterns into account. All the medicines included in the study are listed in Exhibit 2.1 & 2.2.

For each medicine data was collected on the:

- Innovator brand (IB)
- Most sold generic equivalent (MSG)
- Lowest price generic equivalent (LPG)

A preliminary survey was done to determine the MSG product nationally, while the LPG product was determined at each facility. The reason for measuring both the MSG and the LPG was to observe any difference between what the public pays for a popular generic and what they would have paid if the LPG had been dispensed.

No.	Drugs	No.	Drugs
1	Acyclovir 200mg tab	15	Glibenclamide 5mg tab
2	Amitriptyline 25mg tab	16	Hydrochlorothiazide 25mg tab
3	Amoxicillin 250mg caps/tab	17	Indinavir 400mg caps
4	Atenolol 50mg tab	18	Losartan 50mg tab
5	Beclometasone 50mcg/dose inhaler	19	Lovastatin 20mg tab
6	Captopril 25mg tab	20	Metformin 500mg tab
7	Carbamazepine 200mg tab	21	Nevirapine 200mg tab
8	Ceftriaxone 1gm powder for injection	22	Nifedipine Retard 20mg tab
9	Ciprofloxacin 500mg tab	23	Omeprazole 20mg caps
10	Co-trimoxazole (8+40) mg/mL paed suspension	24	Phenytoin 100mg caps/tab
11	Diazepam 5mg tab	25	Pyrimethamine + sulfadoxine (25+500) mg tab
12	Diclofenac 25mg tab	26	Ranitidine 150mg tab
13	Fluoxetine 20mg caps/tab	27	Salbutamol 0.1 mg/dose inhaler
14	Fluphenazine decanoate 25mg/mL injection	28	Zidovudine 100mg caps

Exhibit 2.1: List of the Core Drugs surveyed

No.	Drugs	No.	Drugs
1	Allopurinol 100mg tab	11	Isosorbide dinitrate 10mg tab
2	Amlodipine 5mg tab	12	Itraconazole 100mg caps/tab
3	Amoxicillin+Clavulanic acid (500+125) mg tablet	13	Loratadine 10mg tab
4	Dimenhydrinate 50mg tab	14	Metoclopramide HCl 10mg tab
5	Doxycycline 100 mg caps/tab	15	Prazosin 1mg tab
6	Enalapril 10mg tab	16	Prednisolone 5mg tab
7	Erythromycin 250mg caps/tab	17	Propranolol 40mg tab
8	Fluconazole 150mg tab	18	Simvastatin 20mg tab
9	Furosemide 40mg tab	19	Spironolactone 25mg tab
10	Ibuprofen 200mg tab	20	Valproic Acid 200mg tab

Exhibit 2.2: List of Supplementary Drugs surveyed

Identification of Sampling Areas and Facilities

The survey was conducted in West Malaysia. West Malaysia comprises 11 out of a total of 13 states in Malaysia. West Malaysia was selected as 85% of the population resides in the region, there are major cities as well as rural areas and it is the centre of economic and trade activities. For this study, 4 different geographical regions in West Malaysia were selected including Federal territory (Kuala-Lumpur), Penang (North West), Johor Bharu (South East) and Kota Bharu (North East) - labelled Area 1, 2, 3, and 4, respectively. Areas 2-4 are within 400 kms (one day travelling) from Kuala Lumpur (Area 1). This region is fairly representative of the whole country. In each area, 1 major city and 4 peripheral cities were chosen.

In each area, 1 main General Hospital in the major city and 4 other Government hospitals, not exceeding 2-hour drive from the major city were selected. One private pharmacy and one dispensing doctor were chosen within a 5-kilometre

radial vicinity of the General Hospital. Private Hospitals and University Hospitals were randomly selected from the entire West Malaysia region for inclusion in the case studies. The distribution and the number of all facilities sampled are listed in the Exhibit 2.3. The timetable of the survey is shown in Exhibit 2.4.

Area	General Hospital	Private Pharmacies (Within 5 km of General Hospital)	Dispensing Doctors' (Within 5 km of General Hospital)	Private Hospitals	University Hospitals
Area 1					
Kuala Lumpur	1	2	1	2	1
Klang	1	2	1		
Kajang	1	2	1		
Banting	1	1	1		
Sg Buloh	1	1	1		
Area 2					
Johor Bharu	1	2	1		
Muar	1	2	1		
Segamat	1	2	1		
Kluang	1	1	1		
Kulai	1	1	1		
Area 3					
Penang	1	2	1	2	
Seberang Jaya	1	2	1		
Bukit Mertajam	1	2	1	1	
Balik Pulau	1	1	1		
Kepala Batas	1	1	1		
Area 4					
Kota Bharu	1	2	1		1
Gua Musang	1	2	1		
Tumpat	1	2	1		
Pasir Puteh	1	1	1		
Pasir Mas	1	1	1		
Total	20	32	20	5	2

Exhibit 2.3: Distribution and Number of Facilities for Sampling Plan

Training and timetable of the survey

Period	Activity
June-September 2004	Proposal Submission
October 2004	Survey Planning: <ul style="list-style-type: none"> ▪ Meeting of advisory group ▪ Finalization of sectors to be surveyed. ▪ Sampling. ▪ Selection of data collectors. ▪ Preparation of training manual for data collectors. ▪ Training of data collectors. ▪ Data Collection
November 2004	Data Collection: Data Entry and Checking Data Analysis begins
December 2004	Data Analysis Component Price Survey Begins
January 2005	Report Writing and Finalization of Medicine Prices and Component Prices Report
February-June 2005	Report Editing, Additions and Checking
October 2005	Publication of Final Report
October 2005	Advocacy

Exhibit 2.4: Timetable of the survey

Data Collection

Thirty-five data collectors, all pharmacy students, and 1 associate survey manager, a doctor by profession, were recruited for this study. The data collectors were trained and tested for their ability to undertake data collection correctly.

The data were collected from 5 sectors including public, community retail pharmacies, dispensing doctors, private hospitals and university hospitals. The availability of medicines in all sectors were also assessed and noted in the data collection form. The unit prices were calculated using standard method and each entry on the form was checked carefully on the same day that the data was collected.

During the data collection from the facilities, an attempt was made to get the data on prices as close as possible to what a patient is paying for the course of treatment. For this, the prices of recommended pack sizes were taken into account. Where there was no recommended pack size available, the larger pack sizes were recorded.

Data collection for component prices

To provide a comprehensive analysis of medicine prices, medicine component costs in different sectors were also recorded. A separate form was developed and validated for the component analysis. For this analysis 5 medicines - atenolol 50 mg tab (innovator brand), atenolol 50 mg (generic version), losartan 50 mg (innovator brand), omeprazole 20 mg tab (innovator brand) and omeprazole 20 mg (generic version) - were chosen based on their widespread use and availability. Price data were collected from the medicine outlets previously identified with the lowest priced generic in the area. The data on price

components were collected from those involved in the entire supply chain from buyer to seller (i.e. from manufacturers, wholesalers, distributors, community pharmacies and dispensing doctors) and others such as port and shipping authorities, banks, financial institutions and customs office. The price components identified were very similar to those listed as examples in the WHO/HAI manual. All data on price components was collected in the Kuala Lumpur area of Malaysia.

Data collection for affordability

For affordability assessment, 10 common diseases in Malaysia were selected, based on their high prevalence and included hypertension, hyperlipidemia, peptic ulcer, depression, diabetes, adult respiratory infection, paediatric respiratory infection, asthma, epilepsy, and acute viral infection. The daily wage of the lowest paid unskilled government worker was obtained from the Civil Service Department (Jabatan Perkhidmatan Awam, Malaysia), and noted to be RM 480 per month, or RM 16.03 per day (US\$= 4.18)

Data Entry

Data entry personnel were selected from the pool of data collectors based on their knowledge and experience in using Microsoft Excel. The data collected on the Medicine price data collection form were entered by the designated personnel into the Software, International Medicines Price Workbook, ver., 3.06, Prices were double entered to ensure accuracy. The associate survey manager also checked all the data and principal investigator randomly checked data as well. The Workbooks auto checker was also used to assist in the checking process.

Data Analysis

The Workbook software calculated the median price ratio (MPR) in each sector if the medicine was available in at least 4 facilities. The MPR was the comparison of the median unit price of an individual drug with the 2003 International Reference Price (IRP) from Management Sciences for Health (MSH) Price Indicator Guide (see glossary, page 10). The IRPs are the medians of recent procurement or tender prices offered by not-for-profit and for-profit suppliers to developing countries for multi source products (McFadyen, 2004). MSH prices are of two types; supplier and agency. Where MSH supplier prices were not available, agency tender prices were chosen as the reference. This applied to loratadine, itraconazole, prazosin, simvastatin, fluoxetine, losartan and lovastatin.

The prices noted for the public sector were procurement prices of the medicines whereas prices from the community pharmacies and doctors' clinics were consumer prices.

Availability was also assessed by using the Workbook in all sectors. The treatment affordability for 10 diseases was assessed in terms of the treatment cost of an episode of illness expressed as the number of days' wages of the lowest paid government worker required to pay for the treatment. For estimation, one-month treatment cost was calculated for all medicines for chronic illnesses,

for antibiotics it was calculated for 7 days (except for Acyclovir used to treat acute viral infections where the treatment was for 5 days)

For the price component analysis, we compared the final patient prices with the ex-factory prices and different charges and marks-ups contributing to the final prices for a set of medicines in different sectors.

For price component analysis, the data was analysed for procurement via Local Purchase Order (LPO) and central tender. In the private pharmacies and dispensing doctors' sector, component costs were analysed for a selection of off-patent, recently off-patent and patented drugs. Comparisons were also made for Innovator Brands vs. Generic Equivalents and Manufacturers' Selling Price vs. Add-On Costs in all sectors, and Retailers' vs. Dispensing Doctors' mark-ups. The manufacturer's selling price (MSP) was estimated by tracking back using data on retailer and distributor's mark-ups and also by taking into account other factors such as insurance and freight charges. For the case study of private and university hospitals – data analysis was undertaken in much the same way.

The size of the variation between 25th and 75th percentile was taken as a measure of price variation between facilities and pharmacies surveyed. The difference between the MPR for the IB and that of the LPG was taken as the brand premium paid for purchasing innovator brand products.

The data is presented in Malaysian Ringgits, 3.82 Ringgits equal 1 US\$, approximately.(10.12.2004, Bank Negara Malaysia)

Ethical Consideration:

World Health Organization, Health Action International and the Director General of Health, Ministry of Health, Malaysia, endorsed the survey.

Results

Prices Availability and Affordability

Price comparison within Sectors

Procurement for Public Sector (PPS)

Of the 48 medicines surveyed, 38 were found in 4 or more of the public sector facilities surveyed. Innovator brands (IBs) were found for 14 of the medicines and generics for 26. For twelve drugs only IBs were found (no generics). IBs should normally not be found in the public sector, except for patented products such as fluoxetine and amlodipine. Simvastatin, phenytoin, ceftriaxone injection, prazosin and captopril were among the off-patent medicines in which IBs were procured and used in the public hospitals (but no generics of these medicines were found). Normally public sector facilities carry one generic but in the case of itraconazole and zidovudine, both generic and IB was found.

The comparison is presented as the median price ratio (MPR) of the local price to the reference price. In the public sector (procurement prices), the median MPRs of 14 IBs were 2.41 times higher than the reference price (IRP), 7 being in the range of 1 to 9 times the IRP, while the most sold generic and lowest price generic MPRs were 1.56 and 1.09 higher, respectively. The MPR was observed to range from 0.25 for the most sold generic lovastatin to 31.06 for innovator brand fluoxetine. Some of the MPRs can be observed in Exhibit 3.1.

High prices of generic medicines were also noted in this sector. For the commonly used drugs such as diazepam, omeprazole, carbamazepine zidovudine and ranitidine a MPR more than 2 was found which is considered high in the public sector. High MPRs for IBs were also noted for amlodipine, fluoxetine, loratadine, zidovudine and simvastatin. This indicates possible inefficient procurement and thus higher budgetary expenditures.

Variation across public health facilities for IBs and generics

For innovator brands, the 25th and 75th percentiles, 1.29 and 8.90 indicated large variations across facilities. For generics (LPG), variation was somewhat less (25th percentile, 0.52 and 75th percentile, 1.58).

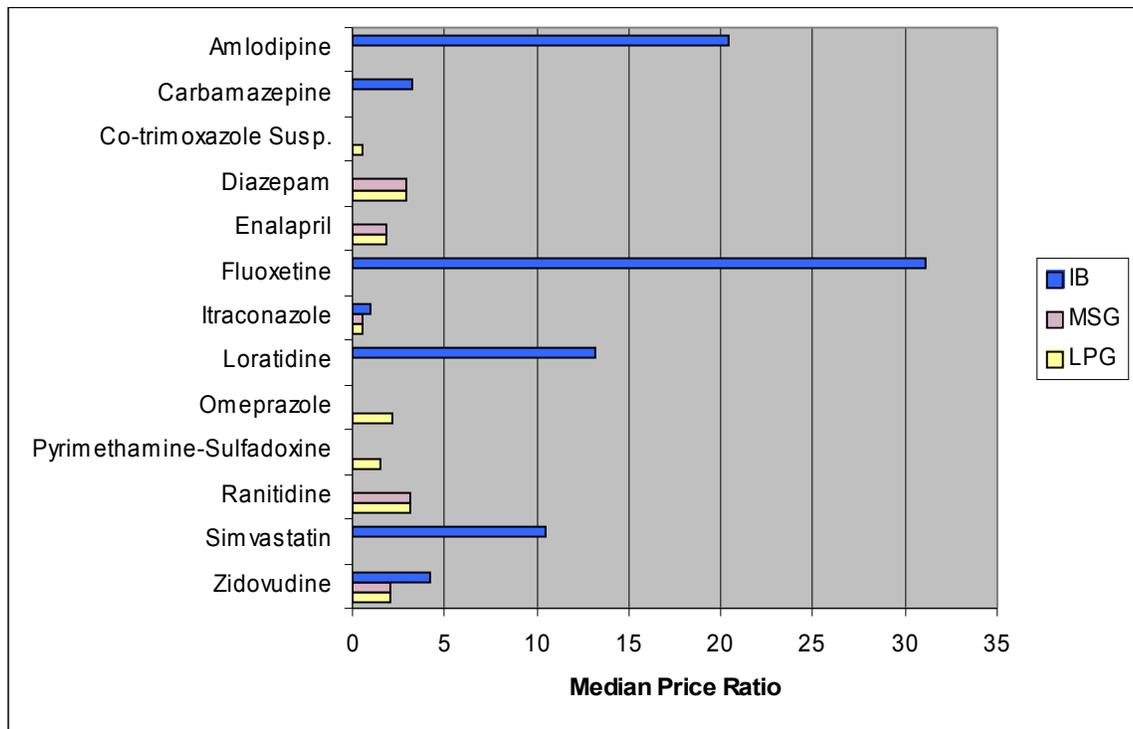


Exhibit 3.1: Median Price Ratios in public sector procurement for selected drugs

Private (for-Profit) Sector Retail Pharmacies (PSRP)

Availability

Of 48 medicines surveyed, 32 IBs, 31 MSGs and 36 LPGs were found in 4 or more pharmacies surveyed. Diazepam, fluphenazine injection and the AIDS medicines indinavir, nevirapine and zidovudine were not found at all.

Variation between IBs and Generics

Median MPR for 32 IBs was about 16.5 times the IRP, while the generics had median MPRs of 6.89 for 31 MSGs and 6.57 for 36 LPGs. The MPR for IBs ranged from 0.99 (for losartan) to 112 times (for ciprofloxacin). Twenty-three IBs had higher MPRs than 10. Of these, 14 drugs had MPRs higher than 20. This included ranitidine, glibenclamide, propranolol, furosemide, diclofenac and atenolol. The price difference between IB and LPG was 263% for Acyclovir, 678% for ciprofloxacin and 550% for glibenclamide. The comparison between IBs

and LPGs showed 28 IBs to be on average 2.5 times more expensive than their LPGs. Analysis of the matching pairs between IBs and MSGs revealed 2.3 times higher prices of IBs than of their MSGs. The matching pair illustrates that the same drugs substance was compared as IB, LPG and MSG. Exhibit 3.2 shows MPRs for IB, MSG and LPG in private pharmacies for selected drugs.

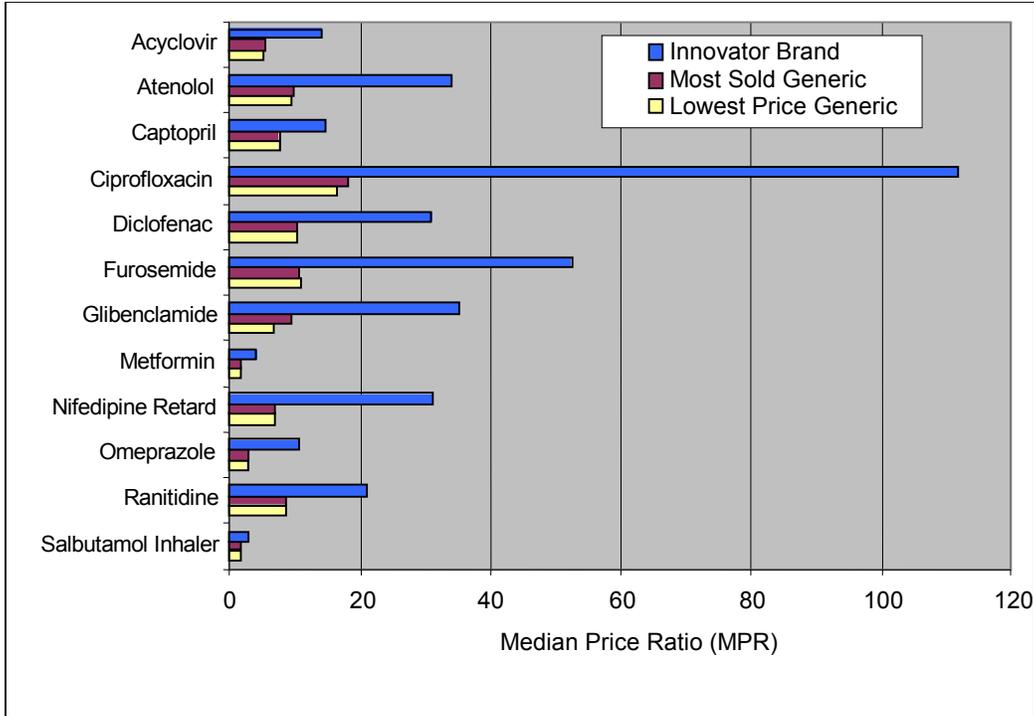


Exhibit 3.2: Comparison of median price ratios of innovator brands, most sold and lowest price generic equivalents in private sector retail pharmacies

Variation between MSGs and LPGs

As indicated by median MPRs being 6.75 for LPG and 6.89 for MSG, the former were observed to be only 2.0% cheaper than the latter. Analysis of matched pairs (same medicines in the analysis) also gave the same findings.

Price variation across facilities for IBs and generics

For IBs, the 25th percentile median MPR was 4.34 while 75th percentile median MPR was 30.91, showing high variation across the facilities. The IB glibenclamide had a MPR range of 30.65 to 40.54 times its IRP with minimum and maximums in the range of 28.73-57.14.

For MSGs the 25th and 75th percentiles median MPRs were 3.35 and 10.27, respectively. For LPGs the 25th percentile was 3.02 and 75th percentile was 9.69. The 25th and 75th percentile MPRs for MSG glibenclamide ranged from 9.5 to 13, for MSG Acyclovir from 3.88 to 8.10. The price variation for IB, MSG and LPG in the 32 pharmacies for atenolol is presented in Exhibit 3.3. The price of the IB varied widely across facilities as compared to the price variation of the MSG and LPG.

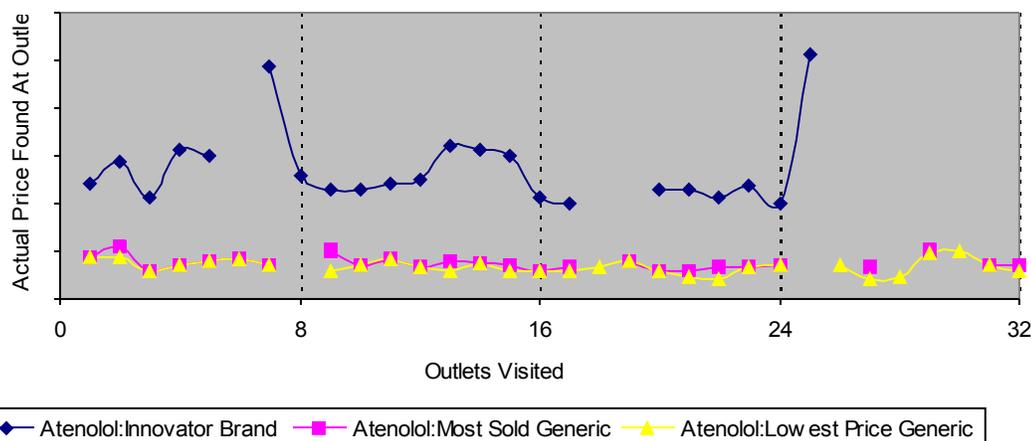


Exhibit 3.3: Actual price variation for Atenolol; IB, MSG and LPG in private sector retail pharmacies

Dispensing Doctors' Sector (DDS)

Availability

Of 48 medicines surveyed, 17 IBs, 19 MSGs and 38 LPGs were found in 4 or more dispensing doctors' surveyed.

Variations between IB and Generic

Median MPR for the 17 IBs was 15.40 times higher than IRPs, while both the MSG and LPG were 7.76 times higher than the IRP. The MPRs for IB atenolol, amlodipine, glibenclamide, ibuprofen, prazosin, propranolol, enalapril, furosemide, ibuprofen, omeprazole, ranitidine and simvastatin were 10 or more.

The data in Exhibit 3.4 reflects great variations within the dispensing doctors' sector. E.g. the difference between the MPRs for IB and LPG of amoxicillin+clavulanic acid is about 273%.

Medicine Name	Medicine Type	Median (MPR)	25%ile	75%ile	Min	Max	% With Meds.
Amoxicillin+Clavulanic Acid (500+125) mg	Brand	3.21	2.94	3.83	2.58	4.01	30.0%
Amoxicillin+Clavulanic Acid (500+125) mg	Most Sold	0.97	0.74	1.06	0.68	1.72	35.0%
Amoxicillin+Clavulanic Acid (500+125) mg	Lowest Price	0.86	0.68	1.15	0.68	1.72	45.0%
Atenolol 50mg	Brand	30.96	27.44	36.39	25.33	44.24	20.0%
Atenolol 50mg	Most Sold	14.54	13.37	17.36	9.85	19.70	60.0%
Atenolol 50mg	Lowest Price	12.67	11.26	16.89	8.44	28.15	90.0%
Co-trimoxazole suspension (8+40) mg/mL	Brand	5.33	4.73	5.88	4.36	6.06	20.0%
Co-trimoxazole suspension (8+40) mg/mL	Most Sold						0.0%
Co-trimoxazole suspension (8+40) mg/mL	Lowest Price	5.86	4.69	6.97	3.64	7.27	30.0%

Exhibit 3.4: Single-product statistics across facilities in dispensing doctors' sector

Variations between MSGs and LPGs

The median MPR for both (19) MSGs and (38) LPGs was found to be 7.76. Nineteen matched pairs also showed the same ratio.

Price ratios for individual medicines sold by dispensing doctors

Exhibit 3.5 presents data for 8 selected medicines available in the dispensing doctors’ sector. The generic equivalents (MSG and LPG) also showed variation in price. The MPRs across the three versions ranged from 0.83 for IB losartan to 52.36 for MSG diazepam.

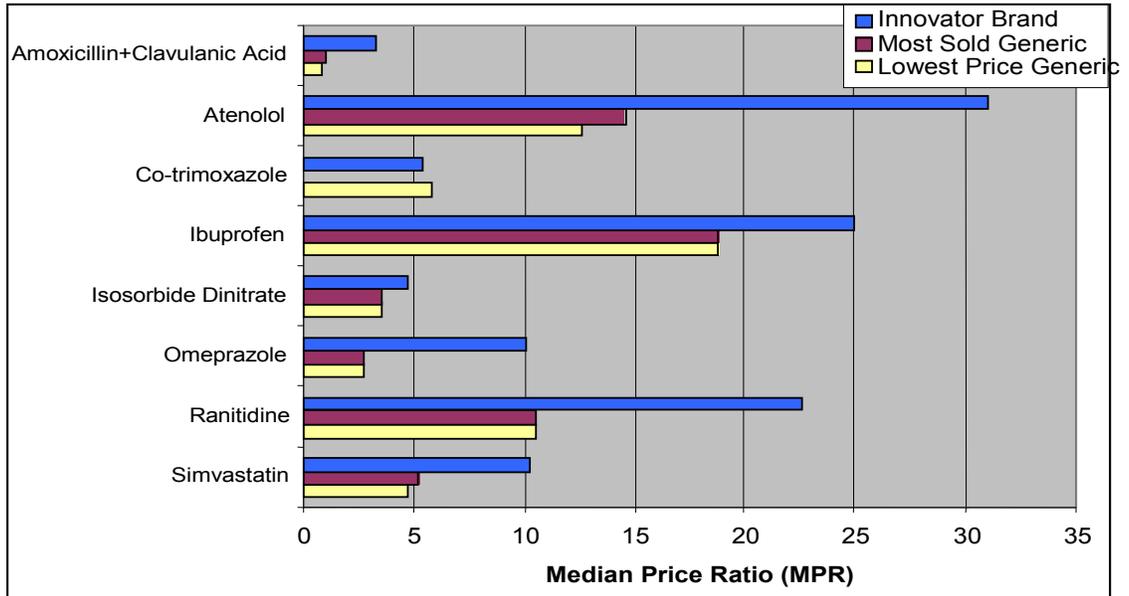


Exhibit 3.5: Comparison of median price ratios in dispensing doctors’ sector (innovator brand, most sold and lowest price generic versions)

Variation across facilities

The IBs showed the largest variation across facilities as indicated by the median MPR 25th and 75th percentiles - 4.72 and 25.66 respectively. However, the median MPR of the MSGs was 5.10 at 25th percentile, 14.76 at 75th percentile. The median MPR of the LPGs was 4.03 for 25th percentile and 12.65% at 75th percentile, thus also showing large variation.

Comparison of Medicine Prices across Sectors in Malaysia

Exhibit 3.6 shows the comparison of the median MPRs for medicines found in both the private pharmacies surveyed and dispensing doctors’ clinics. Overall, the IB products were found to be 2.2% less expensive in dispensing doctors’ clinics than retail pharmacies. However, the LPGs were 17.6% more expensive when dispensed from doctors. Exhibit 3.7 compares the MPRs for 8 LPGs in both sectors. The full list can be found in Annex 3.

Drugs	Private Sector Retail Pharmacies N=32	Dispensing Doctors Sector N=20	No. Of medicines in both sectors	Ratio Dispensing Doctors to private Retail Pharmacies	Percentage Difference(%) Dispensing Doctors to private Retail Pharmacies
Innovator Brand	16.46	16.09	16	0.98	-2.2%
Most Sold Generic	6.89	7.59	17	1.1	10%
Lowest price generic	6.75	7.93	35	1.17	17.6%

Exhibit 3.6: Comparison between private retail sector pharmacies and dispensing doctor sector

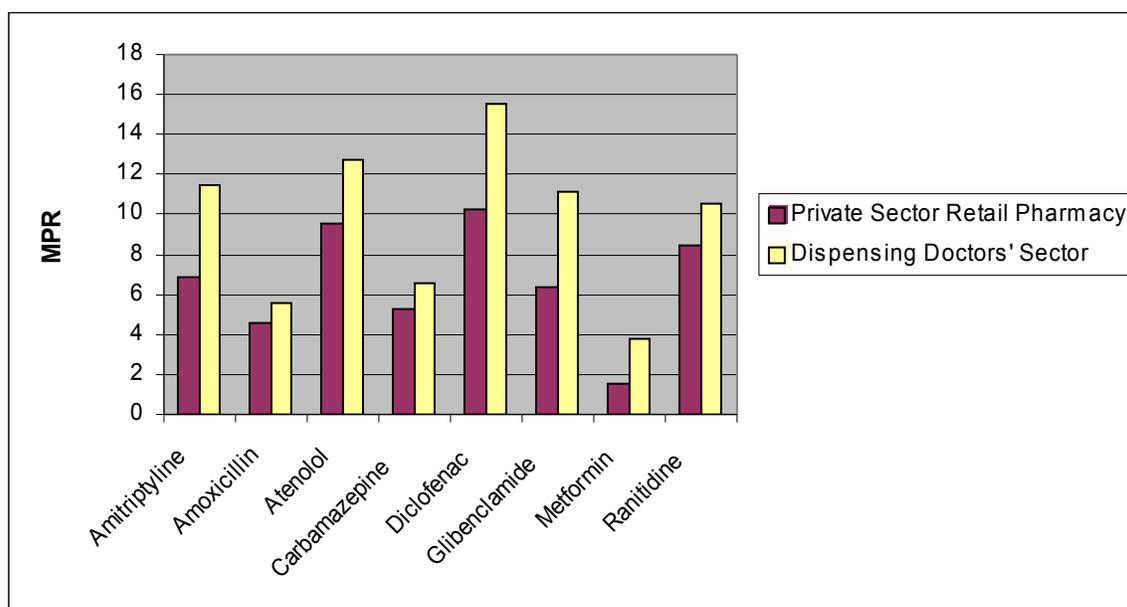


Exhibit 3.7: Comparisons of MPRs of 8 lowest price generic equivalent medicines in private retail pharmacy sector and dispensing doctors' sector

Comparison of Medicine Prices for Different Geographical Regions

Exhibit 3.8 indicates large variations in MPRs of IBs, LPGs and MSGs over the 4 geographical areas in Private Sector Retail Pharmacies. The IB amlodipine showed the highest MPR variation followed by IB glibenclamide and MSG ciprofloxacin. Losartan showed less price variation across areas surveyed. Metformin varied considerably across all areas. The MPR for the drug was 3.9 times the IRP in Kuala Lumpur, 4.2 times in Johore Bahru, 3.4 times in Penang and 4.9 times (the highest) in Kota Bahru.

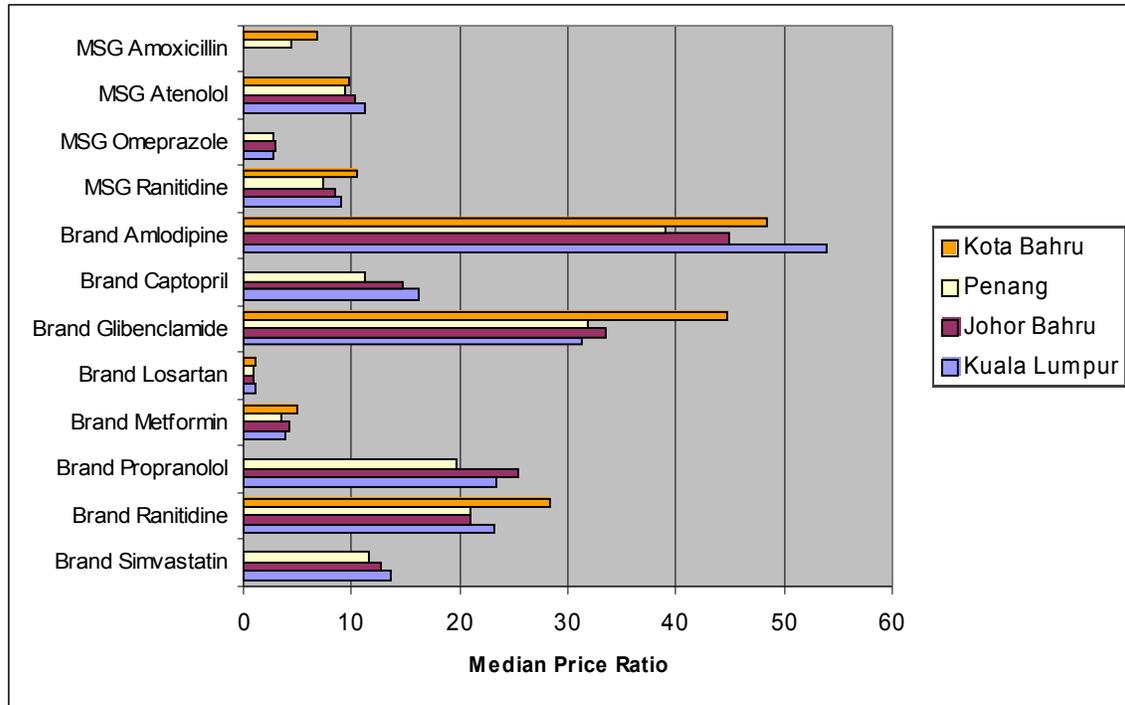


Exhibit 3.8: Regional variations in median price ratios in private sector retail pharmacies

Median price ratios across areas

Exhibit 3.9 compares the region-wise variations in prices in DDS and PSRP. In both sectors MPRs varied across areas. Exhibit 3.10 shows the price variations for individual drugs in private sector retail pharmacies.

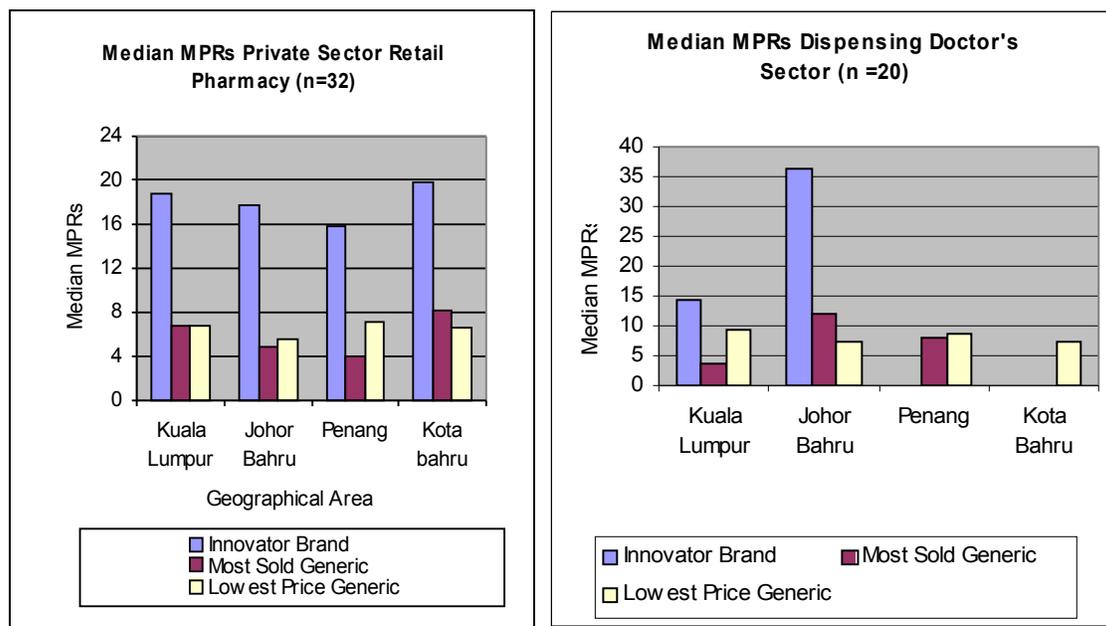


Exhibit 3.9: Regional variation in median MPRs - dispensing doctors' sector and Private Retail Sector Pharmacies.

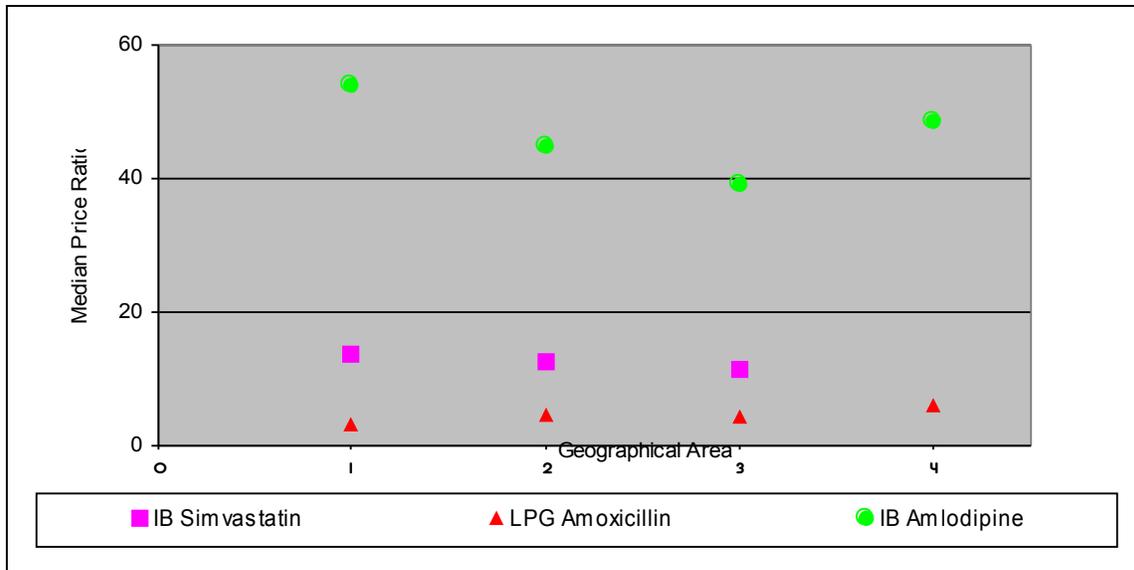


Exhibit 3.10: Regional variation in median price ratios in private sector retail pharmacies across different regions

Comparison of Medicine Availability

In the public sector when all 48 drugs (core and supplementary) were assessed the median availability was very low - only 25% of the generic drugs were available in the 20 facilities surveyed. When only core list drugs were evaluated the median availability was 22% for any generic and 5% for innovator brand. In private pharmacies the median availability of all surveyed medicines was 43% (LPG) 18% (MSG) and 39% (IB). In dispensing doctor's clinics, the availability was 45% for LPG, 15% for MSG and 10% for IBs.

The following is an assessment of the availability of drugs which are listed in the Malaysian National Essential Drug List and/or the Drug Formulary of Ministry of Health.

Drug Formulary Medicines

A. Public Sector Patient Prices

- Core medicines - median availability 7.5% IBs, 0% MSG, 37.5% LPG (22 surveyed medicines on the drug formulary)
- All medicines – median availability 2.5% IB, 0% MSG, 60% (38 meds on the formulary)

B. Private Sector Retail Pharmacies

- Core medicines - median availability 29.7% IBs, 15.6% MSG, 34.4% LPG
- All medicines – median availability 42.2% IB, 18.8% MSG, 43.8% LPG

C. Dispensing Doctors' Sector

- Core medicines - median availability 10% IBs, 12.5% MSG, 35% LPG
- All medicines – median availability 10% IB, 12.5% MSG, 47.5%

Essential Drug List medicines

A. Public Sector Patient Prices

- Core medicines - median availability 10% IBs, 0% MSG, 47.5% LPG (16 medicines)
- All medicines – median availability 0% IB, 0% MSG, 65% LPG (31 medicines)

B. Private Sector Retail Pharmacies

- Core medicines - median availability 42.2% IBs, 10.9% MSG, 23.4% LPG
- All medicines – median availability 46.9% IB, 18.8% MSG, 43.8%

C. Dispensing Doctors' Sector

- Core medicines - median availability 10% IBs, 15% MSG, 35% LPG
- All medicines – median availability 10% IB, 15% MSG, 45% LPG

Combined Drug Formulary and Essential Drugs List medicines

A. Public Sector Patient Prices

- Core medicines - median availability 7.5% IBs, 0% MSG, 37.5% LPG (24 medicines)
- All medicines – median availability 5% IB, 0% MSG, 40% LPG (41 medicines)

B. Private Sector Retail Pharmacies

- Core medicines - median availability 26.6% IBs, 10.9% MSG, 23.4% LPG
- All medicines – median availability 40.6% IB, 18.8% MSG, 43.8% LPG

C. Dispensing Doctors' Sector

- Core medicines - median availability 7.5% IBs, 7.5% MSG, 30% LPG
- All medicines – median availability 10% IB, 10% MSG, 45% LPG

Exhibit 3.11 shows the availability of selected essential medicines in the public sector. Public sector purchases more generic products than IBs, however the availability is still low. In addition, certain medicines that are not protected by patent were found only as IBs such as indinavir, phenytoin, prazosin, simvastatin and valproic acid. The drugs fluoxetine and amlodipine are patented which is why there are no generics available.

All public hospitals surveyed had stocks of generic furosemide, lovastatin and ranitidine. Ninety percent or more of the facilities had generic propranolol, doxycycline, metformin and nevirapine and 80% had salbutamol inhaler.

Medicine Name	IB	MSG	LPG
Allopurinol 100 mg tab	0.0	10.0%	10.0%
Amitriptyline 25 mg tab	0.0	70.0%	70.0%
Amlodipine 5 mg tab	70.0	0.0%	0.0%
Beclomethasone 50 mcg /dose inhaler	15.0	0.0%	0.0%
Erythromycin 250 mg caps/tab	0.0%	0.0%	35.0%
Doxycycline 100 mg cap	0.0%	0.0%	90.0%
Enalapril 10 mg tab	10.0%	60.0%	65.0%
Fluoxetine 20 mg	85.0%	0.0%	0.0%
Fluphenazine Injection 25mg/mL	0.0%	0.0%	70.0%
Furosemide 40 mg	0.0%	100.0%	100.0%
Metformin 500 mg	0.0%	0.0%	90.0%
Phenytoin 100 mg	80.0%	0.0%	0.0%
Prazosin 1mg	90.0%	0.0%	0.0%
Propranolol 40 mg	0.0%	0.0%	90.0%
Pyrimethamine-Sulfadoxine (25+500) mg	5.0%	0.0%	35.0%
Ranitidine 150 mg	0.0%	100.0%	100.0%
Salbutamol Inhaler 0.1mg/dose	0.0%	0.0%	80.0%
Zidovudine 100mg	25.0%	40.0%	40.0%

Exhibit 3.11: Availability of medicines, which are on the National Essential Drug List in the public sector

Low availability of anti-viral drugs such as indinavir, nevirapine and zidovudine was found in public hospitals. The same situation was found in private pharmacies and dispensing doctors clinics. No private retail pharmacy surveyed carried any version of diazepam 5mg tablets and fluphenazine 25mg/ml injection. Pyrimethamine-sulfadoxine and co-trimoxazole suspension was more commonly available in dispensing doctors clinics compared to private pharmacies and public hospitals. Exhibit 3.12 shows the availability of selected medicines in both these sectors.

	Brand	Most Sold Generic	Lowest Price Generic

Medicine Name	Private Sector Retail Pharmacy (n=32)	Dispensing Doctors (n=20)	Private Sector Retail Pharmacy (n=32)	Dispensing Doctors (n=20)	Private Sector Retail Pharmacy (n=32)	Dispensing Doctors (n=20)
Amoxicillin+Clavulanic Acid (500+125) mg	81.3%	30.0%	9.4%	35.0%	43.8%	45.0%
Co-trimoxazole Suspension (8+40) mg/mL	0.0%	20.0%	0.0%	0.0%	3.1%	30.0%
Diazepam 5mg	0.0%	0.0%	0.0%	30.0%	0.0%	50.0%
Fluoxetine 20mg	31.3%	5.0%	0.0%	0.0%	0.0%	0.0%
Fluphenazine Injection 25mg/mL	0.0%	0.0%	0.0%	10.0%	0.0%	10.0%
Furosemide 40mg	37.5%	20.0%	12.5%	5.0%	81.3%	70.0%
Hydrochlorothiazide 25mg	0.0%	5.0%	40.6%	20.0%	46.9%	35.0%
Indinavir 400mg	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lovastatin 20mg	3.1%	0.0%	68.8%	35.0%	84.4%	50.0%
Metformin 500mg	84.4%	15.0%	62.5%	15.0%	87.5%	90.0%
Nevirapine 200mg	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nifedipine Retard 20mg	15.6%	10.0%	59.4%	35.0%	68.8%	45.0%
Phenytoin 100mg	43.8%	10.0%	6.3%	20.0%	12.5%	25.0%
Prazosin 1mg	50.0%	20.0%	18.8%	5.0%	25.0%	20.0%
Propranolol 40mg	59.4%	30.0%	28.1%	5.0%	68.8%	55.0%
Pyrimethamine-Sulfadoxine (25+500) mg	0.0%	0.0%	3.1%	0.0%	3.1%	5.0%
Ranitidine 150mg	84.4%	45.0%	90.6%	30.0%	93.8%	55.0%
Salbutamol Inhaler 0.1mg/dose	84.4%	45.0%	93.8%	15.0%	96.9%	35.0%
Simvastatin 20mg	81.3%	20.0%	43.8%	20.0%	68.8%	65.0%
Valproic Acid 200mg	56.3%	10.0%	0.0%	0.0%	0.0%	0.0%
Zidovudine 100mg	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Exhibit 3.12: Availability of selected medicines in private sector retail pharmacies and dispensing doctors' sector

Treatment affordability

The affordability of IB, MSG, and LPG equivalents used for the selected 10 common conditions (Annex 4) was assessed in Dispensing Doctors' Clinics and Private Sector Retail Pharmacies. The lowest monthly salary of the unskilled government worker was RM 480.85 (RM 16.03 per day) (Civil Service Department JPA, Malaysia, 2004).

The government worker would have to work 2.3 or 2.1 days' to pay for 1-month of treatment with IB atenolol for hypertension when purchased from private pharmacies or dispensing doctors' clinics respectively. For LPG atenolol he only has to pay about half-a day's salary to buy the medicines from both sectors. One month's treatment of IB ranitidine for peptic ulcer required 7.5 days' wages when purchased from private pharmacies and 8.1 days' wages from dispensing doctors' clinics. The generic versions of ranitidine, on the other hand, cost 3 days' wages in the pharmacies and 3.7 days' wages from the dispensing doctors' clinics. IB omeprazole cost 14–15 days' wages for 1 months' treatment, while LPG cost about 3-4 days' wages in both sectors. (Exhibit 3.13).

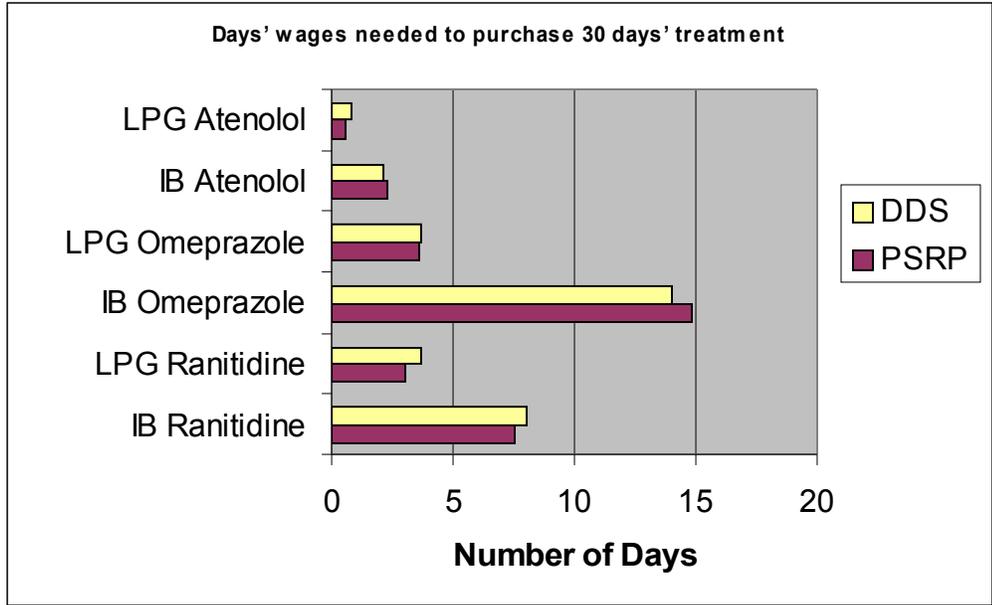


Exhibit 3.13: Days' wages needed to purchase 30 days' treatment of atenolol for hypertension and omeprazole and ranitidine for peptic ulcer disease.

Exhibit 3.14 shows the number of days' wages required to purchase a course of generic products for 4 common conditions in the 2 sectors.

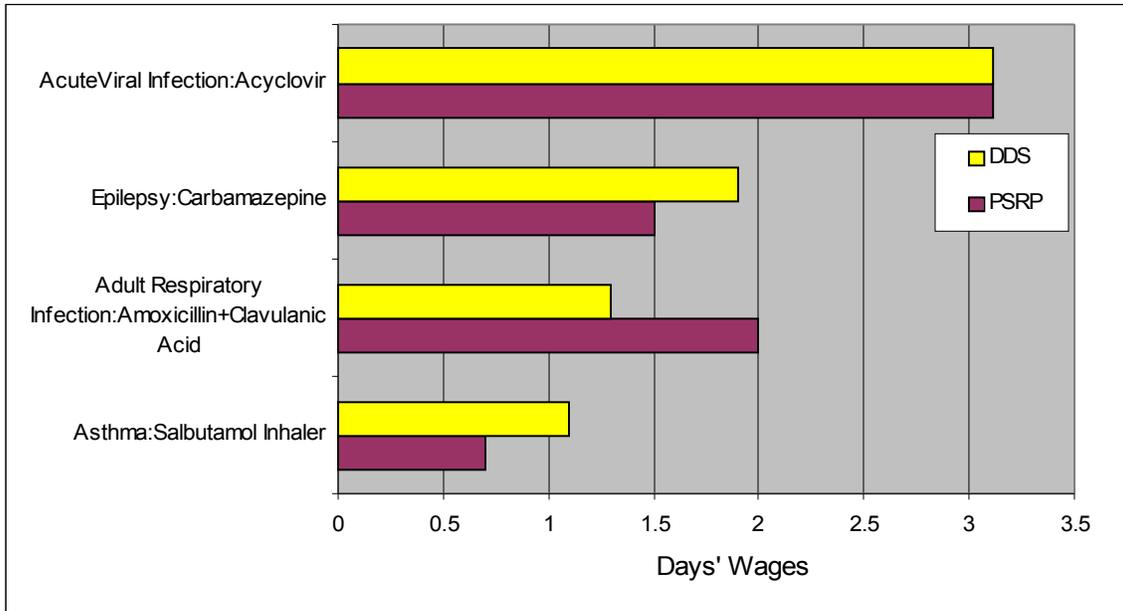


Exhibit 3.14: Comparison of the affordability of generics to treat four conditions when purchased from private pharmacies (PSRP) and dispensing doctor clinics (DDS)

Exhibit 3.15 shows the affordability of a selection of treatments when purchased from private pharmacies. One month's treatment with innovator brand amlodipine required 4.9 days' wages. Treatment of depression for one month with fluoxetine needed 26.6 days'

wages.

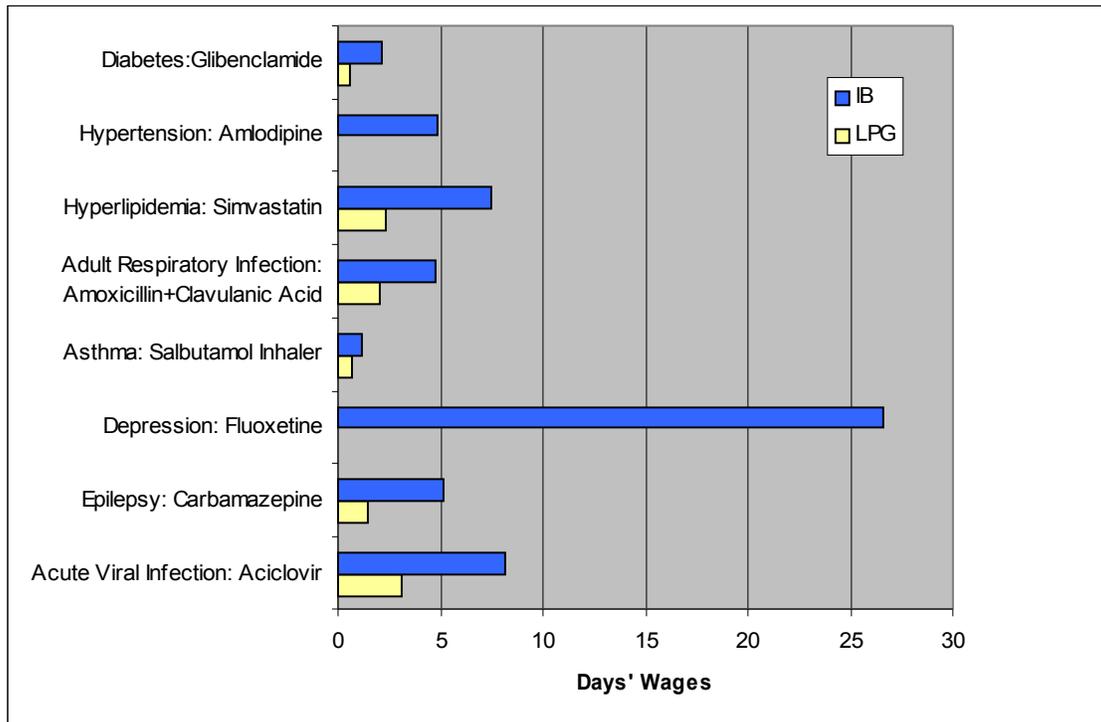


Exhibit 3.15: Affordability of 8 treatment regimens using innovator brands and generic equivalents in the private sector retail pharmacies

Exhibit 3.16 shows the example of a family where the husband suffers depression and peptic ulcer (treated with omeprazole and fluoxetine) the wife has a viral infection (treated with Acyclovir) and the son uses salbutamol inhaler for his asthma. Even if generics are purchased (except fluoxetine which is under patent so there are no generics), a full month's salary is not sufficient to purchase the medicines. If the pharmacy sells innovator brands, nearly two month's salary will be needed to buy the medicines.

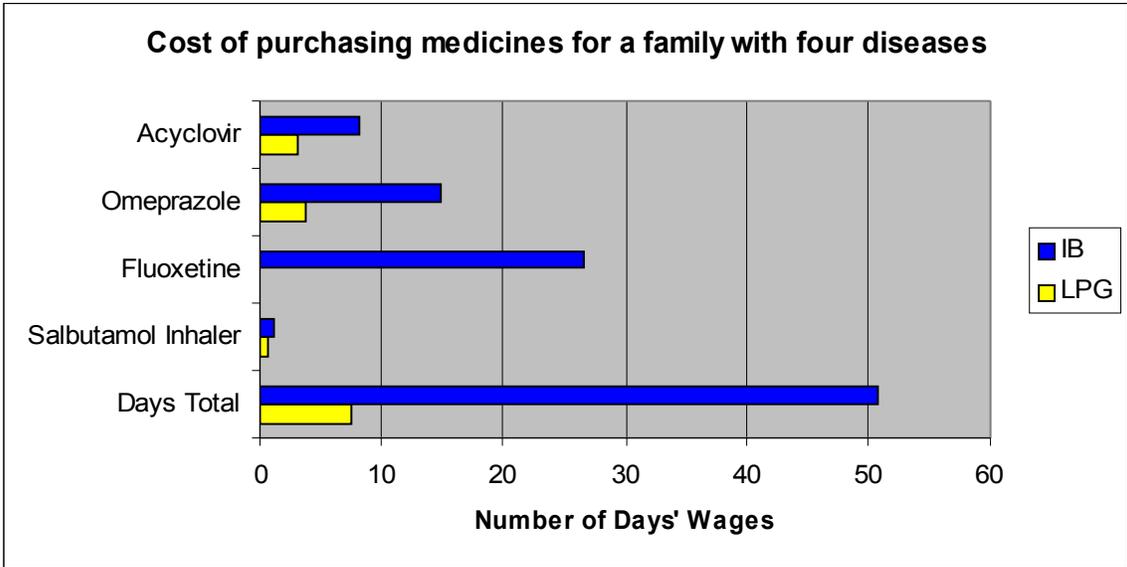


Exhibit 3.16: Cost of purchasing medicines for a family suffering 4 diseases

Private and University Hospitals (Case study)

Five private and 2 university hospitals were randomly selected to investigate the retail price and availability of medicines; however, the data may not be fully reflective of the overall situation because of the small sample size.

In private hospitals (PH) high prices were found for the majority of the drugs when compared with IRPs. On average, prices were 12 (IB) and 7 (LPG) times higher than IRPs. The highest MPR (102) was observed for IB ciprofloxacin, which varied from 67 - 110 times the IRP. For innovator brands, the pricing trend is similar to dispensing doctors and retail pharmacies but for some drugs, the prices are even higher than the retail pharmacies. Some of the examples where similar patterns in pricing were found were amoxicillin + clavulanic acid, atenolol, captopril, carbamazepine, enalapril, fluoxetine, glibenclamide, isosorbide dinitrate itraconazole and loratadine. However in the case of certain drugs, such as ranitidine, ibuprofen, and furosemide, considerable difference between private pharmacies and private hospitals was observed. For generic drugs, the trend was also similar. The prices for diclofenac, glibenclamide, and metoclopramide were almost double that found in private pharmacies. Exhibit 3.17 shows the MPR for a selection of drugs in private hospitals.

The private hospitals carry more IBs than their generic equivalents and it seems that these hospitals may be reluctant to use generic medicines. The availability of IBs in private hospital sector was 60% as compared to 20% for MSGs and 40% for LPGs. The private hospitals showed great variations in prices among the paired products, 20 IBs and 20 MSGs. The median MPRs were observed to be 15.42 and 6.74 for the pair indicating that the generic products were costing less than half of the IBs.

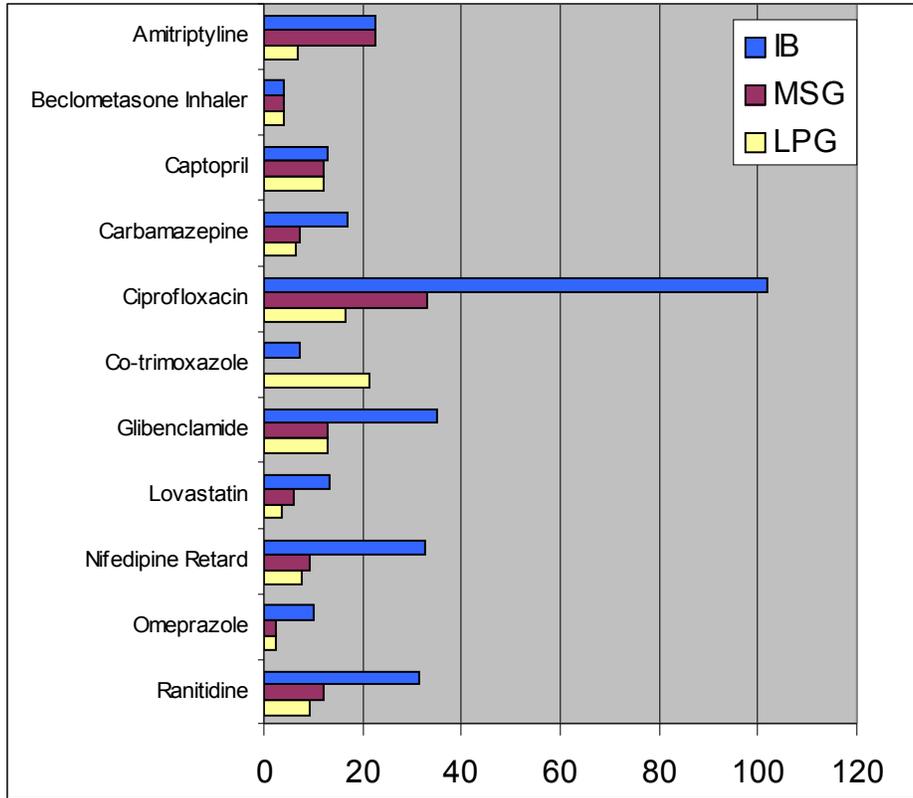


Exhibit 3.17: Comparison of private hospital sector MPRs for selected core medicines (innovator brand, most sold generic and lowest price generic)

Exhibit 3.18 showed MPRs for some of the drugs. University hospitals were more likely to carry generics than IBs: generics were available for 50% of the medicines surveyed.

Surprisingly IB lovastatin was only found in University Hospital and Private Hospital Sector while it was not available in the DDS, PSRP and PPS. Similarly, IB doxycycline and IB amitriptyline were only available in private hospital sector.

Medicine Name	Medicine Type	Median (MPR)	25%ile	75%ile	Min	Max	% With Meds.
Ciprofloxacin 500mg tab	Brand	61.05	61.05	61.05	61.05	61.05	50.00%
Ciprofloxacin 500mg tab	Most Sold						0.00%
Ciprofloxacin 500mg tab	Lowest Price	5.7	5.7	5.7	5.7	5.7	50.00%
Losartan 50mg tab	Brand	0.54	0.52	0.56	0.5	0.58	100.00%
Losartan 50mg tab	Most Sold						
Losartan 50mg tab	Lowest Price						
Pyrimethamine-Sulfadoxine (25+500) mg tab	Brand	16.36	16.36	16.36	16.36	16.36	50.00%
Pyrimethamine-Sulfadoxine (25+500) mg tab	Most Sold						0.00%
Pyrimethamine-Sulfadoxine (25+500) mg tab	Lowest Price	1.58	1.58	1.58	1.58	1.58	50.00%
Amlodipine 5mg tab	Brand	26.05	26.05	26.05	26.05	26.05	50.0%
Amlodipine 5 mg tab	Most Sold						0.0%
Amlodipine 5 mg tab	Lowest Price						0.0%
Fluoxetine 20 mg tab	Brand	30.96	30.91	31.01	30.86	31.06	100.0%
Fluoxetine 20 mg tab	Most Sold						0.0%
Fluoxetine 20 mg tab	Lowest Price						0.0%
Nifedipine Retard 20 mg tab	Brand	19.19	19.19	19.19	19.19	19.19	50.0%
Nifedipine Retard 20 mg tab	Most Sold						0.0%
Nifedipine Retard 20 mg tab	Lowest Price	1.60	1.60	1.60	1.60	1.60	50.0%
Phenytoin 100 mg caps	Brand	16.41	15.54	17.27	14.67	18.14	100.0%
Phenytoin 100 mg caps	Most Sold						0.0%
Phenytoin 100 mg caps	Lowest Price						0.0%

Exhibit 3.18: Selected single-product statistics in university hospital sector

4

Price Components Analysis

As medicines move from the manufacturer along the supply chain, finally arriving at the point of delivery, various costs are added to the manufacturer's selling price of the medicine. The "price components" cover a variety of costs, whether storage and distribution, profit margins, or quality assurance testing.

According to pharmaceutical companies, drug prices vary among countries due to variations in government price control policies, exchange rates, product registration processes, healthcare financing practices, distribution costs, import duties, taxes and shipping costs (Spilker, 1989). But there are no import duties, sales tax, or VAT in Malaysia. The costs of insurance, and freight, and port handling and clearance charges, are not very large. So it was likely that in the absence of all these additional taxes medicine prices should be reasonable. To understand the pricing structure, we analysed medicine prices in terms of price components for 3 medicines in all three sectors. Our goal was to find current price component data and to determine whether price components contribute towards high medicine prices in Malaysia.

Exhibit 4.1 shows the medicines, and their final pack prices (in Ringgit Malaysia-local currency), which were surveyed in the public for procurement sector, private sector retail pharmacies and dispensing doctor sector. The medicines were selected by WHO/HAI, have varying patent status, and represent a variety of disease targets. (Price Components manual, 2004).

Target medicine		Off patent	Recently off patent	Patented
		Atenolol 50 mg tab (Pack Size-60)	Omeprazole 20 mg cap (Pack Size-30)	Losartan 50 mg tab (Pack Size-30)
Procurement for Public Sector	Generic:	RM 11.40	RM 51.66	
	Innovator Brand	RM 42.60	RM 139.20	RM 54
Private Sector Retail Pharmacies	Generic:	RM 24.0	RM 77.14	
	Innovator Brand	RM 72	RM 237	RM 91.50
Dispensing Doctor Sector	Generic:	RM 32	RM 128.57	
	Innovator Brand	RM 94.29	RM 257.14	RM 110

Exhibit 4.1: medicines for the component price survey, all the values are in Malaysian Ringgits.

General Overview of Price Components in Malaysia

Method:

First we collected as many price components as we could from all participants in the supply chain. Then, beginning with the patient/retail price, all collected fees and costs were subtracted off, until a cost approximating the MSP was arrived at.

- The *insurance and freight* data (I&F) were collected from shipping agents.
- Several *banking costs* were incurred when purchasing pharmaceuticals internationally. Such a purchase often required buyers to hold an account called a “trade finance account” with the bank to secure letters of credit (LoC) and “incidental charges”. A fee of RM 1000.00 is required for the setting up of any trade facility. However, the fee for trade facility was not included as a component price as the importers have previously been dealing in the international markets. There is a commission of 0.1% per month on the value of the LoC. For example if the value of pharmaceuticals is RM 100, the bank will consider it RM 110 and will charge an interest of 0.1% on RM110. Therefore, the percentage contribution of the LoC charge included in the study was 0.11 (0.1% of 110%).
- *Incidental charges* including stamp fee, telegraphic and courier fees were equivalent to RM 300.00 (per order).
- The *port authorities* charges approximately RM 995.00 per container of goods for the handling, storage and removal of the container; this includes a documentation fee and a data collection fee for statistical purposes. There is a fee of RM 100.00 per consignment for the importation of dangerous and psychotropic drugs.
- The Pharmaceutical Services Division of the Malaysian Ministry of Health does not charge a fee for the inspection of pharmaceutical products, carried out at the port of entry.
- There is no import tax on pharmaceutical products and there is no sales tax, value added tax (VAT) or general sales tax (GST) in the country (The Malaysian Trade Classification and Custom Duties Order, 1999).
- Patients are not charged a dispensing fee for medicines they obtain in the three sectors studied.

Exhibit 4.2 gives a general overview of the price components in Malaysia

The WHO/HAI methodology defines the following stages in the distribution chain:

Stage 0: Manufacturer’s Selling Price (MSP)

Stage 1: Stage 1 of the component cost includes Stage 0 & I&F (Insurance and Freight).

Stage 2: includes custom charges, port charges, and quarantine charges (after the arrival of medicines in the country). There are certain fees, which are not found (nf) because we did not manage to obtain those values. Letter of Credit

(LoC) charges are included in the finance and banking fees. The difference between import and local production is also shown in exhibit 3.15.

Stage 3: Distributor's/Wholesaler's Mark-Up

Stage 4: Retailers' and dispensing doctors' mark-ups.

Stage 5: There are no VAT, GST or dispensing fees in Malaysia.

In the following discussion, the term "add-ons" is used to describe all price components apart from the MSP.

International Import			Local Production	
Stage 1	Manufacturer's Selling Price (MSP)	Value	Manufacturer's Selling Price (MSP)	Value
	Insurance & Freight (CIF)	Value	Transport	n/f
Stage 2	Finance/Banking Fees	Value	Finance/Banking Fees	n/f
	Incidental/Other Banking Fees	Value	Incidental/Other Banking Fees	n/f
	International Inspection Fee	n/a	Local Transport	Value
	Pharmacy Board Fee	n/a	Pharmacy Board Fee	n/a
	Port Charges & Clearance Fees	Value	National Taxes	n/a
	Import Tariff	n/a		
	Importer's Mark-Up	Value	Distributor's/Wholesaler's Mark-Up	Value
Stage 3	Distributor's/Wholesaler's Mark-Up	Value	Regional Taxes	n/a
	Regional Taxes	n/a	Transport	n/f
	Transport	n/f	Retailer's/Dispensing Doctors' Mark-Up	Value
Stage 4	Retailer's/Dispensing Doctors' Mark-Up	Value	Local Taxes	n/a
	Local Taxes	n/a	VAT/GST	n/a
Stage 5	VAT/GST	n/a	Dispensing Fees	n/a
	Dispensing Fees	n/a		
<i>n/a: Not Applicable; Price Component Does Not Exist</i> <i>n/f: Not Found; Price Component Exist But Data Not Found</i> <i>Value: Price Component Exist and Value Found</i>				

Exhibit 4.2: General Overview of Component Costs by Stages

Component Costs in the Public Sector

In Malaysia medicines are procured in public hospitals by using two systems :Central Tender (CT) or a Local Purchase Order (LPO). The CT is through Pharmaniaga Sendirian Berhad – a Malaysian concessionaire that supplies about 75% of the drugs in public hospitals for a price agreed on with the government. The prices are renegotiated every 3 years. Local Purchase Orders (LPO) is used by hospitals when procuring drugs directly through tenders. There are no Stage 4 price components in the public sector.

Atenolol

Exhibit 4.3 illustrates the relationship between the different stages of the cost for generic and IB atenolol in the public sector. For generic atenolol, stage I include MSP and Insurance and freight and it constitute 68% of the total cost. Of note is that insurance and freight was particularly high as the drug is imported from Canada and repacked in Singapore before being shipped to Malaysia. In contrast, for innovator brand atenolol, the MSP contributed 65% while add-ons made up the other 35%. Actual figures can be seen in Exhibit 4.4 & 4.5. Note that the Wholesale mark-up (Stage 3) was 17% of the final price for both the generic and the IB forms. (Detailed data available in Annex 6, Table 6.1 & Table 6.2).

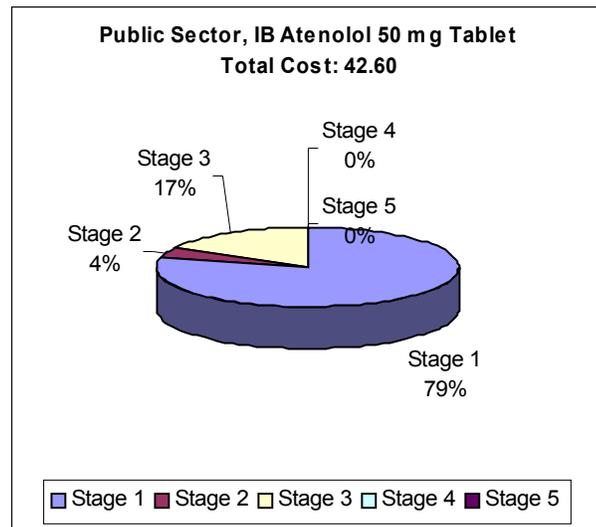
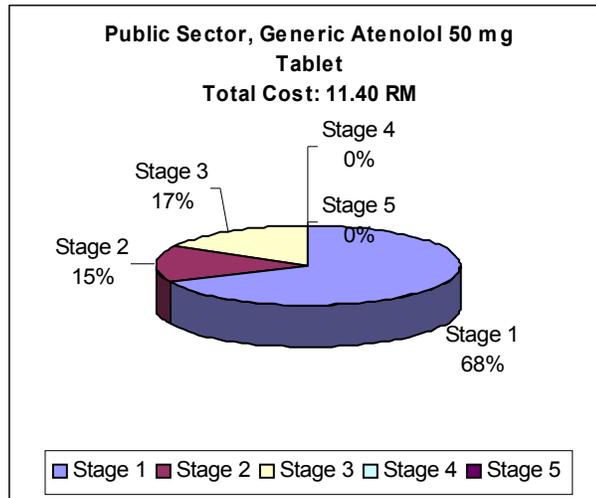


Exhibit 4.3: Share of component costs (as percentages of the total cost) across stages in public sector for generic and innovator atenolol 50 mg tablet (imported) via local purchase order (Pack Size: 60)

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			7.78
Stage 2	22.2%	1.72	9.50
Stage 3	20%	1.90	11.40
Stage 4	N/A		11.40
Stage 5	N/A		11.40
Final % Mark up and Price	46.52%	3.62	11.40

Exhibit 4.4: Actual Price and % Mark-up at Public Sector for Generic Atenolol 50 mg tablets Pack size 60

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			33.63
Stage 2	5.6%	1.87	35.5
Stage 3	20%	7.10	42.60
Stage 4	N/A		42.60
Stage 5	N/A		42.60
Final % Mark up and Price	26.7%	8.97	42.60

Exhibit 4.5: Actual Price and % Mark-up in Public Sector for Innovator Atenolol 50 mg tablets (Pack Size 60)

Omeprazole

Exhibit 4.6 shows the percentage component costs of generic and innovator brand omeprazole 20mg capsule. What is surprising about omeprazole is the similarity in the pattern of MSP and add-on costs between the generic and the innovator, as seen below. Actual component cost and mark-ups can for generic and IB can be seen in the Exhibit 4.7 & 4.8. (Details in Annex 6, Table 6.3 & 6.4)

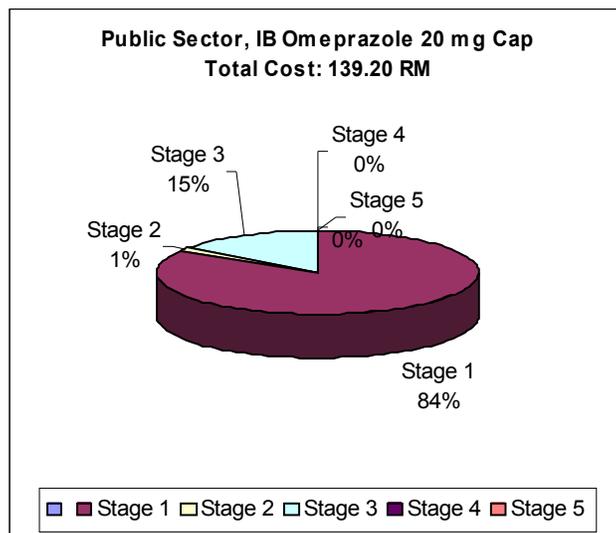
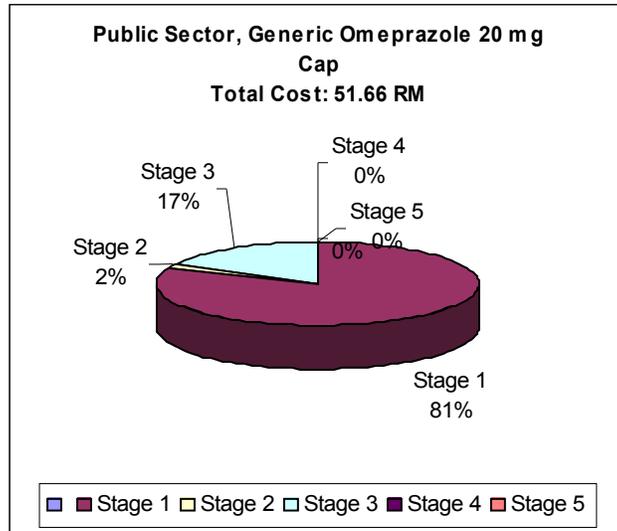


Exhibit 4.6: Share of component costs across stages in public sector for generic and innovator brand omeprazole 20 mg capsule (Pack Size=30)

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			41.08
Stage 2	3%	1.25	43.05
Stage 3	20%	8.61	51.66
Stage 4	N/A		51.66
Stage 5	N/A		51.66
Final % Mark up and Price	25.6%	9.86	51.66

Exhibit 4.7: Actual Price and % Mark-up in Public Sector for Generic Omeprazole 20 mg capsule Pack size 30

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			117.43
Stage 2	0.88%	1.04	118.47
Stage 3	17.5%	20.73	139.20
Stage 4	N/A		139.20
Stage 5	N/A		139.20
Final % Mark up and Price	18.53%	21.77	139.20

Exhibit 4.8: Actual Price and % Mark-up in Public Sector for Innovator Omeprazole 20 mg capsule (Pack size 30)

Losartan

Innovator Brand losartan 50mg is the only medicine among those medicines studied, which was procured through a Central Tender (CT), as opposed to an LPO. The CT procurement is done via Pharmaniaga Sendirian Berhad, a concessionaire, which supplies about 75% of the medicines in the public hospitals.

The most significant add-on cost for losartan is the 15% wholesaler mark-up. However this figure was inconsistent with the 17.5% supplier mark-up, which is cited in the literature (Izham & Bahri, 2003). There are no Stage 4 price components in the public sector. Component cost by stages can be seen in Exhibit 4.9 while actual mark-ups are visible in Exhibit 4.10 (Details can be seen in Table 6.5 in Annex 6).

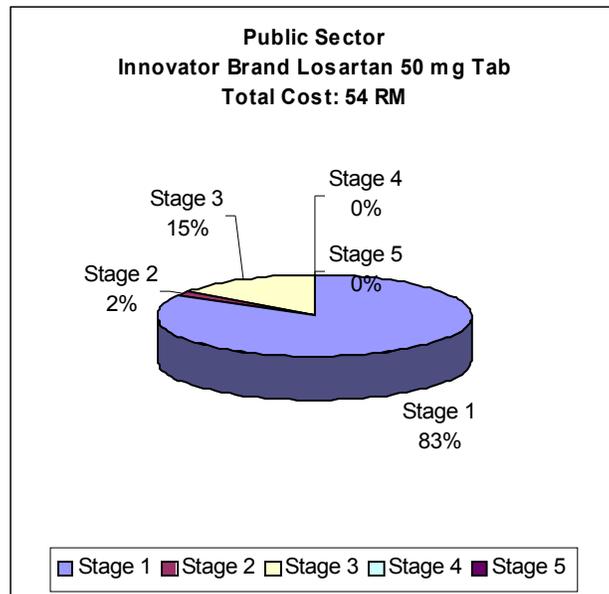


Exhibit 4.9: Share of component cost across stages in public sector for innovator brand losartan 50 mg tablet via central procurement tender (imported) (Pack Size=30)

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			45.01
Stage 2	2.11%	0.95	45.96
Stage 3	17.49%	8.04	54.00
Stage 4	N/A		54.00
Stage 5	N/A		54.00
Final % Mark up and Price	19.97%	8.99	54.00

Exhibit 4.10: Actual Price and % Mark-up in Public Sector for Innovator Brand Losartan 50 mg tablet (Pack Size 30)

Component Costs in the Private Sector Retail Pharmacy

The private retail pharmacy surveyed procured its generic atenolol 50 mg from a local supplier known as a “runner”. A runner is a supplier who often operates without a proper wholesale license and purchases items in bulk from the sole distributor and then re-sells them to retailers. Bulk purchases often bring lower prices: this gives the runner a larger profit margin, even without charging a big mark-up.

Atenolol

Exhibit 4.11 shows the component cost for IB and generic atenolol. Exhibit 4.12 shows that the retailer’s mark-up – 100% of the wholesale price -- is the largest component of the 149.48% add-on costs for generic atenolol. The distributor’s mark-up (in this case runner) is stage 3.

In comparison to generic atenolol, the IB has a lower percentage of add-on costs with the price components more evenly distributed – including between the wholesaler and the retailer. Exhibit 4.13 shows the actual mark-ups for IB atenolol (For details See Table 6.6 & 6.7 in Annex 6).

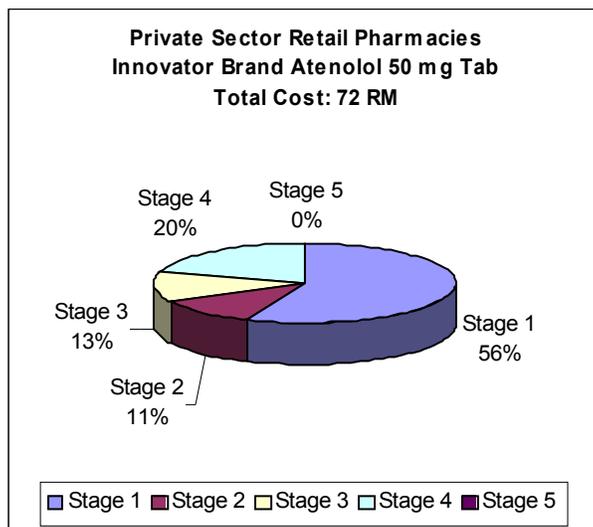
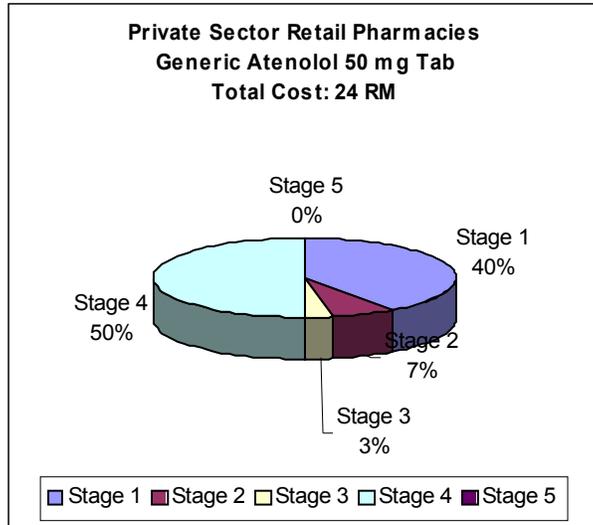


Exhibit 4.11: Component costs across stages in private sector retail pharmacies: generic and innovator brand atenolol 50 mg tablet (Pack Size: 60)

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			9.62
Stage 2	17.87%	1.72	11.34
Stage 3	5.82%	0.66	12.00
Stage 4	100%	12.00	24.00
Stage 5	N/A		24.00
Final % Mark up and Price	149.48%	14.38	24.00

Exhibit 4.12: Actual Price and % Mark-up in Private Sector Retail Pharmacies for Generic for Atenolol 50 mg tablets (Pack Size 60)

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			40.05
Stage 2	20.37%	8.16	48.21
Stage 3	19.12%	9.22	57.43
Stage 4	25.37%	14.57	72.00
Stage 5	N/A		72.00
Final % Mark up and Price	79.77%	31.95	72.00

Exhibit 4.13: Actual Price and % Mark-up in Private Sector Retail Pharmacies for Innovator Brand Atenolol 50 mg tablets (Pack Size 60)

Omeprazole:

Exhibit 4.14 shows component cost across stages for generic and IB omeprazole. Exhibit 4.15 shows that the pharmacy mark-up (140%) is the most prominent add-on cost constituting 59% of the total cost of generic omeprazole. Generic omeprazole is locally produced (see Table 6.8 in Annex 6 for details). As can be seen in Exhibit 4.16 the retailer's mark-up for IB omeprazole is 38% and it is an imported medicine. (Details can be seen in Annex 6, Table 6.9 for details)

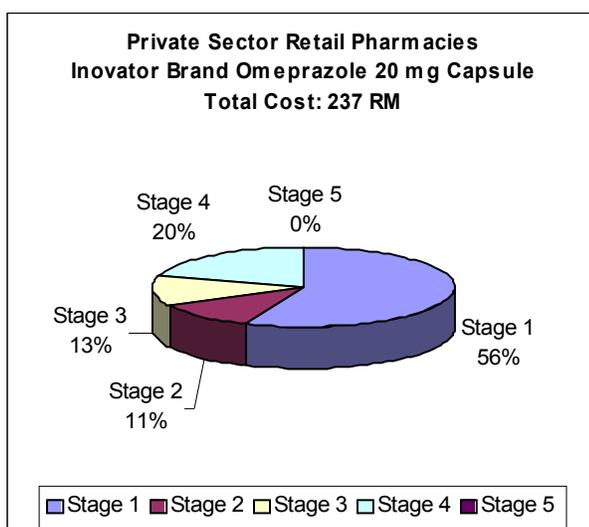
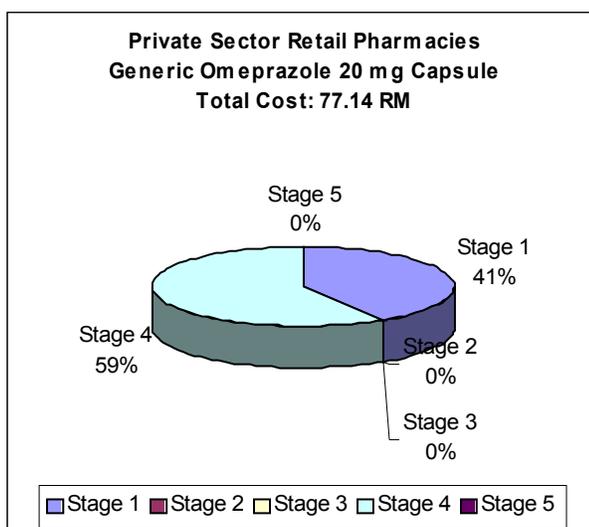


Exhibit 4.14: Component costs across stages in private sector retail pharmacies: generic and innovator brand omeprazole 20 mg tablet (Pack Size 30)

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			31.20
Stage 2	3.0%	0.94	32.14
Stage 3	N/A	0.00	32.14
Stage 4	140%	45.00	77.14
Stage 5	N/A		77.14
Final % Mark up and Price	147.24%	45.94	77.14

Exhibit 4.15: Actual Price and % Mark-up in Private Sector Retail Pharmacies for Generic Omeprazole 20 mg capsule (Pack size 30)

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			129.38
Stage 2	15.93%	20.62	150.00
Stage 3	14.29%	21.43	171.43
Stage 4	38.25	65.57	237.00
Stage 5	N/A		237.00
Final % Mark up and Price	83.1%	107.62	237.00

Exhibit 4.16: Actual price and % Mark-up in Private Sector Retail Pharmacies for Innovator Brand Omeprazole 20 mg capsule (Pack Size 30)

Losartan:

Exhibit 4.17 shows the component costs of losartan 50mg while Exhibit 4.18 shows actual data and price mark-ups. A fixed fee of 4.46 RM for insurance and freight was calculated from data gathered from the shipping agent on container size, pack size and box size. Some retailers claimed to procure their supplies from a dispensing doctor who in turn procured from a sole-distributor. (See Annex 6, Table 6.10 for details)

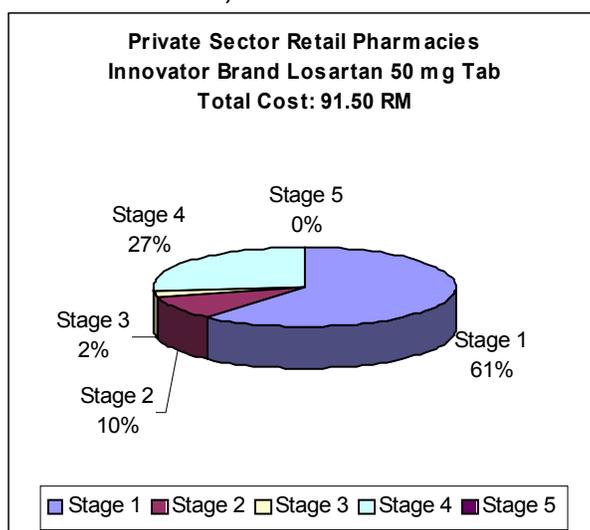


Exhibit 4.17: Component costs across stages in private sector retail pharmacies for innovator brand losartan 50 mg tablet (Imported)(Pack Size: 30)

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			55.56
Stage 2	16.99%	9.44	65.00
Stage 3	3.07%	2.00	67.00
Stage 4	36.56%	24.50	91.50
Stage 5	N/A		91.50
Final % Mark up and Price	64.68%	35.94	91.50

Exhibit 4.18: Actual price data and % mark-up in Private Sector Retail Pharmacies Innovator Brand Losartan 50 mg tablet (Pack Size 30)

Component Costs in the Dispensing Doctors Sector

As stated earlier, dispensing doctors often procure directly from the sole distributor, and bypass the wholesaler. This results in different mark-ups than what is seen in the public sector or private pharmacy sector.

Atenolol

The dispensing doctor procured generic atenolol 50mg from the sole-distributor but procured the innovator brand from a wholesaler. As seen in Exhibit 4.19, component costs contribute 94% (generic atenolol) and 63% (innovator brand atenolol) to the total costs. Exhibit 4.20 shows stage 4 mark-ups of 146% for generic atenolol while a mark-up of 76% for IB can be seen in Exhibit 4.21. (Data for generic & innovator available in Table 6.11& Table 6.12 in Annex 6.)

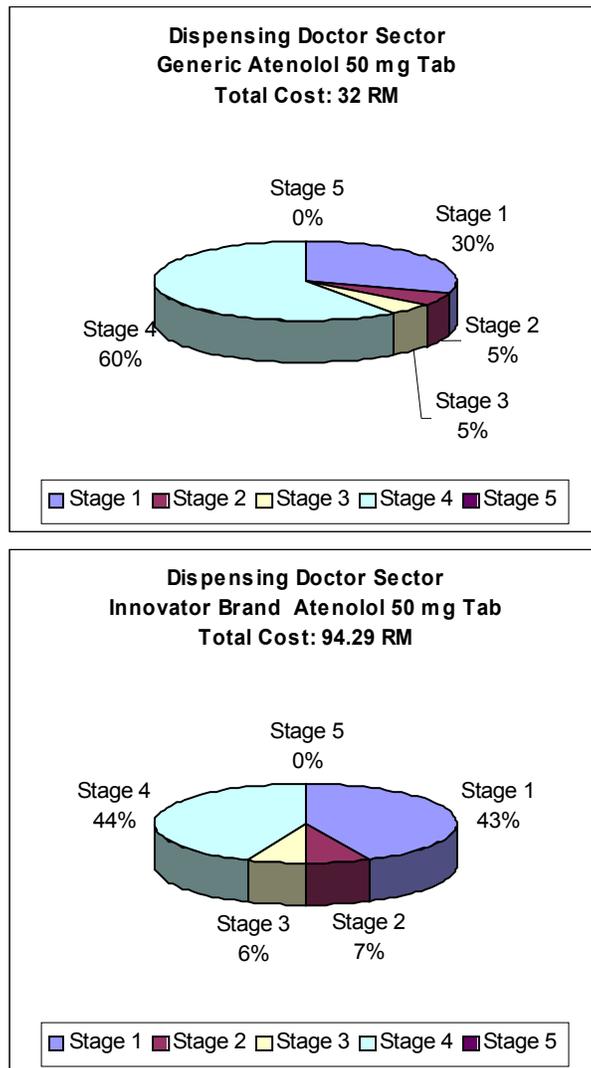


Exhibit 4.19: Component costs across stages in dispensing doctors' sector for generic and innovator brand atenolol 50 mg tablet (imported)(Pack Size: 60)

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			9.58
Stage 2	17.95%	1.72	11.30
Stage 3	15.04%	1.70	13.00
Stage 4	146.15%	19.00	32.00
Stage 5	N/A		32.00
Final % Mark up and Price	234%	22.42	32.00

Exhibit 4.20: Actual Cost and % Mark-up in Dispensing Doctor Sector for Generic Atenolol 50 mg tablets (Pack size 60)

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			41.17
Stage 2	17.09%	7.04	48.21
Stage 3	11.11%	5.36	53.57
Stage 4	76.02%	40.72	94.29
Stage 5	N/A		94.29
Final % Mark up and Price	129.02%	53.12	94.29

Exhibit 4.21: Actual Cost and % Mark-up in Dispensing Doctor Sector for Innovator Brand Atenolol 50 mg tablets (Pack size 60)

Omeprazole:

The dispensing doctor purchased generic omeprazole from a local manufacturer and the IB omeprazole from the wholesaler. As can be seen in Exhibit 4.22 for generic omeprazole the dispensing doctors' mark-up constitute 76% of the retail price compared to the IB, where it constitute 33% of the final price. The most significant mark-up is at stage 4. Exhibit 4.23 shows the actual stage 4 mark-ups (Dispensing doctor's mark-up) for generic omeprazole that is 316% and is very significant. On the other hand Exhibit 4.24 shows the stage 4 mark-ups of 50% for IB omeprazole. (See Table 6.13 & Table 6.14 in Annex 6 for details).

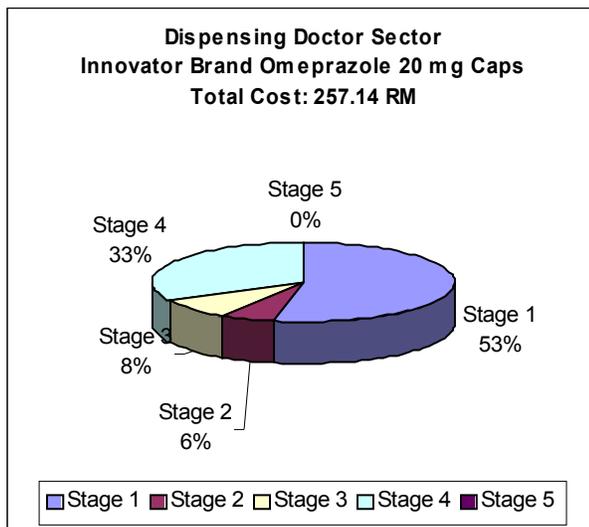
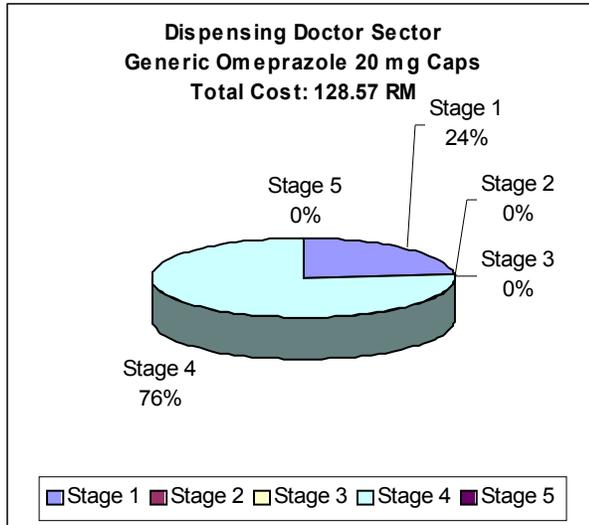


Exhibit 4.22: Component costs across stages in dispensing doctors’ sector for generic and innovator brand omeprazole 20 mg capsule (Pack Size: 60)

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			29.96
Stage 2	3.0%	0.90	30.86
Stage 3	N/A		30.86
Stage 4	316.62%	97.71	128.57
Stage 5	N/A		128.57
Final % Mark up and Price	329.13%	98.61	128.57

Exhibit 4.23: Actual cost and % mark-ups in Dispensing Doctor Sector for Generic Omeprazole 20 mg capsule (Pack Size 60)

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			135.31
Stage 2	10.85%	14.70	150
Stage 3	14.28%	21.42	171.42
Stage 4	50 %	85.72	257.14
Stage 5	N/A		257.14
Final % Mark up and Price	90.03%	121.84	257.14

Exhibit 4.24: Actual Cost and % mark-ups in Dispensing Doctor Sector for Innovator Omeprazole 20 mg capsule (Pack Size 60)

Losartan:

For Losartan Stage 1 and stage 4 costs are the most significant as can be seen in Exhibit 4.25. Exhibit 4.26 shows stage 4 mark-up (dispensing doctor's mark-up) of 71%. (See details in Annex, Table 6.15)

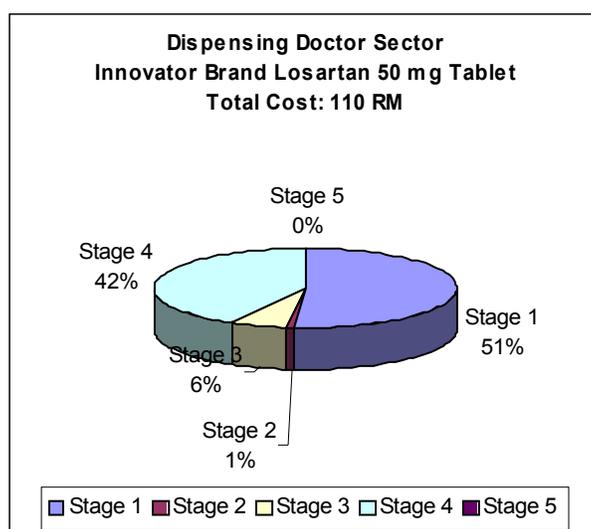


Exhibit 4.25: Component costs across stages in dispensing doctors' sector for innovator brand losartan 50 mg capsule (Pack Size: 60)

Stage	% Mark-Up	Value of Charges (RM)	Cost (RM)
Stage 1			56.51
Stage 2	1.11%	0.63	57.14
Stage 3	12%	6.68	64.00
Stage 4	71.87%	46.00	110.00
Stage 5	N/A		110.00
Final % Mark up and Price	94.65%	53.31	110.00

Exhibit 4.26: Actual cost and % mark-up in Dispensing Doctor Sector Innovator Brand for Losartan 50 mg tablet (Pack Size 30)

Price variation within sectors

Medicines are free to patients in the public sector but procurement prices were collected and analysed, as these can be a major financial burden to the government. The median of the median price ratios of IBs was noted to be approximately 2.4 times higher than the IRPs whereas for generics the median MPR was a little over 1. A MPR of around 1 indicates adequate efficiency of the public procurement system. Some drug prices were much higher than the IRPs. Medicines such as amlodipine and fluoxetine are still patented, but for other drugs, such as ranitidine and carbamazepine, there is no obvious reason why the MPR is more than 3. In some cases innovator brands and generics were both found. The public sector should only buy generics for off-patent medicines in order to save costs. High MPRs and good availability of IBs could be indicators of inefficient procurement in the public sector. The public drug procurement and distribution system, privatised in 1994, may be one of the reasons for the high prices in the public sector, but this needs to be analysed. This has been further supported by earlier studies on anti-infective and cardiovascular drugs, which show a pattern of high prices in public sector (Babar et al, 2004: 2005a). If the procurement is improved, the savings could be used to improve availability of medicines by purchasing more drugs.

In the private sector retail pharmacies, prices were higher than in the other sectors. The median MPR of IBs was found to be 16 times the IRPs. Though it is not possible to define the 'right' MPR in the private sector, we consider MPRs of less than 5 as reasonable to allow for a reasonable profit margin. Out of the 36 generics analysed, 22 had MPRs greater than 5 and of these 9 had MPRs greater than 10. Some examples of MPRs more than 10 are ciprofloxacin, enalapril, ibuprofen, and hydrochlorothiazide. Generic fluconazole had a MPR of 39. For the generically equivalent (paired) products, differences between MSG and the LPG were small indicating a small price difference between generics.

The median MPR for innovator brand medicines in the Dispensing Doctors' Sector was 15 times the international reference price (IRP). Out of 38 drugs analyzed, 27 generics showed MPRs greater than 5 and of these, 18 had MPR more than 10. Some of the LPGs with MPR of more than 10 were furosemide, hydrochlorothiazide, ibuprofen, loratadine, metoclopramide, phenytoin and ranitidine. Some generic prices were very high such as diazepam (MPR 41) and fluconazole (MPR 35).

This may imply that in a free market economy, medicine prices can be set to what the market can bear without taking into account a drug's status, whether generic or patent protected.

Price variation across sectors

The prices of the same innovator brand medicines varied across the private pharmacy and dispensing doctors sectors. Median MPR, 16 times higher in the PSRP, 15 times higher in the DDS when compared with the international reference price. Dispensing doctors' clinics had fewer IBs, indicating that the dispensing doctors sell more generics.

Prices of the same products were also observed to vary across the sectors. IB ciprofloxacin had a price ratio of 112 in private pharmacies and 47 in dispensing doctors' clinics. Generic ciprofloxacin had MPRs of 16 and 12 in the two sectors. The large price difference between innovator brands and generics indicates that competition is not resulting in lower innovator brand prices.

The variation in prices could be due to relative availability of different generic alternatives, as well as the characteristics of the facilities. One limitation of the survey is that the availability of different IBs and/or generic equivalents is not a true reflection of the situation because pharmacies were preselected with more than 50% availability¹. So in fact availability might have been even lower than what we observed.

A great variation was noted when the prices of IBs and generics were compared indicating a high brand premium. The brand premium was particularly high for Acyclovir, ciprofloxacin and glibenclamide. Generics were more expensive in dispensing doctors' sector than in private pharmacies. Some of the generics such as metformin, hydrochlorothiazide and isosorbide dinitrate were twice the price in dispensing doctors' clinics when compared with the private pharmacies. On the other hand private pharmacies had less generics and so seems to sell more of the expensive innovator brand medicines. So, the cost to the patient may therefore not vary that much between the two sectors.

Price variation across the areas

Variation in medicine prices was observed across the 4 geographical areas surveyed. The price variation in pharmacies was random, as apparent in the variation between the prices in 25% and 75% percentile. Some notable examples where the prices varied considerably were metformin, glibenclamide, and lovastatin.

It may be due to free-market system of medicine pricing or varied local competition. The highest numbers of pharmacies were in federal territory Kuala Lumpur, followed by Johore Bahru and Penang. The least number of pharmacies

1. It has since been clarified by WHO and HAI that data from facilities with less than 50% availability should be included in the workbook and extra facilities surveyed.

was found in Kota Bahru. Overall, the highest MPR was found in Kota Bahru pharmacies followed by Kuala Lumpur, Penang and Johore Bahru. The price variation in pharmacies appeared to have little linkage with the density of pharmacies with the exemption of Kota Bahru where the numbers of pharmacies are the lowest but the cost is highest. Another reason for the highest prices could be the distance, as this state is far from Kuala Lumpur: the main distribution hub for the pharmaceuticals.

Availability & Affordability and their implications

Out of 28 core list medicines, 16 correspond to the Malaysian National Essential Drug List (NEDL) and 21 were found in the Drug Formulary (DF) of the Ministry of Health. Out of 20 medicines on the supplementary list, 15 are on the NEDL and the DF. Low availability of medicines on the NEDL was found in all sectors, particularly in the public sector. Private pharmacies were found to carry less generics as compared to the dispensing doctors. Private pharmacies and dispensing doctors were found to carry medicines for the more common diseases. Generic versions of fluoxetine and amlodipine were not available in the market as these drugs are still under patent in Malaysia.

The availability of some drugs was low. No versions of diazepam 5mg tablet and fluphenazine 25mg/mL injection were found in any of the retail pharmacies surveyed. Unavailability of diazepam and fluphenazine at retail pharmacies is probably due to the stricter regulatory requirements of psychotropic drug licences. Pharmacies can keep these medicines but they have to maintain records and can be questioned by authorities in cases of potential mishandling. However these medicines were to be found available at dispensing doctor clinics and public facilities.

Generic versions of zidovudine are being imported into Malaysia from India under compulsory licensing and parallel importation (The Malaysian Institute of Economic Research, 2004). It is a workable strategy to make available essential drugs, which are still under patent. Antiviral drugs to treat HIV were not available in community pharmacies and dispensing doctors' clinics. However, they were available in the public hospitals surveyed, but their availability was very low.

The low availability of medicines at public hospital facilities could have direct implications on access as patients are then forced to buy these medicines from private pharmacies or dispensing doctor clinics. In these sectors our data indicate that private pharmacies may be dispensing more IBs, as they seemed to be more available; this lowers affordability. There are anecdotal reports that the patients are being increasingly asked to purchase their own medication (Sangaralingam & Raman, 2003).

Affordability data indicates that a large part of the population will not be able to pay for their medicines. For example the cost of one month's treatment with IB amlodipine required 4.9 days' wages. In Malaysia the prevalence of cardiovascular disorders is on the rise. In recent years the prevalence of

hypertension and cardiovascular disease has been 15-25% & 5-25% respectively. For cardiovascular diseases the morbidity rate is 30/1000. In year 2000, 4779 deaths have been reported because of the heart diseases and diseases of pulmonary circulation and a mortality rate of 20.53 per 100,000 has been reported (WHO-WPRO, 2002). Drugs used to treat cardiovascular disorders seem to be not very affordable. In this survey affordability has been measured by using salary of lowest paid government worker. For people earning less than that, affordability is even worse. One-month treatment of hypertension and hyperlipidemia using IBs is very expensive. For hyperlipidemia patients buying simvastatin have to pay 7.5 days' wages when purchasing the drug in private pharmacies and 6 days' in dispensing doctors clinics. Purchasing generic simvastatin costs 2 days' wages in both sectors, which is still difficult to afford.

Affordability of many of the drugs surveyed could have direct effects on morbidity and mortality. Fluoxetine costs about 26 days' wages for 1 month of treatment while for amlodipine patients have to spend 4 days' wages to buy these drugs at private pharmacies. Diabetes is a common disease in Malaysia and the patients have to pay 2 days salary to buy innovator version of glibenclamide, while in case of generic they have to spend approximately half a day's salary. For buying IB Acyclovir for acute viral infections they have to spend 8 days' wages. Even purchasing the generic would take 3 days wages. The above diseases are common in Malaysia; therefore, there is a need to monitor the situation and to increase the availability of medicines in the public sector. Lowering the profit of doctors and pharmacists is another way of making the medicines more affordable.

Price Component

In studying the price components of medicines in Malaysia, we encountered some issues, which require individual attention.

(a) Add-on costs contribute significantly to medicine prices in all three sectors

Add-on costs have a significant impact on medicine prices in all sectors. In Malaysia, for generic drugs, the retailer's mark-up contributes about 50-70% of the final price, while for innovator brands the retailer's mark-up ranges from 20-45%. In the retail pharmacy we found actual mark-ups of 100-140% for generics, and 25-38% for innovators.

We have compared the Malaysian mark-ups with other countries where the WHO/HAI surveys have been done. For example, in Sri Lanka's Private for-profit pharmacy sector the wholesale mark-up is 8% while retailer mark-up is 16%. In Kenya, the private retail sector (for imported medicine) has a wholesale mark-up of 15-30% while a maximum retailer mark-up of 20-33% can be seen. In Peru, for imported generic medicine the distributor's mark-up is 36% while the retailer's mark-up is 33%. Armenia's private sector, (for imported medicines) wholesaler/distributor mark-up ranges from 18-25% while the retailer's mark-up is 15-25%. In Brazil in the private retail sector the wholesaler's and retailer's mark-

up is around 27%. In the Philippines' private retail sector, the distributor and retailer mark-up for innovator brand is 30%, while for locally manufactured generics the retailer's mark-up is about 100%.

After comparing with these countries, Malaysian mark-ups for generics seem high. Innovator brands, on the other hand, show similar but we only studied 3 IBs, so this could be a limitation to generalizing the findings.

(b) Dispensing doctors charge the highest prices

Add-on costs for both IBs and generic equivalents were observed to be higher in the dispensing doctors sector compared with both other sectors. For IBs dispensing doctors' mark-ups ranges from 50-75% while for generics they were found up to 316%. In the Malaysian healthcare system patients rely heavily on the physician's advice and the doctor's recommendations are largely followed. So if the patient is sick, they will definitely buy the prescribed medicine.

It is interesting to look at the reasons for high profit margins in the dispensing doctor's sector. We found data that suggests that there is a lower distributor's selling price to dispensing doctors than to retail pharmacies. We also found that the contribution of add-on costs for generic products was higher than for IBs.

Dispensing Doctors are taking advantage of the lower priced generics and marking them up to make a larger profit. For some generics, such as atenolol, they were less expensive than the innovator and even a significant mark-up leaves them considerably less expensive – and more affordable – than the IB. However for generic omeprazole, this was not the case and the drug was expensive. These findings are similar with a study done in Zimbabwe on the prescribing practices of dispensing doctors, where it was found that the desire to increase the income was associated with less clinically and economically appropriate prescribing (Trap et al, 2002).

(c) Central Tender

Losartan was bought through a Central Tender in the public sector. The concessionaire charged a 17.5% mark-up as a profit margin. If we compared this mark-up with other countries, Sri Lanka's government sponsored retail outlets have a number of distribution mark-ups: overheads 18%, State corporation mark-up 9% and wholesale mark-up 7% (while retail mark-up is 12.5%). While in Peru's Public Sector, for locally produced generic, the distribution margin is 10%, while facility mark-up is 15% (VAT and other costs combine to a total cumulative mark-up of about 63%). Malaysian mark-up seems to be comparable with these mark-ups but we don't have the complete cost accounting system.

(d) Most significant price components:

In public sector, insurance and freight was found to be quite high - about 66% in the case of generic atenolol, which was imported from Canada. Retail mark-up – specifically in the dispensing doctor sector was also high. So if these mark-ups were reduced, prices should lower significantly.

For innovator brands, MSPs are high compared to generics and denotes that the MSP is a high proportion of the final cost. For some of the drugs, such as generic atenolol, retail pharmacy profit margins were found to be as high as 100%, which means half of the price of drug is due to the profit margin of the retail pharmacist. In comparison, the Indian state of Maharashtra found the profit margin for generic atenolol to be 20%.

(e) Omeprazole

MSP for generic omeprazole in the public sector is high and as opposed to other medicines, despite it being locally manufactured. This could be due to government negotiations with the supplier. In private pharmacies the MSP is lower than in the dispensing doctors sector, but the large mark-up applied by doctors makes the final price much more expensive in this sector than in private pharmacies.

(f) Cumulative impact of components

Because add-ons accumulate from manufacturer to retailer, even a small charge early on in the distribution chain can have a significant effect on the final price to the patient. Likewise, if any mark-up is lowered, the final price to the patient can be significantly reduced.

Many countries, such as Peru and Armenia, apply VAT to medicines. They are commonly in the 10-20% range. In Malaysia, there are proposals to implement GST on medicines purchased in pharmacies. At present there are no such taxes in Malaysia (and even so medicine prices are high). Applying GST will further worsen the situation, prices will increase and medicines will be even less affordable.

(g) Lack of formal medicine pricing policy:

Malaysia does not have a formal pricing policy. There is a need to form a pricing policy. In other developed countries such as Canada and Australia, the government has pricing policies, which clearly describe pricing mechanism and processes. But in Malaysia all stakeholders, including the manufacturer, distributor, wholesaler and retailer, are free to set their own prices which leads to profit maximization and high prices. As can be seen from our data a “free” market does not function and Malaysian patients pay excessive prices particularly due to excessive mark-ups.

Pharmaceutical policies and drug use patterns

Most of the drugs surveyed were off patent, so it would be expected that they have competitors in the market. The presence of a generic competitor can bring the prices down but it may not be the case for every drug. The purpose of a generic market is to produce cheaper more affordable quality products. Though price variation was observed among the generics, generic prices were generally high. The public sector carried fewer generics and more innovator brands than what was expected. In the study, the private pharmacies seem to carry less

generic drugs. The DDS had a surprisingly good selection of generics and this difference should be investigated further. However these generics were sold with high mark-ups.

Innovator brand medicines were stocked by the PSRP and to some extent by DDS, resulting in high costs. The innovator brands maintain high prices even when faced with generic competition because the product is selling anyway and it gives substantial profit margins to the manufacturers, distributors and retailers because mark-ups are progressive. Generics are more affordable as compared to IBs and they could be even cheaper if mark-ups were restricted and there were incentives to encourage more use of generics. Pharmacies may prefer to sell IBs because it gives them higher overall profits. There is a need for a mechanism to control mark-ups and promote generics. There must be incentives to encourage dispensing of generics, and some form of mandatory generic substitution to promote generics is also required. Doctors should also be encouraged to prescribe by the medicines' INN name rather than brand name. Doctors may not be prescribing and dispensing innovator brand because of less profit margin and the lack of a formal consultation fee. In Malaysia dispensing is not separated, from the medical visit, a doctor charge a total amount of RM 30 to 50 which normally includes generic medicines and consultation fee. If a doctor dispenses a branded medicine, his profit margin will be low and on the other hand it will also be a burden on the patient. It seems that the dispensing doctors' practices in Malaysia may be driven by economic incentives; the situation may be similar to many other countries. This may also have serious implications for appropriateness of treatment (Trap & Hansen, 2003). Hence, there is a need to monitor and investigate the prescribing and dispensing practices of Malaysian dispensing doctors.

High prices compared to the reference prices might be due to a deregulated price system, warranting investigation of the reasons for higher prices. Free market could be the reason as it is unable to control the prices (Nabi F, 1996; Kolassa, 1997a; Mahmood & Bukhari, 2002). In Malaysia, increasing medicine costs, eventually has led to rising drug expenditures in public and private sectors. Malaysia has no National Health Insurance Scheme (NHIS) and the consumers have to buy private insurance. Government provides free healthcare to the public. However, with the coming move of setting up private pharmacies in public hospitals and in the absence of NHIS, public out-of-pocket expenditure on drugs is expected to increase. The Government is also planning to introduce NHIS, which has been implemented in many developing countries. However, the success of such a scheme greatly depends on underlying pharmaceutical policies. According to anecdotal reports, the private insurance is increasing 20% per year (MPS I-bulletin, 30th Nov2004). Higher budgetary expenditures and the issues of medicine access and affordability are all addressed in the draft National Medicine Policy of Malaysia (NMP, 2003). We hope that the discussion and suggestion and findings of this study can be incorporated in the Malaysian National Medicine Policy.

Limitations of the study

The findings regarding availability of drugs may not be completely accurate due to the selection only of the pharmacies with availability >50% and the actual availability may be lower than what was observed in this study. Twenty-one drugs from the core list and 15 drugs from the supplementary list was found in the Drug Formulary (DF) and NEDL, however, while devising the supplementary list the NEDL was not taken into account. Normally drugs, which are not listed on the NEDL, should not be found in the public sector.

Some of the drugs such as fluconazole, amoxicillin+clavulanic acid, captopril, ciprofloxacin, nifedipine retard and zidovudine were found in different strengths from what were specified in the medicine price data collection form. As a result, they were not recorded. So non-availability and lower availability of these drugs may not be so meaningful, because they may be available but in a different strength.

In the public sector, availability was low and moreover the drugs, which were available only in 4 or more facilities, were included in the analysis. Low availability of drugs in public sector also makes the median MPR less robust.

Conclusions and Recommendations

Conclusions:

- Prices were found to be generally high in private sector retail pharmacies and dispensing doctor clinics, for innovator brands as well as generics.
- In the Government sector, innovator brands of off-patent medicines were often found but no generic equivalents, indicating the purchasing method might be inefficient. The prices of many innovator brands were high whereas the generics were generally reasonably priced.
- High availability of branded drugs and comparatively low availability of generic alternatives was seen in private pharmacies. This probably shows that innovators are widely prescribed and dispensed.
- Dispensing Doctors' Sector had high availability of generics compared to innovator brands.
- In the public sector availability was low even for the medicines on the NEDL.
- High variations in prices were found among different sectors and geographical areas. E.g., high price differences were observed for some identical products in private pharmacies and dispensing doctors' clinics.
- Low affordability was observed even for some common ailments, such as hypertension, asthma, respiratory disorders (and often for treatment with generics as well as innovator brands)
- Generics were found to be more expensive in dispensing doctors' clinics compared to the private pharmacies. Innovator brands were more expensive and more available in pharmacies than in doctors' clinics.
- Large variations in medicine prices were found between different pharmacies and doctors' clinics. Prices varied greatly, particularly for innovator brands but also for generics across the private pharmacies surveyed.
- Generally high mark-ups have been noted along the supply chain, which drives up the price and makes medicines less affordable to the people who need them.
- Profit margins and mark-ups are particularly high in dispensing doctors and private retail sectors for generics as compared to innovator brands.
- Add-on costs are most significant in the Dispensing Doctor sector.

- The cost of insurance and freight, banking fees, port handling and clearance charges do not have a significant impact on prices of most of the drugs. However for some of the drugs, high costs for insurance and freight were discovered.
- In the public sector some of the mark-ups were high and demands further investigation of the public procurement system.
- The Manufacturing Selling Price (MSP) was high for innovator brands as compared to their generics in all sectors.

Recommendations:

- There is a need for a pricing policy and to incorporate that pricing policy into the national drug policy.
- A price monitoring system is needed in Malaysia. We recommend establishing this in the Ministry of Health and that a working group regularly monitor the results.
- Mark-ups must be reasonable and incentives be given such that generics are prescribed and dispensed. The Government should intervene to control mark ups and profit margins especially for generics from dispensing doctors.
- The high price of generics demand immediate attention from the Government. There should be an investigation as to why generics are expensive and why generic availability is poor. There is a need for a generics policy; this should include campaigns to promote generics, increasing consumer awareness and to introduce incentives for pharmacist and doctors to prescribe and dispense generics. There is a need for a generic substitution policy as in USA.
- There is a need to investigate why procurement prices especially for innovator brands are high in public sector.
 - The Government should ensure the availability of the drugs on the NEDL in the public sector. The availability of other drugs that are supposed to be available, such as HIV-drugs, must also be ensured.
 - A study should be undertaken to find out the reasons for the low availability of the medicines in the public sector.
 - The Malaysian pharmaceutical society and Malaysian medical association should join with the government to discuss the remuneration and professional roles of pharmacists and physicians in the context of improving access to medicines.
 - Innovator brands are being promoted and sold in Malaysia, which increases costs and acts as a hurdle to access therefore; this practice must be monitored.

Recommendations pertaining to Component Prices:

Our goal in this study was to find price component data and to determine whether price components contribute towards high medicine prices in Malaysia. The data we collected and that we have discussed here has shown the significant impact that price components have on medicine prices and, therefore, access to medicines in Malaysia.

As a result of this investigation, we have been able to make some preliminary recommendations on pharmaceutical policies for Malaysia. However, because this survey was limited to only three medicines at sites within the Kuala Lumpur area, we recommend further in-depth investigation of price components in other areas.

1. Establish maximum wholesale and retail mark-ups

Currently, Malaysia has no maximum mark-ups for wholesalers, retailers and dispensing doctors. There are no other government policies, which impact prices because there are no price controls, import/export duties or taxes. The government should set and regulate the Stage 3 and Stage 4 mark-ups: fixed price margins for wholesalers and retailers. Then prices should fall. There is a need to develop, implement, enforce and monitor a price control policy.

2. Regulate prices of innovator products

The government should regulate the MSP for innovator brand products, as these are the main contributor to the retail price. Pharmacoeconomic analysis should be undertaken as occurs in a number of other countries.

3. Regulating prices of generic drugs

Generic drugs seem to be an affordable option and after comparing with IBs, they seem very low. But some generic drugs (such as omeprazole in this study) are expensive and these prices may need to be regulated.

Questions for future research

- We recommend undertaking pharmacoeconomic analyses of expensive medicines prior to going them on the essential drug list.
- A systematic study to estimate the out-of-pocket expenditure on medicines by the public should be carried out. It seems that a large percentage of the public may have to pay for medicines from their hard earned money. Therefore it is necessary to gather empirical data for appropriate policy changes. Such data is probably best collected by household surveys.
- In many countries the functions of prescribing and dispensing are kept separate, to avoid a conflict of interest on the part of prescriber, who could profit from both selling and prescribing medicines (Trap & Hansen, 2003). By looking at the current situation in Malaysia, an in-depth study on the prescribing practices of the dispensing doctors should be carried out. It is generally wise, and a requirement in most developed countries, to separate prescribing and dispensing.
- The present study revealed that West Malaysia has high prices and there is a need for pricing policy. Prices should also be looked at in East Malaysia even though it is less populated. Medicines may be expensive in East Malaysia because of its distance from the Western region. Furthermore, most of the pharmaceutical companies are in West Malaysia and it is the main distribution hub for pharmaceuticals. So there is a need to replicate the same study in the Eastern part to measure prices and availability.

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Annexes

- Annex 1: National Pharmaceutical Sector Form
- Annex 2: Medicine Price Data Collection Form
- Annex 3: Median Price Ratio (MPR) across sectors
- Annex 4: Treatment Affordability of 10 Selected Conditions
- Annex 5: Medicine Price Component Central Data Collection
- Annex 6: Tables of Price component analysis
- Annex 7: Endorsement letter from the Director General of Health,
Ministry of Health, Malaysia.

Annex 1

National Pharmaceutical Sector form

Date: 25/10/04

Population: 25.05 Million

Rate of exchange (commercial “buy” rate) to US dollars on the

First day of data collection: 1 US = RM 3.82 (RM: Ringgit Malaysia: Malaysian Currency)

Sources of information:

Ministry of Health, Malaysia

IMS-Health

Malaysian Industrial Development Authority (MIDA)

Bank Negara, Malaysia.

General information on the pharmaceutical sector

Is there a formal National Medicines Policy document covering

Both the public and private sectors? Yes No

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

If yes, state total number of medicines on national EML: 1611 – 963 (Essential List)

If yes, year of last revision: 1999 -- 648 (Supplementary List)

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

National

Regional

Public sector only

Both public and private sectors

Other (please specify):

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

For registration of medicines nationally

Public sector procurement only

Insurance and/or reimbursement schemes

Private sector

Public sector

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

Are there incentives for generic prescribing or substitution? Yes No

Public procurement²

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

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

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

International, competitive tender

Open

Closed (restricted)

National, competitive tender

Open

Closed (restricted)

Negotiation/direct purchasing

Are the products purchased all registered? Yes No

Is there a local preference?³ Yes No

Are there public health programmes fully implemented by donor assistance which also provide medicines? Yes No

(e.g. TB, family planning, etc.)

If yes, please specify:

² If there is a public procurement system, there is usually a limited list of items that can be procured. Products procured on international tenders are sometimes registered in the recipient country only by generic names. Import permits to named suppliers are issued based on the approved list of tender awards. An open tender is one that is publicly announced; a closed one is sent to a selection of approved suppliers.

³ A local preference means that local companies will be preferred even if their prices are not the cheapest. Local preference is normally in the range of 10–20%.

Distribution⁴

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

If yes, specify levels:

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

If yes, please specify:

Number of licensed wholesalers: 834 (Year: 2003)

Retail (Year: 2003)

	Urban	Rural	Overall
Number of inhabitants per pharmacy (approx.)	Not Available		
Number of inhabitants per qualified pharmacist (approx.)			7369.26
Number of pharmacies with qualified pharmacists			1846
Number of medicine outlets with pharmacy technician	Not Applicable		
Number of other licensed medicine outlets	Not Available		

Private sector⁵

Are there independent pharmacies? Yes No Number:

Are there chain pharmacies? Yes No Number:

Do doctors dispense medicines?⁶ Yes No

If yes, approximate coverage or % of doctors who dispense: 100 %

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

Financing

(Give approximate figures, converted to US dollars at current exchange rate: commercial "buy" rate on the first day of data collection) 1US: RM3.82

Type of expenditure **Approximate annual budget (US dollars)**

National public expenditure on medicines including government insurance, military, local purchases in past year 137.91 Million

Estimated total private medicine expenditure in past year (out of pocket, private insurance, NGO/mission) 137.04 Million (Estimated)

Total value of international medicine aid or donations in past year Not Applicable

What percentage of medicines by value is imported? 70.45 % (Year: 2000)

⁴ The public sector often has a central storage and distribution centre which may have at least one sublevel. The private not-for-profit sector may be dominated by one type of NGO (e.g. church missions), but may also comprise others such as Bamako Initiative type projects, Red Cross or Red Crescent Society, Médecins Sans Frontières.

⁵ Retail outlets may be called pharmacies, medicine outlets, drug stores, chemists, etc. They may be run/owned by a qualified pharmacist (with diploma) or another category: e.g. pharmacy technician, or a lay person with short training.

⁶ Many countries allow doctors to dispense and sell medicines.

Government price policy

- Is there a medicines regulatory authority? Yes No
Is pricing regulated? Yes No
Is setting prices part of market authorization/registration? Yes No
Do registration fees differ between:
Innovator brand and generic equivalents Yes No
Imported and locally produced medicines Yes No

Public sector

- Are there margins (mark-ups) in the distribution chain? Yes No
Central medical stores %
Regional store %
Other store (specify) %
Public medicine outlet %
Are there any other fees or levies? Yes No
If yes, please describe:

Private retail sector

- Are there maximum profit margins? Yes No
If yes (if they vary, give maximum and minimum):
Wholesale %
Retail %
Is there a maximum retail price (sales price)? Yes No

(If it varies, give maximum and minimum)

Maximum:

Minimum:

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

If yes, please describe:

“Other” sector

- Are there maximum profit margins? Yes No

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

Wholesale %

Retail %

- Is there a maximum sales price? Yes No

Insurance, risk-sharing or prepayment schemes

- Are there any health insurance, risk-sharing or prepayment schemes or revolving medicine funds? Yes No
If yes, please describe:
Are all medicines covered? Yes No
If no, state which medicines are covered (e.g. EML, public health programmes):

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

If yes, please specify:

Estimated percentage of population covered %

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

If no, are some free? Yes No

If yes, tick 3 all that apply:

Tuberculosis

Malaria

Oral rehydration salts

Family planning

Others please specify:

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

Are all medicines supplied free at hospitals? Yes No

If no, are some free? Yes No

If yes, please specify:

Annex 2

Area No: _____

Area ID: _____

Medicine Price Data Collection form

Use one form for each health facility and pharmacy

Date: _____ Area number: _____

Name of town/village/district: _____

Name of health facility/pharmacy (optional): _____

Health facility/pharmacy ID (mandatory): _____

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

Type of health facility:

Public Private retail pharmacy

Other (please specify): _____

Type of price in public and private not-for-profit sector:

Procurement price Price the patient pays

Name of manager of the facility: _____

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

Data collectors: _____

Verification

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

Signed: _____

Date: _____

MEDICINE PRICE DATA COLLECTION FORM

Most sold: determined nationally **Lowest price: determined at FACILITY**

A	B	C	D	E	F	G	H	I
Generic name, dosage form, strength	Brand name(s)	Manufacturer	Available tick ✓ for yes	Pack size recommended	Pack size found	Price of pack found	Unit price (4 digits)	Comments
Acyclovir tab 200 mg	Zovirax	GSK		25			/tab	
<i>Most sold generic equivalent</i>	Lovir	Ranbaxy		25			/tab	
<i>Lowest price generic equivalent</i>				25			/tab	
Allopurinol tab 100 mg	Zyloric	GSK		100			/tab	
<i>Most sold generic equivalent</i>	Upha Allopurinol	Upha		100			/tab	
<i>Lowest price generic equivalent</i>				100			/tab	
Amitriptyline tab 25 mg	Tryptanol/ Tryptizol	MSD		100			/tab	
<i>Most sold generic equivalent</i>	Apo-amitriptyline	Apotex		100			/tab	
<i>Lowest price generic equivalent</i>				100			/tab	
Amlodipine 5mg tab	Norvasc	Pfizer		30			/tab	
<i>Most sold generic equivalent</i>				30			/tab	
<i>Lowest price generic equivalent</i>				30			/tab	
Amoxicillin caps/tab 250 mg	Amoxil	SKB (GSK)		21			/tab	
<i>Most sold generic equivalent</i>	Amoxilin	Malaya Pharma		21			/tab	
<i>Lowest price generic equivalent</i>				21			/tab	
Amoxicillin+clavulanic acid (500+125mg) tab	Augmentin	GSK		21			/tab	
<i>Most sold generic equivalent</i>	Curam	Biochemie		21			/tab	
<i>Lowest price generic equivalent</i>				21			/tab	
Atenolol tab 50 mg	Tenormin	AstraZeneca		60			/tab	
<i>Most sold generic equivalent</i>	Apo-atenol	Apotex		60			/tab	
<i>Lowest price generic equivalent</i>				60			/tab	
Beclometasone inhaler 50 mcg/ dose	Becotide	GSK		1 inhaler: 200 doses			/dose	
<i>Most sold generic equivalent</i>	Qvar	3M Malaysia		1 inhaler: 200 doses			/dose	
<i>Lowest price generic equivalent</i>				1 inhaler:			/dose	

				200 doses			
Captopril tab 25 mg	Capoten	BMS		60		/tab	
<i>Most sold generic equivalent</i>	Apo-capto	Apotex		60		/tab	
<i>Lowest price generic equivalent</i>				60		/tab	
Carbamazepine tab 200 mg	Tegretol	Novartis		100		/tab	
<i>Most sold generic equivalent</i>	Apo-carbamazepine	Apotex		100		/tab	
<i>Lowest price generic equivalent</i>				100		/tab	
Ceftriaxone inj 1 g powder	Rocephin	Roche		1 vial:1gm		/vial	
<i>Most sold generic equivalent</i>	Vaxcel Ceftriaxone	Kotra Pharma		1 vial:1gm		/vial	
<i>Lowest price generic equivalent</i>				1 vial:1gm		/vial	
Ciprofloxacin tab 500 mg	Ciprobay	Bayer		1		/tab	
<i>Most sold generic equivalent</i>	Enoxin	Upha		1		/tab	
<i>Lowest price generic equivalent</i>				1		/tab	
Co-trimoxazole paed suspension (8+40) mg/mL	Bactrim	Roche		100 mL		/mL	
<i>Most sold generic equivalent</i>	Bacin	Atlantic Lab		100mL		/mL	
<i>Lowest price generic equivalent</i>				100 mL		/mL	
Diazepam tab 5 mg	Valium	Roche		100		/tab	
<i>Most sold generic equivalent</i>	Apo-diazepam	Apotex		100		/tab	
<i>Lowest price generic equivalent</i>				100		/tab	
Diclofenac tab 25 mg	Voltarol	Novartis		100		/tab	
<i>Most sold generic equivalent</i>	Voren	YSP		100		/tab	
<i>Lowest price generic equivalent</i>				100		/tab	
Dimenhydrinate 50 mg tab	Dramamine	Pfizer		10		/caps	
<i>Most sold generic equivalent</i>	Hydrinate	Upha		10		/caps	
<i>Lowest price generic equivalent</i>				10		/caps	
Doxycycline 100mg tab/caps	Vibramycin	Pfizer		100		/tab	
<i>Most sold generic equivalent</i>	Upha-Doxycycline	Upha		100		/tab	
<i>Lowest price generic equivalent</i>				100		/tab	
Enalapril 10 mg tab	Renitec	MSD		30		/tab	
<i>Most sold generic equivalent</i>	Invoril	Ranbaxy		30		/tab	

<i>Lowest price generic equivalent</i>				30		/tab
Erythromycin 250mg tab	Erythrocin	Abbott		100		/tab
<i>Most sold generic equivalent</i>	Erotab	Hovid		100		/tab
<i>Lowest price generic equivalent</i>				100		/tab
Fluconazole 150mg tab/caps	Diflucan	Pfizer		30		/tab
<i>Most sold generic equivalent</i>	Pharmaniaga Fluconazole	Pharmaniaga		30		/tab
<i>Lowest price generic equivalent</i>				30		/tab
Fluoxetine caps/tab 20 mg	Prozac	Lilly		30		/tab
<i>Most sold generic equivalent</i>				30		/tab
<i>Lowest price generic equivalent</i>				30		/tab
Fluphenazine decanoate inj 25 mg/mL	Modecate	Sanofi-Winthrop/ BMS		1 ampoule: 1mL		/mL
<i>Most sold generic equivalent</i>	Deca	Atlantic Lab		1 ampoule: 1mL		/mL
<i>Lowest price generic equivalent</i>				1 ampoule: 1mL		/mL
Furosemide(Frusemide) 40 mg tab	Lasix	Aventis		30		/tab
<i>Most sold generic equivalent</i>	Usix	Pharmaniaga		30		/tab
<i>Lowest price generic equivalent</i>				30		/tab
Glibenclamide tab 5 mg	Daonil	Aventis/Hoesch st. AG		60		/tab
<i>Most sold generic equivalent</i>	Clamide	Hovid		60		/tab
<i>Lowest price generic equivalent</i>				60		/tab
Hydrochlorothiazide tab 25 mg	Dichlotride	MSD		30		/tab
<i>Most sold generic equivalent</i>	Apo-hydro	Apotex		30		/tab
<i>Lowest price generic equivalent</i>				30		/tab
Ibuprofen 200 mg tab	Nurofen	Boots		12		/tab
<i>Most sold generic equivalent</i>	Ibuprofen YSP	YSP		12		/tab
<i>Lowest price generic equivalent</i>				12		/tab
Indinavir caps 400 mg	Crixivan	MSD		180		/caps
<i>Most sold generic equivalent</i>				180		/caps
<i>Lowest price generic equivalent</i>				180		/caps
Isosorbide dinitratate 10 mg tab	Isordil	Wyeth		100		/tab

<i>Most sold generic equivalent</i>	Upha-Isosorbide Dinitrate	Upha		100		/tab
<i>Lowest price generic equivalent</i>				100		/tab
<i>Itraconazole 100mg tab/cap</i>	Sporanox	Janssen		28		/tab
<i>Most sold generic equivalent</i>	Itrconazole Pharmaniaga	Pharmaniaga		28		/tab
<i>Lowest price generic equivalent</i>				28		/tab
Loratadine 10 mg tab	Clarityne	Schering-Plough		10		/tab
<i>Most sold generic equivalent</i>	Loradine	YSP		10		/tab
<i>Lowest price generic equivalent</i>				10		/tab
Losartan tab 50 mg	Cozaar	MSD		30		/tab
<i>Most sold generic equivalent</i>				30		/tab
<i>Lowest price generic equivalent</i>				30		/tab
Lovastatin tab 20 mg	Mevacor	MSD		60		/tab
<i>Most sold generic equivalent</i>	Lestric	Ranbaxy		60		/tab
<i>Lowest price generic equivalent</i>				60		/tab
Metformin tab 500 mg	Glucophage	Merck		100		/tab
<i>Most sold generic equivalent</i>	Diabetmin	Hovid		100		/tab
<i>Lowest price generic equivalent</i>				100		/tab
Metoclopramide HCl 10 mg tab	Maxolon	GSK		100		/tab
<i>Most sold generic equivalent</i>	Apo-Metoclopramide	Apotex		100		/tab
<i>Lowest price generic equivalent</i>				100		/tab
Nevirapine tab 200 mg	Viramune	Boehringer I		60		/tab
<i>Most sold generic equivalent</i>	Nevipan	Ranbaxy		60		/tab
<i>Lowest price generic equivalent</i>				60		/tab
Nifedipine Retard tab 20 mg	Adalat Retard	Bayer		100		/tab
<i>Most sold generic equivalent</i>	Cordipin Retard	Pahang Pharmacy		100		/tab
<i>Lowest price generic equivalent</i>				100		/tab
Omeprazole caps 20 mg	Losec	AstraZeneca		30		/caps
<i>Most sold generic equivalent</i>	Omesec	CCM Pharma		30		/caps
<i>Lowest price generic equivalent</i>				30		/caps
Phenytoin caps/tab 100 mg	Epanutin/Dilantin	Pfizer		100		/tab

<i>Most sold generic equivalent</i>	Ditoin	Atlantic Lab		100		/tab
<i>Lowest price generic equivalent</i>				100		/tab
Prazosin 1 mg tab	Minipress	Pfizer		100		/tab
<i>Most sold generic equivalent</i>	Prazotab	Hovid		100		/tab
<i>Lowest price generic equivalent</i>				100		/tab
Prednisolone 5 mg tab	Meticortelone/ Meticorten	Schering-Plough		30		/tab
<i>Most sold generic equivalent</i>	Prednisolone YSP	YSP		30		/tab
<i>Lowest price generic equivalent</i>				30		/tab
Propranolol 40 mg tab	Inderal	AstraZeneca		200		/tab
<i>Most sold generic equivalent</i>	Propranolol	Alpha Pharma		200		/tab
<i>Lowest price generic equivalent</i>				200		/tab
Pyrimethamine with sulfadoxine tab (25+500) mg	Fansidar	Roche		3		/tab
<i>Most sold generic equivalent</i>	Madonine	Atlantic Lab		3		/tab
<i>Lowest price generic equivalent</i>				3		/tab
Ranitidine tab 150 mg	Zantac	GSK		60		/tab
<i>Most sold generic equivalent</i>	Histac	Ranbaxy		60		/tab
<i>Lowest price generic equivalent</i>				60		/tab
Salbutamol inhaler 0.1 mg per dose	Ventoline	GSK		1 inhaler: 200 doses		/dose
<i>Most sold generic equivalent</i>	Asthalin Inhaler	Cipla		1 inhaler: 200 doses		/dose
<i>Lowest price generic equivalent</i>				1 inhaler: 200 doses		/dose
Simvastatin 20 mg tab	Zocor	MSD		120		/tab
<i>Most sold generic equivalent</i>	Vascor	Upha		120		/tab
<i>Lowest price generic equivalent</i>				120		/tab
Spirolactone 25 mg tab	Aldactone	Searle		30		/tab
<i>Most sold generic equivalent</i>	Upha- Spirolactone	Upha		30		/tab
<i>Lowest price generic equivalent</i>				30		/tab

Valproic acid 200 mg tab	Epilim/Epilim Chrono	Sanofi-Synthelabo		100			/tab	
<i>Most sold generic equivalent</i>	Encorate Chrono	Pahang Pharmaceutical		100			/tab	
<i>Lowest price generic equivalent</i>				100			/tab	
Zidovudine caps 100 mg	Retrovir	GSK		100			/caps	
<i>Most sold generic equivalent</i>				100			/caps	
<i>Lowest price generic equivalent</i>				100			/caps	

Annex 3

Median Price Ratio (MPR) across sectors

No	Medicine	Type	Private Sector Retail Pharmacies N=32	Dispensing Doctor Sector N=5
1	Acyclovir 200mg	Brand	14.19	
		Most Sold	5.40	
		Lowest Price	5.30	5.40
2	Allopurinol 100mg	Brand	14.93	
		Most Sold	3.51	7.03
		Lowest Price	3.51	5.27
3	Amitriptyline 25mg	Brand		
		Most Sold	6.89	11.48
		Lowest Price	6.89	11.48
4	Amlodipine 5mg	Brand	47.57	42.72
		Most Sold		
		Lowest Price		
5	Amoxicillin 250mg	Brand		
		Most Sold	4.57	
		Lowest Price	4.57	5.58
6	Amoxicillin+Clavulanic Acid 500+125 mg	Brand	3.18	3.21
		Most Sold		0.97
		Lowest Price	1.33	0.86
7	Atenolol 50mg	Brand	33.98	30.96
		Most Sold	9.85	14.54
		Lowest Price	9.57	12.67
8	Beclometasone Inhaler 50mcg/dose	Brand	4.31	
		Most Sold		
		Lowest Price	2.25	
9	Captopril 25mg	Brand	14.54	
		Most Sold	7.44	7.93
		Lowest Price	7.44	7.93
10	Carbamazepine 200mg	Brand	17.76	
		Most Sold		
		Lowest Price	5.26	6.58
11	Ceftriaxone Injection 1gm powder	Brand		
		Most Sold		
		Lowest Price		3.58
12	Ciprofloxacin 500mg	Brand	111.63	
		Most Sold	18.11	
		Lowest Price	16.46	12.35
13	Co-trimoxazole suspension (8+40) mg/mL	Brand		5.33
		Most Sold		
		Lowest Price		5.86
14	Diazepam 5mg	Brand		
		Most Sold		52.36
		Lowest Price		41.14
15	Diclofenac 25mg	Brand	30.80	
		Most Sold	10.27	15.40
		Lowest Price	10.27	15.40
16	Dimenhydrinate 50mg	Brand	11.79	
		Most Sold	9.43	7.08
		Lowest Price	8.25	7.08
17	Doxycycline 100mg	Brand		
		Most Sold	13.84	
		Lowest Price	12.59	12.59

No	Medicine	Type	Private Sector Retail Pharmacies	Dispensing Doctor Sector
18	Enalapril 10mg	Brand	20.30	16.78
		Most Sold	10.74	
		Lowest Price	10.07	10.74
19	Erythromycin 250mg	Brand	3.45	
		Most Sold	2.41	3.21
		Lowest Price	2.41	3.21
20	Fluconazole 150mg	Brand	83.77	
		Most Sold	39.27	
		Lowest Price	39.27	35.34
21	Fluoxetine 20mg	Brand	62.99	
		Most Sold		
		Lowest Price		
22	Furosemide 40mg	Brand	52.12	27.27
		Most Sold	10.63	
		Lowest Price	10.91	11.73
23	Glibenclamide 5mg	Brand	35.12	38.31
		Most Sold	9.58	
		Lowest Price	6.38	11.17
24	Hydrochlorothiazide 25mg	Brand		
		Most Sold	14.96	31.16
		Lowest Price	11.22	22.44
25	Ibuprofen 200mg	Brand	20.77	24.93
		Most Sold	18.70	18.70
		Lowest Price	12.47	18.70
26	Isosorbide Dinitrate 10mg	Brand	2.36	4.72
		Most Sold	2.36	3.54
		Lowest Price	1.77	3.54
27	Itraconazole 100mg	Brand	3.33	3.43
		Most Sold	1.90	
		Lowest Price	1.90	0.95
28	Loratadine 10mg	Brand	19.20	
		Most Sold	7.19	11.51
		Lowest Price	7.19	11.51
29	Losartan 50mg	Brand	0.99	0.83
		Most Sold		
		Lowest Price		
30	Lovastatin 20mg	Brand		
		Most Sold	3.19	4.78
		Lowest Price	3.19	3.32
31	Metformin 500mg	Brand	3.82	
		Most Sold	1.47	
		Lowest Price	1.47	3.80
32	Metoclopramide 10mg	Brand		
		Most Sold		
		Lowest Price	11.90	17.85
33	Nevirapine 200mg	Brand		
		Most Sold		
		Lowest Price		
34	Nifedipine Retard 20mg	Brand	31.23	
		Most Sold	6.75	6.06
		Lowest Price	6.75	6.06

No	Medicine	Type	Private Sector Retail Pharmacies	Dispensing Doctor Sector
35	Omeprazole 20mg	Brand	10.56	10.01
		Most Sold	2.67	2.67
		Lowest Price	2.54	2.67
36	Phenytoin 100mg	Brand	23.78	
		Most Sold		18.44
		Lowest Price	7.83	18.44
37	Prazosin 1mg	Brand	12.11	15.40
		Most Sold	5.77	
		Lowest Price	6.26	14.76
38	Prednisolone 5mg	Brand		
		Most Sold	6.32	7.59
		Lowest Price	3.79	7.59
39	Propranolol 40mg	Brand	23.56	26.18
		Most Sold	10.47	
		Lowest Price	9.16	15.71
		Lowest Price		
40	Ranitidine 150mg	Brand	21.03	22.60
		Most Sold	8.41	10.51
		Lowest Price	8.41	10.51
41	Salbutamol Inhaler 0.1mg/dose	Brand	2.70	2.97
		Most Sold	1.48	
		Lowest Price	1.48	2.43
42	Simvastatin 20mg	Brand	12.62	10.25
		Most Sold	3.94	5.20
		Lowest Price	3.78	4.73
43	Spironolactone 25mg	Brand		
		Most Sold	2.13	
		Lowest Price	2.13	2.13
44	Valproic Acid 200mg	Brand	4.35	
		Most Sold		
		Lowest Price		

Annex 4

Treatment Affordability of 10 Selected Conditions

Treatment	Type	Private Pharmacy		Dispensing Doctors	
		Median Treatment Price (RM)	Days' wages	Median Treatment Price (RM)	Days' wages
Hypertension Atenolol 50mg × 1 for 30 days	Brand	36.21	2.3	33.00	2.1
	MSG	10.50	0.7	15.50	1.0
	LPG	10.20	0.6	13.50	0.8
Amlodipine 5 mg × 1 for 30 days	Brand	78.50	4.9	70.50	4.4
	MSG	Still Patent		Still Patent	
	LPG	Still Patent		Still Patent	
Hypelipidemia Simvastatin 20mg × 1 for 30 days	Brand	120.00	7.5	97.45	6.1
	MSG	37.50	2.3	49.50	3.1
	LPG	36.00	2.2	45.00	2.8
Peptic Ulcer Ranitidine 150mg × 2 for 30 days	Brand	120.00	7.5	129.00	8.0
	MSG	48.00	3.0	60.00	3.7
	LPG	48.00	3.0	60.00	3.7
Omeprazole 20 mg × 1 for 30 days	Brand	237.21	14.8	225.00	14.0
	MSG	60.00	3.7	60.00	3.7
	LPG	57.00	3.6	60.00	3.7
Depression Fluoxetine 20mg × 2 for 30 days	Brand	425.89	26.6	Insufficient data	
	MSG	Still Patent		Still Patent	
	LPG	Still Patent		Still Patent	
Diabetes Glibenclamide 5 mg × 2 for 30 days	Brand	33.0	2.1	36.00	2.2
	MSG	9.00	0.6	Insufficient data	
	LPG	6.00	0.4	10.50	0.7
Adult Resp. Infect. Amoxicillin+Clavulanic Acid 500+125 mg × 2 for 7 days	Brand	77.60	4.8	78.50	4.9
	MSG	Insufficient data		23.80	1.5
	LPG	32.50	2.0	21.00	1.3
Ped. Resp Infect. Co-trimoxazole Suspension (80+40) mg/ml 10ml/day for 7 days	Brand	Not available		5.13	0.3
	MSG	Not available		Not available	
	LPG	Insufficient data		5.64	0.4

Treatment	Type	Private Pharmacy		Dispensing Doctors	
		Median Treatment Price (RM)	Days' wages	Median Treatment Price (RM)	Days' wages
Asthma Salbutamol Inhaler 0.1 mg/dose 200doses	Brand	20.00	1.2	22.00	1.4
	MSG	11.00	0.7	Insufficient data	
	LPG	11.00	0.7	18.00	1.1
Epilepsy Carbamazepine 200mg × 2 for 30days	Brand	81.00	5.1	Insufficient data	
	MSG	Insufficient data		Insufficient data	
	LPG	24.0	1.5	30.00	1.9
Acute Viral Infect. Acyclovir 200mg × 5 for 5 days	Brand	131.35	8.2	Insufficient data	
	MSG	50.00	3.1	Not available	
	LPG	49.00	3.1	50.00	3.1

Annex 5

Price Component Central Data Collection Form

Part 1: Survey preparation

1. Identify target medicines

	Off-patent	Recently off patent	Patented
Most sold generic			
Name	Apo-atenol	Omesec	
Strength, form, pack size	50mg, tab, 60	20mg, cap, 30	
Manufacturer	Apotex	CCM Pharma	
Innovator brand			
Name	Tenormin	Losec	Cozaar
Strength, form, pack size	50mg, tab, 60	20mg, cap, 30	50mg, tablet, 30
Manufacturer	AstraZeneca	AstraZeneca	MSD

2. Select sample sites:

	Location
Public	KL
Private	KL
"Other"	KL

3. Identify working currency

Currency:	Ringgit Malaysia (RM)
Exchange to US\$:	1.00 USD = RM 3.82 (Government Fixed)
Date:	20 th Oct 2004

Sources: Ministry of Finance, Central Bank, medical stores, importers

Is there a Pharmacy Board? Yes No

Does the Pharmacy Board collect a fee on pharmaceuticals? NO

If yes, please list any fees that apply:

	Imported	Locally produced
Generic equivalent		
Innovator brand		

Comment: _____

Part 2: Price components in procurement process

What finance charges and fees are imposed by the bank on the procurement of pharmaceuticals?
List the charges and the rates.

- Letter of credit: 0.1% on the value of the LC
- Purchase of foreign exchange: No fixed fee.
- Contingency fees: None
- Other: (specify: Stamp Duty): RM 10.00

Incidental Fees: RM 300.00 (Postage/Courier/SWIFT etc)

Comment: _The banks do not charge a service fee/contingency fee except for the 0.1% commission based on the value of the LC

Sources: Ministry of Trade, customs,
Medical stores, importers

2A. For pharmaceuticals procured internationally:

What are the fees for international inspection?

- Pre-shipment inspection (e.g., SGS): RM 780.00 (Not required)
- In-country inspection: No charge (For pharmaceutical products)

Are there charges incurred at the receiving port? If yes, list charge and rate:

Charge	Charge basis	Amount of charge
Port fee, handling, storage, documentation fee etc	Fee	RM 995.00
Customs		NA
Stamp fee		NA
Other (specify)		
Other (specify)		

Is there an import tariff on pharmaceuticals? Yes No

If yes, does this tariff apply to the:

- Public sector? Yes No Rate: _____
- Private retail sector? Yes No Rate: _____
- Other sector? (specify: _____) Yes No Rate: _____

Are any pharmaceuticals exempted from the import tariff? Yes No

If yes, list exempted drugs by sector:

- Public sector Exemptions: _____
- Private retail sector Exemptions: _____
- Other sector (specify: _____) Exemptions: _____

Does the government set a maximum importer's markup? Yes No

If yes, what is the rate? _____

Sources: Ministries of Finance, Health, Trade; medical stores, importers

2B: All medicines: National taxes

Are national taxes levied on pharmaceuticals? Yes No

If yes, does this tax apply to the:

- Public sector? Yes No Basis: _____ Amt: _____
- Private retail sector? Yes No Basis: _____ Amt: _____
- Other sector? (specify: _____) Yes No Basis: _____ Amt: _____

Are any pharmaceuticals exempted from national taxes? Yes No

If yes, list exempted drugs by sector:

- Public sector Exemptions: _____
- Private retail sector Exemptions: _____
- Other sector (specify: _____) Exemptions: _____

Regional taxes

Are regional/state taxes levied on pharmaceuticals?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
If yes, does this tax apply to the:			
▪ Public sector?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Basis: _____	Amt: _____
▪ Private retail sector?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Basis: _____	Amt: _____
▪ Other sector? (specify: _____)	<input type="checkbox"/> Yes <input type="checkbox"/> No	Basis: _____	Amt: _____
Are any pharmaceuticals exempted from regional/state taxes?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
If yes, list exempted drugs by sector:			
▪ Public sector	Exemptions: _____		
▪ Private retail sector	Exemptions: _____		
▪ Other sector (specify: _____)	Exemptions: _____		

Part 3: Government regulation of wholesale and retail mark-ups

3A: Public sector

Sources: Ministry of Health,
medical stores, health facilities

Sources: Ministry of Trade, Health;
Pharmacy board, wholesalers, retail

Does the government regulate mark-ups on the target drug in the public distribution chain? NO
If yes, please indicate rate.

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

Comments: _____

If patients pay for medicines, does the target drug have a maximum sales price? NO
If yes, give the price. If it varies, give the maximum and minimum price.

- Maximum selling price _____
- Minimum selling price _____

3B: Private retail sector

Does the government regulate mark-ups on the target drug in the private distribution chain? NO

If yes, please indicate rate. If they vary, give maximum and minimum:

- Wholesale _____%
- Retail (pharmacy) _____%

Does the target drug have a maximum retail price (sales price)? Yes No
If yes, give the price. If it varies, give the maximum and minimum price.

- Maximum selling price _____
- Minimum selling price _____

Sources: Ministry of Trade, Pharmacy
board, other sector

3C: "Other" sector

Does the government regulate mark-ups on the target drug in the "other" sector? NO

If yes, please indicate rate. If they vary, give maximum and minimum:

- Wholesale _____%
- Retail (pharmacy) _____%

Does the target drug have a maximum retail price (sales price)? Yes No
If yes, give the price. If it varies, give the maximum and minimum price.

- Maximum selling price _____
- Minimum selling price _____

Sources: Ministry of Trade, Finance, Health, wholesalers, retailers, retail pharmacies

Is there a Value Added Tax on pharmaceuticals? Yes No

Is there a General Sales Tax on pharmaceuticals? Yes No

If yes, does this tariff apply to the:

- Yes No Basis: _____ Amt: _____
- Public sector? Yes No Basis: _____ Amt: _____
- Private retail sector? Yes No Basis: _____ Amt: _____
- Other sector? (specify: _____) Yes No Basis: _____ Amt: _____

Is the target drug exempt from VAT/GST? Yes No

If yes, list exempted drugs by sector:

- Public sector Exemptions: _____
- Private retail sector Exemptions: _____
- Other sector (specify: _____) Exemptions: _____

Is there a government regulated dispensing fee? Yes No there is no dispensing fee

If yes, please describe fee and how applied: _____

Does the government set Maximum Selling Prices for medicines? Yes No

If any of the survey medicines have Maximum Prices, list them:

Annex 6

Price Component Analysis (Tables)

Public Sector

International Import				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	0.24	0.24	
	Insurance & Freight (CIF)	7.54	7.54	
<i>Total Stage 1 Costs</i>				<i>= 7.78</i>
Stage 2	Finance/Banking Fees	0.11%	0.01	7.79
	Incidental/Other Banking Fees	0.27	0.27	8.06
	Port Charges & Clearance Fees	1.44	1.44	9.50
<i>Total Stage 2 Costs</i>			1.72	9.50
Stage 3	Distributor's Mark-Up	20%	1.90	11.40
<i>Total Stage 3 Costs</i>			1.90	11.40
Stage 4	Not Applicable	Not Applicable	0.00	11.40
<i>Total Stage 4 Costs</i>			0.00	11.40

Stage 5	Not Applicable	Not Applicable	0.00	11.40
<i>Total Stage 5 Costs</i>			0.00	11.40
			Final Price	11.40
			Total % Mark-up	46.52%

Table 6.1: Public sector component costs of generic atenolol 50mg tablet via local purchase order (LPO)(Pack Size 60)

International Import				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	27.75	27.75	
	Insurance & Freight (CIF)	5.88	5.88	
<i>Total Stage 1 Costs</i>				= 33.63
Stage 2	Finance/Banking Fees	0.11%	0.04	33.67
	Incidental/Other Banking Fees	0.29	0.29	33.96
	Port Charges & Clearance Fees	1.54	1.54	35.50
<i>Total Stage 2 Costs</i>				1.87 = 35.50
Stage 3	Distributor's Mark-Up	20%	7.10	42.60
<i>Total Stage 3 Costs</i>				7.10 = 42.60
Stage 4	Not Applicable	Not Applicable	0.00	42.60
<i>Total Stage 4 Costs</i>				0.00 =42.60
Stage 5	Not Applicable	Not Applicable	0.00	42.60
<i>Total Stage 5 Costs</i>				0.00 =42.60
				Final Price 42.60
				Total % Mark-up 26.7%

Table 6.2: Public sector component costs of innovator brand atenolol 50mg tablet via local purchase order (LPO)(Pack Size 60)

Local Production				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	41.80	41.80	
<i>Total Stage 1 Costs</i>				41.80
Stage 2	Local Transport	3%	1.25	43.05
<i>Total Stage 2 Costs</i>				=43.05
Stage 3	Distributors' Mark-Up	20%	8.61	51.66
<i>Total Stage 3 Costs</i>				8.61 =51.66
Stage 4	Not Applicable	Not Applicable	0.00	51.66
<i>Total Stage 4 Costs</i>				0.00 =51.66
Stage 5	Not Applicable	Not Applicable	0.00	51.66
<i>Total Stage 5 Costs</i>				0.00 =51.66
Final Price		51.66		
Total % Mark-up		25.6%		

Table 6.3:Public sector component costs of generic omeprazole purchased through local purchase order (Pack Size 30)

International Import				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	114.49	114.49	
	Insurance & Freight (CIF)	2.94	2.94	
<i>Total Stage 1 Costs</i>				<i>=117.43</i>
Stage 2	Finance/Banking Fees	0.11%	0.13	117.56
	Incidental/Other Banking Fees	0.14	0.14	117.70
	Port Charges & Clearance Fees	0.77	0.77	118.47
<i>Total Stage 2 Costs</i>				<i>=118.47</i>
Stage 3	Distributor's Mark-Up	17.5%	20.73	139.20
<i>Total Stage 3 Costs</i>			20.73	<i>=139.20</i>
Stage 4	Not Applicable	Not Applicable	0.00	139.20
<i>Total Stage 4 Costs</i>			0.00	<i>=139.20</i>
Stage 5	Not Applicable	Not Applicable	0.00	139.20
<i>Total Stage 5 Costs</i>			0.00	<i>=139.20</i>
			Final Price	139.20
			Total % Mark-up	18.53%

Table 6.4: Public sector component costs of innovator brand omeprazole (Pack Size 30)

International Import				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	40.55	40.55	
	Insurance & Freight (CIF)	4.46	4.46	
<i>Total Stage 1 Costs</i>				<i>= 45.01</i>
Stage 2	Finance/Banking Fees	0.11%	0.05	45.06
	Incidental/Other Banking Fees	0.13	0.13	45.19
	Port Charges & Clearance Fees	0.77	0.77	45.96
<i>Total Stage 2 Costs</i>				<i>= 45.96</i>
Stage 3	Distributor's Mark-Up	17.5%	8.04	54.00
<i>Total Stage 3 Costs</i>			8.04	<i>= 54.00</i>
Stage 4	Not Applicable		0.00	54.00
<i>Total Stage 4 Costs</i>			0.00	<i>= 54.00</i>
Stage 5	Not Applicable	Not Applicable	0.00	54.00
<i>Total Stage 5 Costs</i>			0.00	<i>= 54.00</i>
			Final Price	54.00
			Total % Mark-up	19.97%

Table 6.5: Public sector component costs for innovator brand losartan 50mg (patent drug) via central tender (Pack Size 30)

Private Sector Retail Pharmacies

International Import				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	2.08	2.08	
	Insurance & Freight (CIF)	7.54	7.54	
<i>Total Stage 1 Costs</i>				<i>= 9.62</i>
Stage 2	Finance/Banking Fees	0.11%	0.01	9.63
	Incidental/Other Banking Fees	0.27	0.27	9.90
	Port Charges & Clearance Fees	1.44	1.44	11.34
<i>Total Stage 2 Costs</i>			1.72	<i>= 11.34</i>
Stage 3	Distributor's Mark-Up	5.80%	0.66	12.00
<i>Total Stage 3 Costs</i>			0.66	<i>= 12.00</i>
Stage 4	Retailer's Mark-Up	100%	12.00	24.00
<i>Total Stage 4 Costs</i>			12.00	<i>= 24.00</i>
Stage 5	Not Applicable	Not Applicable	0.00	24.00
<i>Total Stage 5 Costs</i>			0.00	<i>= 24.00</i>
			Final Price	24.00
			Total% Mark-up	149.48%

Table 6.6: Private sector retail pharmacy component costs for generic atenolol 50mg Tablet (Pack Size 60)

International Import				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	34.17	34.17	
	Insurance & Freight (CIF)	5.88	5.88	
<i>Total Stage 1 Costs</i>				<i>= 40.05</i>
Stage 2	Finance/Banking Fees	0.11%	0.04	40.09
	Incidental/Other Banking Fees	0.29	0.29	40.38
	Port Charges & Clearance Fees	1.54	1.54	41.92
	Importer's Mark-Up	15%	6.29	48.21
<i>Total Stage 2 Costs</i>			8.16	<i>= 48.21</i>
Stage 3	Distributor's Mark-Up	19.12%	9.22	57.43
<i>Total Stage 3 Costs</i>			9.22	<i>= 57.43</i>
Stage 4	Retailer's Mark-Up	25.37%	14.57	72.00
<i>Total Stage 4 Costs</i>			14.57	<i>= 72.00</i>
Stage 5	Not Applicable	Not Applicable	0.00	72.00
<i>Total Stage 5 Costs</i>			0.00	<i>= 72.00</i>
			Final Price	72.00
			Total% Mark-up	79.77%

Table 6.7: Private sector retail pharmacy component costs for innovator brand atenolol 50mg tablet (Pack Size 60)

Local Production				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	31.20	31.20	
<i>Total Stage 1 Costs</i>				<i>31.20</i>
Stage 2	Local Transport	3%	0.94	32.14
<i>Total Stage 2 Costs</i>				<i>0.94 = 32.14</i>
Stage 3	Not Applicable	n/a	0.00	32.14
<i>Total Stage 3 Costs</i>				<i>0.00 = 32.14</i>
Stage 4	Retailer's Mark-Up	140.01%	45.00	77.14
<i>Total Stage 4 Costs</i>				<i>45.00 = 77.14</i>
Stage 5	Not Applicable	Not Applicable	0.00	77.14
<i>Total Stage 5 Costs</i>				<i>0.00 = 77.14</i>
			Final Price	77.14
			Total% Mark-up	147.24 %

Table 6.8: Component costs across stages in private sector retail pharmacies for generic omeprazole 20 mg capsule (generic omeprazole is manufactured locally) Pack Size (30)

International Import				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	126.47	126.47	
	Insurance & Freight (CIF)	2.91	2.91	
<i>Total Stage 1 Costs</i>				<i>=129.38</i>
Stage 2	Finance/Banking Fees	0.11%	0.14	129.52
	Incidental/Other Banking Fees	0.14	0.14	129.66
	Port Charges & Clearance Fees	0.77	0.77	130.43
	Importer's Mark-Up	15%	19.56	150.00
<i>Total Stage 2 Costs</i>				<i>20.62 =150.00</i>
Stage 3	Distributor's Mark-Up	14.29%	21.43	171.43
<i>Total Stage 3 Costs</i>				<i>21.43 =171.43</i>
Stage 4	Retailer's Mark-Up	38.25%	65.57	237.00
<i>Total Stage 4 Costs</i>				<i>65.57 =237.00</i>
Stage 5	Not Applicable	Not Applicable	0.00	237.00
<i>Total Stage 5 Costs</i>				<i>0.00 =237.00</i>
			Final Price	237.00
			Total % Mark-up	83.1%

Table 6.9: Component costs across stages in private sector retail pharmacies for innovator brand omeprazole 20 mg capsule (Pack Size 30)

International Import				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	51.10	51.10	
	Insurance & Freight (CIF)	4.46	4.46	
<i>Total Stage 1 Costs</i>				<i>=55.56</i>
Stage 2	Finance/Banking Fees	0.11%	0.06	55.62
	Incidental/Other Banking Fees	0.13	0.13	55.75
	Port Charges & Clearance Fees	0.77	0.77	56.52
	Importer's Mark-Up	15%	8.48	65.00
<i>Total Stage 2 Costs</i>			9.44	<i>=65.00</i>
Stage 3	Distributor's Mark-Up	3.08%	2.00	67.00
<i>Total Stage 3 Costs</i>			2.00	<i>=67.00</i>
Stage 4	Retailer's Mark-Up	36.57%	24.50	91.50
<i>Total Stage 4 Costs</i>			24.50	<i>=91.50</i>
Stage 5	Not Applicable	Not Applicable	0.00	91.50
<i>Total Stage 5 Costs</i>			0.00	<i>=91.50</i>
			Final Price	91.50
			Total % Mark-up	64.68%

Table 6.10: Component costs across stages in private sector retail pharmacies for IB losartan 50 mg (Pack Size 30)

Dispensing Doctor Sector

International Import				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	2.04	2.04	
	Insurance & Freight (CIF)	7.54	7.54	
<i>Total Stage 1 Costs</i>				<i>=9.58</i>
Stage 2	Finance/Banking Fees	0.11%	0.01	9.59
	Incidental/Other Banking Fees	0.27	0.27	9.86
	Port Charges & Clearance Fees	1.44	1.44	11.30
<i>Total Stage 2 Costs</i>			1.72	<i>=11.30</i>
Stage 3	Distributor's Mark-Up	15%	1.70	13.00
<i>Total Stage 3 Costs</i>			1.70	<i>=13.00</i>
Stage 4	Dispensing Doctors' Mark-Up	146.15%	19.00	32.00
<i>Total Stage 4 Costs</i>			19.00	<i>=32.00</i>
Stage 5	Not Applicable	Not Applicable	0.00	32.00
<i>Total Stage 5 Costs</i>			0.00	<i>=32.00</i>
			Final Price	32.00
			Total % Mark-up	234%

Table 6.11: Dispensing doctors' sector component costs for generic atenolol 50mg tablet (Pack Size 60)

International Import				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	35.29	35.29	
	Insurance & Freight (CIF)	5.88	5.88	
<i>Total Stage 1 Costs</i>				<i>= 41.17</i>
Stage 2	Finance/Banking Fees	0.11%	0.05	41.22
	Incidental/Other Banking Fees	0.29	0.29	41.51
	Port Charges & Clearance Fees	1.54	1.54	43.05
	Importer's Mark-Up	12%	5.17	48.21
<i>Total Stage 2 Costs</i>			7.04	<i>= 48.21</i>
Stage 3	Distributor's Mark-Up	11.11%	5.36	53.57
<i>Total Stage 3 Costs</i>			5.36	<i>= 53.57</i>
Stage 4	Dispensing Doctors' Mark-Up	76.02%	40.72	94.29
<i>Total Stage 4 Costs</i>			40.72	<i>= 94.29</i>
Stage 5	Not Applicable	Not Applicable	0.00	94.29
<i>Total Stage 5 Costs</i>			0.00	<i>= 94.29</i>
			Final Price	94.29
			Total% Mark-up	129.02%

Table 6.12: Dispensing doctors' sector component costs for innovator brand atenolol 50mg tablet (Pack Size 60)

Local Production				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	29.96	29.96	
<i>Total Stage 1 Costs</i>				<i>29.96</i>
Stage 2	Local Transport	3%	0.90	30.86
<i>Total Stage 2 Costs</i>			0.90	<i>= 30.86</i>
Stage 3	Not Applicable	n/a	0.00	30.86
<i>Total Stage 3 Costs</i>			0.00	<i>= 30.86</i>
Stage 4	Retailer's Mark-Up	316.62%	97.71	128.57
<i>Total Stage 4 Costs</i>			97.71	<i>= 128.57</i>
Stage 5	Not Applicable	Not Applicable	0.00	128.57
<i>Total Stage 5 Costs</i>			0.00	<i>= 128.57</i>
			Final Price	128.57
			Total% Mark-up	329.13%

Table 6.13: Dispensing doctors' sector component costs for generic equivalent Omeprazole 20 mg capsule (generic omeprazole is manufactured locally) (Pack Size 30)

International Import				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	132.37	132.37	
	Insurance & Freight (CIF)	2.94	2.94	
<i>Total Stage 1 Costs</i>				<i>=135.31</i>
Stage 2	Finance/Banking Fees	0.11%	0.15	135.45
	Incidental/Other Banking Fees	0.14	0.14	135.59
	Port Charges & Clearance Fees	0.77	0.77	136.36
	Importer's Mark-Up	10%	13.64	150.00
<i>Total Stage 2 Costs</i>				<i>=150.00</i>
Stage 3	Distributor's Mark-Up	14.28%	21.42	171.42
<i>Total Stage 3 Costs</i>				<i>=171.42</i>
Stage 4	Retailer's Mark-Up	50.01%	85.72	257.14
<i>Total Stage 4 Costs</i>				<i>=257.14</i>
Stage 5	Not Applicable	Not Applicable	0.00	257.14
<i>Total Stage 5 Costs</i>				<i>=257.14</i>
			Final Price	257.14
			Total % Mark-up	90.03%

Table 6.14: Dispensing doctors' sector component costs for Innovator Brand Omeprazole 20 mg capsule (Pack Size 30)

International Import				
	Type of Charge Found	Amount of Charge (RM unless specified)	Value of Charge (RM)	Total (RM)
Stage 1	Manufacturer's Selling Price (MSP)	52.05	52.0	
	Insurance & Freight (CIF)	4.46	4.46	
<i>Total Stage 1 Costs</i>				<i>56.51</i>
Stage 2	Finance/Banking Fees	0.11%	0.06	56.57
	Incidental/Other Banking Fees	0.13	0.13	56.70
	Port Charges & Clearance Fees	0.77	0.77	57.14
<i>Total Stage 2 Costs</i>				<i>= 57.14</i>
Stage 3	Distributor's Mark-Up	12%	6.86	64.00
<i>Total Stage 3 Costs</i>				<i>= 64.00</i>
Stage 4	Dispensing Doctors' Mark-Up	71.88%	46.00	110.00
<i>Total Stage 4 Costs</i>				<i>= 110.00</i>
Stage 5	Not Applicable	Not Applicable	0.00	110.00
<i>Total Stage 5 Costs</i>				<i>= 110.00</i>
			Final Price	110.00
			Total % Mark-up	94.65%

Table 6.15: Dispensing doctors' sector component costs for IB Losartan 50 mg tablet (Pack Size 30)

Annex 7

Endorsement letter from Director General of Health, Ministry of Health, Malaysia.



PEJABAT KETUA PENGARAH KESIHATAN MALAYSIA
(OFFICE OF THE DIRECTOR GENERAL OF HEALTH MALAYSIA)
KEMENTERIAN KESIHATAN MALAYSIA
(MINISTRY OF HEALTH MALAYSIA)
JALAN CENDERASARI
50590 KUALA LUMPUR

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Ruj. Kami: KKM/KPK/1/H/Jld.XVII(18)

Tarikh: 21 Oktober 2004



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Taman Connaught
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Tuan,

Subject: Endorsement of WHO/HAI Medicine Pricing Survey

Adalah saya dengan ini merujuk surat tuan bertarikh 19/10/2004 mengenai perkara yang tersebut di atas.

2. Sukacita dimaklumkan bahawa saya tiada halangan atas cadangan kajian tuan yang melibatkan hospital-hospital terpilih Kementerian Kesihatan Malaysia. Walau bagaimanapun sila tuan hubungi Pengarah-Pengarah Hospital berkenaan untuk mendapat kerjasama daripada mereka bagi tujuan tersebut.

Sekian dimaklumkan, terima kasih.

Yang Ikhlas,

(TAN SRI DATU DR. HAJI MOHAMAD TAHA BIN ARIF)
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