Medicine prices in Thailand: A result of no medicine pricing policy

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Abstract

Objectives: The main goal of this study was to document the situation of medicine prices in public and private health sectors for policy recommendation.

Methods: A field study to measure prices of selected medicines was undertaken in Thailand using a standardized methodology developed by the World Health Organization (WHO) and Health Action International (HAI). Prices of 43 medicines were measured in health facilities and pharmacies in the capital city and three districts in different parts of Thailand. Medicine prices were expressed as the ratios relative to a standard set of international reference prices (median price ratio or MPR).

Results: The public sector procured generics and innovator brands at 1.46 and 3.3 MPR while patients paid 2.55 and 4.36 MPR, respectively. Private pharmacies procured lowest price generics at 1.48 MPR and innovator brands at 9.67 MPR.

Because of no medicine pricing policy in Thailand, it was found that between public and private sectors, among different public hospitals, and among different private pharmacies, the same generic products were procured and sold to patients at different prices. The median mark-up for innovator brands were 31% in the public sector and 22% in the private sector. For lowest priced generics, the median mark-up were 80% in the public sector and 96% in the private sector. Different prices for the identical product were problems to the health insurance organizations in terms of reimbursement, and to patients in terms of fairness.

Conclusion: The results highlight priority areas for action by the Ministry of Public Health and others in improving the drug pricing systems. The price regulation system should be implemented at every level of drug supply chain and appropriate pricing strategies should be employed.

Keywords: Medicine pricing, medicine price policy, Thailand

Introduction

Thailand employs some health policies to indirectly control the medicine prices and expenditure in the public sectors. The examples of these policies are the implementation of the National Drug List, the National Health Insurance Schemes and utilization of the Drug Related Group (DRG) to reimburse the inpatient expense for government workers. But there is no policy to regulate the drug pricing both in the public or private sectors, and whether it is the procurement or selling prices.

In 2006, about 60% of medicines were imported; 40% were locally produced1. The Commission of Food and Drug Administration requires all manufacturers to have Good Manufacturing Practices (GMP) certification2. Assurance of bioequivalence is required for the registration of generics (in addition to quality assurance). The Ministry of Public Health regularly tests medicines once marketed. The Pharmacy and Therapeutic Committee of each public hospital selects medicines for their institution and some medicines are procured through a group purchasing program. Patients tend to buy prescribed medicines at hospital pharmacies rather than community pharmacies or drug stores3.

The Office of Food and Drug Committee in cooperation with the Faculty of Pharmacy, Mahidol University, for the first time, conducted a nationwide study on prices of selected medicines in Thailand. The main goal of the study was to document medicine pricing situation in the public and private health sectors in Thailand.

Methods

The survey of the prices, availability and affordability of medicines in Thailand was conducted using the standardized World Health Organization/Health Action International (WHO/ HAI) methodology. The WHO/HAI methodology is described in the manual “Medicine Prices: A new approach to measurement”
(WHO/HAI, 2003) and the document is publicly available on the HAI website. Data were collected during October and December 2006. Pricing data were collected for 1. Public sector procurement prices. 2. Public sector patient prices. 3. Private sector procurement prices and 4. Private sector patient prices.

Selection of medicines to be surveyed
Among a total of 43 medicines included in the survey, 26 belonged to the Core List medicines suggested by WHO/HAI for international comparison, and 17 were added as supplementary drugs as requested by Thai FDA. For each substance, two products were monitored, namely: innovator brand (IB) and lowest price generic equivalent (LPG). Each medicine was strength and dosage-form specific. The medicine prices were measured centrally in health facilities and pharmacies in the capital city, Bangkok, and three randomly selected districts in each part of Thailand. The three randomly selected districts were Phitsanulok (North), Suratthani (South), and Nakomrachaseema (Northeast). Procurement prices and prices charged to patients were also recorded.

Selection of medicine outlets
The sampling method described in the WHO/HAI manual for selecting a representative number of public health facilities and pharmacies was employed. The samples in each province were: 1 central or provincial hospital, 4 community hospitals (not more than 3-hours driving distance from the central or provincial hospital), 5 (not more than 5 kilometers from the hospitals), and 1 Provincial Health Office.

Data collection
A standardized data collection form was used and data collectors were trained in a two-day workshop to ensure the reliability and reproducibility of the survey. Data collection was completed in six weeks by December 2006.

Data entry
Price data were entered into the pre-programmed MS Excel workbook provided as part of the WHO/HAI methodology. Data entry was checked using the ‘double entry’ and ‘data checker’ functions of the workbook. Erroneous entries and potential outliers were verified and corrected as necessary.

Data analysis
All data obtained were analyzed by the program designed by WHO/HAI. Availability was calculated as the percentage (%) of medicines found at individual sampling facilities. Data analysis is based on a total of 20 public sector health facilities (20 hospitals) and 21 pharmacies in Bangkok in three randomly selected districts.

For the price analysis, medicines were needed to be found in at least 4 pharmacies for their price data to be included. Medicine prices were expressed as ratios relative to a standard set of international reference prices:

\[
\text{Medicine Price Ratio (MPR) = \frac{\text{median local unit price}}{\text{international reference unit price}}}
\]

An MPR of 2 would mean that the medicine price is twice than that of the international reference price. The reference prices used were the 2005 Management Sciences for Health (MSH) reference prices, taken from the International Drug Price Indicator Guide (2005). These are median prices of high quality multi-source medicines offered to developing and middle-income countries by different suppliers.

International reference prices were converted to local currency using the exchange rate (buying rate, Kasikorn Bank) on 2nd October 2006, the first day of data collection, at a rate of 37.78 baht per one US dollar.

Results

Public sector prices

Public sector procurement prices
Of the 35 medicines with an international reference price, price ratios were calculated for 8 innovator brands and 31 lowest price generics (when the products were found in 4 or more outlets). Overall the Median Price Ratio (MPR) was 1.46 for public sector generics while MPR for innovator brands was 3.3. The 25th and 75th percentiles for innovator brands were 1.65 and 7.68 MPR respectively. The 25th and 75th percentiles for lowest price generic equivalents were 0.80 and 2.26 MPR respectively.

Some innovator brands were being procured at very high prices, such as captopril (MPR 12.10), phenytoin (MPR 11.08), azithromycin (MPR 6.54) and carbamazepine (MPR 4.67). Some generic products were also being procured at high prices, such as the azithromycin (MPR 3.07), captopril (MPR 2.88), and nifedipine retard (MPR 2.6).

As a result of no medicine pricing policy in Thailand, the researchers found that different public hospitals procured the same product at different prices.

Public sector patient prices
Overall, the lowest priced generics were 2.55 MPR, and innovator brands were 4.36 MPR. The 25th and 75th percentiles of innovator brand MPRs were 2.03 and 9.86. The 25th and 75th percentiles of lowest price generic equivalent MPRs were 1.45 and 3.32.

Some innovator brands were sold to patients at very high prices, such as phenytoin (MPR 15.82), captopril (MPR 15.63), azithromycin (MPR 7.94) and carbamazepine (MPR 6.11). The lowest priced generics were sold to patients at 0.49 to 6.79 MPR. High priced generics included glibenclamide (MPR 6.79), phenytoin (MPR 5.75), amitriptyline (MPR 4.05) and captopril (MPR 4.36).

It was found that among different public hospitals, the same products were sold to patients at different prices.
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Table 1. Median MPRs for medicines found in the public sector; procurement prices and patient prices

<table>
<thead>
<tr>
<th>Type and number of medicines</th>
<th>Median MPR Public procurement</th>
<th>Median MPR Public patient prices</th>
<th>Difference (%) Public sector patient prices to procurement prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovator brand (n = 8)</td>
<td>3.3</td>
<td>4.36</td>
<td>32%</td>
</tr>
<tr>
<td>Lowest price generic equivalent (n = 31)</td>
<td>1.46</td>
<td>2.55</td>
<td>74.7%</td>
</tr>
</tbody>
</table>

Comparison of public sector patient prices with public sector procurement prices
Table 1 compares the price of medicines procured and then sold to patients in the public sector. For 8 innovator brands, patients paid 32% more than the government procurement price. Across 31 generics, patients paid about 75% more than the government procurement price.

Private sector prices
Private sector procurement prices
In the private sector, the lowest priced generic equivalents were procured at 1.48 MPR, and innovator brands at 9.67 MPR. The 25th and 75th percentiles for innovator brands were 4.36 and 18.32 respectively. For the lowest priced generics, they were 0.94 and 1.91 MPR.

Private sector patient prices
Overall, lowest price generic equivalents were sold to patients at 3.31 MPR, and innovator brands at 11.6 MPR. The 25th and 75th percentiles for innovator brands were 5.37 and 23.9 MPR respectively. The 25th and 75th percentile of the lowest price generic equivalent were 2.34 and 5.46 MPR, respectively.

Very high priced innovator brands included ciprofloxacin (MPR 72.64), diclofenac (MPR 30.54) aciclovir (MPR 29.71), atenolol (MPR 27.07), ranitidine (MPR 23.9) and gliclazide (MPR 20.36). High priced generics included hydrochlorothiazide (MPR 7.35), glibenclamide (MPR 6.79), nifedipine retard (MPR 6.16) and atenolol (MPR 6.02).

Comparison of private sector patient prices with private sector procurement prices
Table 2 compares the price of medicines procured and then sold to patients in the private sector. Across the 17 innovator brands, patients were charged about 20% more than the procurement price. Across the 22 lowest priced generics, the mark-up was about 124%.

Table 2. Median MPRs for medicines found in the private sector; procurement prices and patient prices

<table>
<thead>
<tr>
<th>Type and number of medicines</th>
<th>Median MPR Private procurement</th>
<th>Median MPR Private patient prices</th>
<th>Difference (%) Private sector patient prices to procurement prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovator brand (n = 17)</td>
<td>9.67</td>
<td>11.60</td>
<td>19.96%</td>
</tr>
<tr>
<td>Lowest price generic equivalent (n = 31)</td>
<td>1.48</td>
<td>3.31</td>
<td>123.6%</td>
</tr>
</tbody>
</table>

Comparison of prices in the public and private sectors
Table 3 compares procurement prices in the public and private sectors. As shown, overall the private pharmacies were buying innovator brand medicines at a price 67% higher than public sector facilities. Overall, lowest priced generics were being purchased by private pharmacies at 29% more than the public sector. Some generic products had large price differences, such as Atenolol 50 mg which was procured by the public sector at 0.95 MPR but by the private sector at 3.61 MPR (280%), Omeprazole 20 mg was procured by the public sector at 0.38 MPR but by the private sector at 1.29 MPR (239%).

According to table 4, overall patient prices in the private sector were approximately 43% and 37% more than patient prices in the public sector for innovator brands and lowest generic equivalents, respectively. Some generic products had large price differential, such as Atenolol 50 mg was sold to patients in the public sector at 3.01 MPR but in the private sector at 6.02 MPR (100%), Omeprazole 20 mg was sold to patients in the public sector at 0.72 MPR but in the private sector at 2.23 MPR (210%).

Table 3. Summary of procurement prices (median MPRs) for medicines found in both the public and private sectors

<table>
<thead>
<tr>
<th>Type and number of medicines in both sectors</th>
<th>Median MPR Public sector procurement prices</th>
<th>Median MPR Private sector procurement prices</th>
<th>Difference (%) Private to public procurement prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovator brand (n = 5)</td>
<td>4.67</td>
<td>7.79</td>
<td>66.9%</td>
</tr>
<tr>
<td>Lowest price generic (n = 22)</td>
<td>1.15</td>
<td>1.48</td>
<td>28.6%</td>
</tr>
</tbody>
</table>
Table 4. Summary of patient prices (median MPRs) for medicines found in both the public and private sectors

<table>
<thead>
<tr>
<th>Type and number of medicines in both sectors</th>
<th>Median MPR Public sector patient prices</th>
<th>Median MPR Private sector patient prices</th>
<th>Difference (%) Private to public patient prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovator brand (n = 5)</td>
<td>6.11</td>
<td>8.76</td>
<td>43.4%</td>
</tr>
<tr>
<td>Lowest price generic (n = 22)</td>
<td>2.42</td>
<td>3.31</td>
<td>36.6%</td>
</tr>
</tbody>
</table>

Comparing mark-ups in the public sector with those in the private sector for retail (procurement to patient price) of individual medicines found in both sectors showed that the median mark-up for innovator brands were similar i.e. 31% in the public sector and 22% in the private sector. The median mark-up for lowest priced generics were also similar; 80% in the public sector and 96% in the private sector.

Affordability

Table 5 illustrates the affordability of a 4 drug regimen when originator brands and lowest priced medicines are purchased in the private sector. The lowest paid government worker (211.5 baht/day) would have to work 0.98 days (207 baht) to be able to afford these medicines. In case, if the innovator brands were used, lowest paid government worker would have to work 4.17 (881 baht/211.5 baht) days to get all these medicines.

Table 5. Affordability of treatments for a family with multiple conditions, private sector

<table>
<thead>
<tr>
<th>Condition</th>
<th>Treatment</th>
<th>Type</th>
<th>Median Treatment Price</th>
<th>Days’ Wages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>Hydrochlorothiazide 50 mg daily for 30 days</td>
<td>LPG IB</td>
<td>30 baht 57 baht</td>
<td>0.1 0.3</td>
</tr>
<tr>
<td></td>
<td>Enalapril 20 mg daily for 30 days</td>
<td>LPG IB</td>
<td>75 baht 510 baht</td>
<td>0.4 2.4</td>
</tr>
<tr>
<td></td>
<td>Glibenclamide 5 mg*2 for 30 days</td>
<td>LPG IB</td>
<td>60 baht 180 baht</td>
<td>0.3 0.9</td>
</tr>
<tr>
<td>Resp. Infection</td>
<td>Amoxicillin 250 mg*3 for 7 days</td>
<td>LPG IB</td>
<td>42 baht 134 baht</td>
<td>0.2 0.6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>LPG IB</td>
<td>207 baht 881 baht</td>
<td>0.98 4.17</td>
</tr>
</tbody>
</table>

Discussion

The procurement prices in the public sectors were lower than the private sectors for both innovator brands and generic products as seen in table 3. This is due to public hospitals procuring through group purchasing mechanisms. It was found that public hospitals predominantly used generic products and lower price innovator brands (with median MPR = 3.3). The very high priced innovator brands such as ciprofloxacin (MPR 72.64), diclofenac (MPR 30.54) aciclovir (MPR 29.71), atenolol (MPR 27.07), ranitidine (MPR 23.9) and glibenclamide (MPR 20.36) were procured only in the private sectors.

The ranges of procured prices (percentile 25 and 75) for innovator brands were wider than the generic products both in the public and private sectors. This happens because of the high market competition among generic manufactures in Thailand, and the group purchasing system used by public hospitals tends to lower the procurement prices each year. This situation is good for the hospitals but not for the local pharmaceutical manufacturers. Regarding the innovator brands which do not have market competition, the prices tend to be high since the day of registration at the Thai FDA, because there is no organization to directly control the prices set by the pharmaceutical companies.

The paired analysis (only same medicines procured by both sectors) showed that the private sector procurement prices were 67% more than the public sector procurement prices for innovator brands, and approximately 29% greater for the lowest priced generics. This is the outcome of a no pricing policy, the result being that the pharmaceutical companies may set their selling prices on their own. Even among different public hospitals, medicines of the same generic names were procured at different prices.

The prices at which the medicines were sold to patients in the private sector were higher than in the public sectors. Differences in patient prices were found not only between public and private sectors...
sector but also among public hospitals and private pharmacies, the same products being sold at different prices.

The retail patient prices set in the public and private sector are not controlled by the government, only when the companies want to increase the prices; they have to notify the authorities. Different prices to patients create problems for the health insurance organizations in terms of reimbursement, and to patients in terms of fairness.

Mark-ups on the generic products were considerably higher than on innovator brands, however the prices of innovator brands were more than 4 times than that of generic drugs, thus making the profit much higher. Moreover, when looking at the percent mark-up of innovator brands in the public sector, it was found that the mark-up is higher than the private sector (45.95% to 25.02%) which shows that the public sector gains more profits by selling innovator brands. In order to tackle these issues, there is a need for regulations to control the percentage mark-up of drugs. High cost drugs should be marked up at a relatively lower percentage than low cost drugs. Results may be limited by the fact that data are inherently subject to outside influences such as market fluctuations and delivery schedules.

**Conclusion and recommendations**

There is no national pricing policy in Thailand to regulate medicine prices. Different prices for the same medicine were found, also high prices were observed for the innovator brand medicines.

These are some suggestions to overcome these issues:

At policy level, the government should include all stakeholders to participate in this matter, including decisions regarding pricing policy. Appropriate pricing strategies should be employed.

The price regulation system should be implemented at every level of drug supply chain: manufacturers to hospitals/drug stores and hospitals/drug stores to patients. Price regulations, such as maximum selling prices, or maximum wholesale/retail mark-ups, should be implemented and enforced.

There should be an organization responsible to set and monitor medicine prices.

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**References**