

### Medicine prices matter

Rapidly rising costs of health care and high medicine prices are a growing concern worldwide, especially in countries where patients have to pay the full price of medicines. This report summarizes the findings of a survey of medicine prices, availability, affordability and price components in Lao People's Democratic Republic, undertaken using a standard survey methodology developed by the World Health Organization (WHO) and Health Action International (HAI).

The survey was conducted in November/December 2013 by the Food and Drug Department (FDD) of the Ministry of Health. The survey managers were Dr. Lamphone Syhakhang (Deputy Director) and Mr. Bounxou Keohavong (Chief of Drug Control Division). Support was provided by WHO's Western Pacific Regional Office and HAI.

### Survey objectives

The survey was designed to answer the following questions:

- What is the availability and patient price for key medicines in public sector outlets, private pharmacies and private clinics?
- Do prices and availability vary in different provinces?
- Do prices and availability vary between originator brands and lowest priced generic equivalents?
- What price does the government pay for medicines, and how does this compare with patient prices in the public sector?
- How do prices compare with international reference prices?
- How affordable are medicines for people on low wages?
- What taxes are levied on medicines and what is the level of the various mark-ups that contribute to the patient price of medicines?

### Key findings from the survey:

#### Government procurement prices

- Lowest priced generics procured through the decentralized process were higher priced than those procured through the centralised processes.
- Overall, procurement prices of lowest priced generics were 90% above international reference prices. Some individual medicines (generics) very high priced at more than 5 times international reference prices.

#### Public sector

- Availability of EML medicines (generics) was suboptimal at 62.8%. Some important medicines had very poor availability e.g. salbutamol inhaler (22.2%)
- Lowest priced generics were high priced at 2.82 times international reference prices.

- Patients were paying 44% more than government procurement prices for lowest priced generics.

#### Private pharmacies

- Availability of generics was poor at 50.3%. Availability of originator brands was 11.5%
- Lowest priced generics were 3.12 times international reference prices, with some high priced individual medicines.
- Lowest priced generics in private pharmacies were 19% more than in public sector outlets, but 17% less compared to private clinics

#### Private clinics

- The availability of generics was poor at 40.4%.
- Lowest priced generics were 3.87 times international reference prices, with some high priced individual medicines.
- Prices of lowest priced generics in private clinics were 37% more than in public sector outlets

#### Regulations

- In all sectors, some unregistered products were found
- In the public sector, some medicines were found in outlets not permitted to stock them.

#### Affordability

- Some, but not all, treatments with lowest priced generics were affordable for those on low wages in all three sectors. Treating co-morbidities, or treating more than one sick person in a household, would not be affordable. Originator brands were not affordable.
- Very few medicines to treat noncommunicable diseases met WHO's target of 80% availability and affordable (in any sector)

#### Comparisons across the six provinces

- In the public sector, availability of generics was lowest in Champasak (53.2%) and highest in Luangprabang (69%). In private pharmacies, availability was again highest in Luangprabang (62.8%), Vientiane had 54%, and Champasak, Savannakhet, Oudomxay and Bolikhamxay were similar at about 46%.
- In the public sector, patient prices for lowest priced generics were lowest in Luangprabang but similar across the other provinces. In private pharmacies, prices were lowest in Champasak and highest in Oudomxay.

#### Comparison with Indonesia and Thailand

- In public sector outlets and private pharmacies, availability of generics was lower in Laos PDR compared to the other two countries
- Public sector procurement prices, and patient prices, of lowest priced generics were higher in Laos PDR compared to the other countries. In private

pharmacies, patient prices in Laos PDR were higher than in Indonesia but lower than in Thailand

### Pharmaceutical sector in Lao PDR

Lao PDR, classified by the World Bank as a low-middle-income country, has a population of 6.4 million (2011) of whom about two thirds live in rural areas. Per capita GDP was US\$ 1281 in 2011, but about 25% of the population live below the poverty line (UNDP 2010). Out-of-pocket payments for health are 63% of total health expenditure. Four health insurance schemes are in operation but they cover only 20% of the population (2012).

Lao PDR has a National Medicines Policy (2003) and Essential Medicines List (EML, 2012). The FDD regulates medicinal products. Medicine prices are not regulated.

Medicine procurement was decentralized to the provinces in 1995 (such as in Bolikhamxay and Savannakhet where health facilities procure medicines themselves) although centralized pooled procurement was recently implemented in some provinces and central hospitals. The centralized method takes two forms:

- (1) collective negotiation by the Medical Product Supply Center (MPSC) in collaboration with the provincial food and drug unit and the provincial procurement committee (as undertaken in Champasak and five central hospitals in Vientiane). In this negotiation, MPSC supports the provinces in the prequalification of the suppliers and through the tender process. Suppliers who win the tender supply directly to the health facilities at the contracted price.
- (2) In some provinces (such as Luangprabang and Oudomxay) the centralized system is used by the provincial food and drug unit to procure medicines, however, they do not go through the tender process but rather use price comparisons.

Revolving drug funds (RDFs) operate at all levels (provincial hospitals, district hospitals, health centres and village health units). A mark-up of 25% is permitted on the procurement price (5% transport, 10% losses, inflation, and a safety margin, and 10% RDF management costs).

### Survey methodology

A total of 50 medicines were surveyed; 22 from WHO/HAI global and regional core lists and 28 selected due to national importance. Each medicine was strength- and dosage-form specific, and had a recommended pack size. Note: different strengths and dosage forms of the survey medicines and therapeutic alternatives may be on the market but were not surveyed.

Availability and prices were recorded for the originator brand product (OB), which was identified at the national level, and for the lowest priced generic equivalent (LPG) product which was determined at each outlet.

Of the 50 medicines, 47 were on the EML (the non-EML medicines surveyed were atorvastatin 20mg tab, chlorpheniramine 2mg/5ml syrup, and gliclazide 80mg tab). Eight medicines had no identifiable originator brand. Of the remaining 42 originator brands, 34 did not have marketing authorization (registration) in Lao PDR, however, they were surveyed as it is known that non-

registered products can be found in outlets. Where not found in any outlets, they were excluded from the analysis. Data was collected from a total of 30 public hospitals and health centres, 30 private pharmacies and 30 private clinics in six provinces; Vientiane, Bolikhamxay, Champasak Luangprabang, Oudomxay and Savannakhet. The public sector sample was composed of 6 central/provincial hospitals, 12 district hospitals, and 12 health centres.

Public sector procurement prices were collected in the public sector outlets where patient prices were collected (a mix of those procuring through the centralized and decentralized systems).

Data on price components were collected for 5 tracer medicines starting in 1 provincial hospital, 1 private pharmacy and 1 private clinic and tracking back in the supply chain to determine mark-ups of the retailers, wholesalers etc. plus any other charges.

Table 1. Measurements in each sector

Measurement	Public sector	Private pharmacies	Private clinics
Price to patient	✓	✓	✓
Availability	✓	✓	✓
Affordability	✓	✓	✓
Procurement price	✓	Not measured	
No. of outlets visited	30	30	30

### Presentation of findings

The WHO/HAI survey methodology presents prices in Kip and as median price ratios (MPR). The MPR is calculated by dividing the local price by an international reference price (converted to Kip using the exchange rate on the first day of data collection i.e. 1USD=7955 Kip). An MPR of 1 means the local price is equivalent to the reference price whereas an MPR of 2 means the local price is twice the reference price.

The international reference prices used for this survey were taken from the 2012 Management Sciences for Health (MSH) International Drug Price Indicator Guide<sup>1</sup> (the MSH Guide pulls together information from recent price lists of not-for-profit and for-profit medicine suppliers for multisource medicines and thus reflects the prices governments could be expected to pay when tendering for medicines).

The availability of individual medicines is calculated as the percentage of outlets where the medicine was found on the day of data collection (hence may not reflect average monthly availability). In the public sector, availability *also* took into account the level of care of each medicine e.g. where a medicine is not permitted to be dispensed from a primary health centre, it was not included in the availability analysis for these outlets. The class of the private pharmacies was not considered as it was known that pharmacies ignore regulations on what medicines they are permitted to stock.

### Interpretation of findings

Country specific factors such as pricing policies, market size, competition, national economic and other factors

may influence prices. For the purposes of these surveys, in low- and middle-income countries an MPR of less than or equal to 1 for public sector procurement prices are considered to indicate acceptable prices.

## Findings

### 1. Medicine availability

#### Public sector

The mean availability of all surveyed medicines was 8.3% for originator brands and 60.6% for generics – see Table 2. For EML medicines, the availability was 8.3% and 62.8% for originator brands and generics respectively. The availability of any product type was 60.8% (all medicines) and 63.0% (EML medicines only)<sup>ii</sup>.

Table 2. Mean % availability, public sector

	Originator brand	Generic
<b>All medicines (50)</b>		
Mean availability	8.3%	60.6%
Standard deviation	9.2%	30.1%
<b>EML medicines (47)</b>		
Mean availability	8.3%	62.8%
Standard deviation	9.2%	28.9%

The availability of originator brands was low in the public sector which is expected as the survey medicines are off-patent and generics are available on the international market, and few were registered. Table 3 shows the availability of generics across six bands. Two medicines were not found in any outlets (gliclazide is not on the EML and no generic versions of salbutamol inhaler are registered although they are available on the international market).

Twelve medicines were found in one or more public sector outlets with a lower level of care than is permitted to stock them i.e. amitriptyline 25mg tab, ceftriaxone 1g inj, ciprofloxacin 500mg tab, diazepam 5mg tab, enalapril 5mg tab, furosemide 40mg tab, glibenclamide 5mg tab, hydrochlorothiazide 50mg tab, isosorbide dinitrate 10mg tab, nifedipine 10mg tab, ofloxacin 200mg tab, and omeprazole 20mg tab.

Table 3. Availability (%), individual medicines, generics, public sector

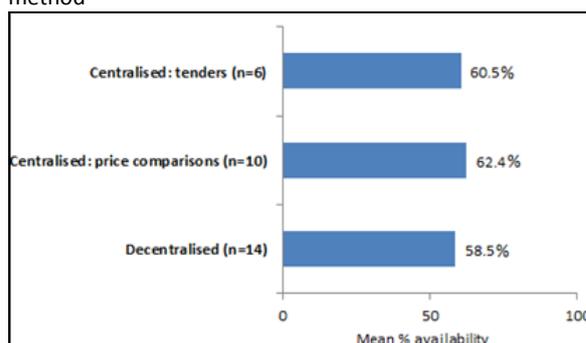
Availability	Medicine
0 %	Gliclazide, salbutamol inhaler
1-24%	Amoxicillin+clavulanic acid, atorvastatin, clotrimazole top cream, hydrochlorothiazide, niclosamide, nifedipine, ranitidine
25 -49%	Aciclovir, folic acid, ibuprofen, ketoconazole cream, mebendazole, metformin, nifedipine, phenobarbital, praziquantel, pyridoxine, simvastatin
50 – 79%	Albendazole, amitriptyline, ampicillin, atenolol, chlorpheniramine syrup, ciprofloxacin, glibenclamide, soluble insulin, isosorbide dinitrate, metronidazole
80-99%	Amlodipine, amoxicillin cap & susp, ceftriaxone inj, chlorpheniramine tab, co-trimoxazole tab & susp, diazepam, diclofenac, doxycycline, enalapril, erythromycin, furosemide, ofloxacin, Vit B1,

	omeprazole, ORS, paracetamol tab & syrup, penicillin VK, polyvidone iodine top soln,
100%	-

tab/cap unless otherwise stated

Figure 1 shows the availability of generics by method of procurement i.e. centralised tenders (Champasak, and Mahosoth hospital in Vientiane), centralised price comparisons (Luangprbang and Oudomxay), and decentralised where outlet procure themselves (Bolikhamxay, Savannakhet and other outlets in Vientiane). Mean availability showed little variation when analysed by method of procurement (decentralised or centralised).

Figure 1. Mean % availability, public sector, by procurement method



#### Private pharmacies

The mean availability of all surveyed medicines in the private pharmacies was 11.5% for originator brands and 50.3% for generics (Table 4). The mean availability was 52.1% for any product type.

Table 4. Mean % availability, private pharmacies

	Originator brand	Generic
Mean availability	11.5%	50.3%
Standard deviation	15.0%	33.3%

Tables 5 and 6 list the availability of originator brands and generics in the private pharmacies, respectively. Fourteen medicines (of the 50 surveyed) had 80% or greater availability as generics. Of these, two medicines (paracetamol tabs and penicillin VK tabs) had 100% availability. Generic versions of nifedipine tabs were not found in any of the pharmacies sampled, and a further 18 medicines had less than 25% availability. Of note was the poor availability of salbutamol inhaler, an essential medicine to treat asthma, in both the public sector (22.2% for the originator brand and 0% for generics) and in the private pharmacies (20% availability for the originator brand and 3.3% for generics).

Table 5. Availability (%) individual medicines, originator brands, private pharmacies

Availability	Medicine
0 %	Metronidazole
1-24%	Albendazole, amoxicillin cap, amoxicillin + clavulanic acid, ceftriaxone inj, clotrimazole top cream, co-trimoxazole susp diazepam, ibuprofen, soluble insulin, ketoconazole cream, salbutamol inhaler
25 -49%	-
50 – 79%	Glibenclamide

80-99%	-
100%	-

tab/cap unless otherwise stated

Table 6. Availability (%) individual medicines, generics, private pharmacies

Availability	Medicine
0 %	Nifedipine
1-24%	Amitriptyline, amoxicillin+clavulanic acid, atenolol, atorvastatin, ciprofloxacin, clotrimazole top cream, glibenclamide, gliclazide, hydrochlorothiazide, ibuprofen, soluble insulin, isosorbide dinitrate, metformin, phenobarbital, praziquantel, pyridoxine, ranitidine, salbutamol inhaler
25 -49%	Aciclovir, amlodipine, folic acid, niclosamide, simvastatin
50 – 79%	Albendazole, ceftriaxone inj, chlorpheniramine syrup, diazepam, doxycycline, enalapril, furosemide, ketoconazole cream, mebendazole, metronidazole, ofloxacin, Vit B1
80-99%	Amoxicillin cap & suspension, ampicillin, chlorpheniramine tab, co-trimoxazole tab & susp, diclofenac, erythromycin, omeprazole, ORS, paracetamol syrup, polyvidone iodine top soln
100%	Paracetamol tab, penicillin VK

tab/cap unless otherwise stated

#### Private clinics

Across the 30 private clinics, the mean availability of originator brands and generics was 8.8% and 40.4%, respectively as shown in Table 7. The mean availability of any product type in the private clinics was 40.8%.

Table 7. Mean % availability, private clinics

	Originator brand	Generic
Mean availability	8.8%	40.4%
Standard deviation	11.0%	23.0%

The availability of originator brands of individual medicines is shown in Table 8. No originator brand had 40% or higher availability. The highest availability was for the Daonil (glibenclamide) at 36.7% even though this product was not registered. Table 9 shows the availability of generics. Only 3 medicines had 80% or greater availability i.e. amoxicillin cap, paracetamol tab, and polyvidone iodine topical solution. Seventeen medicines (generics) had less than 25% availability in the private clinics sampled.

Table 8. Availability (%) individual medicines, originator brands, private clinics

Availability	Medicine
0 %	Ceftriaxone inj, simvastatin, soluble human insulin
1-24%	Amoxicillin cap, amoxicillin+clavulanic acid, diazepam, diclofenac, enalapril, ibuprofen, metronidazole, salbutamol inhaler
25 -49%	Glibenclamide
50 – 79%	-
80-99%	-
100%	-

tab/cap unless otherwise stated

Table 9. Availability (%) individual medicines, generics, private clinics

Availability	Medicine
0 %	Salbutamol inhaler
1-24%	Amitriptyline, amoxicillin+clavulanic acid, atenolol, atorvastatin, ciprofloxacin, gliclazide, hydrochlorothiazide, soluble insulin, isosorbide dinitrate, niclosamide, nifedipine, phenobarbital, praziquantel, pyridoxine, ranitidine
25 -49%	Aciclovir, amlodipine, amoxicillin susp, ampicillin, clotrimazole top cream, co-trimoxazole tab, diazepam, erythromycin, folic acid, furosemide, glibenclamide, ibuprofen, ketoconazole cream, mebendazole, metformin, metronidazole, penicillin VK, simvastatin, Vit B1
50 – 79%	Albendazole, ceftriaxone inj, chlorpheniramine tab & syrup co-trimoxazole susp, diclofenac, doxycycline, enalapril, ofloxacin, omeprazole, ORS, paracetamol syrup
80-99%	Amoxicillin cap, paracetamol tab, polyvidone iodine top soln
100%	-

tab/cap unless otherwise stated

## 2. Medicine prices

### Public sector procurement prices

Across the six provinces, overall the government was paying 14.27 times the international reference price for originator brands, although this was based on only 2 products (see Table 10). For lowest priced generics, the government was paying 1.90 times (90% more than) international reference prices, with half in the range of 1.28 to 3.26 times (28% to 226% higher than) the reference prices.

Table 10. Summary of Median Price Ratios (MPR): government procurement prices compared to international reference prices

	Originator brand	Lowest priced generic
Median MPR (interquartile range)	14.27	1.90 (1.28-3.26)
Minimum	2.21	0.36
Maximum	26.34	13.69
No. of medicines	2	41

Some individual medicines had very high prices compared to international reference prices. Figure 2 shows medicines over 5 times their international reference prices.

Figure 2. Public sector procurement prices over 5 times international reference prices

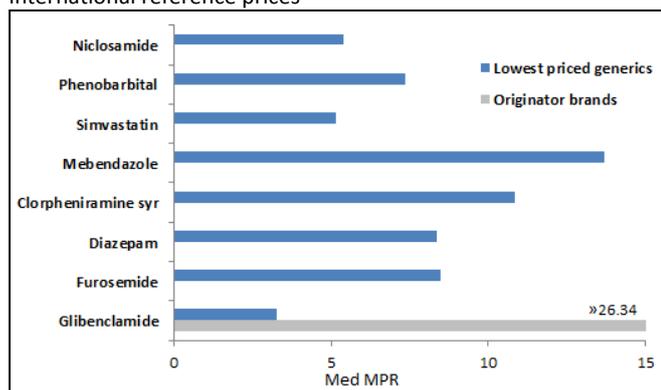
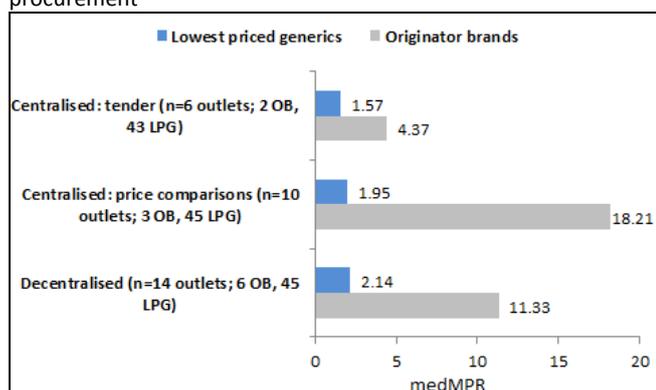


Figure 3 shows public sector procurement prices by method of procurement. Procurement prices of lowest priced generics were highest (medMPR 2.14) in outlets who purchase medicines themselves (decentralised) and lowest (medMPR 1.57) when procured through central tenders. Note: this is not a paired analysis so different medicines make up the medianMPRs for each type of procurement.

Figure 3. Public sector procurement prices by method of procurement



### Public sector patient prices

Overall in the public sector outlets, patients were paying 2.82 times the international reference prices for lowest priced generics (Table 11). Half the medicines were 2.17 – 6.44 times (117% - 544% higher than) international reference prices. The analysis only included two originator brands; MPR=2.70 for Ventolin inhaler (salbutamol) and MPR= 44.90 for Daonil (glibenclamide).

Table 11. Summary of Median Price Ratios (MPR): patient prices in the public sector compared to international reference prices

	Originator brand	Lowest priced generic
Median MPR (interquartile range)	23.80	2.82 (2.17-6.44)
Minimum	2.70	0.62
Maximum	44.90	20.95
No. of medicines	2	48

Figure 4 shows individual medicines with a high price compared to international reference prices. Lowest priced generics of chlorpheniramine syrup had the largest MPR at 20.95 times international reference prices and

glibenclamide was priced at 44.90 times the international reference price for the originator brand (but far less for the lowest priced generic).

Medicines with wider price variability across the 30 public sector outlets included lowest priced generics of chlorpheniramine tab (interquartile range of 1.79 - 7.39), diclofenac (0.97 - 5.80), and mebendazole (5.45 - 19.12). This may be due to different generic products being in the outlets.

Figure 5 shows public sector patient prices by method of procurement. Across 31 medicines, patients were paying 3.12 times international reference prices for lowest priced generics purchased by the outlets (decentralised procurement). Patients were paying less for medicines in outlets where the medicines were procured via the centralised processes.

Figure 4. Public sector patient prices, individual medicines over 6 times international reference prices

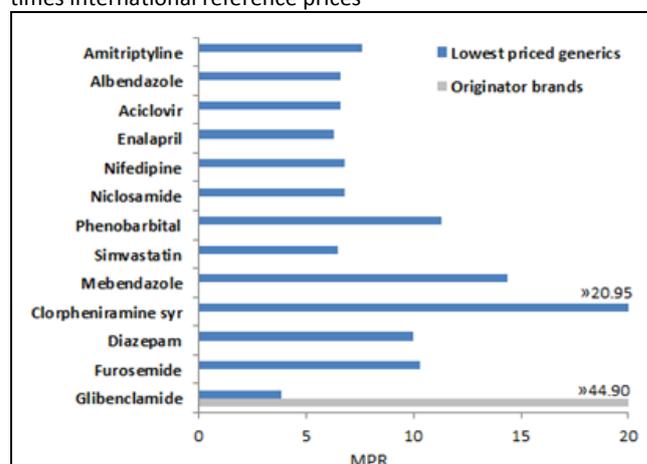
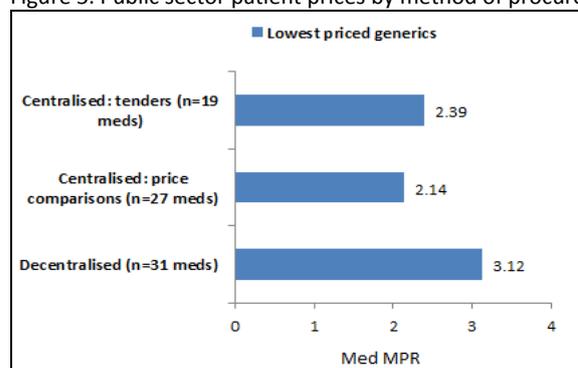


Figure 5. Public sector patient prices by method of procurement



### Patient prices in private pharmacies

Across 41 medicines, patients were paying 3.12 times (212% higher than) the international reference prices for lowest priced generics in private pharmacies (Table 12). Half the medicines were 2.01 – 5.67 times international reference prices. The analysis only included four originator brands, where the median MPR was 10.18. In interpreting this data it must be remembered that international reference prices are bulk procurement prices so in the private sector it would not be expected that patients are paying international reference prices. It is important to consider the affordability of medicines (see

below) as that helps determine if patient prices in the private sector are reasonable or not.

Table 12. Summary of Median Price Ratios (MPR): patient prices in private pharmacies compared to international reference prices

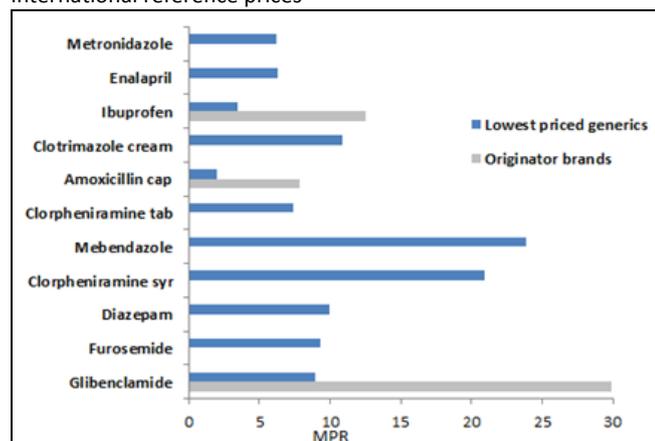
	Originator brand	Lowest priced generic
Median MPR (interquartile range)	10.18	3.12 (2.01-5.67)
Minimum	2.21	0.62
Maximum	29.93	23.90
No. of medicines	4	41

For three medicines, prices were available for both originator brands and lowest priced generics (paired analysis). Across these three medicines, originator brands were 3.60 times the price of lowest priced generics.

Medicines with the widest price variability across the pharmacies were lowest priced generics of hydrochlorothiazide tab (interquartile range of 2.51 – 10.69), paracetamol tabs (1.83 – 7.70), and ranitidine (1.51-4.02). This may be due to different generic products being in the pharmacies.

Figure 6 shows individual medicines with patient prices 6 or more times international reference prices.

Figure 6. Patient prices, private pharmacies over 6 times international reference prices



### Patient prices in private clinics

In private clinics, overall patients were paying 3.87 times (287% more than) the international reference prices for lowest priced generics (Table 13). Half the medicines were 2.66 – 7.14 times (166% - 614% higher than) international reference prices. The analysis only included three originator brands whose medianMPR was 4.62.

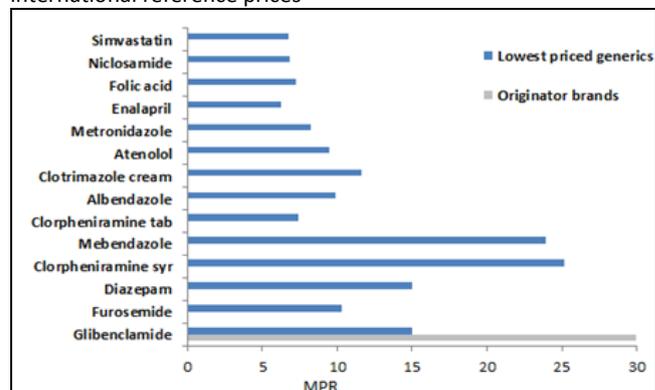
Table 13. Summary of Median Price Ratios (MPR): patient prices in private clinics compared to international reference prices

	Originator brand	Lowest priced generic
Median MPR (interquartile range)	4.62	3.87 (2.66-7.14)
Minimum	2.21	0.62
Maximum	29.93	25.14
No. of medicines	3	42

Only two medicines were available as both originator brands and lowest priced generics. The originator brands were about twice the price of the lowest priced generics.

Figure 7 shows individual medicines 6 or more times international reference prices. As with private pharmacies, in private clinics it would not be expected that patients are paying international reference prices.

Figure 7. Patient prices in private clinics over 6 times international reference prices



### 3. Cross-sector comparisons of prices

#### Public sector procurement prices and public sector patient prices

Overall in the public sector, patients were paying 43.9% more for lowest priced generics than the government procurement price (Table 14). Patients were paying 66.7% more than the procurement price for originator brands but this was based on only two products

Table 14. Summary of prices of medicines procured and sold in the public sector

	Med MPR public procurement prices	Med MPR public patient prices	% difference
Originator brands (n=2)	14.27	23.80	66.7%
Lowest priced generics (n=41)	1.90	2.74	43.9%

When overall patient prices to procurement prices for lowest priced generics were compared by method of procurement, the largest difference (91.3%) was seen in outlets that procure themselves (decentralised). Outlets that procure centrally charged patients less (53.8% and 12.2% as shown in Table 15). Note: the number of outlets in this analysis was limited.

Table 15. Prices of lowest priced generics procured and sold in public sector outlets, by procurement method

	Med MPR public procurement prices	Med MPR public patient prices	% difference
Centralised – tender (n=19)	1.55	2.39	53.8%
Centralised – price comparisons (n=22)	1.91	2.14	12.2%
Decentralised (n=31)	1.63	3.12	91.3%

### Patient prices in the public sector and private pharmacies

Patient prices for lowest priced generics in private pharmacies were 19% higher than in public sector outlets (Table 16). Originator brands were lower priced in private pharmacies compared to public sector outlets, but the analysis was based on only two medicines.

Table 16. Patient prices for medicines found in both the public sector and private pharmacies

	Med MPR Public sector patient prices	Med MPR Private sector patient prices	% difference
Originator brands (n=2)	23.80	16.07	-32.5%
Lowest priced generics (n=37)	2.62	3.12	19.0%

### Patient prices in the public sector and private clinics

Patient prices for lowest priced generics in private clinics were 37.2% higher than in public sector outlets (Table 17). Originator brands were lower priced in private clinics compared to public sector outlets, but again the analysis was based on only two medicines.

Table 17. Patient prices for medicines found in both the public sector and private clinics

	Med MPR Public sector patient prices	Med MPR Private clinic patient prices	% difference
Originator brands (n=2)	23.80	16.07	-32.5%
Lowest priced generics (n=38)	2.82	3.87	37.2%

### Patient prices in private pharmacies and private clinics

Patient prices for lowest priced generics in private clinics were 20% higher than in private pharmacies (Table 18). The two originator brands had the same median prices in the two sectors.

Table 18. Patient prices for medicines found in both private pharmacies and private clinics

	Med MPR Private pharmacy patient prices	Med MPR Private clinic patient prices	% difference
Originator brands (n=2)	16.07	16.07	0%
Lowest priced generics (n=40)	3.13	3.76	20.0%

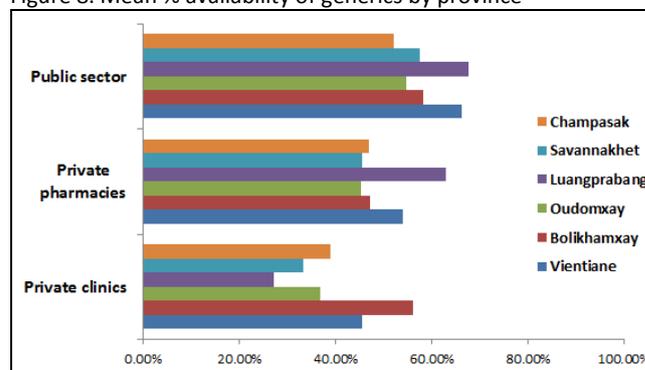
## 4. Cross-provincial analysis

### Availability

The mean availability of generics in the public sector ranged from 53.2% in Champasak to 69% in Luangprabang (Figure 8). In private pharmacies, the availability of generics ranged from approximately 46% in Champasak, Savannakhet, Oudomxay and Bolikhamxay provinces, to 62.8% in Luangprabang. In private clinics there was a greater range compared to the other sectors; from 27.8%

in Luangprabang to 57.1% in Bolikhamxay. In all the provinces except Bolikhamxay, availability of generics was greatest in the public sector and lowest in private clinics. The availability of originator brands was low in all provinces, in all 3 sectors.

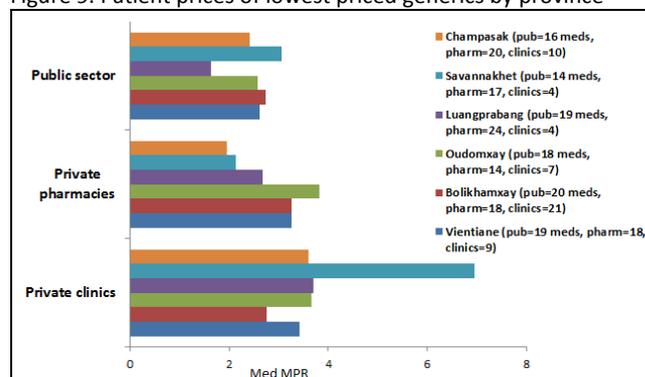
Figure 8. Mean % availability of generics by province



### Patient prices

Patient prices of lowest priced generics in the public sector were lowest in Luangprabang, and similar in the other provinces (Figure 9). In private pharmacies, prices were lowest in Champasak (medMPR 1.96) and highest in Oudomxay (medMPR 3.82). In private clinics, fewer generics were found in most of the provinces making the sample small and hence less reliable. However, prices were lowest in Bolikhamxay (medMPR 2.75) and highest in Savannakhet (medMPR 6.94). There were too few originator brands to compare across provinces.

Figure 9. Patient prices of lowest priced generics by province



## 5. Medicine affordability

Affordability is calculated as the number of days the lowest paid unskilled government worker would have to work to pay for 30 days treatment for NCD medicines and 7 days for acute conditions. At the time of the survey, the daily wage (also the national minimum wage) was 20866.67 Kip [equivalent to US\$ 2.62 per day]<sup>iii</sup>.

Needing to spend more than 1 day's income per month on family medicine needs could be considered to be unaffordable. Table 19 lists how many days this worker would have to work to purchase various treatments.

Table 19. Affordability: number of days' wages needed to purchase standard treatments, lowest priced generics

Medicine & number of units	Public sector	Private pharm.	Private clinics
<b>Diabetes</b>			
Glibenclamide 5mg x60	0.4 (4.3 OB)	0.9 (2.9 OB)	1.4 (2.9 OB)
Metformin 500mg x60	1.3 LPG	1.7 LPG	2.2 LPG
<b>Cardio-vascular disease</b>			
Atenolol 50mg x30		0.5	1.2
Amlodipine 5mgx30	1.0	1.0	1.3
Enalapril 5mgx30	0.7	0.7	0.7
Hydrochlorothiazide 50mg x30	0.1	0.2	0.2
Simvastatin 20mg x30	1.9	1.2	1.9
<b>Respiratory disease</b>			
Salbutamol 100mcg/dose x1 inhaler (200 doses)	2.3 OB	1.9 OB	1.9 OB
<b>Mental health conditions</b>			
Amitriptyline 25mg x90	1.8		1.3
Phenobarbital 100mg x30	1.4		
<b>Respiratory infections</b>			
Amoxicillin 500g x21	0.5	0.5 (2 OB)	0.5
Amoxillin+clavulanic acid x14		3.2	2.9 (4.8 OB)
Ciprofloxacin 500mg x14	0.5	0.3	0.7
<b>Other</b>			
ORS 1L x7 sachets	0.7	0.7	0.7
Diclofenac 50mg x60	0.4	0.6	0.9
Aciclovir 200mg x25	2.7	1.7	2.4
Omeprazole 20mg x30	1	0.9	1.4

OB – originator brand; tab/cap unless otherwise stated

The affordability of lowest price generics in the public sector was reasonable for some conditions, with standard treatment costing a days' wage or less. But this was not the case for all treatments. For example, a course of acyclovir for a viral infection requires 2.7 days wages. In private pharmacies, the affordability of some lowest priced generics was reasonable, however, a course of amoxicillin+clavulanic acid tabs requires 3.2 days wages and a salbutamol inhaler requires 2 days wages. The same situation was seen in private clinics.

When originator brand medicines used, treatments cost well over one days' wage. For example, treating diabetes with Daonil (glibenclamide) costs 4.3 days wages in the public sector.

Treatment costs refer to medicines only and do not include the additional costs of consultation and diagnostic tests. Further, even where individual treatments appear affordable, individuals or families who need multiple medications may quickly face unmanageable medicine costs. A family where the father has diabetes and hypertension (a common co-morbidity) and a child has asthma requires 2.8-4.6 days' wages to purchase lowest

priced generics in the public sector depending on the medicines used<sup>iv</sup>, 3-4.7 days' wages in the private sector, and 3.5-5.4 days' wages in private clinics.

## 6. Availability and affordability of NCDs

As NCD medicines require life-long adherence, affordability becomes critical. WHO has set a target of 80% availability of affordable medicines, including generics, required to treat major NCDs in public and private facilities. Affordability has not been defined by WHO so no more than 1 days' wage for the lowest paid unskilled government worker when purchasing 30 days' supply of lowest priced generics is used in this analysis. In the public sector, only four of 11 NCD medicines found (lowest priced generics) met the WHO target i.e. amlodipine, enalapril, diclofenac and omeprazole. In private pharmacies only 2 of 12 NCD medicines met the target i.e. diclofenac and omeprazole. In the private clinics sampled, none of the 13 NCD medicines were both available and affordable.

## 7. Medicine price components in the private sector

In Lao PDR, mark-ups in the pharmaceutical supply chain (importers, wholesalers, retailers etc.) are not regulated in the private sector. In public sector outlets, a mark-up of 25% is permitted on the procurement price (composed of 5% transport, 10% losses, inflation, and a safety margin, and 10% RDF management costs).

A VAT of 10% is applied to all medicines. A 10% duty is applied to imported medicines (finished product and active pharmaceutical substances).

To ascertain mark-ups in the supply chains, data was collected for 5 tracer medicines (albendazole, amoxicillin, ceftriaxone, chlorpheniramine and omeprazole) by tracking back selling prices and procurement prices starting from one provincial hospital, one private pharmacy and one private clinic. This data is not representative of all outlets and all medicines. A different picture could emerge for different medicines or if data was collected in different areas of the country.

### Imported generics

For imported medicines it was not possible to identify clearance charges, the importers mark-up or the import price for each medicine. So identifying all charges in the supply chain was not possible, although wholesale and retail charges for 4 imported generics were collected.

*Public hospital:* across four medicines the wholesale mark-up was 19% - 152%. For three medicines, the selling price provided by the wholesaler was different to the procurement price provided by the hospital. The reason for this could not be established. The hospital mark-up plus VAT was 12% - 248% (3 medicines). For one medicine, patients were paying less than the procurement price paid by the hospital.

*Private pharmacy:* across three medicines the wholesale mark-up was 6% - 24%. For two of them, the procurement price paid by the pharmacy was different to the selling price of the wholesaler (the reason for this was not known). The pharmacy mark-up plus VAT was 10.9% - 1140%.

*Private clinic:* for four medicines the wholesale mark-up was 4% - 22%. For all four, the procurement price paid by the clinic was different to the selling price of the wholesaler (again the reason was unknown). The clinic's mark-up plus VAT was 60% - 100%.

#### Locally produced generics

Two local manufacturers were found to be supplying the outlets in the case study. The total add-ons from the factory to the patient for 1 amoxicillin cap (generic) were 160 Kip in the public sector supply chain, 305 Kip in the private pharmacy supply chain and 105 Kip in the private clinic supply chain. This represents a total mark-up of 84% on the ex-factory price in the public sector, 156% in the private pharmacy sector and 54% in the private clinic sector.

#### International comparisons

Findings from this survey were compared with those from surveys undertaken in Indonesia (2010) and Thailand (2006), also undertaken using the WHO/HAI methodology<sup>v</sup>. Thirteen medicines (with identical strengths and dosage forms) common to the three surveys were analysed. For the price analyses, Indonesian and Thai prices were adjusted for inflation<sup>vi</sup> and international reference price. Patient prices were not adjusted for purchasing price parity.

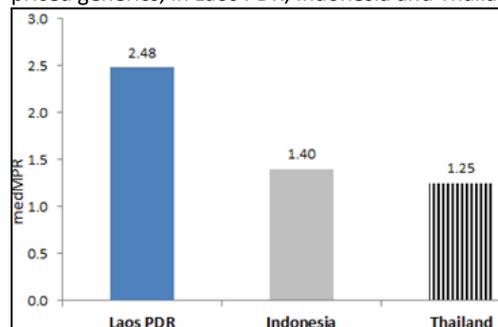
#### Availability

In the public sector, the mean availability of generics was 60.6% in Laos PDR, 63.4% in Indonesia and 80.8% in Thailand. In private pharmacies, the mean availability of generics was 38.5% in Laos PDR, 56.4% in Indonesia and 72.2% in Thailand.

#### Government procurement prices

As shown in Figure 10, public sector procurement prices of lowest priced generics were higher in Laos PDR than in the other two countries. Across 10 medicines, in Laos PDR lowest prices generics were 2.48 times the international reference prices while in Indonesia and Thailand they were 1.40 and 1.25 times international reference prices, respectively. The Lao PDR government was paying much more for some individual medicines e.g. diazepam 5mg tab were 8.35 times international reference prices in Lao PDR whereas the governments of Indonesia and Thailand were procuring at about 0.55 times international reference prices (a difference of over 1400%).

Figure 10. Summary of public sector procurement prices, lowest priced generics, in Laos PDR, Indonesia and Thailand



#### Patient prices

*Public sector:* lowest priced generics (10 medicines) were higher priced in Laos PDR than in the other two countries. In Laos PDR, overall lowest prices generics were 3.19 times the international reference prices, while in Indonesia and Thailand they were 2.01 and 2.74 times international reference prices, respectively (Figure 11).

Figure 11. Summary of public sector prices, lowest priced generics, in Laos PDR, Indonesia and Thailand

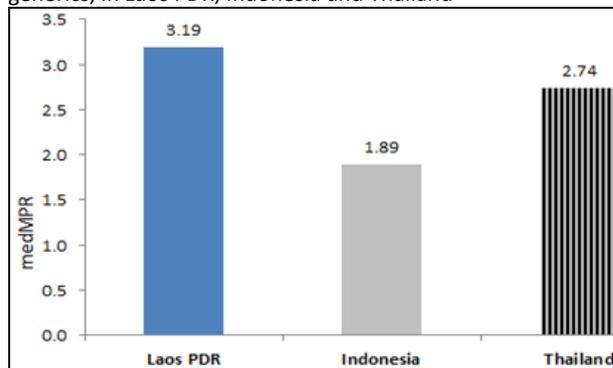
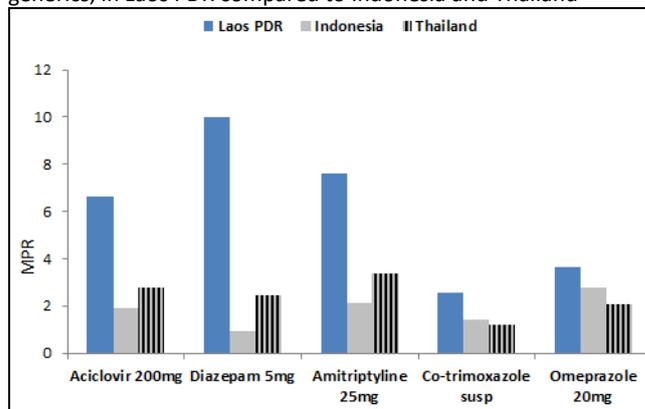


Figure 12 gives examples of individual medicines with high patient prices in Laos PDR such as lowest priced generics of diazepam, amitriptyline and acyclovir.

Figure 12. Examples of public sector patient prices, lowest priced generics, in Laos PDR compared to Indonesia and Thailand



#### Private pharmacies:

Overall, patient prices of lowest priced generics in Laos PDR pharmacies (9 medicines) were approximately twice those in Indonesia, but about 30% lower than in Thailand as shown in Figure 13. Examples of individual medicines with higher and lower patient prices in Laos PDR compared to the other two countries are given in Figure 14. Of note is the higher patient prices of the two anti-diabetes medicines in Lao PDR compared to Indonesia and Thailand.

Figure 13. Summary of patient prices in private pharmacies, lowest priced generics, in Laos PDR, Indonesia and Thailand

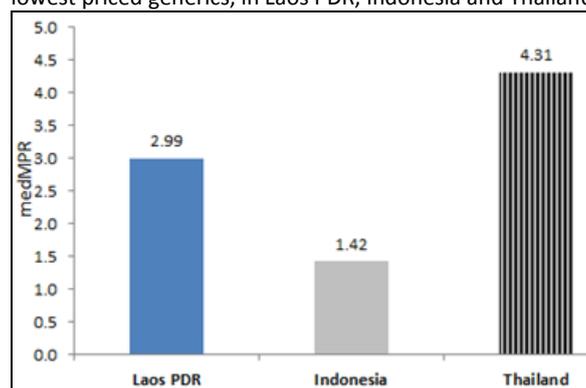
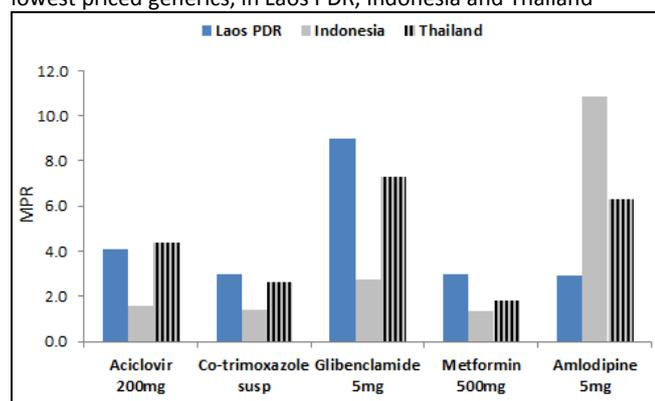


Figure 14. Examples of patient prices in private pharmacies, lowest priced generics, in Laos PDR, Indonesia and Thailand



## Recommendations (draft)

*To be discussed with the MOH and others then finalised*

The results of this survey suggest that a mix of policies need to be implemented to make medicines more affordable and available. Although further investigation is required to obtain a more in-depth understanding of the causes and consequences of medicine pricing and availability, the results of this survey provide broad directions for future research and action. The following steps are recommended:

- Strengthen the medicines regulatory process to ensure all medicines on the market are registered and quality assured.
- Review the permitted level of care of medicines in the public sector, with a view to making some medicines accessible in health centres and/or district hospitals rather than restricting supply to central/provincial hospitals.
- Move towards the public procurement of medicines in all provinces, via centralized competitive tenders, to achieve lower prices.
- Identify the reasons for poor availability of medicines (particularly those on the EML) in public sector outlets and private sector outlets. In the public sector, this may be due to inadequate quantification, inadequate budget, distribution issues or other causes.
- Identify why the mark-up on medicines in the public sector far exceeded the permitted level of 25% (resulting in high patient prices in public sector outlets).

- Investigate medicine price components in the private sector order to identify the practices (including discounting and rebating) of the various actors in the supply chain, and all the costs (mark-ups, taxes and other charges) that make up the final patient price. Based on the outcome of the study, consider regulating mark-ups in the supply chain (taking into account the viability of pharmacies especially in rural areas where turnover can be low)
- Abolish VAT and import duties on medicines (particularly those on the EML), but ensure the savings result in lower patient prices. To compensate for the loss of government revenue, consider increasing the tax on non-healthy products such as tobacco, alcohol, sugary soft drinks etc.
- Improve transparency by:
  - publishing government tender prices
  - establishing links with medicine procurement departments in neighbouring countries to enable sharing of price information
  - requesting WHO WPRO to expand and strengthen its Price Information Exchange to countries in the region

## Further information

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The full survey report and all the data can be found on HAI's website <http://www.haiweb.org/medicineprices/>

<sup>i</sup> <http://erc.msh.org>

<sup>ii</sup> Not counting availability twice when both originator and generic equivalents were found in the same outlet

<sup>iii</sup> 1 USD = 7955 Kip (Oanda)

<sup>iv</sup> Diabetes: LPG glibenclamide or metformin; hypertension: LPG atenolol, amlodipine, or enalapril; asthma: OB salbutamol inhaler (generics not available)

<sup>v</sup> Data obtained from HAI website <http://www.haiweb.org/medicineprices/>

<sup>vi</sup> Accessed World Bank website

<http://www.imf.org/external/pubs/ft/weo/2014/01/weodata/weorept.aspx>