

Ukraine

Essential medicines

Medicine prices, availability, affordability & price components

Medicine prices matter

Rapidly rising costs of health care and high medicine prices are a growing concern worldwide, especially in transitional countries where patients often have to pay the full price of medicines. This brief report about the prices and availability of essential medicines in Ukraine is one of a series of papers summarizing the results of medicine price and availability surveys carried out around the globe using a standard survey methodology developed by the World Health Organization and Health Action International¹.

This survey was conducted in 2007 by the Open Public Health Institute, (Kiev) and studied 38 medicines for palliative care and 24 other important essential medicines. This report presents the findings for the essential medicines; a separate summary report presents the palliative care medicines.

Ukraine^{2, 3, 4}

Ukraine regained its independence in 1991, and is a parliamentary republic. It covers 603 700 km² and borders the Black Sea, the Sea of Azov, Belarus, Hungary, Moldova, Poland, Romania, the Russian Federation and Slovakia. There are 27 major administrative units including the Autonomous Republic of Crimea, 24 regions or oblasts, and 2 cities with the status of oblasts: Kyiv and Sevastopol. The population was over 46.3 million in 2007. Ukraine is rich with iron ore, coal and manganese, and the gross domestic product (GDP) per capita was \$7,832 in 2007. The unemployment rate was 6.9% in 2007.

Ukraine's health status has been changeable, due to the country's unstable socioeconomic situation, with periods of improvement followed by periods of drastic deterioration. Some of the key health demographics are:

- A person born in Ukraine in 2003 can expect to live 73 years if female and 67 years if male: on average, 11.76 years less than people in western European countries.
- The population is constantly decreasing; in 2007 the population decreased by 6.0%.
- Premature mortality from diseases of the circulatory system and cancer are amongst the highest in the WHO European Region (1019,6 and 193,7 per 100 000 respectively); however there has been a downward trend in cancer between 1995 and 2000.

- The standardized death rate for infectious and parasitic disease for all ages was 35.1 per 100,000 in 2007. The morbidity rate from communicable diseases is substantially higher than the averages for the WHO European Region (14.75).
- Both the incidence and number of people living with HIV and AIDS are amongst the highest in the WHO European Region.
- Infant mortality rate was 10.4 per 1000 live births (2007).
- Ukraine's fertility rate (1.2 children per mother in 2007) is the lowest in the WHO European Region.
- Total expenditure on health was 3.6% of GDP in 2007.

This survey found that in Ukraine:

- Many basic treatments for common acute and chronic conditions were not affordable to those on low incomes; especially if the person had more than one illness and/or need more than one medicine – or there was more than one sick person in the family.
- A low paid person with hypertension, asthma, and hypercholesterolaemia would have to work 6 - 15 days every month just to purchase the necessary medicines.
- Patient prices in the private sector were overall 3.8% - 23.3% lower than in the public sector depending upon whether originator brand or generic equivalent – primarily because of high procurement prices.
- Originator brands were many times more expensive than the lower prices of the generic equivalents – up to 28 times more for originator brand diclofenac (2,700%) and 21 times for originator brand fluconazole (2,000%).
- Originator brands were widely available, even being very widely procured and sold in the public sector.
- Low priced generic equivalents were not always available.
- Compared to other countries, the prices of originator brands were high; and the prices of generic equivalents varied from being similar to being many times higher⁵.
- 1 in 8 of the basic medicines surveyed were highly priced in international terms⁶ – across both public and private sectors; and for both originator brand and generic equivalent versions – examples being fluconazole, hydrochlorothiazide and simvastatin.
- The mark-up in the public sector was 27 - 65% depending upon whether originator brand or generic equivalent.

¹ WHO/HAI. Medicine prices: a new approach to measurement, Geneva, World Health Organization, 2003. www.haiweb.org/medicineprices/

² www.euro.who.int/Ukraine/20080123_1

³ Highlights on Health in Ukraine, WHO Regional Office for Europe, 2000

⁴ 2008 Report on the global AIDS epidemic, UNAIDS: www.unaids.org/en/KnowledgeCentre/HIVData/GlobalReport/2008/2008_Global_report.asp

⁵ www.haiweb.org/GlobalDatabase/Main.htm

⁶ www.haiweb.org/GlobalDatabase/Main.htm

Medicine price & availability survey

The survey was designed to answer the following questions:

- What are the patient prices and public sector procurement prices of a selection of medicines?
- How does availability and patient prices vary between the public and private sectors?
- How affordable are the medicines?
- What is the difference in price of originator brands, the most sold generic and the lowest priced generic equivalent versions?
- How do these prices compare to international reference prices?
- What taxes and duties are levied on medicines and what is the level of the various mark-ups that contributes to the retail price of medicines?

A total of 24 essential medicines were surveyed in September 2007; these were selected from the WHO/HAI core list of medicines⁷. Prices and availability were recorded for the originator brand product (OB) and the most sold generic⁸ (MSG) which were determined at the national level; and for the lowest priced generic equivalent (LPG) which was determined at each facility/outlet.

Of the 24 medicines, only 13 originator products were surveyed - as the other 11 were not marketed in Ukraine.

The price and availability data was collected from a total of 6 public sector facilities⁹ and 27 private pharmacies across 6 regions of Ukraine; procurement prices were collected from 5 of the public sector facilities¹⁰.

Table 1. Measurements in each sector.

Measurement	Public sector	Private sector
Price to patient	✓	✓
Availability	✓	✓
Affordability	✓	✓
Procurement price	✓	
No. of facilities visited	6 ¹¹	27

Presentation of price information

The WHO/HAI survey methodology presents prices in local currency and as median price ratios (MPR). The MPR is calculated by dividing the local price by an international reference price (converted to local currency). 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 2007 Management Sciences for Health (MSH) International Drug Price Indicator Guide¹² (median prices of high quality multi-source medicines offered to developing and middle-income countries by different suppliers); the use of reference prices facilitates international comparisons.

⁷ Reflecting the global burden of disease, WHO/HAI Medicine Prices, a new approach to measurement, 2003

⁸ Determined by studying sales volume data

⁹ 30 public sector facilities were visited - however data could only be collected from 6 public sector facilities

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 a low or middle income countries an MPR of less than or equal to 1 for public sector procurement prices and public sector patient prices are considered to indicate acceptable (not excessive) prices.

Affordability

Affordability is calculated as the number of days the lowest paid unskilled government worker would have to work to pay for one month's treatment for chronic conditions, and a treatment course for infections. At the time of the survey, the lowest paid government worker earned 14.67 UAH (US\$ 2.92) per day. Having to spend more than 1 day's income per month on family medicine needs is considered by some as unaffordable. Table 2 demonstrates how many days this worker would have to work to purchase various treatments.

Should this low paid worker need treatment for hypertension, asthma, and hypercholesterolaemia, then they would have to use 6 to 15 days of salary per month to purchase the medicine needs for a month – depending upon the choice of medicine, whether brand or generic was dispensed, and whether obtained from the public or private sectors¹³. This scenario only represents the medicine needs for one person in the family and hence the burden would be much greater.

Table 2. Affordability: number of days' wages .

Hypertension		Public	Private
atenolol	MSG/LPG	0.4	0.4
captopril	OB	2.8	2.8
	MSG/LPG	0.9	0.8
hydrochlorothiazide	MSG	1.1	1.0
	LPG	0.3	0.3
nifedipine retard	OB		3.0
	MSG/LPG	1.3	1.2
Hypercholesterolaemia			
simvastatin	OB		8.7
	MSG/LPG	3.5	7.0 - 7.1
Asthma			
salbutamol inhaler	OB/MSG/LPG	0.7 - 0.8	0.7 - 0.8
beclometasone inhaler	OB		1.9
	MSG/LPG	2.1 - 2.3	2.1
Ulcer			
omeprazole	MSG	1.3	1.3
	LPG	0.9	1.0
ranitidine	MSG/LPG	0.7 - 0.9	0.8 - 0.9

¹⁰ Despite a number of attempts, the investigators failed to collect prices from the centralized procurement at the Ministry of Health

¹¹ Procurement prices were collected from 5 public facilities

¹² <http://erc.msh.org>

¹³ One antihypertensive (atenolol, captopril, hydrochlorothiazide or nifedipine retard); simvastatin; beclometasone inhaler; salbutamol inhaler

Diabetes		Public	Private
glibenclamide	MSG/LPG	0.3 - 0.4	0.3
	OB	3.3	3.0
	MSG	3.1	2.9
metformin	LPG	2.4	2.8
Arthritis			
diclofenac	OB	11.4	8.8
	MSG/LPG	0.4	0.3
Respiratory tract infection			
adult ciprofloxacin	OB		14.8
	MSG	1.3	1.1
	LPG	1.0	0.7
adult amoxicillin 500mg	MSG/LPG	1.0	0.9
child cotrimoxazole susp	MSG/LPG		0.3 - 0.4

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Public sector procurement prices

Public procurement prices were collected from 5 public sector facilities. The prices paid for the lowest priced generic and most sold generic equivalent versions were 3.1 - 3.5 times the international reference price. Ten originator brand medicines (of the 13 marketed in Ukraine) were being procured for the public sector at 7.8 times the international reference price (table 3).

Table 3. Number of times more expensive: public sector procurement prices compared to international reference prices.

	OB	MSG	LPG
Median MPR (interquartile range)	7.8 (2.5 - 23.4)	3.1 (2.0 - 4.9)	3.5 (2.3 - 5.7)
Minimum	1.2	0.4	0.4
Maximum	71.0	31.7	9.1
No. of medicines	10	21	23

The price of the lowest priced generic and most sold generic equivalent versions were around three to three-and -a-half times international reference price – with some medicines ranging from much lower than the international reference price (0.4 times -60% lower- for losartan), and others much higher (up to 31.7 times for hydrochlorothiazide). In some cases, both the originator brand and generic equivalents were high priced when compared to international reference prices e.g. fluconazole was 8-71 times the reference price. Table 4 presents some examples where prices were high in terms of multiples of the international reference price.

Table 4. Number of times more expensive: public sector procurement prices compared to international reference prices.

Medicine		Median MPR
simvastatin	OB	13.8
	MSG	5.6
	LPG	8.0
captopril	OB	9.2
	MSG	2.5
	LPG	2.4
aciclovir	OB	26.6
	MSG	4.9
	LPG	6.5
hydrochlorothiazide	MSG	31.7
	LPG	9.1
diclofenac	OB	66.9
	MSG	2.1
	LPG	7.3
fluconazole	OB	71.0
	MSG	18.2
	LPG	8.4

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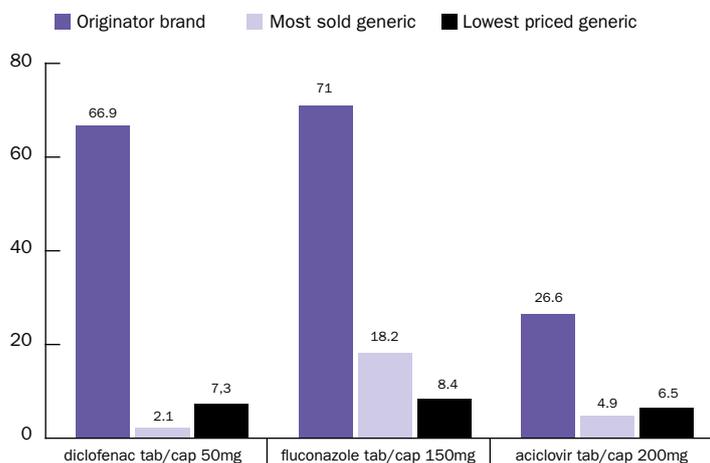
Originator brands were overall 2.7 - 3.6 times more expensive than those of the generic versions; and the most sold generic versions were overall 10% less than the price of the lowest priced generic versions (table 5).

Table 5. Ratio matched pairs of the different types of medicines, public procurement prices.

	Ratio
Originator brand: most sold generic (n=9 matched pairs)	3.6
Most sold generic: lowest priced generic (n=21 matched pairs)	0.9
Originator brand: lowest priced generic (n=10 matched pairs)	2.7

Both originator and generic versions of the same medicines were being procured, even in the same institution at very different prices; originator brand diclofenac was procured at 31 times more than a generic version; originator brand fluconazole was procured at 8.5 times more than a generic version; and originator brand aciclovir at 5.4 times than a generic version (figure 1).

Figure 1. Number of times more expensive: patient prices in the public sector compared to international reference prices.



Public sector patient prices

Price and availability data was collected from 6 public sector facilities; the prices of originator brands were almost 10 times the international reference price compared to 4 times for the lowest priced generic and 4.8 times for the most sold generic equivalent versions (table 6).

Table 6. Number of times more expensive: public sector patient prices compared to international reference prices.

	OB	MSG	LPG
Median MPR (interquartile range)	9.9 (6.6 - 76.1)	4.8 (2 - 6.6)	4.0 (1.9 - 6.3)
Minimum	1.4	0.6	0.6
Maximum	111.7	41.3	20.7
No. of medicines	6	18	20

Lowest priced and most sold generic equivalents were around 4-5 times the international reference price; some medicines were sold at much higher multiples of the international reference prices (up to 112 times for originator brand fluconazole). Table 7 presents some examples where prices were low and high in terms of multiples of the international reference price.

Table 7. Number of times more expensive: public sector patient prices compared to international reference prices.

Medicine		Median MPR
losartan	MSG/LPG	0.6
salbutamol inhaler	OB/MSG/LPG	1.3 - 1.5
ranitidine	MSG/LPG	1.5 - 1.8
omeprazole	MSG/LPG	1.2 - 1.8
ceftriaxone	MSG/LPG	1.4 - 1.6
captopril	OB MSG/LPG	12.0 4.0
diclofenac	OB MSG/LPG	97.5 3.2 - 3.5
fluconazole	OB MSG LPG	111.7 26.4 20.7

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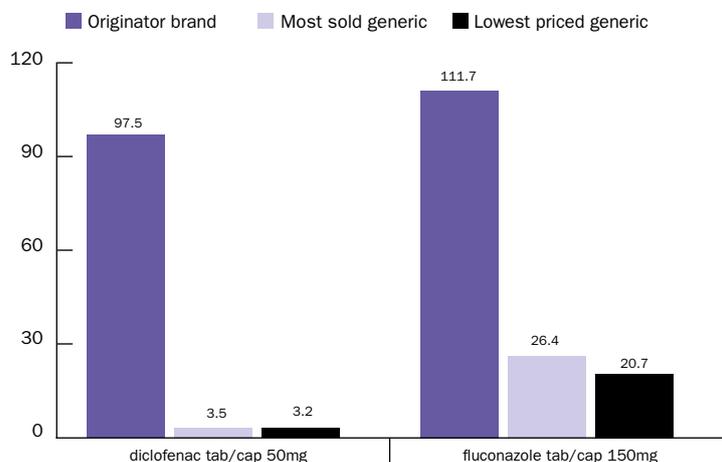
Originator brands were 3 times more expensive than both of the most sold and lowest priced generic equivalent versions; and most sold generics were on average 1.2 times (20%) more than the price of the lowest priced generics (table 8).

Table 8. Ratio matched pairs of the different types of medicines, public sector patient prices.

	Ratio
Originator brand: most sold generic (n=5 matched pairs)	3.0
Most sold generic: lowest priced generic (n=18 matched pairs)	1.2
Originator brand: lowest priced generic (n=5 matched pairs)	3.0

The same public health facilities often stocked both originator and generic equivalent versions. Figure 2 presents two examples where there were large price variations between the originator and generic versions of the same medicine e.g. originator brand diclofenac 50mg tabs/caps were 28-30 times the price of the most sold and lowest priced generic equivalents (which were around 3 times the international reference price); and originator brand fluconazole was 4-5 times more than the generic versions – however the price of generic fluconazole was high at 20-26 times the international reference price.

Figure 2. Number of times more expensive: public sector patient prices compared to international reference prices.



Public sector availability

The average availability, in the 6 public sector outlets, of the 13 originator brands surveyed was 55.1%; and the availability of the 24 most sold generic and lowest priced generic equivalents surveyed was 72.2% and 83.3% respectively (Table 9).

Table 9. Availability in public facilities (n=6).

	OB	MSG	LPG
Median availability (standard deviation)	55.1% (29.2%)	72.2% (22.9%)	83.3% (21.4%)

Table 10 presents the availability of any version of the surveyed medicines in the public sector; all of the medicines were found in at least half of the facilities.

Table 10. Availability in public facilities (n=6).

Availability	Medicine
< 50%	no medicines
50 - 69%	beclometasone inhaler; co-trimoxazole susp; diazepam; fluoxetine; fluphenazine inj; nifedipine retard; simvastatin
70 - 89%	aciclovir; amitriptyline; captopril; paracetamol susp
90 - 100%	amoxicillin; atenolol; ceftriaxone inj; ciprofloxacin; diclofenac; fluconazole; glibenclamide; hydrochlorothiazide; losartan; metformin; omeprazole; ranitidine; salbutamol inhaler

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Figure 2 demonstrates some large price discrepancies between the price of the originator brand and generic versions of the same medicine. Table 11 presents the availability of the same medicines. It can be seen that the availability of the much higher priced originator brands is high – including diclofenac tablets which despite being up to 31 times more expensive, were more available than the lower priced most sold generic version.

Table 11. Availability in public facilities (n=6).

Medicine	OB	MSG	LPG
aciclovir 200mg	50%	83.3%	83.3%
diclofenac 50mg	100%	83.3%	100%
fluconazole 150mg	66.7%	83.3%	100%

Private sector patient prices

Price and availability data was collected from 27 private retail pharmacies; the prices of originator brands were almost 14 times the international reference price compared to 3.7- 3.8 times for the lowest priced generic and most sold generic equivalents (table 12).

Table 12. Number of times more expensive: patient prices in the private sector compared to international reference prices.

	OB	MSG	LPG
Median MPR (interquartile range)	13.8 (5.3 - 42.8)	3.8 (2.3 - 6.1)	3.7 (2.4 - 5.3)
Minimum	1.5	0.5	0.5
Maximum	101.7	38.6	12.4
No. of medicines	12	22	23

The lowest priced and most sold generic equivalents were almost four times the international reference price – with some medicines much higher (up to 101 times for originator brands of ciprofloxacin and fluconazole). Table 13 presents some examples where prices were low (much lower than the international reference price) and high in terms of multiples of the international reference price – fluconazole, hydrochlorothiazide, and simvastatin were particularly highly priced in all versions (brand or generic).

Table 13. Number of times more expensive: private sector patient prices compared to international reference prices.

Medicine	OB	MSG	LPG
aciclovir	32.0	6.3	5.4
captopril	12.2	3.6	3.4
ciprofloxacin	101.0	7.5	4.7
diclofenac	75.3	2.7	2.7
fluconazole	101.7	23.2	12.3
hydrochlorothiazide		38.6	10.5
losartan	4.4	0.5	0.5
nifedipine retard	15.7	6.3	6.3
paracetamol suspension	6.8		3.7
simvastatin	15.4	12.6	12.4

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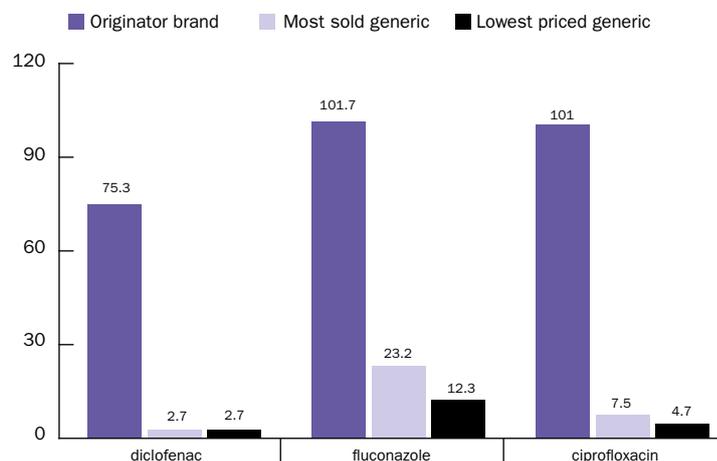
Most sold generics were overall the same price as lowest priced generic equivalents; and originator brands were almost 2.8 and 3.3 times more expensive than those of the most sold and lowest priced generic equivalents respectively (table 14).

Table 14. Ratio matched pairs of the different types of medicines, private sector patient prices.

	Ratio
Originator brand: most sold generic (n=11 matched pairs)	2.8
Most sold generic: lowest priced generic (n=22 matched pairs)	1.0
Originator brand: lowest priced generic (n=12 matched pairs)	3.3

Both originator and generic versions of the same medicines were being sold; figure 3 presents three examples where for example originator brand diclofenac was sold at 28 times the price of the generic equivalents; and originator brand fluconazole sold at 21 times the most sold generic equivalent.

Figure 3. Number of times more expensive: patient prices in the private sector compared to international reference prices.



Private sector availability

The average availability of the 13 originator brands surveyed was 47%; and the availability of the 24 most sold generic and lowest priced generic equivalents surveyed was 68.8% and 79.5% respectively (table 15).

Table 15. Availability in private sector outlets (n=27).

	OB	MSG	LPG
Mean availability (standard deviation)	47% (26.6%)	68.8% (27.5%)	79.5% (27.3%)

Table 16 presents the availability of any version of the surveyed medicines in the private sector. Diazepam was only found in 4% of pharmacies; fluphenazine injection only in 1 in 4 pharmacies (26%); and beclometasone inhaler only in around half of the pharmacies (48%).

Table 16. Availability in private facilities (n=27).

Availability	Medicine
0 - 10%	diazepam
11 - 30%	fluphenazine injection
31 - 50%	beclometasone inhaler
51 - 69%	losartan
70 - 89%	metformin, simvastatin, amitriptyline, fluoxetine, nifedipine retard, co-trimoxazole suspension, fluconazole
90 - 100%	atenolol, hydrochlorothiazide, aciclovir, amoxicillin, captopril, omeprazole, paracetamol suspension, ceftriaxone injection, ciprofloxacin, diclofenac, glibenclamide, ranitidine, salbutamol inhaler

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Figure 3 and table 13 demonstrate that there were some large price discrepancies between the price of the originator brand and generic versions of the same medicine. Table 17 presents the availability of some of these medicines where availability is still high despite high price differentials between brand and generic versions. For example, originator brand fluconazole was found in 56% outlets despite being up to 8 times more expensive than the lowest priced generic equivalent; and originator brand diclofenac was found in 63% outlets despite being 28 times more than the generic equivalent.

Table 17. Availability in private facilities (n=27).

Medicine	OB	MSG	LPG
aciclovir	37%	70.4%	96.3%
captopril	70.4%	81.5%	96.3%
ciprofloxacin	25.9%	77.8%	100%
diclofenac	63%	96.3%	100%
fluconazole	55.6%	81.5%	88.9%
hydrochlorothiazide		70.4%	92.6%
losartan	29.6%	63%	63%

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Comparison of the public sector patient price to the public sector procurement price

The public sector mark-up (the difference between the patient price and the procurement price) was 27-65% for matched pairs of medicines (table 18) - depending whether generic or brand.

Table 18. Percentage difference public sector patient prices to public sector procurement prices for matched pairs of medicines.

	Ratio
Originator brands (n=6 matched pairs)	+27%
Most sold generic (n=17 matched pairs)	+65.4%
Lowest priced generic (n=19 matched pairs)	+31%

Comparison of the private sector patient price to the public sector patient price

The private sector patient price was 3.8 – 23.3% less than the public sector patient price (table 19) - depending whether generic or brand.

The median price was lower in the private sector than in the public sector for 34 out of 44 occasions. For some medicines these differences were much greater - for example the lowest priced generic fluconazole was 41% less expensive in the private outlets than the public sector facilities; and simvastatin was twice the price in the private sector compared to the public sector (table 20).

For a month's course of lowest priced generic simvastatin for hypercholesterolaemia, this would require an additional UAH 50.7 (US\$10) in the private sector compared to the public sector [or an additional 3.5 days of work for the lowest paid unskilled government worker].

Table 19. Percentage difference private sector patient prices to public sector patient prices for matched pairs of medicines.

	Ratio
Originator brands (n=6 matched pairs)	-3.8%
Most sold generic (n=18 matched pairs)	-23.3%
Lowest priced generic (n=20 matched pairs)	-9.3%

Table 20. Percentage difference private sector patient prices to public sector patient.

Medicine	OB	MSG	LPG
ceftriaxone inj		-20%	-10%
ciprofloxacin		-17%	-30%
diclofenac	-23%	-25%	-18%
fluconazole	-9%	-12%	-41%
glibenclamide		-23%	-2%
metformin	-9%	-8%	19%
simvastatin		103%	99%

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Price components

The collection of information on the components of price (mark-ups, taxes, other charges in the supply chain) was met with reluctance of both private and public providers to reveal information. However during meetings with representatives of both sectors, the following was described:

- no taxes or customs fees are applied to medicines;
- the distributor's mark-up is 10-12% and the pharmacy mark-up (regulated by the state) is up to 35%. For some medicines the maximum pharmacy mark-up is 25%.
- some pharmacies provide discounts for pensioners, which vary across medicines and pharmacy networks.
- at the time of the study there was a special procedure for state procurements where, in order to participate in state tenders, the company had to pay a fixed fee of 4,000 UAH (approximately 800 USD).

Recommendations of the investigators

There is a clear need to improve policies on medicine prices and availability.

Prices are not regulated by the government, hence the market sets the price. This is resulting in reduced access to medicines, especially for those on low incomes, as they cannot afford treatments.

The State has an obligation to ensure medicines are both available and affordable, in public sector facilities, for those on low incomes who are registered with government agencies (pensioners, mothers with small children and others). Access to medicines should not be left to market forces as the poor can be adversely affected by even small market changes.

Transparency is needed in the pharmaceutical sector, and of prices in particular, so that effective policies can be implemented, and their impact monitored.

Regular information about the availability, price and affordability of medicines should be collected and made known to procurement officers, policy-makers, health professionals and consumers.

Further information, contact the survey managers:

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The full survey report and data can be found at:
www.haiweb.org/medicineprices