

**MEDICINE PRICES, AVAILABILITY,  
AFFORDABILITY,  
AND PRICE COMPONENTS IN KAZAKHSTAN**

Report of a survey undertaken

November 2004 to January 2005

by the

***Drug Information Center  
Karaganda, Kazakhstan***

**ZdravPlus/USAID project**

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## Acronyms

EML	Essential medicines list
HAI	Health Action International
IB	Innovator brand
IRP	International reference price
LPG	Lowest price generic equivalent
MOH	Ministry of Health
MPR	Median price ratio
MSG	Most sold generic equivalent
MSH	Management Sciences for Health
WHO	World Health Organization

# 1. Executive Summary

## 1.1 Background and Introduction

In order to improve the health care system, Kazakhstan is ready to undertake market reforms where the evidence shows they are needed. The purpose of the survey was to assess the prices and availability of selected medicines in the public and private sectors in the country, the affordability of standard treatments for ordinary people, and to identify price components (taxes, mark-ups etc) from the manufacturer's selling price to the price paid by the patient.

## 1.2. Methodology

From November 2004 to January 2005, the Drug Information Center ZdravPlus/USAID project undertook a survey of the medicine prices, availability, affordability, and price components in the public and private sectors in Kazakhstan. The survey used the methodology developed by the World Health Organization (WHO) and Health Action International (HAI) and described in the manual 'Medicine Prices: a new approach to measurement' (WHO/HAI, 2003).

Prices of 27 medicines were collected from public and private sector pharmacies in four regions -Astana, Almaty, Karaganda, and Kostanay. For each medicine, prices were collected for the innovator brand, most sold generic equivalent and lowest price generic equivalent. The affordability of standard treatments was assessed and price components were determined for a selection of medicines.

## 1.3. Main findings

The survey results show that medicines are too expensive in Kazakhstan. A family living on the monthly income of an unskilled government worker needing 3 common medicines will have to spend one third of the monthly income on buying innovator brand medicines, or one tenth on generics, in the private sector. In public sector there are only five pharmacies so that sector is not an option for the majority of patients.

Medicine price levels in Kazakhstan dramatically exceed international reference price level, even in public procurement. While public sector procurement prices should be comparable to MSH international reference prices (i.e. median price ratio of 1), in this survey the median MPR for public procurement was found to be more than 7 for innovator brands, close to 4 for the most sold generic and about 3 for the cheapest generic. For hydrochlorothiazide, a medicine for hypertension, public sector pays about 12 times the international reference price to procure a generic.

Private sector prices are, on average, 4-9 times higher than the international reference prices. Most expensive are innovator brand medicines, of which one quarter had median prices of more than 26 times international references price. On average, innovator brands are 8.6 times, most sold generics 4.7 times, and lowest price generics 3.7 times, more expensive than international reference prices.

Availability indicators and price level among the four regions within Kazakhstan (centre-north-south) showed variation in both availability and prices for the medicines surveyed. Overall in the private sector, Astana stood out as having the highest prices for both innovators and generics, while Karaganda had the best availability of cheaper generics.

In private medicine outlets, the median availability of the lowest price generic products for the 27 drugs surveyed was 70%. Innovator brands are less available (average 40% in private sector) than generics. One reason is that for some of the medicines surveyed, the innovator brand was not registered in Kazakhstan. This is, however, not a problem where good quality generics are available, but it is a problem for new patented medicines where no copy or similar (me too) medicine is available.

Price components show that add-ons constitute more than 40% of the price of generic medicines. Most of it is wholesale and retail mark-ups. Interestingly, mark-ups seem to be

higher for locally produced medicines than for imported medicines, e.g. the retailer profit is as high as 30% for locally produced generic medicine.

#### **1.4. Conclusions**

- Overall, the prices of medicine are high, even for generics. The prices of certain individual medicines are extremely high.
- Few innovator brands are available, but this is only a problem where no alternatives exist.
- Generic equivalent medicines are less expensive than their corresponding innovator brands but they are still expensive, and the most sold are not always the cheapest.
- Public sector procurement prices are substantially higher than international reference prices, and higher-priced innovator brands are being purchased even when cheaper generics exist.
- Very few of the medicines surveyed were available in the one public pharmacy, and private sector availability varied between regions. In general, however, availability of generics was reasonable in the private sector.
- The high prices of medicines makes them barely affordable to the lowest-paid unskilled government worker, and therefore unaffordable to the 25% of people in Kazakhstan living on less than USD \$2/day.
- Prices of generics increase 50% from the manufacturer to the patient, most of this being pharmacy mark-up.

#### **1.5. Recommendations**

- To use the results as one input to medicines policy discussions.
- To extend the survey to comprise more medicines relevant to Kazakhstan, e.g. more medicines from the EML.
- To undertake studies to find out what price people actually pay.
- To further examine public sector procurement practices with a view to improving purchasing efficiency
- To conduct research to reveal reasons for the high medicine price level in both public and private sectors in Kazakhstan, particularly for those medicines that cost over 5 times the international reference price.
- To undertake research into quality of medicines in the market; regular monitoring of quality testing; and dissemination of results to physicians, pharmacists and patients.
- To look into the level of different price components and its influence on the price people pay.
- To set up a system of regular price monitoring of a selection of medicines.

## 2. Introduction and Background

Kazakhstan has a population of over 14 million people. The gross domestic product in 2004 was 7800 USD. According to World Bank statistics for 2002, about 35% of the population lives below the poverty line of 1 USD per day.

Kazakhstan's public health care system covers approximately 90% of population. The other 10 % of the population uses private health care. There is no social insurance scheme so people pay out-of-pocket but there are several categories of people which receive free health care (children under 5 years old, emergency patients, patients with diabetes, HIV patients and TB patients).

Most medicines are imported. Only 3% of medicines are locally manufactured. All imported medicines are registered by the national regulatory agency. The registration fee is usually 3000 USD per medicine. There is no difference between the fee for generic and brand products. The pricing of medicines is not regulated in Kazakhstan. Mark-ups for wholesale companies and pharmacies are not regulated by the government and pharmacies do not usually charge dispensing fees.

Retail pharmacies are mostly situated in cities and suburbs, and are absent in rural areas. It is illegal for doctors to dispense medicines in cities but it is permitted in rural areas.

Kazakhstan has an essential medicines list (currently consisting of 295 medicines) which is the basis for tendering at the regional level. This is the only method used by the government to procure medicines. The concept of a national drug policy is accepted but the policy is yet to be developed in Kazakhstan. The health care system is becoming obsolete. Kazakhstan is ready to undertake market reforms where the evidence shows they are needed.

The purpose of the survey was to ascertain the prices and availability of selected medicines in the public and private sectors in the country, the affordability of standard treatments for ordinary people, and price components (taxes, mark-ups etc.) from the manufacturer's selling price to the price paid by the patient. The methodology used was designed to answer the following questions:

- What prices do people in Kazakhstan pay for a selection of important medicines?
- Are standard treatments affordable?
- How do prices (procurement and retail) compare to an international reference price?
- Does the availability of medicines vary in the public and private sectors?
- Do prices of the same medicine vary in different parts of the country?
- What is the difference in price for innovator brands and generic equivalents?
- What taxes and mark-ups are levied on medicines?

### 3. Methodology

From November 2004 to January 2005 a survey of medicine prices in Kazakhstan was undertaken using a methodology developed by WHO and HAI<sup>1</sup>. This methodology has been designed for the collection and analysis of medicine prices and availability in a standardized way.

#### Information on the pharmaceutical sector in Kazakhstan

Baseline information on the pharmaceutical sector policies and practices was gathered using a standard questionnaire – see [Annex I](#).

#### 3.1 Selection of medicines

The survey advisory group, consisting of the survey manager and an analyst from the regional health department, selected 27 medicines to be surveyed. Of these, 22 were from the WHO/HAI core list and 5 were added as locally important supplementary medicines. All were registered in Kazakhstan.

Surveying the core medicines allowed for international comparison of price data. However, the following core medicines were not surveyed for the following reasons:

<i>Medicine</i>	<i>Strength, dosage form</i>	<i>Reason for deletion</i>
Artesunate	100mg tabs	Not on Kazakhstan EML
Fluconazole	200mg tabs	Registration period expired
Co-trimoxazole paed susp.	(8+40)mg/ml	Registration period expired
Diazepam	5mg tab	Registration period expired
Indinavir	400mg caps	Not on Kazakhstan EML
Nevirapine	200mg tabs	Not on Kazakhstan EML
Sulfadoxine+Pyrimethamine	(25+500)mg tabs	Registration period expired
Zidovudine	100mg caps	Not on Kazakhstan EML

The following supplementary medicines were added for the following reasons:

<i>Medicine</i>	<i>Strength, dosage form</i>	<i>Reason for addition</i>
Levonorgestrel	0.03mg tabs	ZdravPlus project request
Metronidazole	250mg tabs	ZdravPlus project request
Mebendazole	100mg tabs	ZdravPlus project request
Medroxyprogesterone	150mg/ml injection	ZdravPlus project request
Fluconazole	150mg tabs	ZdravPlus project request

For each medicine, one pre-selected strength and dose form was surveyed, and three product types:

- Innovator (original) brand (IB)
- Most sold generic equivalent (MSG) – which was determined nationally for each medicine prior to data collection by asking a selection of pharmacists to identify the most sold generic equivalent medicines. This method was used because there are no national sales statistics available.

<sup>1</sup> World Health Organization & Health Action International. Medicine Prices. A new approach to measurement. 2003 edition. Working draft for field testing and revision [Online]. 2003 [cited 2006 Jan 19]; Available from: URL: <http://www.haiweb.org/medicineprices/manual/manuals/MedicinePrices.pdf>.

- Lowest price generic equivalent (LPG) – which was determined in each facility

See [Annex II](#) for a complete list of the medicines surveyed. Note: data for ethinyloestradiol 0.03mg + levonorgestrel 0.3mg tablets and the IUCDs (intrauterine contraceptive devices) were collected but subsequently excluded as there was no MSH reference price for these medicines (see 3.8). Data for the most sold generic of mebendazole was excluded from the analysis as the product surveyed was the innovator brand. The innovator brand of levonorgestrel was not identifiable.

### 3.2 Sectors and regions surveyed

The survey measured the following:

	<i>Public sector</i>	<i>Private sector (retail pharmacies)</i>
Price to the patient	✓	✓
Availability to patients	✓	✓
Affordability by patients (benchmark: lowest paid unskilled government worker)	✓	✓
Procurement price	✓	

We chose not to survey the NGO sector as it is operational only in the Kustanay region.

Four regions were surveyed. As per the WHO/HAI methodology, we chose the capital Astana and randomly selected 3 other regions, namely Karaganda, Almaty, and Kustanay. These three regions are in the central, southern and northern parts of the country.

### 3.3 Facilities

We followed the method described in the WHO/HAI manual to select the private and public sector pharmacies to be surveyed. Twenty one (21) pharmacies were randomly selected for surveying: 20 in the private sector and 1 public facility in Karaganda city. Note: there are five public sector pharmacies in the country but as they belong to the same organization (Gospharm) and prices do not differ across the outlets, we only collected prices from one.

### 3.4 Training

Eight data collectors were used – all final-year pharmacy students and selected through interviews. Two people from the pharmaceutical inspectorate were designated as area supervisors. The data collectors were trained on the methodology over two days – 11/12 October 2004. The training included a pilot survey in 1 public facility and 4 retail pharmacies in Karaganda city.

### 3.5 Letters of endorsement

Letters of endorsement was received from the Central Regional Health Department and Agency of Pharmaceutical Control in each of the four cities ([Appendix VI](#)).

### **3.6 Data collection**

The data was collected by 8 pharmacy students (2 per region). Each group was assigned an area supervisor, who observed the data collection during the pilot and reviewed the data when collected.

See Annex III for a list of details of the names, strengths, and dosage forms of the medicines surveyed.

Procurement data was collected by interviews with wholesale agencies (2) which had won government tenders. The prices given correspond to their normal wholesale prices.

Some price component data was collected by interviewing pharmacists. Information regarding wholesale mark-up and taxes was collected from the Central Department for Pharmaceutical Control.

### **3.7 Data entry and analysis**

Two people with both pharmaceutical and computer knowledge entered the data into the workbook that accompanies the manual. These data entry personnel were also selected following interviews. Double entry was done to ensure accuracy.

The data was checked using an automated procedure built into the workbook. Wide variations in data were checked against the data collection form. In the analysis, only price data for medicines found in 4 or more pharmacies in the private sector were included. Availability data was based on all pharmacies surveyed. Public sector price and availability data was based on the one facility surveyed.

### **3.8 International reference prices**

International reference prices are used in the WHO/HAI methodology to facilitate national and international price comparisons. Management Sciences for Health (MSH) 2003 median supplier unit prices were used as the reference for this survey (see MSH International Price Guide Indicator at <http://erc.msh.org> ). Where no supplier prices were available, median agency unit prices were used. MSH prices represent recent procurement prices offered by not-for-profit and for-profit suppliers to developing countries for generically equivalent products. These suppliers sell in large quantities to governments and NGOs so the prices tend to be low.

### **3.9 Median price ratios**

The data from the survey are not presented in tenge but as median price ratios (MPRs) calculated using international reference prices. The median price ratio is the median local cost (in tenge) divided by the reference median unit price (converted to tenge using the exchange rate on the first day of data collection i.e. 1 USD = 131 tenge).

The ratio describes how much greater or smaller the local medicine price is to the international reference price e.g. an MPR of 5 means that the local medicine price is five times that of the international reference price. Median price ratios facilitate comparisons of medicine price surveys e.g. between countries.

## 4. Results

### 4.1 Procurement prices in the public sector

The public procurement median MPR for all core and supplementary medicines was 7.23 for innovator brands (IB), 3.85 for the most sold generic equivalents (MSG) and 3.02 for the lowest price generic equivalents (LPG) See [Table 1](#) below. This shows how expensive both innovator brands and generics are compared to MSH prices.

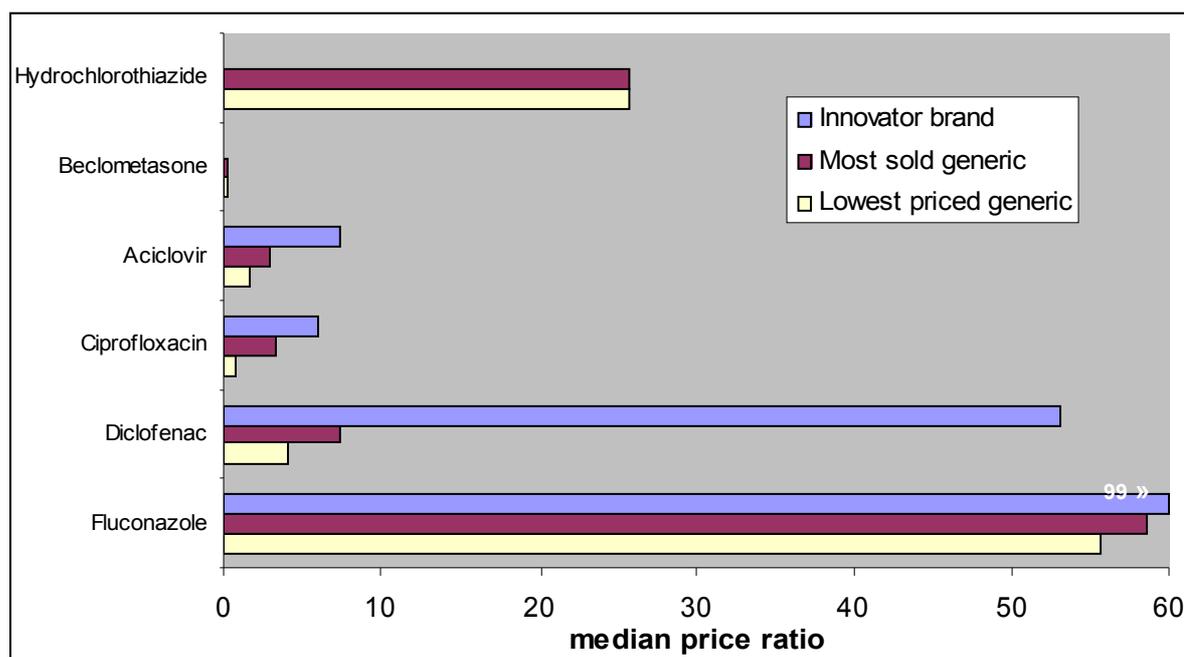
When comparing innovator brand and lowest price generic prices for the 6 medicines available in both forms, the median MPRs were 8.13 and 2.82 respectively. That means that the innovator brands were almost 3 times as expensive as their lowest price generic equivalents. The median MPR of the 13 medicines available in both generic forms was identical – 3.85.

**Table 1. Procurement prices, public sector, all medicines**

	<b>Number of medicines in analysis</b>	<b>Median MPR</b>	<b>25 %ile MPR</b>	<b>75 %ile MPR</b>
Innovator brand	12	7.23	3.86	19.98
Most sold generic	13	3.85	2.99	7.33
Lowest price generic	16	3.02	1.09	4.34

The MPRs for some individual medicines were extremely high e.g. the MPR for fluconazole was 99.62 (IB), 58.63 (MSG) and 55.65 (LPG). The MPR for IB mebendazole was 52.86. Conversely, some MPRs were low and were therefore purchased efficiently, e.g. the MPR for beclometasone inhaler was 0.23 (MSG and LPG). See [Figure 1](#).

**Figure 1 Public sector procurement prices, MPRs for a selection of medicines**



#### 4.2 Public sector patient prices and availability

##### Prices

In the public sector, only one pharmacy was surveyed as we expected to find the same prices in all. The median MPRs for the core and supplementary medicines were 2.16 (IBs), 5.42 (MSGs) and 4.84 (LPGs) as shown in [Table 2](#) below.

**Table 2. Public sector patient prices, 1 facility, core and supplementary medicines**

	Number of medicines in analysis	Median MPR	25 %ile MPR	75 %ile MPR
Innovator brand	2	2.16	not applicable	not applicable
Most sold generic	6	5.42	4.02	6.55
Lowest price generic	7	4.84	2.87	6.36

[Table 3](#) shows the MPRs for some individual medicines. The price ratios for the MSG and LPG are the same for glibenclamide, hydrochlorothiazide, nifedipine retard and omeprazole as they were the same product – in each case the most sold generic was the only generic in the pharmacy.

**Table 3. Public sector patient prices, MPRs, 1 facility**

Medicine	MPR IB	MPR MSG	MPR LPG
Captopril	2.75		
Glibenclamide		4.84	4.84
Hydrochlorothiazide		6.00	6.00
Levonorgestrel		6.73	6.73
Metronidazole		22.69	22.69
Nifedipine Retard		3.75	3.75
Omeprazole		1.19	1.19
Ranitidine			1.99
Salbutamol inhaler	1.57		

**Availability**

The availability of the surveyed medicines in this one public sector pharmacy in Karaganda was extremely poor. Of the 27 medicines surveyed, only 9 were available on the day of data collection. In hindsight all 5 public sector pharmacies should have been surveyed to get a better picture of medicine availability in these facilities.

**4.3 Private sector patient prices and availability****Prices**

Innovator brand medicines in the private sector were on average 8.5 times more expensive than the international reference prices, and the MPRs varied from 1.37 for salbutamol inhaler to 143.32 for fluconazole.

The median MPRs for the most sold generic and lowest price generic were 4.65 and 3.73 respectively. The 25<sup>th</sup> and 7<sup>th</sup> percentile data in [Table 4](#) shows that the variability for half of the medicines was less for the LPGs than it was for the IBs and MSGs.

**Table 4. Median MPR, core and supplementary medicines, private retail pharmacies**

	Number of medicines in analysis	Median MPR	25 %ile MPR	75 %ile MPR
Innovator brand	16	8.58	5.02	26.93
Most sold generic	19	4.65	2.65	7.95
Lowest price generic	20	3.73	1.71	4.61

**Comparing matched pairs of medicines**

In [Table 4](#) above, the median MPRs for IBs, MSGs and LPGs are based on different medicines according to what was available for each product type. By conducting an analysis on only those medicines available in both product types (e.g. IB and LPG, or LPG and MSG),

results are more comparable across product types.. Most sold generics were 25% more expensive than the lowest price generics. Innovator brands were more than double the price of LPGs.

**Table 5. MPRs matched pairs, private retail pharmacies, core and supplementary medicines**

	<b>Number of medicines in analysis</b>	<b>Median MPR</b>	<b>25 %ile MPR</b>	<b>75 %ile MPR</b>
Innovator brand	13	8.51	5.03	16.80
Most sold generic	13	5.17	3.31	8.98
Innovator brand	13	8.51	5.03	16.80
Lowest price generic	13	3.59	1.84	4.45
Most sold generic	19	4.65	2.65	7.95
Lowest price generic	19	3.72	1.59	4.49

The MPRs for some individual medicines were low (less than 1.5) such as salbutamol inhaler, omeprazole, losartan, and beclometasone inhaler. Conversely, some MPRs were extremely high such as fluconazole (IB 143, LPG 72), hydrochlorothiazide (IB 59, LPG 22), and mebendazole (IB 74). Some medicines showed large brand premiums e.g. IB aciclovir was over 14 times the price of the LPG, and IB diclofenac was nearly 16 times the price of the LPG of diclofenac. A few examples are given in [Table 6](#).

**Table 6. MPRs for some individual medicines, private retail pharmacies**

<b>Medicine</b>	<b>Product Type</b>	<b>Median Price Ratios</b>	<b>25%ile MPR</b>	<b>75%ile MPR</b>
Aciclovir	Innovator brand	8.51	8.45	8.98
	Most sold generic	3.31	2.00	3.69
	Lowest price generic	0.59	0.51	1.92
Ciprofloxacin	Innovator brand	16.80	14.40	16.80
	Most sold generic	12.96	12.00	14.76
	Lowest price generic	10.80	6.36	11.52
Fluconazole	Innovator brand	143.32	134.83	149.81
	Most sold generic	83.97	74.24	90.65
	Lowest price generic	72.04	55.34	78.72
Diclofenac	Innovator brand	57.33	52.39	89.81
	Most sold generic	8.98	8.98	18.71
	Lowest price generic	3.59	2.25	5.99

## **Availability**

The median availability of medicines in the 20 private pharmacies was 40% for IBs, 60% for MSGs and 70% for LPGs, see [Table 7](#). The low availability of innovator brands is probably a reflection of people’s inability to pay for them. The low availability of MSGs is probably due to the difficulties we had in identifying the actual most sold product.

**Table 7. Median availability, core and supplementary medicines, private sector**

	<b>Median availability</b>	<b>25 %ile availability</b>	<b>75 %ile availability</b>
Innovator brand	40%	0%	77.5%
Most sold generic	60%	12.5%	82.5%
Lowest price generic	70%	17.5%	87.5%

Some individual medicines had very poor availability in the private sector e.g. fluphenazine was not found at all, lovastatin was found in only 1 pharmacy, fluoxetine in only 3, and metformin in only 4 pharmacies. However, as shown in [Table 8](#), the availability of many LPGs was acceptable and at least one generic of aciclovir was found in all 20 pharmacies.

**Table 8. Availability of individual medicines, generics (LPG), private pharmacies**

<b>Availability</b>	<b>Medicine</b>
No pharmacies	fluphenazine inj, lovastatin, mebendazole
1 – 24%	fluoxetine, losartan, metformin, phenytoin, medroxyprogesterone inj
25-49%	amitriptyline, beclometasone inhaler, salbutamol inhaler
50 – 79%	amoxicillin, carbamazepine, metronidazole
80% and over	aciclovir, atenolol, captopril, ceftriaxone inj, ciprofloxacin, diclofenac, fluconazole, glibenclamide, levonorgestrel, ranitidine, hydrochlorothiazide, nifedipine retard, omeprazole

See [Annex IV](#) for the percentage availability for all medicines in the private sector.

### **Comparison of prices and availability across the four regions surveyed**

As [Table 9](#) shows, the median MPR for generics in the private sector did not differ significantly across the four regions surveyed, but overall seemed to be cheapest in Almaty and most expensive in the capital Astana. Median MPR for innovator brands differed from 6.14 in Almaty to 16.80 in the capital Astana. The small sample size in each region makes the result vulnerable to bias (5 pharmacies, the medicine had to be found in 4 facilities to be included) and the medicines included in the analysis differed across the regions.

**Table 9. Median MPRs, private sector (5 pharmacies per region)**

	<b>Almaty</b>	<b>Astana</b>	<b>Karaganda</b>	<b>Kustanay</b>
Median MPR Innovator brand	6.14 (9 meds)	16.80 (9 meds)	12.03 (8 meds)	11.12 (7 meds)
Median MPR Most sold generic	3.72 (13 meds)	6.40 (13 meds)	5.82 (11 meds)	5.39 (12 meds)
Median MPR Lowest price generic	3.39 (13 meds)	4.31 (14 meds)	3.71 (15 meds)	3.93 (12 meds)

Table 10 compares the MPR for a selection of individual medicines across the four regions. Some showed little variation between regions for both IB and generic, e.g. captopril. Others showed greater variation, e.g. lowest price generic fluconazole was much cheaper in Astana than in other regions. Also noteworthy is the high price of diclofenac innovator brand and most sold generic in Kustanay.

**Table 10. MPRs for selected medicines, private sector, by region (5 facilities per region)**

		<b>Almaty</b>	<b>Astana</b>	<b>Karaganda</b>	<b>Kustanay</b>
Captopril	IB	4.48	4.63	4.53	4.94
	MSG	3.22	3.08	4.63	4.34
	LPG	2.11	2.02	2.02	2.60
Diclofenac	IB		57.33	53.88	89.81
	MSG		7.78	8.98	74.84
	LPG		5.99	2.25	3.67
Mebendazole	IB		74.47	71.31	78.01
	MSG	No data			
	LPG				
Fluconazole	IB	137.40	141.60		
	MSG	76.72	75.38		85.88
	LPG	70.04	16.68	75.76	79.01
Aciclovir	IB	8.51			
	MSG	0.71	3.15		3.73
	LPG	0.71	0.51	0.51	1.89

Of the medicines surveyed, Karaganda had the best private sector availability of lowest priced generics, see Table 11. Low availability of innovator brands was found in all regions, the most sold generic was only found in about half of the pharmacies in any region.

**Table 11. Median availability per region, private sector**

	<b>Median availability</b>			
	<b>Almaty</b>	<b>Astana</b>	<b>Karaganda</b>	<b>Kustanay</b>
Innovator brand	40%	40%	20%	40%
Most sold generic	60%	40%	60%	60%
Lowest price generic	60%	40%	80%	40%

#### 4.4 Treatment affordability

Affordability is the cost of treatment in relation to a person's income. In this survey, the daily wage for the lowest paid unskilled government worker (300 tenge) is used to estimate affordability. The standard treatments used to determine affordability are listed in Annex V. Table 12 below illustrates the affordability for one acute and one chronic condition.

**Table 12. Pneumonia and hypertension treatment affordability for the lowest paid unskilled government worker purchasing the medicines in a private pharmacy**

Treatment	Medicine type	Treatment price in tenge	Number of days' wages needed to pay for treatment
<b>Pneumonia</b> Amoxicillin 250 mg 3 times/day, 1 week	Innovator brand	409	1.4
	Most sold generic	327	1.1
	Lowest price generic	163	0.5
<b>Hypertension</b> Hydrochlorothiazide 25 mg/day, 1 month	Innovator brand	810	2.7
	Most sold generic	450	1.5
	Lowest price generic	300	1.0
<b>Hypertension:</b> Atenolol 50 mg/day, 1 month	Innovator brand	255	0.9
	Most sold generic	189	0.6
	Lowest price generic	138	0.5

To purchase a weeks' supply of innovator brand amoxicillin from private pharmacies for the treatment of pneumonia (1x250mg caps three times a day for 7 days), a patient with this income would have to spend 1.4 days' wages. If purchasing the most sold generic, the days' wages falls slightly to 1.1 days. If the lowest price generic is purchased, the cost falls to half a days wages, which is more affordable. To purchase innovator brands to treat hypertension for a month, the patient has to pay the equivalent of 2.7 days wages for single treatment with a diuretic. If the lowest price generic is purchased, one days wage is needed to pay for the month's treatment; this is barely affordable. If both a diuretic and a betablocker are prescribed, the number of days' wages rises to 3.6 and 1.5 for innovator brands and lowest priced generics, respectively. As 25%<sup>2</sup> of the population lives on less than 2 USD a day (less than the salary of the lowest paid government worker) then it can be inferred that affordability will be even less for a large proportion of the population in Kazakhstan.

Figure 2 shows the affordability of the following treatments when purchased from private pharmacies:

Depression - amitriptyline 25mg three times a day for a month

Hypertension – hydrochlorothiazide 25mg daily for a month

Hypertension – losartan 20mg daily for a month

Diabetes – glibenclamide 5mg twice a day for a month

Arthritis – diclofenac 25mg twice a day for a month

Asthma – one salbutamol inhaler

Ulcer – ranitidine 150mg twice a day for a month

Ulcer – omeprazole 20mg daily for a month

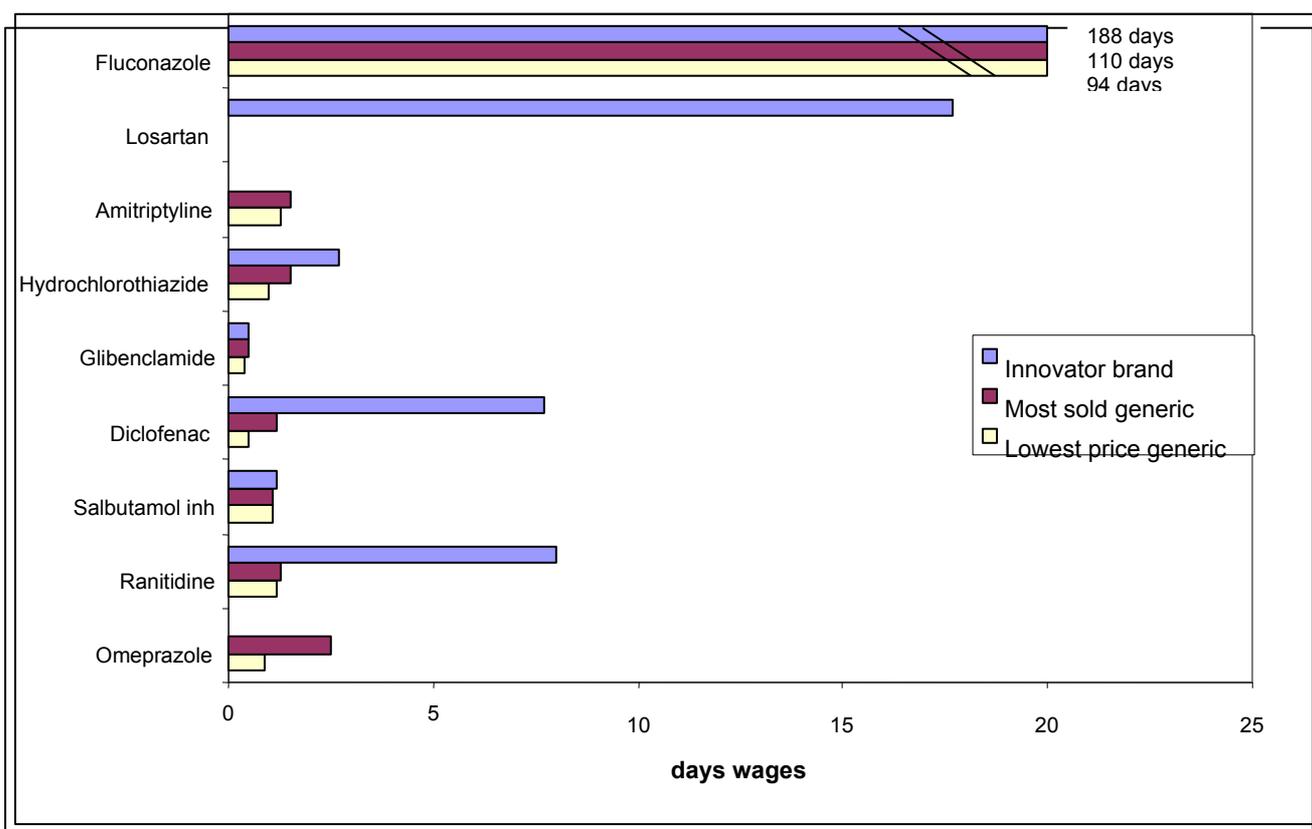
HIV/AIDS – fluconazole 150mg daily to prevent opportunistic infections

Several treatments cost more than a days wage, particularly when innovators are prescribed.

Fluozanole is the least affordable, costing 188, 110 and 94 days wages for the IB, MSG and LPG, respectively.

<sup>2</sup> Reference source – World Development Indicators 2005 (<http://www.worldbank.org/data>) based on survey data for 2003

**Figure 2. Affordability of selected treatments, private pharmacies**



Annex V shows the affordability of standard treatments across sectors.

Disease rarely affects only one person in a family. Consider a family situation - father with an ulcer needing ranitidine 150mg twice daily, mother on glibenclamide 5mg twice daily for diabetes and child with asthma needing a salbutamol inhaler. Can they afford medicines if purchased in private pharmacies? Table 12 shows that clearly such treatment is unaffordable even when the cheapest generics are purchased.

**Table 12. Example of affordability for a family, private pharmacies**

	<b>Brand</b>	<b>MSG</b>	<b>LPG</b>
Father - ranitidine	8.0	1.3	1.2
Mother - glibenclamide	0.5	0.5	0.4
Child – salbutamol inhaler	1.2	1.1	1.1
<b>Total days' wages for one month treatment</b>	9.7	2.9	2.7

#### 4.6. Price components

Data on ‘add-on costs’ (e.g. taxes, mark-ups etc.) were collected as these can have a significant effect on the final price to the patient, as shown in [Table 13](#). Medicines in Kazakhstan are either imported or locally produced so data was collected for both. Only data for generic medicines was collected.

Average cumulative add-ons were 49.3% for the imported medicines surveyed and 49.5% for the locally produced generic medicines. While locally products were not subject to the port charges, customs charge, certification fee, import and transport fee applied to imported products, they had retail mark-ups of 30% compared to around 20% for the imported medicines. Thus the overall difference between imported and locally produced medicines was negligible.

**Table 13. Price components and add-ons for imported and locally produced generic medicines (in local currency tenge) 1 USD = 131 tenge**

Price component	Imported generic medicine (100 tabs)		Locally manufactured generic medicine (100 tabs)	
	% Mark-up	Example	% Mark-up	Example
Manufacture price (incl. local transport)	n/a	n/a		1000,00
Import price (CIF)		2000,00		
Port charges	3%	2060,00		
Custom Charges (CC)	5%	2163,00		
Wholesale markup (5-50%)	15%	2487,45	15%	1150,00
Retail markup (20-30%)	20%	2984,94	30%	1495,00
<b>Final price 100 tabs</b>		<b>2984,94*</b>		<b>1495,00</b>
<b>Cumulative % mark-up</b>	<b>49.3%</b>		<b>49.5%</b>	

\*: In addition, there is a Certification fee of USD 50, irrespective of quantity imported. This will add a small amount per unit.

## 5. Discussion

The survey results show that medicines are too expensive in Kazakhstan. This is best illustrated by the fact that a family living on the monthly income of an unskilled government worker needing 3 common medicines will have to spend one third of the monthly income on buying innovator brand medicines, and one tenth on generics, in the private sector. In public sector there is only five pharmacies so that is not an option for the patients. Prices were only surveyed in one of the five public pharmacies and at least that one had very low availability, further underlining the problem for patients. Kazakhstan also has no insurance system although some support systems operate.

Medicine price level in Kazakhstan dramatically exceeds international reference price level, even in public procurement. Public procurement prices were given by two tenderers and correspond to normal wholesale prices. This means that no discount was given to public sector and whilst public procurement MPRs should be comparable to MSH international reference prices (i.e.  $MPR \approx 1$ ), in this survey the median MPRs were found to be more than 7 for innovator brands, close to 4 for the most sold generic and as high as 3 for the cheapest generic. For hydrochlorothiazide, a low-cost medicine for hypertension, public sector pays as much as 26 times the international reference price to purchase a generic. When generics are available, there should also be no need for public sector to buy more expensive innovator brands, however both innovator brand and generics were found for 6 medicines.

Public sector has only five pharmacies in one particular area where patients can buy medicines. In the public sector pharmacy visited prices were higher than for public procurement orders, with lowest price generics costing, on average, 5 times the international reference prices. Noteworthy is also that metronidazole, a cheap generic, costs 23 times the international reference price. In this sector, however, hydrochlorothiazide price was only 6 times the IRP, which is still high, but at least less than in public procurement where it was 26 times the IRP. Overall availability in the public sector seems to be low, but we cannot conclude because only one pharmacy was visited.

Private sector prices are, on average, 4-9 times higher than the international reference prices. Most expensive are innovator brand medicines, of which one quarter of the medicines had median prices of more than 26 times international references price. On average, innovator brands are 8.6 times, most sold generics 4.7 times, and lowest price generics 3.7 times, more expensive than international reference prices.

On average, MSG prices are 25% higher than LPG prices. Based on a previous survey amongst pharmacists, about half of patients prefer to buy more popular generics, such as the most sold generics identified for this survey, which are not always the cheapest. This is because patients question the quality of cheap medicines. Our survey sampled prices of medicines which are approved by the authorities and we therefore assume they are of good quality. For three of these medicines, namely aciclovir LPG and omeprazole MSG and LPG, the price ratios were lower than the respective reference prices.

As mentioned, the quality of cheap generics have been questioned and criticized. There is no reason to believe that low price equals poor quality as it is possible to produce high quality products cheap, as is also shown by the international reference prices used in this survey. This criticism should be met by studies of the quality of the products in the market and we propose such a study to be done as a follow-up to the price survey.

The four regions of Kazakhstan that were surveyed (centre-north-south) showed variation in both availability and prices for the medicines surveyed. When comparing individual medicines, Astana stood out as having the highest prices for both innovators and generics, while Karaganda had the best availability of lowest price generics.

In private medicine outlets, the median availability of the lowest price generic products for the 27 drugs surveyed was 70%. One medicine, fluphenazine, stood out as not available in any outlet, the reason being a temporary supply cessation. Innovator brands, though, are less available than generics. One reason is that for some of the medicines surveyed, the innovator brand was not registered in Kazakhstan. This is possibly because, at the time they were patent protected, Eastern Europe was not very accessible to western companies and when the situation changed, the manufacturers did not apply for registration. As the manufacturers of innovators (patent holders) may not reduce the price when facing competition from generics, they might have decided to stay out of a market where few people would be able to afford their medicines. This is, however, not a problem where good quality generics are available, but it is a problem for new patented medicines where no copy or similar ("me too") medicine is available.

Data collected on price components show that add-ons in the distribution chain from manufacturer to patient add about 50% to the price of generic medicines. Most of this is wholesale and retail mark-ups. Total add-on costs were almost the same for locally produced medicines as for imported medicines, although the retail mark-up differed (higher for locally produced medicines). Whether our findings represents a true picture is not certain. The wide variation in retail and particularly wholesale mark-ups (20-30% and 5-50%, respectively) suggests that the profit level for wholesalers and retailers may be dependent on other factors, e.g. quantity dispensed. It is also not possible to get a correct picture of what fixed fees, such as the customs charge and registration fee, add to the cost. It is recommended to investigate this further and look at ways of remunerating wholesalers and pharmacists without making their profit dependent on the acquisition cost, as this is an incentive to sell expensive medicines. Regressive mark-ups and/or dispensing fees are used in many countries.

In Kazakhstan, 35% of people live below the national poverty line and 25% live below 2 USD per day<sup>3</sup>. The income used for comparison in the affordability analysis is about 3 USD per day. Our findings that many treatments will not be affordable for the government worker gives a strong message that more than a quarter of the population will not be able to afford some important treatments.

The conclusions we draw from this survey are limited by a number of factors. It was difficult to identify the most sold generic because no national sales statistics are available. In addition, the list of medicines surveyed may not represent the most frequently prescribed medicines in its class. Some medicines were added from the national list of essential medicines, but more would need to be surveyed to get a better picture. In the public sector, procurement prices were only provided by wholesalers, but should have come from the government buyer(s). Price components were poorly investigated, but are also difficult to obtain. International price comparison, in particular comparisons with neighbouring countries, were planned but not done as not all study results were available when this report was drafted. Finally, the prices people actually pay can only be determined by specific studies such as interviewing patients when they leave the pharmacy (exit survey) or by visiting them at home (household survey).

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<sup>3</sup> <http://devdata.worldbank.org/wdi2005/Section2.htm>

This survey should therefore be used for signal generation. The findings identify some problems with medicine prices and pricing policies in Kazakhstan, which should encourage further studies to describe the situation in more detail.

## 6. Conclusion and recommendations

Based on the findings of this survey we conclude that:

- Overall, the prices of medicine are high, even for generics. The prices of certain individual medicines are extremely high.
- Few innovator brands are available, but this is only a problem where no alternatives exist.
- Generic equivalent medicines are less expensive than their corresponding innovator brands but they are still expensive, and the most sold are not always the cheapest.
- Public sector procurement prices are substantially higher than international reference prices, and higher-priced innovator brands are being purchased even when cheaper generics exist.
- Very few of the medicines surveyed were available in the one public pharmacy, and private sector availability varied between regions. In general, however, availability of generics was reasonable in the private sector.
- The high prices of medicines makes them barely affordable to the lowest-paid unskilled government worker, and therefore unaffordable to the 25% of people in Kazakhstan living on less than USD \$2/day.
- Prices of generics increase 50% from the manufacturer to the patient, most of this being pharmacy mark-up.

Research using the WHO/HAI indicators cannot give the full picture of the pharmaceutical sector in Kazakhstan. However, The Drug Information Center hopes that the results and the recommendations presented in this report will be studied and provide a basis for more in-depth studies of the pharmaceutical sector, aiming to make medicines affordable to the country's population.

Based on current research findings we make the following recommendations:

- To use the results as one input to medicines policy discussions.
- To extend the survey to comprise more medicines relevant to Kazakhstan, e.g. more medicines from the EML.
- To undertake studies to find out what price people actually pay.
- To further examine public sector procurement practices with a view to improving purchasing efficiency
- To conduct research to reveal reasons for the high medicine price level in both public and private sectors in Kazakhstan, particularly for those medicines that cost over 5 times the international reference price.
- To undertake research into quality of medicines in the market; regular monitoring of quality testing; and dissemination of results to physicians, pharmacists and patients.
- To look into the level of different price components and its influence on the price people pay.
- To set up a system of regular price monitoring of a selection of medicines.

## **Annex I**

### **National Pharmaceutical Sector form**

Date: 23/11/2004

Population: 15 000 000

Minimum daily salary of a lowest-paid government worker is 300 tenge

Source of information: resolution of government of Kazakhstan №41 from January 11 2002

Rate of exchange (commercial “buy” rate) to US dollars on the first day of data collection: 131 tenge per 1\$

Sources of information: National Bank of Kazakhstan

## General information on the pharmaceutical sector

Is there a formal National Medicines Policy document covering both the public and private sectors **Yes**

Is an Essential Medicines List (EML) available? **Yes**

If yes, state total number of medicines on national EML: **912**

If yes, year of last revision: **December 2003**

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

- 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**

Are there incentives for generic prescribing or substitution? **No**

## Public procurement<sup>4</sup>

Is procurement in the public sector limited to a selection of essential medicines? **Yes**

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**

Is there a local preference?<sup>5</sup> **Yes**

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

<sup>4</sup> 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.

<sup>5</sup> 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%.

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

### **Distribution<sup>6</sup>**

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

If yes, specify levels:

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

If yes, please specify:

Number of licensed wholesalers:

### **Retail**

**Urban Rural Overall**

Number of inhabitants per pharmacy  
(approx.)

Number of inhabitants per qualified  
pharmacist (approx.)

Number of pharmacies with qualified  
pharmacists

Number of medicine outlets with pharmacy  
technician

Number of other licensed medicine outlets

### **Private sector<sup>7</sup>**

Are there independent pharmacies? **Yes** Number:

Are there chain pharmacies? **Yes** Number:

Do doctors dispense medicines?<sup>8</sup> **No**

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

Are there pharmacies or medicine outlets in health facilities? **Yes**

### **Financing**

(Give approximate figures, converted to US dollars at current exchange rate:  
commercial “buy” rate on the first day of data collection)

**Type of expenditure**

**Approximate annual  
budget  
(US dollars)**

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

<sup>6</sup> 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.

<sup>7</sup> 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.

<sup>8</sup> Many countries allow doctors to dispense and sell medicines.

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

Total value of international medicine aid or donations in past year

What percentage of medicines by value are imported? %

### **Government price policy**

Is there a medicines regulatory authority? Yes

Is pricing regulated? No

Is setting prices part of market authorization/registration? No

Do registration fees differ between:

- Innovator brand and generic equivalents No
- Imported and locally produced medicines No

### **Public sector**

Are there margins (mark-ups) in the distribution chain? 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? No

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

- Wholesale %
- Retail %

Is there a maximum retail price (sales price)? No  
(If it varies, give maximum and minimum)

- Maximum:
- Minimum:

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

If yes, please describe:

### **“Other” sector**

Are there maximum profit margins? No

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

- Wholesale %

■ Retail %  
Is there a maximum sales price? **No**

***Insurance, risk-sharing or prepayment schemes***

Are there any health insurance, risk-sharing or prepayment schemes or revolving medicine funds? **No**

If yes, please describe:

Are all medicines covered? **No**

If no, state which medicines are covered (e.g. EML, public health programmes): **EML**

Are some patients / groups of patients exempted, regardless of insurance coverage? (e.g. children < X yrs, war veterans) **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**

If no, are some free?  Yes  No

If yes, tick  all that apply:

- Tuberculosis
- Malaria
- Oral rehydration salts
- Family planning
- Others, please specify:

Are there official user charges/patient co-payments/fees? **Yes**

Are all medicines supplied free at hospitals? **No**

If no, are some free?  Yes  No

If yes, please specify:

## Annex II

# 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:

- |  |  |
|--|--|
| <input type="checkbox"/> Public                        | <input type="checkbox"/> Private retail pharmacy |
| <input type="checkbox"/> Other (please specify): _____ |  |

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

- |  |   |
|--|---|
| <input type="checkbox"/> Procurement price | <input type="checkbox"/> 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
Aciclovir tab 200 mg	Zovirax	GSK		25			/tab	
<i>Most sold generic equivalent</i>	Acyclostate	Stada		25				
<i>Lowest price generic equivalent</i>				25				
Amitriptyline tab 25 mg	Tryptizol	MSD		100			/tab	
<i>Most sold generic equivalent</i>	Amitriptyline	Slovako Pharma		100				
<i>Lowest price generic equivalent</i>				100				
Amoxicillin caps/tab 250 mg	Amoxil	SKB (GSK)		21			/tab	
<i>Most sold generic equivalent</i>	Amoxicillin	Sanavita		21				
<i>Lowest price generic equivalent</i>				21				
Atenolol tab 50 mg	Tenormin	AstraZeneca		60			/tab	
<i>Most sold generic equivalent</i>	Atenolan	Lannacher		60				
<i>Lowest price generic equivalent</i>				60				
Beclometasone inhaler 50 mcg/ dose	Becotide	GSK		1 inhaler: 200 doses			/dose	
<i>Most sold generic equivalent</i>	Beclazon	Norton healthcare		1 inhaler: 200 doses				
<i>Lowest price generic equivalent</i>				1 inhaler: 200 doses				
Captopril tab 25 mg	Capoten	BMS		60			/tab	
<i>Most sold generic equivalent</i>	Kepril	Kefar kenes pharma		60				
<i>Lowest price generic equivalent</i>				60				
Carbamazepine tab 200 mg	Tegretol	Novartis		100			/tab	
<i>Most sold generic equivalent</i>	Finlepsin	AWD pharma		100				
<i>Lowest price generic equivalent</i>				100				
Ceftriaxone inj 1 g powder	Rocephin	Roche		1 vial			/vial	

<i>Most sold generic equivalent</i>	Kefaxon	Kefar kenés pharma		1 vial			
<i>Lowest price generic equivalent</i>				1 vial			
Ciprofloxacin tab 500 mg	Ciproxin	Bayer		1			/tab
<i>Most sold generic equivalent</i>	Cifran	Ranbaxy		1			
<i>Lowest price generic equivalent</i>				1			
Diclofenac tab 25 mg	Voltarol	Novartis		100			/tab
<i>Most sold generic equivalent</i>	Diclofenac	Ratiopharm		100			
<i>Lowest price generic equivalent</i>				100			
Fluconazole caps/tab 150 mg	Diflucan	Pfizer		30			/tab
<i>Most sold generic equivalent</i>	Micosist	Egis		30			
<i>Lowest price generic equivalent</i>				30			
Fluoxetine caps/tab 20 mg	Prozac	Lilly		30			/tab
<i>Most sold generic equivalent</i>	Portal	Lek pharmaceuticals		30			
<i>Lowest price generic equivalent</i>				30			
Fluphenazine decanoate inj 25 mg/mL	Modecate	Sanofi-Winthrop/ BMS		1 ampoule			/mL
<i>Most sold generic equivalent</i>	Mirinil	JELFA pharm		1 ampoule			
<i>Lowest price generic equivalent</i>				1 ampoule			
Glibenclamide tab 5 mg	Daonil	HMR		60			/tab
<i>Most sold generic equivalent</i>	Maninil	Berlinchemie		60			
<i>Lowest price generic equivalent</i>				60			
Hydrochlorothiazide tab 25 mg	Dichlotride	MSD		30			/tab
<i>Most sold generic equivalent</i>	Hipotiazide	Sanofi		30			
<i>Lowest price generic equivalent</i>				30			
Losartan tab 50 mg	Cozaar	MSD		30			/tab
<i>Most sold generic equivalent</i>	Repace	SUN pharmaceutical		30			
<i>Lowest price generic equivalent</i>				30			
Lovastatin tab 20 mg	Mevacor	MSD		60			/tab
<i>Most sold generic equivalent</i>	Lostatine	Dr. Reddy's		60			
<i>Lowest price generic equivalent</i>				60			
Metformin tab 500 mg	Glucophage	Merck		100			/tab

<i>Most sold generic equivalent</i>	Gluconyl	Global Pharm		100			
<i>Lowest price generic equivalent</i>				100			
Nifedipine Retard tab 20 mg	Adalat Retard	Bayer		100		/tab	
<i>Most sold generic equivalent</i>	Corinfar-retard	AWD		100			
<i>Lowest price generic equivalent</i>				100			
Omeprazole caps 20 mg	Losec	AstraZeneca		30		/caps	
<i>Most sold generic equivalent</i>	Omez	Dr Reddy's		30			
<i>Lowest price generic equivalent</i>				30			
Phenytoin caps/tab 100 mg	Epanutin	Pfizer		100		/tab	
<i>Most sold generic equivalent</i>	Diphenin	Akrichin		100			
<i>Lowest price generic equivalent</i>				100			
Ranitidine tab 150 mg	Zantac	GSK		60		/tab	
<i>Most sold generic equivalent</i>	Zoran	Dr.Reddy's		60			
<i>Lowest price generic equivalent</i>				60			
Salbutamol inhaler 0.1 mg per dose	Ventoline	GSK		1 inhaler: 200 doses		/dose	
<i>Most sold generic equivalent</i>	Butahale	Dr.Reddy's		1 inhaler: 200 doses			
<i>Lowest price generic equivalent</i>				1 inhaler: 200 doses			

Supplementary drug list

Fluconazole 150 mg	Diflucan	Pfizer						
<i>Most sold generic equivalent</i>								
<i>Lowest price generic equivalent</i>								
Levonorgestrel 0.03mg cycle*				2			/cycle	
<i>Most sold generic equivalent</i>	Postinor	Gedeon Richter		2				
<i>Lowest price generic equivalent</i>				2				

\* There is no a proprietary name for levonorgestrel in Kazakhstan

Medroxyprogesterone 150mg/ml	Depo-provera	Pharmacia		1			/vial	
<i>Most sold generic equivalent</i>				1				
<i>Lowest price generic equivalent</i>				1				
Mebendazole 100 mg	Vermox	Janseen Pharm		6			/tab	
<i>Most sold generic equivalent</i>				6				
<i>Lowest price generic equivalent</i>				6				
Metronidazole 250 mg tabs	Flagyl	RhonePoulenc		20			/tab	
<i>Most sold generic equivalent</i>	Klion	Gedeon Richter		20				
<i>Lowest price generic equivalent</i>				20				

## Annex III

### Core Medicine List details

	<b>Name</b>	<b>Strength</b>	<b>Dosage Form</b>
1	Aciclovir	200 mg	tab
2	Amitriptyline	25 mg	tab
3	Amoxicillin	250 mg	cap
4	Atenolol	50 mg	tab
5	Beclometasone inhaler	500 mcg/dose	dose
6	Captopril	25 mg	tab
7	Carbamazepine	200 mg	tab
8	Ceftriaxone injection	1g vial	inj
9	Ciprofloxacin	500 mg	tab
10	Diclofenac	25 mg	tab
11	Fluoxetine	20 mg	cap/tab
12	Fluphenazine injection	25 mg/ml	inj
13	Glibenclamide	5 mg	cap
14	Hydrochlorothiazide	25 mg	tab
15	Lovastatin	20 mg	cap/tab
16	Losartan	50 mg	tab
17	Metformin	500 mg	cap
18	Nifedipine retard	20mg	tab
19	Omeprazole	20 mg	tab
20	Phenytoin	100 mg	cap
21	Ranitidine	150 mg	tab
22	Salbutamol inhaler	0.1mg/dose	inhaler

## Supplementary medicines list details

1	Fluconazole	150 mg	cap
2	Levonorgestrel	0.03 mg	tab
3	Mebendazole	100 mg	tab
4	Medroxyprogesterone inj	150 mg/ml	inj
5	Metronidazole	250 mg	tab

## Annex IV

### Median Price Ratios (in comparison to MSH 2003 median price) and Percentage Availability in the Private Sector

No.	Medicine Name	Medicine Type	Median (MPR)	25%ile	75%ile	Min	Max	% with med.
1	Aciclovir	Brand	8,51	8,45	8,98	8,27	10,40	45,0%
1	Aciclovir	Most Sold	3,31	2,00	3,69	0,57	4,02	75,0%
1	Aciclovir	Lowest Price	0,59	0,51	1,92	0,39	3,69	100,0%
2	Amitriptyline	Brand						0,0%
2	Amitriptyline	Most Sold	4,92	3,57	5,02	2,11	50,22	35,0%
2	Amitriptyline	Lowest Price	4,42	3,45	4,95	2,11	50,22	40,0%
3	Amoxicillin	Brand	8,65	8,43	9,76	8,43	14,87	40,0%
3	Amoxicillin	Most Sold	6,92	4,22	7,99	3,11	8,43	55,0%
3	Amoxicillin	Lowest Price	3,44	2,81	6,86	1,69	8,21	70,0%
4	Atenolol	Brand	6,98	5,34	7,39	3,94	8,21	80,0%
4	Atenolol	Most Sold	5,17	4,51	6,57	2,63	8,21	85,0%
4	Atenolol	Lowest Price	3,78	3,28	4,72	2,46	8,21	95,0%
5	Beclometasone inhaler	Brand						0,0%
5	Beclometasone inhaler	Most Sold	1,26	0,56	1,26	0,56	3,05	25,0%
5	Beclometasone inhaler	Lowest Price	1,26	0,56	1,26	0,56	3,05	25,0%
6	Captopril	Brand	4,63	4,38	4,80	4,22	5,29	90,0%
6	Captopril	Most Sold	4,34	3,63	4,52	2,02	4,63	80,0%
6	Captopril	Lowest Price	2,02	2,02	3,38	0,90	4,63	90,0%
7	Carbamazepine	Brand	7,67	6,14	10,74	5,75	11,12	70,0%
7	Carbamazepine	Most Sold	5,22	4,99	5,95	4,60	8,59	70,0%
7	Carbamazepine	Lowest Price	4,45	3,84	4,78	1,53	8,59	70,0%
8	Ceftriaxone injection	Brand	5,00	4,78	5,37	4,72	5,67	80,0%
8	Ceftriaxone injection	Most Sold	1,79	1,49	1,79	1,34	2,96	75,0%
8	Ceftriaxone injection	Lowest Price	1,30	0,87	1,49	0,69	1,73	80,0%
9	Ciprofloxacin	Brand	16,80	14,40	16,80	14,40	19,20	95,0%
9	Ciprofloxacin	Most Sold	12,96	12,00	14,76	9,60	18,00	95,0%
9	Ciprofloxacin	Lowest Price	10,80	6,36	11,52	1,56	12,48	95,0%
10	Diclofenac	Brand	57,33	52,39	89,81	44,16	98,79	85,0%

10	Diclofenac	Most Sold	8,98	8,98	18,71	7,33	97,29	85,0%
10	Diclofenac	Lowest Price	3,59	2,25	5,99	1,80	6,14	85,0%
11	Fluconazole	Brand	143,32	134,83	149,81	97,71	183,21	80,0%
11	Fluconazole	Most Sold	83,97	74,24	90,65	61,07	144,66	75,0%
11	Fluconazole	Lowest Price	72,04	55,34	78,72	11,45	83,97	80,0%
12	Fluoxetine	Brand						0,0%
12	Fluoxetine	Most Sold						0,0%
12	Fluoxetine	Lowest Price						15,0%
13	Fluphenazine injection	Brand						0,0%
13	Fluphenazine injection	Most Sold						0,0%
13	Fluphenazine injection	Lowest Price						0,0%
14	Glibenclamide	Brand	5,03	5,03	5,21	4,65	5,59	90,0%
14	Glibenclamide	Most Sold	4,65	4,56	4,89	3,72	5,12	95,0%
14	Glibenclamide	Lowest Price	3,72	3,72	4,10	2,05	5,03	95,0%
15	Hydrochlorothiazide	Brand	58,89	54,53	58,89	32,72	61,07	75,0%
15	Hydrochlorothiazide	Most Sold	32,72	31,62	33,26	23,12	59,76	85,0%
15	Hydrochlorothiazide	Lowest Price	21,81	13,09	26,17	3,27	33,15	90,0%
16	Levonorgestrel	Brand						
16	Levonorgestrel	Most Sold	4.58	4.40	4.92	3.88	5.95	85.0%
16	Levonorgestrel	Lowest Price	4.53	4.14	4.92	3.88	5.95	85.0%
17	Losartan	Brand	1,43	1,41	1,44	1,40	1,44	20,0%
17	Losartan	Most Sold						10,0%
17	Losartan	Lowest Price						10,0%
18	Lovastatin	Brand						5,0%
18	Lovastatin	Most Sold						0,0%
18	Lovastatin	Lowest Price						0,0%
19	Mebendazole	Brand	74,47	74,47	80,06	37,24	85,27	65,0%
19	Mebendazole	Most Sold						
19	Mebendazole	Lowest Price						0,0%
20	Medroxyprogesterone inj	Brand	9,18	8,39	9,47	6,71	9,70	20,0%
20	Medroxyprogesterone inj	Most Sold						0,0%
20	Medroxyprogesterone inj	Lowest Price						5,0%
21	Metformin	Brand						10,0%
21	Metformin	Most Sold						15,0%

21	Metformin	Lowest Price							15,0%
22	Metronidazole	Brand							0,0%
22	Metronidazole	Most Sold	16,20	15,47	17,41	14,44	18,57		60,0%
22	Metronidazole	Lowest Price	5,67	3,09	11,79	3,09	18,57		60,0%
23	Nifedipine Retard	Brand							0,0%
23	Nifedipine Retard	Most Sold	3,98	3,74	4,24	3,39	4,52		80,0%
23	Nifedipine Retard	Lowest Price	3,75	3,39	4,13	2,09	4,52		80,0%
24	Omeprazole	Brand							10,0%
24	Omeprazole	Most Sold	0,97	0,93	1,08	0,35	1,13		85,0%
24	Omeprazole	Lowest Price	0,35	0,35	0,39	0,30	0,65		90,0%
25	Phenytoin	Brand							0,0%
25	Phenytoin	Most Sold							10,0%
25	Phenytoin	Lowest Price	4,84	4,70	5,38	4,30	6,99		20,0%
26	Ranitidine	Brand	12,26	10,73	13,03	2,30	14,56		45,0%
26	Ranitidine	Most Sold	1,99	1,76	2,99	1,47	7,66		35,0%
26	Ranitidine	Lowest Price	1,84	1,67	2,01	1,15	3,83		80,0%
27	Salbutamol inhaler	Brand	1,37	1,34	1,52	1,18	1,65		70,0%
27	Salbutamol inhaler	Most Sold	1,34	1,34	1,37	1,30	1,65		30,0%
27	Salbutamol inhaler	Lowest Price	1,34	1,32	1,36	1,18	1,65		35,0%

## Annex V

## Affordability of standard treatments

		Daily wage of lowest paid government worker (in local currency):				300					
<b>Diabetes</b>						<b>Public Procurement</b>		<b>Public Patient</b>		<b>Private Retail</b>	
<b>Select Medicine Name</b>	<b>Medicine Strength</b>	<b>Dosage Form</b>	<b>Treatment Duration (in Days)</b>	<b>Total # of Units per Treatment</b>	<b>Product Type</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>
Glibenclamide	5 mg	cap/tab	30	60	<b>Brand</b>					162,00	0,5
					<b>Most Sold</b>	124,20	0,4	156,00	0,5	150,00	0,5
					<b>Lowest Price</b>	124,20	0,4	156,00	0,5	120,00	0,4
<b>Hypertension</b>						<b>Public Procurement</b>		<b>Public Patient</b>		<b>Private Retail</b>	
<b>Select Medicine Name</b>	<b>Medicine Strength</b>	<b>Dosage Form</b>	<b>Treatment Duration (in Days)</b>	<b>Total # of Units per Treatment</b>	<b>Product Type</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>
Hydrochlorothiazide	25 mg	cap/tab	30	30	<b>Brand</b>					810,00	2,7
					<b>Most Sold</b>	352,50	1,2	82,50	0,3	450,00	1,5
					<b>Lowest Price</b>	352,50	1,2	82,50	0,3	300,00	1,0
<b>Hypertension</b>						<b>Public Procurement</b>		<b>Public Patient</b>		<b>Private Retail</b>	
<b>Select Medicine Name</b>	<b>Medicine Strength</b>	<b>Dosage Form</b>	<b>Treatment Duration (in Days)</b>	<b>Total # of Units per Treatment</b>	<b>Product Type</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>
Atenolol	50 mg	cap/tab	30	30	<b>Brand</b>					255,00	0,9
					<b>Most Sold</b>					189,00	0,6
					<b>Lowest Price</b>	75,00	0,3			138,00	0,5

<b>Adult resp. infects.</b>					<b>Public Procurement</b>		<b>Public Patient</b>		<b>Private Retail</b>		
<b>Select Medicine Name</b>	<b>Medicine Strength</b>	<b>Dosage Form</b>	<b>Treatment Duration (in Days)</b>	<b>Total # of Units per Treatment</b>	<b>Product Type</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>
Amoxicillin	250 mg	cap/tab	7	21	<b>Brand</b>					409,50	1,4
					<b>Most Sold</b>					327,60	1,1
					<b>Lowest Price</b>	123,90	0,4			162,75	0,5
<b>Gonorrhoea</b>					<b>Public Procurement</b>		<b>Public Patient</b>		<b>Private Retail</b>		
<b>Select Medicine Name</b>	<b>Medicine Strength</b>	<b>Dosage Form</b>	<b>Treatment Duration (in Days)</b>	<b>Total # of Units per Treatment</b>	<b>Product Type</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>
Ciprofloxacin	500 mg	cap/tab	1	1	<b>Brand</b>	25,00	0,1			70,00	0,2
					<b>Most Sold</b>	14,00	0,0			54,00	0,2
					<b>Lowest Price</b>	3,30	0,0			45,00	0,2
<b>Arthritis</b>					<b>Public Procurement</b>		<b>Public Patient</b>		<b>Private Retail</b>		
<b>Select Medicine Name</b>	<b>Medicine Strength</b>	<b>Dosage Form</b>	<b>Treatment Duration (in Days)</b>	<b>Total # of Units per Treatment</b>	<b>Product Type</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>
Diclofenac	25 mg	cap/tab	30	60	<b>Brand</b>	2130,00	7,1			2298,00	7,7
					<b>Most Sold</b>	294,00	1,0			360,00	1,2
					<b>Lowest Price</b>	162,00	0,5			144,00	0,5

<b>Depression</b>					<b>Public Procurement</b>		<b>Public Patient</b>		<b>Private Retail</b>		
<b>Select Medicine Name</b>	<b>Medicine Strength</b>	<b>Dosage Form</b>	<b>Treatment Duration (in Days)</b>	<b>Total # of Units per Treatment</b>	<b>Product Type</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>
Amitriptyline	25 mg	cap/tab	30	90	<b>Brand</b>						
					<b>Most Sold</b>	306,00	1,0			441,00	1,5
					<b>Lowest Price</b>	306,00	1,0			396,00	1,3
<b>Asthma</b>					<b>Public Procurement</b>		<b>Public Patient</b>		<b>Private Retail</b>		
<b>Select Medicine Name</b>	<b>Medicine Strength</b>	<b>Dosage Form</b>	<b>Treatment Duration (in Days)</b>	<b>Total # of Units per Treatment</b>	<b>Product Type</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>
Salbutamol inhaler	0.1 mg/dose	dose	as needed	200	<b>Brand</b>	280,00	0,9	400,00	1,3	347,00	1,2
					<b>Most Sold</b>					340,00	1,1
					<b>Lowest Price</b>					340,00	1,1
<b>Peptic ulcer</b>					<b>Public Procurement</b>		<b>Public Patient</b>		<b>Private Retail</b>		
<b>Select Medicine Name</b>	<b>Medicine Strength</b>	<b>Dosage Form</b>	<b>Treatment Duration (in Days)</b>	<b>Total # of Units per Treatment</b>	<b>Product Type</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>
Ranitidine	150 mg	cap/tab	30	60	<b>Brand</b>	1536,00	5,1			2400,00	8,0
					<b>Most Sold</b>					390,00	1,3
					<b>Lowest Price</b>			390,00	1,3	360,00	1,2
<b>Peptic ulcer</b>					<b>Public Procurement</b>		<b>Public Patient</b>		<b>Private Retail</b>		
<b>Select Medicine Name</b>	<b>Medicine Strength</b>	<b>Dosage Form</b>	<b>Treatment Duration (in Days)</b>	<b>Total # of Units per Treatment</b>	<b>Product Type</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>	<b>Median Treatment Price</b>	<b>Days' Wages</b>
Omeprazole	20 mg	cap/tab	30	30	<b>Brand</b>						
					<b>Most Sold</b>	588,00	2,0	915,00	3,1	750,00	2,5
					<b>Lowest Price</b>	588,00	2,0	915,00	3,1	270,00	0,9

**ZDRAV/PLUS PROJECT**

**REGIONAL**

**KARAGANDA**

**HEALTH DEPARTMENT**



The central health department and Zdrav/Plus project in the framework of WHO/HAI research endorse Drug Information Center to conduct research regarding Drug pricing and availability in four areas in Kazakhstan. All pharmacies, wholesale companies and government organizations are encouraged to provide support in this research.

**Regional health department director  
Yermekbayev K.K.**