

Medicine Prices, Availability, Affordability in Kyrgyz Republic

Report of a survey conducted September to October 2015

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(Medicines Transparency Alliance)
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Abbreviations

| | |
|--------|--|
| Cap | Capsule |
| DDP/ME | Department of Drug Provision and Medical Equipment |
| GDP | Gross domestic product |
| EML | Essential Medicines List |
| FGP | Family Group of Practitioners |
| FMC | Family Medicine Center |
| HAI | Health Action International |
| OB | Originator brand |
| Inh | Inhaler |
| Inj | Injection |
| LPG | Lowest priced generic equivalent |
| MoH | Ministry of Health |
| MPR | Median price ratio |
| MSH | Management Sciences for Health |
| MHIF | Mandatory Health Insurance Fund |
| SGBP | State Guaranteed Benefit Programs |
| Susp | Suspension |
| Tab | Tablet |
| USD | United States dollars (also \$) |
| WHO | World Health Organization |

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1. Executive Summary

Background: To further improve the healthcare system, Kyrgyzstan is willing to continue the reforms initiated for ensuring equal access to healthcare services. In line with this commitment, the main goal of the survey was to collect accurate data on prices, availability of selected drugs in public and private sectors, affordability of standard treatment course, data evaluation and development of approaches for improving medicines availability amongst population, if necessary.

Methods: The survey on price measurement and availability was conducted in seven administrative regions of Kyrgyzstan: region 1 - capital Bishkek, region 2 – Chuy oblast, region 3 – Issyk-Kul oblast, region 4 – Naryn oblast and region 5 – Jalal-Abad oblast, region 6 – Osh oblast, region 7 – Talas oblast. The survey was predominantly undertaken in private sector due to an absence of public pharmaceutical sector outside of hospitals. Based on random sampling method, 5 private medicine outlets were identified in each surveyed region for visiting and collecting data.

Overall, 35 private medicine outlets were selected for obtaining consumer prices. Data on procurement prices of medicines were obtained from 7 health facilities in the public sector. During the survey, information on prices and availability of 44 medicines was collected, which included both the originator brands and lowest-priced generics. Prices on medicines, identified during the survey, were expressed as ratio of standard set of international reference prices called median price ratio (MPR). The international reference prices were obtained from the “International Price Guide Indicator” published annually by non-governmental organization Management Sciences for Health (MSH 2014).

The price affordability of treatment was estimated as number of paid working days necessary for purchasing medicines for a treatment course of most common acute and chronic conditions, assuming a daily wage of unskilled public sector worker with the lowest wage.

Main findings

Procurement prices have decreased in the public sector between 2010 and 2015, and were consistent with the trends in international reference prices over the same period of time. The median prices for the majority of lowest-priced generics decreased almost twice compared to the procurement prices surveyed in 2010 and were consistent with international reference prices. Originator brands were procured in the public sector for two medicines (metformin, salbutamol), where median price of metformin brand medicine was 7 times the international reference price.

Median prices for the majority of generics in the private sector declined to approximately 1,5 times in relation to the median prices surveyed in 2005 and 2010 (MPR 2010 = 3,5). However, these prices remain high in relation to the MSH reference prices and are approximately 2 times over the international prices (MPR 2015 = 2,17).

For certain generics, such as benzathine benzylpenicillin and aspirine, the median prices in the private sector were very high and almost 20 times over the international standard. The median prices for most generic medicines were between MPR of 1.0 and 1.86 across regions.

Originator brands were presented for 4 medicines: aspirin, fluconazole, salbutamol, and paracetamol suspension. The median price for the brand fluconazole was over 100 times the reference price and almost 30 times more expensive than that of the generic. The availability of originator brands was very low compared to generic medicines in all regions.

A range of environmental factors could have an impact on price changes and affordability in Kyrgyzstan (e.g. currency volatility and trade arrangement). Further research is needed for exploring the specific reasons of price decline among the surveyed medicines in Kyrgyzstan.

Recommendations:

- The survey demonstrates that expenditure for treatment course of priority health conditions by the lowest-paid population declined from 7 to 2 daily wages compared to 2005. However, treatment of acute and chronic conditions remains expensive and requires 5 to 15 daily wages. The survey did not explore the practices of prescribing the lowest-priced generic medicines to patients. This requires further analysis to validate the hypothesis that the overall treatment affordability improved because of changes to prescribing generic medicines.
- Despite the apparent improvement in drugs selection practice in public sector, some medical organizations purchased both generic and brand medicines with the same active ingredients. In this regard, special attention should be paid to the selection of medicines.
- Despite the fact that prices decreased for most generic medicines, median prices remain extremely high for some medicines, with the prices of some medicines exceeded the international reference prices by 20 to 40 times. For complete study of pricing policy in pharmaceutical market, it is necessary to:
 - perform survey on price components and mark-ups in medicines supply chain from manufacture to the end-user;
 - perform comprehensive research of pharmaceutical market to study the barriers to better patient access to medicines in distribution system as well as pricing, including medical, pharmaceutical organizations (wholesale suppliers, distributors, retail network, manufacturers and so on). This will enable stakeholders obtain relevant information on existing barriers and formulate ways for improving drugs distribution system;
 - implement the evaluation of effectiveness on drugs provision benefit program within the framework of health insurance, and study the relationship between health care and pharmaceutical organizations and public insurance system (MHIF); this will enable the government to develop and introduce mechanisms of reference pricing. Medicines included in insurance schemes may play a significant role in balancing prices through so-called mechanism of reference pricing. However, implementation of such policy is problematic under current conditions due to the fact that reference pricing is not established institutionally.
 - create a unified information system for drugs supply that regularly collects and publishes data on prices of originator brands and generics from various companies in the market. This information will be crucial for the analysis of market over time and will allow measurement of the effects of policy and interventions.

2. Introduction

In September-October of 2015, MeTA Project, the international organization, conducted a third national survey on measuring essential medicines price availability, and affordability of medicines in Kyrgyz Republic. Two previous surveys were conducted in 2005 and 2010.

The main goal of the current survey is to collect and analyze data on availability and affordability of medicines for developing approaches on improving the availability and affordability of medicines for the population.

The current survey was performed by using standard survey methodology, developed by WHO/HAI¹. WHO/HAI methodology is described in guideline “Price measurement, availability, and affordability and price components of medicines” (WHO/HAI, 2008) and available at: www.haiweb.org/medicineprices.

The survey aimed to answer the following questions:

- How do medicine procurement prices in the public sector compare with international reference prices?
- How do medicine consumer prices in the private sector compare with international reference prices?
- What is the availability of originator brands and generic equivalents in the private sector?
- What is the difference in prices of originator brands and generic equivalents?
- What is the treatment affordability of most common acute and chronic conditions to individuals with low income?

2.1 Country background

The Kyrgyz Republic is a country in Central Asia with an area of 198 500 km². The country borders Kazakhstan in the northern part, China in the eastern and south-eastern parts, Tajikistan in the south-western part and Uzbekistan in the western part.

Administratively, Kyrgyzstan is divided into 7 regions and 2 republican cities: Bishkek and Osh. Economically and geographically, the country is divided into central, northern and southern regions. The population is estimated at 5 919 700 (data from 1st of July, 2015²), where rural inhabitants constitute 64% and urban - 36% of the population. According to the World Bank, Kyrgyzstan is in the list of lower middle income countries, where GDP constituted 1269 per capita in 2014³. The total working population represented 2.7 million in 2013 at the actual unemployment rate of about 8.3% out of economically active population. The population under 15 represented 31% of the total population in 2014, while the population over 60 years was about 4%. The life expectancy is 70 years. The birth rate, according to preliminary data, amounted to 275 per 1000 cases in 2013⁵.

Maternal mortality rate was 1206 cases per 100 000 live births in 2014⁵. The mortality rate among children was 29.37 (under five years old) per 1000 live births. Kyrgyzstan is among the countries with high Tuberculosis burden (all forms) in the WHO European Region, with estimated incidence of 141 (116–168) per 100 000 population, prevalence of 217 (101–376) per 100 000 population and mortality of 9.5 (9.3–9.8) cases per 100 000 population (WHO Global Tuberculosis Report 2013)⁴.

Mortality rate from HIV/AIDS is 0.5 per 100 000 population. Mortality rate from cardiovascular diseases was 349 cases per 100 000 population in 2014⁵.

2.2 Health Sector

Health sector is funded through several sources: state budget, mandatory health insurance, patient co-payment, special funds, grants from international organizations, voluntary deductions and investments of physical and legal entities, voluntary medical insurance. State budget for healthcare expenditure constituted 158.2³ million USD in 2014. Approximately 15.2% of healthcare budget was spent on procuring medicines which constituted 3.9 USD per capita. External resources with regard to general expenditure accounted for 8.7%. Approximately 2.9% of total GDP were directed to the healthcare services expenditure in 2013. The proportion of healthcare budget constituted 11.8% of the total state budget.

State healthcare sector consists of three organization levels: tertiary, secondary and primary. Tertiary level of healthcare includes facilities that provide specialized healthcare and health promotion services using high-technology equipment, advanced scientific achievements, and involving high-quality medical personnel. The secondary level of healthcare sector includes facilities providing specialized healthcare and health promotion services in ambulatory and in-hospital conditions. The primary level of healthcare sector includes health facilities providing emergency healthcare services, and primary healthcare services in ambulatory conditions as well as public health facilities.

The Mandatory Health Insurance Fund (MHIF) is implementing two programs related to benefit medicine provision of population through the pharmacy network: the first program provides particular category of patients under State Guaranteed Benefits Package (SGBP), the second “Additional Program” of MHIF aims to reduced-price drug provision of insured population through a private pharmacies on the PHC level.

The mandatory health insurance system covered 75% of the population in 2014⁶.

2.3 Pharmaceutical Sector

The pharmaceutical market in Kyrgyz Republic is entirely private and represented by retail distributors and network of retail pharmacies. The total number of private pharmaceutical organizations was 2863 in 2014⁷. The proportion of imported pharmaceutical products constituted 97.4% in 2014, whereas the proportion of locally produced medicines was 2.6%.

In Kyrgyzstan, there are about 40 private pharmaceutical manufacturers who cover 3%-5% of total drugs distributed. In 2013, pharmaceutical products were imported into the country in the amount of 198.6 million USD and 167.8 million USD in 2014⁷. In the meantime, the annual growth rate of import decreased to 15% in 2014 compared to 2013. Medicines are imported from more than 20 countries in the world, including 2% to 12% from European countries, 12% from Russia, 9% from India, 4% from China, 1% from Kazakhstan, and 1% from Belarus.

National Drug Policy (NDP): The State Drug Policy, an official document, was first adopted in 1998. In 2014, the fourth version of NDP #376 was approved by Kyrgyz Republic Government dated 08.07.2014: “Program on development of the area of drugs procurement in Kyrgyz Republic for 2014-2020”. The new NDP policy varies significantly from the previous three versions, as it highlights the provision of economic availability of medicines through implementation of specific strategic activities.

Regulatory system: Regulatory authority in the area of drug circulation is Department of Drug Provision and Medical Equipment (DDP/ME) at the MoH of Kyrgyz Republic. The official site of DDP/ME is <http://pharm.kg>.

Technical regulation "On safety of Drugs and Medical Devices" approved by KR Government dated 01.02.2012 №74 is the main document establishing required application and execution of requirements for drugs and medical devices in the territory of the Kyrgyz Republic.

The procedure for state registration of drugs in Kyrgyzstan is mandatory and aimed at protecting local market from low-quality drugs. The registration of original brands and generics costs 1500 USD, and locally manufactured drugs cost 150 USD. Total number of registered drugs in 2015 (6 months) amounted to 695 715 items: medicines - 4533, commodities – 2424.

The following activities are subject to licensing in the area of drug supply: production and manufacture of drugs, pharmaceutical activities of medicine outlets, wholesale and distribution. In 2014, the number of licensed pharmaceutical organizations totaled 1000⁷.

State quality control is required for all medicines imported to the territory of Kyrgyzstan and those produced locally. State quality control, efficacy and safety are carried out through inspection, registration of medicines, prohibition of counterfeit, low-quality and smuggled medicines in the territory of the Kyrgyz Republic, etc. The conformity certificates were issued for six months to 14 157 pharmaceutical products in 2015: 4295 drugs were certified based on laboratory testing, and 9862 items were certified through recognition procedure, 13 medicines were refused certificate of conformity.

The pharmaceutical market in Kyrgyzstan mainly comprises generic medicines since originator medicines constitute only 3%. The National Drug Policy aims to further support the policy of using generic medicines through advocacy and increased demand for cheaper generic medicines, while ensuring equal clinical efficacy.

Public procurement of medicines in Kyrgyz Republic is decentralized. Procurement of drugs is automated on central, provincial and district levels and is carried out through electronic trading system. The Ministry of Health centrally procures a limited list of tools: vaccines, serums, insulin, medicines for hemodialysis, etc. Medicines are purchased by the government, as a rule, from the list of essential medicines (EML). The following tender processes are used for:

- Public procurement: National Tender (independent, centralized, integrated, framework, etc.);
- International tender: procurement of anti-tuberculosis, anti-retroviral, anti-malarial drugs and other medical goods using grant funds (Global Fund to Fight AIDS, Tuberculosis and Malaria);
- Direct procurement: used by public health programs (the Global Drug Facility/Green Light Committee).

State-guaranteed benefit programs (SGBP) has been launched since 2001 with the aim of providing citizens with health care and health promotion services in health care facilities for free or under benefit terms. Depending on the social status, healthcare services can be provided for free, with partial contribution of co-payment, or the full payment.

Co-payment rate depends on the particular category of population and type of healthcare services (from 5 to 50 USD approximately). Free healthcare services by SGBP are provided to children under 5, women during pregnancy, delivery and postpartum period, as well as senior citizens of 70 years and older.

The expenditure for medicines and medical devices constituted 33% of general expenditure structure on MHIF in 2014.

In Kyrgyzstan, public sector prices for medicines are not regulated. However, through the SGBP, insured citizens can purchase necessary medicines on MHIF prescription on a benefit basis. According to the MHIF, reimbursement rate amounted to 54.4 % in 2014⁶.

The list of medicines exempted from tax (VAT) was approved by KR Government, dated 24.01.2013 (№31) for delivering and importing to the territory of Kyrgyz Republic and includes essential medicines list. The existing EML was updated by KR Government, dated 09.10.2012 (№ 693), and includes 1347 unique medicines. Drug Committee of KR MoH performs selection of drugs and approves national EML.

3. Methodology

3.1. Review

The survey on price measurement, availability and affordability was undertaken using standardized methodology of WHO/HAI (2008) in Kyrgyz Republic. Final consumer prices were collected in private sector medicine outlets. Procurement prices of medicines were obtained from sales department of public health facilities (in-hospital pharmacies).

The medicines list includes 14 drugs from global list, 5 from WHO regional list and 25 supplementary drugs from country list. In total, 44 drugs from Essential Medicines List were reviewed.

For each surveyed medicine, two types of medicines were selected.

- Originator brand (OB) – original pharmaceutical product;
- Lowest-priced generic equivalent (LPG) – equivalent with the lowest commodity unit price at the time of survey.

All prices were converted to USD using the exchange (buy) rate at the beginning of survey on 28.09.2015¹⁰ (\$1 USD = 68,8689 soms). The international wholesaler prices of 2014 were used as reference unit prices (see MSH, International Drug Price Indicator Guide at <http://erc.msh.org>).

3.2. Site selection

Selection of surveyed regions was performed in line with WHO/HAI recommended methodology. Seven regions were selected based on geographic distribution of population (urban, rural): capital of republic - Bishkek, and six regions located in northern and southern parts of the country. Besides, the regions where surveys on procurement prices were undertaken earlier in 2005, 2010, were taken into consideration. The following regions were included in the current survey:

1. Bishkek (main urban center)
2. Chuy oblast
3. Talas oblast
4. Naryn oblast
5. Issyk-Kul oblast
6. Djalal-Abad oblast
7. Osh oblast

Survey data by sectors:

| | Public sector | Private sector |
|---------------------------------------|---------------|----------------|
| Procurement price | ✓ | |
| Availability of medicines | | ✓ |
| Prices for end-user | | ✓ |
| Price-wise affordability of treatment | | ✓ |

In each surveyed region health facilities of secondary level were selected to collect data on procurement prices in the public sector.

Data on medicine prices and availability were collected in each surveyed region (Bishkek, Chuy, Talas, Naryn, Issyk-kul, Jalal-Abad, Osh) using random sampling method. Health facilities of

secondary levels located within the three-hour driving distance from the main Family Medicine Center (FMC) were selected.

Further, private medicine outlets were selected for visiting and collecting data at each selected Family Group of Practitioners (GFP) and FMC. Ultimately, 5 private medicine outlets selected in each region constituted 35 private pharmacies. The sampling of pharmacies in private sector included exclusively licensed pharmacies and their outlets.

3.3 Selection of medicines

The survey included 14 global, 5 regional medicines from EML of WHO/HAI and 25 supplementary medicines from country list of essential drugs. The following medicines were excluded from the list of surveyed medicines because these medicines were not registered in the country:

- Oxytocin 5iu/10iu Injection
- Phenytoin 100mg Tablet
- Zinc sulphate 20mg Disp tablet
- Artemether-Lumefantrine 20/120 mg cap/tab

Fluphenazine 25mg/ml depot injection, a neuroleptic and antipsychotic substance, was replaced with haloperidol decanoate.

Some additional medicines were included in the supplementary list based on the country needs. The full list of surveyed medicines is available in Annex I.

4. Data collection

The survey personnel included a survey manager, regional (area) supervisor, data collectors for each region and data entry specialist. A training workshop for an area supervisor and data collectors was conducted on survey sites for each region separately during half of a working day. For collecting data on price components and availability, a special form was used that included names, doses and release forms of medicines.

Data collection was implemented from September 15 to October 15, 2015. Data collector visited one private pharmacy in every region conducted interview and collected data on medicine prices and availability. When data were insufficient, data collector visited additional pharmacy for collecting more information. To ensure data quality, an area supervisor checked filled forms and performed random visits to data collection sites. Before entering data into computerized workbook, the filled forms were checked to ensure completeness and accuracy of collected data.

Procurement prices were received from public health facilities of regional level. Data collectors were provided with tender files for the time-period of April-August, 2015.

To verify data, a data collector visited an in-hospital pharmacy and received access to recorded files on prices.

4.1 Data entry and analysis

Data entry and data analysis were performed centrally. The survey data were entered into special program of MS Excel Workbook, provided by the WHO/HAI. The complete information on local unit price for each medicine (originator brand, generic) from each survey site, public and private

sectors, were entered into the database. To avoid errors, double entry and data verification were performed.

The prices from Management Sciences for Health (MSH 2014⁹), median of the lowest prices of international suppliers, were used as international reference prices (see MSH International Price Guide Indicator on <http://erc.msh.org>).

Medicine prices are presented as median price ratios per one tablet (capsule, vial etc.) to the international reference price per unit, i.e.

$$\text{Median Price Ratio (MPR)} = \frac{\text{median local unit price}}{\text{International reference unit price}}$$

Thus, the ratio is an expression of how much greater or less the median local medicine price is compared to the international reference price.

After entering international reference prices (MSH 2014⁹) for each unit of surveyed medicine and exchange rate (1 USD = 68,8689 soms (28.09.2015¹⁰), the Workbook calculated median price ratios for each medicine in each sector and region.

In order to calculate MPR in private sector, it is necessary to collect prices of surveyed medicines from at least four pharmacies. As for procurement prices, it was sufficient to obtain data from one data collection source due to the fact that procurement data analysis includes pricing only and does not assess their availability.

The $\text{MPR} \leq 1$ in public or private sector indicates concordance with the international reference prices, while a MPR of greater than 1 indicates a high price level compared to international reference prices. The analysis provides full reflection on each medicine as well as the entire group of surveyed medicines in Workbook that determined the 25-th/75-th percentiles, and the minimum and maximum values of median prices across the medicines being surveyed.

The availability of each medicine in pharmacies was expressed as percentage to the number of surveyed sites (pharmacies) on the data collection day.

Availability or affordability of surveyed medicines for the population was estimated based on data from private 35 pharmacies with consideration of standard deviations.

Ultimately, price affordability treatment of 15 most common acute and chronic conditions in country was considered. The cost of treatment course was compared with a daily wage of unskilled lowest-paid worker from public sector in order to determine a number of paid working days needed for covering costs of such treatment. The treatment was affordable, if amount of daily wages, requested for covering treatment course consists of one or less paid working days.

The wage of the lowest-paid worker, according to the national statistics committee constituted 46 soms in 2014 (0.68 USD cents) per day.

5. Results

5.1 Public sector procurement prices

Public sector procurement prices for medicines were selected in 7 regional health facilities of secondary level. Out of 44 surveyed drugs, the prices were received for 38 low-priced generic equivalents and 2 originator brands.

The median price ratio for the originator brands (metformin and salbutamol in inhalation) was over 4,82 times the international reference price; for the lowest-priced generics, on all available 38 medicines, MPR accounted for 1,04 where 50% of drugs were within the range between 25% and 75%.

Table 1. Number of times more expensive: public sector procurement prices compared to international reference prices.

| | OBs | LPGs |
|---|-----------------------|-----------------------|
| Median MPR (interquartile range 25% - 75%) | 4,82 (3,41 – 6,23) | 1,04 (0,53 – 1,93) |
| Minimum | 2,01 | 0,24 |
| Maximum | 7,64 | 13,41 |
| № of medicines | 2 | 38 |

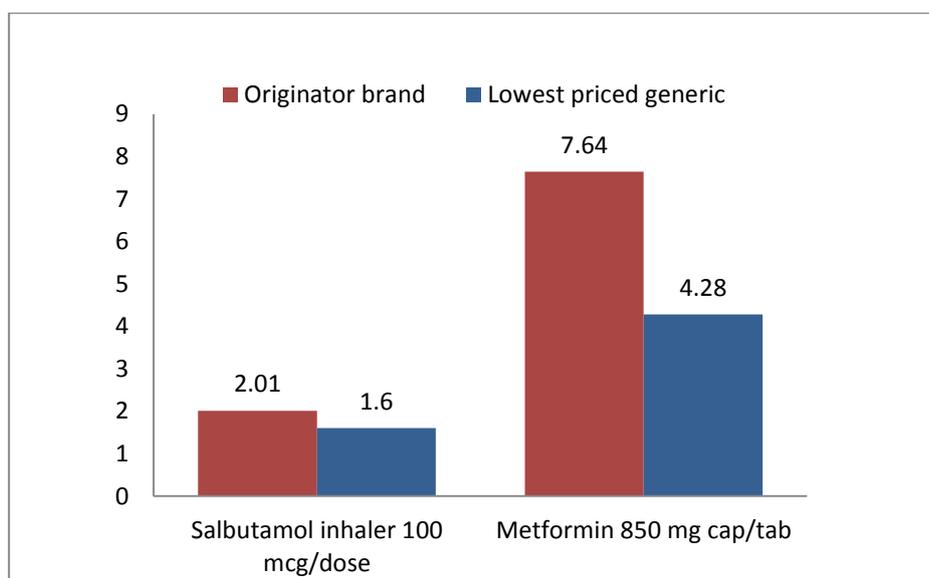
The public sector procurement prices for most medicines are below or at the level of international reference prices. However, some generic medicines had higher prices, as presented in Table 2, and were over 3,35 – 13,41 times the international reference prices.

Table 2. Median price ratios, public sector procurement prices, lowest priced generics

| Medicines | Median Price Ratio (MPR)/LPGs |
|------------------------------|-------------------------------|
| Aspirin 100 mg tab | 13,41 |
| Amitriptyline 25 mg tab | 3,35 |
| Hydrochlorothiazide 25mg tab | 5,74 |
| Metformin 850 mg tab | 4,28 |
| Diazepam 5 mg tab | 4,49 |

The MPRs for originator brand and the lowest-priced generic salbutamol in inhalation, procured by the same medical organization, exceeded the international reference price by 2,01 and 1,6. This indicates a slight price difference between originator and generic ($2,01/1,60 = 1,25$). The MPRs for metformin in tablet both originator brand and generic significantly exceeded international reference prices by 7,64 and 4,28 times respectively: this is almost by 2 times its generic analogue ($7,64/4,28 = 1,78$) (figure 1.).

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



5.2 Patient prices in the private sector

Private sector medicine prices were collected from 35 retail pharmacies. Out of the 44 surveyed medicines, 4 originator brands and 39 low-priced generic equivalents were identified.

The originator brand prices were over 44 times the international reference prices, with 50% of medicines in the range of 6,44 - 87,12 times the international reference prices. The lowest-priced generic equivalents were over 2,17 times the international reference prices and with 50% of medicines exceeding the international reference prices in the range of 1,08-4,40 (table 3). Overall, median prices of the originator medicines were 20 times higher than the low-priced generics.

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

| | OB | LPG |
|---|-------------------------|-----------------------|
| Median MPR (interquartile range 25% - 75%) | 43,96 (6,44 – 87,12) | 2,17 (1,08 – 4,40) |
| Minimum | 1,56 | 0,48 |
| Maximum | 108,90 | 21,78 |
| Nº of medicines | 4 | 39 |

Among the originator brands identified in 4 private pharmacies, the price for salbutamol inhaler was close to the international reference price with a minimum median of 1,56; the price for originator brand fluconazole in tablet considerably exceeded the reference price with maximum MPR of 108,90. Among the lowest-priced generics, the price for enalapril in tablet was much lower than the international reference price (MPR 0,66); aspirin low-priced generic was over 21,78 times the international reference price. Below are the examples of individual medicines of both types with much lower or higher median than that of international reference price (see table 4).

Table 4. Number of times more expensive: private sector patient prices compared to international reference prices.

| Medicines | OB/MPR | LPG/MPR |
|---------------------------|--------|---------|
| Aspirin 100mg cap/tab | 79,86 | 21,78 |
| Fluconazole 150mg cap/tab | 108,90 | 3,67 |

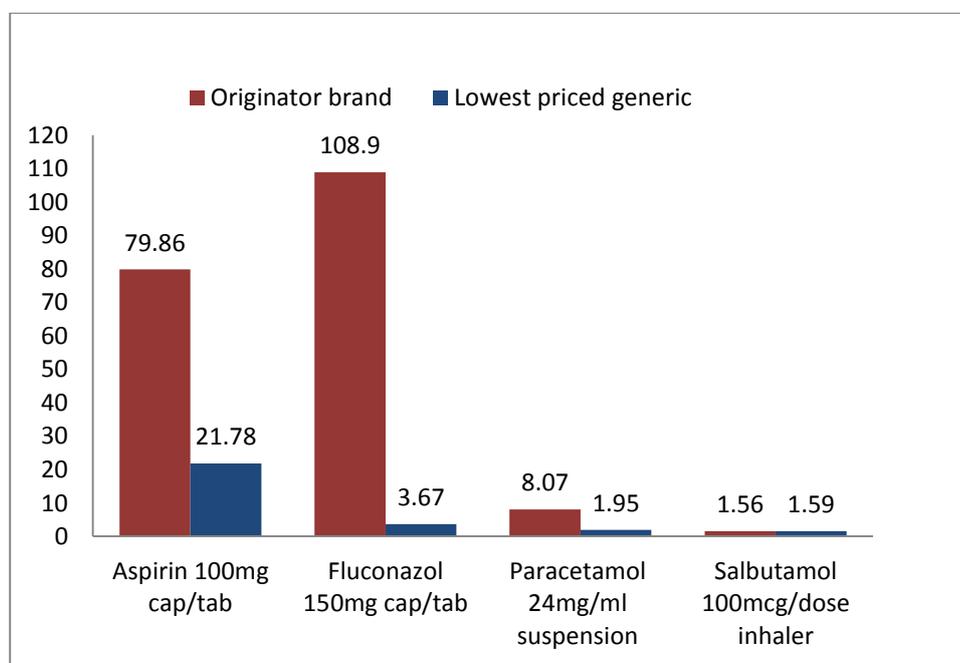
| Medicines | OB/MPR | LPG/MPR |
|--------------------------------|--------|---------|
| Paracetamol 24mg/ml suspension | 8,07 | 1,95 |
| Salbutamol 100mcg/dose inhaler | 1,56 | 1,59 |
| Enalapril 5mg cap/tab | - | 0,66 |
| Ranitidine 150mg cap/tab | - | 0,48 |
| Aciclovir 200mg cap/tab | - | 0,51 |

Both types of medicines (matched pairs), originator brand and lowest-priced generic equivalent, were identified for 4 medicines: aspirin in tablets, fluconazole in tablets, paracetamol suspension and salbutamol inhaler. The median MPR for four identified “matched-pair” originator brands constituted 43,96 where 50% of identified prices had MPR in the range of 6,44 and 87,12 (25% percentile of 6,44 and 75% percentile of 87,12). The median MPR for their generic analogues accounted for 2,81 (25% percentile of 1,86/75% percentile of 8,20). Thus, the median MPR for originator brands exceeds median MPR of their generic analogues by 15 times (see Table 5).

Table 5. Ratio matched pairs of the different types of medicines, private sector patient prices.

| | OB | LPG |
|---|-------------------------|-----------------------|
| Median MPR (interquartile range 25% - 75%) | 43,96 (6,44 – 87,12) | 2,81 (1,86 – 8,20) |
| Minimum | 1,56 | 1,59 |
| Maximum | 108,90 | 21,78 |
| Nº of medicines | 4 | 4 |

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



5.3 Private sector patient prices across the seven regions surveyed

Prices for private sector medicines were collected from 35 retail pharmacies located in 7 regions of the country. In each region 5 retail pharmacies were surveyed. Comparative analysis of medicine prices across the regions was performed on the lowest-priced generics due to a lack of originator brands in 4 and more pharmacies of one region.

As shown on figure 3, median MPR, taken for comparing the lowest-priced generics across the regions were in the range of minimum 1,04 in Chuy oblast up to maximum of 1,79 in Osh oblast. Prices for generic medicines were 2 times over the international reference prices in Osh oblast and 1,5 times over in Naryn and Talas oblasts.

In the remaining regions (Bishkek, Chuy, Issyk-Kul and Jalal-Abad) the prices were above the level of international reference prices (\geq MPR 1). In figure 4, the scenario is presented on median MPR for generic amoxicillin in tablet, which was presented across all private retail pharmacies of 7 regions.

Figure 3. Median MPR, low price generic medicines surveyed in private retail pharmacies, by regions

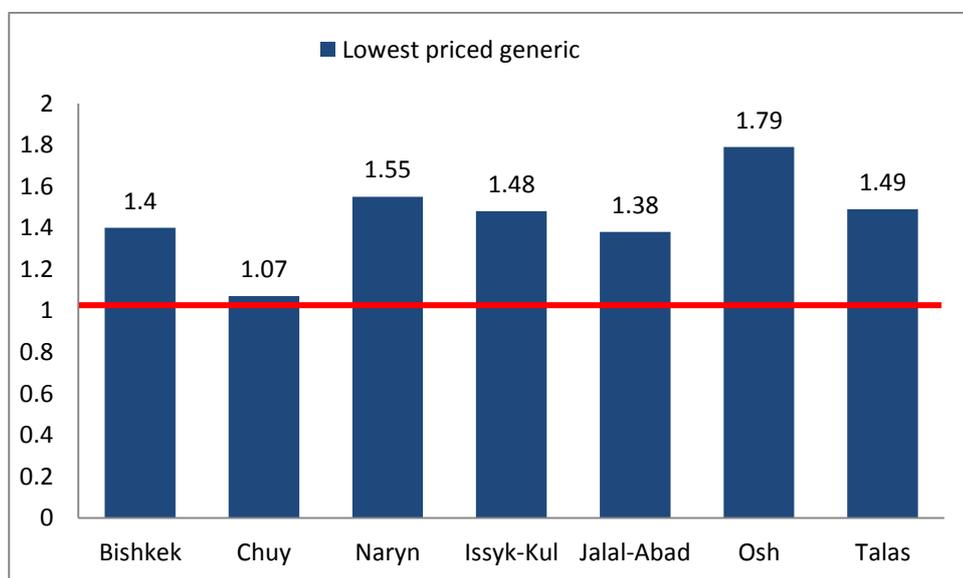
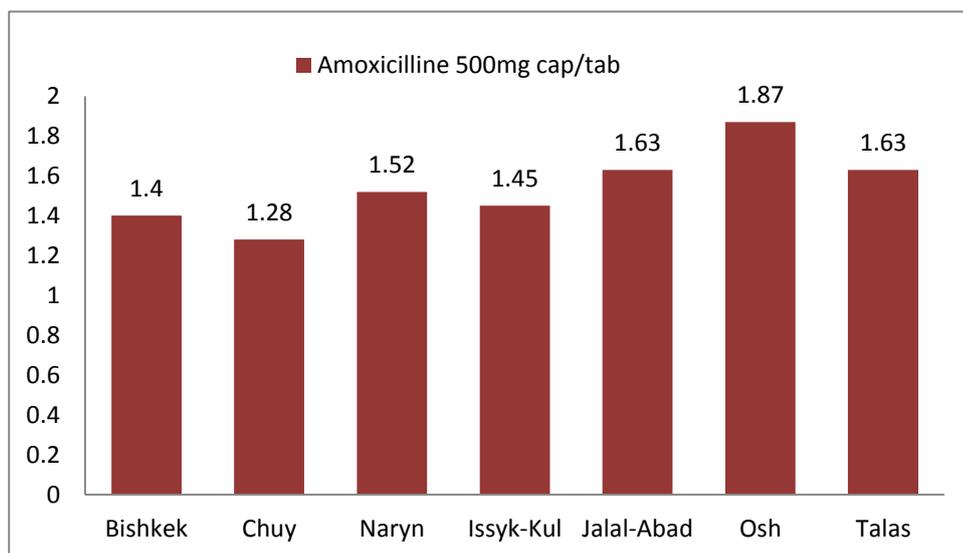


Figure 4. Median MPRs for lowest priced generic Amoxicillin 500mg cap/tab by the regions



5.4 Availability of medicines in the private sector

The availability of originator brands was very low. The average availability of 4 originator brands surveyed was 3,2%. Unlike the originator medicines, their low-priced generic versions were available in a majority of pharmacies visited the availability of 39 lowest priced generic equivalents surveyed was 65,1% respectively (table 6).

Table 6. Availability in private sector pharmacies (n=35).

| | OB | LPG |
|--|----------------|-------------------|
| Median availability (standard deviation) | 3,2% (9,3%) | 65,1% (34, 9%) |
| | | |

Tables 7 and 8 present the availability of any versions of the surveyed medicines in the private sector. The availability of lowest priced generics of amoxicillin, captopril, ceftriaxone injection, dexamethasone injection and diclofenac was 100%. A full list of the availability of all medicines (OB and LPG) is included as Annex III.

Table 7. Availability of originator brands in private sector pharmacies

| Availability | OB |
|---------------------|---|
| 1% - 25% | Aciclovir, Amlodipine, Fluconazole, Metformin, Salbutamol inhaler |
| 25% – 50% | Aspirin, Paracetamol suspension, |

Table 8 . Availability of lowest priced generics in private pharmacies

| Availability | LPG |
|----------------------|---|
| No pharmacies | Atripla, Chlorpromazine, Insulin soluble for injection, Ketamine, Morphine injection |
| 1% - 24% | Diazepam, Diazepam inj, Fluoxetine, Haloperidol decanoate, Phenobarbital, Simvastatin |
| 25% - 49% | Amitriptyline, Clarithromycine, Levofloxacin, |
| 50% - 75% | Salbutamol inhaler, Procaine benzylpenicillin, Paracetamol suspension, Metronidazole, Glibenclamide, Fluconazol, Carbamazepine, Benzathine benzylpenicillin, Beclometasone inhaler, |
| 76% - 100% | Aciclovir, Amoxicillin, Amlodipine, Amoxicillin+clavulanic acid suspension, Aspirin, Atenolol, Captopril, Ceftriaxone injection, Ciprofloxacin, Co-trimoxazole suspension, Dexamethasone, Diclofenac, Enalapril, Gentamicin, Hydrochlorothiazide, Magnesium sulphate 50%, Metformin, Nifedipine, Omeprazole, Oral rehydration salts, Ranitidine |

Table 9 presents availability of medicines with both originator and generic brands that are highly available despite the large discrepancy in price between the branded and generic versions. For example, the originator brand of aspirin tablets was found in 40% of pharmacies despite it being 3,6 times more expensive than the generic version; the branded paracetamol suspension was available in 37% per the facilities visited but was 4 times more expensive than its low-priced equivalent. This

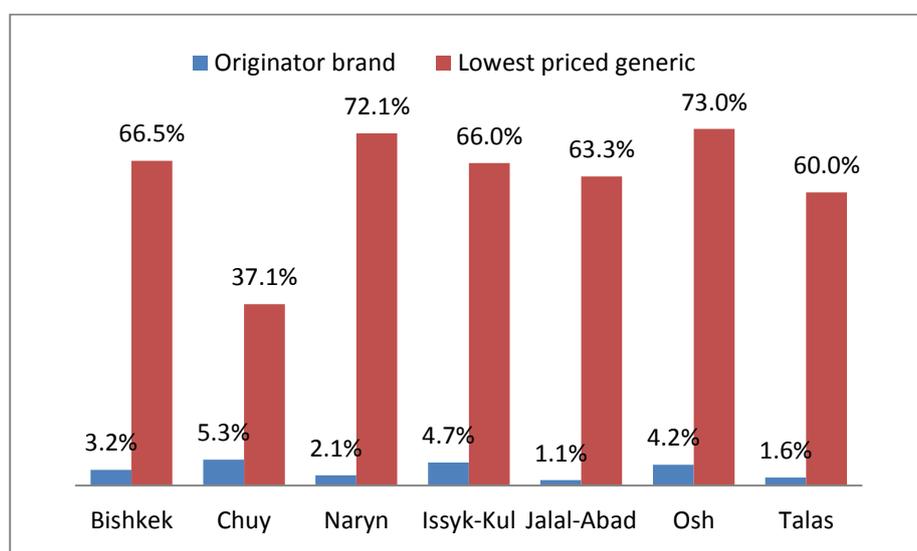
indicates that the suppliers adopted price discrimination as a pricing/profit-maximising strategy, to serve two distinctive markets for the branded and generic versions of these medicines according to the people’s willingness or ability to pay for these products.

Table 9. Availability of matched pairs of medicines in private sector pharmacies

| Medicines | Availability of OB | Availability of LPG |
|--------------------------------|--------------------|---------------------|
| Aspirin 100mg cap/tab | 40% | 80% |
| Fluconazole 150mg cap/tab | 14,3% | 74,3% |
| Paracetamol 24mg/ml suspension | 37,1% | 62,9% |
| Salbutamol 100mcg/dose inhaler | 17,1% | 54,3% |

Mean availability of original brands was very low. Across the regions, Chuy and Issyk-Kul regions reported highest number of brands: 5,3 and 4,7 respectively. Highest availability of generics was in Naryn and Osh regions: 72,1% and 73% respectively (figure 5). Not all the 44 medicines were found in retail pharmacies in all 7 regions.

Figure 5. Mean availability of medicines by regions



5.5 Affordability of standard treatments

Full list of most common health conditions and affordability of standard treatment course is included in Annex VI.

The affordability of standard treatment course was calculated as daily salary of the lowest-paid unskilled government worker and estimated as the number of paid working days necessary to cover treatment costs. Monthly salary of unskilled government worker was 970 soms or 46 soms per day. Considering the exchange rate at the time of the survey (1 US dollar = 68.8689 soms) daily salary constituted 67 US cents.

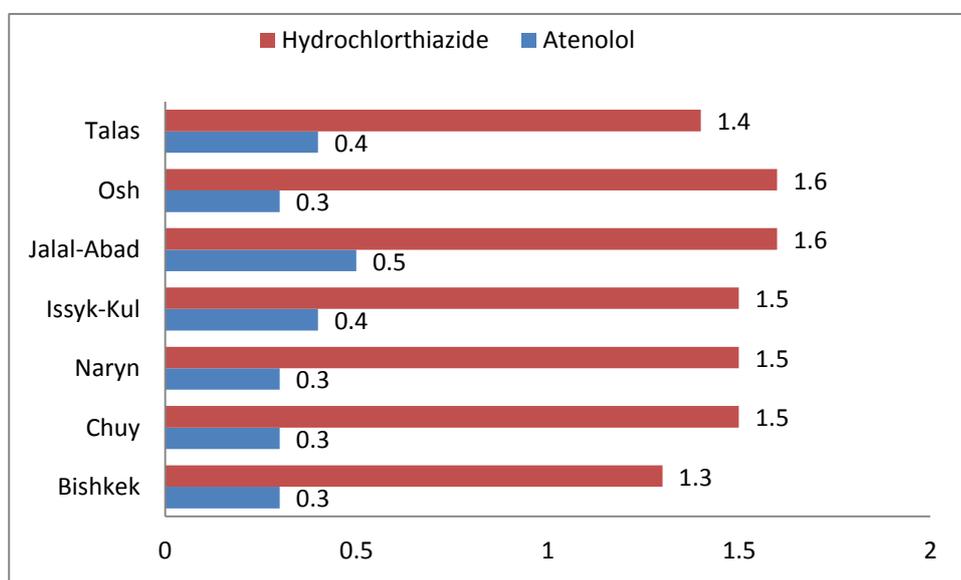
The affordability of treatment with the lowest-priced generics for surveyed health conditions varied from 0,3 to 14,9 of daily salary. A patient with bronchial asthma has to work 1/4 day to purchase 8 maximum acceptable doses of salbutamol inhaler for alleviating the attack of bronchial asthma. The treatment course with hypolipidemic drug simvastatin 20 mg tablet, a first choice drug for patients

suffering from elevated concentrations of cholesterol lipoproteins in blood, would require almost half of monthly salary of a low-paid employee.

To purchase paracetamol suspension (the lowest-priced generic), a fever reducing medicine, it will be necessary to work one day; whereas purchasing the originator brand will require 3 days and more. Treatment of stomach ulcer with generic omeprazole 20 mg tablet or ranitidine 150 mg tablet, is equal to about 1,5 working days.

Figure 5 shows the number of days necessary for a low-paid government worker to cover 30 days treatment course for treating hypertension with generic medicines hydrochlorothiazide and atenolol. The treatment course of hypertension using atenolol medicine costs 4 times cheaper compared to what patient would spend on hydrochlorothiazide. The affordability of treatment using both drugs does not considerably vary across the regions.

Figure 5 Availability of treatment with lowest priced generics of atenolol and hydrochlorothiazide by the regions



6. Discussion

The current survey was undertaken within the MeTA project using international standardized methodology of WHO/HAI. The findings of the current survey demonstrate that the median of MPR was equal or close to 1 for the lowest priced generic medicines, implying that the procurement prices at public health facilities are close to the level of international reference prices for majority of medicines.

In the survey, only two medicines in public sector were presented as both originator brand and generic-equivalent (metformin and salbutamol inhaler). The analysis shows that the proportion of originator brands in procurement is insignificant compared to generics, and when procured the public health facilities pay over 1,64 times (4,82 vs. 2,94) for the originator brand compared to the generic brands. When lower-priced generics are available, there is no significant price advantage for choosing the generic brand because its price is not significantly lower than the branded version.

The comparative analysis of median prices for generic-equivalents with median prices of surveys undertaken earlier in 2005 and 2010, demonstrates that current prices have slightly changed compared to the prices in 2005 (MPR 2005 =1,29 and MPR 2015 = 1,04) and significantly

decreased (2 times less) compared to prices in 2010 (MPR 2010 = 2,36 and MPR 2015=1,04). The analysis on median prices of individual generic medicines, amitriptyline and hydrochlorothiazide demonstrates a decrease in current prices that are consistent with the prices in 2005 (3,2 vs. 3,35 and 4,88 vs. 5,74) and significant price decrease in 2015 in relation to the prices in 2010 (5,34 vs. 3,35 and 21,55 vs. 5,74).

In the private sector the predominant medicines were generic medicines. Mean percentage of availability for the lowest price generics was 65,1 %, and the mean availability for originator brands was 3,2%. The individual originator brands such as aspirin and paracetamol suspension were highly available in 40% of private medicine outlets whereas their generic analogues were available in 80%-63% of private medicine outlets accordingly. The cost of originator brand was over 4 times than that of generic. .

Chlorpromazine lowest priced generic was not identified in any private medicine outlet, despite being included in the List of the Essential Medicines and registered in Kyrgyzstan. The lowest availability was observed for the following generic medicines: amitriptyline, diazepam, fluoxetine, haloperidol decanoate (1%-24%). The low availability of listed medicines in private medicine outlets is explained by the fact that dispensing antidepressants and tranquilizers requires an appropriate license. The provision of special storage, safety conditions and strict recording of medicines are some of the reasons which explain low commitment of private pharmacies to dispense the group of medicines. The highest availability was observed for the following generic medicines: amoxicillin, captopril, ceftriaxone injection, dexamethasone injection and diclofenac (100%).

The availability of originator brands in regions was extremely low 1,1 % - 5,3 % and the highest in affluent geographical regions (Chuy, Issyk-Kul), availability of generic medicines was between 37,1% - 73%.

Comparative analysis of mean availability for originator brands and generic equivalents based on data from earlier surveys demonstrates decrease in availability both for originator brands (2005 – 6,8%; 2010 – 3,7%; 2015 – 3,2%), and generic equivalents (2005 – 80%; 2010 – 58,9%; 2015 - 65,1%).

In the private sector, the median of MPR for originator brands was 44 times over the international reference prices. The maximum MPR was observed for originator brand fluconazole (Diflucan), that had an extremely high price and was 100 times higher than the international reference price, and 30 times higher than its generic equivalent (108,9 vs. 3,67). Despite the availability of originator brand fluconazole in medicine outlets, patients have a choice in obtaining the low-priced generic considering its high availability and price (MPR=3,67). The most favorable scenario was observed for salbutamol inhaler, where the median price for originator brand and generic equivalent did not differ from each other and as a result, in most private medicine outlets both versions of salbutamol inhaler (MPR 1,56 vs. 1,59) was available.

The median of MPR for generic medicines was 2,17 times the international reference prices.

The generic version of aspirin had a maximum MPR of 21,78 and benzathine benzylpenicillin – 21,49. The majority of generic prices are within the range of 1,08 - 4,4 (25% - 75% interquartile range), and prices of the most sold generics are below or at the level of international reference prices. Significant discrepancies in price range of generic medicines across the regions were not observed.

The comparative analysis on the median prices of generic equivalents and analogous median prices reported in earlier surveys (2005, 2010) in the private sector, demonstrates that the current prices changed slightly and decreased for 1.5 times respectively in both cases.

Thirty percent of population in Kyrgyzstan lives below the poverty line of slightly over 1 USD per day. Consumer household spending on health care constitute 0.72 cents per month (2014⁸). The income used for comparison of treatment affordability analysis accounted for 0.6 cents per day. The survey shows that treatment course for the most common diseases such as hypertension, stomach ulcer, and bronchial asthma costs a low-paid public worker 1-2 days' wages. A month course of cholesterol-lowering medication simvastatin requires half of a monthly wage of a low paid worker. Antidiabetic medicine glibenclamide and a course of antibiotic treatment approximately cost a two-day wage for purchasing medicines in private pharmacies.

The survey undertaken in 2005, related to the evaluation of treatment affordability based on the income level of low-paid public worker with 0,5 USD per day, demonstrated that a minimum weekly income was required for treatment course of analogous health conditions.

Thus, for treating health conditions with similar time duration at analogous income of the lowest-paid worker, the current survey shows the decrease in daily wage from one to two weeks on average needed for purchasing lowest-priced generics for covering treatment course.

The survey showed that treatment became more affordable for the low-income population to treat most common health conditions. The improvement of treatment affordability is unrelated to such factors as poverty reduction, income increase or consumption decrease, but is a clear reflection of general price reduction on generic medicines.

7. Conclusion and recommendations

Procurement prices have decreased in public sector and were consistent with international reference prices. The median prices for the majority of lowest-priced generics decreased almost twice compared to the procurement prices surveyed in 2010 and were consistent with international reference prices. Originator brands were procured in public sector for two medicines (metformin, salbutamol), where median price of metformin brand medicine was 7 times the international reference price.

Median prices for the majority of generics in the private sector declined to approximately 1,5 times in relation to the median prices surveyed in 2005 and 2010 (MPR 2010 = 3,5). However, these prices remain high in relation to the MSH reference prices and are approximately 2 times over the international prices (MPR 2015 = 2,00).

For certain generics median prices were very high with prices being almost 20 times over the international standard. The median prices of generic medicines were between MPR of 1 and 1.86 across regions.

Originator brands were presented for 4 medicines: aspirin, fluconazole, salbutamol, and paracetamol suspension. The median price for the brand fluconazole was over 100 times the reference price and almost 30 times more expensive than that of generic. The availability of originator brands was very low compared to generic medicines in all regions.

A range of environmental factors could have an impact on price changes and affordability in Kyrgyzstan (e.g. currency volatility and trade arrangement). Further research is needed for exploring the specific reasons of price decline among the surveyed medicines in Kyrgyzstan.

Recommendations:

- The survey demonstrates that expenditure for treatment course of priority health conditions by the lowest-paid population declined to 7 and 2 daily wages compared to 2005. However, treatment of acute and chronic conditions remains expensive and requires 5 to 15 daily wages. The survey did not explore the practices of prescribing the lowest-priced generic medicines to patients. This requires further analysis to validate the hypothesis that the overall treatment affordability improved because of changes to prescribing generic medicines.
- Despite the apparent improvement in drugs selection practice in public sector, some medical organizations purchased both generic and brand medicines with the same active ingredients. In this regard, special attention should be paid to the selection of medicines.
- Despite the fact that prices decreased for most generic medicines, median prices remain extremely high for some medicines, with the prices of some medicines exceeded the international reference prices by 20 to 40 times. For complete study of pricing policy in pharmaceutical market, it is necessary to:
 - perform survey on price components and mark-ups in medicines supply chain from manufacture to the end-user;
 - perform comprehensive research of pharmaceutical market to study the barriers to better patient access to medicines in distribution system as well as pricing, including medical, pharmaceutical organizations (wholesale suppliers, distributors, retail network, manufacturers and so on). This will enable stakeholders obtain relevant information on existing barriers and formulate ways to improve drugs distribution system;
 - implement the evaluation of effectiveness on drugs provision benefit program within the framework of health insurance, and study the relationship between health care and pharmaceutical organizations and public insurance system (MHIF) that will enable the government to develop and introduce mechanisms of reference pricing. Medicine included in insurance schemes may play a significant role in balancing prices through so-called mechanism of reference pricing. However, implementation of such policy is problematic under current conditions due to the fact that reference pricing is not established institutionally.
 - create a unified information system for drugs supply that regularly collects and publishes data on prices of originator brands and generics from various companies in the market. This information will be crucial for market analysis over time and will allow measurement of the effects of policy and interventions.

References:

1. “Measuring medicine prices, availability, affordability and price components” (WHO/HAI, 2008) www.haiweb.org/medicineprices
2. National statistical data, 2015
3. World Bank Development Indicators, 2013, 2014
<http://data.worldbank.org/indicator/NY.GNP.PCAP.CD>
4. Book of statistical data “Population health and activities of public health organizations of Kyrgyz Republic in 2015”, Republican Medical Information Centre, 2014
5. Ministry of Health, Kyrgyz Republic
6. Report of Mandatory Health Insurance Fund under the Government of Kyrgyz Republic for 2015.
7. Department of Drug Provision and Medical Equipment <http://pharm.kg>.
8. Poverty assessment. Report of World Bank, 2013.
9. International Drug Price Indicator Guide. <http://erc.msh.org>.
10. National Bank of Kyrgyz Republic www.nbkr.kg

Annex I: List of Core and Supplementary Medicines

| List | No. | Disease | Name | Strength | Dosage form | Originator brand, Manufacturer |
|--------------------|-----|-----------------------------|-------------------------|---------------|-------------|--------------------------------|
| Global core list | 1 | Asthma | Salbutamol | 100mcg/dose | inhaler | Ventoline/GSK |
| | 2 | Diabetes | Glibenclamide | 5 mg | cap/tab | Daonil/Sanofi-Aventis |
| | 3 | Cardiovascular disease | Atenolol | 50 mg | cap/tab | Tenormin/AstraZeneca |
| | 4 | Cardiovascular | Simvastatin | 20 mg | cap/tab | Zocor/MSD |
| | 5 | Depression | Amitriptyline | 25 mg | cap/tab | Tryptizol/MSD |
| | 6 | Infectious disease | Ciprofloxacin | 500 mg | cap/tab | Ciproxin/Bayer |
| | 7 | Infectious disease | Co-trimoxazole | 8+40 mg/ml | suspension | Bactrim/Roche |
| | 8 | Adult respiratory infection | Amoxicillin | 500 mg | cap/tab | Amoxil/GSK |
| | 9 | Infectious disease | Ceftriaxone | 1 g/vial | injection | Rocephin/Roche |
| | 10 | CNS | Diazepam | 5 mg | cap/tab | Valium/Roche |
| | 11 | Pain/inflammation | Diclofenac | 50 mg | cap/tab | Voltarol/Novartis |
| | 12 | Pain/inflammation | Paracetamol | 24 mg/ml | syrup/susp | Panadol/GSK |
| | 13 | Ulcer | Omeprazole | 20 mg | cap/tab | Losec/AstraZeneca |
| | 14 | Hypertension | Captopril | 25 mg | cap/tab | Capoten/BMS |
| Regional list | 15 | Infectious disease | Amoxicillin+clavul acid | 25+6.25 mg/ml | suspension | Augmentin/GSK |
| | 16 | Asthma | Beclametasone inhaler | 250mcg/dose | Inhaler | Becotide/GSK |
| | 17 | Hypertension | Carbamazepine | 200 mg | cap/tab | Tegretol/Novartis |
| | 18 | Diabetes | Metformin | 850 mg | cap/tab | Glucophage/BMS |
| | 19 | Ulcer | Ranitidine | 40 mg | cap/tab | Zantac/GSK |
| Supplementary list | 20 | CHD | Aspirin | 100 mg | cap/tab | Aspirin/Buyer |
| | 21 | Antiviral/HIV/AIDS | Atripla | 600/200/300 | cap/tab | |
| | 22 | Antiviral | Aciclovir | 200 mg | cap/tab | Zovirax/GSK |
| | 23 | Hypertension | Amlodipine | 5 mg | cap/tab | Norvasc/Pfizer |
| | 24 | Infectious disease | Benzathine benzylpenici | 2,4 M IU | vial | Retarpen/Sandoz |
| | 25 | Mental disease | Chlorpromazine | 25mg/ml | amp | Thorazine/GSK |
| | 26 | General disease | Dexamethasone | 4 mg/ml | amp | Decadron/MSD |
| | 27 | Anxiety | Diazepam | 5 mg/ml | amp | Valium/Roche |
| | 28 | Schizophrenia | Fluoxetine | 20 mg | cap/tab | Prozac/Eli Lilly |
| | 29 | Pain/inflammation | Ketamine | 50 mg/ml | vial | |
| | 30 | Hypertension | Enalapril | 10 mg | cap/tab | Renitec/MSD |
| | 31 | Schizophrenia | Haloperidol decanoate | 5 mg/l | amp | Haldol/Janssen |
| | 32 | General disease | Magnesium sulphate | 0,5 mg/ml | amp | |
| | 33 | Pain/inflammation | Morphine injection | 10 mg/ml | amp | |
| | 34 | Hypertension | Hydrochlorothiazide | 25 mg | cap/tab | Dichlortride/MSD |
| | 35 | Diabetes | Insulin soluble | 100 IU/10 ml | vial | |
| | 36 | Cardiovascular | Nifedipine | 20 mg | cap/tab | Adalat Retard/Buyer |
| | 37 | Mental disease | Phenobarbital | 100 mg | cap/tab | Luminal/AstraZeneca |
| | 38 | Infectious disease | Procaine benzylpenicill | 600 mg 1M IU | vial | Wycillin/Pfizer |
| | 39 | Diarrhea | Oral rehydration salts | 1 PKT/1L | power/sahe | N/A |
| | 40 | Infectious disease | Gentamicin | 40 mg/ml | amp | Garamycin/ Shering-Plough |
| | 41 | Infectious disease | Clarithromycine | 500 mg | cap/tab | Klaricid/Abbott |
| | 42 | Antiviral | Fluconazol | 150 mg | cap/tab | Diflucan/Pfizer |
| | 43 | Infectious disease | Levofloxacin | 250 mg | cap/tab | Levaquin/Janssen |
| | 44 | Antiviral | Metronidazole | 250 mg | cap/tab | Flagyl/Sanofi |

Annex II. Medicine data collection form

| Questions | Responses |
|---|--|
| S1.1 How many licensed private retail medicine outlets are there in the country? □ | Number 887 (31%) retail pharmacies, 241 (8%) wholesalers, 209 (8%) medicine outlets |
| S1.2 What proportion of patients access medicines through: a) public/government sector b) formal private sector c) Other: specify: d) Other: specify: | a) _____% b) 100% c) _____% d) _____% |
| S1.3 Are there public medicine outlets which sell medicines in public health facilities? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know |
| S1.4 Are there private pharmacies which sell medicines in public health facilities? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know |
| S2.1 What proportion of medicines by volume are imported? | 97.4% Year 2014 |
| S2.2 What proportion of medicines by value are exported? | 2.6% Year 2014 |
| S3.1 Are there regulations for local preference in public procurement? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know |
| S4.1 Do the fees charged for the registration of medicines differ between: a) Originator brands and generic equivalents b) Imported and locally produced medicines | a) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know b) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't Know |
| S5.1 Does the government set the price of some/all originator brand products? a) If yes, please describe how this is done (e.g. direct price controls, international reference pricing): | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know |
| S5.2 Does the government set the price of some/all generic products? a) If yes, please describe how this is done (e.g. direct price controls, national reference pricing): | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know |
| S5.3 Are prices set in the private sector for medicines on the national Essential Medicines List? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> No national EML |

| | |
|--|---|
| S5.4 Are prices of medicines set as part of market authorization? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know |
| S6.1 Of the medicines included in the survey, are there any which are patent protected or only available as the originator brand product (i.e. single source products)? <input type="checkbox"/> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know |
| a) If yes, please specify which medicines: | |
| <p>S6.2 Please provide the website address (URL) of any websites that publish the following information:</p> <p>a) Pharmaceutical legislation</p> <p>b) Standard treatment guidelines</p> <p>c) Regulatory procedures</p> <p>d) Prescribing information</p> <p>e) Licensed manufacturers</p> <p>f) Medicines approved for marketing</p> <p>g) List of registered products</p> <p>h) Medicine prices (procurement or patient)</p> | For all items http://pharm.kg . |

Annex III. Availability of individual medicines, private sector

| Medicine Name | National EML (yes/no) | % outlets where medicine was found Private sector (n = 35 outlets) | |
|--|-----------------------|---|----------------------|
| | | Originator brand | Lowest price generic |
| Aciclovir | yes | 0,0% | 97,1% |
| Amitriptyline | yes | 0,0% | 48,6% |
| Amlodipine | yes | 2,9% | 97,1% |
| Amoxicillin | yes | 0,0% | 100,0% |
| Amoxicillin+clavulanic acid suspension | yes | 0,0% | 88,6% |
| Aspirin | yes | 40,0% | 80,0% |
| Atenolol | yes | 0,0% | 97,1% |
| Atripla | yes | N/A | N/A |
| Beclometasone inhaler | yes | 0,0% | 74,3% |
| Benzathine benzylpenicillin | yes | 0,0% | 60,0% |
| Captopril | yes | 0,0% | 100,0% |
| Carbamazepine | yes | 0,0% | 71,4% |
| Ceftriaxone injection | yes | 0,0% | 100,0% |
| Chlorpromazine | yes | 0,0% | 0,0% |
| Ciprofloxacin | yes | 0,0% | 97,1% |
| Clarithromycin | yes | 0,0% | 28,6% |
| Co-trimoxazole suspension | yes | 0,0% | 94,3% |
| Dexamethasone | yes | 0,0% | 100,0% |
| Diazepam | yes | 0,0% | 22,9% |
| Diazepam inj | yes | 0,0% | 17,1% |
| Diclofenac | yes | 0,0% | 100,0% |
| Enalapril | yes | 0,0% | 97,1% |
| Fluconazol | yes | 14,3% | 74,3% |
| Fluoxetine | yes | 0,0% | 22,9% |
| Gentamicin | yes | 0,0% | 94,3% |
| Glibenclamide | yes | 0,0% | 51,4% |
| Haloperidol decanoate | yes | 0,0% | 17,1% |
| Hydrochlorthiazide | yes | 0,0% | 82,9% |
| Insulin soluble for injection | yes | 0,0% | 0,0% |
| Ketamine | yes | 0,0% | 0,0% |
| Levofloxacin | yes | 0,0% | 25,7% |
| Magnesium sulphate 50% | yes | 0,0% | 97,1% |
| Metformin | yes | 8,6% | 80,0% |
| Metronidazole | yes | 0,0% | 85,7% |
| Morphine injection | yes | 0,0% | 0,0% |
| Nifedipine | yes | 0,0% | 82,9% |
| Omeprazole | yes | 0,0% | 97,1% |
| Oral rehydration salts | yes | 0,0% | 94,3% |
| Paracetamol suspension | yes | 37,1% | 62,9% |
| Phenobarbital | yes | 0,0% | 22,9% |
| Procaine benzylpenicillin | yes | 0,0% | 71,4% |
| Ranitidine | yes | 0,0% | 91,4% |
| Salbutamol inhaler | yes | 17,1% | 54,3% |
| Simvastatin | yes | 0,0% | 20,0% |

Annex IV. Median Price Ratios, public sector procurement prices

| Medicine Name | Lowest price generic MPR | | |
|--|--------------------------|-------|-------|
| | MPR | 25th | 75th |
| Aciclovir | 0,32 | 0,31 | 0,37 |
| Amitriptyline | 3,35 | 3,29 | 3,94 |
| Amlodipine | 0,24 | 0,23 | 0,64 |
| Amoxicillin | 1,28 | 1,13 | 1,30 |
| Amoxicillin+clavulanic acid suspension | 0,94 | 0,72 | 1,16 |
| Aspirin | 13,41 | 13,36 | 13,46 |
| Atenolol | 0,55 | 0,53 | 0,61 |
| Atripla | N/A | N/A | N/A |
| Beclometasone inhaler | 3,16 | 2,64 | 3,29 |
| Benzathine benzylpenicillin | N/A | N/A | N/A |
| Captopril | 0,31 | 0,27 | 0,39 |
| Carbamazepine | 0,96 | 0,93 | 1,00 |
| Ceftriaxone injection | 0,33 | 0,27 | 0,35 |
| Chlorpromazine | 1,36 | 1,32 | 1,65 |
| Ciprofloxacin | 0,76 | 0,72 | 0,81 |
| Clarithromycine | N/A | N/A | N/A |
| Co-trimoxazole suspension | 1,51 | 1,51 | 1,51 |
| Dexamethasone | 0,60 | 0,58 | 0,62 |
| Diazepam | 4,49 | 2,62 | 4,73 |
| Diazepam inj | 3,29 | 3,22 | 4,55 |
| Diclofenac | 1,42 | 1,29 | 1,55 |
| Enalapril | 0,38 | 0,33 | 0,48 |
| Fluconazol | N/A | N/A | N/A |
| Fluoxetine | N/A | N/A | N/A |
| Gentamicin | 0,85 | 0,84 | 0,87 |
| Glibenclamide | 2,00 | 2,00 | 2,00 |
| Haloperidol decanoate | 1,10 | 1,04 | 1,16 |
| Hydrochlorthiazide | 5,74 | 5,65 | 5,76 |
| Insulin soluble for injection | 0,37 | 0,37 | 0,37 |
| Ketamine | 2,31 | 2,23 | 2,51 |
| Levofloxacin | N/A | N/A | N/A |
| Magnesium sulphate 50% | 0,52 | 0,44 | 0,52 |
| Metformin | 4,28 | 3,95 | 4,60 |
| Metronidazole | 0,91 | 0,91 | 0,91 |
| Morphine injection | 0,52 | 0,50 | 0,54 |
| Nifedipine | 0,31 | 0,29 | 0,77 |
| Omeprazole | 0,98 | 0,70 | 1,21 |
| Oral rehydration salts | 1,74 | 1,11 | 2,14 |
| Paracetamol suspension | 1,13 | 1,13 | 1,13 |
| Phenobarbital | 2,60 | 2,53 | 3,09 |
| Procaine benzylpenicillin | 0,87 | 0,73 | 0,90 |
| Ranitidine | 0,46 | 0,40 | 1,28 |
| Salbutamol inhaler | 1,60 | 1,45 | 1,90 |
| Simvastatin | 1,66 | 1,64 | 1,66 |

Annex V. Median Price Ratios, private sector patient prices

| Medicine Name | Original brand MPR | Lowest price generic MPR |
|--|--------------------|--------------------------|
| Aciclovir | 0,0 | 0,51 |
| Amitriptyline | 0,0 | 4,84 |
| Amlodipine | 0,0 | 0,96 |
| Amoxicillin | 0,0 | 1,52 |
| Amoxicillin+clavulanic acid suspension | 0,0 | 1,00 |
| Aspirin | 79,86 | 21,78 |
| Atenolol | 0,0 | 0,70 |
| Atripla | 0,0 | 0,0 |
| Beclometasone inhaler | 0,0 | 2,95 |
| Benzathine benzylpenicillin | 0,0 | 21,49 |
| Captopril | 0,0 | 0,52 |
| Carbamazepine | 0,0 | 1,50 |
| Ceftriaxone injection | 0,0 | 0,58 |
| Chlorpromazine | 0,0 | 0,0 |
| Ciprofloxacin | 0,0 | 1,35 |
| Clarithromycine | 0,0 | 2,53 |
| Co-trimoxazole suspension | 0,0 | 2,76 |
| Dexamethasone | 0,0 | 0,87 |
| Diazepam | 0,0 | 4,94 |
| Diazepam inj | 0,0 | 7,17 |
| Diclofenac | 0,0 | 2,17 |
| Enalapril | 0,0 | 0,66 |
| Fluconazol | 108,90 | 3,67 |
| Fluoxetine | 0,0 | 17,07 |
| Gentamicin | 0,0 | 1,16 |
| Glibenclamide | 0,0 | 2,99 |
| Haloperidol decanoate | 0,0 | 5,81 |
| Hydrochlorthiazide | 0,0 | 7,60 |
| Insulin soluble for injection | 0,0 | 0,0 |
| Ketamine | 0,0 | 0,0 |
| Levofloxacin | 0,0 | 3,88 |
| Magnesium sulphate 50% | 0,0 | 0,60 |
| Metformin | 0,0 | 5,43 |
| Metronidazole | 0,0 | 2,16 |
| Morphine injection | 0,0 | 0,0 |
| Nifedipine | 0,0 | 3,97 |
| Omeprazole | 0,0 | 1,61 |
| Oral rehydration salts | 0,0 | 2,72 |
| Paracetamol suspension | 8,07 | 1,95 |
| Phenobarbital | 0,0 | 2,63 |
| Procaine benzylpenicillin | 0,0 | 1,48 |
| Ranitidine | 0,0 | 0,48 |
| Salbutamol inhaler | 1,56 | 1,59 |
| Simvastatin | 0,0 | 6,29 |

Annex VI. Affordability of standard treatment, private sector

| № | Condition | Treatment | Duration (days) | Number of days' wages to purchase treatment | |
|----|----------------------------------|--|-----------------|---|----------------------|
| | | | | Originator brand | Lowest price generic |
| 1 | Arthritis | Diclofenac 25mg twice a day | 30 | | 1,3 |
| 2 | Asthma | Salbutamol inhaler 0.1mg/dose 200 doses | 8 doses | 0,2 | 0,2 |
| 3 | Adult respiratory infection | Ciprofloxacin 500 mg twice a day | 14 | | 1,2 |
| 4 | Adult respiratory infection | Amoxicillin 500 mg 3 times a day | 21 | | 1,5 |
| 5 | Anti-thrombosis | Aspirin 100 mg, tablet a day | 30 | 7,1 | 1,9 |
| 6 | Depression | Amitriptyline 25 mg, 3 times a day | 90 | | 4,7 |
| 7 | Anxiety | Diazepam 5 mg one time a day | 7 | | 0,4 |
| 8 | Epilepsy | Carbamazepine 200 mg, 3 times a day | 150 | | 6,5 |
| 9 | Diabetes | Glibenclamide 5 mg, twice a day | 30 | | 1,8 |
| 10 | Diabetes | Metformin 850 mg, twice a day | 60 | | 9,0 |
| 11 | Systemic mycoses | Fluconazole 150 mg, one time a day | 30 | 385,8 | 13,0 |
| 12 | Hypertension | Atenolol 50 mg, tablet a day | 30 | | 0,3 |
| 13 | Hypertension | Hydrochlorothiazide 25 mg, twice a day | 30 | | 1,5 |
| 14 | Hypercholesterolaemia | Simvastatin 20 mg, tablet a day | 30 | | 14,9 |
| 15 | Paediatric respiratory infection | Co-trimoxazole suspension, 8+40 mg/ml, 5 milliliters twice a day | 70 | | 1,4 |
| 16 | Pain/inflammation | Paracetamol suspension 24 mg/ml, 5 millilitres 3 times a day | 105 | 2,9 | 0,7 |
| 17 | Ulcer | Omeprazole 20 mg, tablet a day | 30 | | 1,3 |
| 18 | Ulcer | Ranitidine 150 mg, twice a day | 30 | | 1,6 |

Annex VII. Medicine price data collection form

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| Medicine Price Data Collection Form | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

| A | B | C | D | E | F | G | H | I | J |
|---|-----------------------|--------------------------|--------------|------------------|-----------------------|-----------------|---------------------|-------------------------------|----------|
| Generic name, dosage form, strength | Medicine Type | Brand or product name(s) | Manufacturer | Available yes/no | Pack size recommended | Pack size found | Price of pack found | Unit price (4 decimal places) | Comments |
| Aciclovir 200 mg cap/tab | Originator brand | Zovirax | GSK | | 20 | | | per cap/tab | |
| | Lowest-priced generic | | | | 20 | | | per cap/tab | |
| Amitriptyline 25 mg cap/tab | Originator brand | Tryptizol | MSD | | 100 | | | per cap/tab | |
| | Lowest-priced generic | | | | 100 | | | per cap/tab | |
| Amlodipine 5 mg cap/tab | Originator brand | Norvasc | Pfizer | | 30 | | | per cap/tab | |
| | Lowest-priced generic | | | | 30 | | | per cap/tab | |
| Amoxicillin 500 mg cap/tab | Originator brand | Amoxil | GSK | | 21 | | | per cap/tab | |
| | Lowest-priced generic | | | | 21 | | | per cap/tab | |
| Amoxicillin+clavulanic acid suspension 25+6.25 mg/ml millilitre | Originator brand | Augmentin | GSK | | 100 | | | per millilitre | |
| | Lowest-priced generic | | | | 100 | | | per millilitre | |
| Aspirin 100 mg cap/tab | Originator brand | Aspirin | Bayer | | 20 | | | per cap/tab | |
| | Lowest-priced generic | | | | 20 | | | per cap/tab | |

| | | | | | | | | | |
|--|-----------------------|-----------|-------------|--|-----|--|--|-------------|--|
| Atenolol 50 mg cap/tab | Originator brand | Tenormin | AstraZeneca | | 60 | | | per cap/tab | |
| | Lowest-priced generic | | | | 60 | | | per cap/tab | |
| Atripla 600/200/300 mg cap/tab | Originator brand | Atripla | MSB/Gilead | | 30 | | | per cap/tab | |
| | Lowest-priced generic | | | | 30 | | | per cap/tab | |
| Beclometasone inhaler 250 mcg/dose dose | Originator brand | Becotide | GSK | | 200 | | | per dose | |
| | Lowest-priced generic | | | | 200 | | | per dose | |
| Benzathine benzylpenicillin 1.44g 2,4M IU vial | Originator brand | Retarpen | Sandoz | | 1 | | | per vial | |
| | Lowest-priced generic | | | | 1 | | | per vial | |
| Captopril 25 mg cap/tab | Originator brand | Capoten | BMS | | 60 | | | per cap/tab | |
| | Lowest-priced generic | | | | 60 | | | per cap/tab | |
| Carbamazepine 200 mg cap/tab | Originator brand | Tegretol | Novartis | | 50 | | | per cap/tab | |
| | Lowest-priced generic | | | | 50 | | | per cap/tab | |
| Ceftriaxone injection 1 g/vial vial | Originator brand | Rocephin | Roche | | 1 | | | per vial | |
| | Lowest-priced generic | | | | 1 | | | per vial | |
| Chlorpromazine 25mg/ml (2ml) amp | Originator brand | Thorazine | GSK | | 10 | | | per amp | |
| | Lowest-priced generic | | | | 10 | | | per amp | |
| Ciprofloxacin 500 mg cap/tab | Originator brand | Ciproxin | Bayer | | 10 | | | per cap/tab | |
| | Lowest-priced generic | | | | 10 | | | per cap/tab | |
| Clarithromycine 500 mg cap/tab | Originator brand | Klaricid | Abbott | | 14 | | | per cap/tab | |
| | Lowest-priced generic | | | | 14 | | | per cap/tab | |

| | | | | | | | | | |
|---|-----------------------|-----------|----------------|--|-----|--|--|----------------|--|
| Co-trimoxazole suspension 8+40 mg/ml millilitre | Originator brand | Bactrim | Roche | | 100 | | | per millilitre | |
| | Lowest-priced generic | | | | 100 | | | per millilitre | |
| Dexamethasone 4 mg/ml amp | Originator brand | Decadron | MSD | | 10 | | | per amp | |
| | Lowest-priced generic | | | | 10 | | | per amp | |
| Diazepam 5 mg cap/tab | Originator brand | Valium | Roche | | 100 | | | per cap/tab | |
| | Lowest-priced generic | | | | 100 | | | per cap/tab | |
| Diazepam inj 5 mg/ml amp | Originator brand | Valium | Roche | | 10 | | | per amp | |
| | Lowest-priced generic | | | | 10 | | | per amp | |
| Diclofenac 50 mg cap/tab | Originator brand | Voltarol | Novartis | | 100 | | | per cap/tab | |
| | Lowest-priced generic | | | | 100 | | | per cap/tab | |
| Enalapril 5 mg cap/tab | Originator brand | Renitec | MSD | | 30 | | | per cap/tab | |
| | Lowest-priced generic | | | | 30 | | | per cap/tab | |
| Fluconazol 150 mg cap/tab | Originator brand | Diflucan | Pfizer | | 1 | | | per cap/tab | |
| | Lowest-priced generic | | | | 1 | | | per cap/tab | |
| Fluoxetine 20 mg cap/tab | Originator brand | Prozac | Eli Lilly | | 30 | | | per cap/tab | |
| | Lowest-priced generic | | | | 30 | | | per cap/tab | |
| Gentamicin 40 mg/ml (2ml) amp | Originator brand | Garamycin | Shering-Plough | | 10 | | | per amp | |
| | Lowest-priced generic | | | | 10 | | | per amp | |
| Glibenclamide 5 mg cap/tab | Originator brand | Daonil | Sanofi-Aventis | | 60 | | | per cap/tab | |

| | | | | | | | | | |
|---|-----------------------|------------------|----------------|--|-----|--|--|-------------|--|
| | Lowest-priced generic | | | | 60 | | | per cap/tab | |
| Haloperidol decanoate 5 mg/ml amp | Originator brand | Haldol decanoate | Janssen Pharma | | 10 | | | per amp | |
| | Lowest-priced generic | | | | 10 | | | per amp | |
| Hydrochlorothiazide 25 mg cap/tab | Originator brand | Dichlortride | MSD | | 100 | | | per cap/tab | |
| | Lowest-priced generic | | | | 100 | | | per cap/tab | |
| Insulin soluble for injection 100 IU (10 ml) vial | Originator brand | HumuLIN R | MSD | | 1 | | | per vial | |
| | Lowest-priced generic | | | | 1 | | | per vial | |
| Ketamine 50 mg/ml vial | Originator brand | | | | | | | | |
| | Lowest-priced generic | | | | 1 | | | per vial | |
| Levofloxacin 250 mg cap/tab | Originator brand | Levaquin | Janssen Pharma | | 100 | | | per cap/tab | |
| | Lowest-priced generic | | | | 100 | | | per cap/tab | |
| Magnesium sulphate 50% 10 ml amp | Originator brand | | | | | | | | |
| | Lowest-priced generic | | | | 10 | | | per amp | |
| Metformin 850 mg cap/tab | Originator brand | Glucophage | BMS | | 100 | | | per cap/tab | |
| | Lowest-priced generic | | | | 100 | | | per cap/tab | |
| Metronidazole 250 mg cap/tab | Originator brand | Flagyl | Sanofi-Aventis | | 10 | | | per cap/tab | |
| | Lowest-priced generic | | | | 10 | | | per cap/tab | |
| Morphine injection 10 mg/ml amp | Originator brand | | | | | | | | |
| | Lowest-priced generic | | | | 10 | | | per amp | |

| | | | | | | | | | |
|--|-----------------------|-----------|-------------|--|-----|--|--|----------------|---------------------|
| Nifedipine 20 mg cap/tab | Originator brand | Adalat | Bayer | | 100 | | | per cap/tab | |
| | Lowest-priced generic | | | | 100 | | | per cap/tab | |
| Omeprazole 20 mg cap/tab | Originator brand | Losec | AstraZeneca | | 30 | | | per cap/tab | |
| | Lowest-priced generic | | | | 30 | | | per cap/tab | |
| Oral rehydration salts 1PKT/1 L powder | Originator brand | | | | | | | per powder | no originator brand |
| | Lowest-priced generic | | | | 1 | | | per powder | |
| Paracetamol suspension 24 mg/ml millilitre | Originator brand | Panadol | GSK | | 60 | | | per millilitre | |
| | Lowest-priced generic | | | | 60 | | | per millilitre | |
| Phenobarbital 100 mg cap/tab | Originator brand | Luminal | AstraZeneca | | 100 | | | per cap/tab | |
| | Lowest-priced generic | | | | 100 | | | per cap/tab | |
| Procaine benzylpenicillin 600 mg 1 M IU vial | Originator brand | Wycillin | Pfizer | | 1 | | | per vial | |
| | Lowest-priced generic | | | | 1 | | | per vial | |
| Ranitidine 150 mg cap/tab | Originator brand | Zantac | GSK | | 60 | | | per cap/tab | |
| | Lowest-priced generic | | | | 60 | | | per cap/tab | |
| Salbutamol inhaler 100 mcg/dose dose | Originator brand | Ventoline | GSK | | 200 | | | per dose | |
| | Lowest-priced generic | | | | 200 | | | per dose | |
| Simvastatin 20 mg cap/tab | Originator brand | Zocor | MSD | | 30 | | | per cap/tab | |
| | Lowest-priced generic | | | | 30 | | | per cap/tab | |