



# **Prices and availability of locally produced and imported medicines in Tanzania**

Report of a survey conducted in August 2013

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## Executive summary

A survey was undertaken in Tanzania in August 2013 to measure and compare the price and availability of locally produced and imported medicines. The survey used a draft methodology developed by Health Action International (HAI) and the World Health Organization (WHO). Professor Mary Justin-Temu from the Muhimbili University of Health and Allied Sciences was the survey manager.

**Methodology:** Price and availability data was collected for 24 medicines, both locally produced and imported, in a total of 33 public sector health facilities, 30 private sector medicine outlets, and 30 mission sector health facilities across six areas of the country i.e. the capital Dar es Salaam, Manyara, Mbeya, Mtwara, Shinyanga and Tabora. Each medicine was strength- and dosage-form specific. Data was collected for all products in stock in each facility on the day of the survey. Government procurement prices and quantities purchased were collected from the Medical Store. Wholesale procurement prices and selling prices were collected from a single private wholesaler in Dar es Salaam.

### Key findings:

#### *Government procurement prices*

- For each medicine, either locally produced products or imported products were procured, but not both.
- Approximately equal numbers of locally produced products and imported products were procured
- Overall, imported products were 94% higher priced than locally produced products. Locally produced products were 31% below international reference prices whereas imports were 34% higher in price.

#### *Availability and patient prices in the public sector*

- Locally produced products and imported products had poor mean availability at 21% and 32% respectively.
- Across the 9 medicines where both locally produced and imported products were found (paired analysis), locally produced products were 7% higher in price. Across all medicines, locally produced products and imported products were 67% and 120% above international reference prices, respectively.
- The government was charging patients 135% more than the procurement price for locally produced products, and 65% more for imported products.
- Branded generics were predominant. The availability of imported branded generics was higher than those made in Tanzania (27% vs. 15%), and overall patient prices of imported branded generics were 32% higher than those locally produced. Few originator brands and INN generics were found.

#### *Availability and patient prices in the private sector*

- Locally produced products had lower mean availability (21%) than imported products (70%).
- Across the 12 medicines where both locally produced and imported products were found (paired analysis), there was little difference in price. Across all medicines, locally produced products and imported products were 101% and 201% above international reference prices, respectively.
- Branded generics were predominant. Few INN generics and originator brands were found. The availability of imported branded generics was higher than those made locally (58% vs. 19%), and overall patient prices of imported branded generics were 48% higher than those locally produced.

#### *Availability and patient prices in the mission sector*

- Locally produced products had lower mean availability (18%) than imported products (54%).
- Across the 10 medicines in the paired analysis, imported products were 47% higher priced than locally produced products.
- Branded generics were predominant, with few INN generics and originator brands found. The availability of imported branded generics was higher than those made in Tanzania (45% vs. 16%),

Overall patient prices of imported branded generics were 49% higher than those locally produced. For INN generics, imported products were also higher priced (39% more) than local products

#### *Cross-regional analysis*

- In all six survey regions the availability of locally produced products was lower than the availability of imported products in each of the three sectors.
- There was insufficient data to calculate patient prices for locally produced products, per sector, in the six survey regions so a price comparison with imported products was not possible.

#### *Country of manufacture*

- Across the three sectors, 91% of the products found were made in India (46.1%), Tanzania (22.6%) and Kenya (22.3%)
- Products from five Tanzanian manufacturers were found in the outlets. Of these, about 60% were made by Shelys Pharmaceuticals Ltd.

#### **Recommendations:**

- Where high priced imported products were awarded tenders, the government should investigate if any medicines have locally produced quality-assured versions that may offer savings. If so, the local manufacturer should be prequalified and encouraged to submit bids. If not, local manufacturers should be encouraged to produce these products.
- The government should pass on low procurement prices for locally produced medicines to patients in the public sector, in order to improve the affordability of medicines, especially for the poor who have to pay out-of-pocket.
- The reasons for the low availability of locally produced products should be identified.
- Health professionals and patients should be encouraged to prescribe, dispense and use lower priced quality-assured locally produced products rather than higher priced imported products.
- The influence of retail mark-ups and manufacturers' selling prices on the final patient price for locally produced and imported products should be investigated. If retail mark-ups are high, the government should consider regulating them using regressive margins to incentivize the selling of lower priced products.

## **Introduction**

Ensuring access to medicines is complex; it requires governments, through their policies, to balance the availability of quality assured medicines, whilst ensuring that they are affordable, and at the same time meeting the priority health needs of the population. An increasing number of governments in middle-income and low-income countries (LMIC) are supporting local production of medicines in the expectation that it will result in increased medicine availability and lower medicine prices.

This report summarizes the results of a pilot survey undertaken in Tanzania to measure and compare the price and availability of locally produced and imported medicines. The survey used a draft methodology developed by Health Action International (HAI) and the World Health Organization (WHO), adapted from the WHO/HAI tool to measure medicine prices and availability.<sup>1</sup>

The survey was undertaken in August 2013 by Professor Mary Justin-Temu from the Muhimbili University of Health and Allied Sciences. Technical support, including training, data analysis and writing the survey report, was provided by external consultants Margaret Ewen (HAI) and Warren Kaplan (Boston University). Richard Laing from Boston University reviewed the report. Harvard Pilgrim Health

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<sup>1</sup> WHO/HAI Measuring medicine prices, availability, affordability and price components, 2008: <http://haiweb.org/medicineprices/>

Care Institute developed the Excel workbook for data entry and analysis. Funding for the survey was provided by the WHO Department for Public Health, Innovation, Intellectual Property and Trade.

The survey was designed to answer the following questions:

- What price does the government pay for selected medicines that are imported and locally produced and what quantities are procured?
- What is the availability and patient price for selected medicines that are both locally produced and imported?
- Do prices and availability for locally produced and imported medicines vary within sectors (public, private, others) for originator brands, branded generics and INN generics, and in different regions of the country?
- How do government procurement prices for locally produced and imported medicines compare with patient prices in the public sector?
- How do prices compare with international reference prices?

### **Tanzanian pharmaceutical sector<sup>2</sup>**

Tanzania, which is classified as a low-income economy by the World Bank, has a population of 47.78 million people and the estimated GNP per capita was US\$ 453 in 2012. In 2009, total health expenditure per capita in Tanzania was US\$ 23.

The supply of medicines in Tanzania is via private wholesalers and the government's Medical Stores Department. Private wholesalers procure medicines from international and local manufacturers and distribute them to retail outlets. The Medical Stores Department procures essential medicines in bulk from local and international wholesalers. It in turn is the main supplier of essential medicines to the public sector and a primary supplier to faith-based and other non-government, non-commercial groups providing health services in Tanzania.

According to a 2013 WHO mission report, 75-80% by volume of medicines are imported into Tanzania although the authors acknowledged difficulty verifying this figure. In 2010, there were seven licensed pharmaceutical manufacturers in the country. No active pharmaceutical ingredients are manufactured in Tanzania.

Both overseas and local pharmaceutical companies are licensed to manufacture medicines using the same guidelines. Guidelines for registering human, veterinary and biological products are available in the TFDA web site ([www.tfda.or.tz](http://www.tfda.or.tz)). The product registration processes takes one year, or 6 months when fast-tracked. The product registration certificate lasts for 5 years. Registration fees do not differ between originator brands and generic equivalents although such fees do differ for imported products (about \$1250 US) and locally produced products (about \$250 USD). A list of registered products is published on the TFDA website. A Quality Management System certified to ISO 9001:2008 has been in place since June 2009, as has a medicines testing laboratory that was WHO Prequalified in January 2011.

Medicine prices are not controlled in Tanzania. When procuring medicines, the government has a local preference of up to 15% i.e. the government will pay up to 15% more for locally produced products than for imports. Public sector procurement is limited to medicines on the Essential Medicines List.

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<sup>2</sup> Source of data: National Bureau of Statistics Annual Report. Dar es Salaam, Planning Commission, 2009; World Health Report. Geneva, World Health Organization, 2009;  
[http://www.who.int/childmedicines/countries/LOCAL\\_MANUFACTURERS\\_report.pdf?ua=1](http://www.who.int/childmedicines/countries/LOCAL_MANUFACTURERS_report.pdf?ua=1)

Mark-ups in the pharmaceutical supply chain are not regulated. Tanzania does not apply value added tax (VAT), goods and services tax/general sales tax (GST) nor import duties on medicines.

## Methodology

### Sectors

Data was collected in the public sector (hospital pharmacies and health facilities), the private sector (private retail pharmacies and Accredited Drug Dispensing Outlets (ADDO)) and in the mission sector.

### Survey areas

Data was collected in six areas of the country i.e. the capital Dar es Salaam, Manyara, Mbeya, Mtwara, Shinyanga and Tabora.

Figure 1. Map of Tanzania showing survey areas: Dar es Salaam, Manyara, Mbeya, Mtwara, Shinyanga and Tabora



### Medicines

Data was collected for 25 medicines (both locally produced and imported), however, a data collection error for one medicine meant that the analysis was based on 24 medicines. Of these, 5 were from the WHO/HAI global list of medicines, all with pre-set strengths and dosage forms, plus 19 selected medicines of national importance where international reference prices were available. Of the 24 medicines, all but one (tetracycline 250mg caps) were included in Tanzania's Essential Medicines List. All medicines were off-patent. See Annex 1 for the 24 medicines in the analysis

For each medicine, data was collected on all products (containing the same strength and in the same dosage form) stocked in the medicine outlet on the day of data collection. Note that different strengths and dosage forms of the survey medicines, and therapeutic alternatives, may be on the market (but were not included in the survey).

### Data collection

As shown in Table 1, patient price and availability data was collected from a total of 33 health facilities in the public sector, 30 private sector medicine outlets (19 retail pharmacies and 11 ADDOs), and 30 mission sector health facilities.

Public sector procurement prices (tender prices for 2012) were collected from the Central Medical Store Department.

Wholesale procurement prices and selling prices were collected from a single private wholesaler in Dar es Salaam.

The country of manufacture was identified from product labels. This information was validated, for each product found in the outlets, with information provided by the Tanzanian Food and Drugs Authority.

Table 1. Measurements in each sector

Measurement	Public sector	Private sector	Mission sector
Availability to patients	✓	✓	✓
Price to patients	✓	✓	✓
Procurement price	✓		
Wholesale procurement and selling prices		1 (Dar es Salaam)	
Number of medicine outlets sampled	33	30	30

In some health facilities in the public sector and the mission sector, some medicines are provided as part of the consultation fee, or are free-of-charge to certain groups of patients or all patients. As it was not possible to identify the prices of medicines supplied as part of a fixed fee, they are not included in the patient price analysis. However, they were included in the availability analysis, as were medicines supplied free of charge, if found in the facility on the day of data collection.

#### **Data collection and data quality assurance**

The survey manager was trained on use of the survey tool, by the consultants, in July 2013. This training included piloting data collection in a public hospital and a private pharmacy.

In August 2013 the survey manager trained all survey personnel. The data collectors in this survey had previously collected data using the WHO/HAI methodology so were experienced in collecting medicine prices.

At the end of each day, area supervisors checked each data collection form. Data was validated by area supervisors in one public hospital pharmacy and two private retail pharmacies. No inconsistencies were found.

Data was double-entered into an Excel spreadsheet designed for the survey, and then checked by the consultants.

The registration status (marketing authorization) of each product found in the survey was checked against the list of registered products on the Tanzanian Food and Drugs Authority (TFDA) website (<http://www.tfda.or.tz/>). The registration status of products not listed on the website was verified with TFDA personnel.

#### **Data analysis**

Availability was based on whether the medicine was in the outlet on the day of data collection.

For each medicine, where more than one locally produced product or imported product was found in an outlet, the median unit price was calculated and used in the analysis.

Prices are expressed as median price ratios (MPR). An MPR is the ratio of the price in the local currency (Tanzanian Shilling) divided by an international reference price converted to Shillings. At the time of the survey, 1 USD = 1580.42 Tanzanian Shillings. The use of reference prices serves as an external benchmark for price comparisons. An MPR of 1 means the Tanzanian price is equivalent to the reference

price, whereas an MPR of 2 means the Tanzanian price is twice the reference price. The international reference prices used for this survey were taken from the 2012 Management Sciences for Health (MSH) *International Drug Price Indicator Guide* (<http://erc.msh.org/>). The MSH guide pulls together information from recent price lists of not-for-profit and for-profit suppliers for multisource medicines, and thus reflects the prices governments could be expected to pay for medicines.

For patient prices, an MPR was only calculated for a medicine when at least 4 price points were recorded in each sector. Minimum MPRs and maximum MPRs represent the minimum and maximum values found in an outlet. For public procurement prices, an MPR was calculated when one or more products were procured.

Prices were analysed in various ways, including by product type i.e. originator brands, branded generics and INN generics. An originator brand is the product that was first authorized world-wide for marketing (usually as a patented product). It always has a brand name. A branded generic is a generic equivalent product marketed under a brand name. An INN generic is a generic equivalent product that is marketed under its International Non-proprietary Name (INN) rather than a brand name.

INCO terms were identified for all products procured by the government.

## Results

### 1. Public sector procurement prices and quantities

For the 24 survey medicines, the government was procuring a total of 9 locally produced products and 10 imported products. Overall, government procurement prices for locally produced and imported medicines were 0.69 and 1.34 times international reference prices respectively, as shown in Table 2. For both locally produced and imported products the procurement price covered all costs to the Central Medical Store (delivered duty paid/DDP in INCO terms).

Table 2. Summary of government procurement prices

	Locally produced products	Imported products
Number of medicines	9	7
Number of products	9	10
<b>Median MPR</b>	<b>0.69</b>	<b>1.34</b>
Interquartile range	0.65 – 0.97	0.69 – 4.85
Minimum MPR	0.43	0.49
Maximum MPR	1.42	5.77

Of the survey medicines procured, the government was buying either locally produced or imported medicines but not both (that is, no single medicine was procured as both locally produced products and imported products). The government was procuring imported artemether+lumefantrine 20mg+120mg tablets from two different manufacturers (Novartis and Ajanta) in different pack sizes.



Annex 1 lists the government procurement prices of individual medicines. Table 3 gives examples of medicines with high procurement prices compared to international reference prices. Fluconazole and artemether+lumefantrine tablets (both imported) were approximately 5 times international reference prices, respectively.

Table 3. Examples of high procurement prices (as MPR) for locally produced and imported products

	Locally produced products MPR	Imported products MPR
Fluconazole 150mg		5.71
Artemether+lumefantrine 20mg+120mg FDC		5.77*
Diclofenac 50mg		4.00
Cloxacillin 250mg	1.42	

\*based on prices from two manufacturers; *tab/cap unless stated*

## 2. Patient prices

### 2.1. Public sector patient prices

In the public sector where patients pay the full price for medicines, overall patient prices for locally produced products and imported products were 1.67 and 2.20 times international reference prices, respectively (see Table 4). Across all products (local and imported) the median MPR was 1.98. Note: products supplied as a fixed fee, which includes the consultation, were excluded from this analysis.

For locally produced products, half the medicines were 1.06 – 2.39 times international reference prices, whereas for imported products, half the medicines were 1.29 – 3.26 times international reference prices.

Table 4. Summary of public sector patient prices

	Locally produced products	Imported products
Number of medicines	12	17
Number of products	170	308
<b>Median MPR</b>	<b>1.67</b>	<b>2.20</b>
Interquartile range	1.06 – 2.39	1.29 – 3.26
Minimum MPR	1.00	0.57
Maximum MPR	6.55	4.87

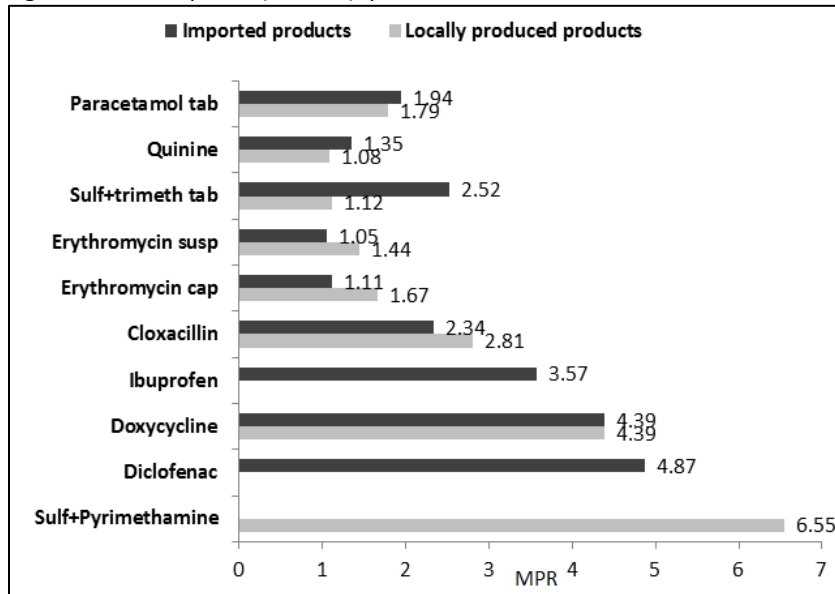
For the nine medicines where both locally produced and imported products were found in the public sector outlets (paired analysis), overall patient prices for locally produced products were 7% higher than imported products. The median MPRs of locally produced and imported products were 1.44 and 1.35 respectively, that is, 44% and 35% above international reference prices as shown in Table 5.

Table 5. Summary of public sector patient prices, paired analysis

	Locally produced products	Imported products
Number of medicines	9	9
Number of products	104	107
<b>Median of Median MPR</b>	<b>1.44</b>	<b>1.35</b>
Median of Interquartile range	1.00-1.83	1.29-1.75

Annex 2 lists the MPRs for individual medicines in the public sector. Locally produced products ranged in price from 1.00 times (i.e. the same as) the international reference price for paracetamol suspension to 6.55 times (555% higher than) the international reference price for sulfadoxine+pyrimethamine 500mg+ 25mg tab. Imported products ranged from 0.57 times (43% less than) the international reference price for paracetamol suspension to 4.87 times (387% higher than) the international reference price for diclofenac 50mg tab. Figure 2 shows individual medicines with high patient prices compared to international reference prices and/or price differences between locally produced and imported products.

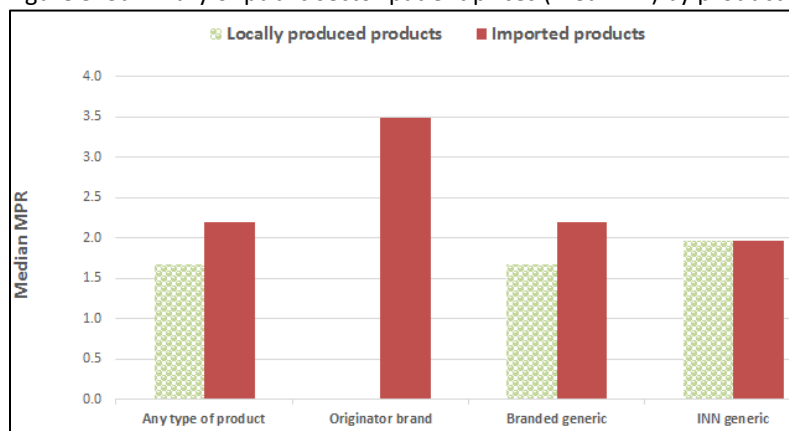
Figure 2. Patient prices (as MPR), public sector, for selected individual medicines



### 2.1.1. Public sector patient prices by product type

No locally produced originator brands were found in the public sector outlets surveyed. Imported originator brands had a median MPR= 3.48. Overall, locally produced branded generics were 24% lower priced (median MPR = 1.67) compared to imported branded generics (median MPR = 2.20) as shown in Figure 3. For INN generics there was virtually no difference in overall patient price between locally produced and imported products. However, for locally produced products, INN generics were 18% higher priced than branded generics. The opposite was seen for imported products where INN generics were 10% lower priced than branded generics. Note: this aggregate data are not for a paired sample of medicines.

Figure 3. Summary of public sector patient prices (medMPR) by product type



## 2.2. Private sector patient prices

In the private sector, overall patient prices for locally produced products were 2.01 times international reference prices (see Table 6). Patient prices for imported products were 3.01 times international reference prices. For locally produced products, half the medicines were 1.67 – 3.33 times international reference prices, whereas for imported products half the medicines were 2.16 – 4.87 times international reference prices. Across all products, prices were 2.80 times (180% more) international reference prices.

Table 6. Summary of private sector patient prices

	Locally produced products	Imported products
Number of medicines	12	232
Number of products	161	713
<b>Median MPR</b>	<b>2.01</b>	<b>3.01</b>
Interquartile range (25 <sup>th</sup> -75 <sup>th</sup> percentiles)	1.67 – 3.33	2.16 – 4.87
Minimum MRP	1.51	1.41
Maximum MPR	7.27	10.91

In the paired analysis, across 12 medicines, patient prices for imported products in the private sector (median MPR=2.29) were similar to prices for locally produced products (median MPR=2.27) as shown in Table 7.

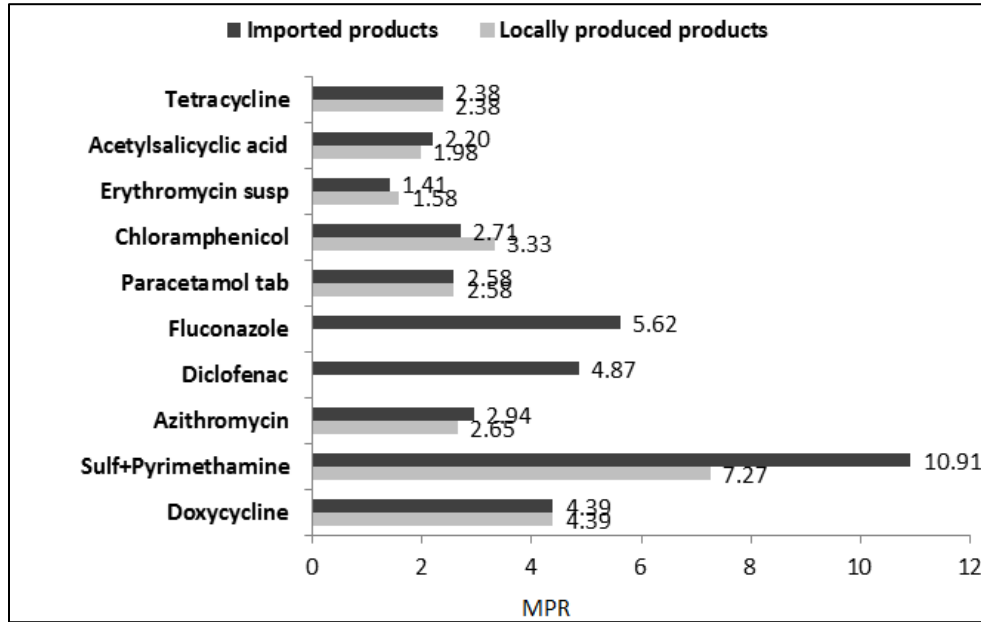
Table 7. Summary of private sector patient prices, paired analysis

	Locally produced products	Imported products
Number of medicines	12	12
Number of products	131	331
<b>Median of Median MPR</b>	<b>2.27</b>	<b>2.29</b>
Median of interquartile range (25 <sup>th</sup> -75 <sup>th</sup> percentiles)	2.07 – 2.95	2.18-3.14

Annex 3 lists prices (as MPRs and in Shillings) for individual medicines in the private sector. Locally produced products ranged from a MPR of 1.51 times (51% more than) international reference prices for

paracetamol 120mg/5ml suspension to 7.27 times (627 % more than) international reference prices for sulfadoxine + pyrimethamine 500mg+ 25mg cap/tab. For imported medicines, erythromycin suspension had the lowest price across the 22 medicines in the analysis (MPR= 1.41). Sulfadoxine + pyrimethamine had the highest MPR at 10.91 times (991% more than) international reference prices. Figure 4 shows individual medicines with high patient prices compared to international reference prices and/or price differences between locally produced and imported products.

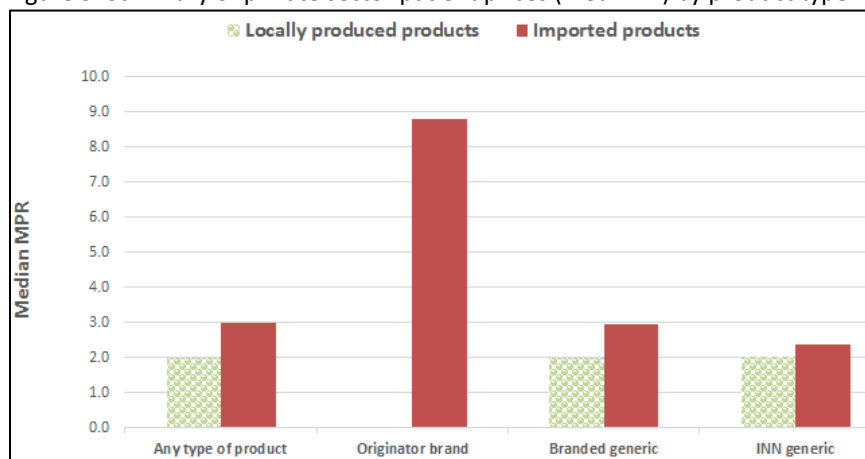
Figure 4. Patient prices (as MPR), private sector, for selected individual medicines



### 2.2.1. Private sector patient prices by product type

In the private sector, imported originator brands were 8.79 times international reference prices (50 products) as shown in Figure 5. Overall, imported branded generics (median MPR=2.97, 567 products) were 48% higher priced than locally produced branded generics (median MPR=2.01, 149 products). Imported INN generics (median MPR=2.38, 96 products) were 20% lower priced than imported branded generics, but 15% higher priced than locally produced INN generics (median MPR=2.07, 12 products). Note: this aggregate data are not for paired samples of medicines.

Figure 5. Summary of private sector patient prices (medMPR) by product type



### 2.3. Mission sector patient prices

In the mission sector outlets, overall patient prices for locally produced products were 1.89 times international reference prices. Patient prices for imported products were 2.81 times international reference prices (see Table 8). For all products, the median MPR was 2.58.

For locally produced products, half the medicines were 1.41 – 2.58 times international reference prices, whereas for imported products, there as a larger spread as half the medicines were 1.94 – 4.81 times international reference prices.

Table 8. Summary of mission sector patient prices

	Locally produced products	Imported products
Number of medicines	11	20
Number of products	137	438
<b>Median MPR</b>	<b>1.89</b>	<b>2.81</b>
Interquartile range (25 <sup>th</sup> -75 <sup>th</sup> percentile)	1.41 – 2.58	1.94 – 4.81
Minimum MRP	1.08	1.14
Maximum MPR	7.27	10.91

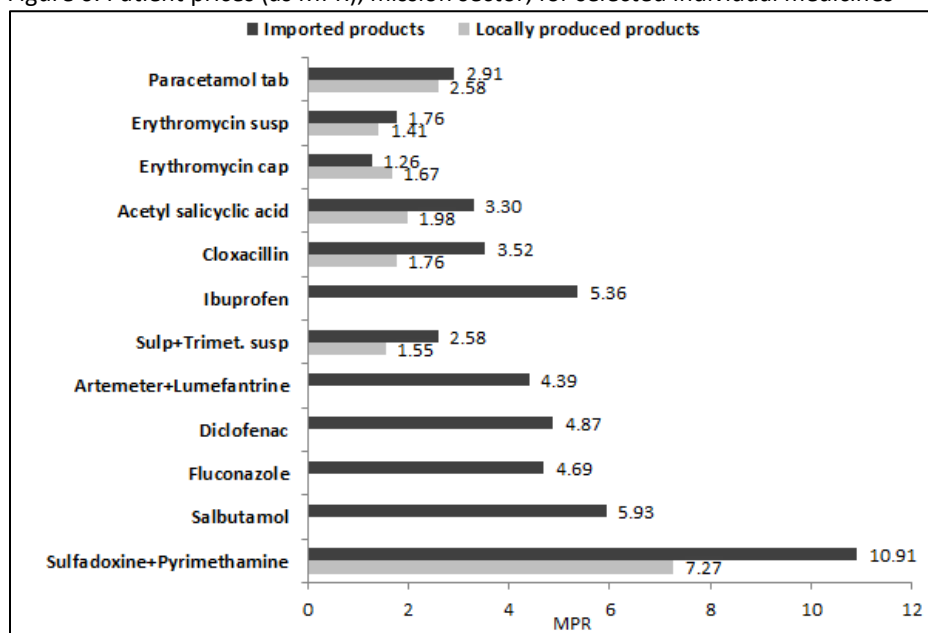
In the paired analysis, across 10 medicines, overall patient prices for imported products were 47% higher priced (medianMPR = 2.53 i.e. 153% above international reference prices) than locally produced products (medianMPR = 1.72 i.e. 72% above international reference prices) as shown in Table 9.

Table 9. Summary of mission sector patient prices, paired analysis

	Locally produced products	Imported products
Number of medicines	10	10
Number of products	102	159
<b>Median of Median MPR</b>	<b>1.72</b>	<b>2.53</b>
Median of Interquartile range (25 <sup>th</sup> -75 <sup>th</sup> percentile)	1.63 – 1.84	1.70 – 3.05

Annex 4 lists the MPRs for individual medicines in the mission sector. Locally produced products ranged from a MPR of 1.08 times (8% more than) international reference prices for quinine sulphate 300mg tab to 7.27 times (627% more than) international reference prices for sulfadoxine+pyrimethamine 500mg+ 25mg cap/tab. For imported products, quinine sulphate again had the lowest patient price ratio (MPR = 1.14). Sulfadoxine + pyrimethamine 500mg+ 25mg cap/tab also had the highest MPR at 10.91 times (991% more than) international reference prices. Figure 6 shows individual medicines with high patient prices compared to international reference prices and/or price differences between locally produced and imported products.

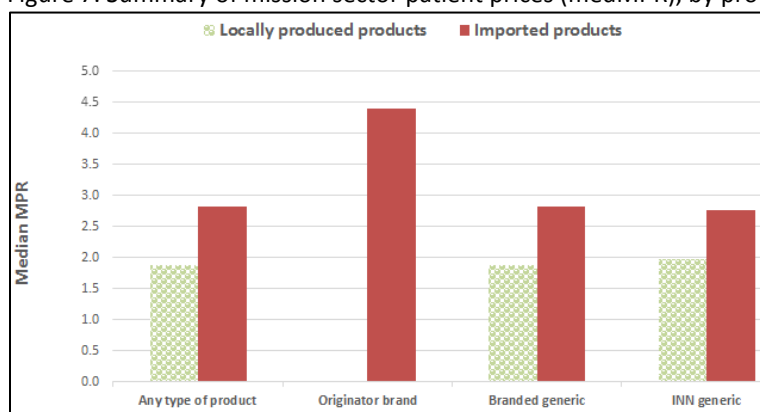
Figure 6. Patient prices (as MPR), mission sector, for selected individual medicines



### 2.3.1. Mission sector patient prices by product type

In the mission sector, as shown in Figure 7, imported originator brands had a median MPR of 4.39 times the international reference price. No locally produced originator brands were found. Overall, for branded generics, imported products (medMPR = 2.81) were 49% higher priced than locally produced products (medMPR = 1.89). For INN generics, imports (medMPR=2.76) were also higher priced (39%) than those made locally (medMPR=1.98).

Figure 7. Summary of mission sector patient prices (medMPR), by product type



### 3. Analysis of public sector procurement prices and public sector patient prices

For 8 medicines, locally produced products procured by the government were found in the public sector outlets surveyed (i.e. matched pairs). For these medicines, patients were paying 135% more than the public procurement price. Across 7 imported medicines (matched pairs), patients were paying 65% more than the public procurement price (see Table 10).

See Annex 5 for details on the paired analysis of public sector procurement prices and public sector patient prices.

Table 10. Median ratio of public sector procurement prices and public sector patient prices

	Number of paired medicines	Median Ratio between Public Sector Procurement Price MPR and Public Sector Patient Price MPR
Locally produced products	8	2.35
Imported products	7	1.65

## 4. Availability

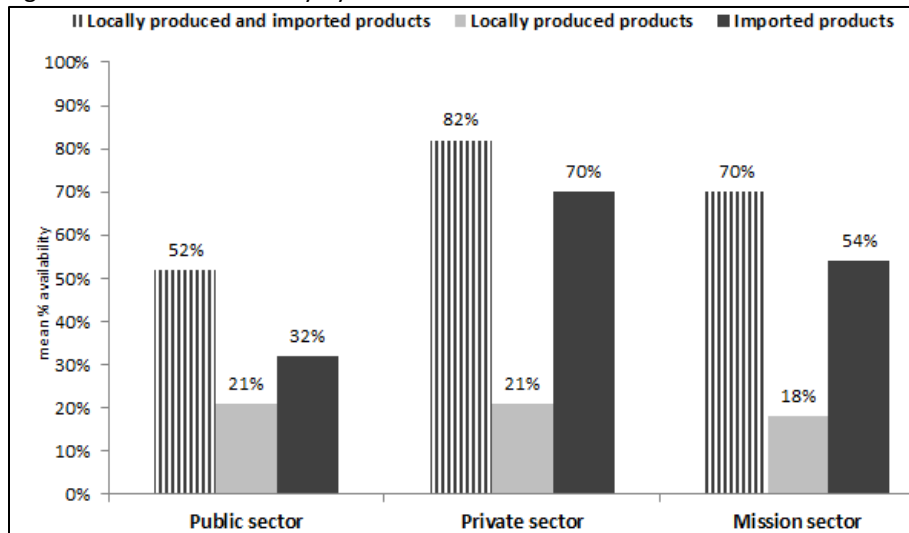
### 4.1. Availability by sector

Across the 24 survey medicines, the overall availability of locally produced products in outlets was lower than imported medicines in all three sectors as shown in Figure 8. In the public sector, where mean availability of medicines (locally produced and imported) was 52%, the availability of locally produced products was 21% whereas for imported products the availability was 32%. In the private sector, the mean availability of locally produced products was 21%; for imported products it was far higher at 70% (the availability of locally produced and imported products was 82%). Mean availability in the mission sector was 18% for locally produced products and 54% for imported products (the availability of locally produced and imported products was 70%).

Note: For some medicines in some outlets, both locally produced products and imported products were in stock on the day of data collection. Therefore, the sum of the percentage availability of locally produced products (grey bar in the figures) and the percentage availability of imported products (black

bar) may not be equal to the percentage availability of both locally produced and imported products (striped bar).

Figure 8. Mean % availability by sector



Annex 6 lists the percentage availability of individual medicines in each sector. Figures 9-11 shows the availability of five medicines (all tab/cap) in the public, private and mission sectors. They illustrate how variable availability of locally produced and imported medicines can be, both within a sector and across sectors. For example, in the public sector, for acetyl salicylic acid the availability of locally produced products was far higher (85%) than the availability of imported products (3%). For sulphamethoxazole +trimethoprim tabs the opposite was seen in the public sector where imported products had greater availability. While the availability of locally produced acetyl salicylic acid was higher than the availability of imports in the public sector, in the other two sectors the situation was different. In the private sector and mission sectors, the availability of imported acetyl salicylic acid products was higher (57% private; 47% mission) than imported products (30% private; 27% mission).

Figure 9. Percentage availability, selected individual medicines, public sector

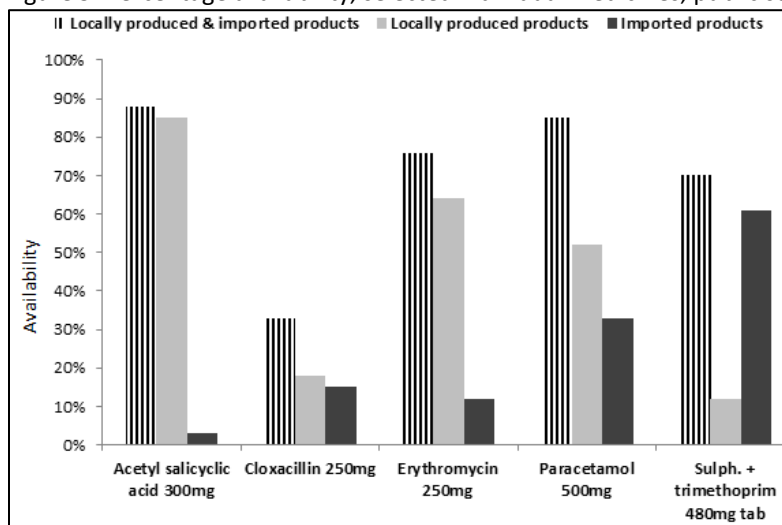




Figure 10. Percentage availability, selected individual medicines, private sector

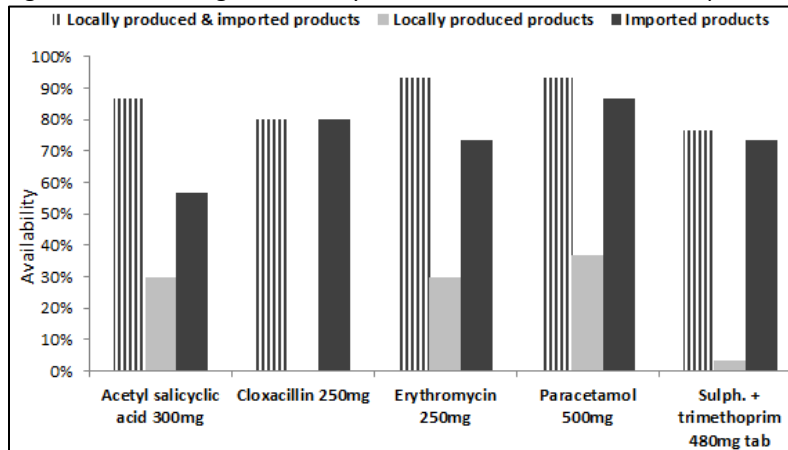
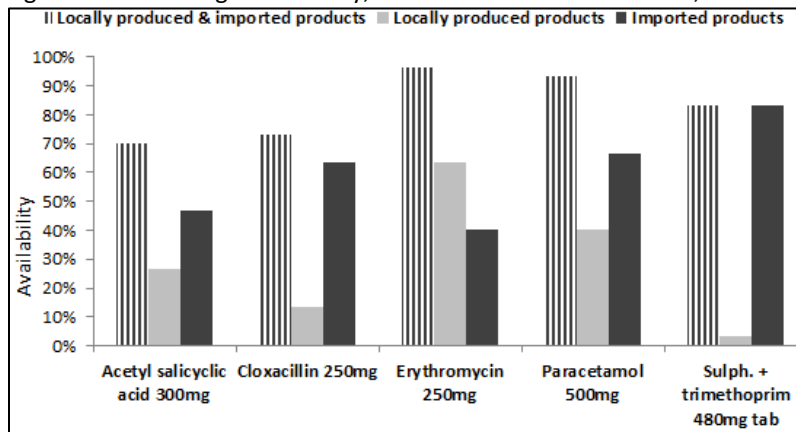


Figure 11. Percentage availability, selected individual medicines, mission sector

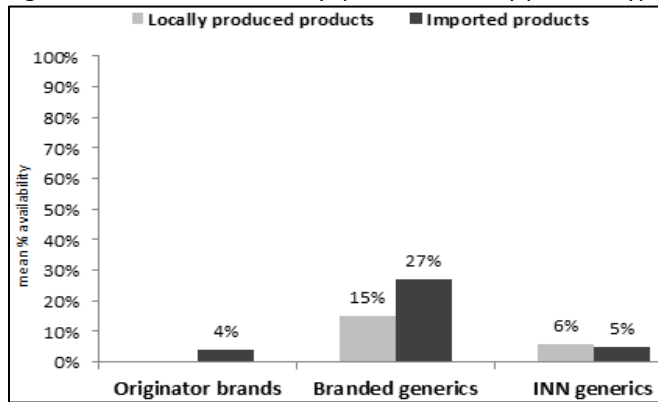


## 4.2. Availability by product type

### 4.2.1. Public sector

Across the 33 public sector outlets and 24 survey medicines, the predominant product type found was branded generics (Figure 12). Mean availability was higher for imported branded generics (27%) compared to those made in Tanzania (15%), as well as imported INN generics (5%) and locally produced INN generics (6%). No locally produced originator brands were found in the public sector. Imported originator brand products had a mean availability of 4% in this sector.

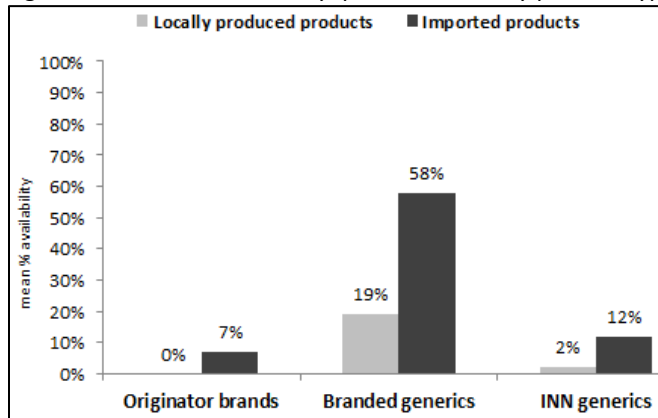
Figure 12. Mean % availability, public sector, by product type



#### 4.2.2. Private sector

Across the private sector outlets, branded generics were also the predominant product type at 58% mean availability for imported products and 19% for locally produced products (see Figure 13). Imported INN generics had a mean availability of 12%; very few locally produced INN generics were found in the private sector (2%). There were no locally produced originator brands found in the private sector. Imported originator brands had a mean availability of 7%.

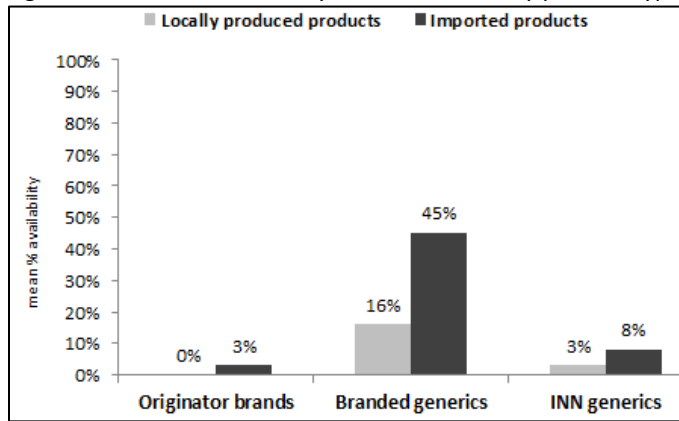
Figure 13. Mean % availability, private sector, by product type



#### 4.2.3. Mission sector

Across the outlets surveyed in the mission sector, the predominant product type for both locally produced products and imported products was branded generics at 16% and 45% respectively (see Figure 14). Mean availability of INN generics was low at 3% and 8% for locally produced and imported products, respectively. The availability of originator brands products found in the mission sector outlets on the day of data collection was 3% (all imported).

Figure 14. Mean % availability, mission sector, by product type



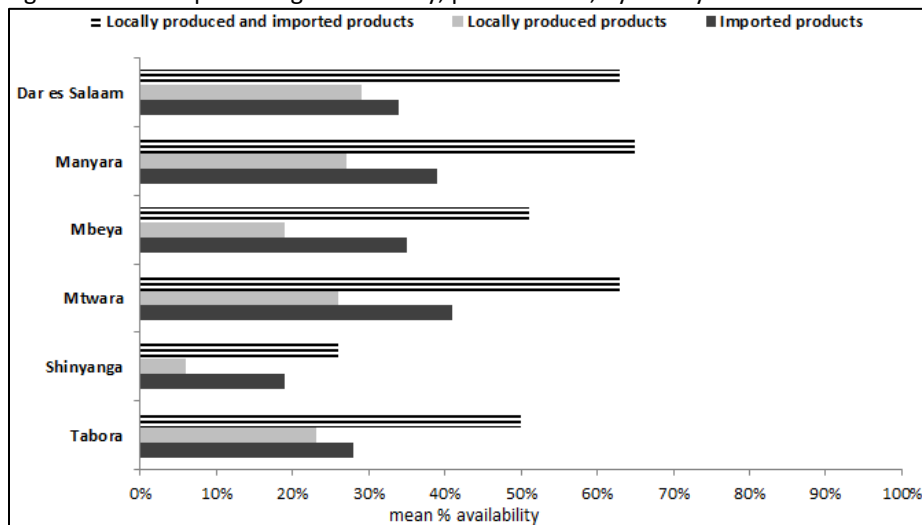
## 5. Cross-regional analysis

### 5.1. Availability

#### 5.1.1 Public sector

In the public sector of each of the six survey areas, the mean percentage availability of locally produced products was lower compared to the availability of imported products (see Figure 15). The mean availability of locally produced products ranged from 6% in Shinyanga to 29% in Dar es Salaam. The availability of imported products ranged from 19% in Shinyanga to 41% in Mtwara. The difference in availability between locally produced and imported products was smallest in Dar es Salaam and Tabora. The mean availability of all products found in the public sector was lowest in Shinyanga (26%) and highest in Manyara (65%).

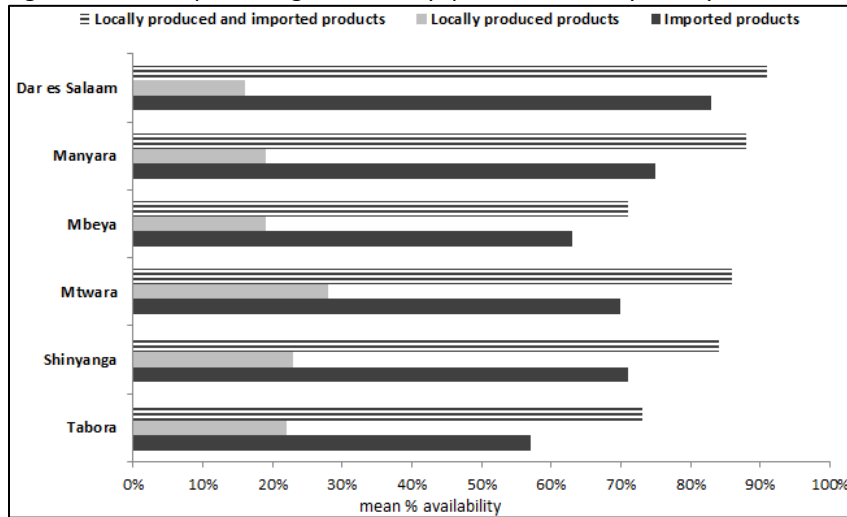
Figure 15. Mean percentage availability, public sector, by survey area



#### 5.1.2 Private sector

In the private sector in each of the six survey areas, the mean availability of locally produced products was lower compared to imported products (Figure 16). The availability of locally produced products ranged from 16% in Dar es Salaam to 28% in Mtwara. The availability of imported products was far higher ranging from 57% in Tabora to 83% in Dar es Salaam. The difference in availability between locally produced and imported products was greatest in Dar es Salaam and least in Tabora. The mean availability of both imported and locally produced products in the private sector was lowest in Mbeya (71%) and highest in Dar es Salaam (91%).

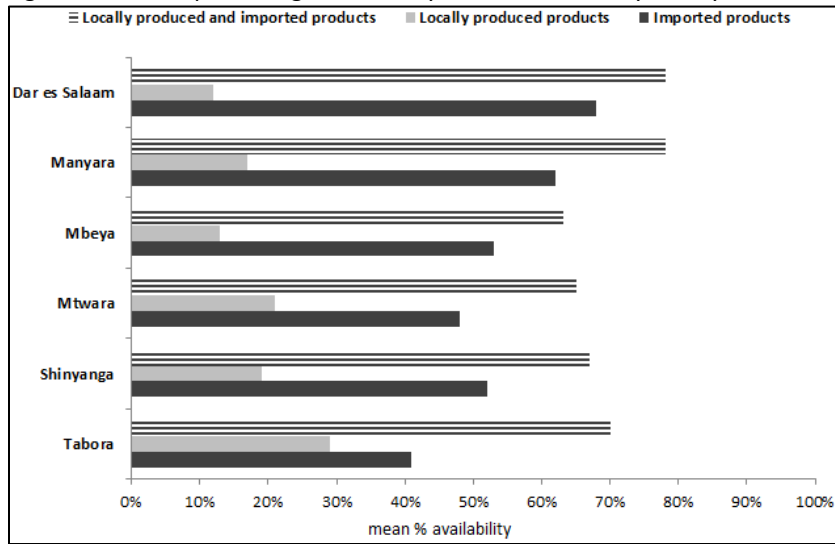
Figure 16. Mean percentage availability, private sector, by survey area



### 5.1.3 Mission sector

In the mission sector health facilities sampled in each survey area, the mean percentage availability of locally produced products was lower compared to the availability of imported products (Figure 17). The availability of locally produced products ranged from 12% in Dar es Salaam to 29% in Tabora. The availability of imported products ranged from 41% in Tabora to 68% in Dar es Salaam. The difference in availability between locally produced and imported products was greatest in Dar es Salaam and least in Tabora. The mean availability of all products found in the mission sector was lowest in Mbeya (63%) and highest in Manyara and Dar es Salaam (both 78%).

Figure 17. Mean percentage availability, mission sector, by survey area



## 5.2. Patient prices

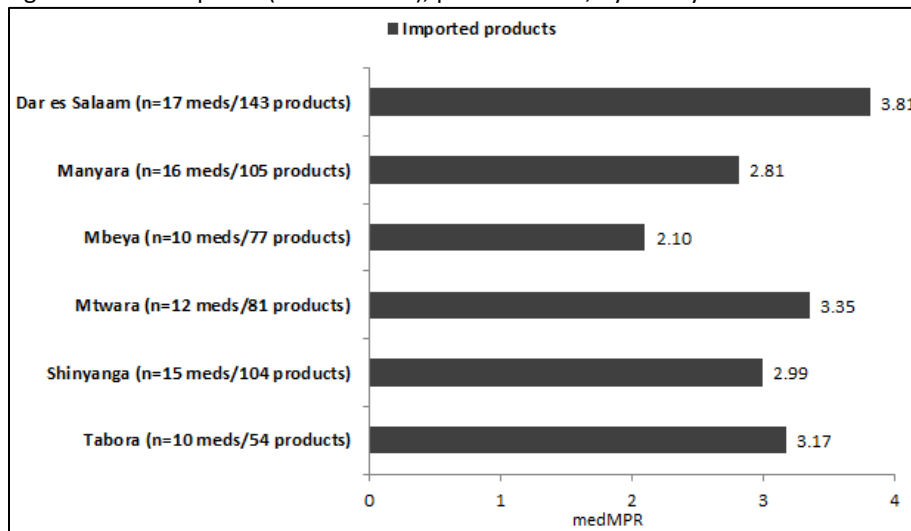
### 5.2.1 Public sector

There were insufficient price points to calculate median patient prices in the six survey areas in the public sector.

### 5.2.2 Private sector

There was insufficient price points (less than 4 medicines per area) to calculate a median MPR for locally produced products. For imported products, patient prices were lowest in Mbeya (medMPR=2.10) and highest in Dar es Salaam (medMPR=3.81) as shown in Figure 18.

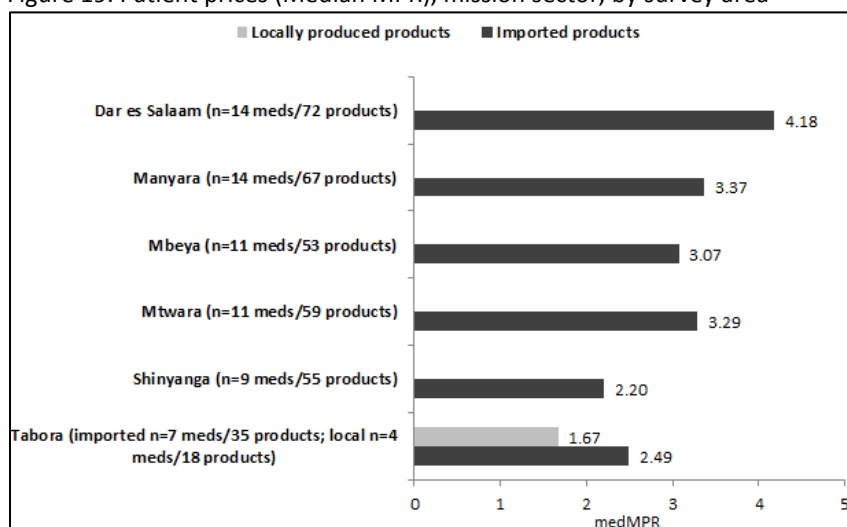
Figure 18. Patient prices (Median MPR), private sector, by survey area



### 5.2.3 Mission sector

In the mission sector, a median MPR for locally produced products could be calculated in Tabora only (medMPR=1.67) which was lower than the price of imported products (medMPR=2.49). Across the six survey areas, patient prices for imported products ranged from a medMPR of 2.20 in Shinyanga to 4.18 in Dar es Salaam, as shown in Figure 19.

Figure 19. Patient prices (Median MPR), mission sector, by survey area



## 6. Country of Manufacture

Across the three sectors, 91% of the products found were made in India, Tanzania and Kenya as shown in Table 11. Approximately 81% of all the products found were branded generics.

Table 11: Country of manufacture and % of products found by product type

	Originator brand	Branded generic	INN generic	Total
India	0.1%	41.0%	5.1%	46.1%
Tanzania	0.0%	18.9%	3.7%	22.6%
Kenya	0.7%	18.0%	3.6%	22.3%
USA	2.0%	0.0%	0.0%	2.0%
China	0.5%	0.2%	1.1%	1.8%
Switzerland	0.8%	0.3%	0.0%	1.1%
France	1.0%	0.0%	0.0%	1.0%
Cyprus	0.0%	0.7%	0.2%	0.9%
Germany	0.0%	0.6%	0.0%	0.6%
Egypt	0.0%	0.3%	0.0%	0.3%
South Africa	0.2%	0.1%	0.0%	0.3%
UK	0.1%	0.1%	0.1%	0.3%
Jordan	0.0%	0.2%	0.0%	0.2%
Yemen	0.0%	0.1%	0.0%	0.1%
Denmark	0.0%	0.0%	0.1%	0.1%

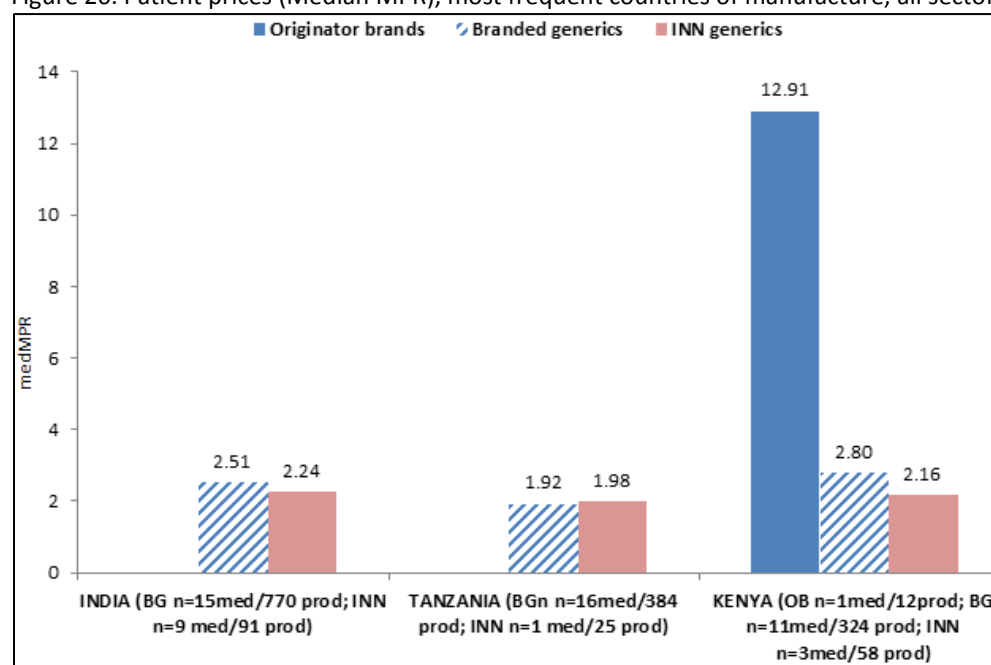
Greece	0.0%	0.1%	0.0%	0.1%
Pakistan	0.0%	0.1%	0.0%	0.1%
Uganda	0.0%	0.1%	0.0%	0.1%
Korea	0.0%	0.1%	0.0%	0.1%
Belgium	0.0%	0.0%	0.0%*	0.0%
<b>Total</b>	<b>5.4%</b>	<b>80.8%</b>	<b>13.9%</b>	<b>100%</b>

\*One product was found to be manufactured in Belgium but because of rounding it shows as 0%

Figure 20 gives overall patient prices by product type, across all three sectors, for the products manufactured in India, Tanzania and Kenya. For branded generics and INN generics, overall patient prices were lower for products made in Tanzania than those imported from India and Kenya. Note: this data is not for a paired sample of medicines and few products were found as INN generics.

A paired analysis was possible for only five medicines (branded generics). As shown in Table 12, across these five medicines, patient prices of branded generics were lower for products made in Tanzania than for those made in India and Kenya.

Figure 20. Patient prices (Median MPR), most frequent countries of manufacture, all sectors



OB – originator brands; BG – branded generics; INN – INN generics

Table 12. Patient prices (MPRs), branded generics, all sectors most frequent countries of manufacture

	INDIA MPR	TANZANIA MPR	KENYA MPR
Chloramphenicol 250mg	2.33	3.33	3.00
Doxycycline 100mg	3.14	4.39	4.39
Fluconazole 150mg	4.69	0.59	4.69
Paracetamol 120mg/5ml susp	1.51	1.51	1.51
Sulh.+Trimeth 480mg tab	2.24	1.26	2.80
<b>Median MPR</b>	<b>2.33</b>	<b>1.51</b>	<b>3.00</b>

## 7. Patient prices across Tanzanian manufacturers

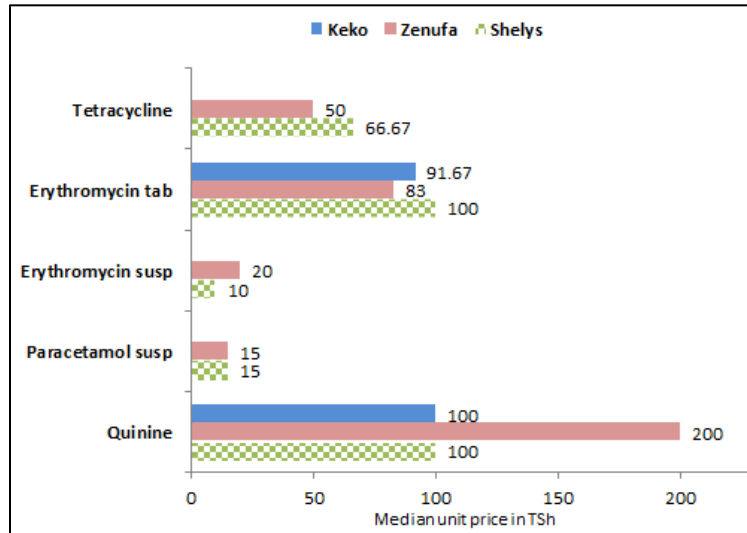
As stated above, 22.6% of the products found were made in Tanzania. Products manufactured by five local companies were found in the three sectors. The vast majority were made by Shelys Pharmaceuticals Ltd as shown in Table 13. Overall patient prices in Shillings and median MPRs (across medicines and sectors) are given although it must be remembered that this is not a paired analysis.

Table 13. Local manufacturers and the number of products found (all sectors)

Company	Number of products found	Median patient price in TSh	Median MPR
Shelys Pharmaceuticals Ltd	294	25.50	1.75
Zenufa Laboratories (Tanzania) Ltd	80	20.00	2.27
Keko Pharmaceutical Industries Ltd	78	68.33	1.53
Mansoor Daya Chemicals Ltd	17	10.00	1.98
Tanzania Pharmaceutical Industries	2	22.50	-
<b>total</b>	<b>471</b>		

Annex 7 lists median patient prices in Shillings, and MPRs, for individual medicines manufactured by the companies in Tanzania. Figure 21 gives examples of median patient prices in Shillings, for one tablet/capsule or millilitre of liquid, made by Shelys Pharmaceuticals Ltd, Zenufa Laboratories (Tanzania) Ltd and Keko Pharmaceutical Industries Ltd.

Figure 21. Median patient unit price in TSh, individual medicines, by manufacturer (all sectors)



## 8. Price Components

Measuring price components in the supply chain is important in determining the contribution of the manufacturer's selling price, duties, mark-ups, taxes, and other costs that make up the final patient price. However, it is challenging to collect this information as many agents in the supply chain may be unwilling to divulge prices and mark-up information. Therefore, in this survey, procurement prices and selling prices were collected for individual products from one wholesaler in Dar es Salaam. Although this



is only one point in the supply chain, it provides some information on wholesale mark-ups. Data was also collected on any taxes or duties applied to medicines.

### ***Duties and taxes***

VAT, GST and import duties are not applied to medicines in Tanzania.

### ***Wholesale and retail mark-ups, private sector***

Across the 24 survey medicines, the wholesaler had 89 products (75 imported, 14 locally produced) in stock on the day of data collection.

#### ***Imported products***

A comparison of wholesale procurement prices with wholesale selling prices, for individual imported products, showed wholesale mark-ups of 3-27% (see Annex 8). The wholesale selling price for each product was then compared with the median patient price for the product across the private sector outlets sampled. This showed retail mark-ups, for imported products, of 3-641%. However, these retail mark-ups are only estimates and must be used with caution. They were not measured by tracking products from the retail outlet to the wholesaler where purchased which would enable the true mark-up to be calculated.

#### ***Locally produced products***

A comparison of wholesale procurement prices with wholesale selling prices, for individual locally produced products, showed wholesale mark-ups of 10-18% (see Annex 8). Comparing the wholesale selling price for each product with the median patient price across the private sector outlets sampled showed retail mark-ups of 52-614%. However, as with imported products, these retail mark-ups are only estimates and must be used with caution.

Based on the wholesale mark-up and estimated retail mark-up, the greatest contribution to the final patient price for both imported and locally produced products will likely vary by product. For some products it will likely be the manufacturer's selling price whereas for other products it will likely be the mark-ups in the supply chain.

## **Discussion**

Across all the surveyed medicines, the Tanzanian government procured either locally produced products or imported products, but not both. Thus it was not possible to determine if the local preference was being applied. Overall the government was procuring imported products at 94% more than the price of the locally produced products.

The government was selling locally produced products to patients in public sector outlets for 135% more than their procurement prices. For imported products, the mark-up was lower at 65%. This closed the price gap between imported and locally produced products in the public sector. Patients were paying 7% more for locally produced than for imported products, and the mean availability of locally produced products was lower (21%) than imports (32%). The mean availability of the survey medicines, locally produced and imported, in the public sector was sub-optimal at 52%.

In the private sector overall availability was higher (82%), and far more imported products (70%) were stocked compared to locally produced products (21%). For medicines with both imported and locally made products, there was little difference in the patient price in the private sector. In the mission sector, imported products were also more available than locally produced products (54% and 18% respectively) but 47% higher priced. Hence in all three sectors, the availability of locally produced products was poor. But when in stock, patient prices were slightly higher for local products compared to imported products in the public sector, almost identical in the private sector, and lower in the mission sector.

In each of the six survey areas, and in each sector, the availability of locally produced products was lower compared to the availability of imported products. Patient prices for locally produced and imported products could not be compared by survey region for each sector due to insufficient data.

About 90% of the products found were made in India, Tanzania and Kenya. Tanzania produced about 23% of the products found. These products were made by five Tanzanian companies. Of these, the majority (about 60%) were made by Shelys Pharmaceuticals.

In all three sectors, the availability of branded generics was higher than the availability of INN generics or originator brands. Across the sectors, 81% of the products found were branded generics. Of these about half were made in India and a quarter in Tanzania. Only about 14% of the products found were INN generics; of these slightly more were made in India compared to Tanzania and Kenya. Across the three sectors, overall patient prices of products from India were slightly higher prices than products made in Tanzania for both branded generics and INN generics.

Measuring price components in the supply chain has proven to be challenging in medicine price surveys undertaken using the WHO/HAI methodology. Therefore, in this survey, procurement prices and selling prices were collected from a single private wholesaler in Dar es Salaam. This is only one point in the supply chain so has limited value. The wholesaler was found to be charging mark-ups of 3-27% for imported products and 10-18% for those made in Tanzania.

While this survey measured differences between the price and availability of locally produced and imported products, it must be remembered that other factors can influence access to medicines (such as access to healthcare facilities, financing etc.). As well, it is crucial that all pharmaceutical products on the market are quality assured, whether imported or locally manufactured.

Limitations in the methodology include the limited number of survey medicines (although it resulted in a large number of products in the analyses), and not determining true retail mark-ups.

## **Recommendations**

Based on the findings from this study:

- Where high priced imported products were awarded tenders, the government should investigate if any medicines have locally produced quality assured versions that may offer savings. If so, the local manufacturer should be prequalified and encouraged to submit bids. If not, local manufacturers should be encouraged to produce these products.
- The government should pass on low procurement prices for locally produced medicines to patients in the public sector, in order to improve the affordability of medicines especially for the poor who have to pay out-of-pocket.

- The reasons for the low availability of locally produced products should be identified.
- Health professionals and patients should be encouraged to prescribe, dispense and use lower priced quality-assured locally produced products rather than higher priced imported products.
- The influence of retail mark-ups and manufacturers' selling prices on the final patient price for locally produced and imported products should be investigated. If retail mark-ups are high, the government should consider regulating them using regressive margins to incentivize the selling of lower priced products.

## Annex 1 Government procurement prices

Prices in Shillings are for a unit i.e. a tab or cap, mL of liquid, or a vial

Medicine	Locally produced products			Imported products		
	Products (n)	Median unit price (TSh)	Median price ratio (MPR)	Products (n)	Median unit price (TSh)	Median price ratio (MPR)
Acetyl salicyclic acid 300mg	1	3.33	0.66			
Albendazole 100mg/5ml suspension						
Amoxicillin 250mg	1	21.09	0.75			
Amoxicillin 500mg						
Artemeter+Lumefantrine 20mg+120mg FDC tab				4	109.42	5.77
Azithromycin 250 mg						
Chloramphenicol 250 mg				1	40.31	1.34
Ciprofloxacin 500mg						
Cloxacillin 250 mg	1	40.32	1.42			
Diclofenac 50 mg				1	41.06	4.00
Doxycycline 100mg				1	16.43	0.72
Erythromycin 250 mg	1	25.86	0.43			
Erythromycin 125 mg/5ml suspension				1	6.98	0.49
Fluconazole 150 mg				1	608.86	5.71
Ibuprofen 200 mg						
Paracetamol 120 mg/5ml suspension	1	6.03	0.61			
Paracetamol 500mg	1	5.34	0.69			
Quinine sulphate 300 mg	1	60.16	0.65			
Salbutamol 4 mg				1	3.33	0.66
Sulfadoxine+Pyrimethamine 500mg+25mg	1	53.26	1.16			
Sulfamethoxazole+Trimethoprim 400mg+80mg						
Sulfamethoxazole+Trimethoprim 200+40mg/5ml suspension						
Tetracycline 250mg						
Zinc sulphate 20 mg disp.tab	1	47.57	0.90			
<b>MedianMPR</b>			<b>0.69</b>			<b>1.34</b>

*tab/cap unless stated*

## Annex 2 Patient prices in the public sector

An MPR and price in Shillings is given for a medicine with >3 price points.

Prices in Shillings are for a unit i.e. a tab or cap, mL of liquid, or a vial

Products recorded as a fixed fee or free-of-charge where excluded.

Medicine	Locally produced products			Imported products		
	Products (n)	Median unit price (TSh)	Median price ratio (MPR)	Products (n)	Median unit price (TSh)	Median price ratio (MPR)
Acetyl salicyclic acid 300mg	28	10.00	1.98	1		
Albendazole 100mg/5ml suspension	1			0		
Amoxicillin 250mg	1			28	50.00	1.78
Amoxicillin 500mg	0			2		
Artemeter+Lumefantrine 20mg+120mg FDC tab	0			64	41.67	2.20
Azithromycin 250 mg	3			3		
Chloramphenicol 250 mg	0			15	66.67	2.22
Ciprofloxacin 500mg	0			10	100.00	1.67
Cloxacillin 250 mg	6	80.00	2.81	5	66.00	2.32
Diclofenac 50 mg	0			26	50.00	4.87
Doxycycline 100mg	7	100.00	4.39	26	100.00	4.39
Erythromycin 250 mg	23	100.00	1.67	4	66.33	1.11
Erythromycin 125 mg/5ml suspension	12	20.50	1.44	6	15.00	1.05
Fluconazole 150 mg	3			27	100.00	0.94
Ibuprofen 200 mg	0			10	33.33	3.57
Paracetamol 120 mg/5ml suspension	12	10.00	1.00	7	5.70	0.57
Paracetamol 500mg	17	13.89	1.79	13	15.00	1.94
Quinine sulphate 300 mg	14	100.00	1.08	8	125.00	1.35
Salbutamol 4 mg	0			13	13.33	2.64
Sulfadoxine+Pyrimethamine 500mg+25mg	12	300.00	6.55	2		
Sulfamethoxazole+Trimethoprim 400mg+80mg	4	20.00	1.12	23	45.00	2.52
Sulfamethoxazole+Trimethoprim 200+40mg/5ml suspension	9	10.00	1.29	15	10.00	1.29
Tetracycline 250mg	0					
Zinc sulphate 20 mg disp.tab	18	100.00	1.89			
<b>Median MPR</b>			<b>1.67</b>			<b>2.20</b>

*tab/cap unless stated*

### Annex 3 Patient prices in the private sector

An MPR and price in Shillings is given for a medicine with >3 price points.

Prices in Shillings are for a unit i.e. a tab or cap, mL of liquid, or a vial

Medicine	Locally produced products			Imported products		
	Products (n)	Median unit price (TSh)	Median price ratio (MPR)	Products (n)	Median unit price (TSh)	Median price ratio (MPR)
Acetyl salicylic acid 300mg	9	10.00	1.98	17	11.11	2.20
Albendazole 100mg/5ml suspension	0			14	250.00	3.48
Amoxicillin 250mg	6	50.00	1.78	35	50.00	1.78
Amoxicillin 500mg	0			3		
Artemeter+Lumefantrine 20mg+120mg FDC tab	0			76	83.33	4.39
Azithromycin 250 mg	13	750.00	2.65	10	833.33	2.91
Chloramphenicol 250 mg	5	100.00	3.33	24	81.50	2.71
Ciprofloxacin 500mg	0			48	200.00	3.35
Cloxacillin 250 mg	0			28	80.00	2.81
Diclofenac 50 mg	2			42	50.00	4.87
Doxycycline 100mg	4	100.00	4.39	24	100.00	4.39
Erythromycin 250 mg	9	100.00	1.67	28	100.00	1.67
Erythromycin 125 mg/5ml suspension	8	22.50	1.58	27	20.00	1.41
Fluconazole 150 mg	0			31	600.00	5.62
Ibuprofen 200 mg	1			36	33.00	3.54
Paracetamol 120 mg/5ml suspension	33	15.00	1.51	35	15.00	1.51
Paracetamol 500mg	11	20.00	2.58	51	20.00	2.58
Quinine sulphate 300 mg	4	200.00	2.16	24	200.00	2.16
Salbutamol 4 mg	0			35	20.00	3.95
Sulfadoxine+Pyrimethamine 500mg+25mg	22	333.33	7.27	36	500.00	10.91
Sulfamethoxazole+Trimethoprim 400mg+80mg	1			29	50.00	2.80
Sulfamethoxazole+Trimethoprim 200+40mg/5ml suspension	2			40	15.00	1.94
Tetracycline 250mg	7	50.00	2.38	20	50.00	2.38
Zinc sulphate 20 mg disp.tab	24	100.00	1.89	0		
<b>Median MPR</b>			<b>2.01</b>			<b>3.01</b>

*tab/cap unless stated*

## Annex 4 Patient prices in the mission sector

An MPR and price in Shillings is given for a medicine with >3 price points.

Prices in Shillings are for a unit i.e. a tab or cap, mL of liquid, or a vial

Products recorded as a fixed fee or free-of-charge where excluded.

Medicine	Locally produced products			Imported products		
	Products (n)	Median unit price (TSh)	Median price ratio (MPR)	Products (n)	Median unit price (TSh)	Median price ratio (MPR)
Acetyl salicylic acid 300mg	8	10.00	1.98	14	16.67	3.30
Albendazole 100mg/5ml suspension	0			3		
Amoxicillin 250mg	2			28	70.00	2.49
Amoxicillin 500mg	0			2		
Artemeter+Lumefantrine 20mg+120mg FDC tab	0			52	83.33	4.39
Azithromycin 250 mg	6	566.67	2.00	6	700.00	2.47
Chloramphenicol 250 mg	2			23	80.00	2.66
Ciprofloxacin 500mg	0			31	200.00	3.35
Cloxacillin 250 mg	4	50.00	1.76	19	100.00	3.52
Diclofenac 50 mg	1			25	50.00	4.87
Doxycycline 100mg	3			25	100.00	4.39
Erythromycin 250 mg	20	100.00	1.67	12	75.00	1.26
Erythromycin 125 mg/5ml suspension	9	20.00	1.41	19	25.00	1.76
Fluconazole 150 mg	2			19	500.00	4.69
Ibuprofen 200 mg	0			16	50.00	5.36
Paracetamol 120 mg/5ml suspension	18	15.00	1.51	11	15.00	1.51
Paracetamol 500mg	13	20.00	2.58	22	22.50	2.91
Quinine sulphate 300 mg	12	100.00	1.08	16	105.56	1.14
Salbutamol 4 mg	0			27	56.00	5.93
Sulfadoxine+Pyrimethamine 500mg+25mg	8	333.33	7.27	9	500.00	10.91
Sulfamethoxazole+Trimethoprim 400mg+80mg	1			27	40.00	2.24
Sulfamethoxazole+Trimethoprim 200+40mg/5ml suspension	4	12.00	1.55	31	20.00	2.58
Tetracycline 250mg	0			1		
Zinc sulphate 20 mg disp.tab	24	100.00	1.89			
<b>Median MPR</b>			<b>1.89</b>			<b>2.81</b>

*tab/cap unless stated*

## Annex 5 Paired analysis of public sector procurement prices and public sector patient prices

Medicine	Ratio between public sector patient price MPR and public sector procurement price MPR	
	Locally produced products	Imported products
Acetyl salicylic acid 300mg	3.00	
Albendazole 100mg/5ml suspension		
Amoxicillin 250mg		
Amoxicillin 500mg		
Artemeter+Lumefantrine 20mg+120mg FDC tab		0.38
Azithromycin 250 mg		
Chloramphenicol 250 mg		1.65
Ciprofloxacin 500mg		
Cloxacillin 250 mg	1.98	
Diclofenac 50 mg		1.22
Doxycycline 100mg		6.09
Erythromycin 250 mg	3.87	
Erythromycin 125 mg/5ml susp		2.15
Fluconazole 150 mg		0.16
Ibuprofen 200 mg		
Paracetamol 120 mg/5ml susp	1.66	
Paracetamol 500mg	2.60	
Quinine sulphate 300 mg	1.66	
Salbutamol 4 mg		4.00
Sulfadoxine+Pyrimethamine 500mg+25mg	5.63	
Sulfamethoxazole+Trimethoprim 400mg+80mg		
Sulfamethoxazole+Trimethoprim 200+40mg/5ml suspension		
Tetracycline 250mg		
Zinc sulphate 20 mg disp.tab	2.10	
<b>Median</b>	<b>2.35</b>	<b>1.65</b>
<b>Number of pairs</b>	<b>8</b>	<b>7</b>



## Annex 6 Percentage availability of medicines by sector

	PUBLIC SECTOR			PRIVATE SECTOR			MISSION SECTOR		
	Local & import	Local	Import	Local & import	Local	Import	Local & import	Local	Import
Acetyl salicylic acid 300mg	88%	85%	3%	87%	30%	57%	70%	27%	47%
Albendazole 100mg/5ml susp	30%	3%	0%	47%	0%	47%	10%	0%	10%
Amoxicillin 250mg	85%	3%	82%	100%	20%	87%	97%	7%	90%
Amoxicillin 500mg	6%	0%	6%	10%	0%	10%	7%	0%	7%
Artemeter+Lumefant rine 20mg+120mg FDC tab	91%	0%	91%	97%	0%	97%	93%	0%	93%
Azithromycin 250 mg	18%	9%	9%	53%	43%	23%	37%	20%	20%
Chloramphenicol 250 mg	42%	0%	42%	83%	17%	67%	73%	7%	70%
Ciprofloxacin 500mg	24%	0%	24%	90%	0%	90%	77%	0%	77%
Cloxacillin 250 mg	33%	18%	15%	80%	0%	80%	73%	13%	63%
Diclofenac 50 mg	70%	0%	70%	100%	7%	97%	80%	3%	77%
Doxycycline 100mg	85%	21%	79%	87%	13%	73%	90%	10%	80%
Erythromycin 250mg	76%	64%	12%	93%	30%	73%	97%	63%	40%
Erythromycin 125 mg/5ml susp	55%	36%	18%	90%	27%	73%	87%	30%	57%
Fluconazole 150 mg	70%	9%	64%	77%	0%	77%	70%	7%	63%
Ibuprofen 200 mg	30%	0%	30%	93%	3%	90%	53%	0%	53%
Paracetamol 120mg/5ml susp	48%	36%	21%	97%	80%	77%	90%	57%	37%
Paracetamol 500mg	85%	52%	33%	93%	37%	87%	93%	40%	67%
Quinine sulphate 300 mg	64%	42%	24%	80%	13%	70%	87%	37%	50%
Salbutamol 4 mg	39%	0%	39%	93%	0%	93%	90%	0%	90%
Sulfadoxine+ Pyrimethamine 500mg+25mg	42%	36%	6%	100%	73%	90%	47%	27%	27%
Sulfamethoxazole+ Trimethoprim 400mg+80mg tab	70%	12%	61%	77%	3%	73%	83%	3%	83%
Sulfamethoxazole+ Trimethoprim 200+40mg/5ml susp	70%	27%	42%	93%	7%	87%	100%	13%	87%
Tetracycline 250mg	0%	0%	0%	73%	23%	57%	3%	0%	3%
Zinc sulphate 20 mg disp.tab	55%	55%	0%	80%	80%	0%	80%	80%	0%
<b>Mean % Availability</b>	<b>52%</b>	<b>21%</b>	<b>32%</b>	<b>82%</b>	<b>21%</b>	<b>70%</b>	<b>70%</b>	<b>18%</b>	<b>54%</b>

*Local = locally produced products, Import = imported products, tab/cap unless stated*

## Annex 7 Patient prices of products manufactured by Tanzanian companies, all sectors

	Shelys			Zenufa			Keko			Mansoor Daya			TPI		
	No. prod.	Median unit price TSh	MPR	No. prod.	Median unit price TSh	MPR	No. prod.	Median unit price TSh	MPR	No. prod.	Median unit price TSh	MPR	No. prod.	Median unit price TSh	MPR
Acetyl salicyclic acid 300mg	32	10.00	1.98							13	10.00	1.98			
Albendazole 100mg/5ml susp	1	300.00													
Amoxicillin 250mg	2	30.00		1	66.00		6	55.00	1.96						
Amoxicillin 500mg															
Artemeter+Lumefantrine 20mg+120mg FDC tab															
Azithromycin 250 mg	22	666.67	2.35												
Chloramphenicol 250 mg	2	125.00		5	100.00	3.33									
Ciprofloxacin 500mg															
Cloxacillin 250 mg							10	58.33	2.05						
Diclofenac 50 mg				3	50.00										
Doxycycline 100mg	1	100.00		12	100.00	4.39	1	142.86							
Erythromycin 250mg	19	100.00	1.67	2	83.00		32	91.67	1.53						
Erythromycin 125 mg/5ml susp	17	10.00	0.70	12	20.00	1.41									
Fluconazole 150 mg	6	62.50	0.59												
Ibuprofen 200 mg				1	50.00										
Paracetamol 120mg/5ml susp	40	15.00	1.51	20	15.00	1.51				2	5.00		1	20.00	
Paracetamol 500mg	27	15.00	1.94	10	20.00	2.58	1	11.11		2	35.00		1	25.00	
Quinine sulphate 300 mg	7	100.00	1.08	5	200.00	2.16	18	100.00	1.08						
Salbutamol 4 mg															
Sulfadoxine+Pyrimethamine 500mg+25mg	34	333.33	7.27				9								
Sulf+Trim.400mg+80mg tab	4	32.50	1.82	1	25.00		1								
Sulf+Trim 200+40mg/5ml susp	11			4	14.50	1.87									
Tetracycline 250mg	3	66.67		4	50.00	2.38									
Zinc sulphate 20 mg disp.tab	66	100.00	1.89												
<b>All products found</b>	<b>294</b>	<b>25.50</b>	<b>1.75</b>	<b>80</b>	<b>20.00</b>	<b>2.27</b>	<b>78</b>	<b>68.33</b>	<b>1.53</b>	<b>17</b>	<b>10.00</b>	<b>1.98</b>	<b>2</b>		

An MPR is given for medicines with >3 price points. Prices in TSh are for a unit i.e. tablet, capsule, millilitre of liquid etc.

Shelys – Shelys Pharmaceuticals Ltd; Zenufa – Zenufa Laboratories (Tanzania Ltd); Keko - Keko Pharmaceutical Industries Ltd; Mansoor Daya – Mansoor Daya Chemicals Ltd; TPI – Tanzanian Pharmaceutical Industries

## Annex 8 Mark-ups in the private sector

### I. IMPORTED PRODUCTS

Medicine	Product type	Wholesale procurement price (unit)	Wholesale selling price (unit)	Median retail price (unit)	Wholesale mark-up (%)	Retail mark-up (%)
Acetyl salicylic acid 300mg	INN generic	3.3	3.7	11.11	12%	200%
Albendazole 100mg/5ml susp	Originator brand	132.75	150	250	13%	67%
Amoxicillin 250mg	Originator brand	128.25	141.5	550	10%	289%
	Branded generic	30	34	50	13%	47%
	INN generic	25	27.5	66	10%	140%
	Branded generic	59	66	200	12%	203%
	Branded generic	25	27.5	68.33	10%	148%
Amoxicillin 500mg	Originator brand	319.5	352	550	10%	56%
Artemeter+ Lum. 20+120mg	Originator brand	153.33	168.68		10%	
Azithromycin 250mg	Branded generic	1230	1341.67	1750	9%	30%
	Branded generic	483.33	533.33		10%	
	Branded generic	233.33	266.67	700	14%	163%
	Branded generic	350	391.67	645.83	12%	65%
Chloramphenicol 250mg	Branded generic	60	67.5	85	12%	26%
	Branded generic	29	30	85	3%	183%
	Branded generic	45	50	90	11%	80%
Cloxacillin 250mg	INN generic	59	66	100	12%	52%
	Branded generic	42	47.5	80	13%	68%
	Branded generic	42	47.5	100	13%	111%
Ciprofloxacin 500mg	Branded generic	50	56		12%	
	Branded generic	215	236.5	300	10%	27%
	Branded generic	57	63		11%	
	Branded generic	693	770	1500	11%	95%
	Branded generic	1260	1400	1900	11%	36%
	Branded generic	48	53	175	10%	230%
	Branded generic	2250	2475	4500	10%	82%
Diclofenac 50mg	Branded generic	6.5	7.5	50	15%	567%
	Branded generic	145	160	350	10%	119%
	Branded generic	733.5	800	2000	9%	150%
	Branded generic	40	45	125	13%	178%
	Branded generic	6.7	8	50	19%	525%
	Branded generic	6	7	50	17%	614%
Doxycycline 100mg	Branded generic	23	25.5	71.43	11%	180%
	Branded generic	56	62		11%	
Erythromycin 250mg	Branded generic	50	56	100	12%	79%
	Branded generic	50	56	100	12%	79%
	Branded generic	50	56		12%	
	Branded generic	95	105	200	11%	90%
Erythromycin 125mg/5ml susp	Branded generic	13.5	15	24	11%	60%
	Branded generic	24	27		13%	

	Branded generic	15	16.5	24.5	10%	48%
	Branded generic	13.5	15	20	11%	33%
Fluconazole 150mg	Branded generic	220	250	850	14%	240%
	INN generic	197	250		27%	
	Branded generic	400	450	1000	13%	122%
Ibuprofen 200mg	Branded generic	10	11.5	41.67	15%	262%
	Branded generic	8.5	9.5	30	12%	216%
	Branded generic	6	6.75	30	12%	344%
Paracetamol 500mg	Originator brand	57.6	64	100	11%	56%
	Branded generic	11	12.5		14%	
	Branded generic	10	11.5		15%	
	Branded generic	6.5	7.3	20	12%	174%
	Branded generic	6.3	7	16.67	11%	138%
	Branded generic	8.5	9.5	14.17	12%	49%
	Branded generic	8.5	9.5	22.5	12%	137%
Paracetamol 120mg/5ml susp	Branded generic	6	6.75	50	13%	641%
	Branded generic	9	10	50	11%	400%
	Branded generic	6.5	7.5	13	15%	73%
	Branded generic	8	9		13%	
	Branded generic	14	15.5	25	11%	61%
	Branded generic	6	7	10	17%	43%
Quinine 300mg	Branded generic	7	8	15	14%	88%
	INN generic	140	160	200	14%	25%
Salbutamol 4mg	INN generic	110	125	200	14%	60%
	Branded generic	11	12.5	20	14%	60%
Sulf+Pyrimeth 500+25mg	Branded generic	5	5.6	20	12%	257%
	Branded generic	223.33	250	500	12%	100%
Sulf+Trimeth 240mg/5ml susp	Branded generic	8	9	20	13%	122%
	Branded generic	6.3	7.5	20	19%	167%
	Branded generic	7	8	15	14%	88%
Sulf+Trimeth 400+80mg tab	Branded generic	22	24.5		11%	
	Branded generic	20	22.5	50	13%	122%
	Branded generic	17.5	19.5	20	11%	3%
	Branded generic	17.5	19.5	27.5	11%	41%
Tetracycline 250mg	INN generic	20	23	50	15%	117%

*tab/cap unless stated*

## II. LOCALLY PRODUCED PRODUCTS

Medicine	Product type	Wholesale procurement price (unit)	Wholesale selling price (unit)	Median retail price (unit)	Wholesale mark-up (%)	Retail mark-up (%)
Azithromycin 250mg	Branded generic	250	275	666.67	10%	142%
Ciprofloxacin 500mg	Branded generic	46	53		15%	
Diclofenac 50mg	Branded generic	6	7	50	17%	614%
Erythromycin 250mg	Branded generic	53	58.5	91.67	10%	57%
	Branded generic	55	62		13%	

Ibuprofen 200mg	Branded generic	9	10	50	11%	400%
Paracetamol 500mg	Branded generic	6.6	7.3	15	11%	105%
Paracetamol 120mg/5ml susp	Branded generic	6.5	7.5	15	15%	100%
	Branded generic	5.75	6.5	15	13%	131%
Quinine 300mg	Branded generic	120	132	200	10%	52%
Sulf+Pyrimeth 500+25mg	Branded generic	113.33	133.33	333.33	18%	150%
Sulf+Trimeth 240mg/5ml susp	Branded generic	6.5	7.5	20	15%	167%
Tetracycline 250mg	Branded generic	23	26	50	13%	92%
Zinc sulphate 20mg	Branded generic	40	45	100	13%	122%

*tab/cap unless stated*