This Chapter examines medicine consumption by volume within the non-hospital sector. Usage patterns across 84 countries in all income categories and with a variety of different health-care systems are described.

Consumption has grown in countries of all income categories. The percentage growth is higher in low-income countries than high-income countries, although in absolute terms the picture is reversed.

Medicines to treat chronic disease are taking a larger proportion of total volume in the non-hospital sector. Projections indicate that chronic disease medicine volumes will need to increase dramatically if access is to be provided to those who need these medicines.

Usage of medicines included on the WHO Model List of Essential Medicines is similar across countries of all income categories, at about 25–35%. Higher country income is not associated with different use of the Model List products, and out-of-pocket expenditure is not necessarily associated with lower rates.

There is considerable variation in the share of original and licensed brand products both within and across product categories and countries as compared with other brands and unbranded products. This variation may represent an opportunity for policy intervention to encourage a shift in consumption to the generally cheaper unbranded categories of products.

Analysis of consumption is complicated by the diversity of databases and classification systems. While the different systems can be viewed as being complementary, consumption patterns, and the impact of pharmaceutical policy in aggregate, could be clearer if data from the public and private sectors were combined. The need for more comprehensive information is particularly acute in low-income countries.
1.1 BACKGROUND/INTRODUCTION

Medicines are key to maintaining good health. In many developing countries medicines are effectively unaffordable or inaccessible (1). As shown elsewhere in the chapter on Medicine Expenditures, in low-income countries total pharmaceutical expenditure constituted around 30% on average of total health expenditure (range 7.7% to 62.9%). The expense of serious family illness, including medicines, is a major cause of household impoverishment (2).

This chapter focuses on consumption within the non-hospital sector and looks at whether and how the situation has changed over the last 10–15 years. Usage patterns across a large number of countries are examined and the proportions of medicines to treat chronic and acute diseases compared. The extent to which medicines included on the WHO Model List of Essential Medicines are used and the use of generics is discussed. These analyses highlight issues for policy-makers in low- and middle-income countries that affect both infrastructure and policy.

1.1.1 Data sources and methods of medicine classification

Analysis of information on volumes of medicines consumed is difficult as such information is often collected in different ways for different purposes by different organizations using different definitions (see Box 1.1). Procurement organizations may collect or report information from purchases or tenders (3). Health insurance or reimbursement organizations are likely to report expenditures and volumes of specific or of categories of products (4), but only for those products approved for reimbursement. Market research organizations are likely to report purchases by pack but rarely for low-income countries, and in such countries, public sector information is often omitted. Analysis of information on expenditures is interesting, however, it cannot provide a complete picture of consumption. The reason is that prices vary greatly for the same product across countries, over time and under different circumstances as is shown in the Chapter on Medicines Prices, Availability and Affordability.

Governments have used commercially available databases such as those from IMS Health to investigate medicine consumption across countries (5). Both EuroMedStat (6) and European Surveillance of Antimicrobial Consumption (ESAC) (7) have used and compared the data available produced by national health systems with those collected by IMS for particular therapeutic categories. In high-income countries the information on volumes from administrative databases and that collected by IMS is similar. For middle- and low-income countries, however, IMS data consist of either a combination of both public and private sector sales, or private sector sales alone (see Annex 1). In these countries, conclusions drawn only from administrative data may be very different from those based on IMS data.

IMS data and classifications were used in this Chapter for two reasons – first, ease of use and comparability as discussed above, and secondly, the need to look at long-term trends. In many middle- and low-income countries, long-term trend information has often not been collected from the public sector – if only because public sector reimbursement of medicines, particularly those used in the non-hospital sector, has generally been a relatively new phenomenon. IMS data are therefore often the only source of data on consumption in earlier periods.

This Chapter focuses on consumption within the non-hospital sector. This is not because the hospital sector is unimportant but because volume information in the hospital sector is, at least within high-income countries, often unavailable, even within commercial databases. The non-hospital sector information can generally be split from the hospital sector within
the IMS databases, and usually constitutes the larger volume. Given the lack of available hospital data for many countries, therefore, analysis was restricted to the non-hospital sector. Although in order to extend country coverage, a minority of the countries’ data used (6 out of 84) related to both hospital and non-hospital sectors, or to the hospital sector alone (Denmark, Malaysia, Singapore, Slovenia, Sweden and China – see Annex 1). Robust data on volumes or particular categorizations were not available for all 84 countries in every year. The lowest number of countries included in any analysis was 73. Information on which countries’ data were unavailable is given in each section.

A summary table describing the data sources used in this Chapter is given in Annex 1. In interpreting the volume trends described below the following comments should be borne in mind:

- IMS collects relatively few data relating to consumption of medicines in Central and East Africa, despite good coverage of French-speaking Africa and also parts of North Africa. The patterns of medicine consumption described here for low-income countries as a group could be very different if more comprehensive data were available.

- The decision to focus on the non-hospital sector does not mean that the same set of medicines or conditions were always being compared, particularly over different time periods. The range of medicines distributed in the non-hospital sector differs by country and has differed over time. In some countries, for example, Bulgaria and China, medicines used within hospitals are sometimes purchased from the non-hospital sector.

- The IMS non-hospital sector data for high-income countries show that payment is almost entirely through some form of taxation or insurance. In middle-income countries, the IMS data tend to reflect a mix of funding sources and in low-income countries, the data generally reflect out-of-pocket expenditure alone. This does not prevent comparisons being made but it will affect the types of questions that can be asked and the conclusions that can be drawn.

- Changes to the distribution system can also affect the range of medicines monitored by IMS, as will changes to IMS’ coverage of that system.

- IMS data represent either purchase or dispensing by the supply chain, rather than actual consumption by patients.

### 1.1.2 Definitions

This Chapter uses a number of different concepts to classify medicines and countries, as described below.

**Medicines**

**Protection:** Medicines are classified according to whether or not a product has benefited from protection from competition in the form of, for example, product patents or data exclusivity. **Protected** products are those that are currently protected from competition. Products that are categorized as “No Longer Protected” are products that once benefited from protection, but for which this protection has now ceased or expired. Products that are categorized as “Never Protected” are products that have never benefited from protection. Classification

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1 One SU equals one tablet, one capsule, one suppository or pessary, one pre-filled syringe/cartridge, pen, vial or ampoule, one dose of an inhaled medicine or 5ml of an oral syrup or suspension. The definition of an SU of topical treatments, granules, powders, pellets, eye and ear preparations varies depending on the exact composition of the product but can be based on millilitres or grams. A Standard Unit has been defined for every product for which data are collected by IMS.
depends on the availability of robust information on patents. This information is only available in the IMS data for 25 countries and these are described in the relevant section below.

**Licensing:** Medicines are also classified separately according to the relationship between the originator of the molecule and the company that is marketing the product. Products that are marketed by the originator of the molecule are defined as "original brands". Products that are marketed under the terms of a licensing agreement with the originator are defined as "licensed brands". "Other brands" constitute two different types of product. The majority of "other brands" are branded products that are either manufactured and/or marketed by a company that is not the originator of the molecule, and for which there is no evidence of a licensing agreement, for example, branded generics, pirate products and copy products. A number of "other brands" are also branded products that contain ingredients for which there are no originators, i.e. the ingredients are derived from naturally occurring substances.
Examples are vitamins, homeopathic medicines and infant milks. Some insulins are also classified as “other brands”. “Unbranded products” are products that are manufactured and/or marketed under the generic name of their ingredient molecule(s), rather than a brand name. This classification applies even if the product is launched before the estimated patent expiry date of the active molecule ingredient, and/or marketed by the molecule ingredient originator and a licensee of the originator. These definitions are applied as the product is launched and do not change with, for example, patent expiry. An “original or licensed brand” may therefore be “protected” or “no longer protected”. The licensing categorization is available in all but 10 of the country data listed in Annex 1 (Algeria, Croatia, Estonia, India, Kuwait, Latvia, Lebanon, Lithuania, Romania and Ukraine).

Chronic/Acute: Third-level EphMRA ATC classes are categorized according to whether that class was thought to be more likely to treat chronic disease or acute disease. The classification was based principally on an analysis of 14.6 million prescriptions issued to 1.1 million patients in the 12 months up to September 2008 taken from a sample of General Practices in the UK. Classes were first defined as acute or chronic on the basis of the average number of prescriptions written per patient in that year. If the average for a class exceeded two prescriptions, the class was assigned to “chronic”. For example, most antibiotics and analgesics were classified as acute whereas asthma and diabetes medicines fall into the chronic disease category. Some classes with less than an average of two prescriptions per patient per year were also assigned to “chronic” following review. The classes that were reassigned tended to be specialist products that are less likely to be recorded as being used within a General Practice database but which are nevertheless used to treat chronic disease. The full categorization is given in Annex 2.

Essential medicines: The definition of essential medicines was derived from the WHO Model List (10). For the latest data period (2008), the most recent WHO Model List available at the time was used (the 2007 List). For earlier periods, the List most appropriate to that time period was used. The WHO Model List contains a core and a complementary list and both lists contain medicines that may be substituted by any other medicine within the same pharmacological class. Those medicines that may be substituted are marked by a square box symbol. The WHO Model List specifies the molecule name, the form and the strength of the medicine. In this Chapter, medicine volumes are attributed to WHO Model List usage on the basis of molecule name and form alone. Strength was not used to filter out volume. This analysis will therefore tend to over-estimate WHO Model List usage as all strengths, rather than just those shown in the WHO Model List, are included. Substitutable medicines were defined in this Chapter as those medicines falling in the same EphMRA ATC3 class.

Countries

Income: World Bank income categories for 2008 were used to classify countries (11). These ratings were also applied to data from earlier years, which means that comparisons over time represent comparisons between the same set of countries. In some cases data from IMS were only available as groups of countries. The data from Central America, for example, is an aggregate of six countries (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama), and the data from French-speaking Africa is an aggregate of 10 countries (Benin, Burkina Faso, Cameroon, Congo, Côte d’Ivoire, Gabon, Guinea, Mali, Senegal and Togo). These countries fall into different income categories. For the purposes of this Chapter the aggregate data were classified according to which income category was predominant. Thus French-speaking Africa was categorized as low-income (7 out of the 10 countries are low-income countries), and Central America as lower-middle-income (4 out of the 6 countries fall into the lower-middle-income category).
1.2 SITUATION ANALYSIS

1.2.1 Pharmaceutical consumption in the non-hospital sector

Per capita consumption

Table 1.1 shows the change in median pharmaceutical consumption per capita according to countries’ level of income between the years 2000 and 2008. The earliest year for which the majority of countries’ data are available was 2000, and 2008 was the latest calendar year for which data were available at the time of analysis. Growth in consumption within the non-hospital sector occurred across all income categories. High-income countries as a whole consumed very much more than lower-income ones, although some higher-income countries did post volume declines over this period, notably France. It should be remembered that these data reflect patterns in the non-hospital sector only and that volumes for the public sector in the low-income countries are not included.

Growth in volume was highest in the low-income countries. In middle-income countries growth followed the gradual expansion of public sector financing of medicines into the non-hospital sector. In low-income countries, however, where out-of-pocket expenditure is the main source of finance for the consumption shown here, other factors must be at work. One factor affecting all countries is the growing burden of chronic disease. The impact of chronic diseases on consumption patterns is examined specifically in later sections.

Table 1.1 Per capita pharmaceutical consumption in the non-hospital sector by country income category (by volume, 2008 in SU).

<table>
<thead>
<tr>
<th>Country Income Category</th>
<th>Median per capita consumption, 2008</th>
<th>Multiple of median SU per capita to that of low income countries</th>
<th>% change in median annual per capita consumption (2000 versus 2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High (n=31)</td>
<td>1042</td>
<td>7.7</td>
<td>18.6%</td>
</tr>
<tr>
<td>Upper-middle (n=15)</td>
<td>515</td>
<td>3.8</td>
<td>20.4%</td>
</tr>
<tr>
<td>Lower-middle (n=19)</td>
<td>214</td>
<td>1.6</td>
<td>22.9%</td>
</tr>
<tr>
<td>Low (n=12)</td>
<td>135</td>
<td>1.0</td>
<td>29.3%</td>
</tr>
</tbody>
</table>

Of the 84 countries listed in Annex 1, the following were excluded from this analysis: Israel, the Netherlands, Puerto Rico (high-income), Croatia, the Russian Federation (upper-middle income) and Algeria and Ukraine (lower-middle income).

For the rate of growth in volumes between these two dates, see Annex 3.

Analysis of consumption by EphMRA ATC class

Just five classes of medicines account for more than two thirds of total volume and four of them are common to all income groups in both 2000 and 2008 (see Table 1.2 below and Annex 4).

Systemic general anti-infectives (Class J) are used more widely in low-income countries, where this class had a higher share (7.3%) compared to cardiovascular medicines (Class C) (4.3%). The importance of infectious diseases in low-income countries is reinforced by an examination of medicines used in the treatment class P (Parasitology). These medicines are almost absent in 2008 within high- (0.2%) and upper-middle- (0.4%) income countries but take a relatively high volume share in low-income countries (3.5%).
**TABLE 1.2** Consumption of major classes of medicine by country income category in the non-hospital sector, 2008

<table>
<thead>
<tr>
<th>EphMRA ATC class</th>
<th>% total consumption by major classes of medicine, 2008 (growth compared to 2000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High (n=31)</td>
</tr>
<tr>
<td>A alimentary tract and metabolism</td>
<td>16.6 (-1.7)</td>
</tr>
<tr>
<td>C cardiovascular system</td>
<td>15.6 (3.0)</td>
</tr>
<tr>
<td>N central nervous system</td>
<td>16.6 (2.5)</td>
</tr>
<tr>
<td>R respiratory system</td>
<td>12.8 (-2.5)</td>
</tr>
<tr>
<td>S sensory organs</td>
<td>12.8 (0.4)</td>
</tr>
</tbody>
</table>

Growth compared to 2000 is shown in brackets. Of the 84 countries listed in Annex 1, the following were excluded from this analysis: Israel, the Netherlands, Puerto Rico (high-income), Croatia, the Russian Federation (upper-middle income) and Algeria and Ukraine (lower-middle income).

For percentage growth in volumes between these two dates, see Annex 5.

**Consumption of acute and chronic disease medicines**

In this analysis, groups of medicines at EphMRA ATC Class 3 level were classified as being used to treat mainly either acute or chronic disease (for methods and definitions, see Section 1.1). From Figure 1.1 it can be seen that those medicines classes used mainly to treat chronic disease constitute an increasing proportion of total volume across all income categories.

**FIGURE 1.1**

Comparison of medicine classes used to treat chronic diseases in the non-hospital sector as a proportion of total volume among different WHO country income categories between 1997 and 2008 (median and range)

Medicines classes used mainly to treat chronic disease constitute an increasing proportion of total volume across all income categories, although acute disease maintains a significant share.

For the list of countries’ data included in each year, see Annex 6.
although acute disease maintains a significant share. The median percentage of products used to treat chronic disease is consistently less for lower-income countries than for higher-income countries, reflecting the greater burden of infectious diseases in lower-income countries.

The growth in chronic disease medicine volumes is not unexpected. Chronic disease is forecast to increase dramatically in the developing world. The projected impact of chronic disease has been estimated for the 23 developing countries with more than 80% of the chronic disease burden in 2005. Deaths due to chronic disease were projected to rise by 48% between 2005 and 2030, and disease burden (Disability-Adjusted Life Year (DALY) lost) by 20%. A DALY is a summary measure that combines years of life lost due to premature death and years of life lived with disability (12).

**BOX 1.2**

**Type 2 diabetes and its impact on morbidity and mortality**

The study used information on treatment volumes collected by IMS from the public sector in South Africa and the public and private sectors in Brazil. Information on prevalence and current access to treatment were derived from the literature. Analysis was restricted to the public sector in South Africa due to the absence of information on prevalence of diabetes in patients treated in the private sector. Analysis covered both the public and private sectors in Brazil.

Target levels of usage of antidiabetic medicines were derived from the cohort of patients placed on an intensive glycaemic control programme as described in the ADVANCE trial, a factorial randomized, controlled trial conducted at 215 Collaborating Centres in 20 countries from Asia, Australasia, Europe and North America (15). At the time of the analysis, intensive treatment had been found to provide a 10% relative reduction in the combined outcome of major macrovascular and microvascular events as compared to standard control regimens, although more recently published trials may appear now to give a different picture.

The estimated change to current volumes if intensive treatment were introduced is shown in Table 1.3 below. Estimates are given for two levels of patient access – 15% and 60%. If a 60% target is chosen, the estimated required increases (in WHO DDDs) for oral antidiabetics in Brazil is more than 200% and well over 300% in the public sector in South Africa. Negative values indicate that current volumes exceed those needed to reach target levels in that level of patient access.

**TABLE 1.3**

**Estimated change to current volumes if intensive treatment for Type 2 diabetes was introduced in South Africa and Brazil, two middle-income countries**

<table>
<thead>
<tr>
<th></th>
<th>Increase in volume needed to intensively treat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Only 15% of all diabetes patients</td>
</tr>
<tr>
<td>South Africa (public sector)</td>
<td>Melformin</td>
</tr>
<tr>
<td></td>
<td>Sulfonylureas</td>
</tr>
<tr>
<td></td>
<td>Insulin</td>
</tr>
<tr>
<td>Brazil</td>
<td>Melformin</td>
</tr>
<tr>
<td></td>
<td>Sulfonylureas</td>
</tr>
<tr>
<td></td>
<td>Insulin</td>
</tr>
</tbody>
</table>
The impact of such growth on absolute volumes, as opposed to expenditure, is relatively unexplored. An analysis was therefore carried out to estimate the absolute volume increase needed to treat patients with Type 2 diabetes in two middle-income countries, and indeed what effect wider usage would have on morbidity and mortality (13). Diabetes is a significant cause of chronic disease burden and by 2025 approximately three quarters of those with diabetes will live in developing countries (14). The methodology and results are described in Box 1.2.

The use of essential medicines by country income category

The WHO Model List of Essential Medicines is a guide for the development of national and institutional essential medicines lists. Medicines were categorized according to whether or not they were included within the WHO Model List (for more information on essential medicines and the WHO Model List see the Chapter on Selection and for the methods and definitions used here, see Section 1.1).

Figure 1.2 shows the percentage of total volume, and interquartile range, in the non-hospital sector in 2008 made up by medicines listed on the core and complementary WHO Model List of Essential Medicines and medicines that are permitted to be substituted for those on the core and complementary List issued in 2007. It is important to note that the IMS data from low-income countries exclude publicly reimbursed medicines, and that in middle-income countries the information from the public hospital sector is not included. A key comparison is between the public sector in high-income countries and the private sector in low-income countries. This is because these represent on the one hand national or insurance funded expenditure in public sector facilities and on the other out-of-pocket expenditure in private facilities. Middle-income countries in IMS data represent a mix of funding (see Annex 1).

Having said this, there appears to be little difference between country income categories, and the situation has changed little since 2002 (see Annex 8). Median usage of medicines on the Model List ranges on average between 25% and 35% across all income categories.

FIGURE 1.2

% of WHO Model List medicines (core, complementary and substitutable) of total volume in the non-hospital sector, 2008

All countries/panels listed in Annex 1 are included in the analysis.
There are a number of reasons why the use of medicines included in the WHO Model List may be so low, but these are likely to be different in the various income categories. In low-income and some middle-income countries the level will be a function of the fact that here the private sector serves to both supplement and complement the public sector. The mix of medicines stocked in the private sector will thus tend to be different to those procured by the public sector. Given the mix of funding sources in middle-income countries, however, it might have been expected that the rate of WHO Model List usage would have been higher than that seen in low-income countries. However, it is clear from the data from high-income countries that a higher income, and wider public reimbursement of medicines, does not necessarily correlate with greater or lesser use of the WHO Model List products.

### 1.2.2 Consumption of brands and/or generics

#### Percentage of volume in the retail sector by type of brand in 2008

As discussed earlier, IMS data can be divided into two broad categories: “original brands” plus “licensed brands” and “other brands” plus “unbranded medicines” (for definitions see Section 1.1).

In 2008, the share (in volume) of other brands and unbranded was more than twice that of original and licensed brands across all income categories (see Table 1.4). The share of original and licensed brands was highest in high-income countries but similar in both middle- and low-income countries. There has been modest decline (2–3%) in the percentage of original and licensed brand usage since 2000. The higher percentage use of original and licensed brands in high-income countries no doubt reflects their higher use of on-patent products. These similarities however hide considerable variation between countries in the use of generic medicines, as shown in the next section.

<table>
<thead>
<tr>
<th></th>
<th>High (n=31)</th>
<th>Upper Middle (n=12)</th>
<th>Lower Middle (n=18)</th>
<th>Low (n=12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>38%</td>
<td>23%</td>
<td>22%</td>
<td>30%</td>
</tr>
<tr>
<td>Minimum</td>
<td>7%</td>
<td>6%</td>
<td>7%</td>
<td>10%</td>
</tr>
<tr>
<td>Maximum</td>
<td>57%</td>
<td>38%</td>
<td>32%</td>
<td>31%</td>
</tr>
<tr>
<td>Percentile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>33%</td>
<td>18%</td>
<td>14%</td>
<td>20%</td>
</tr>
<tr>
<td>75</td>
<td>46%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>High (n=31)</th>
<th>Upper Middle (n=12)</th>
<th>Lower Middle (n=18)</th>
<th>Low (n=12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>35%</td>
<td>20%</td>
<td>19%</td>
<td>28%</td>
</tr>
<tr>
<td>Minimum</td>
<td>17%</td>
<td>9%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Maximum</td>
<td>55%</td>
<td>38%</td>
<td>33%</td>
<td>31%</td>
</tr>
<tr>
<td>Percentile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>26%</td>
<td>16%</td>
<td>10%</td>
<td>17%</td>
</tr>
<tr>
<td>75</td>
<td>44%</td>
<td>23%</td>
<td>25%</td>
<td>29%</td>
</tr>
</tbody>
</table>

Of the countries listed in Annex 1, the following were excluded from this analysis in both 2000 and 2008: Estonia, Kuwait, the Netherlands (high-income), Croatia, Latvia, Lebanon, Lithuania, Romania (upper-middle-income), Algeria, India, Ukraine (lower-middle-income).
Consumption of generics in higher-income countries

In 25, mainly high-income, countries, the IMS consumption data can be broken down according to the existence of legal or commercial protection from competition (see Section 1.1 for definitions). This allows analysis of only that part of total consumption that has never been protected against competition or for which protection has expired or ceased (the “unprotected” market). Figures 1.3 and 1.4 show a breakdown of the unprotected market for

FIGURE 1.3
Volumes of oral forms in the unprotected market, 2000

FIGURE 1.4
Volumes of oral forms in the unprotected market, 2008

As noted above there is considerable variation between countries in the use of the different types of product. It is clear that the USA, the UK, Canada and Germany use a substantial amount of unbranded (generic) medicines while several other countries still rely heavily on original or licensed branded products even though their protection has expired or ceased years previously. In the higher-income countries described here, it may be that reference pricing, rebates paid by the wholesalers or pharmacists, regional or national procurement contracts or other reimbursement policies lead to little or no differential in the price of the original or licensed brand and the equivalent unbranded generic at some or all of the points within the distribution chain. It is only where this is not the case that wider use of unbranded generics would produce savings and policy needs to take these factors into account.

Consumption of generics in lower-income countries in the non-hospital sector

In lower-income countries the difference in price between original and licensed brands and their branded or unbranded generic equivalents can be great. For example, in a review of the WHO/HAI pricing studies the “percentage difference in price between originator brands and lowest-priced generics (brand premium) in the private sector was over 300% in lower-middle-income countries and low-income countries, whereas in upper-middle-income countries it was substantially lower (152%), and in India it was only 6%.” (1)

As explained in Section 1.1, in lower-income countries it is not possible within the IMS data to split out the unprotected market. However it is possible to look in some detail at some widely used molecules. Figure 1.5 shows how the share of volume of original and licensed brands varies for each of five commonly used medicines from different therapeutic classes. Each of these medicines had generic equivalents according to the WHO/HAI survey. Outlier products whose market share was more than more than 1.5 times the Inter Quartile Range

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**FIGURE 1.5**

Consumption of original and licensed branded versions of five commonly used medicines* in the non-hospital sector in the year to September 2009 (as a percentage of total consumption)

*Acyclovir 200 mg, atenolol 50 mg, ciprofloxacin 500 mg, omeprazole 20 mg and simvastatin 20 mg.
(IQR) for the country are indicated by circles. Outlier products whose market share was more than three times the IQR for the country are indicated by asterisks.

Even within this small sample of products it can be seen that the use of original and licensed brands varies both by medicine and across countries. Again such variation may offer an opportunity for savings if there were greater use of generics. However, branded generics have sometimes been found to be priced at the same price as the original or licensed brands and the perception of the relative quality of branded or unbranded generics and indeed their relative pricing in each country has had a significant effect on consumption patterns.

1.3 FUTURE CHALLENGES AND ISSUES

The current and projected growth in volumes seen here will challenge the health-care budgets of both individuals and governments, and perhaps also the supply chain itself. As demand grows, unless systems and resources improve, the rate of stock-outs, already too high in both the public and private sectors in the developing world, may worsen.

The analyses in this Chapter suggest some useful areas for further investigation at an individual country level that will help to address these two issues:

- Whilst the intra- and inter-country variation in the use of generic medicines is not necessarily indicative of inconsistent policy, it does suggest that a review of the different incentives and requirements for generic prescription, dispensing and substitution, and their implementation, may generate substantial savings.

- The role of the private sector supply chain should be considered. The impact of dramatically increased volumes on the reliability of supply may be better managed using the skills and resources of both sectors than either alone. Lessons from the Medicines Transparency Alliance may be relevant.

- The 25–35% share of consumption of medicines that are on the WHO Model List of Essential Medicines may indicate that a local review of consumption patterns of products on the national list is appropriate, if this has not been done already.

These actions, and assessment of their impact, will benefit from comprehensive information covering both the public and private sectors. In lower-income countries, particularly those in sub-Saharan Africa, the information that is available is spread across a number of different databases and sources. Efforts to link together such sources of information on price, volumes and expenditure should be encouraged.
REFERENCES


**ABBREVIATIONS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATC</td>
<td>Anatomical, Therapeutic, Chemical</td>
</tr>
<tr>
<td>CCPs</td>
<td>Certificats Complementaire de Protection, Supplementary Protection Certificates</td>
</tr>
<tr>
<td>DALY</td>
<td>Disability-Adjusted Life Years</td>
</tr>
<tr>
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ANNEXES

Annex 1 Summary of country information used
Annex 2 Classification of acute and chronic disease medicines
Annex 4 Top 5 medicine classes by volume and country income category: 2000 and 2008 compared
Annex 5 Top 5 medicine classes by volume and country income category: % growth 2000–2008
Annex 6 Country data availability for acute and chronic disease analysis
Annex 7 Estimates of the impact of Type 2 diabetes on volumes and of the impact of different treatment regimens on overall survival in simulated cohorts of type 2 diabetes patients in South Africa, China and Brazil
Annex 8 Analysis of volume in the non-hospital sector in 2002 and 2008 according to whether the medicine is included on the WHO Model List of Essential Medicines