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# 9

## Measuring price components

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### 9.1 BACKGROUND

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The price paid for a medicine comprises a number of *price components*, the manufacturer's selling price (MSP) being just one of them. As medicines move along the supply chain, from the manufacturer to the patient, additional costs are added to the MSP. These price components come from a variety of sources, such as freight costs, government-collected tariffs, taxes and mark-ups collected by middlemen to meet their overheads, and procurement procedures. Such fees are often high, regularly constituting between 30% and 45% of the price of the dispensed medicine but they can even exceed 100% (1–3). Price components are a concern for all actors involved in public health and access to medicines, from governments, nongovernmental organizations (NGOs) and social insurance plans to prescribers and patients.

Price components have both a direct and cumulative impact on the price of the medicine. Since price components are cumulative (i.e. each is applied to the running total), each price component rises from the base (MSP) price on which all subsequent charges are levied. Even a relatively small price component early in the supply chain can contribute significantly when its effects are compounded as other price components are applied.

Governments may not always have a complete picture of medicine price components because different ministries may be involved in purchasing and distributing essential medicines. However, accurate information on the various price components, including the MSP, is needed to develop measures that reduce the prices paid for medicines, make distribution systems as efficient as possible and enable reliable international price comparisons.

Before the WHO/HAI Project on Medicine Prices and Availability, there was no methodology to systematically collect, analyse and compare information on medicine price components. Accurately budgeting total costs for service delivery and making careful predictions about how many patients can be treated are difficult without a clear understanding of the costs incurred in procuring, storing and distributing medicines. Unreliable information on medicine prices and the inability to analyse their price components hamper governments from constructing sound medicine pricing policies and evaluating their impact. It also makes it hard for governments to determine whether their medicine expenditure is comparable to that of other countries at a similar stage of development. Finally, those responsible for purchasing

medicines cannot negotiate better deals because they have no sound basis from which to start their negotiation.

As part of the WHO/HAI medicine prices survey, individual price components and their impact on medicine prices at the point of delivery are being investigated. The data collected on price components can be used to develop national pharmaceutical policies, such as creating tax and tariff exemptions, controlling mark-ups and establishing government-recommended selling prices, which aim to increase access to life-saving medicines.

The Price Components study has two goals. The first three-pronged goal is to help the participant categorize price component costs in the national health system; identify those components with the most significant contribution to the final price; and develop pharmaceutical policies that can reduce the price paid for dispensed medicines. The second goal is to gather data on the manufacturer's selling price for reliable international price comparisons. As with the data gathered on medicine prices, availability and affordability, price component data will also be posted on the WHO/HAI Medicine Prices web site, which will provide global market intelligence of the manufacturers' selling prices. The web site will also allow international comparisons of medicine prices at different stages of the supply chain.

**The price components survey is an integral part of the medicine prices survey.**

## **9.2 OVERVIEW OF THE PRICE COMPONENTS SURVEY METHODOLOGY**

The price components data collection methodology has two parts: a pharmaceutical policy investigation at the central level and research into actual price components along the medicine distribution chain. WHO and HAI conducted an in-depth validation study in three countries (Morocco, Pakistan and Uganda) in 2005 and an additional study in New Delhi, India, in 2007 (4, 5), which confirm the appropriateness of the methodology.

Data collection begins at the central level where investigators gather information on national policies that affect pharmaceutical prices. This includes:

- information on import tariffs on finished products, including exemptions for particular products and for certain buyers;
- financial charges incurred in importing pharmaceuticals, such as charges for letters of credit at the central bank or charges for foreign currency transactions;
- policies on taxes levied on medicines, both along the supply chain and to the final customer;
- policies that control mark-ups in the supply chain;
- policies on quality assurance, as set by the ministry of health, and associated charges for any required quality control tests;
- the entry points of imported medicines into the country as well as the port fees and the costs for customs clearing that are incurred.

Collecting these data will require interviewing staff in various ministries and health-care delivery systems to identify what mark-ups are allowed by law and any restrictions that are imposed on them (for example, a maximum mark-up).

The survey's second part comprises collecting the actual price components of selected medicines as they move along the supply chain. Since there are many possible distribution routes and intermediaries, the survey begins at the end of the supply chain and tracks each medicine backwards to the beginning. That is, researchers must begin at the end of the supply chain – at the dispensaries in the public sector or retail pharmacies in the private sector – and track the targeted medicine to the beginning of the supply chain – the manufacturers or importers.

Data are collected in at least the public and private sectors, as well as any 'other' sector used in the medicine prices survey, in two regions. Five to seven medicines are tracked from the time they are procured from the manufacturer until they reach the patient. Medicines are selected to reflect a range of categories (e.g. single- and multi-source products, imported and locally produced products) in which different price structures could be found. Where possible, data are collected for both the originator brand product and a generic equivalent for each medicine.

At the dispensaries or private retail pharmacies, investigators collect information on the procurement price and the dispensing price, and identify the wholesaler or public sector supplier for each medicine. They also note any mark-ups, taxes and dispensing fees. Once investigators have visited all dispensing points they aggregate the wholesaler information to identify which wholesalers should be interviewed. Next the investigators visit these wholesalers and public sector suppliers, and collect information on wholesale mark-ups, local distribution costs and any taxes collected. At the wholesalers/public sector suppliers, investigators will identify the international supplier or local manufacturer. Investigators will visit as many of the supply chain stages as possible, and gather as much information on the price components as can be found. Data collection continues at each stage of the supply chain within the target country, ending with the importer (for imported medicines) and the manufacturer (for those medicines that are locally produced).

The data collected on the components of medicine prices are analysed according to five common stages of the supply chain that all medicines traverse as they move from manufacturer to patient:

- manufacturer's selling price + insurance and freight (Stage 1);
- landed price (Stage 2);
- wholesale selling price (private) or central medical stores price (public) (Stage 3);
- retail price (private) or dispensary price (public) (Stage 4); and
- dispensed price (Stage 5).

This categorization allows comparisons both among health systems and between countries. The collected data are entered into the *Price Components Data Entry* page of the computerized workbook (Part II). The *Price Components Data Analysis* page will help investigators study the different components and identify those with the most significant impact. The price components survey findings should be included as a case study in the general medicine prices and availability survey report. As with other survey data, price components data are published on the HAI web site for cross-country analyses of the manufacturers' selling prices and price component structures.

**Results from the price components survey are presented as a case study, rather than as quantitative research results.**

### 9.3 OVERVIEW OF PRICE COMPONENTS

Price components vary among countries, among sectors of the health-care system and among medicines. For example, certain classes of medicines (e.g. life-saving medicines) might be exempted from a mark-up or the public sector might be exempted from certain taxes and tariffs. Some countries administer originator brand and generically equivalent medicines differently. The following price components are commonly found in the medicine price chain:

- MSP
- Insurance and freight
- Port and inspection charges
- Pharmaceutical import duties
- Mark-ups by importers, wholesalers and retail distributors
- Value Added Tax (VAT)/Goods and Services Tax (GST)
- Dispensing fees.

To understand the impact of these component costs, the supply chain has been divided into five stages that medicines traverse as they move from manufacturer to patient (see Fig. 9.1). The components in each stage vary by country, and components are incurred in different orders. However, using the five-stage approach allows for comparisons at the end of each stage among sectors and among countries.

**STAGE 1: MSP plus insurance and freight.** For locally produced medicines, the Stage 1 cost is the MSP for the recommended or surveyed pack size, plus (possibly) domestic transport to the purchasing entity. For imported medicines, the Stage 1 cost is the MSP plus insurance and international freight (CIF).

**STAGE 2: Landed price.** The landed price includes all other price components that arise during medicine procurement and delivery to the procurement office. This includes banking fees for foreign currency purchases, inspection charges (either pre- or post-shipment), port fees (docking, storage, handling, insurance in port), customs clearing, import tariff and importer's mark-up. Any fees collected centrally are listed here, e.g. the Pharmacy Board fee. The landed price also includes local transport charges to the central warehouse, the importer or the wholesaler but does not include domestic storage and distribution costs after the medicines leave the purchasing warehouse.

**STAGE 3: Wholesale selling price (private) or Central Medical Stores price (public).** The wholesale selling price or Central Medical Stores price is based on the landed price, and includes either the wholesaler's additional expenses or the central warehouse's overhead costs, e.g. quality control, storage, handling, overhead expenses (such as salaries, security and rent) and profit margin as well as local transport to the retailer/health facility. Many of these might be included in the wholesale mark-up; it is important not to count them twice.

**STAGE 4: Retail price (private) or dispensary price (public).** The retail (pharmacy) selling price is based on the wholesale selling price, and includes the retailer's/dispensary's additional expenses, e.g. storage, handling, overhead expenses and profit margin. Many of these expenses might be included in the retailer's mark-up; it is important not to count them twice.

**STAGE 5: Dispensed price.** The dispensed medicine price includes the Stage 4 price plus any dispensing fees and any sales taxes (VAT or GST), if applicable. Where there is no dispensing fee or sales tax applied, there are no Stage 5 costs and the price at the end of Stage 4 is the dispensed price. Furthermore, in many public sector programmes the patient does not pay; the cost at the end of Stage 5 is intended to reflect the cost at the point of delivery, whether to the health system, insurance group or patient.

### BOX 9.1

#### A note on mark-ups

A mark-up is a charge added to the purchasing price to cover the costs and margins of the wholesaler or retailer. The mark-up may be a fixed amount or a percentage charge. In some countries, the government sets a maximum wholesale or retail mark-up. In other cases, pricing is unregulated: the government does not restrict the margins and manufacturers, wholesalers and pharmacies may charge what they wish. Some countries apply a combination at the retail level of a smaller fixed mark-up plus a set dispensing fee. Where a government sets limits on mark-ups but is not able to enforce these limits, the result can be that wholesalers and retailers charge higher mark-ups than allowed by law. But in very competitive markets wholesalers and retailers might collect less than the maximum mark-ups to gain more customers.

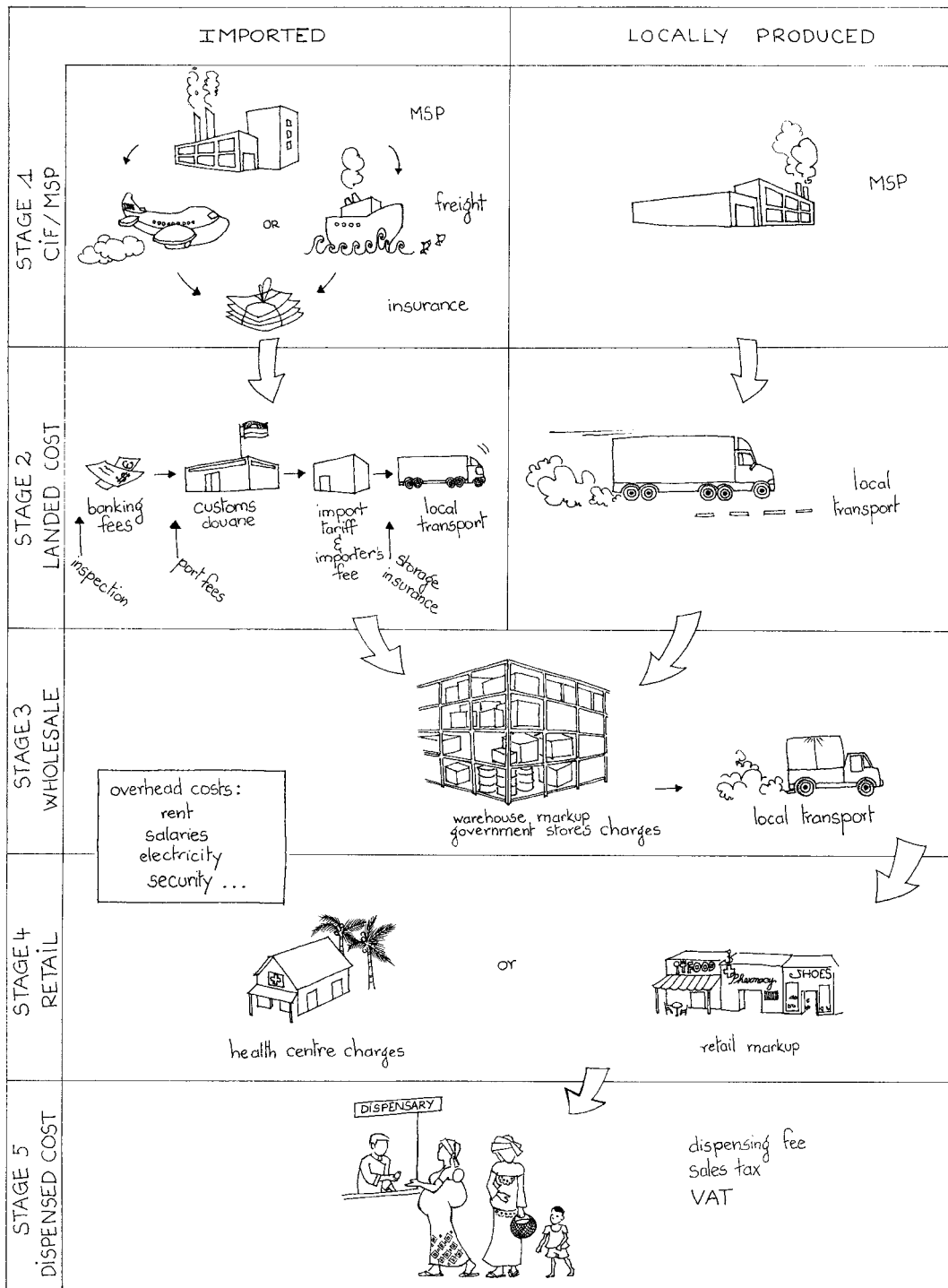
Fig. 9.1 illustrates the staged approach to price components. Dividing the supply chain into stages in this way has several advantages. The division into Stage 1 and Stage 2 allows countries to examine the MSP cost separately from the costs of procuring and landing the product. The division between Stage 2 and Stage 3 allows for comparison of the landed cost of the medicine at the port or at the importer's warehouse before it enters the domestic distribution system. Distinguishing between the wholesaler and the retailer selling prices (Stage 3 from Stage 4) allows the investigator to examine the mark-ups that cover the overhead costs and profit margins of these actors in the supply chain. The information collected in Stage 5 is important for understanding fees the patient pays that are separate from the retailer's mark-up, plus any taxes applied at the retail level.

Price component names vary widely between countries. The next section provides a list of price components, with a definition and an example for each. Use these descriptions both as a guide to what costs to look for and to match the price components you find in your research. These are the most common price components discovered to date; other countries might have different ones.

#### 9.3.1 Stage 1: Manufacturer's selling price + insurance and freight

The Stage 1 price comprises two prices: a medicine's base price (MSP) and insurance and freight charges. For an imported product, this is the MSP plus costs for insurance and freight to the importing country. For a locally produced medicine, the Stage 1 price is the MSP. Defining Stage 1 in this way allows for comparisons of

Fig 9.1 The staged approach to price components



prices between imported and locally produced equivalent medicines, and identifies the MSP.

### Manufacturer's selling price (MSP)

The MSP is the price the manufacturer charges for the medicine.

### Insurance and freight

Insurance and freight are the costs of insuring and shipping the products to the destination country. For locally manufactured products, these components do not apply.

Shipping costs are accounted for in different ways. The principal shipping terms are:

**EXW: EX-Works:** The selling price reflects the price at the purchase site. The buyer is responsible for all insurance and freight costs.

**FOB: Free on Board:** The seller is responsible for transport to the port of shipment (in the exporting country); the buyer is responsible for international shipping and insurance.

**CIF: Cost, Insurance, Freight:** The seller is responsible for freight to the destination port and includes this cost in the selling price; the buyer is responsible for insurance once goods are loaded on the carrier and all costs after arrival in port.

**DDU: Delivered Duty Unpaid:** The seller is responsible for insurance and freight to a named place of destination; the buyer assumes responsibility for insurance and transport, including import duties, once delivered.

It is important that investigators try to separate the MSP from insurance and freight, although it might not always be possible. Manufacturers sell the same product to different organizations for different prices: when the MSP is coupled with the shipping costs this is difficult to see. These price differences occur for many reasons, among them: some procurement offices have better negotiating skills; some have better access to market intelligence; and some are being penalized for a poor payment history. Separating the MSP and the insurance and freight will allow for more accurate international price comparisons.

MSP information can be a challenge to find (although countries have managed to do so), particularly in the private sector. However, this survey's aim is to identify it as accurately as possible. In the public and 'other' sectors, the investigator should check the awarded tender price. For imported products it is necessary to check if the tender price is EXW, FOB, CIF or DDU. In the private sector, the wholesaler(s), the customs office or the ministry of health will often be able to provide information on the import price (Stage 1 price), which they know for tariff purposes. For locally procured products, the MSP is the price that the wholesaler or the public or private procurement agency pays a local manufacturer. Remember that there are two sides to every transaction: one side might be easier to approach than the other.

### 9.3.2 Stage 2: Landed price

The landed price is the cost of the medicine after it has arrived in a country, has cleared all customs and import requirements, and is then transported to the wholesaler, the importer or Central Medical Stores. This stage also includes the price components that arise from the procurement process. The landed price therefore

includes, among others, the MSP, insurance and freight costs, inspection, import tariffs, inspection and port charges and local transport costs to the wholesaler, importer or Central Medical Stores. These are described below.

### Finance/banking fees

Procuring pharmaceuticals usually involves large tenders worth millions of dollars. Investigators should ask about the cost for letters of credit, the purchase of foreign exchange, special foreign currency bank accounts, commissions and special licences for importation. Moreover, banks often require a currency deposit or a contingency fee to guarantee the availability of funds. Contingency fees only become price components when the contingency fee is collected, but bank handling or administrative fees are often collected. Investigators should consult with an international bank to identify these and other financial costs.

### International inspection

Products crossing borders are inspected to verify quantity, quality, export market price, import customs value and import eligibility. Inspection can be carried out either prior to shipment or upon arrival in the receiving country. Fees for inspection are either based on a percentage of the order value or are a minimum flat fee (usually for small orders). The inspection fee is paid either by the importer/buyer or, in the case of pre-shipment inspections, can be included in the selling price. Pre-shipment inspection fees are often labelled 'SGS fees'. Investigators should check with the customs office and the ministry of trade to find these costs.

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**Inspection fees are a special case when filling in the Collection sheet and the workbook. In order to allow comparisons of all inspection fees, you are asked to record both pre-shipment and in-country inspection fees as Stage 2 price components.**

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### Import tariff or duty

If there is an import tariff, it may apply to all imported medicines or there might be a system to exempt certain products and purchasers. Investigators should check whether an import tariff is levied on the target medicines. In addition, check whether the same level of tax or duty applies to all products. Exemptions for different products, different sectors, and different delivery programmes should be reported. (Note that import tax or duty may also apply to imports of raw material for local production, but this is outside the scope of this study. You can mention this in the final report.) Investigators can check with any tax official about tariffs that apply to medicines.

### Importer's mark-up

The importer purchases pharmaceuticals internationally and sells them domestically to various health systems. The importers will add a mark-up to cover their costs and profit. Importers' costs include local storage (rent, utilities, staff), local transport, packaging and marketing. When listing the importer's mark-up, take care not to 'double count' costs recorded elsewhere (e.g. the import tariff). If the



importer's mark-up is government-regulated in your country, please note that fact in your final report.

#### Port and clearing charges

Other charges may be collected to cover such costs as clearance, temporary storage, stamp duty, handling and insurance in port. Governments may charge for documentation, such as data collection for statistical purposes. Investigators should interview importers to identify these costs.

#### Pharmacy board fee or national drug authority fee

A pharmacy board fee is a charge on medicines (percentage or fixed fee) collected in some countries that goes to the pharmacy board (council) or similar body, or the national drug regulatory authority. In some countries, this fee is applied to all medicines, while others apply it only to imported medicines or locally manufactured medicines. The pharmacy board fee should not be confused with the registration fee collected by the national drug regulatory authority to register a product for use in country. The pharmacy board fee is based on volume or number of purchases, while the registration fee is a one-time (or once a year) per item fee. Check with the pharmacy board, as well as the ministries of health or trade and the medical stores to find the pharmacy board fee. If the pharmacy board fee varies by category of medicine (i.e. essential or non-essential), these variations should be recorded in the final report.

#### Quality control testing

Medicines are often tested as each new batch arrives in the country (or at the procurement office) to ensure that they meet quality standards. The costs for running these tests, for collecting samples of each batch of medicine and of storing it for later comparison can be add-on costs.

Quality control fees differ from other price components because their cost has a direct benefit to the patient; they are intended to guarantee the product's quality. These price components show that all price components do not have to be eliminated, but simply accounted for. It is important to identify these costs, to increase overall transparency in pricing and to reduce the chance of hiding other price components behind the claim that they are necessary for safeguarding the medicine supply. Medicine quality control costs should not be eliminated, but they should be closely examined. Check with the national drug regulatory authority.

#### Transport costs

Stage 2 transport costs represent the cost of moving goods from the port or airport (for imported medicines), from the importer (if applicable) or from the factory (for locally produced medicines) to the wholesaler's warehouse or central medical stores. Check with importers, wholesalers and central medical stores on these costs.

#### Other fees and tariffs

Many countries have additional fees and tariffs that do not fall into the above categories. Examples include the Defence Levy that used to be collected in Sri Lanka on all imported medicines, the Consular Invoice which is used in Central America, or

fees for health, safety and technical standards documentation accompanying each order. Please describe all other fees and tariffs incurred after purchase and during Stage 2 of the supply chain in detail in your final report, being sure to describe variations by product or sector.

The ministries of health, trade and finance, as well as customs, the medical stores and private sector importers should be able to identify additional fees and tariffs.

### National taxes

Some countries collect national, state and/or local taxes on the procurement of medicines. These taxes are collected in addition to the Goods and Services Tax (GST) or Value Added Tax (VAT) paid by the final purchaser.

If there is a national tax levied on goods bought by the importer or supplier, list it in Stage 2. Check with the ministry of finance, importers, and medical stores. GST and VAT are handled specially, and are discussed in Stage 5 below.

### 9.3.3 Stage 3: Wholesale selling price or central medical stores price

The 'wholesale selling price' is the total cost at the end of Stage 2, plus the wholesaler's costs and profit margin, as well as any costs for moving the medicines from the wholesaler to the retailer and any regional taxes that are applicable. In the public sector (and often the 'other' sector), this is the price of the goods when they leave the Central Medical Stores. In the private sector, this is the price when the medicine leaves a wholesaler.

### Wholesale mark-up

The wholesale mark-up is the percentage added by the wholesaler or Central Medical Stores to cover overhead costs. These costs encompass overhead expenses such as rent, security, electricity, staff salaries and loss. In some situations, it includes costs to transport medicines to retailers. In the private sector, the mark-up also includes a profit margin; in the public and mission sector, the margin can provide capital for future investment or cover unforeseen increases in costs (e.g. inflation or devaluation).

If the medicines move through more than one wholesaler on their way to the patient, multiple wholesale mark-ups might be levied. This tends to happen as medicines move from central, urban areas to more rural ones. (6)

In some countries, the government applies a ceiling or maximum percentage limiting the mark-up that a wholesaler can add. In some cases, this mark-up is not enforced and much higher percentages can be observed. Where applicable, both the maximum allowable mark-up and the actual observed mark-up should be described in the final report.

### Regional or state taxes

Some countries collect state or regional taxes on medicine procurement. These taxes are collected in addition to the national taxes discussed above, and the GST or VAT the final purchaser paid.

If there is a regional tax levied on goods bought by the wholesaler or medical stores, list it here. Check with the ministry of taxation, wholesalers and medical stores. GST and VAT are handled specially, and are discussed in Stage 5 below.

### Transport costs

Stage 3 transport costs include the cost of moving goods from the warehouse (wholesaler) to the point of delivery (retailer) or, in the public sector, from the central or regional medical stores to the hospital pharmacies/dispensaries or health post.

In the public sector and in some 'other' sectors (e.g. church mission sector), medicines are distributed from a central warehouse directly to health facilities or via regional and/or district storage facilities. Mark-ups can be charged by a regional store as well as the central store, so check this information.

#### **9.3.4 Stage 4: Retail price (private sector) or dispensary price (public sector)**

The Stage 4 price components include the retailer's/dispensary's additional expenses, e.g. storage, handling, overhead and profit margin. The 'retail selling price' at the end of Stage 4 reflects the total cost to the public sector dispensary or private sector pharmacy, including overhead costs and profit margin.

### Retail mark-up

The retail mark-up is the percentage that retailers (pharmacies) add to cover their costs, including their profit. These costs include those overhead costs that retailers incur in their practice, such as rent, staff salaries, repackaging and loss, as well as profit. Retail mark-ups are not limited to the private sector: the public and other sectors can also use mark-ups to cover their costs.

Mark-ups can vary between products: imported and locally produced medicines often have different mark-ups. Pharmacies may also charge different mark-ups on originator brands and generically equivalent products. In some countries, for example, the mark-ups are higher on generic equivalents because, even with the mark-up, they are considered to be affordable. If this applies in your survey area, it should be reported in the final report.

In some cases, the government applies a ceiling or maximum percentage limiting the mark-up that a retailer can add. However, it is also common to find that this mark-up is not enforced and much higher percentages can be found in practice. Where applicable, both the maximum allowable mark-up and the actual observed mark-up should be described in the final report.

In some countries, there may be different maximum mark-ups for different price bands: this is called a 'regressive mark-up' and means that the mark-up decreases as the price of the medicine increases. If this is the case, enter the appropriate mark-up for your target drug in the workbook, and describe the range of the mark-up system in the final report.

In countries where prices are not regulated or where regulations are not enforced, there might be great variation in retail mark-ups. If medicines are sold in the informal sector (medicine outlets), price variations can be even greater. (In this study, investigators are only required to collect information in one retail establishment per sector: however, if investigators are aware of these variations, they are encouraged to describe the variations and the surveyed establishments in their final report).

### Local or town taxes

Some municipalities collect local or town taxes on medicines. These taxes are collected in addition to the national and state taxes discussed above, and the GST or VAT the final purchaser paid.

If there is a local tax levied on goods the retailer or health post bought, list it here. Check with the ministry of taxation, retailers and public sector health posts to identify these taxes. Remember that GST and VAT are handled specially, and are discussed in Stage 5 below.

### 9.3.5 Stage 5: Dispensed price

At Stage 5 of the supply chain, the price components are the VAT, GST and any dispensing fees that are collected when the medicine is dispensed. These price components are included in the survey, regardless of whether the patient, the public sector, an insurance organization or another institution pays for the medicine because they are still a component that raises the final cost of medicine delivery.

### Value Added Tax (VAT) and Goods and Services Tax (GST)

VAT and GST can be levied on sales. These taxes vary from country to country, and also from state to state within a country. In many countries, medicines or certain sectors are exempted from VAT or GST; in other countries, VAT is collected at each stage of the supply chain. Each participant in the supply chain pays cost plus VAT, and then adds VAT to its selling price. The VAT is thus refunded to the participant so that the final purchaser is the only one who pays VAT. In these cases, VAT should only be recorded as a Stage 5 cost and should not be listed on each intermediate sale along the supply chain. Similarly, if the government reimburses VAT applied in the distribution chain's intermediate stages, it should not be counted. However, if VAT is applied in more than one stage of the distribution chain and this amount is not recovered in the selling price or reimbursed by government, then it should be counted in each appropriate stage. In some countries, GST is charged on medicines. As with VAT, only the tax added to the final price should be recorded.

### Dispensing fees

Pharmacies may be allowed to charge a dispensing fee per item dispensed or per prescription filled. The fee is intended to reflect the work involved in handling a prescription; it is not a doctor's fee for service. The dispensing fee can take various forms: a percentage mark-up, a fee per item or a fee per prescription. Dispensing fees can also vary for originator brand and generic formulations.

### Dispensed medicine price

Investigators should record the final dispensed medicine price paid by the final purchaser. This could be the patient, the government or an insurance provider. For countries that use a maximum retail price (MRP), investigators should check if the patient pays the MRP or if a different price is charged, and note this in the report.

In other cases, the government sets a maximum retail price, and it is left to the wholesaler and retailer to agree on their respective mark-ups. If there is a maximum sales price for your target medicines, report whether the dispensed medicine price is different from the maximum sales price in your final report.

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## 9.4 COSTS THAT ARE NOT INCLUDED IN PRICE COMPOSITION ANALYSIS

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The following medicine price components should not be included in the price components analysis.

### Registration fees

The national medicines (or drugs) regulatory authority may charge a fee when a product is registered in the country, plus a renewal fee for as long as the product is on the market. Since these fees are charged only when a market authorization is issued or as an annual fee, and are independent of the quantity of medicine sold, they should not be included here as a price component.

### Patient fees for service

Information on the following charges should not be included in the price components survey:

- fees for services other than the cost of the medicine (and the dispensing fee) such as the doctor's consultation; and
- travel expenses for a patient to reach a dispensing site.

However, if these fees are a significant burden for the patient they should be discussed in the final report.

Where a standard charge (e.g. a fee for the consultation/fee for service, including medicines) is set for all patients in public health facilities, this information should be included in the survey report.

### Co-payments

A co-payment is a payment an individual makes, usually at the time a medicine is obtained, to offset part of the medicine and/or dispensing cost. Since co-payments may not be universally applied (e.g. different fees may be charged for different classes of patients), and are usually not related to the value of the product being supplied, these charges are not included in the price components analysis.

### Informal charges

There may also be informal charges about which no information is publicly available. The only way of measuring them is by household surveys (interviewing patients at home) or exit interviews (interviewing patients when they leave the pharmacy or doctor). Surveys of this kind are not covered here, but can be developed as separate projects. However, participants are encouraged to describe additional informal charges in their final report.

### Discounts and rebates

Manufacturers and suppliers sometimes reward buyers with discounted prices<sup>1</sup> or rebates.<sup>2</sup> Discounts are also sometimes offered to patients, with pharmacies

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<sup>1</sup> A discount can take several forms, including: 1) a price reduction given to customers at the date of sale; 2) bonus deals: additional units supplied to customers below list price; 3) sale of equipment at a reduced rate; 4) contributions to salaries or other incentives or services.

<sup>2</sup> A rebate is a payment made by the seller to the purchaser after the date of sale.

reducing the price of a medicine (e.g. for customer loyalty); offering the patient a non-medical product at a discount when a medicine is purchased; or offering other rewards and enticements.

Discounts and rebates are not uncommon, and can be prolific in some countries. Often they vary depending on the medicine or the patient. In many countries, it is extremely difficult to collect information on the discounts and rebates being offered, and in such cases these should be excluded from the price components survey. However, in some countries discounts and rebates are standardized and information is more readily available. For example, a price components study in New Delhi, India, found evidence of bonus deals (e.g. buy nine get one free) on pharmacy invoices (3).

If it is possible to collect information on discounts and/or rebates, then these should be included in the price components survey. That is, they should be noted in the Comments columns of the Price Components Data Collection form and the *Price Components: Data Entry* page of the workbook. They should also be discussed in the final report, ideally including a separate analysis that shows their impact on various profit margins in the supply chain.

### Manufacturing price components

Price components exist in all supply chains, including those for the materials needed to manufacture essential medicines locally. For example, there are import tariffs and sales taxes on raw active pharmaceutical ingredients; the excipients and the machinery used in manufacturing; local distribution charges to transport supplies to the factory; and operating costs to cover rent, electricity and business taxes.

Countries with a significant local production capacity might be interested in production line price components. However, the goal of the price components survey is to understand the MSP as it relates to the costs to distribute medicines to the point of delivery – the price components of distribution. Understanding the MSP and manufacturing price components requires a different type of analysis, including assigning indirect factory costs to individual tablets and amortizing costs across a subset of locally produced medicines. It is also likely that it would not be possible to analyse manufacturing price components before a complete analysis of distribution price components had been completed. Thus, price components are restricted in this survey to the procurement and distribution of finished products.

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## 9.5 PLANNING THE PRICE COMPONENTS SURVEY

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### 9.5.1 Meeting with the advisory committee

An advisory committee meeting is essential in planning the price components survey. The meeting's objectives include:

- identifying the goals of the price component survey and the information to collect;
- receiving advice on which medicines to track and which price components to survey;
- gaining insight into medicine procurement and supply chains in various sectors; and
- discussing and planning data collection, namely: identifying key informants, determining how they should be approached and by whom (this could include advisory committee members).

The advisory committee for the price components survey could be the same as that for the general medicine prices and availability survey, or could be a subcommittee with particular knowledge of the medicines supply chain in various sectors.

### **9.5.2 Personnel**

Finding price component information can be difficult and requires specific expertise. Since gathering data on price components will require interviewing government, procurement and financial officials, researchers should have experience in qualitative research, specifically in conducting open-ended interviews. Some price components might be considered ‘trade secrets’ that participants are not willing to reveal: for example, a wholesaler might not be willing to publish his mark-up for fear of losing customers. Researchers will therefore need good investigative and interpersonal skills, including an inquisitive, non-threatening approach. They also require an understanding of the relationships and the political situations in their country, and should ideally be recognized in the pharmaceutical sector. Investigators or the advisory committee should have connections that can facilitate obtaining meetings with key informants.

Survey personnel from the general medicine prices survey can be used for the price components survey provided that they have the necessary skills and are available during/following the general medicine prices survey. The survey manager is the most likely to possess the skills necessary to conduct price components data collection. In cases where the survey manager lacks the necessary skills or is subject to time constraints, separate survey personnel will need to be recruited to conduct the price components survey; possibly someone from the Advisory Committee.

Two people should undertake data collection visits for various reasons, among which is to ensure that comprehensive notes are taken during interviews. The data collection team can be composed of the survey manager and an area supervisor, particularly when local knowledge of a region is required. Alternatively, the survey manager could conduct the interviews with a member of the advisory committee, or with a researcher recruited specifically for the price components survey.

### **9.5.3 Seeking endorsements**

As with the general medicine prices survey, a signed, official letter of endorsement can be of great help in carrying out the price components survey. A sample letter of endorsement, shown in Annex 2, is included as a Word file on the CD-ROM for local modification as appropriate. WHO will also provide a letter of endorsement on request.

### **9.5.4 Planning timeline**

The price components survey can either be conducted at the same time, or after the general medicine prices survey. Conducting both surveys simultaneously will require less time and resources, since survey teams will only need to travel to the field once. For example, area supervisors can collect data on price components during the validation visits conducted as part of the general medicine prices survey. However, conducting the price components survey after the general medicine prices survey has the distinct advantage that the sample medicines and facilities can be selected based on the results of the medicine prices and availability survey. For this reason, it is strongly recommended that the price components survey be conducted directly after the general survey.

Table 9.1 below presents a sample timeline of activities for the price components survey. It is understood that officials are busy and appointments might not occur in this order, and that more time might be needed for certain activities. In addition, countries might have other organizations to be added to the interview list. Multiple meetings with certain stakeholders might also be needed, i.e. two or three manufacturers, or follow-up meetings with the same informant. Experience from previous price components surveys shows that meetings at the central level require at least one full hour and sometimes two hours; three meetings a day is therefore realistic. Any remaining time should be used for the team to review data collected on the day, corroborate that team members heard the same thing and transcribe notes.

### 9.5.5 Planning where to conduct the study

The price components survey includes two types of data collection: central data collection on official policies related to price components, and tracking specific medicines through the supply chain to identify add-on costs. Central data collection generally takes place in the main urban centre, though visits to key informants located in other areas may be required. Medicine tracking is conducted in two of the six survey areas where the general medicine prices and availability survey was conducted, namely

- the main urban centre; and
- one additional survey area.

The additional survey area should be rural and should be located as far from the urban centre as possible. This will ensure that data are collected on the mark-ups by intermediary distributors and on local distribution and storage costs as medicines move out to the district and health centre levels. Ideally, the additional survey area should also contain multiple retailers, so that alternatives are available if one retailer does not agree to participate.

**Table 9.1 Sample timeline for price components survey**

DAY	TASK	DETAILS
1-2	Planning	Survey planning meeting with advisory committee. Select regions, sectors, dispensing sites and medicines to be surveyed. Identify key informants and schedule appointments for data collection visits. Seek endorsements, prepare data collection forms and plan travel.
3	Training/briefing	Training of national team. Meeting with private sector professional (e.g. wholesaler), who can give private system overview.
4-8	Central data collection	Meet with ministries of health, finance and trade, WHO, pricing authority, drug regulatory authority, manufacturer's association, pharmacists' council, tax consultant, importers, Central Bank, transport company, pharmacy sellers' association, quality control laboratory.
9-11	Medicine tracking (capital)	Data collection at dispensing sites: public and mission health centres and retail pharmacy. Collect central data from procurement agents, Central Medical Stores, local manufacturers.
12-14	Medicine tracking (rural area)	Data collection at dispensing sites: public and mission health centres, and retail pharmacy. Identify and visit other resellers, procurement agents, local manufacturers and local wholesalers.
15-16	Medicine tracking (capital)	Visit wholesalers and collect data.
17-20	Analysis	Data analysis.
21	Clarification	Day for additional meetings to clarify data, as necessary.
22	Synthesis	Meeting of advisory committee to review results, develop recommendations and consider further research.
23-24	Write-up	Report writing.



**When collecting pricing data, price components should be surveyed in both the urban centre and a rural region to capture the full extent of possible mark-ups by middlemen.**

## 9.6 SELECTING THE MEDICINES TO BE SURVEYED

Researchers should select five to seven medicines that illuminate pricing policies in their country. Some countries may need to survey additional medicines if it is known that mark-ups and other add-on costs vary according to different categories of medicines. Targeting more than seven medicines complicates data collection in busy retail pharmacies.

Where a medicine prices and availability survey has been conducted, the results should be used to select medicines with high prices, and/or variable pricing patterns. Target medicines should be selected from the global and regional core lists of medicines included in the medicine prices survey (three to four from the global list and two to three from the regional list). Target medicines should also have high use/sales volumes and should be commonly found in all sectors surveyed. Depending on the local situation, the medicines selected should also cover categories of medicines that will provide the full range of pricing structures. These should include both imported and locally produced medicines, where these exist. Other categories can include:

- single-source, multi-source and limited-source (e.g. ACTs) products;
- National Essential Medicines List (NEML) and non-NEML medicines;
- price-controlled and non-price controlled medicines;
- taxed and tax-exempt medicines;
- treatment of acute and chronic conditions;
- various formulations (tablet, liquid, injection); and
- adult and paediatric treatment/ailment.

In some countries, it may be useful to select a medicine used in public health emergencies or provided by international donors such as the Global Fund to Fight AIDS, Tuberculosis and Malaria, since these may be exempted from certain mark-ups. These data can also help to plan budget requirements to store and distribute these 'donated' medicines.

**It is useful to draft a table showing the characteristics of the medicines selected for the components survey, and to include it in the final report.**

Data will be collected on both the originator brand and a generic equivalent, where these exist. The generic product should be the lowest-priced generic most commonly found during the medicine prices and availability survey. If this medicine is not available at a dispensing site, the lowest-priced generic product available at the dispensing site should be used.

Up to 7 medicines, with 2 product types per medicine, in up to 4 sectors, results in a total of 56 possible items to track per region, as illustrated in Table 9.2. But it is unlikely that all forms are available. The public sector in many countries stocks only generics, and many 'single' source medicines will not have a generic equivalent.

**Table 9.2 Data to be collected**

<b>MAIN URBAN CENTRE</b>							
	Med 1	Med 2	Med 3	Med 4	Med 5	Med 6	Med 7
<b>Public</b>	Generic	Generic	Generic	Generic	Generic	Generic	Generic
	Originator	Originator	Originator	Originator	Originator	Originator	Originator
<b>Private</b>	Generic	Generic	Generic	Generic	Generic	Generic	Generic
	Originator	Originator	Originator	Originator	Originator	Originator	Originator
<b>Other 1</b>	Generic	Generic	Generic	Generic	Generic	Generic	Generic
	Originator	Originator	Originator	Originator	Originator	Originator	Originator
<b>Other 2</b>	Generic	Generic	Generic	Generic	Generic	Generic	Generic
	Originator	Originator	Originator	Originator	Originator	Originator	Originator
<b>ADDITIONAL REGION (RURAL SURVEY AREA)</b>							
	Med 1	Med 2	Med 3	Med 4	Med 5	Med 6	Med 7
<b>Public</b>	Generic	Generic	Generic	Generic	Generic	Generic	Generic
	Originator	Originator	Originator	Originator	Originator	Originator	Originator
<b>Private</b>	Generic	Generic	Generic	Generic	Generic	Generic	Generic
	Originator	Originator	Originator	Originator	Originator	Originator	Originator
<b>Other 1</b>	Generic	Generic	Generic	Generic	Generic	Generic	Generic
	Originator	Originator	Originator	Originator	Originator	Originator	Originator
<b>Other 2</b>	Generic	Generic	Generic	Generic	Generic	Generic	Generic
	Originator	Originator	Originator	Originator	Originator	Originator	Originator

## **9.7 SELECTING DISPENSING SITES (MEDICINE OUTLETS) TO SURVEY**

In tracking medicines through the supply chain, data are collected for all sectors in the price survey (public, private sectors and other sectors).

In each region, at least one dispensing site is surveyed per sector. Survey sites are selected before data collection begins, from the facilities used in the Medicine Prices survey. Selection of facilities should be based on the following criteria:

- All/most of the target medicines were available at the time of the medicine prices survey
- Medicine prices were found to be outside the normal range (e.g. outside inter-quartile range)
- Pharmacist (or facility staff) at the dispensing site were cooperative and would be likely to participate in additional data collection
- Convenience/feasibility – public and other sector facilities can be selected based on their proximity to a private sector outlet satisfying the above criteria.
- For rural facility: medium to long supply chain.

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## 9.8 SELECTING WHICH PRICE COMPONENTS TO SURVEY

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Section 9.3 provided definitions of different price components, however, it is not necessary to collect information on each component. Investigators should make the best use of their time by selecting components to survey based on the following criteria:

- **Financial impact.** Small, one-time charges have a minimal impact on the final medicine price, especially when compared with, for example, the retail mark-up. Researchers should focus on those price components that have a more significant financial impact. These should include price components that appear early in the supply chain (e.g. bank charges), since their contribution is compounded by increasing the base price of components that occur later in the supply chain.
- **Changeability.** Some price components are easier to regulate and enforce than others. Price components that are already part of a country's pharmaceutical pricing policy might be easier to research and discuss.
- **Distributed responsibility.** Select price components that are the responsibility of different participants in the supply chain. There are three principal actors involved in procurement whose actions influence price components: the government, the private sector and the procurement office. The target price components should include some that are under the influence of each participant, e.g. for the government, import tariffs and taxes; for the private sector, wholesale and retail mark-ups; and for the procurement office, overhead expenses and the cost of procurement.
- **Advocacy.** Select price components that lend themselves to an advocacy campaign. A retail mark-up of 10% or less is difficult to argue against, without seeming insensitive to retailers and their families. In contrast, a government tax on medicines of 7% might be easier to bring to national attention, with the argument that a tax on medicines is a regressive tax on the sick.
- **Transparency.** Pick price components to investigate that are not already well understood or transparent. Focus on components that have not been researched.

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## 9.9 TRAINING

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Since collecting data on price components is sometimes challenging, appropriate training of survey personnel is essential to ensure that comprehensive and reliable information is obtained. The price components research team is quite small (two to three people), therefore, the training session can consist of an informal meeting of a half to a full day's duration. Training should focus on ensuring that researchers have a clear understanding of the various price components applied at each stage of the supply chain, and how to identify these components through both central level data collection and medicine tracking. Topics to be covered include:

- Survey objectives
- Background information on the medicines supply chain in the country's various sectors
- The staged approach to price components
- Description of price components in each stage of the supply chain
- Overview of the price components survey methodology

- Central data collection
  - identifying informants and setting up appointments
  - conducting interviews – process and techniques
  - consolidating and synthesizing data
  - frequently encountered problems and how to address them (role play exercises, e.g. uncooperative minister)
- Medicine tracking
  - the price components data collection form
  - medicine tracking – process and techniques
  - frequently encountered problems and how to address them
- Data entry
- Data analysis
- Report writing.

During the training session, substantial guidance should be provided on conducting price components interviews, since specific skills are required when obtaining what can sometimes be perceived as sensitive information. Trainers should emphasize the following:

- Upon arrival for the interview, the interviewers should introduce themselves, explain the visit's purpose, and provide informants with a copy of the letter of endorsement and business cards (where appropriate). Interviewers may also want to reassure commercial informants that their confidentiality will be maintained.
- Interviewers should explain the survey's objectives, namely to improve access to affordable medicines for all by researching medicine prices and charges along the supply chain.
- It is useful to stress that the supply chain's viability is a key consideration in this work.
- To establish a dialogue, researchers should begin the interview by asking general, factual questions about the function of the interviewee's office.
- Interviewers will need to gauge the informant's interest and manage discussions accordingly. If time is short, researchers should focus on the key objectives and critical information to be obtained.
- Above all, it is important to understand and be sensitive to each informant's role in the medicines supply chain.
- The wording of delicate questions must be carefully selected. During training, it may be useful to provide examples of the right and wrong ways of asking the same question.
- Throughout the interview, allow the interviewee time and space to question the survey team or express thoughts/opinions.
- Being able to listen to and incorporate the interviewee's opinions into the questioning will build a common ground for further discussion.
- It may be useful to ask the interviewee to provide examples of specific medicines to illustrate complex policies or pricing formulas.

- At the interview's conclusion, researchers should leave room for ongoing communication. It is often necessary to contact informants a second or third time to clarify the information obtained and/or verify information from other sources.

### 9.10 PLANNING DATA COLLECTION VISITS

As much as possible, data collection appointments should be planned in advance. Researchers should allocate time to plan and schedule meetings with busy professionals before the survey begins. This applies to central level visits to collect information on national pharmaceutical policies, as well as to visits to dispensing points in the public, private and 'other' sectors to track target medicines through the supply chain. Note that in tracking medicines, the public purchasers, wholesalers, importers and manufacturers to be visited will be identified as data collection progresses; as such it will not be possible to make these appointments in advance.

**Experience shows that you can obtain more information if you request an appointment rather than visiting without prior notice at what may be the busiest time of day.**

Previous surveys have shown that connections with key contacts are important for securing data collection visits. Members of the advisory committee should support the researchers in setting up appointments with key informants. An official letter of endorsement may also assist in securing appointments. It is important to build support for the research by explaining the project and its goals. Emphasis should be placed on understanding price structures in order to increase countrywide access to medicines, for all people, while maintaining the viability of the supply chain.

Within each organization/association/company to visit, consideration should be given to the most appropriate informant to interview. A mid-level staff member may have a better understanding of day-to-day operations than a minister or chief executive officer (CEO), may be more accessible and may have more time available. It can sometimes take two or three phone calls or visits before finding the right person to talk to. When setting up appointments, interviewees should be asked when the best time is to visit in order to avoid peak hours of activity.

**It will probably be easier to speak to importers or manufacturers after data have been collected from wholesalers and retailers so that the researcher already has an understanding of the issues that wholesalers and retailers face.**

### 9.11 DATA COLLECTION

The following section provides guidance on the two types of data collection in the price components survey: central data collection on official policies related to price components, and tracking specific medicines through the supply chain to identify all price components. Table 9.3 provides a list of common price components and possible sources of information.

**Table 9.3 Price components and possible sources of information**

TARIFF/TAX	POSSIBLE SOURCES OF INFORMATION
<b>STAGE 1</b>	
Manufacturer's selling price (MSP)	Manufacturer's list prices (from wholesalers), Public sector tenders, customs declaration forms, local manufacturers
Freight and insurance charges	Importers, customs declaration forms Ministry of health tenders
<b>STAGE 2</b>	
Finance/banking fees	Ministry of finance, Central bank
International inspection	Drugs/Medicines regulatory authority, Ministry of trade
Port charges, clearance	Customs, Importers, Medical stores
Quality control testing	Ministry of health, Procurement office, Quality assurance/Drug testing lab
Import tariff or duty	Customs, Ministries of health, trade, finance, Medical stores, Importers
Importer's mark-up	Importers, Wholesalers, Ministry of trade
Pharmacy council/Board fee	Pharmacy board/association/council, Ministries of health, trade, finance, Medical stores
'Other' fees	Ministries of health, trade, finance; Medical stores, Importers, Wholesalers
National taxes	Ministry of finance
<b>STAGE 3</b>	
Transportation costs	Importers, Wholesalers Ministry of health, Medical stores
Wholesale mark-up, official (hypothetical)	Wholesaler, Ministry of health, retailers, Pharmacy board/association/council, Medical stores, Ministry of health
Wholesale mark-up, observed in the field	Wholesaler, retailer Medical stores
Quality control costs	Wholesaler, Medical stores, Quality assurance/Drug testing laboratory
Regional taxes	Ministry of finance
<b>STAGE 4</b>	
Retail mark-up, official (hypothetical)	Retailers, Drugs/Medicines regulatory authority, Pharmacy board/association/council, Ministry of health
Retail mark-up, observed in the field	Retailers /Health facilities
Local or town taxes	Retailers, Ministry of finance
<b>STAGE 5</b>	
VAT/GST	Retailers, Ministry of finance
Dispensing fees	Pharmacies, Ministries of health or trade, Pharmacy board/association/council
Cost to patient	Retailers

Other sources of information that have proven useful in countries that have conducted price components surveys include:

- local representatives of multinational pharmaceutical companies;
- the WHO local representative;
- independent tax attorneys (for tax code) (meetings with tax and import experts whose business is not exclusively in pharmaceuticals can be very productive); and
- the pharmaceutical manufacturers' association.

#### **9.11.1 Central data collection on national pharmaceutical policies**

At the central level, information will be collected on government policies and regulations that affect price components. Researchers will visit ministries, the customs office, the central bank, the pharmacy board and others for this information. Annex 6 contains a list of key informants to interview as part of central data collection, the

key objectives of the interview, and sample questions to ask. Uncovering several of these price components will require good investigative skills, determination and numerous questions. The information gathered at the central level will be compared to the prices reported in the field to see which policies are implemented and whether they are enforced.

**It may be useful to start with a visit to a wholesaler or retailer who will be excluded from the price component survey to ask for an overview of the pharmaceutical market in that country.**

### 9.11.2 Collecting data along the supply chain

In the second phase, investigators will collect data along the public, private and 'other' supply chain in the main urban area as well as in one additional survey area used in the medicine prices survey. Participants will begin at the end of the supply chain, at the dispensing point for each sector, and track the targeted medicines backwards along the supply chain to their point of origin, recording the price components incurred. Participants will visit dispensing facilities, retailers, wholesalers, public sector purchasers, local manufacturers and importers in their investigations of the price components. Note that some of the data collected might contradict data collected at the central level. Inconsistencies can illuminate the system structure and system operation and should be recorded.

For each target medicine, track both the originator brand product and the lowest-priced generic product most commonly found during the medicine prices and availability survey. Note that in some countries with a large generic manufacturing capacity, it may be appropriate to collect data on 'branded generics' in addition to/ in place of originator brands. If the lowest-priced generic product is not available at a given dispensing site, collect data on the generic product with the lowest price at that site.

In the private sector and some other sectors (e.g. dispensing doctors) it is necessary to start at the end of the distribution chain (the retail pharmacy) and work backwards to identify wholesalers and manufacturers. In the public and mission sectors, however, the distribution chain is known and data can therefore be collected in either direction. For example, it may be more efficient to visit the Central Medical Stores during central level data collection, even though public sector dispensing sites have not yet been visited.

Manufacturers or importers are likely to be supplying medicines to multiple wholesalers, and similarly wholesalers will be supplying multiple retailers. After you visit all the dispensing units in a survey area, compile a list of wholesalers and the products they handle. If there are regional wholesalers, visit them at this time. If there are central wholesalers, wait until data collection in both survey areas is complete, then compile a list of central wholesalers and the products they handle prior to conducting visits.

**As you work backwards through the distribution chain, it is useful to consolidate the data collected, e.g. by keeping a running list of the wholesalers you need to visit and the medicine data you need to collect from them.**

Wherever possible, try to obtain documentation of the prices you are quoted, e.g. through paper invoices or computer systems. Valuable information on the manufacturer and distributor is often given on the packaging and on package inserts. Secondary data, such as manufacturers' web pages or other Internet sites, can also be a useful source of information. Note that multiple names on packaging can be confusing e.g. when a product is imported but the labelling is done locally. Such cases will require clarification in order to differentiate between imported and locally manufactured products

**BOX 9.2****Hints for data collection**

- Price components affect both sides of a transaction. Buyers will negotiate a lower purchase price so that they can add a higher mark-up; sellers will ask for a higher mark-up or a greater guaranteed volume of sales to safeguard their profit. It is helpful to ask the same question of both sides of the purchase and sale: wholesalers frequently know what retail mark-ups are, and retailers understand wholesale mark-ups.
- It is also useful to ask the same questions several times. This can include asking one question of several wholesalers, as well as making repeat phone calls to one wholesaler and asking different staff the same question. Even if you believe you have the answer, it is worthwhile checking other participants' perceptions. This should include both those involved with pharmaceuticals and those who are not: port storage charges or banking fees are the same regardless of the import item.
- Ask a question even if you think you know the answer. Each participant might have a different view of the same issue.

**Note regarding exemptions**

**Many countries exempt certain medicines or certain sectors from various tariffs and fees. For example, a country might exempt life-saving medicines from a mark-up. Donated goods are also often exempt from several tariffs, but incur price components such as transport, storage and insurance.**

**Possible exemptions include:**

- some or all of the medicines on the essential medicines list;
- medicines for public health programmes;
- some or all of the medicines on the public tender;
- medicines imported by NGOs or the mission sector; and
- donations.

**Investigators should check whether their target medicines and sectors are exempt from any fees or tariffs. In addition, investigators should check whether the same level of tax or duty applies to all products. Exemptions for different products, different sectors, and different delivery programmes should be reported. Note that import tax or duty may also apply to imports of raw material for local production; these data are not currently being collected, but can be presented in the final report.**

**9.12 THE PRICE COMPONENTS DATA COLLECTION FORM**

The Price Components Data Collection form, found in Annex 7 and on the CD-ROM that accompanies this manual, is used to collect data in the field. A separate form should be completed for each medicine, for each specific product type, sector and



region being surveyed. Participants should photocopy or print the required number of copies of the price components data collection form. Because the medicines are tracked backwards along the supply chain, the Price Components Collection form is filled in from the bottom (Stage 5) to the top (Stage 1).

### 9.12.1 Elements of the Price Components Data Collection form

#### *Type of charge*

The Type of Charge column is for recording the various possible price components in each stage of the supply chain.

#### *Charge status*

The status of each charge is described according to two categories:

- Not found: NF: Price component is known to exist, but no data were found
- Value: V: Price component exists and data were found

#### *Charge basis*

Charge basis refers to whether the fee is a:

- **Percentage fee.** The price component is a fixed percentage on the previous cumulative total. For example, an import tariff of 8% calculated on the total value of the order.
- **Fixed fee.** A fixed fee is charged regardless of the cumulative total price. Examples include a dispensing fee of US\$ 1 on each prescription or US\$ 200 for international inspection of an entire shipment.

#### *Price to which charge is applied*

This column is used for recording the price to which the charge is being applied. Usually, this will be the cumulative price at the time at which the charge is applied (i.e. the previous line). However, sometimes multiple charges are applied to the same price. For example, in Sri Lanka both the import tariff and the defence levy were applied to the Stage 1 procurement cost. While the order in which fixed fee charges are added does not affect the final price, the price to which a percentage charge is applied will affect the amount of the charge. Suppose there is a procurement with a value of US\$ 10 000, with an 8% import tariff and a 4% defence levy, then both the import tariff and the defence levy should be levied on the base of US\$ 10 000. The cumulative total should be US\$ 11 200. If these two charges are added sequentially, the defence levy will be applied to a higher price, resulting in an incorrect total (US\$ 11 432).

#### *Amount of charge*

The amount of charge is entered as a percentage (e.g. 8%) or as a fixed fee (e.g. US\$ 200).

#### *Comments*

The Comments column can be used for explanatory comments or any additional information, such as 'inconsistent with official rates'.

**Source**

This refers to where the medicine was obtained. For example, at a private retailer the source usually refers to the wholesaler from which the medicine was purchased. This information is used to track medicines backwards through the supply chain.

**Table 9.4 Example of the price components data collection form for Stage 3****Source:** *GenLabs Ltd*

Stage 3: Wholesaler or medical store	Type of charge	Charge status	Charge basis	Price to which charge is applied	Amount of charge	Comments
	Procure price	value	N/A	N/A	100.00	
	<i>Regional tax</i>	<i>V</i>	<i>%</i>	<i>Stage 3 procure price</i>	<i>3.0</i>	
	<i>Wholesale mark-up</i>	<i>V</i>	<i>%</i>	<i>Stage 3 procure price</i>	<i>10.0</i>	
	<i>Transport costs</i>	<i>V</i>	<i>Fixed</i>	<i>Cumulative Sub-total</i>	<i>5.50</i>	<i>Not included in mark-up</i>

**It is likely that some price component may have been missed or omitted: please list any costs in the 'Other fees' line of the appropriate stage and provide a description so that we can correct the omission. If you have questions, send an e-mail to HAI or WHO.**

Table 9.4 shows an example of the Price Components Data Collection form completed for Stage 3 of the supply chain.

**9.12.2 Instructions for completing the Price Components Data Collection form****STEP 1: Prepare the data collection forms: fill in background information**

1. Identify the data collector completing the form.
2. Fill in the region and sector (capital, rural; public, private, other).
3. Fill in the name and/or identifying code of the dispensing outlet.
4. Fill in the name of the target medicine, strength, dosage form, manufacturer and pack size. Describe the target medicine by checking the appropriate boxes and adding any additional information in the space provided (e.g. acute vs chronic condition, medicine for public health emergency).
5. Identify the type of data being collected. This is usually field data (i.e. medicines tracked through the distribution chain), but could also be hypothetical data (official rates obtained centrally).

**STEP 2: Visit dispensing points in the public, private and 'other' sectors**

Visit each of the selected dispensing points in the public, private and 'other' sectors. The order of the visits does not matter. Dispensing points are visited to obtain

the price at which they purchase and sell the target medicines; to identify Stage 4 and Stage 5 add-on costs; and to identify where the medicines were obtained (e.g. wholesaler, medical store), to allow for tracking backwards through the supply chain.

**In the medicine prices and availability survey, medicines are recorded as available only if they are available on the day of data collection. In the price components survey, data should be collected on medicines even if they are not available on the day of data collection, for example by reviewing recent invoices.**

Stage 5 costs:

1. On page 2 of the Price Components Data Collection form, in the first row of the table marked Stage 5: dispensed price, record the selling price as the total price of the medicine, whether it is being charged to the government, insurance companies or the patient.
2. In the Type of Charge column list Stage 5 charges (e.g. VAT/GST, dispensing fees) *in the order in which they are applied*. For each charge, indicate the charge status (value or not found), charge basis (flat fee or per cent) and the amount of the charge. For percentage charges, indicate to which price the charge is applied (e.g. MSP, Stage 5 procure price).
3. If the patient pays a different price from the selling price, record this as the cost to patient. In the public and 'other' sectors this might be a fraction of the actual cost or might be zero. Include a description of this in your report.

Stage 4 costs:

1. Record the procurement price paid by the retailer or public dispensary. The Stage 4 procure price should be the same as the price subtotal at the end of Stage 3, however, data from different sources do not always match up.
2. Note the source (e.g. wholesaler, Central Medical Stores) of the target medicine, which is needed to track the medicine along the supply chain.
3. In the Type of Charge column list Stage 4 charges (e.g. retailer's mark-up, local or city taxes) *in the order in which they are applied*. For each charge, indicate the charge status (value or not found), charge basis (flat fee or per cent) and the amount of the charge. For percentage charges, indicate to which price the charge is applied.

Specific questions to ask at the dispensing point include:

- How do you obtain medicines (e.g. distribution lines). Public sector: Do you make any local purchases?
- Who pays for local transport? What is the cost of local transport?
- What is your margin? What is included (overhead, local transport)?
- Do you know what the wholesaler/central store margin is?
- Do you receive any discounts/rebates/schemes?
- Do you give any discounts?

**As part of medicine tracking in the public sector, researchers should identify whether any medicines are being obtained through local purchase. If public sector hospitals are procuring medicines directly from the manufacturer, a wholesaler or a retailer, rather than obtaining them through government stores procurement system, they could be paying higher prices or the current drug budget does not accurately reflect real need.**

**Delays in payment, such as late payments from governments to suppliers or from pharmacies to wholesalers, invariably increase the price of future orders. Researchers should try to ascertain whether delays in payment are common and if so, include this information in their report.**

### **STEP 3: Visit public sector procurement office and wholesalers**

Public purchasers and wholesalers are visited to obtain the price at which they purchase and sell the target medicines; to identify Stage 3 add-on costs; and to identify where the medicines were obtained (e.g. manufacturer) to allow for tracking backwards through the supply chain.

Make a list of the resellers (i.e. wholesalers or public purchasers) identified in Step 2. For each wholesaler, list the medicines that they sold or dispensed. Go to a maximum of five wholesalers (those that sell to most of the target facilities) and investigate the price components of the medicines that they sell. Complete the Stage 3 section of the price components data collection form for the drug sold by each reseller.

Stage 3 costs:

1. Record the procurement price paid by the wholesaler or public purchaser. The Stage 3 procure price should be the same as the price subtotal at the end of Stage 2, however, data from different sources do not always match up.
2. Note the source (e.g. manufacturer or importer) of the target medicine.
3. In the Type of Charge column, list Stage 3 charges (e.g. wholesaler's mark-up, regional taxes) *in the order in which they are applied*. For each charge, indicate the charge status (value or not found), charge basis (flat fee or per cent) and the amount of the charge. For percentage charges, indicate to which price the charge is applied.
4. Record the selling price of the medicine to the retailer or dispensing point. Note that this selling price may not match the retailer's reported purchase price.

Specific questions to ask the public sector procurement office or wholesalers include:

- How do you obtain medicines (e.g. distribution lines)?
- Who pays for local transport? What is the cost of local transport?
- What is your margin? What is included (overheads, local transport)? Do you know what the retailer's margin is?
- Do you know what the manufacturer's margin is?
- Do you receive any discounts/rebates/schemes?
- Do you give discounts?

**Occasionally, there is an extra step in the supply chain. This occurs when wholesalers or public purchasers procure medicines from other domestic wholesalers. If this is the case in your country, insert an additional Stage 3 table into the data collection form, and repeat Step 3 for this additional level of distribution.**

#### *Locally produced medicines:*

##### **STEP 4: Visit local manufacturers**

Where possible, schedule visits to the local manufacturers of the target medicines identified in Step 3 above. Local manufacturers are visited to obtain the manufacturer's selling price and information about wholesale and retail mark-ups, local transport charges and taxes and about the structure of the distribution system.

It may not be possible to secure visits with all local manufacturers, in which case it will be necessary to extrapolate data from selected manufacturers across target medicines. It might be useful to first visit a manufacturer that is not producing any of the target medicines to obtain general information on transport costs, mark-ups, etc. The sources of information used to estimate the MSP and Stage 1 and Stage 2 add-on costs should be clearly described in your report.

Stage 2 costs:

1. In the Type of Charge column list Stage 2 charges (e.g. transport, pharmacy association/board/council fee, national taxes) *in the order in which they are applied*. For each charge, indicate the charge status (value or not found), charge basis (flat fee or per cent) and the amount of the charge. For percentage charges, indicate to which price the charge is applied.

Stage 1 costs:

1. Enter the MSP for the pack size of the target medicine in the first row of the table. Leave the second row (INF) and third row (CIF) blank.

Specific questions to ask manufacturers include:

- Who pays for local transport to the wholesaler? What is the cost of local transport?
- What is your mark-up? What is included (local transport, taxes, marketing, profit margin)? Do you know what the wholesale mark-up is?
- Do you offer any discounts/rebates/schemes?
- Do you ever sell medicines directly to hospitals or other public sector health centres?

#### *Imported medicines:*

##### **STEP 5: Visit importers**

For imported medicines, collect the price components associated with importing the target medicine as Stage 2 costs.

Stage 2 costs:

1. In the Type of Charge column, list Stage 2 charges (e.g. finance/banking fees, international inspection, port charges/clearance, import tariff, quality control testing, importer's mark-up, pharmacy board fee, national taxes) *in the order*

*in which they are applied.* For each charge, indicate the charge status (value or not found), charge basis (flat fee or per cent) and the amount of the charge. For percentage charges, indicate to which price the charge is applied.

Note: Enter any costs of local transportation from the port of entry to the wholesaler that are paid for by the manufacturer.

2. Use the 'Other fee' category to record price components not listed here. Provide an explanation of these 'Other' charges in your report.
3. If you only have access to the price of medicines after they leave the importer or the manufacturer, you can enter this value directly in the final row.

### **STEP 6: Collect data on international procurement and shipping**

For imported medicines, collect the price components associated with procuring the target medicine and international shipping as Stage 1 costs.

**Table 9.5 Price components data collection form for Stage 1**

Stage 1	Type of charge	Charge basis	Price to which charge is applied	Amount of charge	Comments
	Manufacturers' selling price	price			
	Insurance and freight				
	CIF				

Stage 1 costs:

*Case 1: Separate Manufacturer's selling price and shipping costs:*

Enter the MSP for the pack size of the target medicine in the first row of the table. For 'Insurance and Freight': note whether this is a fixed fee or a percentage, and enter the amount paid. Enter the shipping terms (e.g. CIF, FOB, EXW) in the Comments column. Leave the third row (CIF) blank.

*Case 2: Combined Manufacturer's selling price and shipping costs:*

Enter the price found for the medicine, including shipping in the bottom row (CIF). Leave the first two rows blank.

#### **BOX 9.3**

##### **A note on maximum retail prices (MRPs)**

Labelling packages with the maximum retail price (MRP) does not always guarantee uniform prices across a country. Patients do not always buy an entire package; instead tablets may be sold individually, and the price for each tablet is set to what patients will pay. This leads to price variations across a country even if there is an MRP.

**BOX 9.4****Dealing with inconsistent data**

Inconsistencies in the collected data are common: two ministries will report different values for a mark-up, or the government-set fee will not match the fee used at the pharmacy. There is already evidence of this for wholesale and retail mark-ups: due to a lack of enforcement, the mark-up used in practice might not match the official rate. Furthermore, prices may differ between shipments or orders, particularly in countries with a volatile currency.

When inconsistent data are found, you should first verify the data, and if an inconsistency is confirmed, attempt to identify the reason(s) for the inconsistency. Any inconsistent data should be identified and discussed in the final report.

**Reporting difficulties**

Little is known about price components due to the difficulty in discovering the required data. To create a uniform system that will allow cross-country comparisons, we have made certain assumptions. You may discover cases that do not fit into the forms provided. Please send us reports and comments on those price components that do not fit into forms, additional significant price components that are not discussed in this handbook, and other information about your health sector that is relevant to the medicine prices project.

**9.13 DATA ENTRY**

The data collected on individual medicines is entered into Part II of the workbook, on the *Price Components Data Entry* page of the workbook. The workbook can then be used to generate pie charts and summary tables that can be used in reporting results, as described in the section on data analysis that follows. While information on policies and regulations is not entered in the workbook, other central level data are (e.g. bank fees). Since the price components survey is a case study, results are described in text form.

To enter data on individual medicines, open the workbook and go to the price components data entry page by clicking on the **PRICE COMPONENTS** entry button on the *Home* page, or by clicking on the Price Components entry tab at the bottom of the spreadsheet (if this tab is hidden, use the ► arrow to scroll through the tabs until it is visible).

At the top of the page there are three buttons:

**HOME PAGE:** Clicking on this button will bring you to the *Home* page of the workbook.

**SHOW/HIDE DETAILS:** This button allows you to switch back and forth between the full data entry grid, and a summarized version that can be copied into your report. When details are hidden, the 'Cumulative price that charge is applied to' column is hidden; be sure that this column is visible during data entry.

**PRICE COMPONENTS: ANALYSIS:** Clicking on this button will bring you to the page of the workbook where price components data are analysed.

The *Price Components Data Entry* page displays a blank table where you can enter data from a single Price Components Data Collection form. To begin entering data

from a new data collection form, press the **NEW** button (cell A6); the workbook will display a new (blank) data entry table.

**For each Price Components Data Collection form, one data entry table is completed.**

You can show or hide each data entry table using the **SHOW/HIDE** buttons in Column A. When data are hidden the medicine identifying information is still visible (Fig. 9.2). Once multiple medicines have been entered, it is useful to hide the data that you are not working on to avoid scrolling through large amounts of data.

**Fig. 9.2 Price composition page with hypothetical data from individual medicines hidden**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1		Price Components Data entry																
2																		
3																		
4																		
5																		
6	Home Page	Show/Hide Detail																
7	Price components analysis																	
8	NEW																	
9		Sector	Import/local	Product type	Medicine Name	Medicine Strength	Dosage Form	Pack size	Region	Manufacturer	Manufacturer's selling price	Stage 1	Stage 2	Stage 3	Stage 4	Final price	Comments	Type of data
10	Show	Public	Imported	Generic	Amoxicillin	500 mg	cap/tab	21	Urban	AB Mevs	5.00	6.10	9.23	10.61	12.73	15.73		Final data
11	Show	Private	Imported	Generic	Amoxicillin	500 mg	cap/tab	21	Urban	AB Mevs	5.00	6.10	8.23	12.98	15.58	18.58		Final data
12	Show	Private	Imported	Originator	Amoxicillin	500 mg	cap/tab	21	Urban	GSK	15.00	18.30	23.46	26.96	32.38	35.38		Final data
13	Show	Public	Imported	Generic	Amoxicillin	500 mg	cap/tab	21	Rural	AB Mevs	5.00	6.10	9.24	12.41	14.90	17.90		Final data

### 9.13.1 Completing the data entry table

The first section of the data entry table is used for entering the medicine identifying information (Fig. 9.2). Complete this section in full, including:

**Sector (Column B):** Select the applicable sector (public, private, other and other 2) using the drop-down box provided (click on the cell and then on the arrow to the right of the cell).

**Import/local (Column C):** Select whether the medicine is imported or locally produced using the drop-down box provided.

**Product type (Column D):** Select whether the medicine is an originator brand or a generic equivalent using the drop-down box provided.

**Medicine name, strength, dosage form and pack size (Columns E-H):** Enter the target medicine name in Column E, its strength in Column F, and its dosage form in Column G. Enter the pack size for which data was collected in Column H.

**Region (Column I):** Select whether the data were collected in the urban or rural region surveyed.

**Manufacturer (Column J):** Enter the name of the manufacturer of this medicine. To the right of the medicine identifying information (Columns L-P), the cumulative price at the end of each stage of the supply chain is provided as a summary (note that Final Price is the price at the end of Stage 5).

**Comments (Column Q):** You will have chosen to survey different categories of medicines based on anticipated differences in add-on costs between categories. Use this cell to fully describe the medicine being studied according to the identified categories, e.g. on/not on essential medicines list, price controlled/unregulated; imported/locally produced; single source/multi-source.



**Type of data (Column R):** Select whether the data being reported are field data or hypothetical data.

The following data entry table sections are used to enter price components for each stage of the supply chain. Data entry is essentially a process of copying data from the Price Components Data Collection forms into the data entry grid in the workbook. As such, the data entry grid contains a similar interface to the Price Components Data Collection form, with three additional columns:

- **Value of charge (Column K):** The workbook will automatically calculate the value of each known charge in local currency. For fixed fees, the value will be the same as the amount of charge. For percentages, this column will show the actual amount of the charge.
- **Total (Column L):** This column provides a running total of the target medicine price, in local currency. The workbook calculates the cumulative price automatically as data are entered.
- **Cumulative mark-up (Column M):** The workbook will calculate the cumulative per cent mark-up automatically as each charge is applied. Cumulative per cent mark-up is a measure of how much higher a certain price is above the MSP or CIF.



The data entry table is organized according to supply chain stages, shown in Column E. Depending on the data you have collected for Stage 1, select 'MSP plus insurance/freight', 'CIF' or 'MSP only' using the drop-down menu that appears when you click on the cell containing the label 'MSP + ins/freight' (default). The data entry table will automatically be updated to allow you to enter the Stage 1 data you have collected. Similarly for Stages 3 and 4, use the drop-down menu to select Wholesale/Medical Store (Stage 3) and Retail/Dispensary (Stage 4) according to whether the data being entered are from the private sector or the public sector.

**Type of charge (Column F):** In Stage 1, charges (Manufacturer's selling price, insurance and freight, or CIF) will be listed automatically once you identify the type of data you collected in Column E (see above). In other stages, the type of charge is selected using the drop-down list. If the drop-down list does not contain the charge in question, select 'Other fees' and identify the charge in the Comments Column (Column N/O).

**Charge status (Column G):** Select 'Not found' or 'Value' using the drop-down list.

**Charge basis (Column H):** Select 'per cent' or 'fixed fee' using the drop-down list. Note that for MSP/CIF in Stage 1, procurement price in Stages 3 and 4, and selling price in Stage 5, charge basis is not applicable since these are not charges but the price of the product as it enters into the respective stages of the supply chain.

**Price that charge is applied to (Column I):** This is the column used to identify the price to which a *percentage charge* is applied, which is essential for calculating the value of the charge correctly. Note that when the charge is a fixed fee, the value of the charge is the same, regardless of the point in the supply chain at which the charge is applied. Column I is therefore not applicable and is 'turned off' (shaded in grey).

Using the drop-down list, you can select the correct point in the supply chain where the percentage charge is applied. Options available are:

1. The cumulative price of a medicine at the end of a stage (e.g. selecting 'Stage 3 cumulative total' from the drop-down list applies the percentage charge to the price of the medicine at the end of Stage 3).
2. The cumulative price of the medicine at the time the percentage charge is incurred, i.e. the total price in the preceding row (most common scenario). In this case, select 'Stage [X] cumulative total after [last charge that was applied]', i.e. the charge in the preceding row. For example, an importer's mark-up is applied as 5% of (CIF + international inspection + port charges + import tariff), with these three add-on costs applied in the order indicated. In Column I, 'Stage 2 cumulative total after import tariff' would be selected since the import tariff was the most recent charge. The workbook would then calculate the mark-up as a percentage of (CIF + international inspection + port charges + import tariff).
3. The value of an individual price component (e.g. selecting 'Stage 4 mark-up' from the drop-down list applies the percentage charge to the value of the retail/dispensary mark-up).
4. In Stages 3 and 4, the price at which the medicine was procured (e.g. selecting 'Stage 3 – procure price' from the drop-down list applies the percentage charge to the Stage 3 procurement price).

**In some cases, a percentage charge is applied to a price that occurs later in the supply chain, usually the final retail price. The workbook cannot calculate the value of the charge if the price to which it is applied has not yet been determined. In these cases, it is necessary to calculate the value of the charge manually and enter it as a fixed fee in the data entry grid. In the Comments column, this can be clarified, e.g. 'Defence tax applied to final retail price'.**

**Amount of charge (Column J):** Enter the amount of the charge. For percentages, use per cent values and not decimals (e.g. 13%, not 0.13). Only enter the number – the % sign will appear automatically.

**Value of charge (Column K):** The workbook will automatically calculate the value of each charge. For fixed fees, the amount of charge and value of the charge will be the same.

**Total (Column L):** The workbook will automatically calculate the cumulative total price as each charge is applied.

**Cumulative mark-up (Column M):** The workbook will automatically calculate the cumulative per cent mark-up as each charge is applied.

**Comments (Column N):** Use this column to record any relevant notes, such as pricing formulas, exemptions, etc. If any charges were recorded as 'other fees' in Column F, be sure to indicate the nature of the charge under Comments.

The workbook automatically calculates the total value of add-on costs applied during each stage (e.g. total Stage 2 add-on costs). It also calculates the cumulative total price (Column L), and the cumulative % mark-up (Column M), of the medicine as it leaves each stage. The total price at the end of a stage is automatically imported into the next stage as the 'starting price'. However, since price components data can be difficult to obtain and involve cross-checking data from multiple sources, data from different stages do not always match. For example, based on a wholesaler's purchase price of 150.00 and a CIF price of 100.00, you know that the total Stage 2 add-on costs must be 50.00. However, the Stage 2 costs you have

entered only total 35.00, probably because it was not possible to identify all the add-on costs incurred in Stage 2.

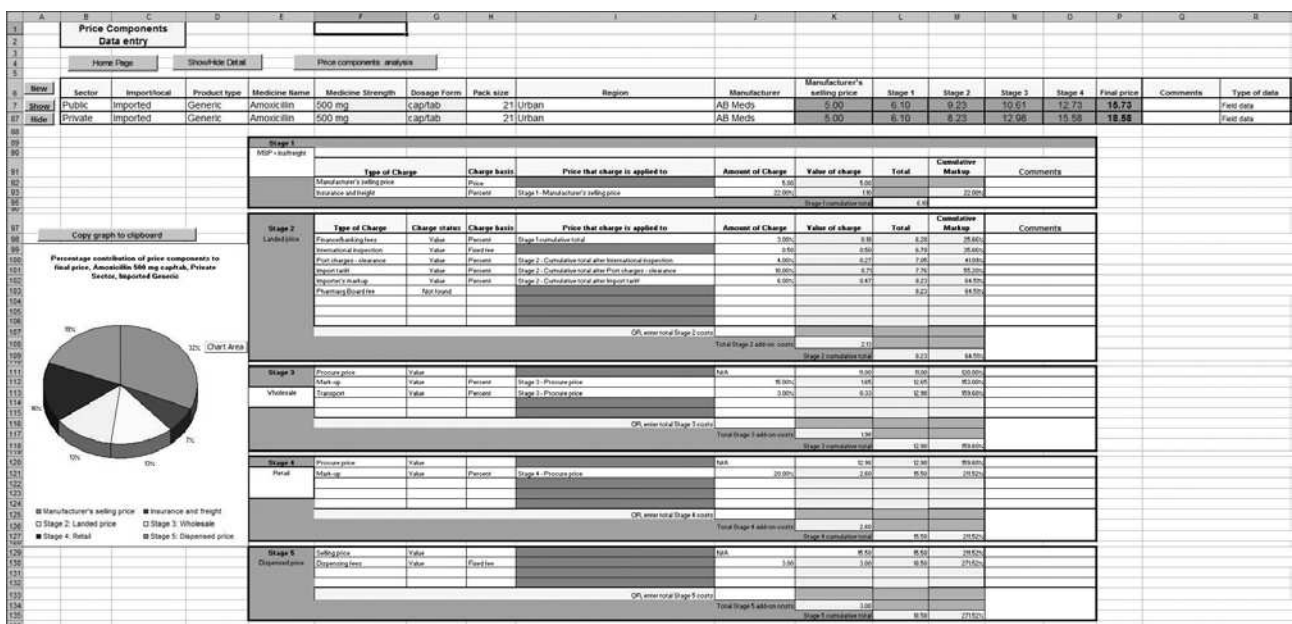
To address issues of mismatching data, you can overwrite the total costs for each stage as determined by the entered data. In the yellow rows marked 'OR, Enter total stage [X] costs', enter the alternative total cost for the stage in question (50.00 in the example above). The workbook will use this new amount to determine the cumulative total price of the medicine as it leaves the stage, as well as the 'starting price' for the next stage. Alternatively, you can also overwrite the starting price in Stages 3, 4 and 5 if you know it to be different from that calculated by the workbook. In the example above, the workbook will calculate the wholesale purchase price to be 135.00 (CIF + Stage 2 costs). By clicking on the cell in Column K containing the wholesale purchase price, you can type in the known procure price of 150.00. All subsequent calculations will then be based on this new value. *Be sure to explain any mismatching data clearly in your report.*

**Note that to the left of the data entry table, a pie chart showing the contribution of each stage of the supply chain to the final price is generated as data are entered. These pie charts can be copied by clicking on the **COPY GRAPH TO CLIPBOARD** button, and then pasted into your report to illustrate results.**

Fig. 9.3 shows an example of a completed price components data entry table. In this example:

- In Stage 2, the finance/banking fees charge is applied to the Stage 1 cumulative total, or the MSP plus insurance and freight.
- In Stage 2, the Pharmacy Board Fee is known to be a charge, but its value was not found.

**Fig. 9.3 Price components data entry table (hypothetical data)**



- The Stage 3 procure price (11.00) was identified as part of data collection, and it does not match the medicine price at the end of Stage 2, i.e. the Stage 2 cumulative total (8.23). This may be due to the fact that data were not found for some individual charges in Stage 2. The Stage 3 procure price has therefore been entered into cell K111, and is automatically used in calculating the cumulative per cent mark-up from this point forward.
- In Stage 3, both the wholesale mark-up and transport charges are applied to the same base price – the Stage 3 procure price.

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## 9.14 DATA ANALYSIS

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Once you have completed entering the data from each of the Price Components Data Collection forms into the workbook, check for discrepancies before beginning data analysis.

Analysing data on price components involves three steps:

- analysing data collected at the central level;
- analysing data collected for individual medicines; and
- comparing central information with the add-on costs observed through medicine tracking and identifying any discrepancies.

### 9.14.1 Analysing central data

Since the results of the price components study are presented as a case study, data analysis of central level data generally involves summarizing and consolidating information obtained through key informants. This should include:

- information on any policies related to price components (including any pricing formulas);
- the official and unofficial add-on costs applied to each stage of the supply chain;
- details of groups of medicines, sectors, etc. that are exempt from certain charges; and
- any prices or charges that you were not able to obtain; these indicate a lack of transparency in pricing information, which is a finding in itself.

The process of analysing centrally collected data is likely to begin during data collection and will evolve as new information is gathered.

**Where you have conflicting information on the amount of a charge from different sources, it is useful to report the amount of this charge as a range (e.g. local transport costs range from 3–6%).**

### 9.14.2 Analysing data for individual medicines

Once the price component data have been collected and entered into the workbook, they can be used for different types of analyses. You can use the summaries automatically calculated by the workbook to analyse:

- the cumulative per cent mark-up in the supply chain;
- the contribution of each stage of the supply chain to the dispensed medicine price;
- the price components with the most significant contributions to the final price; and
- comparison of price components across the sectors surveyed, the two regions studied, the product types surveyed, and any other categories of medicines included in the study.

### **Graphing individual medicines**

For each set of data entered into the *Price Components: Data Entry* page, the workbook automatically generates a pie chart showing the per cent contribution of each stage of the distribution chain to the final price of the medicine, as shown in Fig. 9.3. Pie charts can be used in combination to show differences between regions, product types and sectors, etc. Pie charts can be copied by clicking on the **COPY GRAPH TO CLIPBOARD** button, and then pasted into your report (open your report in Microsoft Word and select Edit → Paste).

### **Producing summary tables**

The workbook's *Price Components: Data Analysis* page allows you to generate summary tables across all of the medicines for which price components data were collected. These tables will allow you to compare data for different medicines and identify variations in add-on costs between product types, sectors, regions, and any other categories you have decided to study (e.g. locally produced vs imported medicines).

As shown in Fig. 9.4, summary data tables can be generated for three different measures:

- actual values;
- cumulative per cent mark-up; and
- per cent contribution to the final price.

You can switch between these measures by clicking on the respective buttons in Row 6.

#### **BOX 9.5**

##### **Difference between cumulative per cent mark-ups and per cent contribution to the final price.**

Cumulative per cent mark-up is a measure of how much higher a certain price is above the MSP price. For example, if the MSP price is 100 and the price at the end of Stage 2 is 118, the cumulative % mark-up is 18%.

Per cent contribution to the final price is a measure of a certain price as a percentage of the final medicine price. For example, if the total Stage 2 costs are 23.00 and the final medicine price is 46.00, the per cent contribution of Stage 2 to the final price is 50%.

**Fig. 9.4 Price Components: Data Analysis page showing parameters for producing summary tables**

	A	B	C	D
1		<b>Price Components</b>		
2		<b>Data analysis</b>		
3				
4		Go To Home Page	Price component : entry	
5				
6		<input type="radio"/> By Region - Rural <input type="radio"/> By Region - Urban <input type="radio"/> By Sector - Public <input type="radio"/> By Sector - Private <input type="radio"/> By Sector - Other <input type="radio"/> By Sector - Other 2	<input type="radio"/> Show Value <input checked="" type="radio"/> Show cumulative % mark-up <input type="radio"/> Show % contribution to final price <input checked="" type="checkbox"/> Show Field data <input checked="" type="checkbox"/> Show Hypothetical data	<input type="checkbox"/> Show all stages

For each set of results, two types of views are possible: tables showing results by region and tables showing results by sector. The Region view will display data from either urban or rural survey areas, depending on your selection, for all sectors included in this survey area. For example, selecting 'By Region – Rural' will display all public, private, other and other 2 sector data collected in the rural survey area. Similarly, selecting the Sector view will display data from both urban and rural survey areas for the sector (public, private, other or other 2) that you select. For each view, select the data or sector you would like to display by clicking on the appropriate button in cell B6.

You can also choose to display hypothetical data, field data or both types of data, by selecting or deselecting the appropriate buttons in Row 6 (the default is that both hypothetical and field data are displayed). For each medicine in the summary table, results are simplified to show only the MSP/CIF, or MSP/CIF contribution to the final price, the final price, and in the cumulative per cent mark-up analysis, the total cumulative mark-up. Selecting the 'Show all stages' button in Row 6 will show the value (price), cumulative per cent mark-up or per cent contribution to the final price, depending on the analysis chosen, for each stage of the supply chain.

Begin by examining the values (prices) for either the urban or rural survey area. First select 'Show Value' and then select either 'By Region – Rural' or 'By Region – Urban'. The workbook automatically generates a table of values (MSP/CIF price and final patient price) for all medicines studied in the survey area, across all sectors studied. If 'Show all stages' is selected, the value for each stage in the supply chain will be displayed in addition to the MSP/CIF price and final price. Note: in your report you should identify if the price in Row 17 was the MSP or CIF price (as entered on the *Price Components Data Entry* page).

Then examine the cumulative per cent mark-ups for either the urban or rural survey area. You can obtain these tables by selecting 'Show cumulative % mark-up', and then selecting either 'By Region – Rural' or 'By Region – Urban'. The workbook will again generate a table displaying data for all medicines studied in this survey area, for all sectors studied. Note any differences you observe between the sectors in the study. You should also look for variations between imported and locally produced medicines, originator brand products and generic equivalents, and between the other categories of medicines you have decided to survey. For example, is the total mark-up for Medicine A, an imported product, higher than for Medicine B, a locally produced product?

Next examine the per cent contributions to the final price for the same survey area by selecting this button in Row 6. The workbook will automatically generate new summary tables. Again, identify any differences between sectors, imported and locally produced medicines, originator brand products and generic equivalents, and between the other categories of medicines you have decided to survey.



**Although price components summary tables only stratify data by region or sector, you should also look for variations across the other categories of medicines you have studied (e.g. imported vs locally produced, NEML vs non-NEML)**

Once you have completed analysing data for the first survey area, re-do the analysis for the second survey area by re-generating data tables as described above.

Next you should examine the values, cumulative per cent mark-ups and the per cent contributions to the final price for each sector in the study. Generate tables for a given sector by firstly selecting 'Show value' and then selecting the appropriate 'By Sector' button, in Row 6. The workbook will generate a table displaying data for all medicines studied in this sector, for both urban and rural survey areas. Then select 'Show cumulative % mark-up' and generate this summary table for the same sector. Finally select '% contributions to the final price' to generate the third table for this sector. Repeat the analysis for each sector in the study. In each table, note any differences you observe between survey areas, and look for variations between imported and locally produced medicines, originator brand products and generic equivalents, and between the other categories of medicines you have decided to survey.

Fig. 9.5 shows a hypothetical price components summary table comparing values in the private sector (note that the 'Show all stages' button has been selected and as a consequence data are provided for each stage of the supply chain). In this

**Fig. 9.5 Example of summary table comparing values (prices) in the private sector**

	A	B	C	D	E	F
1		<b>Price Components</b>				
2		<b>Data analysis</b>				
3						
4		Go To Home Page	Price component : entry			
5						
6		<input type="radio"/> By Region - Rural <input type="radio"/> By Region - Urban <input type="radio"/> By Sector - Public <input checked="" type="radio"/> By Sector - Private <input type="radio"/> By Sector - Other <input type="radio"/> By Sector - Other 2	<input checked="" type="checkbox"/> Show Value <input type="checkbox"/> Show cumulative % mark-up <input type="checkbox"/> Show % contribution to final price <input checked="" type="checkbox"/> Show Field data <input checked="" type="checkbox"/> Show Hypothetical data			
7						
8						
9		<b>Value analysis by sector</b>				
10		Sector	Private			
14					Amoxicillin	Amoxicillin
15					Generic	Originator
16		Type of region	Import/local	Data	Field data	Field data
17		Urban	Imported	MSP/CIF	5.00	15.00
18				Stage 1 add on costs	1.10	3.30
19				Stage 2 add on costs	2.13	5.16
20				Stage 3 add on costs	1.98	3.52
21				Stage 4 add on costs	2.60	5.40
22				Stage 5 add on costs	3.00	3.00
23				Final price	18.58	35.38

example, both product types of amoxicillin are imported, with the manufacturer’s selling price of the originator brand being three times the price of the generic. The final patient price for the originator brand is twice the generic price. Examination of the mark-ups (Fig 9.6) will reveal that the cumulative mark-up is greater for the generic than the originator brand. However, the patient pays less when buying the generic.

Fig. 9.6 shows a hypothetical price components summary table comparing cumulative per cent mark-ups in the urban survey area (again the ‘Show all stages’ button has been selected so data are provided for each stage of the supply chain). In this example, the cumulative per cent mark-up for generic amoxicillin is higher in the private sector than in the public sector. There are many possible reasons, for example the public sector may be exempt from certain charges (such as taxes), or may apply lower mark-ups at central/regional medical stores and health facilities. Central level data, and data for individual medicines, would need to be checked to explain these findings. Fig. 9.6 also shows that in the private sector, the cumulative per cent mark-up for amoxicillin is higher for the generic than it is for the originator brand. However, bear in mind that higher percentage charges may still result in lower actual add-on costs if the base medicine price is low. Note that in this example, data were not collected for originator brand amoxicillin in the public sector.

**Fig. 9.6 Example of summary table comparing cumulative % mark-ups in the urban survey area**

	A	B	C	D	E	F	G
1		<b>Price Components</b>					
2		<b>Data analysis</b>					
3							
4		Go To Home Page	Price component : entry				
5							
6		<input type="radio"/> By Region - Rural <input checked="" type="radio"/> By Region - Urban <input type="radio"/> By Sector - Public <input type="radio"/> By Sector - Private <input type="radio"/> By Sector - Other <input type="radio"/> By Sector - Other 2	<input type="checkbox"/> Show Value <input checked="" type="checkbox"/> Show cumulative % mark-up <input type="checkbox"/> Show % contribution to final price <input checked="" type="checkbox"/> Show Field data <input checked="" type="checkbox"/> Show Hypothetical data				
7							
8							
9		<b>Cumulative percentage markup by region</b>					
10		Type of region	Urban				
11							
12							
13					Amoxicillin	Amoxicillin	Amoxicillin
14					Generic	Generic	Originator
15							
16		Sector	Import/local	Data	Field data	Field data	Field data
17		Public	Imported	MSP/CIF	5.00		
18				Stage 1 mark-up	22.00%		
19				Stage 2 mark-up	51.24%		
20				Stage 3 mark-up	15.00%		
21				Stage 4 mark-up	20.00%		
22				Stage 5 mark-up	23.56%		
23				Total cumulative mark-up	214.62%		
24				Final price	15.73		
25		Private	Imported	MSP/CIF	5.00	15.00	
26				Stage 1 mark-up	22.00%	22.00%	
27				Stage 2 mark-up	34.84%	28.22%	
28				Stage 3 mark-up	18.00%	15.00%	
29				Stage 4 mark-up	20.00%	20.00%	
30				Stage 5 mark-up	19.26%	9.27%	
31				Total cumulative mark-up	271.52%	135.86%	
32				Final price	18.58	35.38	

Fig. 9.7 shows a hypothetical price components summary table comparing per cent contributions to final price in the public sector. Note that in this example add-on costs in the supply chain contribute a greater proportion to the final medicine price in the rural area than in the urban area. Again, there are many possible reasons, including higher transport charges to the rural area.



**Fig. 9.7 Example of summary table comparing % contribution to final price in the public sector**

	A	B	C	D	E	F	
1		<b>Price Components</b>					
2		<b>Data analysis</b>					
3							
4		Go To Home Page		Price components : entry			
5							
6		<input type="radio"/> By Region - Rural <input type="radio"/> By Region - Urban <input checked="" type="radio"/> By Sector - Public <input type="radio"/> By Sector - Private <input type="radio"/> By Sector - Other <input type="radio"/> By Sector - Other2	<input type="radio"/> Show Value <input type="radio"/> Show Cumulative percentage markup <input type="radio"/> Show % contribution to final price <input checked="" type="checkbox"/> Show field data <input checked="" type="checkbox"/> Show Hypothetical data <input checked="" type="checkbox"/> Show all stages				
7							
8							
9		<b>Percentage contribution to final price by sector</b>					
10		Sector	Public				
14					Amoxicillin	Amoxicillin	
15					Generic	Generic	
16		Region	Import/local	Data	Field data	Field data	
17		Rural	Imported	MSP/CIF contribution		27.93%	
18				Stage 1 contribution		6.15%	
19				Stage 2 contribution		16.31%	
20				Stage 3 contribution		25.83%	
21				Stage 4 contribution		15.24%	
22				Stage 5 contribution		8.54%	
23				Final price		17.90	
24		Urban	Imported	MSP/CIF contribution	31.78%		
25				Stage 1 contribution	6.99%		
26				Stage 2 contribution	19.87%		
27				Stage 3 contribution	8.80%		
28				Stage 4 contribution	13.49%		
29				Stage 5 contribution	19.07%		
30				Final price	15.73		

### 9.14.3 Comparing central data with data from individual medicines

The third step in data analysis is to compare the data obtained at the central level with the actual mark-ups observed through medicine tracking. Any discrepancies should be highlighted in your case study.

## 9.15 REPORTING RESULTS

The price components case study should be included as a section of the medicine prices survey report. The case study should include:

### 1. Introduction

### 2. Methods

This should include the regions, sectors, medicines and components selected for medicine tracking, with rationale.

### 3. Results

This should include:

- A written summary of central level data on price components;
- Results of medicine tracking, including pie charts for selected medicines and summary tables;

- Comparison of central level data with results of medicine tracking.

#### 4. Discussion and recommendations

In this section of the case study the researcher can identify those price components that could be changed so as to reduce the final price of the target medicines. To do this, the participant should have an understanding of the current pharmaceutical policies, as well as have identified the price components with the most significant contributions to the final price of medicines. Not all price components can be reduced: they might be required (e.g. to finance quality control testing), or the small financial gain from changing them will not out-weigh the administrative and implementation costs. However, most health programmes will find that there are always some price components that can be reduced. Researchers should compare the largest contributing costs with existing policies and identify and discuss those price components that are not currently addressed by policies.

However, changing policies at the central level does not mean that they will be enforced at the periphery or that patients will see the expected price reductions. It is likely that a monitoring system will need to be set up at the same time to guarantee that the policy changes have the expected effect and the cost savings reach the patient and do not end up as a larger margin for some middleman.

#### 5. Conclusion

The researcher can use this section to highlight key points and suggest further areas of study, if needed.

Further information on reporting is provided in Chapter 12.

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