
7

Data entry

Data entry will generally take place at the central level under the survey manager's supervision. Part I of the computerized Excel® WHO/HAI Medicine Pricing *Workbook* that accompanies this manual is used to enter price and availability data collected in the field, consolidate and summarize results, and print tables that will serve as the basis for reports. The workbook contains various pages for data entry and analysis:

- Medicine unit price data are entered in the *Field Data Consolidation* pages for procurement, public, private and any 'other' sectors. The workbook will automatically calculate the per cent availability and median price ratio (MPR) of each medicine. The workbook will also generate summary data (mean per cent availability and median MPR) for each sector.
- On the *Sector Availability and Price Summary* page, the workbook provides comparable data between sectors to allow for cross-sector comparisons.
- On the *Standard Treatment Affordability* page, the workbook automatically calculates the number of days' wages required to purchase selected standard treatment courses. The daily wage of the lowest-paid unskilled government worker must be entered in local currency.
- Data collected on the components of medicine prices are entered into Part II of the workbook on the *Price Components: Data Entry* page and analysed on the *Price Components: Data Analysis* page.

You should have the *Workbooks* open as you read this chapter. Start Excel and open the file WHO/HAI Medicine Price WorkbookI.xls and WHO/HAI Medicine Price WorkbookII.xls that you copied onto your hard disk. Depending on the security settings on your computer, you may need to choose the option to 'Enable Macros' as the file is opening.

7.1 OVERVIEW OF THE WORKBOOK AND ITS OPERATIONS

The specially designed, two-part computerized WHO/HAI Medicine Pricing workbook that accompanies this manual allows rapid entry and analysis of medicine price data. After data have been entered, the workbook automatically generates summary tables that form the basis of data analysis. In preparing for data collection, you will have already used the workbook to finalize the list of medicines to be surveyed and to generate the Medicine Price Data Collection form (see Chapter 3, page 47).

The computerized workbook consists of the following pages:

Part I

1. *Home page*
2. *International Medicine Reference Price Data page*
3. *Field Data Consolidation: Medicine Procurement Prices page*
4. *Field Data Consolidation: Public Sector Patient Prices page*
5. *Field Data Consolidation: Private Sector Patient Prices page*
6. *Field Data Consolidation: Other Sector Patient Prices page* – first other sector
7. *Field Data Consolidation: Other Sector 2 Patient Prices page* – second other sector
8. *Sector Availability and Price Summary page*
9. *Medicines Availability and Price Summary page*
10. *Standard Treatment Affordability page*
11. *Study Medicines: Originator Brand Products Surveyed page*
12. *Medicine Price Data Collection Form page*

Part II

1. *Home Page*
2. *Price Components: Data Entry page*
3. *Price Components: Data Analysis page*

These pages are described further in the sections that follow. If you have problems with the workbook or discover any bugs, please send an e-mail message describing the problem with the problem file attached to HAI¹ or WHO,² who will try to respond promptly.

7.1.1 Moving between workbook pages

You can use either of two methods to move between pages.

1. Use the movement buttons. From the *Home* page, click a button with the name (abbreviated) of the desired page to go to that page. From any other workbook page, click the **GO TO HOME PAGE** button to return to the *Home* page.
2. Click on the tabs at the bottom of each page to move between pages of the workbook.

7.1.2 Protected and hidden cells

Within the workbook, some cells are ‘protected’ from entering data and other areas are ‘hidden’ from view. These areas contain formulas or data that allow the workbook to carry out its calculations automatically. Errors in the workbook’s operation may result if you unprotect or reveal these areas. **In order to guarantee the integrity of the calculations, these cells should not be modified.**

7.1.3 Ensuring accuracy

The quality of the information that the medicine price survey generates depends on the accuracy of data entry. The survey manager has overall responsibility for the quality of the data and should supervise data entry personnel on a regular basis.

¹ info@haiweb.org

² medicineprices@who.int

To help ensure greater accuracy, identify the resources needed for data entry and checking before data collection begins and plan data processing carefully. Ideally, data entry should take place at one site where the survey manager can supervise the process. Information on the Medicine Price Data Collection forms should be checked again for legibility and consistency during data entry.

Entering detailed data such as long columns of unit prices can lead to substantial errors. Within each *Field Data Consolidation* page, a double-entry function is provided whereby a second person enters all the data a second time, and the two sets of results can be compared to identify errors. The double entry procedure is critical to ensure the accuracy of data entry.

Once all the data has been double entered and any errors corrected, the workbook needs to be checked carefully. This is done in two ways – by checking the data manually and by running the automated data checker. A list of items to check as part of the manual verification is provided in Annex 5, while instructions for using the data checker are provided in Section 7.10.

7.1.4 Saving and backing up your work

Save the workbook periodically as you work to prevent data loss in the event of power failure. Each time that substantial changes are made, you should save the workbook under a different date or version number so you can refer back to previous versions as needed. This will also be useful during the WHO/HAI project staff's external review of data, since it will avoid confusion in identifying the most recent version of the workbook. The ability to save multiple versions of the workbook will depend on the amount of memory you have available on your PC.

7.2 HOME PAGE

The top section of the *Home* page (Fig. 7.1) is used for recording important general information about your survey, such as country name, WHO region, other sectors surveyed and names of survey areas. This information should have been completed prior to data collection (see Chapter 3, page 43).

The following blue section on the *Home* page contains a box with action buttons that are used to move to different parts of the workbook. Click a button to jump to the page indicated.

The lower yellow section of the *Home* page contains a box with action buttons that allow you to erase previously entered data from the workbook. It is generally easier to start a new survey by opening and renaming the original master workbook. In some circumstances, however, it may be more efficient to erase parts of an existing workbook to start a new survey, for example, if you have collected data on the same list of medicines from several provinces and use the same medicine lists, defined treatments and so on for each province.

Click on a button to erase data on a specific page or click on the **ERASE & RESET ALL DATA** button to erase all data in the workbook. After clicking the button, you will be prompted to confirm that you want to erase the data indicated. Once you confirm, all data you have entered on a page will be erased, so take care using this function.

Fig. 7.1 Home page of survey workbook

International Medicines Price Workbook - Part I World Health Organization/Health Action International	
Release 1 May 2008	
Your Country :	
Your WHO Region :	
State or province (Where applicable) :	
First other sector :	
Second other sector :	
First day of data collection :	
Version of your workbook :	1
Survey areas (comma separated) :	
Press button to jump to page	
Study Medicines: Reference Price	Summary: Sector Comparison
Consolidation: Procurement Data	Summary: Product Comparison
Consolidation: Public Sector Data	Treatment Affordability
Consolidation: Private Sector Data	Originator brands surveyed
Consolidation: Other Sector Data	Data collection
Consolidation: Other2 Sector Data	
Press button to erase data	
Erase & Reset All Data	Erase Procurement Data
Erase Reference Price	Erase Public Sector Data
Erase Affordability Data	Erase Private Sector Data
	Erase Other Sector Data
	Erase Other2 Sector Data
Other actions	
Check data	Set language
Import older version data	Print data collection form

CAUTION

Before erasing anything, you may want to save the entire workbook under a separate file name as a back-up in case you need to return to it later.

7.3 INTERNATIONAL MEDICINE REFERENCE PRICE DATA PAGE

The *International Medicine Reference Price Data* page contains important information on the medicines in the survey, which is used in subsequent pages. With the exception of exchange rate information (Rows 3–6), which must be entered for the first day of data collection, all the information on this page should have been entered during survey preparation (See Chapter 3, pages 43–47). Fig. 7.2 contains an example of the page as it appears in the workbook.

Fig. 7.2 International Medicine Reference Price Data page

A	B	C	D	E	F	G	H	I	J	K	L	M	O
1	International												
2	Medicine Reference Price Data												
3	Go To Home Page		Exchange Rate: \$US 1.00 in local currency =								Number of		
4	Brand Products Surveyed		Name of local currency:								Global : 14		
5	MSH/Other Prices		Date of exchange rate:								Supplementary : 20		
6	Add regional medicines		Source of exchange rate:								Regional : 16		
7			Source of Other Unit Price:								EML : 32		
8											All : 60		
9											Price Data Used = MSH 2007		
10	Med. No.	Medicine Name (Name must be unique)	Medicine Strength	Dosage Form	Target Pack Size	Medicine list	National Essential Medicine List	2007 MSH Unit Price (\$US)	Other Unit Price (\$US)	Price of Target Pack (\$US)	Price of Target Pack (local currency)	Reference Unit Price (local currency)	Level of care (for which medicine is available)
11	1	Albendazole	200 mg	cap/tab	2	Regional	yes	\$0.0131		\$0.0262			1
12	2	Amitriptyline	25 mg	cap/tab	100	Global	yes	\$0.0068		\$0.6800			1
13	3	Amoxicillin	500 mg	cap/tab	21	Global	yes	\$0.0468		\$0.9828			1
14	4	Amoxicillin suspension	50 mg/ml	millilitre	100	Regional	yes	\$0.0084		\$0.8400			1
15	5	Atenolol	50 mg	cap/tab	60	Global	yes	\$0.0161		\$0.9660			1
16	6	Atorvastatin	20 mg	cap/tab	30	Regional	yes	\$1.0847		\$32.5410			1
17	7	Beclometasone inhaler	0.05 mg/dose	dose	200	Regional	yes	\$0.0151		\$3.0200			1
18	8	Captopril	25 mg	cap/tab	60	Global	yes	\$0.0189		\$1.1340			1
19	9	Carbamazepine	200 mg	cap/tab	160	Regional	yes	\$0.0195		\$2.9250			1
20	10	Ceftriaxone injection	1 g/vial	vial	1	Global	yes	\$0.9040		\$0.9040			2

7.3.1 Entering the exchange rate

- At the top of the page (cell J3), enter the Exchange Rate of 1 US dollar to your local currency. Note: it must be the exchange rate on the first day of data collection so you cannot add this until that day. Once you have entered the exchange rate, you should not change it.

Note that there may be a buying rate and a selling rate. In some countries, multiple rates may co-exist. For example, there may be an official rate, a commercial rate and a parallel or black market rate. Use the commercial 'buy' rate on the first day of data collection. The recommended source is Oanda FX-History.¹

- To document your decision, enter:
 - The name of your local currency (cell H4)
 - The date for which the exchange rate is valid (cell H5)
 - The source of the exchange rate you used (cell H6).

7.3.2 Medicine identifying information

Following the preparatory work undertaken before data collection, Column C of the *International Medicine Reference Price Data* page should already contain the full list of medicines (global core, regional core and supplementary medicines) surveyed

¹ <http://www.oanda.com/convert/fxhistory>

during fieldwork. For each medicine, the *Reference Price Data* page contains the following identifying information:

1. *Medicine Name (Column C)*: The name is usually the International Non-proprietary Name (INN).
2. *Medicine Strength (Column D)*: The medicine strength, usually expressed as the number of milligrams or grams of active ingredient per dosage form (see item 3 below).
3. *Dosage Form (Column E)*: The dosage form of the medicine for which the unit price is to be determined.
4. *Target Pack Size (Column F)*: The pack size for which data are collected (when the target pack size is not available in an outlet the next largest pack size is used). The Target Pack Size is not used in workbook calculations and is included for reference purposes only.
5. *Medicine List (Column G)*: Medicines are identified as either Global, Regional or Supplementary. Note that a running total of the number of global, regional and supplementary medicines in the survey, as well as the number of EML medicines and total number of medicines in the survey, is provided in the top right-hand corner of the page.
6. *National Essential Medicine List (Column H)*: By identifying which medicines are contained on the National Essential Medicine List (where one exists), the workbook allows you to restrict your analysis to this group of medicines. For each medicine, select one of the following from the drop-down box: 'yes' (medicine is on the EML), 'no' (medicine is not on the EML), 'don't know' (EML exists but you were unable to access it) or 'no list' (there is no EML). Identifying medicines on the EML is particularly useful when the public sector is only expected to carry EML medicines. Further information on restricting analysis to EML medicines is provided in Chapter 8, pages 108–109 and 114–115.
7. *MSH Unit Price (Column I)*: The median unit price of the medicine in the most recent MSH International Drug Price Indicator Guide. Even if another set of reference prices is being used for your national analyses, entering the most recent MSH prices will allow you to compare your data to those of other countries.
8. *Other Unit Price (Column J)*: This column is used if another set of reference prices is being used for the analysis. You can switch between the two different sets of reference medicine prices (i.e. MSH and Other) by clicking the **MSH/OTHER PRICES** button at the top of the page.

All price calculations depend on the set of reference prices chosen. Switching reference prices will change the calculations. If you wish to obtain reports using both sets of prices:

1. Select the MSH prices.
 2. Print all reports.
 3. Switch sets of reference prices.
 4. Print all reports a second time. All pages that depend on reference price indicate the source used.
9. *Price of Target Pack (US\$), Price of Target Pack (local currency), Reference Unit Price (local currency) (Columns K–M)*: Once you have entered an exchange rate, unit prices (MSH or Other) and target pack sizes, the workbook automatically calculates:

- Price of Target Pack (US\$) (Column K).
 - Price of Target Pack (local currency) (Column L).
 - Reference Unit Price (local currency) (Column M). The values in the Reference Unit Price (local currency) column are used in calculating the price ratios.
10. *Level of care for which medicine is available (Column O)*: This column identifies the minimum public-health facility levels that are expected to stock each survey medicine. For each medicine, the workbook will automatically restrict the availability analysis in the public sector to those outlets in which the medicine is expected to be found. For example, a medicine marked '2' should be available at secondary and tertiary health facilities, but not at the primary level. In calculating the per cent availability of this medicine, only secondary and tertiary health facilities in the public sector sample will be included. Further information on analysis by level of care is provided in Chapter 8, page 113.

7.4 FIELD DATA CONSOLIDATION PAGES

The *Field Data Consolidation* pages are used to enter unit price data collected in the field using the Medicine Price Data Collection forms.

There are five *Field Data Consolidation* pages in the workbook, allowing price information from up to five sectors to be entered.

1. Procurement prices.
2. Public sector patient prices.
3. Private sector patient prices.
4. Other sector patient prices: for example, prices from the church mission sector.
5. Other sector patient prices 2: second other sector.

The unit prices entered on the *Procurement Prices* page should be prices from recent government medicine orders, usually from public sector centralized medicine procurements. In some cases, procurement prices from other sectors have been collected; these should also be entered on this page but must be analysed separately. For the *Field Data Consolidation* pages for the other four sectors, the prices entered will be the medicine-specific patient or customer charges that were collected at different facilities and medicine outlets in the survey.

CAUTION

The survey workbook has a separate page for entering 'Public Sector Procurement Price' data and 'Public Sector Patient Price' data. Government procurement prices should only be entered in the *Public Sector Procurement Price* page, while public sector patient prices should only be entered in the *Public Sector Patient Price* page.

If procurement prices from another sector (e.g. mission sector) have been collected, these should also be entered into the *Public Sector Procurement Price* page. **However, procurement data from each sector must be analysed separately (See Chapter 8, page 106).**

7.4.1 Field Data Consolidation page sections

The *Field Data Consolidation* pages contain two different ‘views’: the ‘data entry’ view and the ‘sector summary’ view. You can switch between these two views by pressing the **DATA/SUMMARY** button in the top left-hand corner of each view.

1. Data entry view

The ‘data entry’ view contains the empty data grid in which you enter the unit prices found for each medicine.

Fig. 7.3 Field Data Consolidation: Medicine Procurement Prices page, in data entry view

	A	B	C	D	K	L	M	N	O	P	Q
1	Field Data Consolidation:										
2	Medicine Procurement Prices										
3											
4	Go To Home Page	Data/Summary									
5	Ratios On/Off	Double Entry			Sort by:	ID	Agency	Date	Number		
6					Data for Procurement Orders (Enter Medicine Unit Prices in Local Currency)						
7	Procurement ID										
8	Procurement Agency										
9	Date (Mon-YY as in Jan-02)										
10	Include order in analysis (1=yes, 0=no)?				0	0	0	0	0	0	0
11											
12	No.	Medicine Name	Medicine Type	Include in analysis?	1	2	3	4	5	6	7
13	1	Albendazole	Brand	1							
14	1	Albendazole	Lowest Price	1							
15	2	Amitriptyline	Brand	1							
16	2	Amitriptyline	Lowest Price	1							
17	3	Amoxicillin cap/tab	Brand	1							
18	3	Amoxicillin cap/tab	Lowest Price	1							

Medicine list

On the left-hand side of the grid (Column B), the list of survey medicines is displayed. This list is generated automatically from the medicines listed on the *International Medicine Price Reference List* page. For each medicine, Column C lists the two different types of products for which data are collected:

- Row 1 ‘Brand’: Originator brand
- Row 2 ‘Lowest Price’: Lowest-price generic equivalent

Column D: ‘Include in analysis’ allows you to include or exclude specific medicine products from the analysis. Medicines marked ‘1’ in Column D are included in data analysis, while medicines marked ‘0’ are not included. The default setting for Column D is ‘1’, i.e. all medicines are included in the analysis. You can exclude a medicine by clicking on the appropriate cell and entering ‘0’.



If a medicine is under patent and no generics are registered, the lowest-priced generic row for this particular medicine should be ‘turned off’ (i.e. this product should be excluded from analysis). Similarly, for an older substance where the originator brand product cannot be identified, the originator row for this particular medicine should be turned off.

Data entry grid

An empty data grid is provided in which you enter information about:

- The source of each column of unit price data (Rows 7–9)
- The unit prices found for each medicine (Rows 13–112)

The *Medicine Procurement Prices* page allows you to enter up to 120 sets of procurement prices for each medicine. To identify each set, you specify:

- An arbitrary Procurement ID (Row 7)
- The Procurement Agency (Row 8)
- The Procurement Date (Row 9)

This information is contained on the front page of the Medicine Price Data Collection form.

The other four *Field Data Consolidation* pages allow you to enter data from up to 120 public sector, private sector and ‘other’ sector medicine outlets. For each set of prices, you specify:

- An arbitrary Medicine Outlet Study ID (Row 7)
- A code for the Region or Survey Area where the outlet was located (Row 8)
- A measure of Distance From Population Centre (Row 9), which allows you to classify facilities as urban or rural

This information is contained on the front page of the Medicine Price Data Collection form.

Row 10: Include outlet in analysis (1 = yes, 0 = no)

This row allows you to exclude various medicine outlets/procurement orders from the analysis. For example, if you would like to analyse medicine prices in a particular region, you would include medicine outlets in this region and ‘turn off’ data from other regions by setting the corresponding cells in Row 10 to ‘0’. Chapter 8 (page 123) contains additional information about conducting sub-analyses by type of medicine outlet.

The default in Row 10 is set to ‘0’. When unit prices are entered for a facility, the default automatically changes to ‘1’ and the data are included in the analysis. This poses a problem in cases where none of the survey medicines is found in a given medicine outlet; this outlet should still be included so that it will be taken into account in the availability analysis. Since the corresponding cell in Row 10 does not change to ‘1’ automatically, it must be changed manually by clicking on the cell and entering ‘1’. Note that the outlet study ID, region, and distance from population centre (Rows 7–9) should be entered as usual.

Row 11: Level of care (Public sector patient prices only)

In this row, the level of care provided at each public sector facility is identified. Enter ‘1’ for primary care facilities, ‘2’ for secondary care facilities and ‘3’ for tertiary care facilities as indicated on the first page of the Medicine Prices Data Collection form. The identification of each public sector facility according to its level of care will allow the workbook to calculate the availability of individual medicines based on the level of care where they are expected to be available. For example, primary and secondary facilities will not be included in the availability analysis of a specialized medicine that is only provided at tertiary hospitals.

The analysis of availability of medicines by level of care is only conducted for public sector patient prices. While some other sectors may also have levels of care (e.g. NGO hospitals), this will vary according to the other sector selected. As such, the workbook cannot accommodate levels of care for other sectors. Levels of care will generally not apply to the private sector or to procurement prices.

Summary data for individual medicines

Once data have been entered into the data-entry grid, you can obtain summary data for individual medicines by pressing the **RATIOS ON/OFF** button in the top left-hand corner of the page. This will 'hide' the data entry grid and display the following summary information for each survey medicine:

- Median (MPR): ratio of median medicine unit price to international reference price
- 25th percentile
- 75th percentile
- Minimum
- Maximum
- Per cent with medicine: per cent of the medicine outlets in which medicine was found. For the *Public Sector Procurement* page, this is replaced with # orders: the total number of procurement prices (orders) entered for each medicine.
- Median price: median medicine unit price in local currency.

Fig. 7.4 shows part of the *Field Data Consolidation: Private Sector Patient Prices* page with the summary data cells for individual medicines displayed. These summary data are further described in Chapter 8.

Fig. 7.4 Field Data Consolidation: Private Sector Patient Prices page displaying the summary data cells for individual medicines

	A	B	C	D	E	F	G	H	I	J	EI
1	Field Data Consolidation:										
2	Private Sector Patient Prices										
3											
4	Go To Home Page	Data/Summary									
5	Ratio On/Off	Double Entry									
6											
7	Medicines Outlet Study ID			Summary Comparisons to Reference Prices and Percent Availability in Outlets							
8	Region										
9	Distance From Population Centre										
10	Include outlet in analysis (1=yes,0=no)?			(Blank if found in < <input type="text" value="4"/> outlets)							
11											
12	No.	Medicine Name	Medicine Type	Include in analysis?	Median Price Ratio	25%ile	75%ile	Min	Max	% with med.	Median Price
13	1	Albendazole	Brand	1							
14	1	Albendazole	Lowest Price	1							
15	2	Amiripryline	Brand	1							
16	2	Amiripryline	Lowest Price	1							
17	3	Amoxicillin cap/tab	Brand	1							
18	3	Amoxicillin cap/tab	Lowest Price	1							

At the top of the summary ratio section is a blue area in which you enter (cell H10) the minimum number of unit prices required for each medicine in order for the median price ratio to be computed:

- A minimum of four unit prices should be obtained from different public health facilities or medicine outlets, private sector outlets, and outlets in the other sectors.
- Where procurement data have been collected centrally, a single procurement price is sufficient (so the blue area should state ‘Blank if med. has <1 orders’ on the *Procurement Price* page). However, if a number of local procurement agents (e.g. hospitals, regional medical stores) have been surveyed, you should set the figure to < 4 orders.

2. ‘Sector summary’ view

In the ‘sector summary’ view, price and availability data for individual medicines are summarized across all medicines in the survey or according to groups of medicines such as ‘EML medicines only’. By consolidating data across a range of medicines, a summary of medicine availability and price for the sector is obtained. Fig. 7.5 shows a *Field Data Consolidation: Private Sector Patient Prices* page in the ‘sector summary’ view. The measures in the summary tables are explained in detail in Chapter 8.

Fig. 7.5 ‘Sector summary’ view from the *Field Data Consolidation: Private Sector Patient Prices* page

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Field Data Consolidation:													
2	Private Sector Patient Prices													
3														
4	Go To Home Page			Data/Summary										
116	Describe outlets included in this summary:													
117														
118	<input type="radio"/> All <input checked="" type="radio"/> Global <input type="radio"/> Regional <input type="radio"/> Supplementary <input type="radio"/> Global + Regional <input type="radio"/> EML			Private Sector Medicines Outlets (n=0 in survey)										
119				Includes all medicines (n=50 on list)										
120				Analysis Includes All Meds.					Analysis Includes Only Medicines					
121				With Prices Found for Both Types in Pair										
122				Brand		Lowest Price			Brand		Lowest Price			
123				Overall Percent Availability of Medicines on List in Outlets Included in Analysis										
124	Mean availability													
125	Std dev availability													
126														
127														
128				Number of Listed Medicines For Which Prices Were Found in 4+ Outlets										
129	No. of meds. included			0		0			0		0			
130				Summary of Medicine-specific Median Price Ratios (MPRs) For Meds. Found in 4+ Outlets										
131	Median MPR													
132	25 %ile MPR													
133	75 %ile MPR													
134	Minimum MPR													
135	Maximum MPR													
136														
137														

NOTE: In Row 116, you are asked to describe the procurements/outlets in this summary. It is important to describe clearly the data contained in the summary, particularly if subgroup analyses are being conducted or if different sets of procurement data are being analysed.

7.4.2 Action buttons

Each *Field Data Consolidation* page has a set of action buttons at the top that control the way the page is displayed. There are four buttons in the upper left corner (see Fig. 7.3):

GO TO HOME PAGE button.

DATA/SUMMARY This button causes the page to display either the data entry grid (Data) or the sector summary (Summary).

RATIOS ON/OFF This button switches between the data entry grid (Ratios Off) and the summary data for individual medicines (Ratios On).

DOUBLE ENTRY Once data from the field have been entered the first time, clicking this button displays a menu that allows you to carry out double entry (See page 93).

In addition, there are four action buttons at the top of the data entry grid that allow you to sort the columns in the grid from left to right according to the identifying information in Rows 7, 8, 9 and 12. Sorting will allow you to select certain subsets of the data for analysis (see Chapter 8). You can sort the columns on the *Medicine Procurement Prices* page by:

- **ID** (Row 7)
- **AGENCY** (Row 8)
- **DATE** (Row 9)
- **NUMBER** (Row 12, the default sort order).

You can sort the columns on the other four *Field Data Consolidation* pages by:

- **ID** (Row 7)
- **REGION** (Row 8)
- **DISTANCE** (Row 9)
- **NUMBER** (Row 12, the default sort order).

To the right of the data sorting buttons, there is one additional action button, the **INCLUDE ALL OUTLETS** button. During data analysis, you may wish to limit analysis to selected medicine orders (on the *Medicine Procurement Prices* page) or selected outlets (on the other *Field Data Consolidation* pages) by changing the '1's in Row 10 to '0's for all outlets to be excluded from analysis. The **INCLUDE ALL OUTLETS** button restores all the orders or outlets to the analysis by replacing all '0's with '1's.

7.4.3 How to enter data

All the *Field Data Consolidation* pages use the same procedures for entering data, whether it is procurement price data or patient price data. The following steps describe how to enter data on the *Private Sector Patient Prices* page as an example.

1. Use the action buttons on the Home page to go to the *Field Data Consolidation: Private Sector Patient Prices* page.
2. If the sector summary is displayed, click on the **DATA/SUMMARY** button to switch to the data entry grid.
3. If the columns containing summary data for individual medicines are visible, click on the **RATIOS ON/OFF** button to hide them.

4. Enter the identifying information for the first medicine outlet:
- Enter the Medicine Outlet Study ID in Cell K7.
 - Enter the Region code in Cell K8.
 - Enter the Distance from Population Centre in Cell K9. Distance should be entered as the approximate number of kilometres from the medicine outlet to the largest population centre in the region.
 - Note: for the public sector, you would also need to identify the level of care of the medicine outlet (primary = '1', secondary = '2', tertiary = '3') in Cell K11.

This information should be obtained from the front page of the Medicine Price Data Collection form.

5. Starting at Cell K13 and proceeding down the column, enter the unit prices for each of the medicines in the list. Medicine unit prices are found in Column I of the Medicine Price Data Collection form. The unit medicine prices should always be entered in local currency, with four decimal points. Do not enter '0' if the medicine was not found.

As you begin to enter data, the column colour should switch from grey (inactive) to white (active). Row 10, Include Outlet in Analysis, should automatically change from '0' (No) to '1' (Yes). **If, at any given outlet, no medicines were found, you will need to manually change Row 10 to '1' so that the outlet is included in the analysis.**

Note: if your computer is set to use commas rather than full stops to denote decimals, you must enter all unit prices using commas, for example 0,0031 and not 0.0031. An error message will result if you enter 0.0031.

If a medicine is recorded as 'available' but does not have a price (e.g. for medicines that are free or available for a fixed fee), enter an 'F' into the appropriate cell in the data entry grid. This will allow this medicine to be included in the availability analysis even though there are no price data for it. This situation will usually occur in public sectors that offer some/all medicines to patients for free or for a fixed fee.


CAUTION

Always check the Comments column of the Medicine Price Data Collection form to see if the medicine has been recorded as 'free' or available for a 'fixed fee'. If there is no comment, the data collector may have simply forgotten to record the price. In this case, alert the survey manager who will need to investigate further.

6. Repeat steps 4–5 for each private sector retail outlet included in the survey, using Columns L–DZ. You can enter data for up to 120 outlets.


CAUTION

To protect against data loss, save the workbook periodically throughout the data entry process and again when data from all medicine outlets have been entered.

You can view summary statistics for individual medicines at any time by pressing the **RATIOS ON/OFF** button. Note that median price ratios will not be calculated until at least one procurement price, or at least four public, private or other sector patient prices are entered for the medicine in question.

7.4.4 Double entry procedures

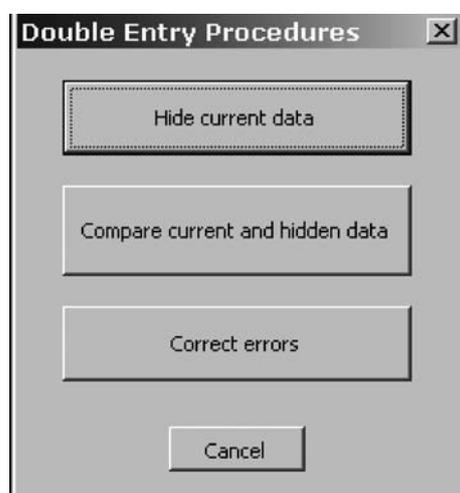
Entering detailed data, such as long columns of the unit prices of medicines, can lead to a substantial number of errors. The quickest and most efficient way to find these data entry errors is to have a second person enter all data a second time and then identify where the numbers entered disagree. The workbook contains a set of procedures to lead you through this process. Pressing the **DOUBLE ENTRY** button at the top of each *Field Data Consolidation* page will display the menu of double entry procedures, as shown in Fig. 7.6. The functions of the four action buttons on the menu are described below.

The double entry process is conducted separately for each Field Data Consolidation page.

All data for a Field Data Consolidation page, i.e. all data for a given sector, should be entered before conducting double entry.

Double entry should be conducted for one Field Data Consolidation page, and any errors corrected, before proceeding to the next page.

Fig. 7.6 Menu of double entry procedures



Note that pressing the **CANCEL** button will exit the double entry menu without making any changes.

STEP 1: Select HIDE CURRENT DATA. Pressing this button will copy all the data in the data entry grid to a 'hidden' part of the workbook, leaving an empty data grid into which a second set of data can be entered. The identifying information for the facilities or outlets will remain to ensure that the same columns are used for the second round of data entry.

STEP 2: Re-enter data. All data for the sector should be re-entered by a second person. This is highly preferable to the same data entry personnel entering the data twice, since they are likely to make the same mistakes.

STEP 3: Compare the two sets of data. After you complete the second round of data entry, press the **DOUBLE ENTRY** button at the top of the page and select **COMPARE CURRENT AND HIDDEN DATA**. Pressing this button will generate an automatic comparison of the data entered in the second round with the data entered in the first (hidden) round. Any cells that do not agree will be highlighted in red. If there are no errors, all the cells in the data entry grid will remain clear with no red cells.

STEP 4: Correct errors. Once any errors have been identified and highlighted in red, you can return to the original data collection forms to determine the correct values. Press the **DOUBLE ENTRY** button at the top of the page and select **CORRECT ERRORS**. A pop-up window (Fig. 7.7) will appear, which will allow you to proceed through the highlighted errors one by one and enter and save the final value to be used.

Fig. 7.7 'Correct data entry' window

Original Value	Second Value	Correct Value
0.01	1	
Save	Skip	Cancel

For each error, the pop-up window will show you the original value and the second value entered. Enter the correct value in the space provided and press 'Save'. Or, press 'Skip' to pass over this error and move to the next error to be corrected (e.g. in cases where further investigation is required) or 'Cancel' to close the double entry window.

The survey manager should make all final decisions about ambiguous data values.

CAUTION

It is vital that you manually check all the data on the *Field Data Consolidation* pages since the data-checker will not identify all possible errors. Print these pages since it can be difficult to do the manual checking of so much data on a computer screen.

7.5 STANDARD TREATMENT AFFORDABILITY PAGE

The *Standard Treatment Affordability* page defines standard treatments and expresses the costs of the treatments in terms of:

- Median treatment prices (using the median unit prices of the originator brand and lowest-priced generic equivalent products from each sector).
- The number of days' wages of the lowest-paid government worker (useful for inter-country comparisons).

There have been 14 standard treatments entered on this page, corresponding to the global medicines list (see Table 7.1 for the list of conditions, medicines and treatment schedules).

Table 7.1 Standard treatments used to calculate the affordability of global medicines

Condition	Medicine name	Strength	Dosage form	Treatment schedule
1. Asthma	Salbutamol	0.1 mg/dose	inhaler	1 inhaler of 200 doses
2. Diabetes	Glibenclamide	5 mg	cap/tab	1 cap/tab x 2/day x 30 days = 60
3. Hypertension	Atenolol	50 mg	cap/tab	1 cap/tab x 30 days = 30
4. Hypertension	Captopril	25 mg	cap/tab	1 cap/tab x 2/day x 30 days = 60
5. Hypercholesterolaemia	Simvastatin	20 mg	cap/tab	1 cap/tab x 30 days = 30
6. Depression	Amitriptyline	25 mg	cap/tab	1 cap/tab x 3/day x 30 days = 90
7. Adult respiratory infection	Ciprofloxacin	500 mg	cap/tab	1 cap/tab x 2/day for 7 days = 14
8. Paediatric respiratory infection	Co-trimoxazole	8+40 mg/ml	suspension	5ml x 2/day x 7 days = 70 ml
9. Adult respiratory infection	Amoxicillin	500mg	cap/tab	1 cap/tab x 3/day x 7 days = 21
10. Adult respiratory infection	Ceftriaxone	1 g/vial	injection	1 injection
11. Anxiety	Diazepam	5mg	cap/tab	1 cap/tab x 7 days = 7
12. Arthritis	Diclofenac	50mg	cap/tab	1 cap/tab x 2/day x 30 days = 60
13. Pain/inflammation, paediatric	Paracetamol	24mg/ml	suspension	child 1 year: 120mg (=5ml) x 3/day x 3 days = 45ml
14. Ulcer	Omeprazole	20mg	cap/tab	1 cap/tab x 30 days = 30

If your survey did not include one of the global medicines, Columns C, D, H, J, L and N will contain '#N/A' for that medicine. You can replace the medicine with another from the regional or supplementary list (see below). When you do this '#N/A' will disappear. In addition to the 14 standard treatments, space is provided to enter up to 8 additional standard treatments using survey medicines.

Additional standard treatments should be locally defined for a target condition by the ministry of health, a professional association or an expert panel. If there are no locally defined standard treatments for a condition you wish to include in the affordability analyses, you can use a standard treatment defined by an international organization, such as WHO.

Standard treatments are entered as follows:

- Acute conditions: full courses of therapy
- Chronic conditions, where therapy continues indefinitely: one-month course of therapy.

Click on the **TREATMENT AFFORDABILITY** button on the *Home* page to move to the *Standard Treatment Affordability* page. There is space to analyse the affordability of up to 22 standard medicine treatments.

In Cell J6 enter the daily wage of the lowest-paid unskilled government worker in local currency (Note: yearly, monthly, bimonthly and weekly salaries should be reduced to a daily wage by dividing by 365, 30, 14 or 7, respectively). You may be

able to obtain this information from the personnel office in the ministry of health. If it is not available, contact a recently employed low-paid worker to find out the net salary after all compulsory deductions of charges and taxes. If allowances are a standard part of the salary given to all similar government workers (e.g. housing allowance), then include the allowance as part of the wage. If allowances are only applied to certain workers (e.g. allowance for dependent family members) then it should not be included in the wage.


CAUTION

The daily wage of the lowest-paid unskilled government worker must be entered in cell J6 in order to obtain affordability results by number of days' wages.

To define new standard treatments:

1. Enter the name of the first standard treatment to be defined in Cell B78 overwriting the default text 'Enter Condition'. Type the name of a selected condition and press 'Enter'.
2. In Cell B80, select the Medicine Name of the medicine used in the standard treatment. The medicine must be one included in the survey. Move the cursor into the cell and click on the selection arrow that appears to the right of the cell. You will then see an alphabetical drop-down list of all medicine names in the survey. Use your mouse or the arrow keys to select the medicine that you want on the list, and click on it. After a medicine name is entered, the 'Medicine Strength' and 'Dosage Form' will appear automatically in Columns C–D.
3. In Column E, enter the Treatment Duration, which is the number of days for a typical course of therapy. For a chronic disease for which a medication is taken daily, the treatment duration would be 30 (to define a monthly treatment), while for acute illnesses it would be the total duration of therapy.
4. In Column F, enter the Total # of Units per Treatment, which is the number of units of the medicine that would be given for the treatment duration that you specified. For example, for amoxicillin 250 mg taken 3 times per day for 7 days, the treatment duration will be 7 days and the number of units per treatment will be 21 cap/tab.
5. After the Medicine Name and the Total # of Units per Treatment have been entered, the workbook automatically calculates the Median Treatment Price in local currency for each sector based upon the median unit prices of the data that you collected. It also expresses the treatment price in terms of 'Days' Wages' for the wage rate specified in Cell J6.
6. Repeat steps 2–5 for additional treatments you wish to define. Further space is provided, starting in Cell B83. Alternatively, you can replace one (or more) of the pre-selected treatments that were not surveyed. In this case, you will be overwriting the name of the condition, Medicine Name, Treatment Duration and Total # of Units per Treatment.

If a particular treatment requires more than one medicine, you can enter the same treatment name in more than one block of data and enter the information for the different medicines required in separate blocks. In reporting the Median Treatment Price and Days' Wages for this condition, you would need to add together the information from all medicines to get totals for the treatment. For example, if you would like to calculate the affordability of treating asthma with both salbutamol and

beclometasone, you would need to calculate the affordability of purchasing each medicine separately, and then add them together to obtain the total treatment cost.



Be careful when entering the units required for liquids, injections or inhalers. Note that for inhalers the unit is a single dose of inhalant, not the number of inhalers. This would mean that you need to calculate and enter the total number of doses required in a month as the Total # of Units per Treatment (Column F). Expressing the dose of combination products can also be confusing. For co-trimoxazole, the medicine unit is written as 8+40 mg/ml. The treatment regimen might be 2 doses of 5 ml per day for 7 days, which would amount to 70 ml (2 doses x 5 ml x 7 days) for the total treatment course.

7.6 PRICE COMPONENTS: DATA ENTRY PAGE

Information on entering data for price components is provided in the price components section of the Manual (Chapter 9).

7.7 DATA CHECKER

Once all the data have been double entered and any errors corrected, the workbook needs to be checked carefully. This is done in two ways – by running the automated data checker and by checking the data manually. A list of items to check as part of the manual verification is provided in Annex 5.

You will not be able to use the data checker until double entry has been performed.

Automated check of the data

Once you have manually checked the data and corrected any errors, click the button **CHECK DATA** on the *Home* page of the workbook to activate the automated data-checking system. A pop-up window will appear showing data-checking actions and their related settings (Fig. 7.8).

Three data-checking actions are conducted:

1. Checking the consolidation pages
2. Checking other pages in the workbook, i.e. affordability and components
3. The scope of analysis (number of outlets, medicines etc.)

A series of default settings are provided to determine which data should be flagged for checking. For example, as Fig. 7.8 shows, the workbook is set to flag median price ratios of less than 0.5 or greater than 125 as 'outliers' or unexpected data that require further verification. It is suggested that you use the default settings provided; however, you can alter a setting or turn a specific check off (click on the ticked box). The defaults have been set to highlight wide variations or unexpected data but these data may not be incorrect.

Fig. 7.8 'Check data' window

The 'Check data' window is divided into two tabs: 'Check' and 'Report'. The 'Check' tab is active, showing a section titled 'Select data-checking actions to be conducted'. This section is split into two columns of options:

- Check data consolidation pages:**
 - OB <= LPG in outlet
 - MPR for OB <= MPR for LPG
 - MPR is < 0.5 or MPR is > 125 or MPR is > 2 times the 90th %ile of MPRs on page
 - Min is < 50 % of the 25th %ile
 - Max is > 5 times Min or Max is > 2 times the 75th %ile
- Check other pages:**
 - Daily wage is < 1 or > 25 times exch rate
 - Final cumulative markup is < 35 %
 - Final cumulative markup is > 185 %
 - Single percentage mark-up is > 50 %
 - Price composition analysis without description

Below these options is a section titled 'Standardize the scope of analysis' with the following settings:

- Set minimum outlets to 4 (patient prices pages only)
- Include all outlets for analysis
- Include all medicines for analysis

At the bottom of the window are three buttons: 'Check data', 'Restore formats', and 'Close'.

Then click 'Check Data'; the data checker will verify all the data in the workbook according to the parameters specified in the 'Check data' window (this can take a few minutes). Once the data checker has completed verification, a new window will appear listing all the data (identified by their specific pages and cells in the workbook) that need to be checked, and the reason that the data were flagged (see example in Fig. 7.9).

Fig. 7.9 Example of results generated using the data checker

The 'Check data' window is now in the 'Report' tab, displaying a list of findings. The text in the report area is as follows:

-The following strange findings were noted. Your data may be correct, but we would like you to go back and check each of these cases and ensure that no errors are present:

- There were 2 cases where the minimum price was extremely low compared to others in the row. Could there be a price that was entered incorrectly?
Worksheet Private: Cells G53,G61
- There were 5 cases where the spread between the minimum and maximum price ratios was extremely wide. Have all the prices in these rows been entered correctly?
Worksheet Public: Cells H25,H75
Worksheet Private: Cells H31,H39,H65
- There were 10 cases where the maximum price was extremely high compared to others in the row. Could there be a price that was entered incorrectly?
Worksheet Public: Cells H25,H75
Worksheet Private: Cells H31,H33,H39,H41,H45,H65,H71,H75
- There were 3 cases where an MPR was very low in international terms. Please check that the prices entered were correct, and also confirm reference price used, definition of medicine units used, and package sizes found.
Worksheet Procurement: Cells D49
Worksheet Private: Cells D57,D77

In the workbook all the cells listed in the report will now be coloured purple so you can easily identify them. Data in the purple cells may be correct; they are highlighted merely to indicate that they need checking.

By clicking on the Report tab at the top of the Check Data pop-up window, you will access a list of all data that require checking. Copy and save the report as a Word document, and hit the **CLOSE** button. Then carefully check each purple cell in the workbook. You are likely to find a high concentration of purple cells on the consolidation pages; here you need to check the unit prices entered against the Data Collection form for that medicine outlet.

If you find an error, change the data and save the workbook. Once you have checked all the purple cells you can turn off the colour by clicking on 'Check Data' again on the *Home* page of your workbook to access the 'Check Data' window (Fig. 7.8), then click on 'Restore formats' and 'Close'.

7.8 OTHER PAGES

Six other pages of the workbooks do not relate specifically to data entry and are therefore not discussed in this chapter. These are:

Part I

- *Originator Brands Surveyed* page: This page is used to record information on the originator brand products surveyed. It is discussed further in Chapter 3.
- *Data Collection* page: This page is used to generate the Medicine Price Data Collection form used to record medicine prices and availability in the field. It is discussed further in Chapters 3, 5 and 6.
- *Sector Availability and Price Summary* page: This page provides comparable data between sectors to allow for cross-sector comparisons. It is discussed further in Chapter 8.
- *Medicines Availability and Price Summary* page: This page summarizes the per cent availability and median price ratios obtained for individual medicines in the different sectors included in the survey. It is discussed further in Chapter 8.

Part II

- *Price Components: Data Entry* page: This page is used for entering data collected in the price components part of the survey. It is discussed further in Chapter 9.
- *Price Components: Data Analysis* page: This page generates results for the price components part of the survey. It is discussed further in Chapter 9.