

Monitoring the availability and price of cardiometabolic medicines and technologies in facilities

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1. Introduction

The World Health Organization (WHO) Regional Office for Africa is conducting a regional assessment on the availability and prices of essential medicines, diagnostics, and technologies for cardiometabolic conditions—specifically type 1 and 2 diabetes and cardiovascular diseases such as hypertension, myocardial infarction, cardiovascular episodes, and atherosclerotic cardiovascular disease—in the WHO African Region. The objective is to identify barriers and inform targeted interventions to improve availability, affordability, and equitable access.

The assessment includes three key components:

1. Facility-level surveys using an app-based tool to collect data on price and availability in public and private health facilities.
2. Procurement analysis to gather contextual information on health systems and national procurement prices.
3. Price component tracking to examine the breakdown of medicine costs across the supply chain.

Together, these elements will provide a comprehensive understanding of both facility-level access and systemic bottlenecks affecting supply and policy.

Poor availability and high prices are key barriers to accessing NCD medicines, and a first step in addressing these issues is to monitor the availability, prices and affordability of these medicines. To do this within the WHO Regional Assessment, Health Action International's (HAI) Addressing the Challenge and Constraints of Insulin Sources and Supply (ACCISS) Study, has developed a methodology to support monitoring of essential anti-hypertensive, anti-diabetes and other medicines (including human and analogue insulins), as well as insulin syringes and pen needles, blood glucose meters and test strips for self-monitoring, and devices for measuring blood pressure and HbA1c testing. This monitoring will be done in public and private facilities.

Data collected using this tool will be done via phone interviews to be more sustainable, with validations. Data is entered into apps provided by HAI. Following data quality checks, the data is loaded into dashboards also provided by HAI.

This manual outlines the methodology for facility-level data collection.

If you have any questions about any aspect of the manual, please contact Molly Lepeska (Manager, ACCISS Study) at HAI (molly@haiweb.org).

2. Planning

2.1 Scope, survey regions and sectors

In most countries, national-level monitoring will be possible. However, in very large countries monitoring at the state-level is recommended. Please consult Molly at HAI if you feel state-level monitoring is preferential to national-level.

The selection of regions within the country will depend on various factors e.g. the administrative regions in the country, economic levels, urban/rural and perhaps the structure of the health system in terms of cardiometabolic care etc. For national monitoring, it is recommended that at least 6 regions in the country are monitored. However, the app will allow for a maximum of 10 regions. The capital should be selected, plus at least 5 other regions. If the country has, for example, four administrative regions then select all four for monitoring.

In most countries, monitoring should include the public sector, and private pharmacies in the community. If insulin or the other medicines surveyed are commonly accessed in other sectors, then additional sectors can be added. We suggest no more than one additional sector to make the monitoring manageable.

Once the sectors and regions have been selected, you will share these regions with HAI and will be given a corresponding number (i.e. Region 1, Region 2, etc) to help guide your data collection.

A form will be provided to collect this information from you.

To have a robust dataset, the minimum sampling requirement is a total of 30 facilities per sector, that is, 5 facilities per sector per survey region (when six regions are selected). If you wish to sample more facilities then do so but consider balancing the number in each sector you are monitoring. See Section 3.1 on identifying the facilities.

2.2 Medicines and supplies

Survey the following medicines (strength-specific) and devices that are relevant to your country.

Insulin and Delivery Devices

- Insulin - Regular, NPH and mixed regular/NPH human insulin, rapid-acting, long-acting and mixed analogue insulin in vials, pre-filled pens and cartridges
- Delivery devices - insulin syringes and pen needles

Cardiovascular Medicines to treat hypertension, myocardial infarction, cardiovascular episodes, and atherosclerotic cardiovascular disease.

All are immediate-release tablets or capsules, except for nifedipine retard and indapamide sustained release (SR) which are modified release medicines. **Please see Annex 2. for complete medicine list.**

Diabetes and Sickle Cell Medicines

Please see Annex 2. for complete medicine list.

Diagnostic Devices (for self-testing or in-facility testing of outpatients)

Please see Annex 2. for complete list.

Data is collected on the medicines available in the facility on the day of data collection.

For the tablets/capsules, insulin syringes, pen needles, blood glucose meters and test strips, data is collected only on the product (brand) in each facility with the **lowest unit price**.

For insulin, data is collection on **all** insulins in stock whether human or analogue, and supplied in vials, prefilled pens and cartridges. Do not survey re-usable pens (as they are not prefilled with insulin).

As part of preparing for the survey, develop your list of survey medicine. For each category on the master list (except insulin), select the medicines and strengths that are on your national essential medicines list, standard treatment guidelines or most commonly used. To help identify the most commonly-used oral diabetes medicines, antihypertensives and statins (plus the most commonly-used strength of these plus metformin), ask the government medical stores and a major wholesaler to the private sector.

If you have questions when developing your list of survey medicines/devices, please contact Molly Lepeska at HAI (molly@haiweb.org). This information will be included in the information form we send you to complete (as mentioned in 2.1).

2.3 Personnel

A monitoring manager is needed to lead the work. The person should be experienced in undertaking such surveys and have a good understanding of the health system regarding insulin and diabetes care.

Tasks include planning and preparation, training data collectors (if you are including additional data collectors), conducting/overseeing data collection, checking and finalising data, and preparing reports and shorter briefing material.

Regular monitoring using the app has showed that one data collector can conduct the interviews/enter the data for all facilities. However, the monitoring manager can decide how many to data collectors are needed. Data collectors need to have meticulous attention to detail, and be fully trained, so that errors are not made.

2.4 Technical and financial resources

Technical resources

Android device needed (either a tablet or a phone) with an Android operating system of 2.3 or higher. The apps will not work on an Apple phone or Apple tablet, but the online version of the app can work on an iPhone.

3. Preparation

The minimum number of facilities is 5 per sector per survey region. If two sectors (public and private pharmacies) and six regions are surveyed, then the minimum is 30 public facilities and 30 private pharmacies.

3.1 Identifying the facilities

The first step in recruiting the facilities is to identify those that will be invited to participate.

Start with a list of public sector facilities, in each level of care you will be monitoring (regional/referral hospitals, district hospitals, primary healthcare clinics etc.), in each region selected for monitoring. Include those that have diabetes clinics. Note: if primary healthcare clinics (PHC) are not permitted to dispense any of the survey medicines then do not survey PHCs

For private pharmacies in the community, ask the Ministry of Health or the national pharmacy association for a list and cross-check it with government NCD focal points or others in each study region (including obtaining or checking the phone number).

It is important that you have a telephone number for each facility as ideally you will be inviting participants, and undertaking the survey, by phone. If you are unable to get the phone number, then exclude the facility from the list. However, if it is a hospital that has a diabetes clinic then a personal visit may be needed to invite participation. Repeat this process for each of the other sectors you have selected for monitoring (such as private retail pharmacies). In some countries, a personal visit may be needed to recruit all facilities (if resources are available).

Once the list of potential facilities per sector and per region has been drafted, stratify as urban or rural (if relevant). Then randomly select facilities from each of these two groups in each survey region, according to the proportion of the population they represent. If identifying the facilities as urban or rural is not possible, simply do a random selection. In the public sector, randomly select by the levels of care that will be monitored. The outcome of the stratification and randomisation is a master list of potential facilities which is the basis for recruitment.

In some more remote survey regions, there may be fewer than five facilities per sector. Where this happens, increase the number of facilities sampled in other regions so the minimum total across all the survey regions is reached (as far as possible with a balance between urban and rural).

3.2 Training

Training of all monitoring personnel is an essential part of the work; it must not be overlooked as it helps ensure data quality. Training on recruiting and registering facilities is needed, in addition to training on the collection of the actual price and availability data.

If you are planning on working with others to collect your data, you will need to hold a training workshop prior to recruiting, and using the app to register facilities and enter availability and price data.

A copy of the relevant sections of the manual should be provided, and the app available on tablets or phones (see Section 3.3).

During the training workshop, the following should be covered:

- The objectives of the monitoring.

- The market for cardiometabolic medicines (to familiarize others with what is on the market), for example, the different types of insulins, presentations, strengths, likely pack sizes, etc. Provide a list of commonly used brand names of each survey medicine that is registered in the country.
- Supplies for administering insulin (insulin syringes, pen needles). The difference between insulin syringes and other types of syringes, and pen needles and other type of needles, needs to be explained.
Annex 1 shows photos of examples of insulin delivery tools. It would be useful to add brands that are commonly used in your country and provide a copy of the photos to all monitoring personnel. It could also be useful to have some examples at the training session.
- Tools for measuring blood glucose levels i.e. different brands of blood glucose meters and blood glucose testing strips on the market in the country, and the types, brands
Annex 1 also shows photos of examples of these tools.
- Interview etiquette.
- The procedure for registering facilities, then collecting the data, using the app. Go through the process (see Sections 3.4 and 4). This should be followed by piloting a phone interview with an actual facility (on speaker so everyone can hear the responses). This pilot test needs to be pre-planned with the facility. Choose one that has insulins, insulin syringes, meters and test strips, and some of the cardiac medicines you will be surveying. In addition to entering the data directly into the app, ask someone to record the responses on a form so you can refer back to them if necessary. If interviewing a facility is not possible, conduct a roleplay exercise on registering and collecting/entering data from a facility.
- Overcoming any unexpected responses or situations, and the importance of immediately communicating anything unusual to the monitoring manager.

Checking the data once collected should be done by the monitoring manager. If it assigned to someone else, then they need to be trained on what to do.

3.3 CommCare monitoring app

3.3.1 Downloading and installing the app

Please see the “Getting started guide” for guidance on downloading the monitoring app.

3.4 Recruiting and registering the facilities in the app

To recruit a facility, phone each on the master list and ask to speak to the person in charge. Recruiting facilities is best done by the monitoring manager. If it is assigned to a data collector, it is important that they are trained on what to say. They need to explain the purpose of the monitoring, what is involved (from the perspective of the facility), how the results can be accessed etc. It is important to state that the **data will be aggregated and that their name, and that of the facility, will not be known outside of the monitoring team**. Answer any questions they have.

While some facilities may agree on this call, others may wish to consider it (in which case agree on a day and time to call them back).

For some facilities where it is important that they be included, a personal visit might need to be considered. In some countries, a personal visit to all facilities may be required (if funding permits).

Each person registering the facilities needs to be assigned a unique identifier (known as the 'User ID' in the app). This User ID will make up the first half of the Facility ID (as described in Section 3.3.2 Registration Form). Note: the second half of the Facility ID is the Facility Number. This is the consecutive number of the registration by that data collector (also described in Section 3.3.2 Registration Form).

Complete the Registration Form in the app for each facility. You access the Registration Form by hitting 'Start' on the homepage of the app, then 'Facility Management'. The contact person in the facility needs to be on the phone during the registration process to ensure the data entered about the facility is correct.

The data to be included in the Registration Form are:

1. Facility Information

- Date of registration of the facility.
- Name of the health facility. The data collector should check this with the facility's contact person as the name may have changed from what was stated on the master list.
- User ID i.e. the numerical identification assigned to the data collector registering the facility in the app.
- Facility number i.e. the consecutive number of the registration by that data collector.
- Facility ID. This unique identifier will appear automatically in the app; it is a combination of the User ID and the Facility Number (see Section 3.3.2).
- Region. Prior to the survey make sure you have identified which regions correspond to a number (1,2,3, etc) Select the number of the region from the drop-down list.

2. Contact Information

- Contact Person. Enter the name (First name and Surname) of the person in the facility who you are speaking to.
- Telephone number. Enter the telephone number to be used for the calls. It is vital that the telephone number is accurately recorded (if not, you will not be able to contact them if you need to clarify something or if you decide to repeat the survey at a later date). Once the number is entered, read it back and ask the person to confirm it is correct.
- Alternative telephone number. It is wise to record an alternative number for the calls.


- Street Number. Enter the street number of the facility or '-999' if it is not known or there is no street.
- Street Name. Enter the street name. If there is no street name, '-999' is entered.
- City, town or village name. While this will be listed on the sheet, it should be checked with the contact person as a mistake could have been made on the master list.
- If no street address. If '-999' has been entered, the app will then ask for the community's name and nearest landmark to be entered.

3. Additional Facility Information

- Facility Sector. Confirm the sector with the contact person and enter it using the drop-down list. If it is not one from the list (which is unlikely as all sectors to be monitored are prefilled into the app by HAI), then select 'Other'. You will then be asked to type in the name of the sector. Inform the monitoring manager if an additional sector is entered as a decision needs to be made on whether to exclude the facility.
- Level of Care. Selecting the level of care is required only when the public sector was selected. The level of care options are primary, secondary or tertiary. If none of these, select 'Other' and enter the level of care. Again, inform the monitoring manager as this facility may need to be excluded.
- Name of local currency. In some countries the local currency can be referred to in different ways e.g. in Peru it can be PEN, soles or nuevo sol. Decide which one will be used and enter it consistently for all the facilities.

If nothing is entered for one of the above, the app will not move to the next page. Instead, it will highlight the missing data in red and state "Sorry, this response is required". Please enter the data in order to proceed.

If you need to query an entry, save as 'Incomplete' and write a note to remind you of what needs to be done. When all the registration data has been entered and is correct, hit the green 'Finished' bar on the top of the last page of the registration form. You will be taken to the home page and a message will appear stating that the registration was successful.

 **As data is entered (facility registration data or survey data), you can change it by hitting 'Clear' where this is included. Note: you cannot change data in the app once the 'Finished' bar is hit. It is recommended to save the data as incomplete then review it. Once the data collector and monitoring manager are happy that the data has been entered correctly then hit the green 'Finished' bar. If you then find a mistake has been made, inform HAI who will revise the data in Commcare.** At any stage, you can check the list of registered facilities (and their details) by hitting the 'Facility List' button the Facility Management page of the app.

The monitoring manager should prepare a sheet of facilities who have agreed to participate. The data collector should record on this sheet the date when the interview was held/completed, a postponement (and the new date to call back) or a refusal by the facility to be interviewed.

4. Data collection

Data for each interview with a facility is entered in 'Facility Survey' in the app.

You may have to prearrange a suitable time for the facility to be interviewed. If not, then phone at a time the facility is likely to be less busy.

4.1 Prior to phoning the facility

Before phoning the facility, you should prepare the following within the app:

- When you click on Facility Survey you will be taken to a screen that lists all the registered facilities. Select the facility name and facility ID that will be interviewed (from the schedule given to you by the monitoring manager). Key case summary (facility name and ID, date when the data was last modified and the region) and contact details will automatically be displayed in the next two pages. You will then be taken to a page where you select 'Facility Data Collection'



- On the 'Data Collection Information' screen, the facility name and ID will automatically appear on the top of the page. Enter the following:
 - Date of the interview. Scroll up or down so the day, month and year appears in the area surrounded by the purple lines
 - Name of the data collector
 - Name of the organisation doing the monitoring ('Local Organisation')
 - The name of the local currency will automatically be entered (from the facility registration data)
 - Type of interview. Select one of the following:
 - 'New Facility' if it is the first interview to collect actual data.
 - 'Validation Visit (in person)' if it is an in-person validation interview (see Section 4.3).

4.2 Interviewing the facility

Once the above data has been entered into the app, call the facility (swipe back a few pages to get the phone number). If there is no answer, save the incomplete form in the app and call back. If there is an answer, swipe to the next page which prompts you to introduce yourself and then ask to speak to the facility contact recorded in the app. The name of this person appears automatically on this page. It may be prudent to also confirm the name of the facility with the person.

If the contact is not available, write down the name of the person you are speaking to so you have a record and proceed to the next page.

The app will prompt you to say that the facility has expressed interest in participating in the study for which you are grateful, the study is approved by the Ministry of Health to improve access to NCD medicines in the country, that the interview will take about approximately 30 minutes, and the name of the facility or person will remain confidential. Then select whether the person you are speaking to is:

- willing to proceed with the interview now. If so, swipe to the next page.
- would like you to call back later. If this is selected, swipe to the next page where you will be prompted to ask for a suitable day and time to call back. Enter this on the page and thank the person for talking to you.

When proceeding with the telephone interview, next you will be prompted to ask the facility person whether they are willing to be visited for a validation study. **Note: very few facilities will be validated but this question needs to be asked of each facility.**

Next key contact information needs to be confirmed. The name of the contact person, telephone number and secondary telephone number that was registered will automatically appear on the screen. Select any that need modification, then swipe to the next page and enter the new information.

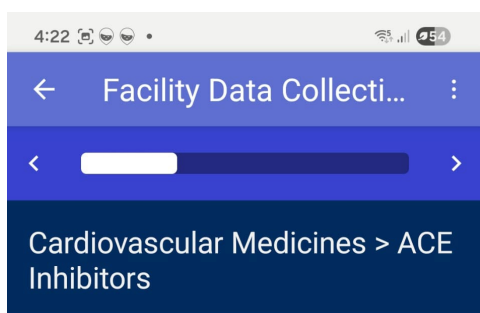
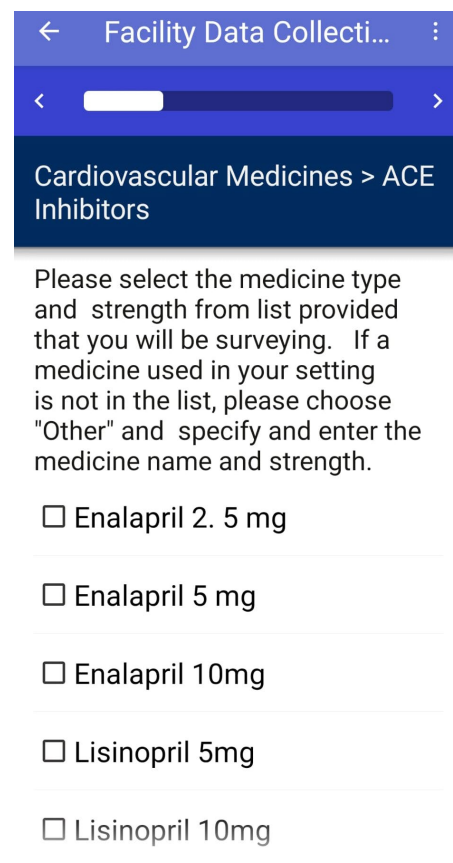


4.2.1 Cardiovascular Medicines

The first set of data collected on are the cardiovascular NCD medicines. The International Non-Proprietary Name (INN) and strengths of medicines within each category that are commonly on EMLs are listed. Prior to beginning the survey, you will need to identify which of each medicine within each category is on your EML, standard treatment guidelines and/or commonly used. See Annex 2. For listed strengths in the app.

- ACE inhibitors – all that are included on EML
- Angiotensin receptor blockers – all that are included on EML
- CCBs – all that are included on EML
- Anti HT combinations: **only the 1 most commonly used**
- Methyldopa
- Diuretics – all that are included on EML
- Antiplatelet - all that are included on EML
- Statins (lipid lowering agents in EML) – all that are included on EML
- Beta blockers – all that are included on EML
- Vasodilators- all that are included on EML

Use this list to guide data collection. For each facility you speak to, please select the medicines and strengths per category that you will survey. Questions will then appear for each of these medicines



If you selected other 1 please specify medicine type and strength

Lisinpril 50mg

If you identify other medicines not listed in the app you can add them as “Other”. Type in the INN and strength and the name will appear in the survey questions.

Note: immediate-release tablets and capsules are considered the same. But data for modified release formulations (such as nifedipine retard and indapamide SR) must not be mixed with immediate-release formulations of the same medicine.

The set of questions will be asked for the first medicine, and then repeated for each of the other medicines. The following questions are asked:

- Is the medicine [INN name and strength] in stock today?
If you are told that this strength is not in stock but a different strength is, then the medicine is not in stock. If you are told the medicine will be in stock tomorrow, it is not in stock.

- Select ‘Yes’ if the medicine and strength is physically in stock.
- Select ‘No’ if the medicine and strength is not in stock.

If this medicine is in stock, ask for information on the medicine with the **lowest unit price** (price per tablet/capsule). Then enter the number of tablets/capsules in the pack.

- Do people have to pay for this medicine?
From the drop-down list, enter either ‘Yes’ if all people must pay out-of-pocket; ‘No’ if it is supplied free-of-charge to all, or ‘Some people have to pay and some do not’.

Note: in the public sector (or any other sector where people can be hospitalised), this question relates to **outpatients** (not hospital inpatients).

- If all people have to pay, the next question asks what the **full patient price** is (commonly known as the retail price in the private sector) **for that pack. The pack price is entered, in local currency.** Do not enter the name of the local currency (dollar, shilling, som etc.) as it has already been entered into the app.
- If told people pay but not the full price, select the most common reason (select only one from the options). Option one is a co-payment, that is, where people pay only a part of the full price. Option two is where the cost of the insulin is included in a service fee that includes other costs (such as the consultation fee). Option three is 'Other' in which case enter the reason why people do not pay the full price of the insulin.
- If all people do not pay (it is free-of-charge) then select the reason(s) from the options given (you can select more than one). The reason(s) will likely vary depending on the sector. Option one is where the government supplies free-of-charge to all. Option two is that the cost is paid in full by an insurance programme. Option three is that the medicine is supplied free-of-charge through a donation programme. Option four is 'Other' where the reason needs to be entered.
- If some people pay and some do not pay then you will firstly complete the question on the reason(s) being provided for free (as described above). Then, secondly, complete the two questions on the full pack price (see above).

You will then follow this same list of questions for all of the other cardiovascular medicines categories.

Blood pressure monitoring device

You will ask whether the facility has a blood pressure monitoring device that is functional and validated, to be used for testing the blood pressure of outpatients. The questions are similar to the above questions, but will also include a question about the cost of a test and how many tests were undertaken in the last 7 days.

4.2.2 Diabetes Management

The next set of data are for medicines in the management of type 2 diabetes that have been selected for your survey. The categories and medicines are list below. All are tablets except the GLP-1's (which are injections). See Annex 2. For listed strengths in the app.

Please follow the procedure for Section 4.2.1. Note: data is only collected for the brand with the **lowest unit price.**

- Metformin
- Sulfonylurea - gliclazide, glimepiride, glipizide, glibenclamide
- Thiazolidines - pioglitazone
- Gliptins-vildagliptin, sitagliptin
- SLGT-2 – empagliflozin, dapagliflozin, canagliflozin
- GLP-1 – semaglutide, dulaglutide, liraglutide, tirzepatide

4.2.3 Insulin

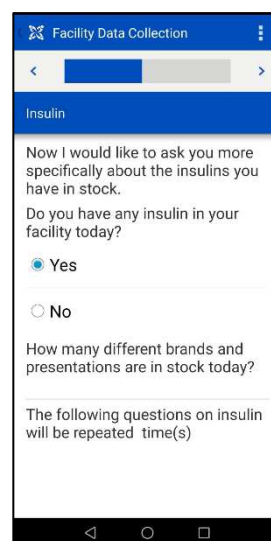


Have a list of registered insulin products on hand, including the brand name, manufacturer, strength, volume, presentation and pack size of each, that you can quickly refer to if you are unsure about what you are being told

The following will be asked:

- Do you have any insulin in your facility today?
 - Select 'Yes' if insulin is physically in stock that day for supply to outpatients. The next question asks how many different brands and presentations are in stock (enter the number). A specific brand of insulin may be available in up to three presentations (vials, prefilled pens, cartridges). There may also be different pack sizes of the same brand and presentation (although this is likely to be rare). In addition, there may be different strengths in stock of the same brand (this is also rare). If so, then data on each presentation, pack and strength must be entered separately (as they will likely have a different price).

It is important to accurately enter the number of brands/presentations/strengths in the facility as the app repeats the set of questions based on this number.
 - If the person says no insulins are in stock, or the insulin is only for emergency use in the facility, select 'No'. If the person says none are in stock today but they will be tomorrow, enter 'No' as the question only relates to the day of data collection. The app will then move to the next questions.



For each insulin brand and presentation that is in stock, the following questions are asked:

- What is the brand name of the insulin?

Type in the first few letters of the brand name and then select the brand name from the drop-down list. The following information will automatically appear for the brand selected - the International Non-proprietary Name, the insulin type, whether the insulin is an originator brand or a biosimilar, and the manufacturers name. This information has been preloaded into the app as it is needed for the dashboard analyses.

If the brand name does not appear, or if it is an animal insulin, enter 'Other' then select from the list. Ask the person for the brand name and manufacturers name (which will be written on the packaging) and enter this. For an animal insulin please state this in addition to the brand name.
- What is the strength of this brand of insulin?

The strength is printed on the packaging. Most insulins are 100 IU per millilitre (mL). But insulins can also be marketed as 40 IU/mL, 200 IU/mL, 300 IU/mL, or 500 IU/mL.

Select the strength from the drop-down list. Select 'Other' for any other strength found and enter that strength.

If two different strengths of the same brand are in stock, the data for each is entered separately. Proceed with just one strength. When all the data is entered for that strength, start again for the second strength of that brand.

- What is the presentation of this brand of insulin?
Insulins are supplied in vials, prefilled pens, and cartridges. See Annex 1 for an example of a pre-filled pen and cartridge. Select the presentation from the drop-down list. Do not include reusable pens as they do not contain insulin. Again, if two different presentations of the same brand are in stock, the data for each is entered separately.
- What is the volume of insulin?
The volume (amount) of insulin is printed on the packaging. It is the number of millilitres (mL) in the presentation selected. **Note: enter the volume of insulin in one individual vial (or one pre-filled pen or one cartridge depending on the presentation selected) – not in a pack of vials or pack of pens or pack of cartridges.** Most vials contain 10mL of insulin, and most pre-filled pens and cartridges contain 3mL. But a different volume may be found. Select the volume from the drop-down list. Select 'Other' for any volume that is not on the list and enter the number of mL. Only enter a number – do not enter any words (including mL). Again, different volumes of the same brand and volume of insulin are considered different products and get entered separately.
- How many vials (or pre-filled pens or cartridges) are in the pack?
The packaging will state the number of vials, pre-filled pens or cartridges in the pack. Most vials are sold singularly, and most pens and cartridges are in packs of 5. But a different number may be found. Again, different pack sizes of the same brand get entered separately. Only enter a number – do not enter any words.
- Do people have to pay for this brand insulin?
From the drop-down list, enter either 'Yes' if all people must pay the facility for the insulin; 'No' if it is supplied free-of-charge to all, or 'Some people have to pay and some do not'.
Note: in the public sector (or any other sector where people can be hospitalised), this question relates to **outpatients** (not hospital inpatients).
 - If all people have to pay for the insulin, the next question asks what the **full patient price** is (commonly known as the retail price in the private sector) **for that pack of insulin. The pack price is entered, in local currency.** If the pack contains 5 x 3mL pre-filled pens, then enter the price for that pack - not the price for one pen. Do not enter the name of the local currency (dollar, shilling, som etc.) as it has already been entered into the app.

If people pay but not the full price, select the most common reason (select only one from the options). Option one is a co-payment, that is, where

people pay only a part of the full price. Option two is where the cost of the insulin is included in a service fee that includes other costs (such as the consultation fee). Option three is 'Other' in which case enter the reason why people do not pay the full price of the insulin.

- If all people do not pay for insulin (it is free-of-charge) then select the reason(s) from the options given (you can select more than one). The reason(s) will likely vary depending on the sector. Option one is where the government supplies insulin free-of-charge to all. Option two is that the cost is paid in full by an insurance programme. Option three is that the insulin is supplied free-of-charge through a donation programme (such as Life for A Child or Changing Diabetes in Children). Option four is 'Other' where the reason needs to be entered.
- If some people pay for their insulin and some do not pay then you will firstly complete the question on the reason(s) for insulin being provided for free (as described above). Then, secondly, complete the two questions on the full price (see above).

The app will then repeat the set of questions according to the number of brands/presentations/strengths etc of insulin available in the facility.

As you enter data, you may find there are more brands/presentations etc. in stock than you were told and entered. If so, before starting the next section do the following:

- hit the three dots on the top right-hand corner and select 'Go to Prompt'
- scroll up to the question 'How many different brands and presentations are in stock today' and select it
- enter the correct number
- scroll forward over the insulin data already entered to the page where you enter the data for the additional insulins (titled Insulin Information (2) or (3) etc.)

An additional question is asked about whether the facility has a refrigerator to store insulin and if yes, how often they check the temperature (never, weekly, monthly, annually)

4.2.4 Insulin syringes

The next set of data is collected for insulin syringes available *for home use*. These syringes have IU on the barrel. They are different to the syringes used for injecting other medicines that have mL on the barrel and come in a range of sizes. Insulin syringes are usually only up to 100IU/1mL, whereas ordinary syringes can be found up to 50mL. An insulin syringe is usually supplied with a needle attached.

The following questions are asked:

- Do you have insulin syringes in stock today? **Note: If the syringes in stock are only used by the facility (and hence not for supply to outpatients) then they are considered not in stock.**
 - Select 'Yes' if insulin syringes are physically in stock for people to use at home. Next select whether all people have to pay for insulin syringes, they are free to all, or some people pay and some do not.

If all people do not pay for insulin syringes, then select the reason(s) from the drop-down list (you can select more than one). The options are the same as for insulin when provided free-of-charge. If 'Other' is selected, then enter the reason.

If all people have to pay, then enter the full patient pack price of the **lowest priced** insulin syringe. **Enter the price for the pack.** Next enter the pack size (how many syringes are in the pack). They may be sold individually in which case enter '1'. Then enter the brand name and manufacturer of this cheapest insulin syringe.

If people are not paying the full price for insulin syringes, select the most common reason from the three options given. The options are the same as for insulin when the full price is not paid. If 'Other' is selected, then enter the reason. If people pay the full price then skip this question.

If some people pay for an insulin syringe and some do not, complete the question on the reason(s) for these syringes being provided for free then complete the two questions on the full price of the lowest price insulin syringe.

- Select 'No' if insulin syringes are not physically in stock for sale to people. The app then takes you to the section on pen needles.

4.2.5 Needles for use with insulin pens

The next set of data are collected for needles supplied to people (in the home) who use insulin pens. These are not needles that come with insulin syringes. They are specific needles that are used with insulin pens. The needle is short (usually shorter than needles used with an ordinary hypodermic syringe). See Annex 1 for a picture of a pen needle. You may find it useful to send the picture to the facility to clarify the type of needle you are asking questions about.

The same set of questions are asked for pen needles as asked for insulin syringes. Price data is entered for the pen needle with the lowest (unit) price.

4.2.6 Blood glucose meters

The next set of data are collected for blood glucose monitoring meters for self-use in the home (often referred to as glucometers). Annex 1 shows some examples.

The following questions are asked:

- Do you have blood glucose monitoring meters in stock to supply to people to use at home?
Note: If these meters are only used by the facility to test glucose levels (and hence not supplied to self-test at home) then they are considered not in stock.

Some meters measure more than blood glucose e.g. cholesterol, ketones or uric acid (commonly referred to as 3in1 or 2in1 meters). They are usually higher prices than meters that only measure blood glucose. If a facility only stocks these meters, then enter the blood glucose meter as unavailable (not in stock).

- Select 'Yes' if blood glucose meters for self-use at home are physically in stock.

Next select whether all have to pay for these meters, no-one pays (free-of-charge to all), or some people pay and some get them for free.

If all people have to pay, then enter the full patient price of the lowest price meter in stock. Meters are sold individually so no calculations are needed to determine the cheapest. Next enter the brand name of this cheapest meter. If people are not paying the full price, select the main reason from the three options given. If 'Other' is selected, then enter the reason.

If all people do not pay for meters for home use, then select the reason(s) from the drop-down list (you can select more than one). The options are the same as for insulin when provided free-of-charge. If 'Other' is selected, then enter the reason.

If some people pay for a meter and some do not, complete the question on the reason(s) for meters being provided for free then complete the two questions on the full price of the lowest price meter.

- Select 'No' if blood glucose meters are not in stock for people to use at home.

4.2.7 Blood glucose test strips

The next set of data is collected for **blood glucose monitoring test strips for self-use at home**. Do not enter data on strips used solely by the facility staff to do tests on patients.

The same questions are asked as in 4.2.6. Please note:

- In some facilities more than one brand of blood glucose test strips may be available for supply to patients. Enter the price of the brand that has the **lowest price per strip**. The person in the facility may have to calculate which brand this is (pack price divided by the number of strips in the pack)
- Enter the **pack price for the cheapest strip** and the **pack size (number of strips in the pack)**. **Also enter the brand name of that pack of test strips.**

4.2.8 Blood glucose testing in the facility

Here questions are asked about **facility staff testing blood glucose levels of outpatients (not inpatients) using a meter and test strip**.

The first question asks if the facility has a functioning blood glucose meter that is used to check blood glucose levels of outpatients.

If 'Yes', enter whether all people have to pay for a test, no-one pays, or if some people pay and some do not. If no-one pays, select the option that explains why it is free or 'Other' then enter the reason.

If all or some people have to pay for a test done in the facility, then enter the price the facility charges people for 1 test. Do not enter the name of the local currency. As before, enter the reason if the full price is not charged.

If a test is free provided the person buys the test strip, enter that a meter was available. If the strip is the only charge, then enter that as the price of the test. If the facility adds a further charge to the price of the strip, enter the total charge. In the comments section of the app (at the end), please state that the person had to buy the strip.

Whether free or charged, next enter the number of tests done (outpatients only) using a meter/strip in the last 7 days. If they need to look it up and come back to you, enter “will respond” and continue the survey. But do not hit ‘Finished’ at the end of the survey. This allows you to enter the data at a later time (and then hit ‘Finished’). Make a record that they will contact you with the number of tests. If you do not hear from the facility, phone the person who you did the survey with and ask for the number.

4.2.10 HbA1c testing in the facility

Here questions are asked about **facility staff testing HbA1c (glycated haemoglobin) levels of outpatients (not inpatients). This requires blood being analysed using a machine (not a meter).**

The same set of questions are asked as with blood glucose testing by facility staff (see 4.2.9 above).

4.2.11 Sickle-cell Disease Management


The next set of questions related to medicines used to treat sickle-cell disease in your country. For the medicines selected to be surveyed (from those listed below), please follow the same guide as outlined in Section 4.2.1 Note: data is only collected for the brand with the **lowest unit price**.

- Hydroxycarbamide (hydroxyurea)

4.2.11 General comments

This is the end of the survey. Please ask the person being interviewed if they have any additional information to share with you. If so, enter the comments and inform the monitoring manager as it may impact the findings. Thank the person being interviewed for their time.

To complete data collection, swipe the green ‘Finished’ banner at the top of the page. The data will then be saved in the app.

 **As data is entered, you can change it in a number of places by hitting ‘Clear’. Note: you cannot change data in the app once the ‘Finished’ bar is hit. It is recommended to save the data as ‘incomplete’ then review it. Once the data collector and monitoring manager are happy that the data has been entered correctly then hit the green ‘Finished’ bar.**

4.3 Validation studies

Data collection should be validated to check the accuracy of the data provided by the facility during the phone interview.

Validation studies are repeat surveys, where the two sets of results are compared for consistency and accuracy. Unlike the usual data collection, which is done via a phone call, a validation study is done in person as the insulin, cardiovascular medicines etc. need to be physically seen in the facility and the price given.

Ideally validations should be undertaken in every survey region. But to make the validations do-able, undertake them in the capital only (if you have the resources needed to go to the facilities). From those facilities in the capital who had previously indicated they are willing to have their data validated, select two per sector in each of the two survey regions where availability of the survey medicines was good.

It is important that the facility does not know before the survey (by telephone) that they will be visited as it can bias data collection. The validation should be undertaken on the same day after the phone interview so that availability is identical or very similar (it may be that an insulin or CV tablet was sold between the phone and in-person interview). Ideally the data collector who did the telephone interview should not do the validation; use a different person (a different data collector or the monitoring manager).

The data collector should not be told the facilities what will be validated. Data collected via the phone interview needs to be saved as 'incomplete' for all the facility surveys done that day or that week. This allows the phone data to be changed if necessary.

The data should be compared without delay, with any discrepancy between the two sets of data from the same facility discussed with the monitoring manager. A phone call with the person who provided the data may be needed to clarify what is correct. Depending on the number and type of discrepancies, a better explanation of the data requirements etc. may be needed for the facility staff, and/or the data collector may need additional training.

Where a discrepancy is confirmed, the phone interview data may need to be corrected as this gets displayed in the dashboard. If so, change the phone data in the app and hit 'Finished'. While the validation data stays in Commcare, it is not included in the dashboard as that would result in a double-up for that household.




5. Data quality assurance

When all the data has been collected in the app, inform Molly at HAI who will commence the data checking process.

If an error was made, you will receive a form that highlights the errors per facility. You will then need to check the data and return it to Molly (molly@haiweb.org).

HAI will make the necessary changes to the data in Commcare. When all is correct, HAI will send you the link to the dashboard where the data will appear. **It is important to do a final check of the data when in the dashboard before you share it with anyone. Sometimes an error is not obvious until it appears in a chart or table.** If you find any questionable data, check it with the data collector and facility as required, and inform HAI of any changes needed to what is in Commcare.

Annex 1: Examples of various devices

Insulin pens and pen needles	
Pre-filled insulin pen (they are supplied containing insulin)	
Insulin pen needle	
Insulin cartridges	
Glucose Meter Supplies	
	

Annex 2. Medicines and Strengths

ACE Inhibitors

Enalapril 2.5 mg, 5 mg, 10mg
Lisinopril 5mg, 10mg, 20mg
Ramipril 2.5mg, 5mg, 10mg
Perinodopril 2mg, 4mg, 8mg
Captopril 50mg, 25mg

Calcium Channel Blockers (CCB)

Amlodipine 5mg, 10mg
Nifedipine retard 10mg, 20mg, 30mg, 40mg

Angiotensin Receptor Blockers

Losartan 25mg, 50mg, 100mg
Telmisartan 40mg, 80mg
Valsartan 5mg, 10mg

Alpha 2 Agonists

Methyldopa 250mg

Statins

Atorvastatin 10mg, 20mg, 40mg, 80mg
Simvastatin 5mg, 10mg, 20mg, 40mg

Fluvastatin
Lovastatin
Pravastatin
Rosuvastatin

Antiplatelet

Aspirin 75mg, 100mg
Clopidorel 75mg

Diuretics

Thiazide-like

Hydrochlorothiazide 25mg
Indapamide 1.5mg (SR)
Chlorthalidone 25mg
Chlorothiazide 25mg

Loop Diuretics

Bumetanide 20mg, 40mg
Furosemide 20mg, 40mg
Torsemide 20mg, 40mg

Potassium-Sparing Diuretics

Amiloride 5mg
Spironolactone 12.5mg, 25mg
Eplerenone 25mg

Beta Blockers

Bisoprolol 1.25mg, 5mg
Atenolol 50mg
Caredilol 12.5 mg
Metoprolol 50mg, 100mg

Anti-hypertensive combinations

Examples could be: lisinopril+amlodipine (5mg+10mg) , lisinopril+hydrochlorothiazide (10mg +12.5mg)

Blood Pressure Machine

Small child/pediatric cuff, Standard adult cuff, Large adult cuff

Metformin

Metformin 500mg, 850mg, 1g

Sulfonylurea

Glibenclamide 5mg
Gliclazide 30mg, 60mg , 80mg
Glimpepiride 1mg, 2mg, 3mg, 4mg
Glipizide 5mg, 10mg

Gliptins

Vildagliptin 50mg
Sitagliptin 50mg, 100mg

SLGT-2

Empagliflozin 10mg, 25mg
Dapagliflozin 10mg, 25mg
Canagliflozin 10mg, 25mg

GLP-1

Semaglutide .68 mg/ml, 1.34 mg/ml, 2.68mg/ml
Dulaglutide .68 mg/ml, 1.34 mg/ml, 2.68mg/ml
Liraglutide .68 mg/ml, 1.34 mg/ml, 2.68mg/ml
Tirzepatide .68 mg/ml, 1.34 mg/ml, 2.68mg/ml

Hydroxycarbamide (hydroxyurea)

Hydroxyurea 100mg, 200mg, 500mg, 1g