ANTENATAL CLINIC
ELECTRONIC MEDICAL RECORD SYSTEM

User Manual

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Introduction

Antenatal care refers to the interventions to curb maternal and infant mortality. It is a planned programme of medical management of pregnant women directed towards making pregnancy and labor a safe and satisfying experience. Antenatal care is concerned mainly with prevention, early diagnosis and treatment of general medical and pregnancy associated disorders.

The need for Collecting Patient Records

GOAL: To equip users with fundamental knowledge in records management

Objectives: By the end of this session, users will be able to:

1. Learn the importance of collecting patient records
2. Methods of collecting patient records
3. Advantages and disadvantages of different kinds of records
4. Tools used in collecting patient records in this system.

Patient records are collected for various purposes. Some of the reasons that patient records are collected at health facility level are:

- Continuity of patient care: To be able to manage a patient based on past diagnoses.
- Disease surveillance: To be able to monitor disease epidemics in various areas.
- Official reporting and planning: To be able to submit reports to official bodies and thus be able to plan effectively for various issues such as purchase of medicines.
- Community planning : To assist in drawing community relevant plans.
- Research: To be able to conduct research that can improve patient care; patient treatment.

Methods of Collecting Patient records

As mentioned above, there are two broad methods for collecting patient records namely:

- Paper based
- Electronic based

Paper based records

This is a patient record that is created on paper. The paper based record takes several forms such as:

- The health passport book
- The Master card
- Patient registers
- Patient files

Advantages of paper based records

- People are familiar with paper, therefore they do not have to learn new skills in order to create patient records on paper
- Paper is portable to the point of care
- Paper can be scanned in order to develop information from the scanned paper record
- Paper is flexible in such a way that information can be written in various forms.
- Paper records do not experience problems once in hand as do computer systems. For example there can be a power failure which can then affect the up time of a computer system.

Disadvantages of paper based records

- Patient data often missing, illegible, or inaccurate
- There is no proper format for recording data on paper and thus making it difficult to find follow up patient information
- Difficult to access, retrieve patient records and thus affecting availability of the patient record
- Discontinuity of patient care because of the difficulty to establish linkages with patient records from other health providers.
- Difficult to provide alerts and decision support

Electronic based record

This is a patient record that is stored in a computer system providing users with complete and accurate data and providing assistance to the users such as decision support alerts (for example suggesting the dosage to be taken based on the weight of the patient).

Advantages of electronic based records

- Can retrieve patient information easily
- Data accuracy is increased because of the presence of validation features in the system
- Offers opportunity to ensure continuity of care
- Makes administrative tasks easier such as community mobilisation and procurement of various items since reports can be generated easier than on paper.
- Offer alerts and decision support easily.

Disadvantages of electronic based records

- Require training and thus are not instantly accepted by users
- They are not available all the times that are used. They are prone to downtime due to various factors such as power failures for example.
- Have high initial capital costs that deter some decision makers from adopting them.

Tools for collecting electronic patient records

Electronic based patient records can be collected using different tools. The tools that are used to enter information into the electronic systems are called ***input devices.***

Input devices influence how users interact with the electronic patient record. The interaction that an electronic patient system user establishes with the electronic system is called an **interface**.
Here is a list of input devices and the interfaces that they influence:

Device	*Interface*
Touch screen	Touch screen interface
keyboard	keyboard interface

Table 1: input devices

For purposes of this module, concentration will be on the touch screen interface.

Hardware used

These are all the physical components that are used to operate maternity registration system. The physical components can be classified into these groups:

- Input components
- Output components
- Central processor
- Connection devices
- Power backup components

Input Components

These are all devices that are used to enter data into Antenatal electronic medical record system. Examples of such devices include:

- Scanner – This is used to enter data into Antenatal system such as patient identities and drugs during drug dispensation.
- Touchscreen – This is the primary device for entering data into the system. It is used to enter various patient details ranging from Patient registration to follow up visits.

Output Components

These are all devices that are used to give feedback to the users of the Antenatal system. Examples include:

- Label printers – These give hard-copy output such as bar-coded patient identities and patient visit summaries.
- Touchscreen Computers – These give soft copy feedback such as Body Mass Index, among other feedback, reports.

Central Processor

This is a device that stores, processes and gives feedback to the users on all the data that is entered. This device is called a server.

Computer Network cable

A network cable connects various independent computers to each other. In order to understand the role of a network cable, it is necessary to examine the idea of a network in more depth.

Computer Network

It is the connection of one or more independent computers to each other using connection cables or other means such as atmospheric waves.

Baobab health electronic patient record systems are connected to each other through a device called a network switch. The network switch has got cables that connect the touchscreen computers to each other and at the same time connect the touch screen computers to a central computer in the network that is called the server. In a later it will be pointed out that the network switch also provides power to the touch screen computers and the label printers.

Therefore in relation to the devices displayed below, the computer network cable performs the following two functions:

- Connect the touch screen computers to all other computers in the network
- Bring application on the touch screen from the server through the switch.

Power Back up Components

These are devices that are used to supply electricity to the server that runs the Antenatal application even when there is no electricity coming from ESCOM. The power back up devices consist of four car batteries and a battery charger. The whole system is designed in such a way that it runs from the car batteries even when ESCOM electricity is on. This means that when the ESCOM electricity goes off, the system continues running because the batteries supply power continuously.

Illustration 1: Power backup components

The Touch screen workstation

From their name, touch screen workstations provide for the possibility to interact with the computer system using fingers. The touchscreen workstations have a screen that enables a user to enter information into the computer by selecting various options. A pointer on the touch screen indicates where the screen has been touched.

The touch screen interface has the advantage of promoting ease of use since system users would have to use their hands in order to select different options.

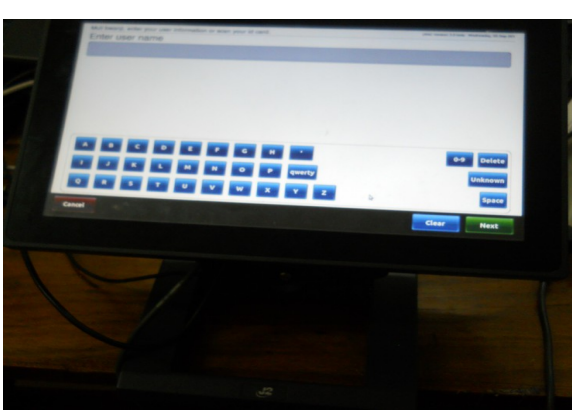


Illustration 2: the touchscreen workstation

Touch screen computer

This is the main device of the workstation. This is used to enter data as well as give output to the system user in the form of alerts or decision support.

Illustration 3: parts of the touchscreen computer

The Label printer

This device is used to give printed output from the electronic system. The Label printer contains two items inside namely:

- Label spool
- Ribbon

Illustration 4: Closed label printer

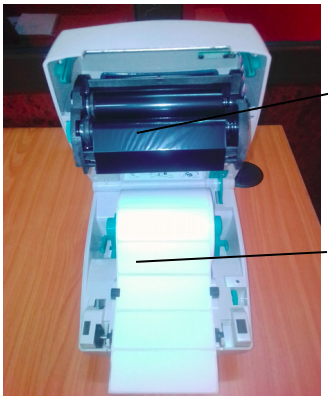


Illustration 5: Open label printer

Bar code scanner

This device is used to read a bar code label into the system. The bar code label contains information that is stored visually in the form of vertical lines (bars) that represents specific information. A bar code label can represent information such as a patient unique identity, or drug description for example.

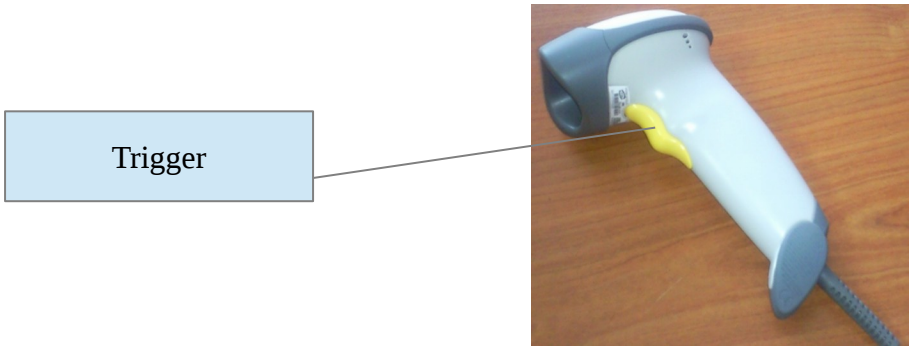


Illustration 6: Bar code scanner

In order to read a bar code, the bar code trigger is pressed and moved from top to down across the bar code label.

SECTION REVIEW

In this section, we have discussed the need for collecting patient records and how these records can be collected. We have also discussed benefits of both methods. From this discussion, this manual emphasizes about the need to migrate from paper based record systems computer based systems. Finally, we have looked at tools used in collecting patient records and other supporting materials.

USING THE ANTENATAL CARE EMR SYSTEM

GOAL: To equip users with knowledge on how to manage patients using ANC application

Objectives: By the end of this session, users will be able to:

1. Log in to start using ANC system.
2. Select required user activities before using the system.
3. Register patients using ANC application.
4. Record patient vitals.
5. Perform clinic consultation activities using the system.
6. Manage prescriptions.
7. Set next visit appointment dates using the system.
8. Manage PMTCT services using the ART system.
9. Run and View monthly and cohort reports.

The Antenatal Care EMR system can be used to perform the following tasks:

- Register Antenatal clients
- Capture client's antenatal care data
- Review clients ANC service history
- Print client's data entered in the system in form of visit summary, obstetric and medical history and labs results.
- Produce monthly and cohort reports.
- Manage PMTCTC services.

General system concepts

As explained in earlier sections, the electronic Antenatal Care system is a touch screen based application. This means that the application is used by touching the screen. In addition to this, the application asks the user several questions in order to record any piece of information.

In order to move from one question to another in a section, a button with the word **"Next"** is displayed on each page. To indicate that questions in a given section have been answered, the word **"Finish"** is displayed on another button. To clear text that has been typed, the word "**Clear**" is displayed on a blue button. To exit a particular screen, the word "**Cancel**"is displayed on a red button. A message is then displayed on the screen asking for confirmation. If you want to confirm, press **Yes**.

The system has the following concepts which will help the user navigate and toggle through various scenarios using the touch screen interfaces

- Drop-down lists
- Alphabetic and Numeric Keyboards
- Validation, Alerts and Flags

Drop Down Selection Lists

In the course of using the system, the user will come across two types of selection lists. Selection list 1, as indicated in illustration 7, requires the user to select an option on the left hand-side list and then select an option on the right hand-side list before the system can proceed to the next page. On the other hand, selection list 2, as indicated in illustration 8 below, simply requires the user to make a selection from the options on the drop down list. The selection can be made by touching the desired option. If the option the user is looking for is not displayed at first glance, the user can narrow the search by typing characters in text box (***applicable in selection list 2 only).***

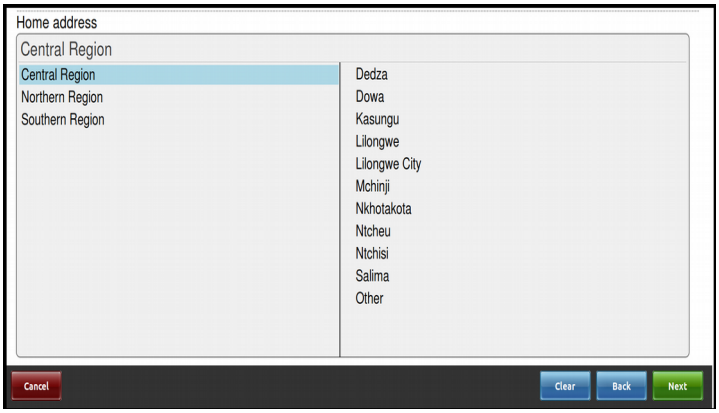


Illustration 8: selection list 1

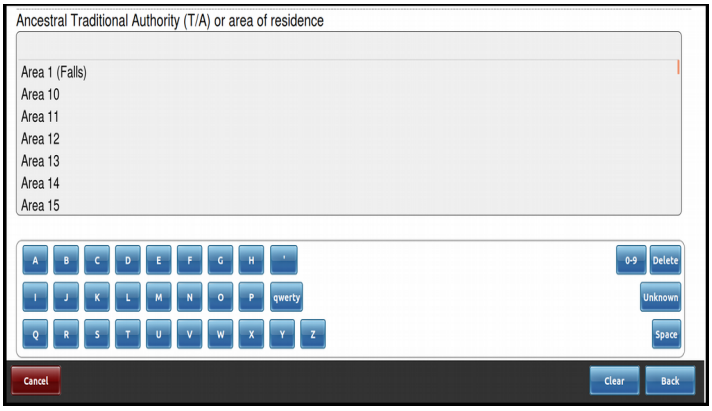


Illustration 7: selection list 2

Keyboards

The ANC system allows the user to use both alphabetic and numeric keyboards to enter data into the system.

Alphabetic Keyboard

Users can enter data by touching the required characters on the alphabetic keyboard. They can do this using the **QWERTY** keyboard or the **A-Z** keyboard. To switch between the two keyboards, the user can tap on the "**QWERTY"** button if the **A-Z** keyboard is in use. Conversely, the users can tap the "**A-Z"** button if the **QWERTY** keyboard is in use.

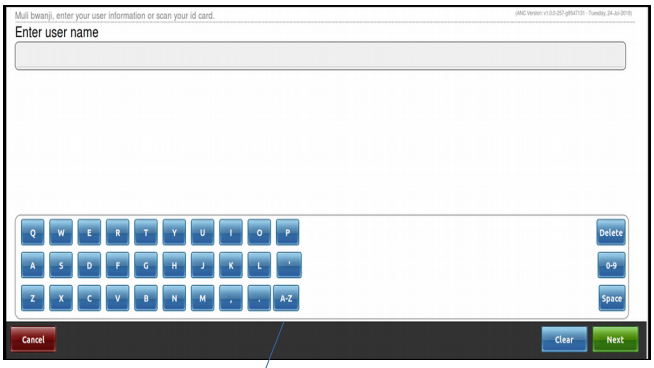


Illustration 9: QWERTY keyboard

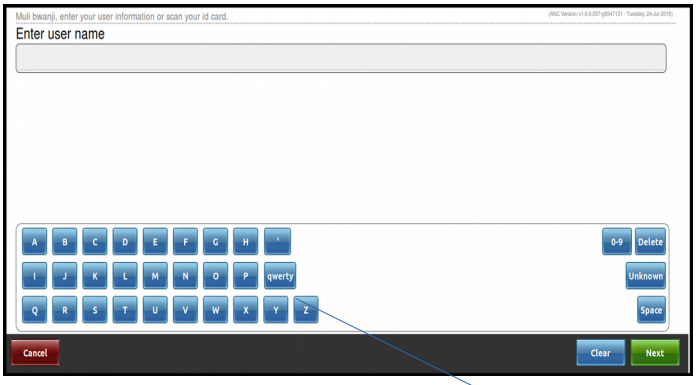


Illustration 10: A-Z Keyboard

A-Z button

Qwerty button

Numeric Keyboard

The numeric keyboard only accepts numeric user input as data. Users can enter data by touching any of the displayed numbers.

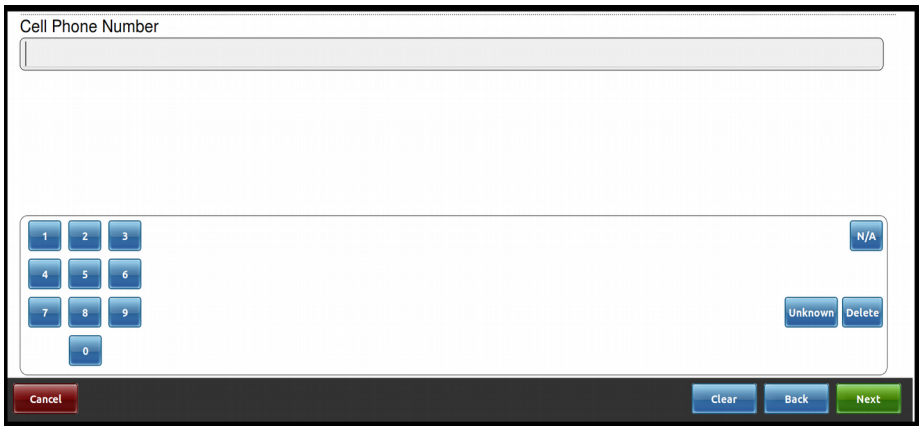


Illustration 11: Numeric keyboard

Month of birth

When editing a patient's demographics, under birth date, the user selects the birth month by simply touching on the desired option.

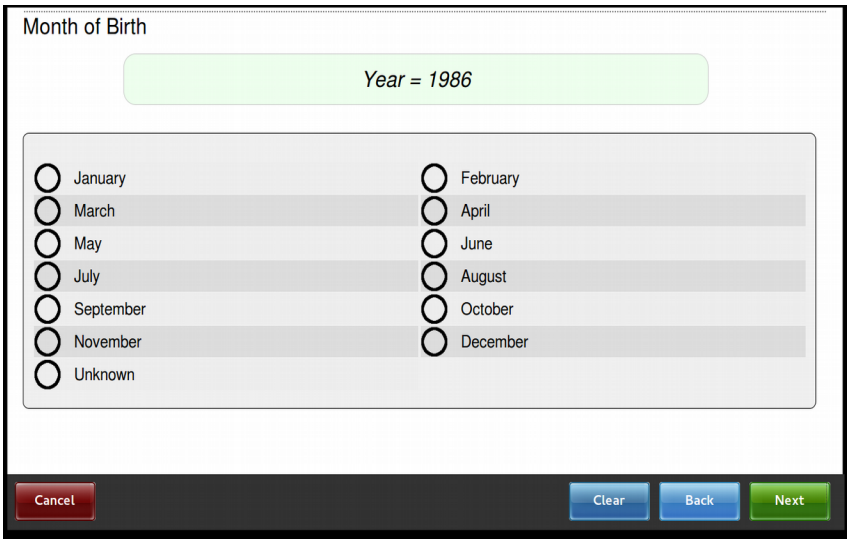


Illustration 12: selecting month of birth

Birth Day

To select the day of birth, the user taps on any of the numbers displayed.

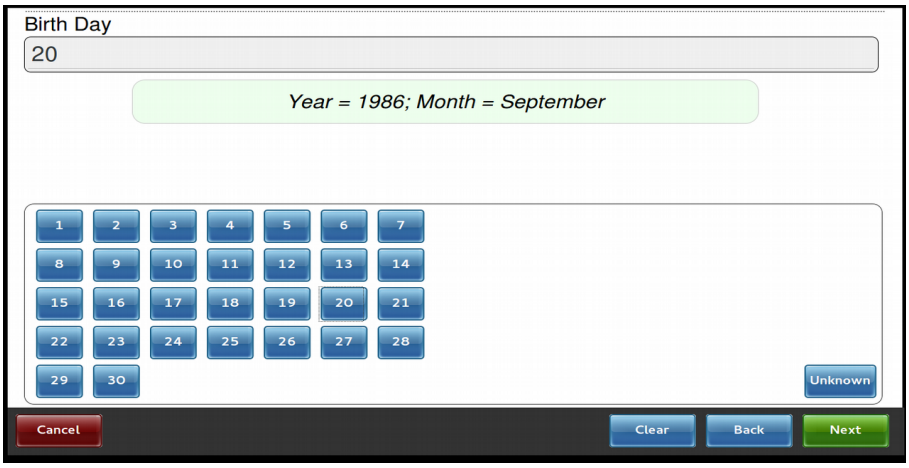


Illustration 13: to enter day of birth

Validations and Alerts

When information is entered, the system checks whether the information is valid or not. The system checks the entered information against conditions that have been defined in order to improve the accuracy of the client's data. These predefined conditions are known as **validation rules**.

For example year of birth can not be greater than the current year, system gives an **alert** on the screen indicating what the problem is. There are two types of validation rules in the system.

1. **Restrictive validation rules**- these do not allow entering of information that is outside the valid ranges. An example of an alert for a restrictive rule is shown in the illustration below.

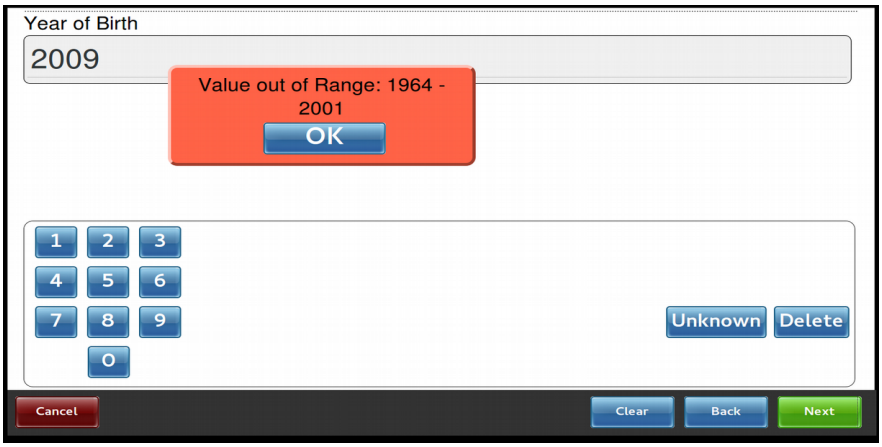


Illustration 14: restrictive validation rule

2. **Non-restrictive rules**- these allow information that is outside the valid ranges to be entered after the user confirms the information. An example of an alert for a non-restrictive rule is shown in the figure below:

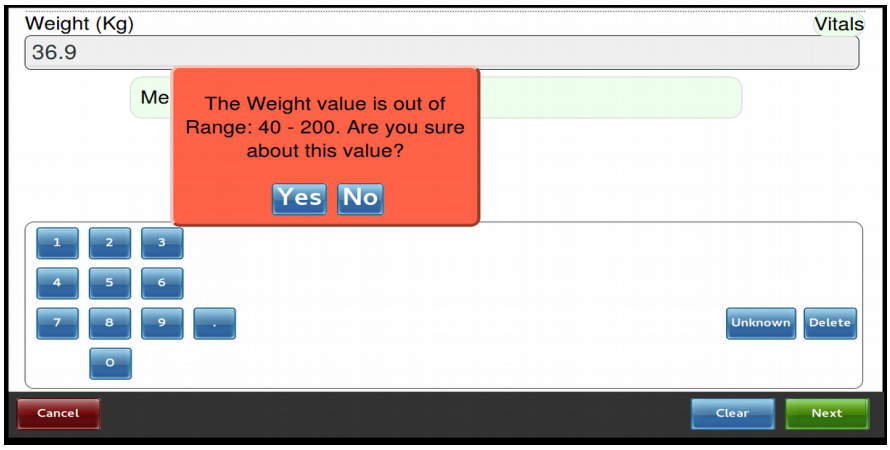


Illustration 15: Non-restrictive validation rule

When a user encounters a non-restrictive validation rule, they can confirm their input by clicking **yes** or cancel by clicking **no.**

Getting started with Antenatal Care System

Logging In

To access to the system, the user is required to login using his/her credentials. These credentials are the user name and password. A User name and password is used for security purposes when using the system. A user name and password ensures security of the system by:

- Making it possible to track the person that created a record in the system
- Restricting the activities that a user can perform in the system
- Preventing unauthorized users from using the system

Password and User names are also necessary in order to help system administrators track and diagnose problems with the system and also to improve the use of the system by looking at user patterns.

User Name

User name is a collection of alphabetical or numerical characters from "a" to "z". A user name **should not be LESS than** six characters and it should be **UNIQUE** in the system. This is required to let the user proceed with using the system.

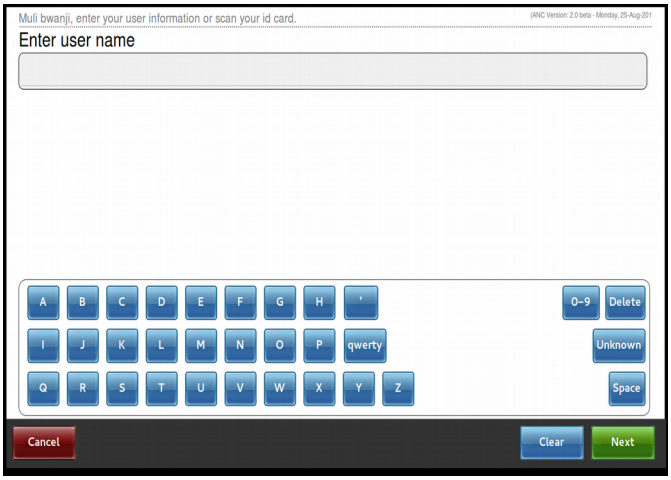


Illustration 16: user name login screen

Password

This is a combination of alphabetical or numerical characters from "a" to "z" and “0-9”. The password should not be LESS than 6 characters. The user is requested to enter the password only after entering a correct user name.

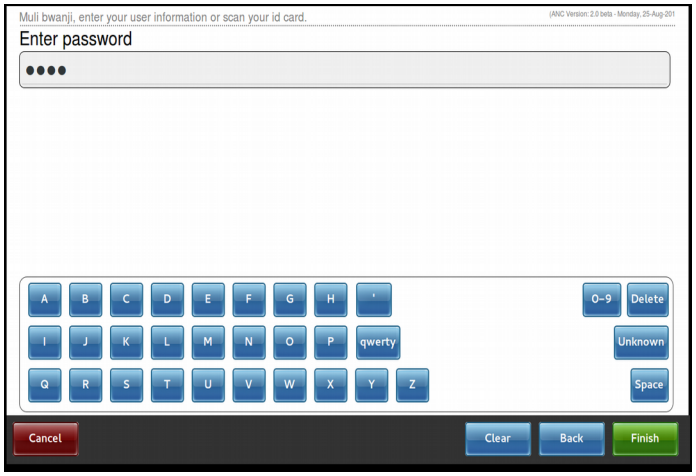


Illustration 17: password login screen

Workstation Location

After entering the correct user name and password, a user is presented with the screen that prompts the user to enter workstation location as shown below.

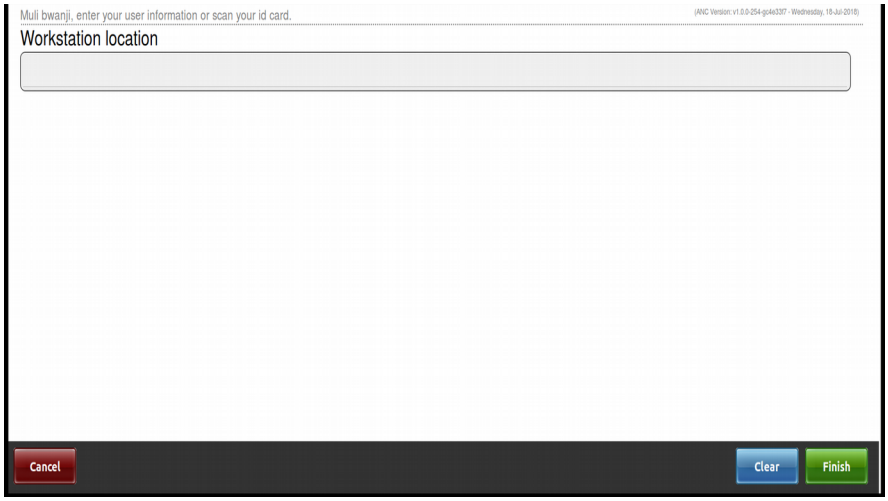


Illustration 18: enter workstation location screen

Selecting Activities

Users must select activities which they perform at the clinic on a daily basis. However, it should be noted that when one changes workstation, they are at liberty to select other tasks. The system will however still keep history of the tasks which were selected during the last system use.

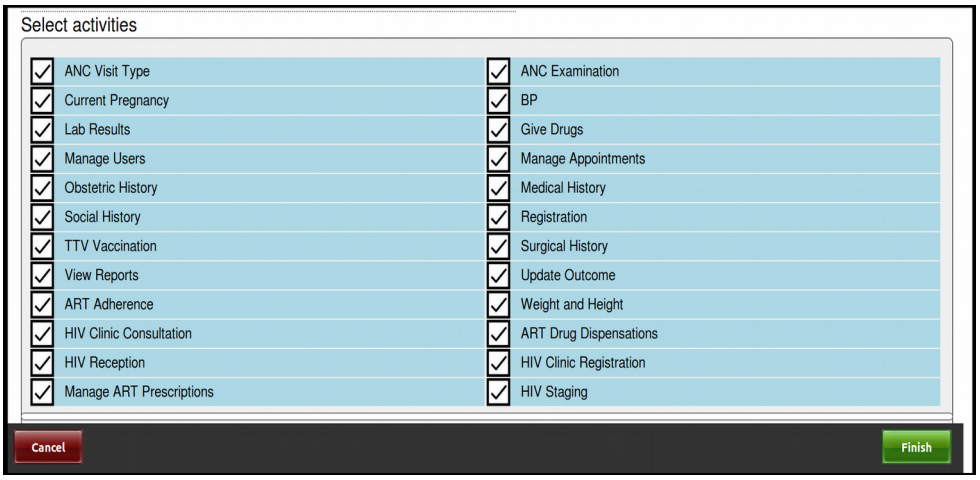


Illustration 19: select activities screen

Take note that there are some activities that are standard for various cadres at the Antenatal clinic as indicated in the table below.

CADRE/STATION	**TASKS**
Registration Clerks (registration station	Registration, TTV vaccination, View reports (Optional)
Vitals Clerks	Registration, TTV vaccination, BP, Weight and Height, View reports (optional)
ANC consultation	All ANC tasks. ART tasks (optional)
PMTCT	All tasks

Table 2: standard activities for various cadres

Application Dashboard

The dashboard screen comes up after the user has selected tasks. It introduces users to the system functionality and components and how these improve system usage and client service provision.

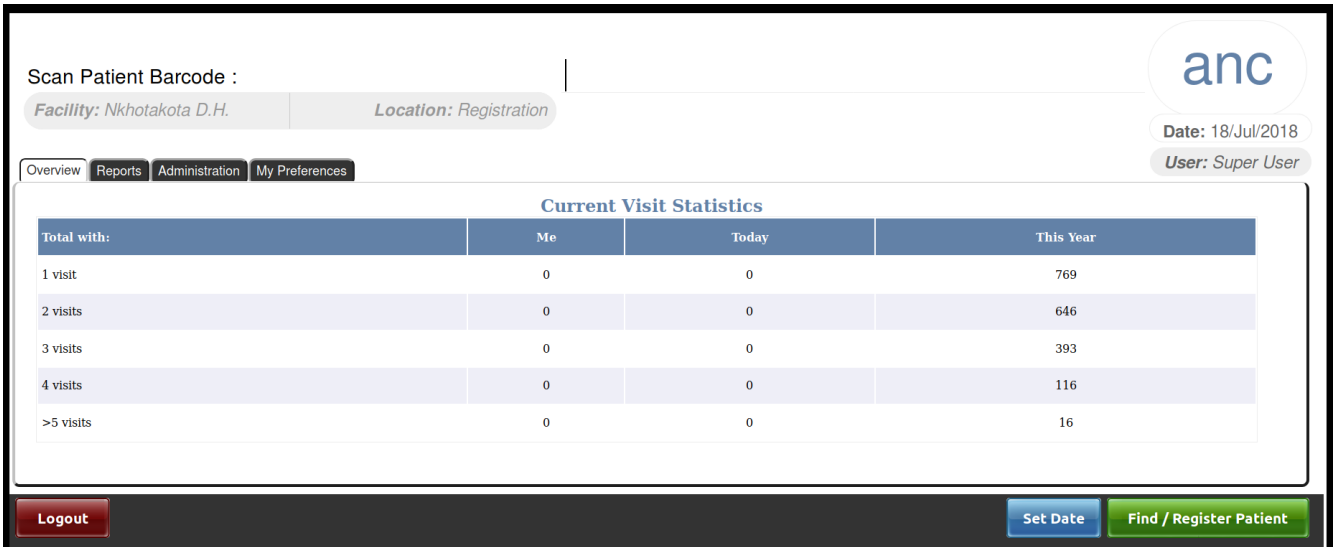


Illustration 20: Application Dashboard

- **Facility**- this indicates the name of the health facility where the system is being used.
- **Location –** this indicates the workstation location at the health facility
- **User**- this indicates the name of the health worker who is currently using the system. For another health worker to use the system the current user must press the **Logout** button to exit the system.
- The **Current visit Statistics** show the number of clients that have visited the Antenatal clinic using the system. These statistic are shown for the current day and for the year against the number of times the client has visited i.e. people that have visited once, twice, etc.
- **Date-** this indicates the system date which is normally today's date. This date can be set to a previous date by pressing the **Set Date** on the system dashboard in order to allow for back-data entry. When the system date is not today's date, the date appears in red as shown in the illustration below.

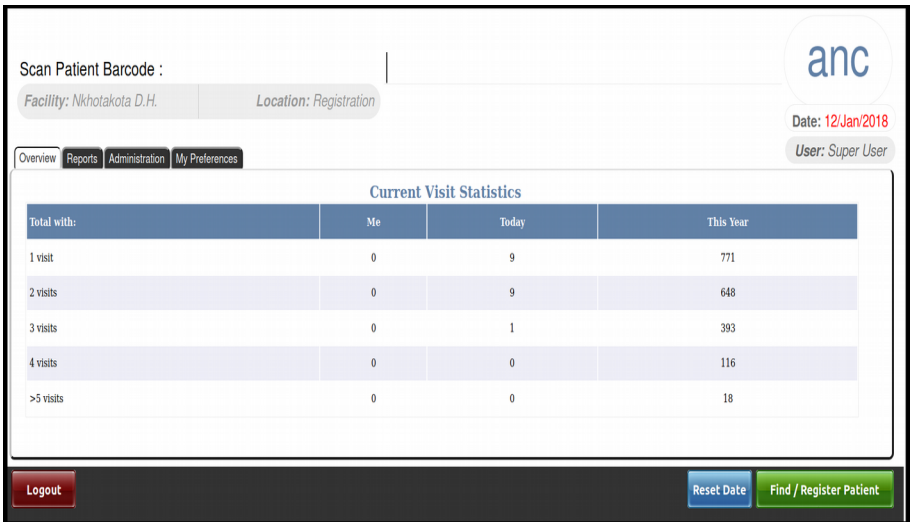


Illustration 21: date appears in red when set to past date

Registering patients

This is a process of recording patient information to the system. The process involves recording demographics, patient history, observations as well as diagnosis.

The ' **Find / Register Patient**' button on the system dashboard is used for two functions:

- Search for an already registered patient using first name, last name and gender
- Register a new patient

The process of registering a new patient also starts with entering the patient's first name and last name and gender in order to make sure that the patient is not already registered in the system. If the patient is not in the system, then the patient details are entered into the system by recording the following:

- Age (year of birth, month of birth and date of birth)
- Nationality
- Phone number
- Occupation
- Address of patient: This includes both the home address and the residential address, traditional authority and landmark (a feature that is identifiable and can be used to locate the patient's house).

Note that Name and Gender are already indicated during the first stage of the registration. After collecting demographics the system allows the user to enter observations and diagnosis of the patient.

The screenshots below summarize the process of adding a new patient in the system.

Illustration 22: Enter first name

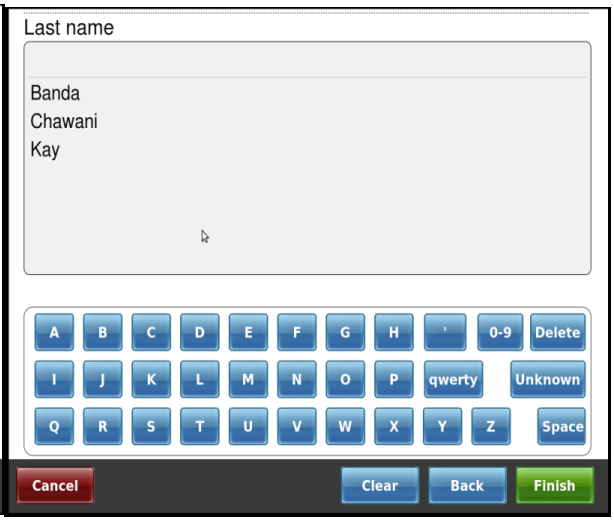


Illustration 23: Enter last name

To register a new patient, Select the option "**Create a new person with the name…**"and press the **New Patient** button.

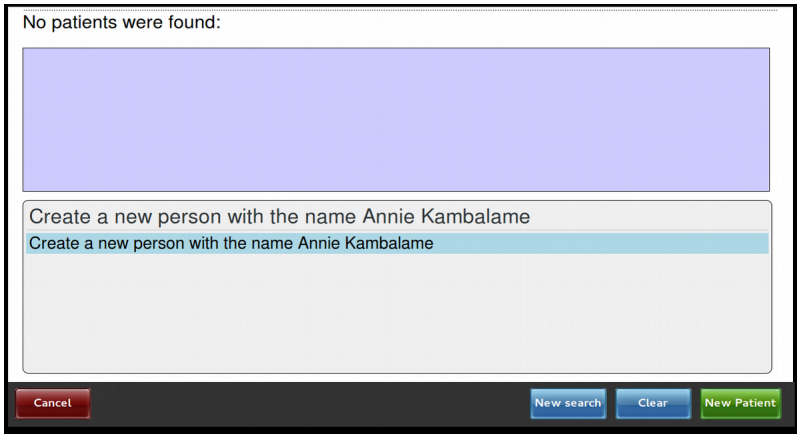


Illustration 24: patient search results

The next screen allows the user to enter the patient's year of birth. Press on Unknown if the patient does not know their year of birth. The system will allow you in a later screen to estimate the client's age. This will enable the application to estimate year of birth.

Illustration 25: Enter year of birth if known

Illustration 26: Tap Unknown if the year of birth is unknown

The next screen allows you to select the patient's month of birth. If the birth month is not known, select unknown. Note that if you select unknown, the system will not ask you about the birth day. It will proceed to asking about the patient's nationality.

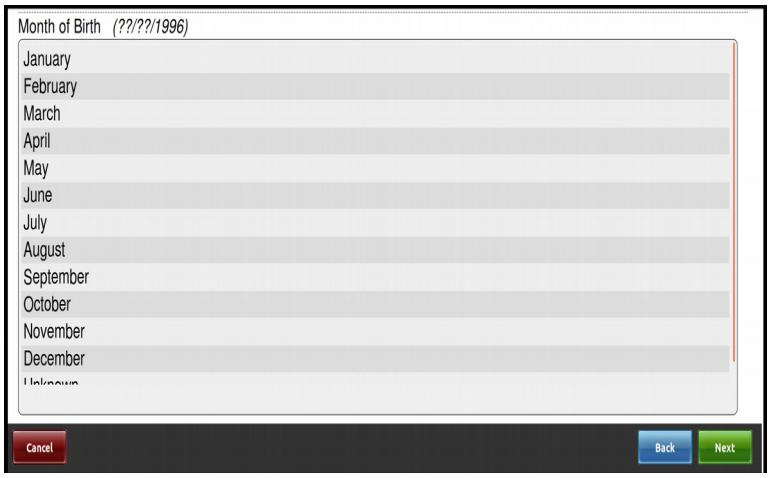


Illustration 28: select month of birth if known

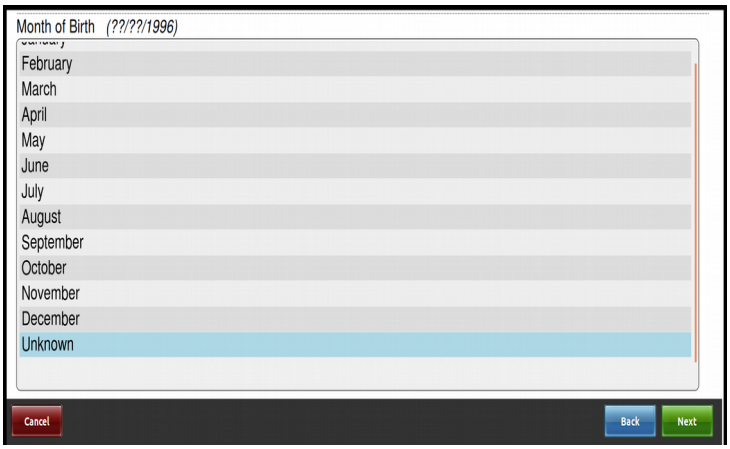


Illustration 27: Select unknown if month of birth is not known

After selecting month of birth, the next page asks the user for the patient's day of birth.

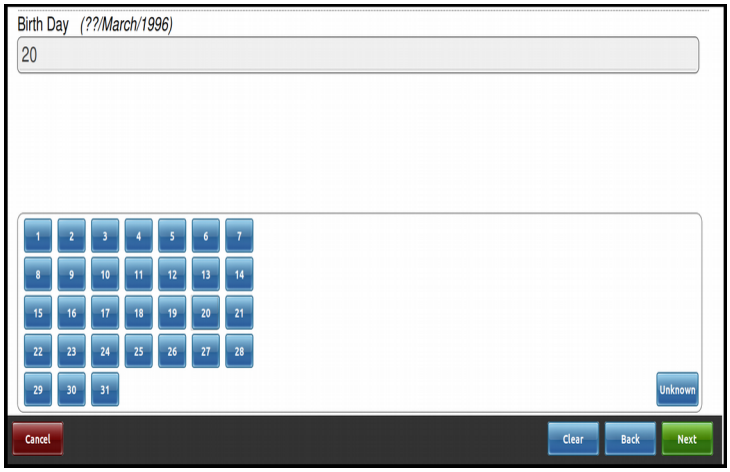
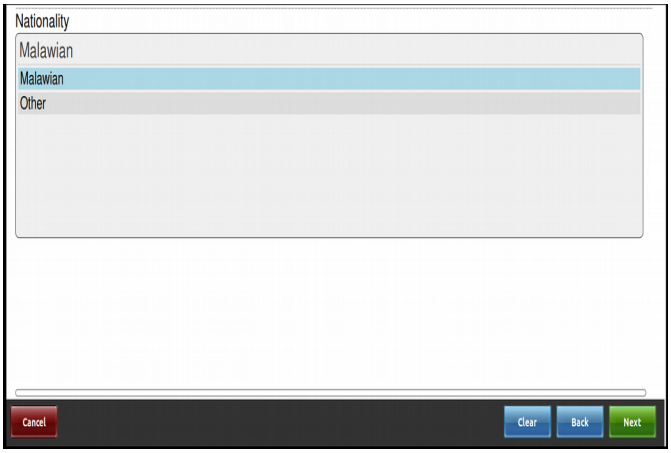


Illustration 29: select birth day

After selecting the day of birth, the system asks for the patient's nationality.




Baobab
Health

Reports

The reports tab

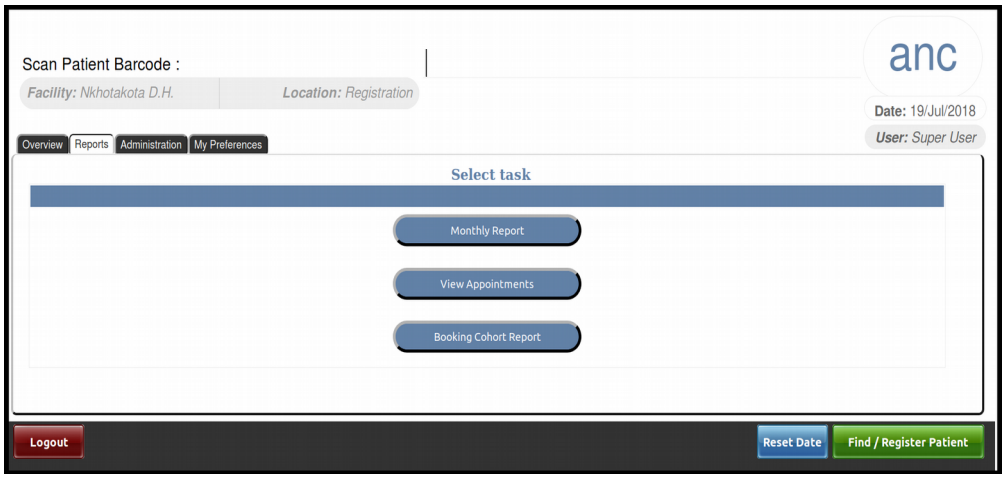


Illustration 30: Reports Tab

Administration

The Administration tab

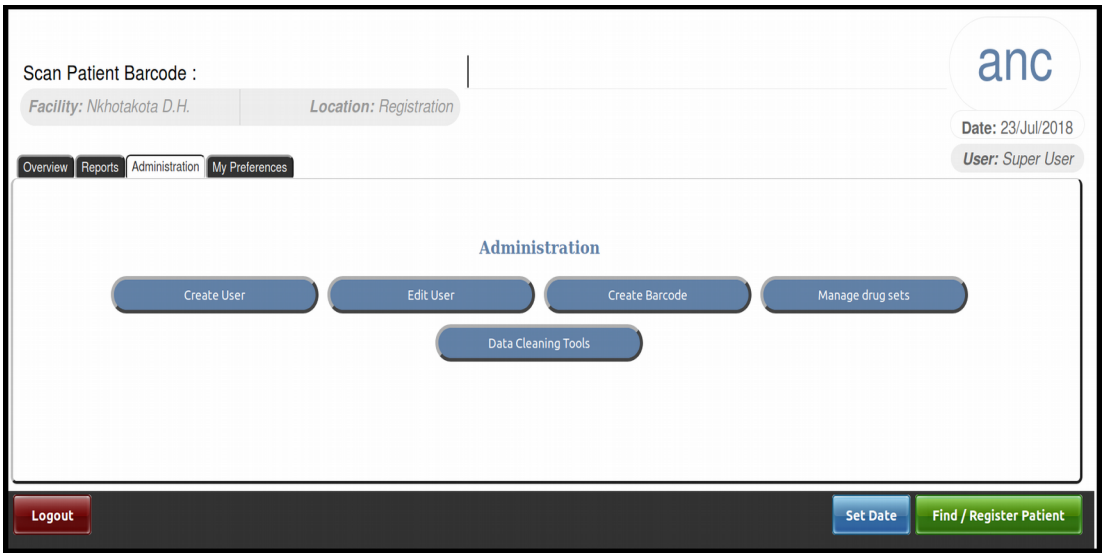


Illustration 31: Adminstration Tab

My Preferences

The preferences tab

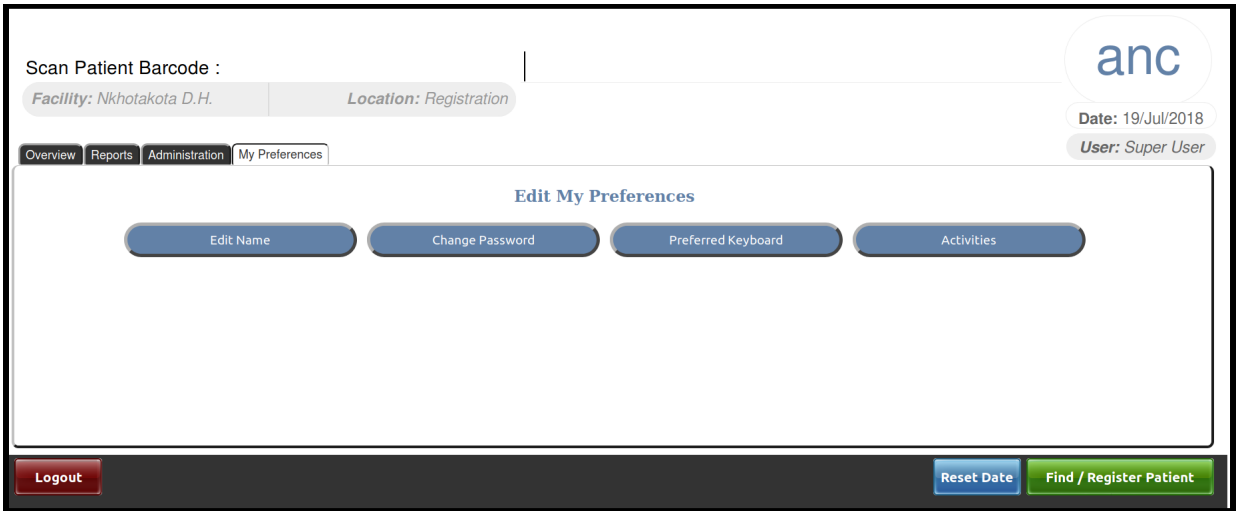


Illustration 32: My Preferences Tab