Guide to Configuring DHIS2 for use with the **DHIS2 Android Capture App**

***This Document is deprecated. Please find the updated documentation in the [DHIS2 Documentation Portal]**

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Configuring DHIS2 for use with the **New Android Capture App**

Introduction

This guide is designed to assist you in configuring DHIS2 for use with the Android Capture App.

It is not a tutorial or training manual; it is designed to complement the core DHIS2 documentation and training materials with specific reference material for the Android application.

The document is divided into sections, which are intended to describe all the features that have been implemented in the app, those that have not yet been implemented and those that will not be supported. Where applicable, an explanation of problems with the use of a particular feature in Android app will be provided. Recommendations or tips will also be presented for a better understanding and use of the app.

In addition, the document has sections for new features in the login, visual configurations, synchronization management and a list of known important errors.

- ➔ Any issues around using a particular feature with Android are highlighted with an exclamation mark **!**
- ➔ Every time the icon is presented, a tip will be provided for a better use and understanding of the feature.
- ➔ When there is an error or issue in which we are currently working , you will find this icon

Recommendations for a DHIS2 mobile deployment

If you plan to deploy the DHIS2 Android App in the field, we strongly recommend you to read the Mobile Implementation Guidelines published by UiO. They include chapters on technology requirements, security and configuration aspects, and testing and roll out recommendations. Below you will find some key aspects briefly introduced, we recommend reading the extended document.

Mobile device specifications

The Android App is compatible with DHIS2 2.29, 2.30 and 2.31.
It requires a device that is running Android v4.4 or higher.

In this link you will find recommendations for new mobile device acquisitions for a Dhis2 Android deployment.

Testing and Piloting

Before deploying the DHIS2 Android App in the field, you should first do a full round of testing of the app in you own configuration.

The app has been extensively tested with the demo servers, and during Beta testing it was tested against some real configurations as well. We know, however, that every DHIS2 configuration is special in many senses, and might cause inconsistencies that we have not being able to identify.

It is strongly advised to carry out a comprehensive testing of the app in your own server before piloting it.

How to migrate to Android Capture App

If you are ready for deploying the new Android App in the field and your users are already using Event Capture or Tracker Capture, you should follow these steps:

1. Sync data of the current app you are using
2. Download and install the DHIS2 Android App
3. Login using your credentials and all data will be synced.

Deleting the app without syncing can cause information loss.

Contribute to the App

How to report a bug

First of all, please check the **List of already reported bugs**

The list is always updated as you add new bugs and we work on them. You need an active, free DHIS2 Jira account.

When reporting a bug please specify together with your description:

- ➔ DHIS2 version and build revision
- ➔ DHIS2 Android App version
- ➔ Android OS version
- ➔ Device (when possible)
- ➔ Error log (when possible)

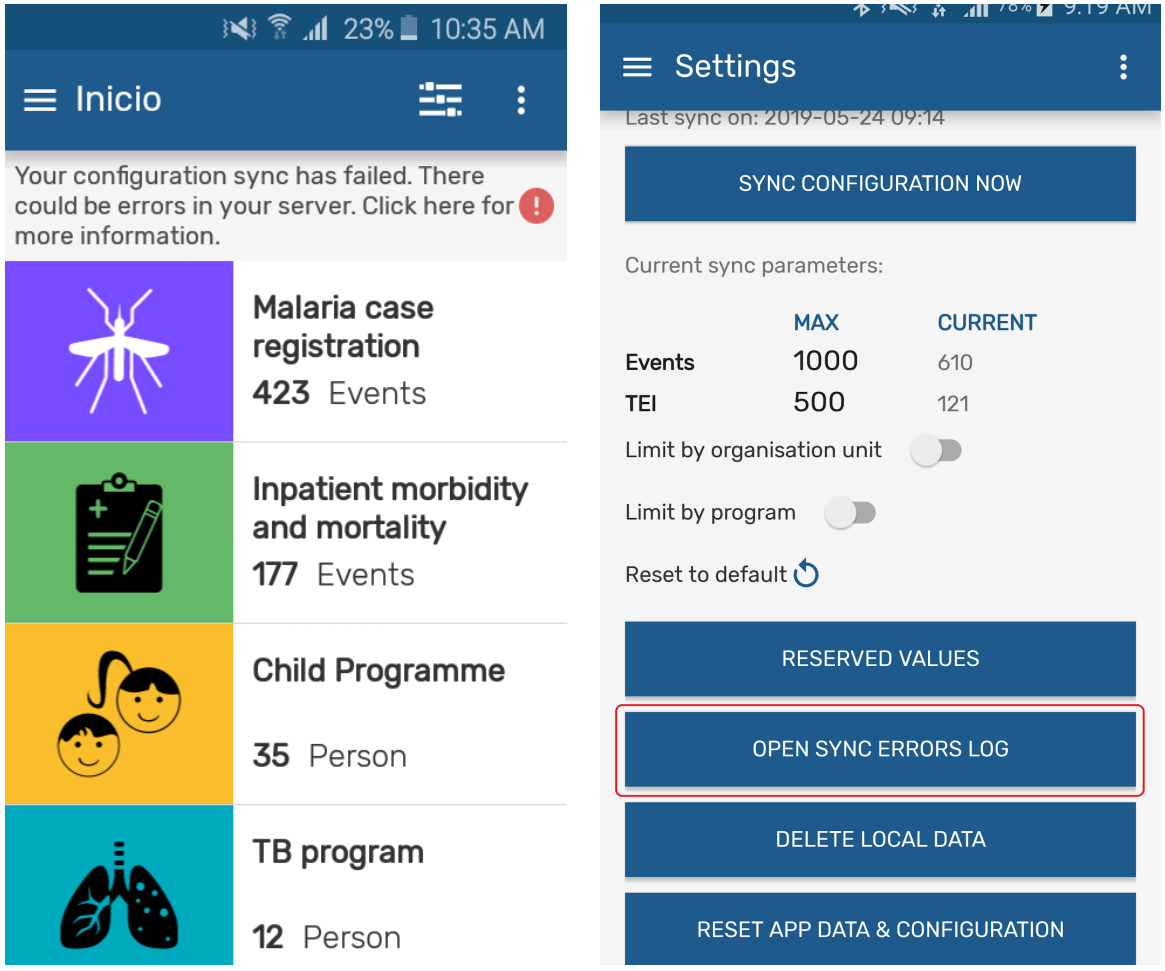
How to suggest Icons to the library

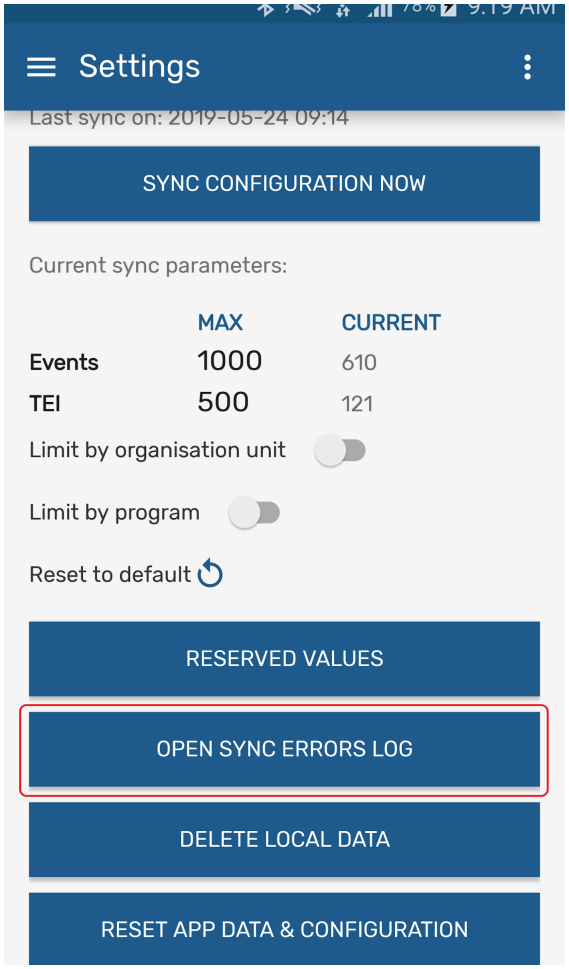
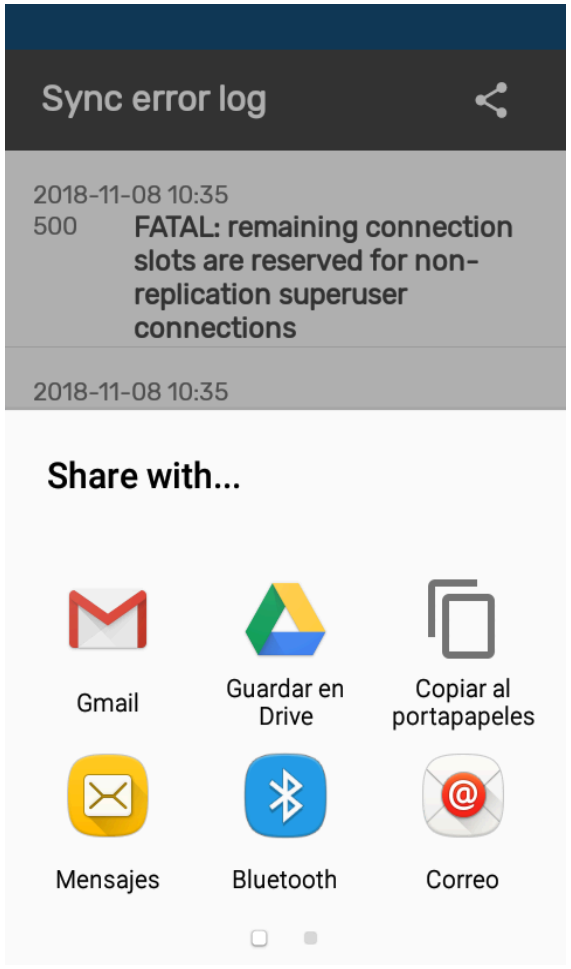
DHIS2 and the new DHIS2 Android App allows you to select icons for programs, datasets and the options of an optionset. DHIS2.30 incorporates 125 icons. We plan to expand the collection of icons on each future version of DHIS2- for that we need your help: we are seeking ideas for new icons - please submit yours using this form.

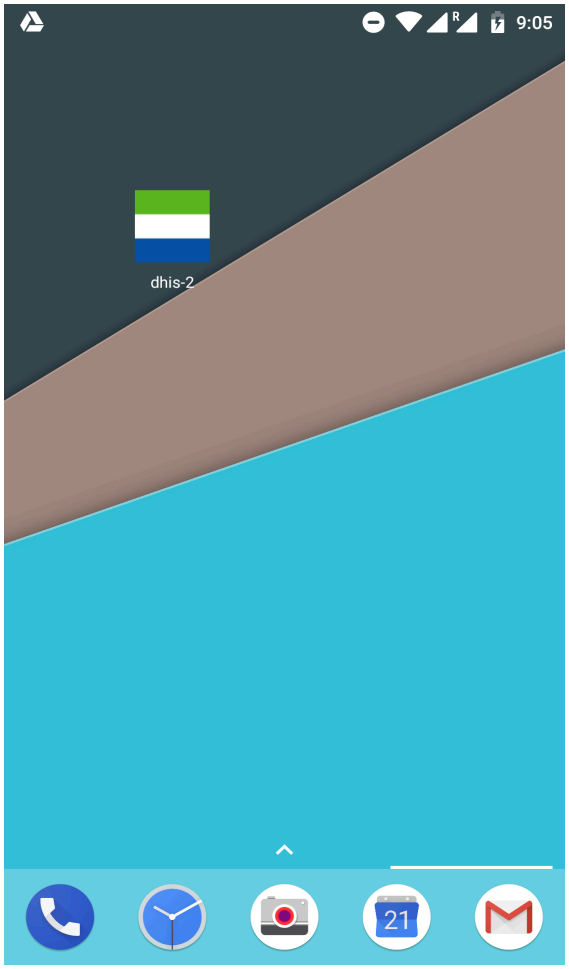
How to add translations

You can contribute to the current translations of the App or add a new language. Just contact us (android@dhis2.org) and we will set up the translation server and send you instructions.

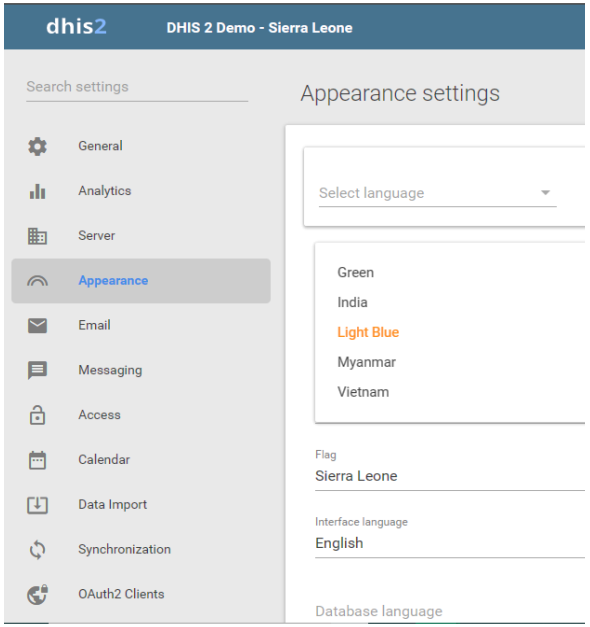
NEW Visual configurations

Metadata & data sync error		In case of errors during the sync process, a message is displayed in the home screen which takes you to the sync error log. The sync error log gives details about the error and is prepared to be shared with admins.

Sharing errors	 	

Personalize your Icon		You can set your icon in the wallpaper using the DHIS2 App Widget. The icon will be the flag configured in your server. How to add a widget - Long press in your wallpaper - Select Widgets - Look for the DHIS2 Widget - Select It will add a shortcut to your app.

Personalise the colour of the App



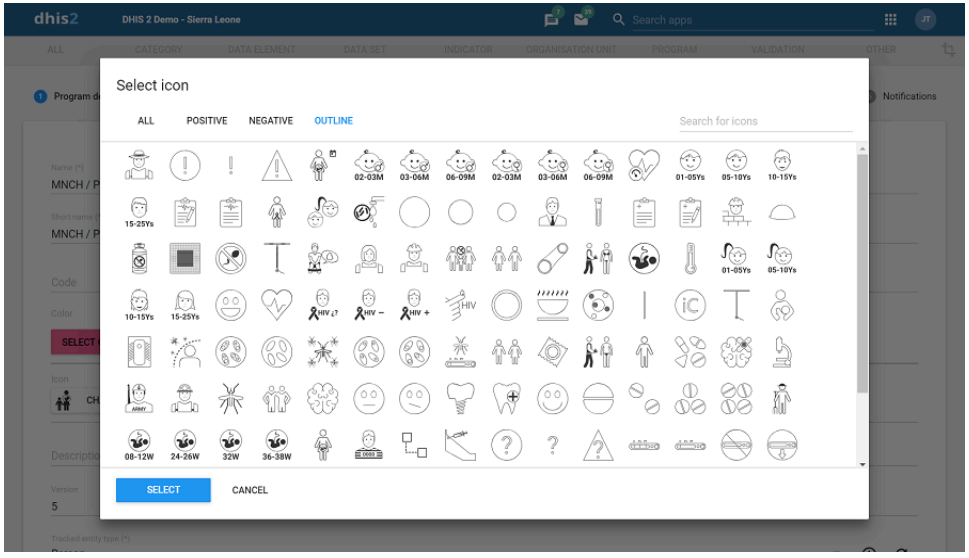
You can set the generic theme of the app by configuring them in our server.

How to set the server theme and flag

- Go to System Settings
- Appearance
- Style
- Select your style:
  - Light Blue / Vietnam
  - Green
  - India (Orange)
  - Myanmar (red)
- Select your flag

The configuration of the following features through the web UI will be available for DHIS2 v2.30

Icon library for metadata



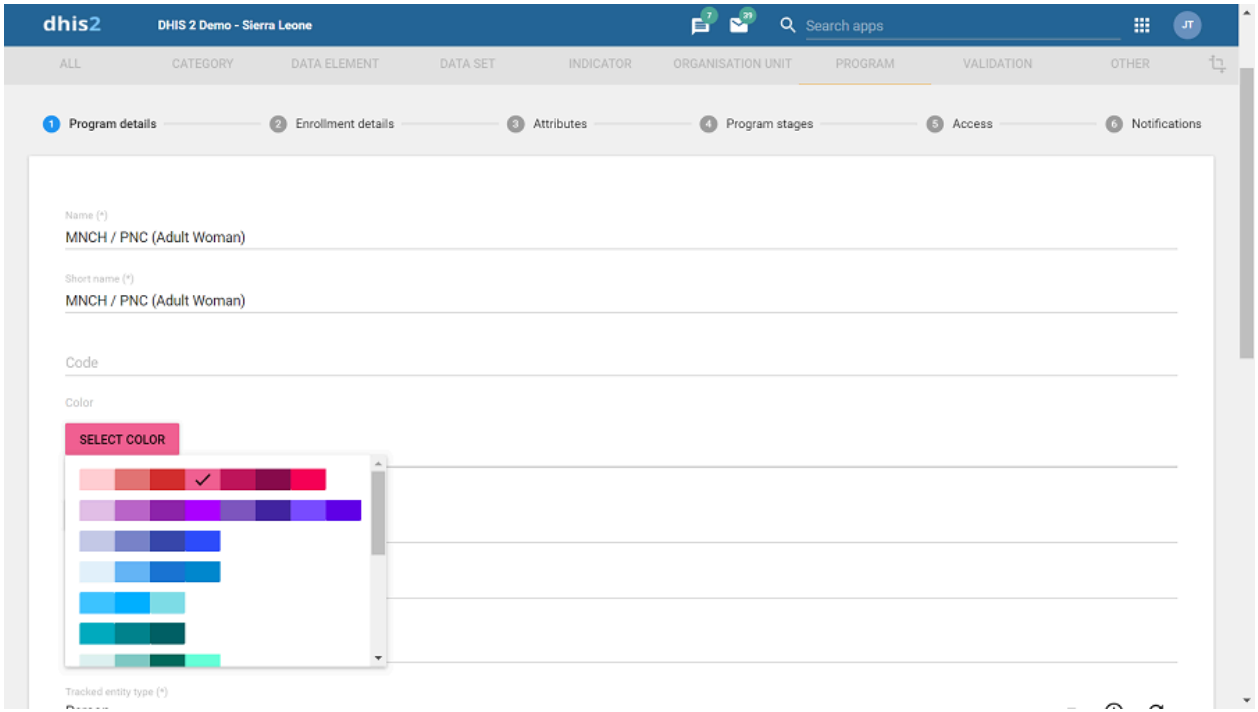
There are currently 134 icons available that you can choose from. You can search by name in the icon picker widget. Icons are available in positive, negative and outlined shapes. We will be adding many more icons in future releases.

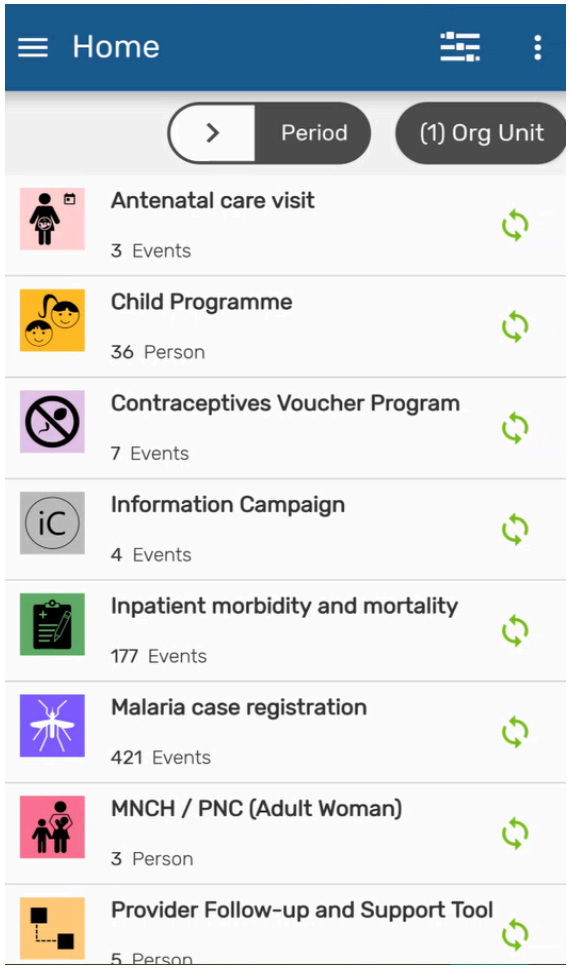
Icons can be associated to programs, stages, data elements and the options of an option set. This is configurable through the Maintenance App. In the Android App icons render in the home screen to illustrate all the programs

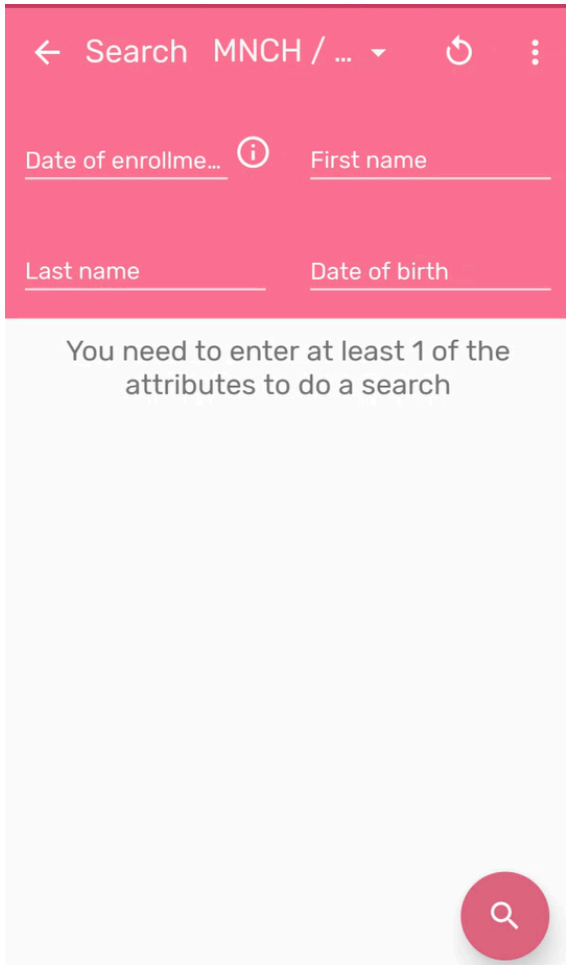
available to a user, or while adding an stage. For data elements and options, the icons render for single event programs, when a section contains a single DE, showing the option set as a matrix or sequence of images.

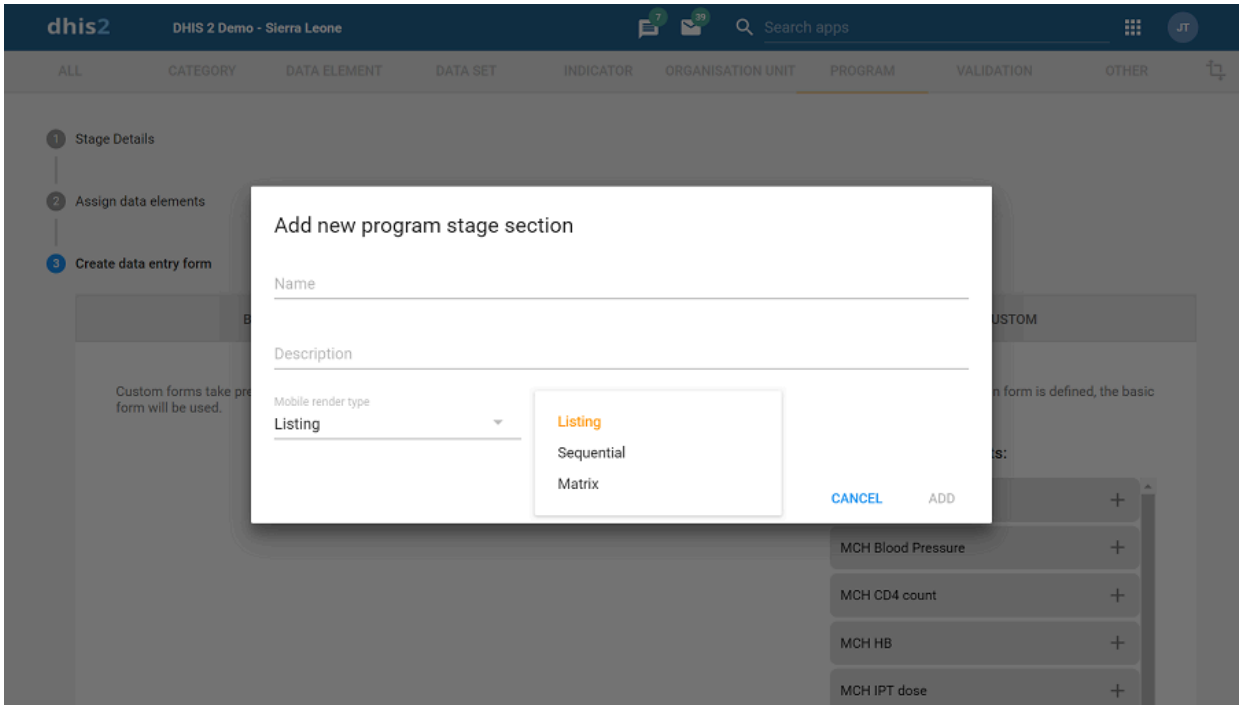
Icons will initially only render in the new Android app. The new web-based Capture App will incorporate them in the near future.

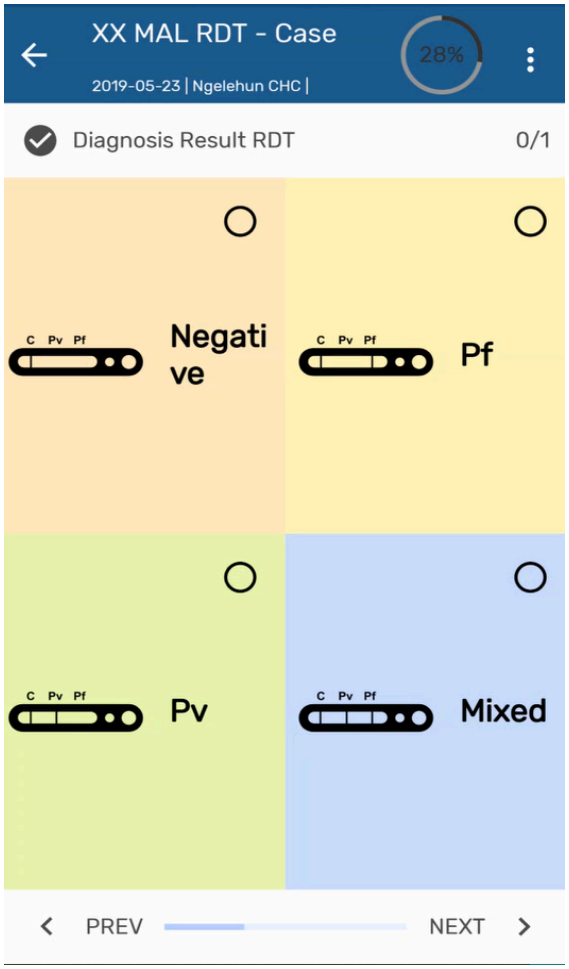
We plan to expand the collection of icons on each future version of DHIS2- for that we need your help: we are seeking ideas for new icons - please submit yours using this form.

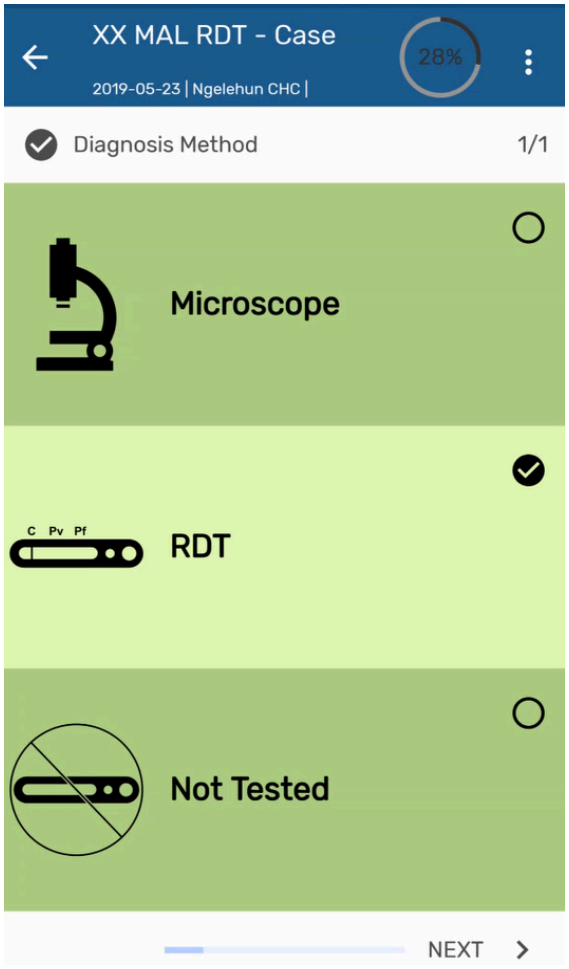
Colour palette for metadata		Tracker and Event capture now have the ability to render colours for programs, stages, data elements and options in option sets. A colour picker is integrated in the Maintenance App, which shows as a palette, except for options which allows the selection of any colour. In the Android App, the color will be rendered as background color for programs and stages combined with an icon (if selected). For options it renders as the background colour during data entry form for single event programs. When the user selects a program with an assigned colour, that colour becomes the background theme for all screens in the domain of the program. Colours will first be available in the new Android app, followed in future releases by the new web-based Capture App.

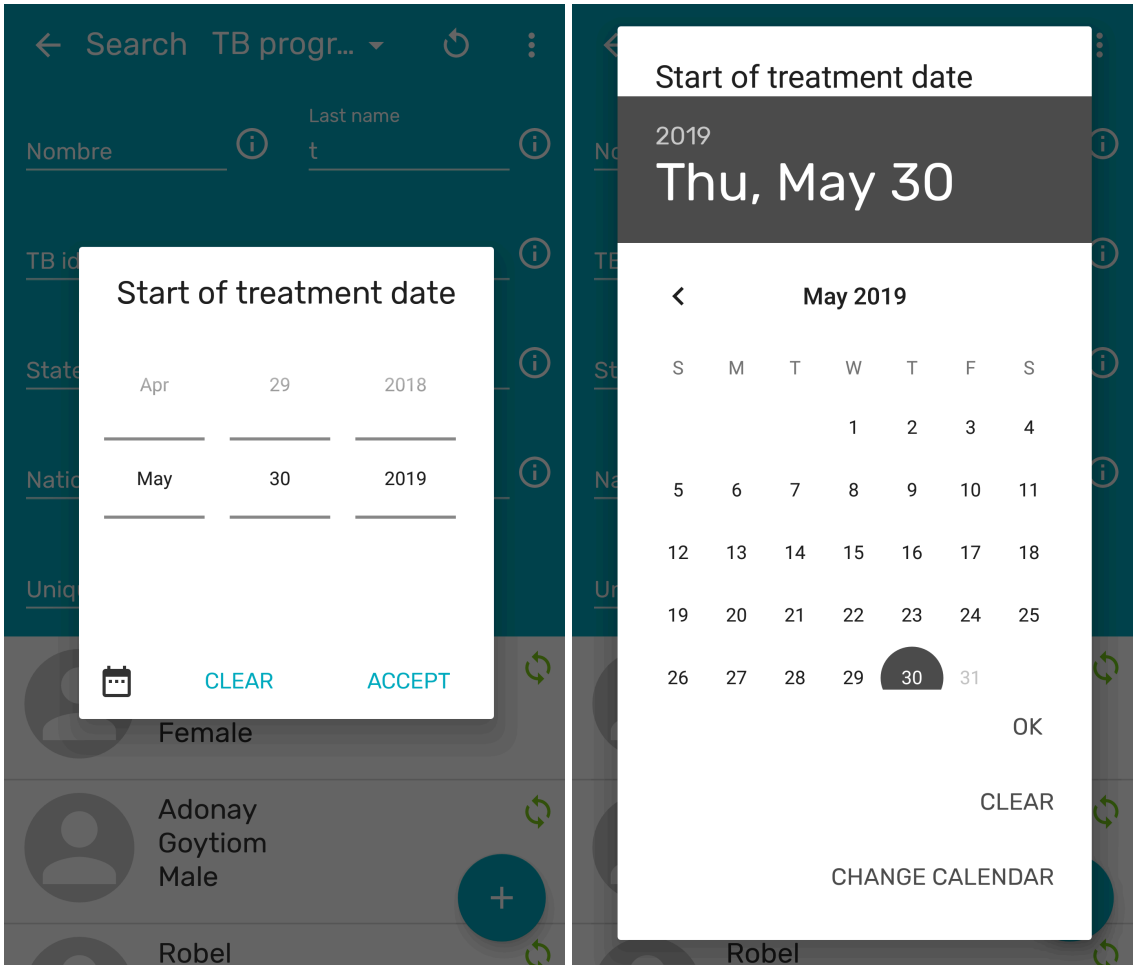

Home
Period
(1) Org Unit
Antenatal care visit
3 Events
Child Programme
36 Person
Contraceptives Voucher Program
7 Events
Information Campaign
4 Events
Inpatient morbidity and mortality
177 Events
Malaria case registration
421 Events
MNCH / PNC (Adult Woman)
3 Person
Provider Follow-up and Support Tool
5 Person


Search MNCH / ...
Date of enrollme...
First name
Last name
Date of birth
You need to enter at least 1 of the attributes to do a search

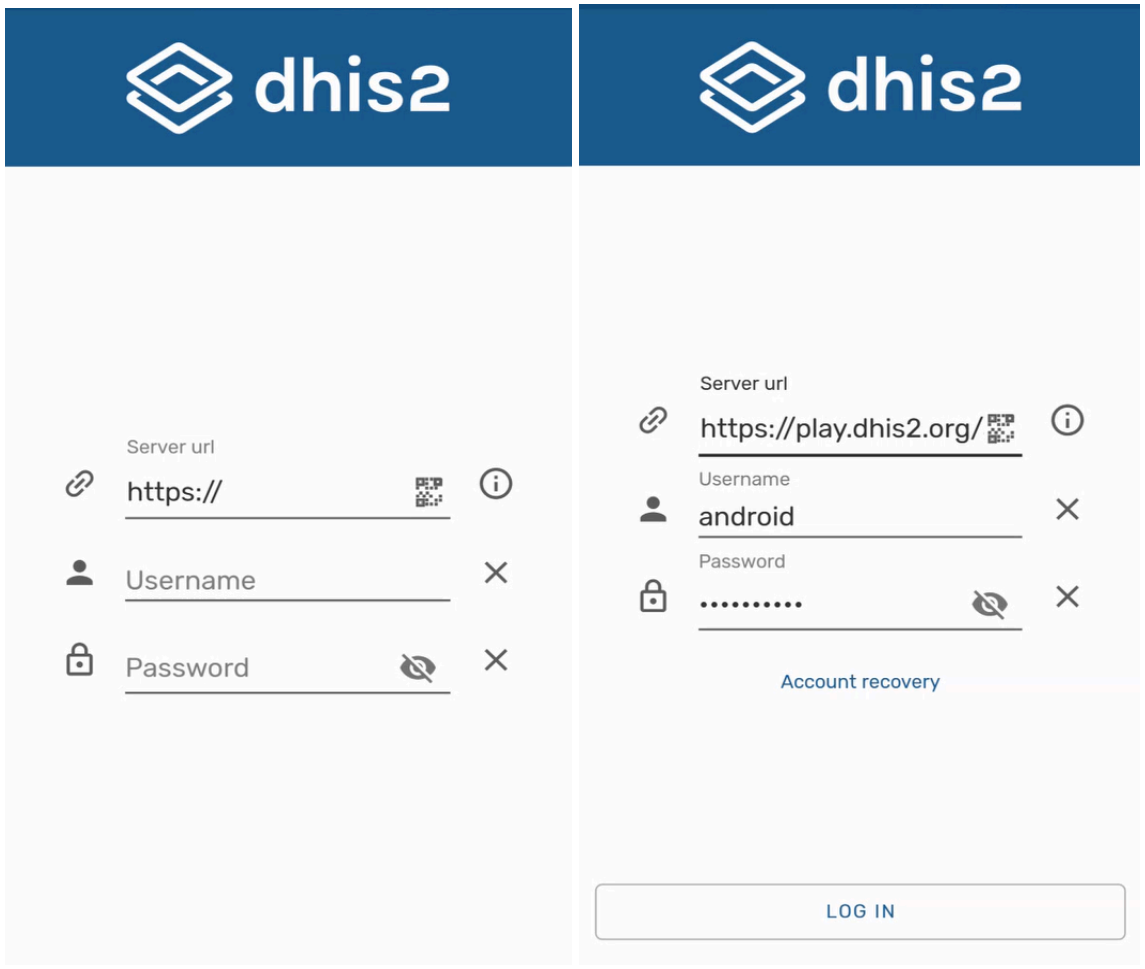
Rendering Types for Program Sections		Program Section: when used in combination with icons, a Program Section with a single data element and associated Option Set can render the options in sequential or matrix layout (see screenshots). Render type for sections will first be available in the Android app, followed in future releases by the new web-based Capture App UI.

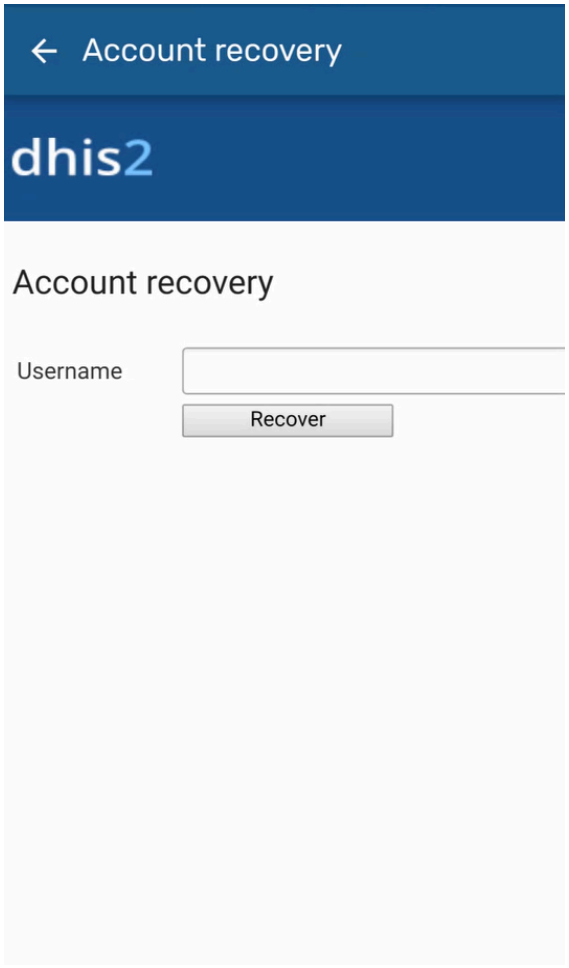

XX MAL RDT - Case
28%
2019-05-23 | Ngelehun CHC |
Diagnosis Result RDT
0/1
C Pv Pf
Negati
ve
C Pv Pf
Pf
C Pv Pf
Pv
C Pv Pf
Mixed
PREV
NEXT

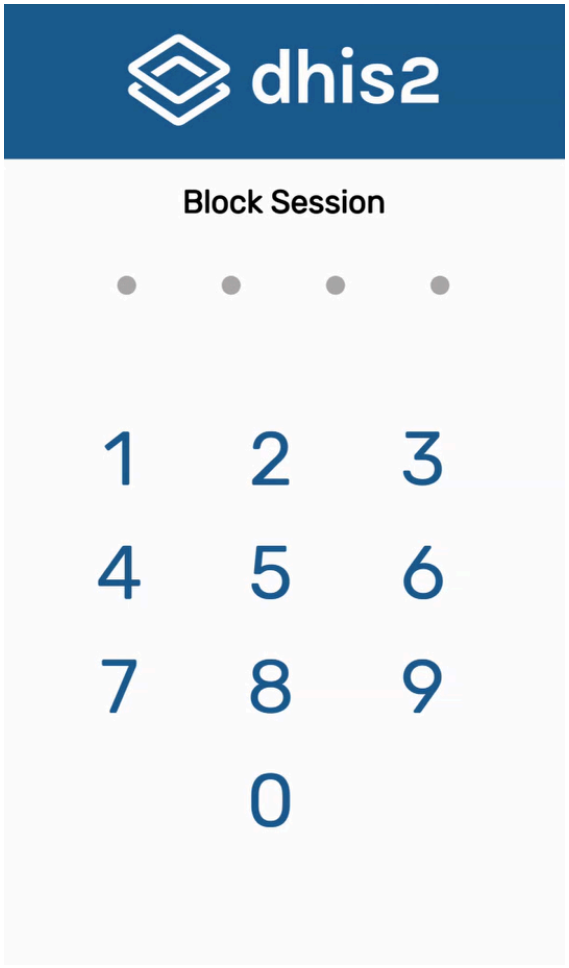
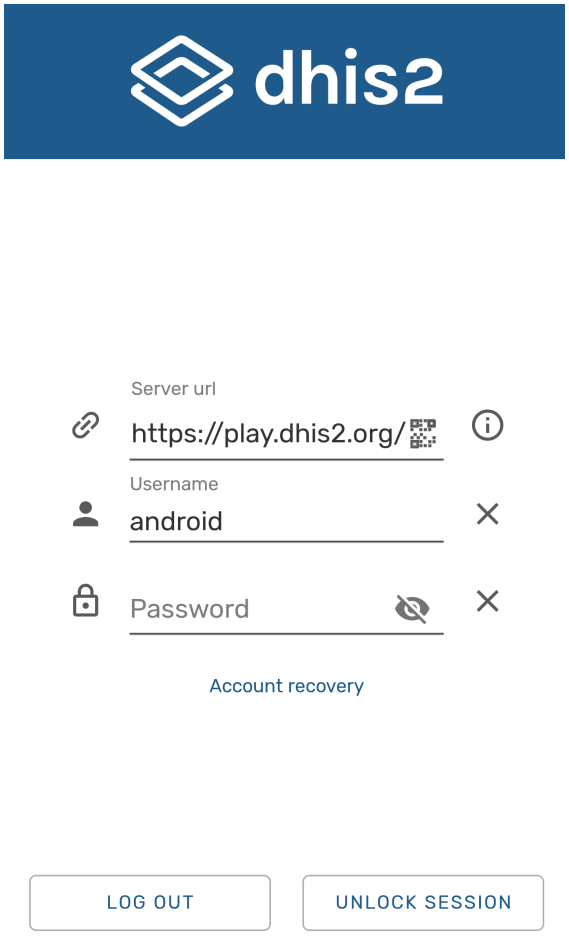

XX MAL RDT - Case
28%
2019-05-23 | Ngelehun CHC |
Diagnosis Method
1/1
Microscope
C Pv Pf
RDT
Not Tested
NEXT

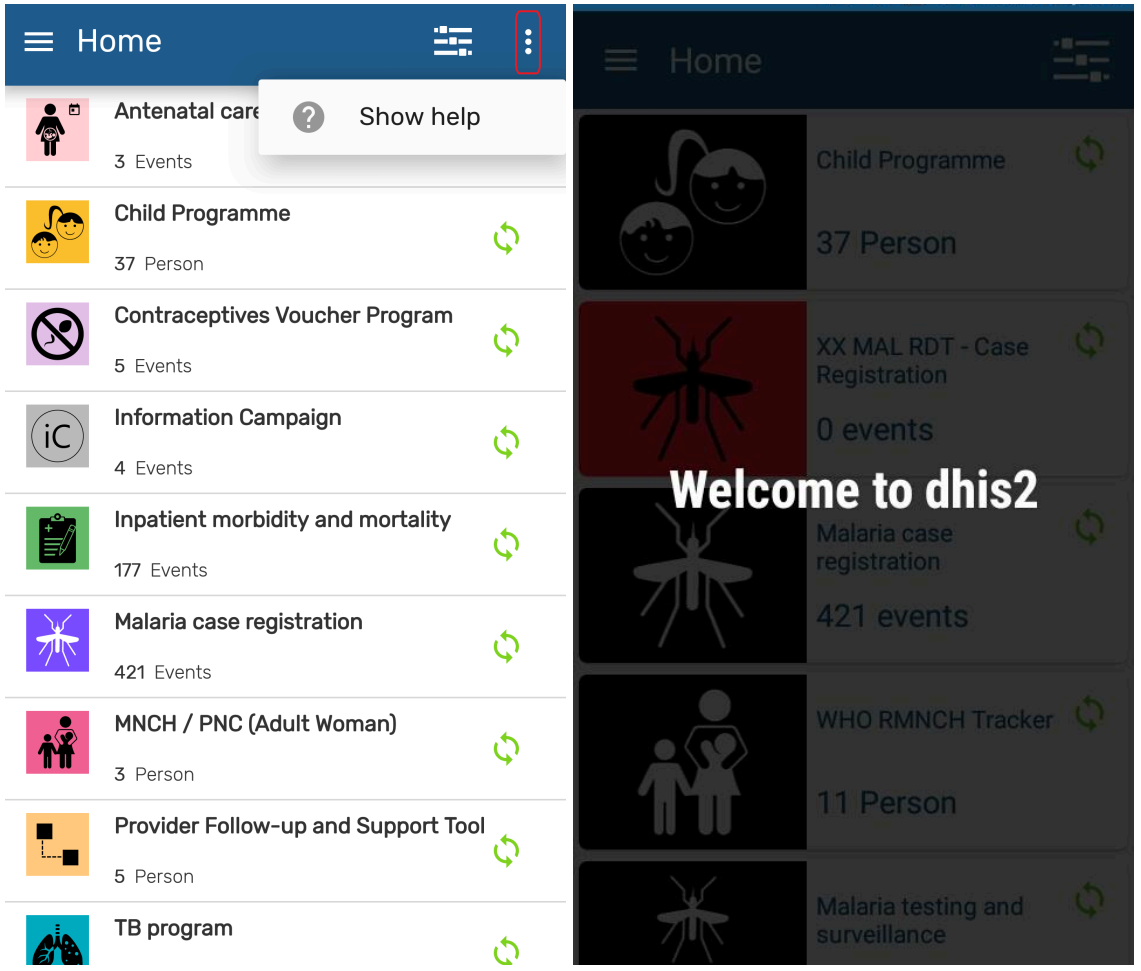
New Calendar (Tracker programs)		Now it is possible to use two different calendars when making a new enrollment. The one in the left is the first to appear but you can change it by clicking on the calendar icon on the lower left corner. ANDROAPP-2191:For Android versions 4.4, 5.1 and small devices, the Accept option is not visible in the second calendar view.

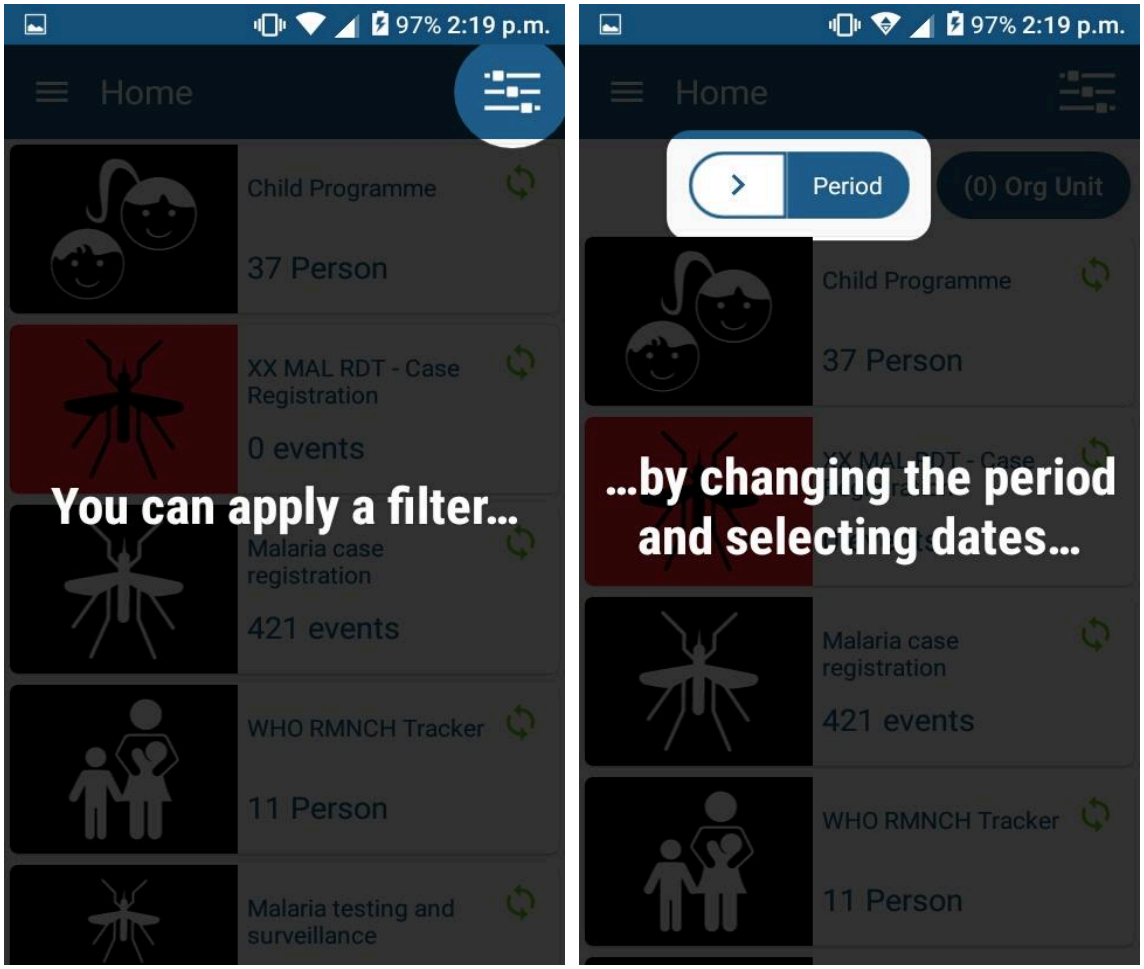
NEW Android specific features

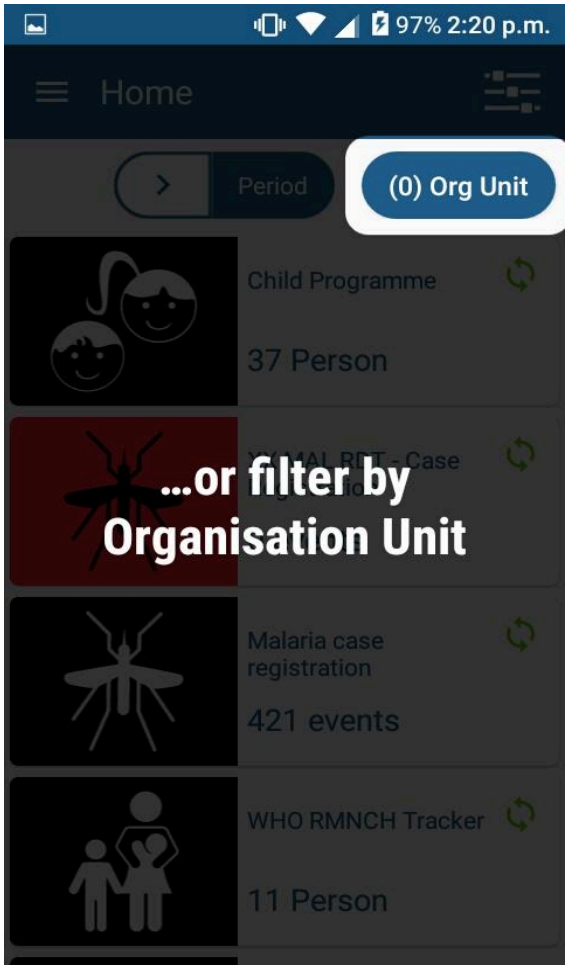
Item	Screenshot	Description of feature
Login		There are two ways to access the application: 1. Manual: The user must type the corresponding URL of the server to be used and enter the username and password. Take note that the login is able only with 2.29, 2.30 and 2.31 servers. 2. QR: The user can use a QR code instead of typing the URL. Username and password must be entered manually. After the first login, the app will suggest URL and username of all successful connections. User is able to make an offline login only if it is using the same user than the last online session.

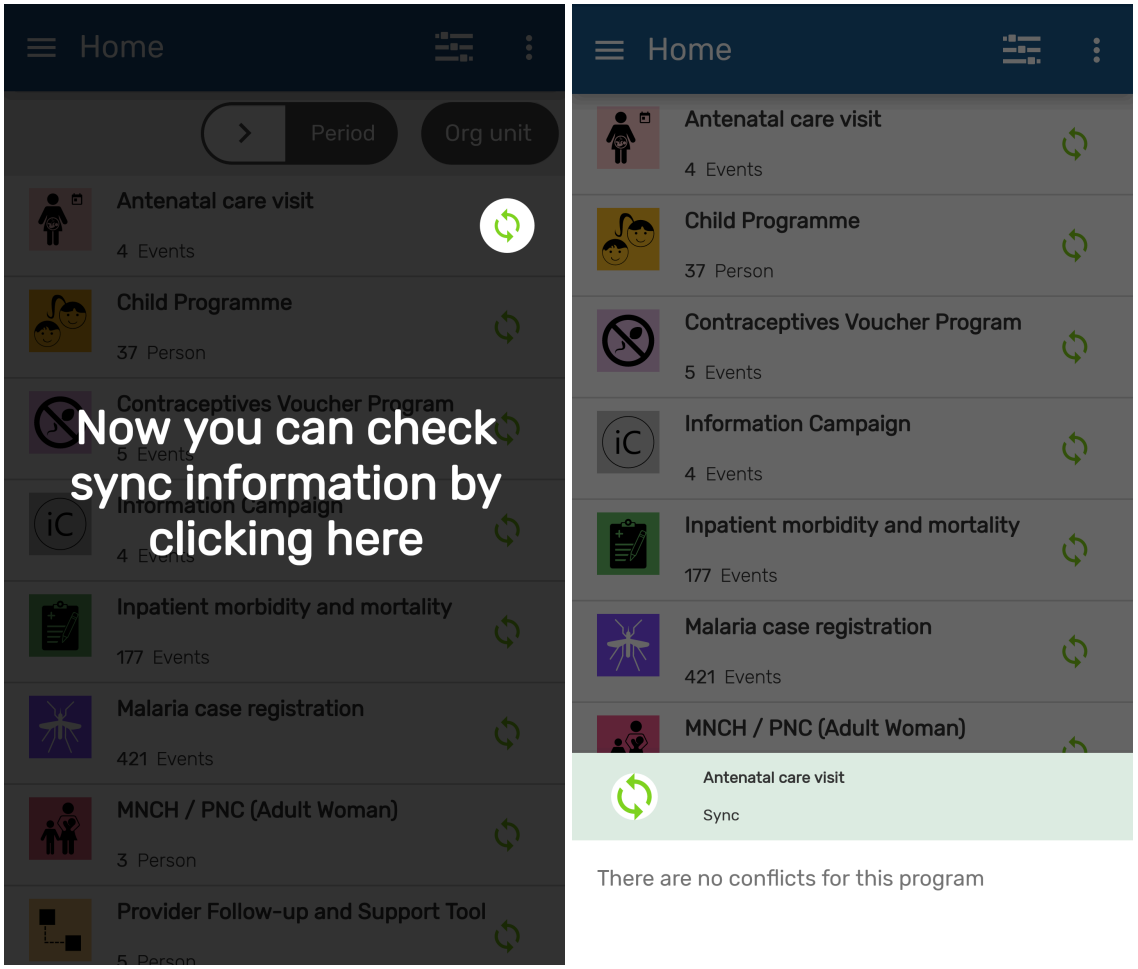
Account Recovery		The users will be able to restore their own password if the have enabled the setting: *Enable user account recovery*

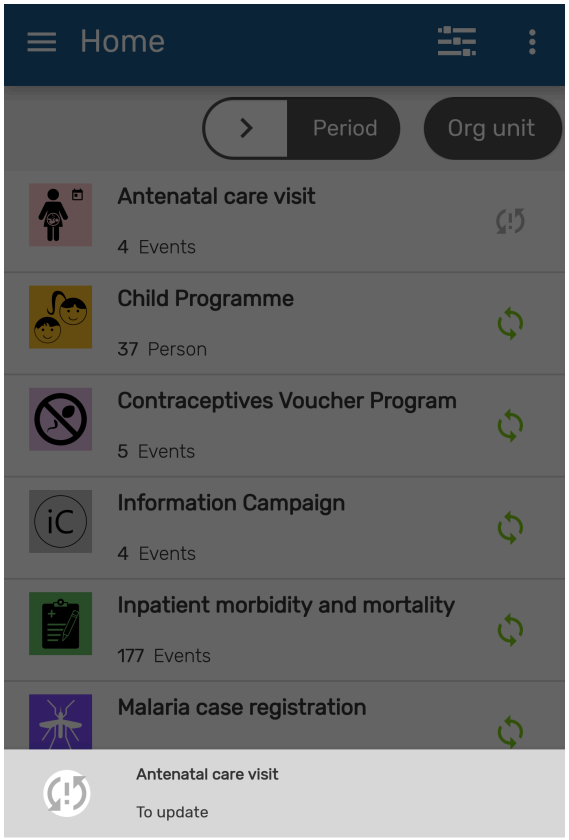
Blocking session (PIN)	 	User is able to lock the session using a 4 digit PIN. This allows to move to other apps on your phone without deleting the local data. If the user forgets the PIN number, log in by entering the credentials is also available.

Instructions/ information buttons		Contextual guide opens the first time the user opens the App. User is able to re-open(trigger) the instructions by clicking on the three dots at the top right corner of the screen.

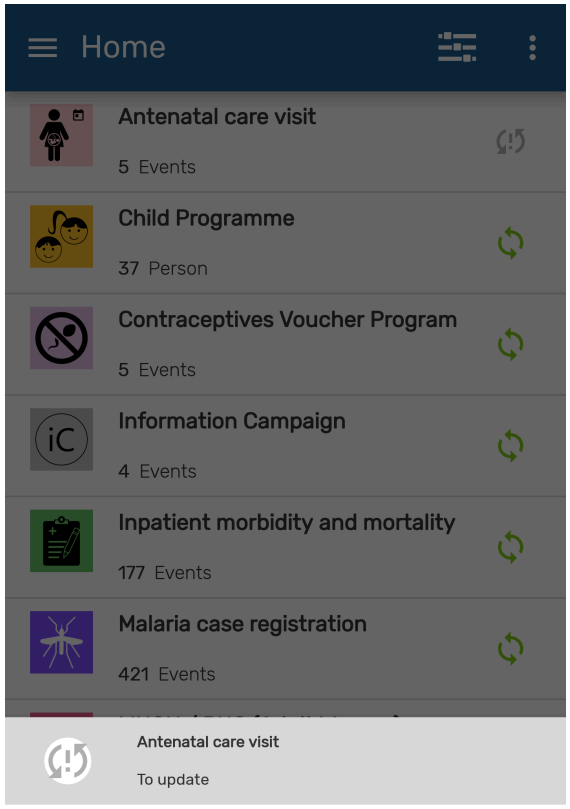
Filter		Allows the user to filter data from the available programs based on periods (specific day, week, month, or year) or organisation units.


97% 2:20 p.m.
Home
Period
(0) Org Unit
Child Programme
37 Person
...or filter by
Organisation Unit
Malaria case
registration
421 events
WHO RMNCH Tracker
11 Person

Sync information		Allows the user to check sync information for a specific program.

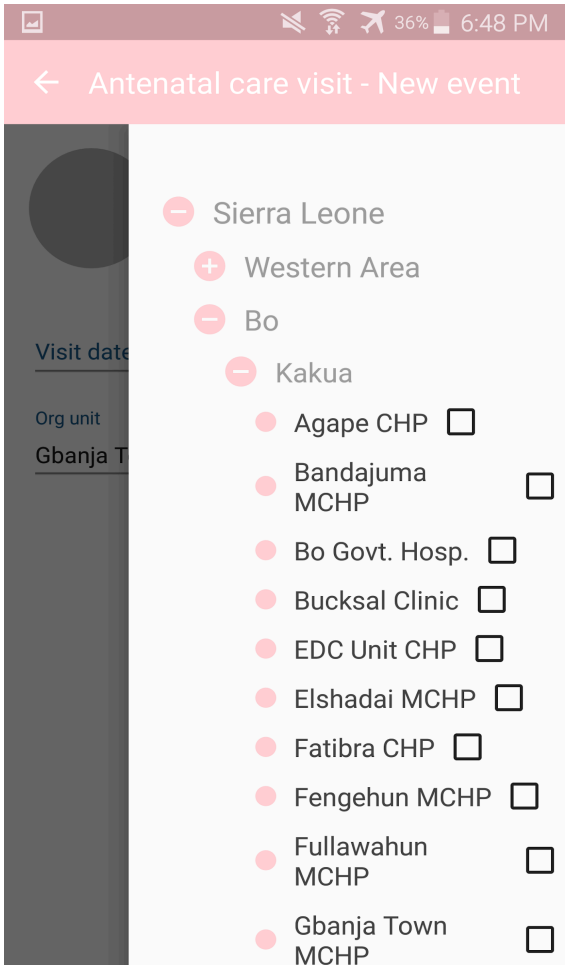


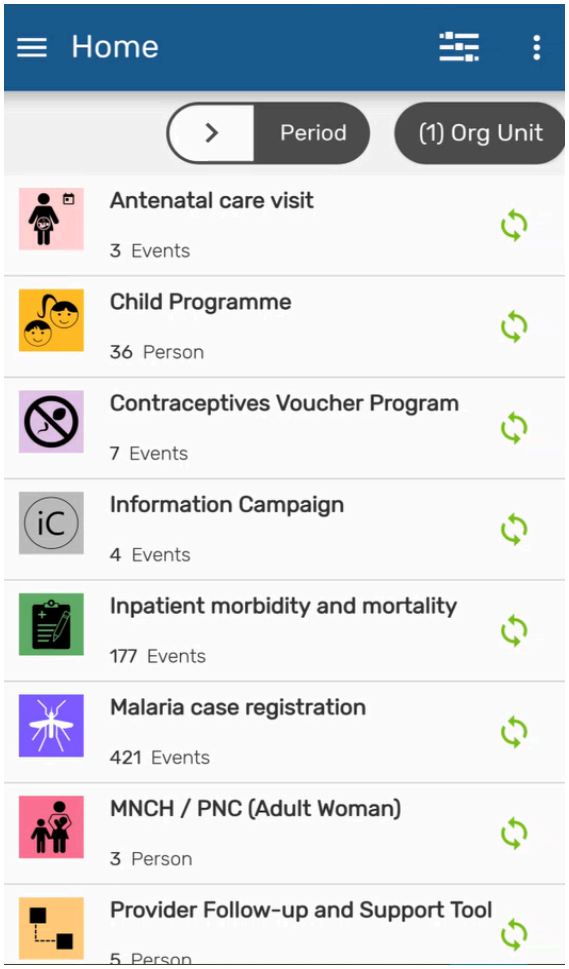
There are no conflicts for this program

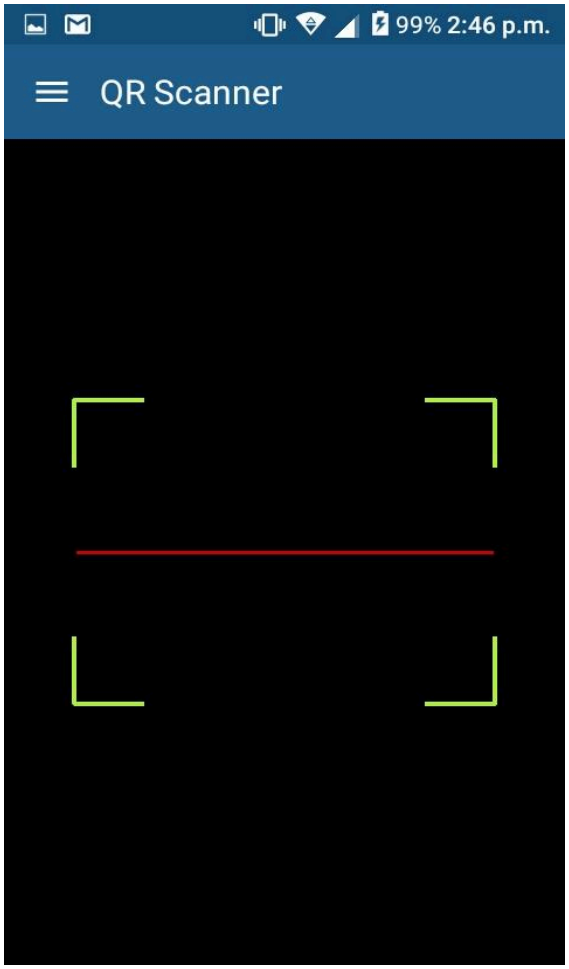
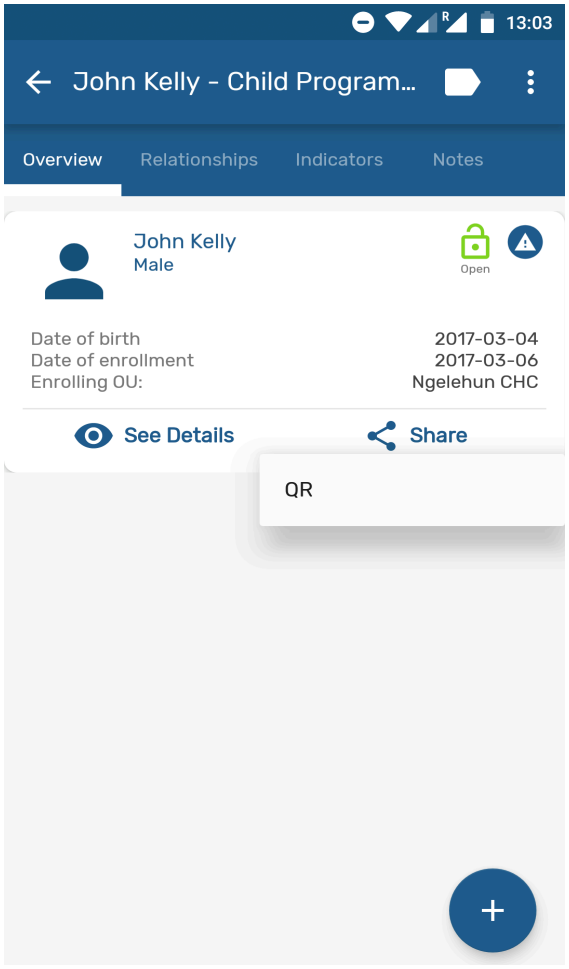


There are no conflicts for this program

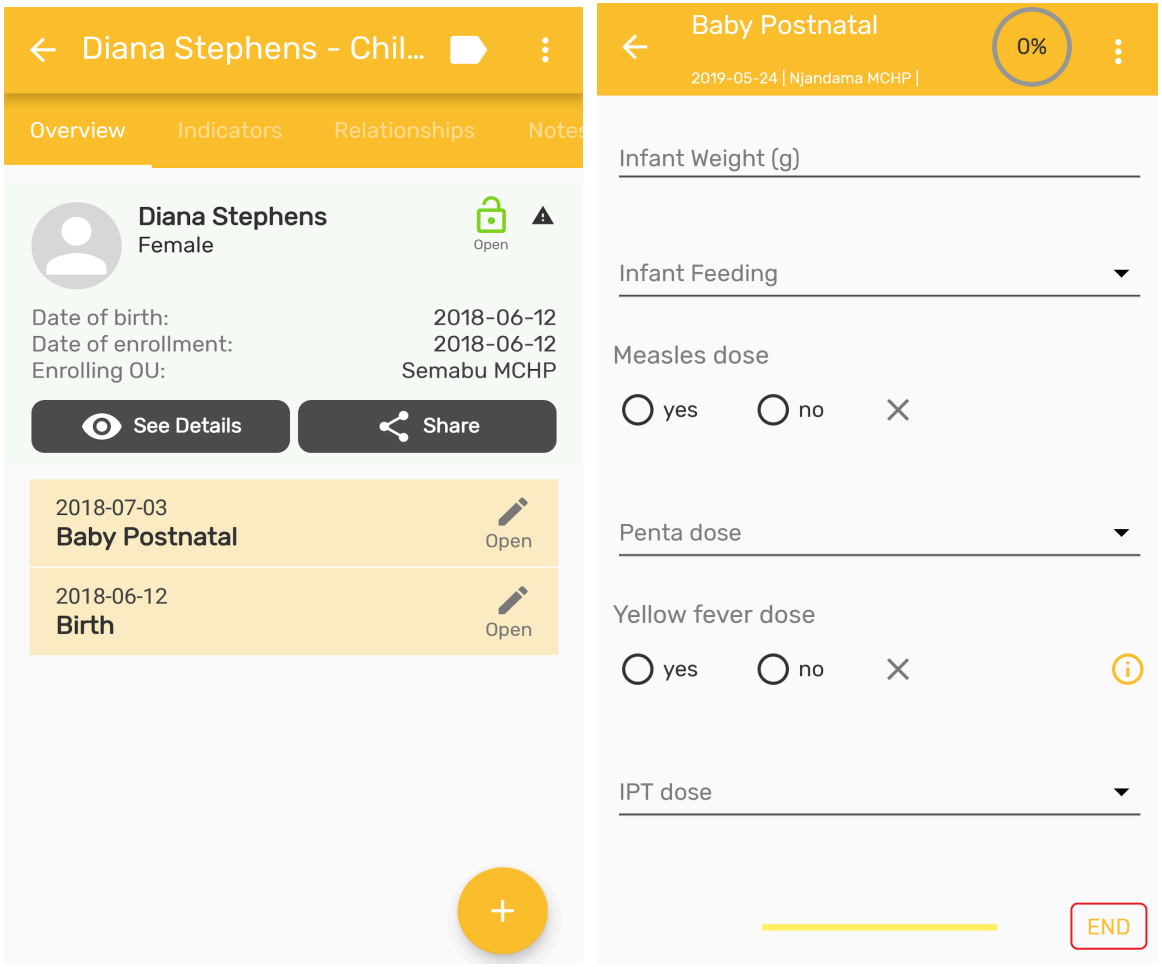
Network connection is not available.

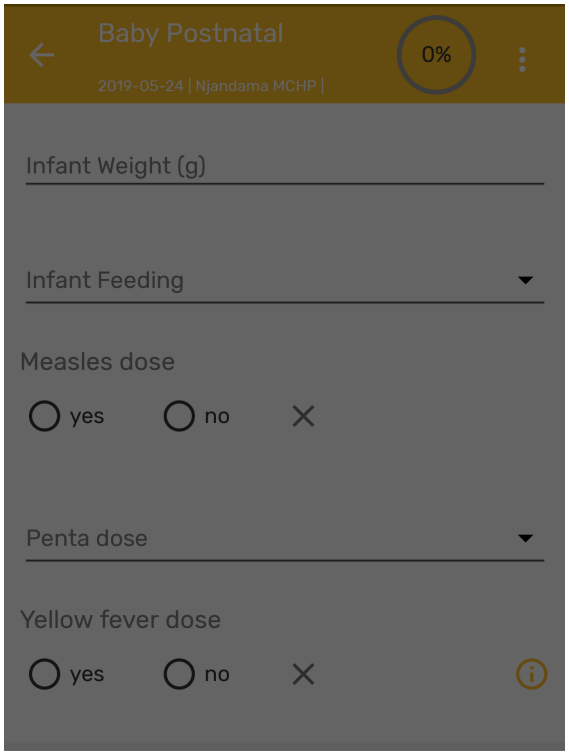
Org unit		The whole organisation unit tree is displayed. Organisation units not available for data entry will be colored in grey. User must check the box to select the org unit wanted. Mobile users are not expected to access the org. unit hierarchy of a whole country. Maximum number of org units is difficult to set,as the App does not set the limit, but the resources on the device (memory, processor). We could say below 250 org units should be safe, but still believe that is a very big number for a mobile use case.

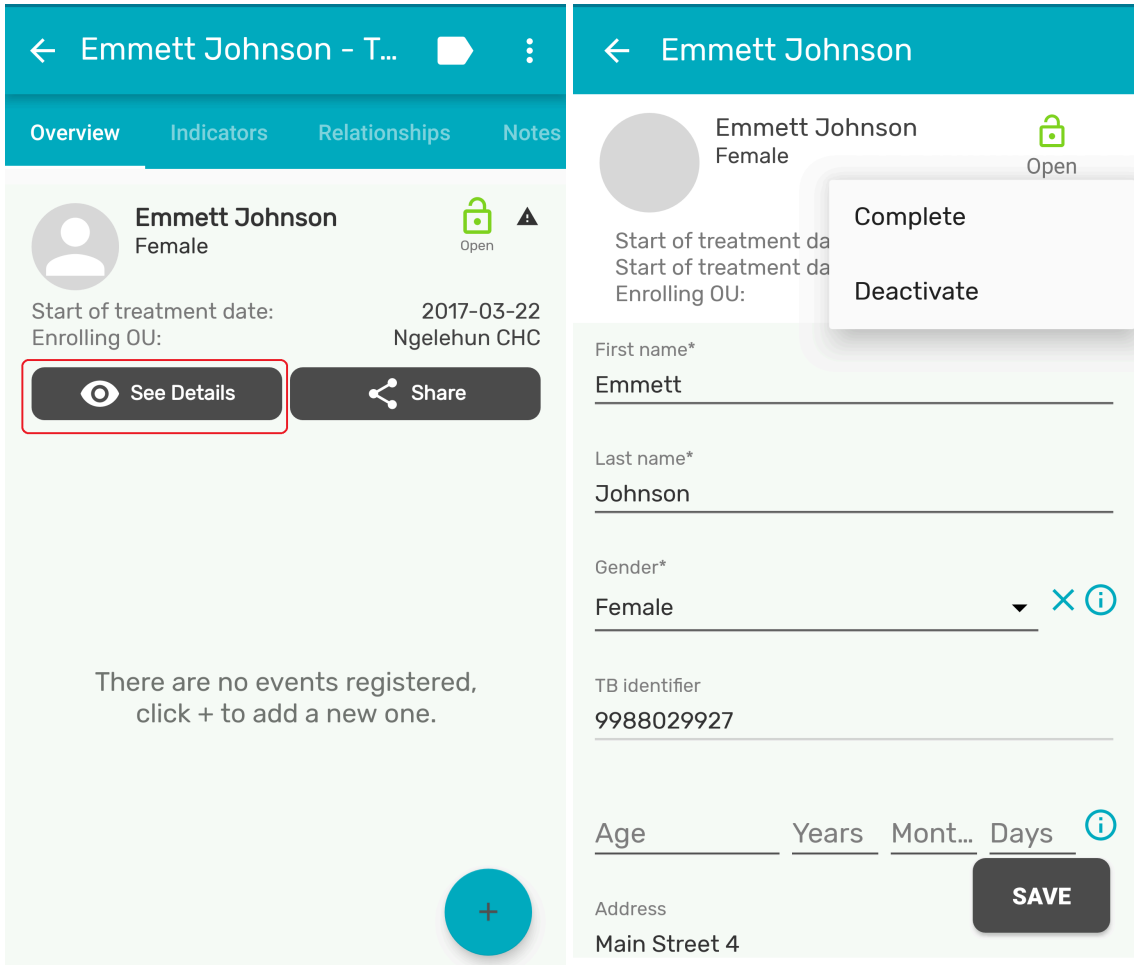
Differentiating tracker and event programs		An easy way to differentiate program is by looking the word at the bottom left corner. The word “Event” will always be in event programs. In tracker will appear the name of the tracked entity type (person, patient, building, etc.).

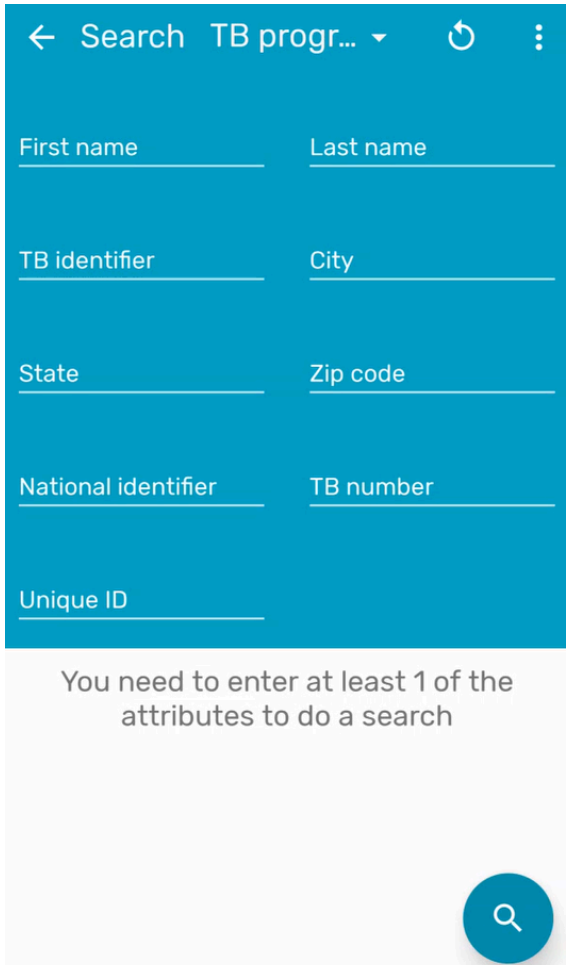
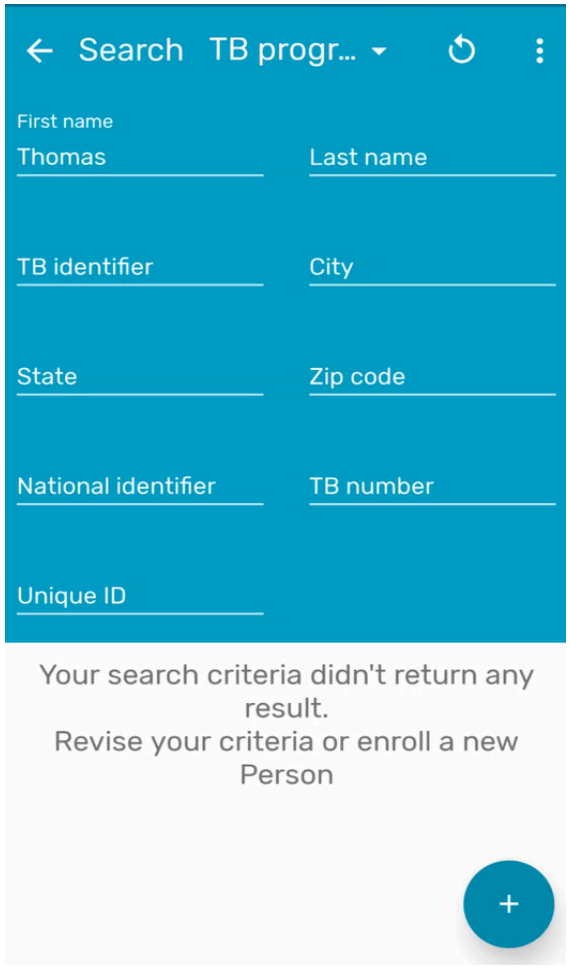
Sharing Data	 	

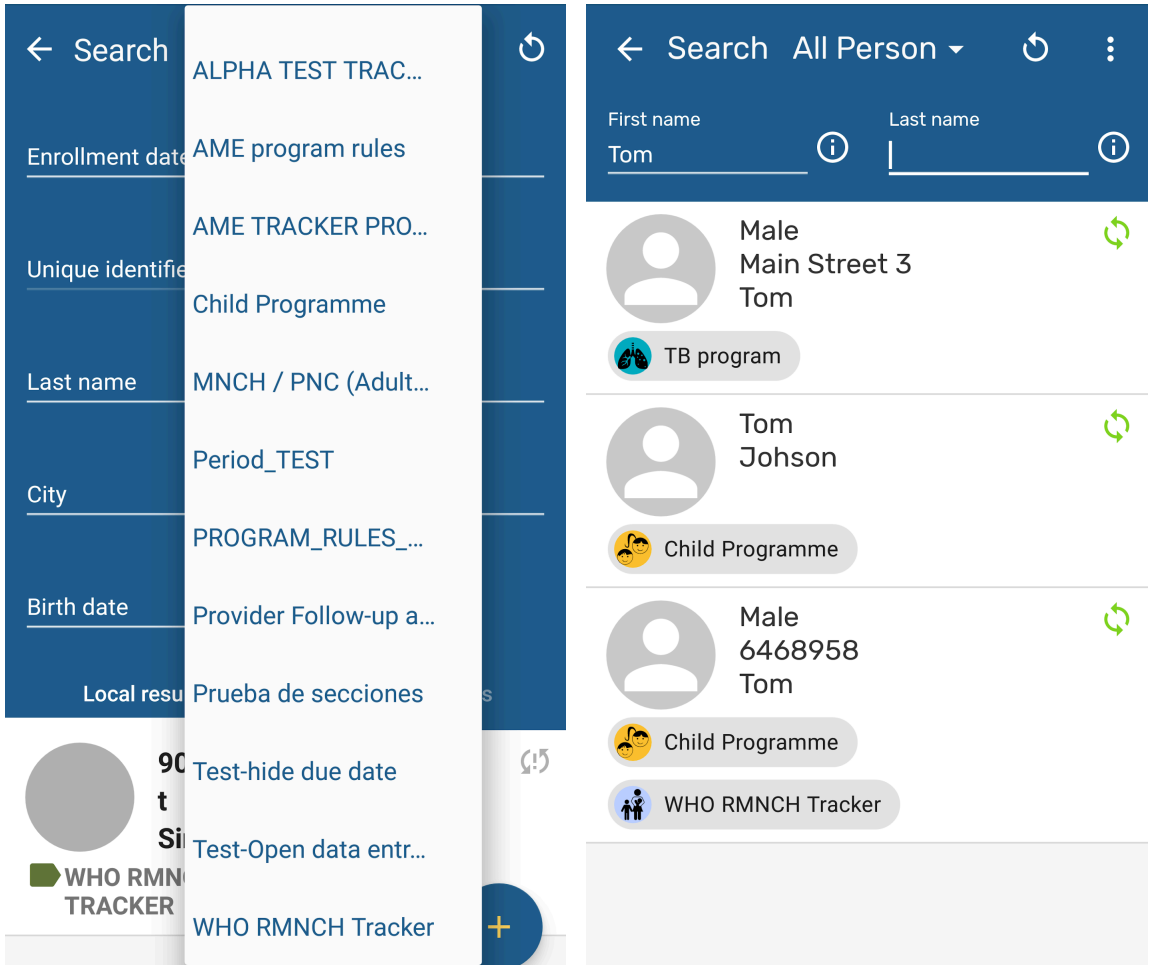
Program with registration specific features

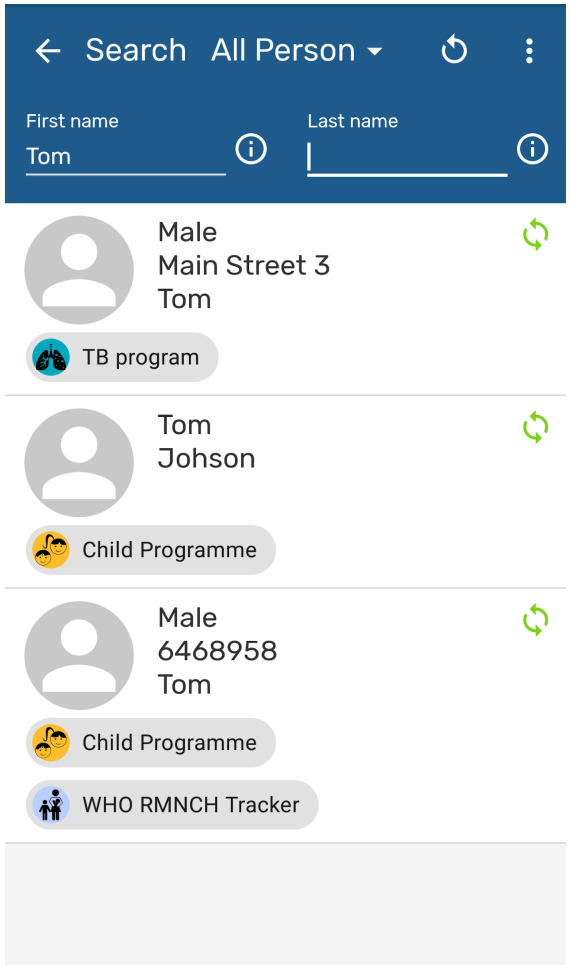
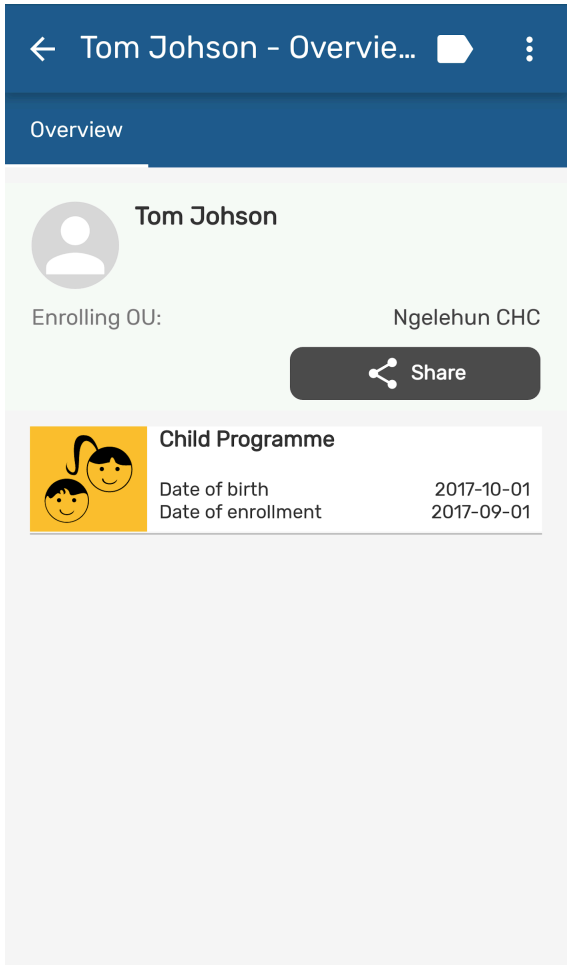
Complete/Re-open event		User must enter the event and then click the "END" button in the bottom right corner. Two options will be presented: 1. Finish and complete 2. Finish To verify if an event is completed look at the color of the box, it must be grey; and also have the label "Event Completed" on it. It applies the same legend set than the web UI. The app needs to take into consideration if the user has the correct authority ('Uncomplete events') to reopen a completed event.

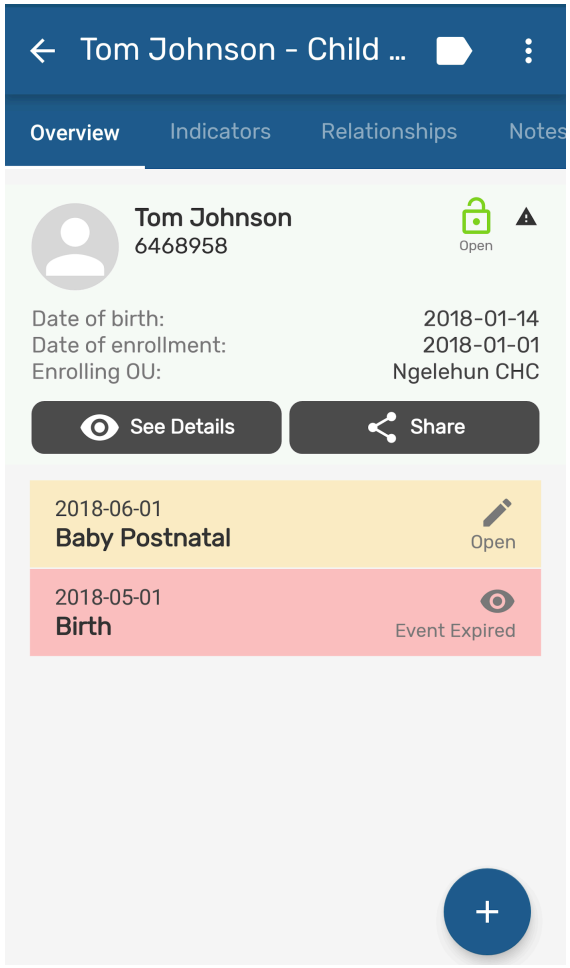
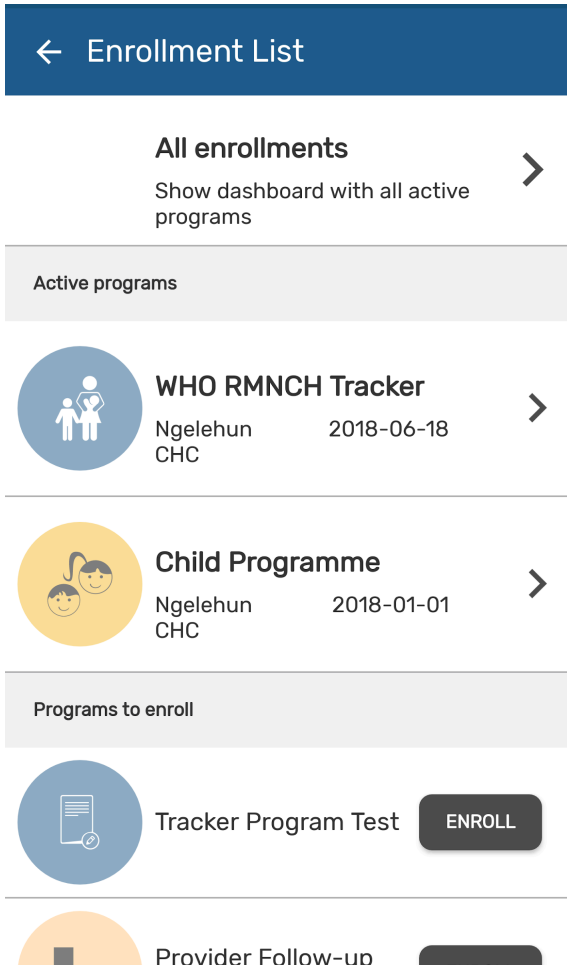

Baby Postnatal
0%
2019-05-24 | Njandama MCHP |
Infant Weight (g)
Infant Feeding
Measles dose
yes
no
Penta dose
Yellow fever dose
yes
no
What would you like to do for this event?
Finish and complete
Finish

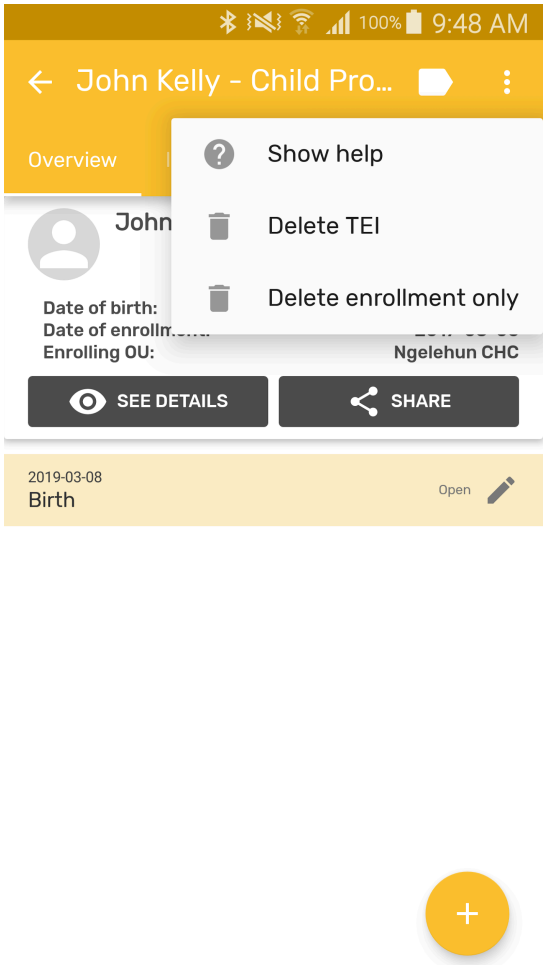
Complete/ Deactivate Enrollment		To complete or deactivate an enrollment, click on 'See details' and actions will be available in the 'Lock' icon on the top right corner of the screen.

Reset search fields	 	All tracker programs will take the user to the search screen. The search fields are used to look up for a specific entity, and the circled arrow at the top right corner to reset the search. All fields will be blank for the user to do a new search. At first, the user is obligated to do a search. if there are no coincidences, the search button will change to an 'Add' button for the user to create a new enrollment.

Search screen for all Tracked Entity Type		User is able to search across all program of one tracked entity type (TET). In the Search screen there is a drop down which shows all the programs available for the active TET (active TET is defined by the selection of the program in the home screen). That drop down should also have an option with TET name. (for example: person) When the user selects that option, the search fields available will only be the TET attributes (no program specific attributes). Search restrictions do not apply, because they belong to the programs. The search will return the found TEI's in the local database and also those in the Search OU of the user (when user is online). For those found online, the user will have to select them and the whole record will be downloaded. When configuring search org. units, make sure that your capture org. units are contained in your search org.units, to do that capture org. units have to be selected as well as search org. units.

TEI Dashboard across programs	 	User can see the TEI dashboard without any program by selecting the TEI in the list if the search was without program. The dashboards will show the list of active enrollments.

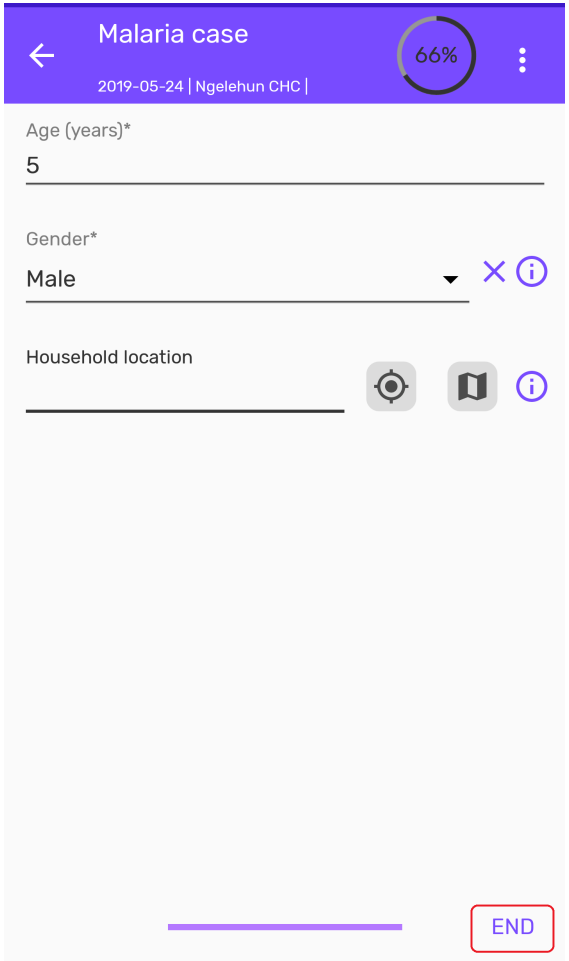
TEI enrollment history and new enrollment	 	User is able to see the complete historical record of the TEI. By clicking on the top right corner icon they will see a list of Active enrolments, followed by a list of past enrolments (completed or cancelled), followed by the programs in which the TEI could be enrolled. User can also return to the 'TEI Dashboard without any program' by selecting 'All enrollments'. Users should be able to navigate to the different enrolments from the list.

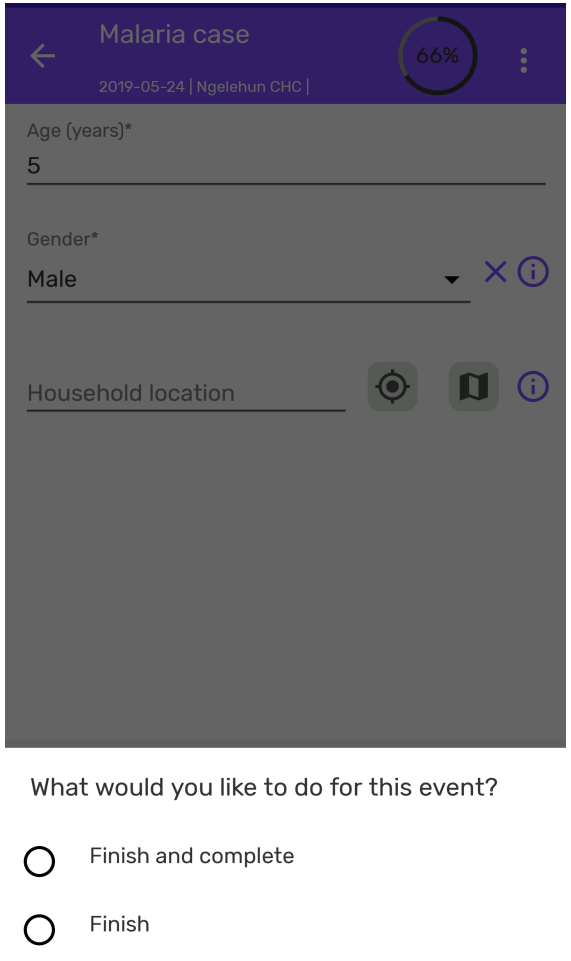
Delete TEI's & Enrollments		To delete a TEI or an enrollment, select In the TEI dashboard, the three dots menu. Local TEI or Enrollment will be deleted from the database. Records that has been previously synced with the server will be marked for deletion if the user has the authority: • F_ENROLLMENT_CASCADE_DELETE • F_TEI_CASCADE_DELETE They will show in the TEI search list, but will not be accessible.

Program without registration specific features

Complete event and Field completion percentage

Complete button





The percentage of data completed in each event is shown in the top right corner of an event when it is opened after first registration.

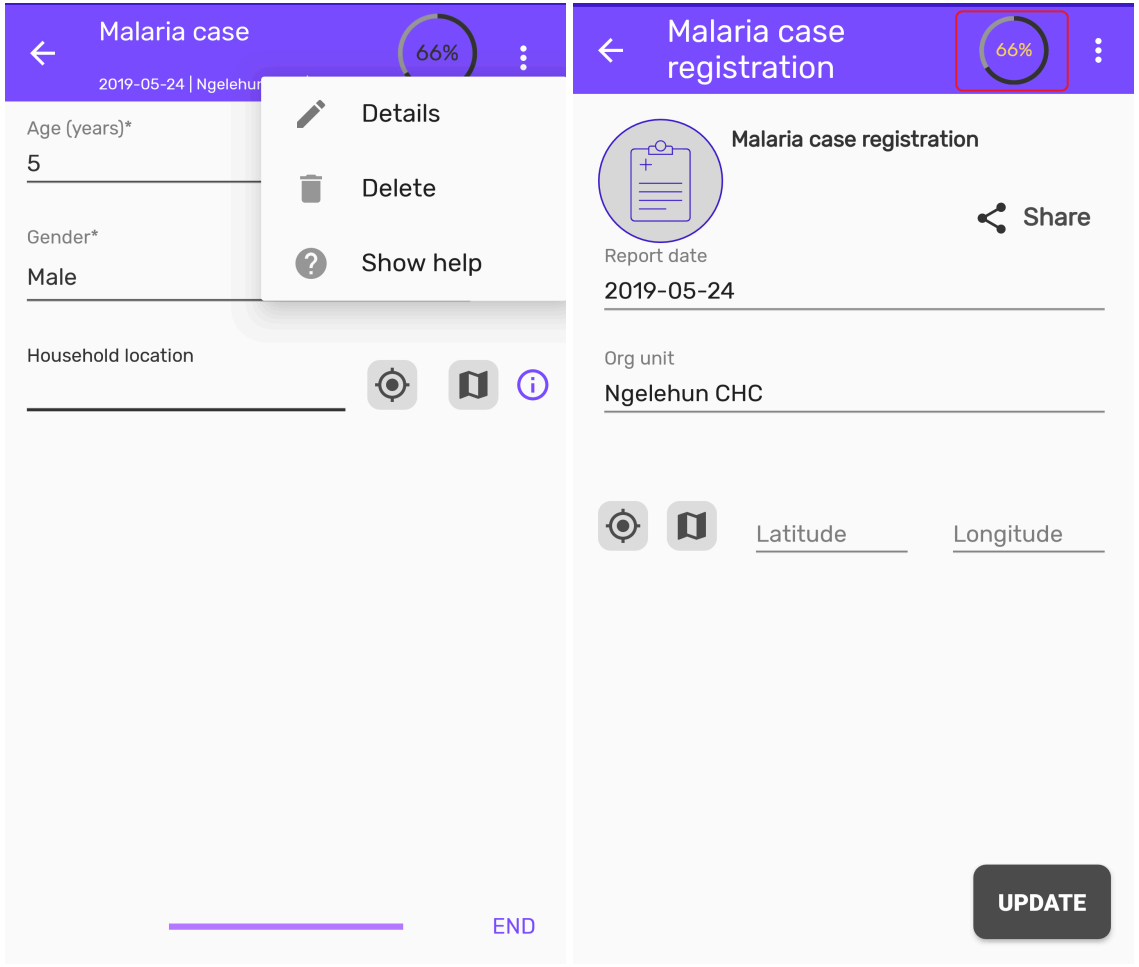
To complete an event click on the 'END' button. Two options will be offered

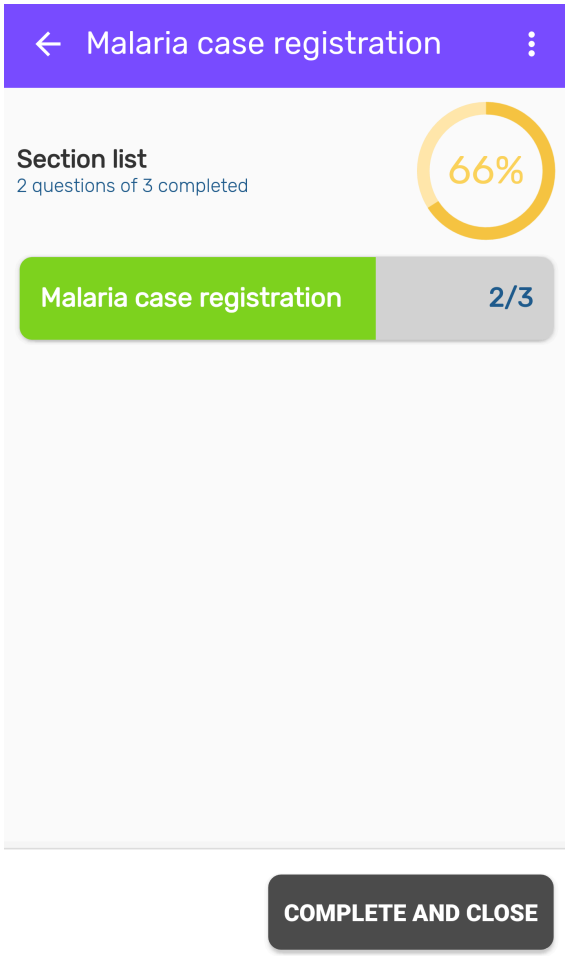
1. Finish and complete
2. Finish

You can also complete by clicking by clicking on the three dots at the top right corner of the screen, then Details, then click on the percentage and select "complete and close" button.

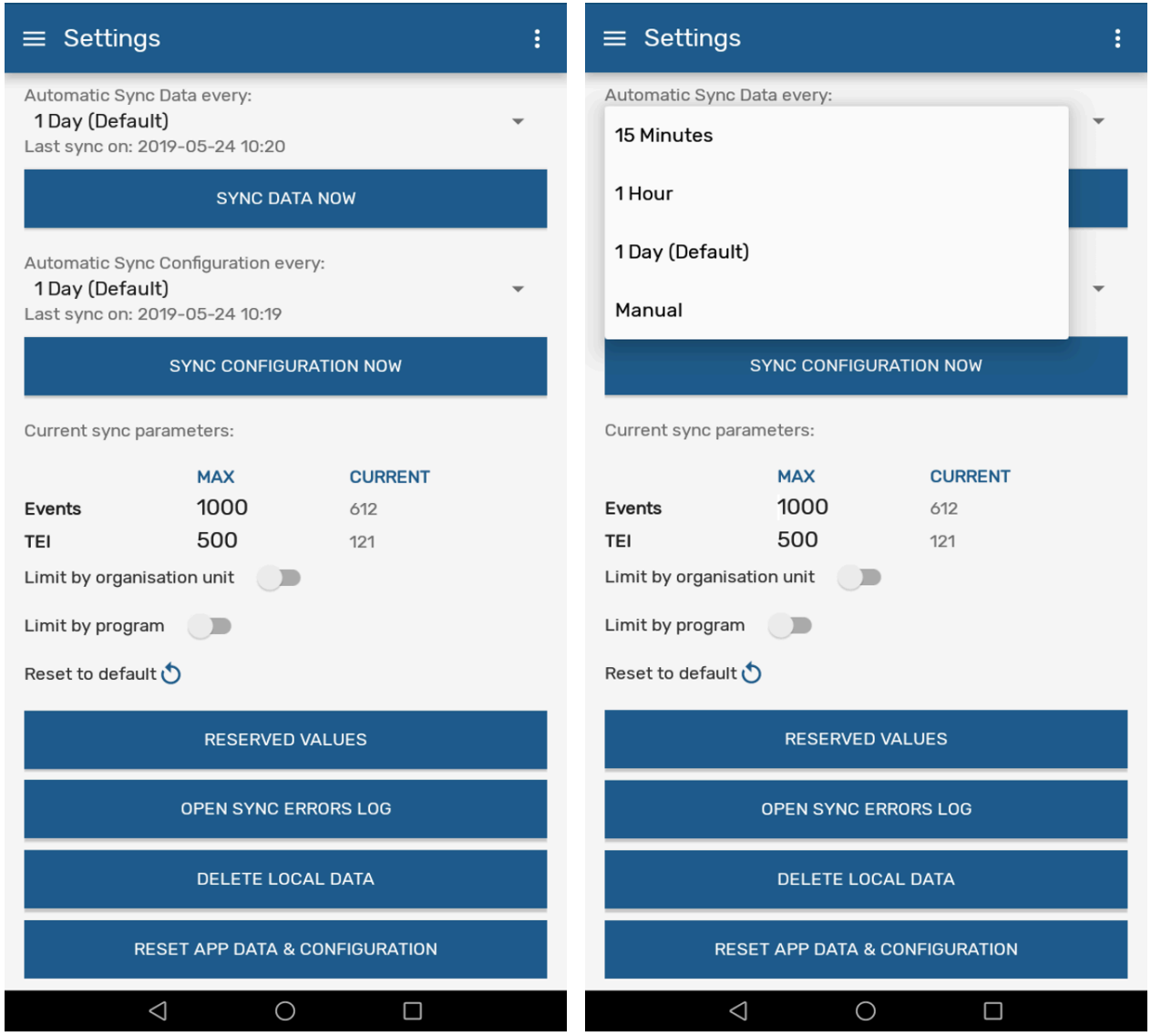
The percentages will be adapted according to the effects of the program rules in the forms.

Complete and close




Malaria case registration
Section list
2 questions of 3 completed
66%
Malaria case registration
2/3
COMPLETE AND CLOSE

NEW Settings



Data sync process: User is able to choose from a drop-down list if the data entered in the app is uploaded to the server manually or scheduled every 15 min, 1 hour or 1 Day. By default the app will sync every 24h. This kind of Syncing includes new and updated events and TEI's.

Configuration sync process (Metadata syncing): User is able to choose from a drop-down list if the data entered in the app is uploaded to the server manually or scheduled every day or week. By default the app will sync every 24h. This sync will update changes in programs or configurations in web.

Sync Parameters: these parameters allow the user to specify the maximum number of TEI's and events that can be stored in the local device. The user can also specify if limits apply per organisation unit, per program or in total. Values can be set to default by clicking on "Reset to default".

Reserved Values: this will specify the number of reserved Id's available in your device and will allow you to refill them.

Open sync errors log: The sync error log gives details about the error and is prepared to be shared with admins.

Delete Data: this action will delete local data without having to log out.

Reset App: this action will log out the user and delete all data and metadata. It is similar to resetting the App.

Features supported

The following is a comprehensive list of all features available for **Programs with and without registration** in DHIS2, and notes on whether or not these have been implemented in the Android Capture app.

In the notes, 'admin' refers to someone who develops and configures a DHIS2 system, and 'user' refers to someone who uses apps to capture data, update it, and review reports.

Any issues around using a particular feature with Android are highlighted with an exclamation mark **!**.

Also, every time the icon is presented, a tip will be provided for a better use and understanding of the feature.

✓	Feature implemented
–	Feature not implemented (will be ignored)
	Work in progress. Feature not completely implemented yet or with unexpected behaviour already reported .

Feature	Description of feature	Program type	Status	Notes on implementation
Program features				
Data entry method for option sets	Enables an admin to choose how options will be displayed on-screen across the entire program (ie either as drop-down lists or as radio buttons)	Program with registration	–	This will be replaced by the new rendering options.
		Program without registration	–	
Combination of categories (Attribute CatCombo)	Allows an admin to attach a Category (set of Options) to the Program, requiring users to categorize each enrolment. (This is called an Attribute Category Combination in DHIS2.)	Program with registration	✓	
		Program without registration	✓	display text

Data approval workflow	If an admin selects a pre-configured Data Approval Workflow, this will be used to enforce an 'approval' or 'acceptance and approval' cascade, enabling users to sign-off and lock data.	Program with registration	–	
		Program without registration	–	
Display front page list	If this option is ticked, the landing page displays a list of active enrolments once an Org Unit and Program have been chosen. (Attributes shown are those ticked as 'display in list'.)	Program with registration	✓	
First stage appears on registration page	When this option is chosen, then during Program enrolment, the screen for the first Program Stage is also shown (enrolment and the first event are captured together on one screen).	Program with registration	✓	In Android, this is implemented by opening automatically the event after enrollment is completed, instead of adding the form to the same screen.
Completed events expiry days	Enables admins to lock data-entry a certain number of days after an event has been completed.	Program with registration	✓	
		Program without registration	✓	
Expiry period type + expiry days	Enables admins to set a period (eg weekly, monthly), and to lock data-entry a certain number of days after the end of the period.	Program with registration	✓	
		Program without registration	✓	
Allow future enrolment dates	If ticked, this enables a user to enter future Enrolment dates during enrolment in a Program; otherwise users are restricted to today or past dates.	Program with registration	✓	
Allow future incident dates	If ticked, this enables a user to enter future Incident dates during enrolment in a Program; otherwise users are restricted to today or past dates.	Program with registration	✓	

Only enrol once (per tracked entity instance lifetime)	If ticked, prevents a TEI (eg person) from being enrolled in this Program more than once.	Program with registration	✓	
Show incident date	If ticked, both Enrolment and Incident dates are shown to the user for data capture; otherwise, only the Enrolment date is shown/captured.	Program with registration	✓	
Description of incident date	Allows an admin to customize the label that is used for the incident date.	Program with registration	✓	
Description of enrolment date	Allows an admin to customize the label that is used for the enrollment date.	Program with registration	✓	
Capture coordinates (enrolment)	Enables users to capture geographical coordinates during enrolment in the program.	Program with registration	✓	
Relationships – create and update	Enables users to create relationship types (eg mother-child, doctor-patient) which link two TEIs (eg patients); users can use this relationship to add links to other TEIs (eg patients).	Program with registration	✓	
Relationships - shortcut link to add a relative	This enables admins to add a link for one specific relationship to the Dashboard, enabling users to directly create a linked TEI (eg 'child' patient).	Program with registration	–	
Attributes – display in list	This setting determines whether an Attribute can be viewed in lists such as search results, and whether it can be seen in the shortlist of Attributes shown under 'Profile' in the Dashboard.	Program with registration	✓	The first 3 attributes will be shown.
Attributes – mandatory	This enables an admin to mark an Attribute as 'mandatory', meaning the enrolment can't be saved until a value is captured.	Program with registration	✓	
Attributes – date in future	For date Attributes, this enables an admin to either prevent or allow future dates to be captured.	Program with registration	✓	

Registration form - default	The default data entry form simply lists all attributes defined for the TEI.	Program with registration	✓	
Registration form - custom	This enables an admin to define a custom layout (using HTML) for the registration form.	Program with registration	–	Custom layouts are not supported in the Android App.
Program notifications	You can set up automated notifications for when program enrolments or completions occur, or at a set interval before/after incident or enrolment dates. These can be sent as internal DHIS2 messages, emails or SMSs.	Program with registration	✓	This functionality is executed on the server side, once data is received. Will not work when the app is working offline.
		Program without registration	✓	
Activate/deactivate enrolment	Deactivating a TEI dashboard will cause the TEI to become “read-only”. This means you can’t enter data, enrol the TEI or edit the TEI’s profile.	Program with registration	✓	
Complete allowed only if validation passes	Select check box to enforce that an event created by this program is only completed when all validation rules have passed.	Program with registration	–	
		Program without registration	–	
Org unit opening/closing dates	Enables an admin to set opening and closing dates for an Org Unit, which blocks users from adding or editing events outside of these dates.	Program with registration	✓	
		Program without registration	✓	
Data sharing levels / Can capture data	Enables the user to add new event, edit data and delete events in the program.	Program with registration	✓	
		Program without registration	✓	
Data sharing levels / Can view data	Enables the user to see list of events within the program.	Program with registration	✓	

		Program without registration	✓	
Data sharing levels / No access	The user won't be able to see the program	Program with registration	✓	
		Program without registration	✓	
Program stage features				
Event form - default	The default data entry form simply lists all attributes belonging to a program registration	Program with registration	✓	
		Program without registration	✓	
Event form – section forms	Sections forms allow you to split existing forms into segments	Program with registration	✓	
		Program without registration	✓	
Event form – custom	Define a custom event form as a HTML page.	Program with registration	–	Custom layouts are not supported in the Android App.
		Program without registration	–	
Program stage notifications	You can set up automated notifications for when the program stage is completed, or at a set interval before/after scheduled event dates. These can be sent as internal DHIS2 messages, emails or SMS messages.	Program with registration	✓	This functionality is executed on the server side, once data is received. Will not work when the app is working offline.

Repeatable	If Repeatable Is ticked, this stage can be repeated during one program enrollment. If t is not, then the stage can only happen once during a program enrollment.	Program with registration	✓	
Repeatable + Standard interval days	The system will suggest the due date as the calculation of the last event + standard interval dates.	Program with registration	✓	
Period type	Enables an admin to configure a set of periods (e.g. weeks or months) for each event in the program stage, instead of just a date. When creating events, users are then asked to choose a period (instead of a date) for each new event they create within that program stage.	Program with registration	✓	
Auto-generate event	If ticked, a 'booking' is generated for this Program Stage upon enrolment, based on the 'Scheduled days from start'.	Program with registration	✓	
Generate events based on enrolment date (not incident date)	Check on it for auto-generating due dates of events from program-stages of this program based on the enrollment date. If it is not checked, the due dates are generated based on incident date.	Program with registration	✓	
Open data entry form after enrolment + report date to use	If selected, once an enrolment is complete, an event's data entry form should open directly afterwards.	Program with registration	✓	
Ask user to complete program when stage is complete.	If selected, upon completing the program stage the user should be asked to complete the program. (This setting is ignored if 'Ask user to create new event…' is also ticked.)	Program with registration	✓	

Ask user to create new event when stage is complete	If selected, when the Program Stage is completed the user is prompted to book.	Program with registration	✓	
Hide due date	Only shows the actual date for events, hiding the due date.	Program with registration	✓	
Capture coordinates (event)/ Feature Type-Point	Enables the user to capture geographical coordinates when each event is created – particularly useful in devices that have GPS (eg Android), as instead of having to type in coordinates, the user can automatically populate them with the press of a button.	Program with registration	✓	
		Program without registration	✓	
Description of report date	Allows an admin to customize the label that is used for the event's date.	Program with registration	✓	
		Program without registration	✓	
Data elements – compulsory	This enables an admin to mark a data element as 'compulsory', meaning an event can't be saved until a value is captured.	Program with registration	✓	
		Program without registration	✓	
Data elements – allow provided elsewhere	On the form, this places a tick-box next to the selected data element, and enables previous data to be pulled into the data element.	Program with registration	–	
Data elements – display in reports	Displays the value of this data element into the single event without registration data entry function	Program with registration	–	
		Program without registration	✓	

Data elements – date in future	For date Data Elements, this enables an admin to either prevent or allow future dates to be captured.	Program with registration	✓	
		Program without registration	✓	
Data elements – render options as radio	Enables an admin to choose how options will be displayed on-screen for each Data Element (i.e. either as drop-down list or as radio buttons).	Program with registration	–	This will be replaced by the new rendering options.
		Program without registration	–	
Block entry form after completed	Prevents all edits to events after they have been completed.	Program with registration	✓	
		Program without registration	✓	
Event comments	Enables the user to add overall comments to an event. These comments are cumulative (new comments are added below existing comments).	Program without registration	–	

Feature	Description of feature	Status	Notes on implementation
Program with registration: Tracked entity dashboard features			
Messaging	Enables users to send ad-hoc free-text messages to TEIs (e.g. patients) via SMS or email.	–	
Mark for follow-up (button with exclamation triangle)	Enables a user to mark a TEI (e.g. patient) as requiring follow-up.	✓	
Display TEI audit history	Enables a user to see a history of all edits to Attributes for this TEI (e.g. patient).	–	
Inline program indicators	If a program indicator 'display in form' box is ticked, the indicator appears on the Tracker Capture dashboard, and is updated live as data capture occurs.	✓	! ANDROAPP-1723: Some program indicators are not been shown even if display in form is selected
Delete events	Enables the user to delete an event.	✓	
Schedule events	In the event generation dialogue, the user should also see the option to schedule an event. The process is like creating an event, but the user will be sent back to the TEI dashboard after the event is scheduled.	✓	
Referral of patients	In the event generation dialogue, the user should also see the option to refer a patient. The process is like creating/scheduling an event, but the user can change the org unit and has to specify if is a one-time or permanent referral. One time will just create the event in the specified OU,	✓	
Reset search fields	User is able to clean up the search fields by pressing on the rounded arrow icon on the top right corner of the search screen.	✓	

Search screen for all TE Type	User is able to search across all program of one tracked entity type (TET). In the Search screen there is a drop down which shows all the programs available for the active TET (active TET is defined by the selection of the program in the home screen). That drop down should also have an option with TET name. (Person in our server) When the user selects that option, the search fields available will only be the TET attributes (no program specific attributes). All search restrictions do not apply, because they belong to the programs.	✓	
TEI Dashboard without program	User can see the TEI dashboard without any program by selecting the TEI in the list if the search was without program. The dashboards will show the TET attributes in the details card followed by a list of active enrollments.	✓	
TEI enrollment history and new enrollment	User is able to see the complete historical record of the TEI. By clicking on the top right corner icon they will see a list of Active enrolments, followed by a list of past enrolments (completed or cancelled), followed by the programs in which the TEI could be enrolled. Users should be able to navigate to the different enrolments from the list.	✓	
Program without registration: Single event program specific features			
Events listing (grid)	A listing of existing events that is displayed once a program is selected.	✓	
Sort and filter events in grid	Allows the user to sort listed events, or to filter events based on keywords or specific ranges of dates/numbers.	✓	Events are sorted chronologically. The user can filter by period and organisation unit.
Edit events in grid	Allows the user to directly edit the data elements shown in the events listing/grid.	–	

View event audit history	Enables the user to see a history of all changes to the event's data elements.	–	
Show/hide columns [in event list/grid]	Enables the user to modify the data elements shown in the event listing/grid (applies to that user only).	–	
Field completion percentage	The percentage of data completed in each event is shown in the top right corner of an event when it is opened after first registration. The percentages should be adapted to the effects of the program rules in the forms.	✓	The percentage of completion does not take into account the not-supported value types in the forms.
Delete events	Enables the user to delete an event.	✓	

Value types supported

The following is a comprehensive list of all value types available in DHIS2, and notes on whether or not these have been implemented in the Android Capture app.

Any issues around using a particular feature with Android are highlighted with an exclamation mark **!**.

Everytime the icon is presented, a tip will be provided for a better use and understanding of the app.

✓	Value type implemented
–	Value type not implemented, but will be safely ignored (if not compulsory)
	Work in progress. Feature not completely implemented yet or with unexpected behaviour already reported .

DHIS2-6998**: Tracked Entity Attributes** are not using the 'Form name' because there is no translation available for now.

Value type	Description of value type	Program with registration		Program without registration	Notes on implementation
		Attributes	Data Elements	Data Elements	
Time	Time only	✓	✓	✓	
Date & Time	Date plus time	✓	✓	✓	
Date	Date only	✓	✓	✓	
Age	Enables entry of either an age in years/months/days or a date-of-birth (both are stored as date-of-birth)	✓	✓	✓	

Phone number	A valid phone number	✓	✓	✓	
Email	An email address in a valid format	✓	✓	✓	
Yes/no	Boolean yes/no (or no response)	✓	✓	✓	
Yes only	Yes or no response	✓	✓	✓	
Number	Any valid number, including decimals	✓	✓	✓	
Integer	Any integer (whole numbers, no decimals)	✓	✓	✓	
Positive Integer	Only positive integers (no zero or negative values)	✓	✓	✓	
Positive or Zero Integer	Only zero or positive integers (no negative values)	✓	✓	✓	
Negative Integer	Only negative integers (no zero or positive values)	✓	✓	✓	
Percentage	Any decimal value between 0 and 100	✓	✓	✓	
Unit interval	Any decimal value between 0 and 1	✓	✓	✓	
Text	Text (length of text up to 50,000 characters)	✓	✓	✓	
Long text	Text (no constraints on length)	✓	✓	✓	

Letter	A single letter	✓	✓	✓	
File	Enables upload of files in various formats (requires appropriate storage to be configured)				
Organisation unit	Enables selection of a DHIS2 organisation unit as the chosen value	✓	✓	✓	
Tracker Associate	Enables selection of an existing Tracker 'tracked entity instance' (e.g. a person) as the value	–	–	–	
Username	Enables selection of a valid DHIS2 username as the value				
Coordinate	Enables manual entry of geographical coordinates (doesn't enable automatic capture of coordinates)	✓	✓	✓	
URL	Enables manual entry of a URL.	✓	✓	✓	
Image	Enables upload of images				

Program rules supported in Android Capture App

The following is a comprehensive list of all **Program rule components** (variable types and actions) available in DHIS2, and notes on whether or not these have been implemented in the Android Capture app.

Any issues around using a particular feature with Android are highlighted with an exclamation mark **!**.

Everytime the icon is presented, a tip will be provided for a better use and understanding of the app.

✓	Component implemented
–	Component not implemented (rule fails)
N/A	Non-applicable
	Work in progress. Feature not completely implemented yet or with unexpected behaviour already reported .

Program rule Variable source types supported

Variable type	Description of variable type	Program Type	Status	Notes on implementation
Data element from the newest event for a program stage	This source type works the same way as 'Data element from the newest event in the current program', except that it only evaluates values from a specific program stage.	Program with registration	✓	
Data element from the newest event in the current program	This source type is populated with the newest data value collected for the specified data element within the enrolment.	Program with registration	✓	
	This program rule variable will be populated with the newest data value found within the 10 newest events in the same organization unit.	Program without registration	✓	

Data element in current event	Variable takes the data element's value from the current event.	Program with registration	✓	
	Contains the data value from the same event that the user currently has open.	Program without registration	✓	
Data element from previous event	Program rule variables with this source type will contain the newest value from all previous events for the specified data element. The event currently open is not evaluated	Program with registration	✓	
	This program rule variable will be populated with the newest data value found within the 10 events preceding the current event date (i.e. not including the current event).	Program without registration	✓	
Tracked entity attribute	Populates the program rule variable with a specified tracked entity attribute for the current TEI (e.g. current patient).	Program with registration	✓	
Calculated value	Calculated value	Program with registration	✓	
		Program without registration	✓	

Program rule Actions supported (Data element in current event)

!ANDROAPP-1793 Program Rules support names and codes for option sets variables from 1.2.1

Action	Description of action	Program with registration	Program without registration	Notes on implementation
Hide Field	Hides an individual data element if the rule is true.	✓	✓	! If you change the value after the field is hidden, it will revert the action depending on the value type rule engine default value. We recommend its use combined with the hasvalue function.
Hide Section	Hides a whole section and its data elements if the rule is true.	✓	✓	
Hide Option	hide a single option for an option set in a given data element/tracked entity attribute. When combined with **show option group** the **hide option** takes precedence	✓	✓	
Hide Option Group	hide all options in a given option group and data element/tracked entity attribute When combined with **show option group** the **hide option** takes precedence	✓	✓	
Show option group	Used to show only options from a given option group in a given data element/tracked entity attribute. To show an option group implicitly hides all options that is not part of the group(s) that is shown.			

Assign Value	Assigns a value to a specified data element or attribute if the rule is true.	✓	✓	
Show Warning	Shows pop-up warning to the user if rule is true; does not prevent the user from continuing.	✓	✓	
Warning on Complete	Shows a pop-up warning to the user if, at the point 'complete' is clicked, a rule is true; this does not prevent the user from continuing.	✓	✓	
Show Error	Shows a pop-up error message to the user as soon as a rule is true, and prevents user from continuing until rule is no longer true.	✓	✓	The field will be cleared out so that the user is unable to store a value unless it meets the criteria of the program rule.
Error on Complete	Shows a pop-up warning to the user if, when 'complete' is clicked, a rule is true, and prevents user from continuing until rule is no longer true.	✓	✓	
Make Field Mandatory	Sets a data element as 'mandatory' if rule is true.	✓	✓	
Display Text	Used to display information that is not an error or a warning, for example feedback.	✓	✓	**Event Program** Independently from the source variable type, text will be displayed in the form as the last element of the last section. Text will be displayed as the messages in the indicators tab. **Tracker Program** **1. Program rule configured as "Trigger rule only for program stage"** Text will be displayed ONLY in the form as the last element of the last section. Text will be displayed as the messages in the indicators tab**.**

				-> If the program rule uses any variable type which is not from the current stage, the rule will not be able to evaluate and the message will not be shown. **2. Program rule NOT configured as "Trigger rule only for program stage"** Text will be displayed ONLY in the indicators tab and NOT in the form. --> If the program rule uses any variable of type Current event, the rule will not be able to evaluate and the message will not be shown.
Display Key Value/Pair	Used to display information drawn from a data element.	✓	✓	**Event Program** **Variable Type:** ● Data element from the newest event in the current program ● Data element from previous event ● Data element in current event ● Built-in variable Key/Value Pair will be displayed in the form ONLY in the specified section. **Tracker Program** **1. Variable Type:** ● Data element in current event Key/Value Pair will be displayed in the form ONLY in the specified section. **2. Variable Type:** ● Data element from the newest event in the current program ● Data element from previous event

				• Data element from the newest event for a program stage • Tracked entity attribute • Built-in variable Key/Value Pair will be displayed ONLY in the indicators tab and NOT in the form.
Hide Program Stage	Hides a whole program stage from the user if the rule is true	N/A	N/A	Action rule only supported for **Data element from the newest event in the current program** type and **Tracked entity attribute** variables.
Create event	Create an event within the same enrollment.			This action will be available in future versions of DHIS 2. DHIS2-3130
Send Message	Send Message triggers a notification based on provided message template. This action will be taken whenever there is a change in data value . However this behaviour can be controlled by providing event/enrollment status in program rule expression	N/A	N/A	This feature is executed on the server side.
Schedule Message	Schedule Message will schedule notification at date provided by Expression in the data field.	N/A	N/A	This feature is executed on the server side.

Program rule Actions supported (Other variables)

!ANDROAPP-1793 Program Rules support names and codes for option sets variables from 1.2.1

Action	Description of action	Data element from the newest event in the current program		Data element from previous event		Data element from the newest event for a program stage	Tracked entity attribute	Notes on implementation
		Program with registration	Program without registration	Program with registration	Program without registration	Program with registration	Program with registration	
Hide Field	Hides an individual data element if the rule is true.	✓	✓	✓	✓	✓	✓	
Hide Section	Hides a whole section and its data elements if the rule is true.	✓	✓	✓	✓	✓	N/A	
Hide Option	hide a single option for an option set in a given data element/tracked entity attribute. When combined with **show option group** the **hide option** takes precedence	✓	✓	✓	✓	✓	✓	

Hide Option Group	hide all options in a given option group and data element/tracked entity attribute When combined with **show option group** the **hide option** takes precedence	✓	✓	✓	✓	✓	✓	
Assign Value	Assigns a value to a specified data element or attribute if the rule is true.	✓	✓	✓	✓	✓	✓	
Show Warning	Shows pop-up warning to the user if rule is true; does not prevent the user from continuing.	✓	✓	✓	✓	✓	✓	
Warning on Complete	Shows a pop-up warning to the user if, at the point 'complete' is clicked, a rule is true; this does not prevent the user from continuing.	✓	✓	✓	✓	✓	N/A	
Show Error	Shows a pop-up error message to the user as soon as a rule is true, and prevents user from continuing until rule is no longer true.	✓	✓	✓	✓	✓	✓	The rule will let the user to finish the enrollment but will prevent from completing the events until rule is no longer true. The field will be cleared out so that the user is unable to store a value

								unless it meets the criteria of the program rule.
Error on Complete	Shows a pop-up warning to the user if, when 'complete' is clicked, a rule is true, and prevents user from continuing until rule is no longer true.	✓	✓	✓	✓	✓	N/A	
Make Field Mandatory	Sets a data element as 'mandatory' if rule is true.	✓	✓	✓	✓	✓	✓	
Display Text	Used to display information that is not an error or a warning, for example feedback.	✓	✓	✓	✓	✓	✓	**Event Program** Independently from the source variable type, text will be displayed in the form as the last element of the last section. Text will be displayed as the messages in the indicators tab. **Tracker Program** **1. Program rule configured as "Trigger rule only for program stage"** Text will be displayed ONLY in the form as the last element of the last section. Text will be displayed as the messages in the indicators tab. -> If the program rule uses any variable type which is

								not from the current stage or previous event, the rule will not be able to evaluate and the message will not be shown. **2. Program rule NOT configured as "Trigger rule only for program stage"** Text will be displayed ONLY in the indicators tab and NOT in the form. --> If the program rule uses any variable of type Current event or previous event, the rule will not be able to evaluate and the message will not be shown.
Display Key Value/Pair	Used to display information drawn from a data element.	✓	✓	✓	✓	✓	✓	**Event Program Variable Type:** • Data element from the newest event in the current program • Data element from previous event • Data element in current event • Built-in variable Key/Value Pair will be displayed in the form ONLY in the specified section. **Tracker Program**

								1. Variable Type: ● Data element in current event Key/Value Pair will be displayed in the form ONLY in the specified section. **2. Variable Type:** ● Data element from the newest event in the current program ● Data element from previous event ● Data element from the newest event for a program stage ● Tracked entity attribute ● Built-in variable Key/Value Pair will be displayed ONLY in the indicators tab and NOT in the form.
Hide Program Stage	Hides a whole program stage from the user if the rule is true	✓	N/A	N/A	N/A	N/A	N/A	Action rule only supported for **Data element from the newest event in the current program** variable type If the event is auto-generated, the rule won't apply.

Create event	Create an event within the same enrollment.							This action will be available in future versions of the App. DHIS2-3130
Send Message	Send Message triggers a notification based on provided message template. This action will be taken whenever there is a change in data value . However this behaviour can be controlled by providing event/enrollment status in program rule expression	N/A	N/A	N/A	N/A	N/A	N/A	This feature is executed server side.
Schedule Message	Schedule Message will schedule notification at date provided by Expression in the data field. Sample expression is given below	N/A	N/A	N/A	N/A	N/A	N/A	This feature is executed server side.

Functions to use in program rule expressions

Function	Description of function	Status	Notes on implementation
d2:ceil	Rounds the input argument up to the nearest whole number.	✓	
d2:floor	Rounds the input argument down to the nearest whole number.	✓	
d2:round	Rounds the input argument to the nearest whole number.	✓	
d2:modulus	Produces the modulus when dividing the first with the second argument.	✓	
d2:zing	Evaluates the argument of type number to zero if the value is negative, otherwise to the value itself.	✓	
d2:oizp	Evaluates the argument of type number to one if the value is zero or positive, otherwise to zero.	✓	
d2:concatenate	Produces a string concatenated string from the input parameters. Supports any number of parameters.	✓	Use d2:concatenate function instead of using "+" as the expression evaluator in the app will be adding numbers if it can.
d2:daysBetween	Produces the number of days between the first and second argument. If the second argument date is before the first argument, the return value will be the negative number of days between the two dates. The static date format is 'yyyy-MM-dd'.	✓	
d2:weeksBetween	Produces the number of full weeks between the first and second argument. If the second argument date is before the first argument, the return value will be the	✓	

	negative number of weeks between the two dates. The static date format is 'yyyy-MM-dd'.		
d2:monthsBetween	Produces the number of full months between the first and second argument. If the second argument date is before the first argument the return value will be the negative number of months between the two dates. The static date format is 'yyyy-MM-dd'.	✓	
d2:yearsBetween	Produces the number of years between the first and second argument. If the second argument date is before the first argument, the return value will be the negative number of years between the two dates. The static date format is 'yyyy-MM-dd'.	✓	
d2:addDays	Produces a date based on the first argument date, adding the second argument number of days.	✓	
d2:count	Counts the number of values that is entered for the source field in the argument.	✓	
d2:countIfValue	Counts the number of matching values that is entered for the source field in the first argument. Only occurrences that matches the second argument is counted.	✓	
d2:countIfZeroPos	Counts the number of values that is zero or positive entered for the source field in the argument. The source field parameter is the name of one of the defined source fields in the program.	✓	
d2:hasValue	Returns the number of numeric zero and positive values among the given object arguments. Can be provided with any number of arguments.	✓	

d2:validatePattern	Evaluates to true if the input text is an exact match with the supplied regular expression pattern. The regular expression needs to be escaped.	✓	
d2:left	Evaluates to the left part of a text, num-chars from the first character.	✓	
d2:right	Evaluates to the right part of a text, num-chars from the last character.	✓	
d2:substring	Evaluates to the part of a string specified by the start and end character number.	✓	
d2:split	Split the text by delimiter, and keep the nth element (0 is the first).	✓	
d2:length	Find the length of a string.	✓	
d2:zpvc	Returns the number of numeric zero and positive values among the given object arguments. Can be provided any number of arguments.	✓	
d2:inOrgUnitGroup *	Evaluates whether the current organization unit is in the argument group. The argument can be defined with either ID or organization unit group code.		
d2:hasUserRole**	Returns true if the current user has this role otherwise false		
d2:zScoreWFA***	Function calculates z-score based on data provided by WHO weight-for-age indicator. Its value varies between -3.5 to 3.5 depending upon the value of weight.	✓	

*Available in DHIS2 v2.30
** Applies in DHIS2 v2.31 onwards
***Applies in DHIS2 v2.32

Standard variables to use in program rule expressions

Available in DHIS2 v2.30

Variable	Description of function	Status	Notes on implementation
V{current_date}	Contains the current date whenever the rule is executed.	✓	
V{event_date}	Contains the event date of the current event execution. Will not have a value at the moment the rule is executed as part of the registration form.	✓	
V{event_status}	Contains status of the current event or enrollment.	✓	
V{due_date} *	This variable will contain the current date when the rule is executed. Note: This means that the rule might produce different results at different times, even if nothing else has changed.	✓	
V{event_count}	Contains the total number of events in the enrollment.	✓	
V{enrollment_date} *	Contains the enrollment date of the current enrollment. Will not have a value for single event programs.	✓	
V{incident_date} *	Contains the incident date of the current enrollment. Will not have a value for single event programs.	✓	
V{enrollment_id} *	Universal identifier string(UID) of the current enrollment. Will not have a value for single event programs.	✓	

V{event_id}	Universal identifier string(UID) of the current event context. Will not have a value at the moment the rule is executed as part of the registration form.	✓	
V{orgunit_code}	Contains the code of the orgunit that is linked to the current enrollment. For single event programs the code from the current event Org Unit will be used instead.	✓	
V{environment}	Contains a code representing the current runtime environment for the rules. The possible values is "WebClient", "AndroidClient" and "Server". Can be used when a program rule is only supposed to run in one or more of the client types.	✓	
V{program_stage_id}	Contains the ID of the current program stage that triggered the rules. This can be used to run rules in specific program stages, or avoid execution in certain stages. When executing the rules in the context of a TEI registration form the variable will be empty.	✓	
V{program_stage_name}	Contains the name of the current program stage that triggered the rules. This can be used to run rules in specific program stages, or avoid execution in certain stages. When executing the rules in the context of a TEI registration form the variable will be empty.	✓	

*Only applies to tracker

Program Indicators

The following is a comprehensive list of all **Program indicator variables** available in DHIS2, and notes on whether or not these have been implemented in the Android Capture app.

Any issues around using a particular feature with Android are highlighted with an exclamation mark **!**.

Everytime the icon is presented, a tip will be provided for a better use and understanding of the app.

✓	Component implemented
–	Component not implemented (rule fails)
N/A	Non-applicable
	Work in progress. Feature not completely implemented yet or with unexpected behaviour already reported .

Variables to use in a program indicator expression or filter

Variable type	Description of variable type	Status	Notes on implementation
Event Date event_date	The date of when the event took place.		!ANDROAPP-2216
Creation Date* creation_date	The date of when an event or enrollment was created in the system.		
Due Date due_date	The date of when an event is due.		
Sync Date* sync_date	The date of when the event or enrollment was last synchronized with the Android app.		
Incident date incident_date	The date of the incidence of the event.	✓	

Enrollment date (not visible on UI) enrollment_date	The date of when the tracked entity instance was enrolled in the program.	✓	
Enrollment Status enrollment_status	Can be used to include or exclude enrollments in certain statuses.	–	
Current date current_date	The current date.	✓	
Completed date	The date the event is completed.		
Value Count value_count	The number of non-null values in the expression part of the event.	✓	
Zero or positive value count zero_pos_value_count	The number of numeric positive values in the expression part of the event.	✓	
Event Count event_count	The count of events (useful in combination with filters).	✓	
Enrollment Count enrollment_count	The count of enrollments (useful in combination with filters).	N/A	Indicators in the Android App are calculated in the domain of one TEI enrollment. Value always 1.
TEI Count tei_count	The count of tracked entity instances (useful in combination with filters).	N/A	Indicators in the Android App are calculated in the domain of one TEI enrollment. Value always 1.
Program Stage Name program_stage_name	Can be used in filters for including only certain program stages in a filter for tracker programs.		
Program stage id program_stage_id	Can be used in filters for including only certain program stages in a filter for tracker programs		

Reporting Period Start reporting_period_start	Can be used in filters or expressions for comparing any date to the first date in each reporting period.	N/A	Indicators in the Android App are calculated in the domain of one TEI enrollment.
Reporting Period End reporting_period_end	Can be used in filters or expressions for comparing any date to the last inclusive date in each reporting period.	N/A	Indicators in the Android App are calculated in the domain of one TEI enrollment.

Documentation Reference
*DHIS2 v2.32