

# KRG – DHIS Health Monitoring System

## USER MANUAL

**Pilot project for the development of a system of health monitoring and surveillance activities in the Autonomous Region of Kurdistan**

ver. 2016 February

# User Manual for Medical Doctors and Health Care workers

The **KRG Health Monitoring System** (referred also as **KRG Health System**) is a web-based application Powered by the DHIS 2 (<https://www.dhis2.org/>) platform and will be available in an Internet browser when you have Internet connection.

## 1. Login in the System

### 1.1. Opening KRG Health Monitoring System

To connect to the system, open a browser, we recommend Google Chrome (download installer here: <http://www.google.com/chrome>) and in the address field you type in the URL :

<https://krg-dhis.ipro-it.eu/>

You will then see the login screen of KRG Health System.



Fig. 1

## 1.2. Logging in and out of the application - Dashboard

Once you can see the blue login screen of the KRG Health System you must enter your user name and password to log in to the application. If the login is not successful you will be notified that the username or password is incorrect and asked to re-enter these credentials. Note that the username and the password are case-sensitive! Please control the position of your Caps Lock key before entering and type the strings with the correct case.

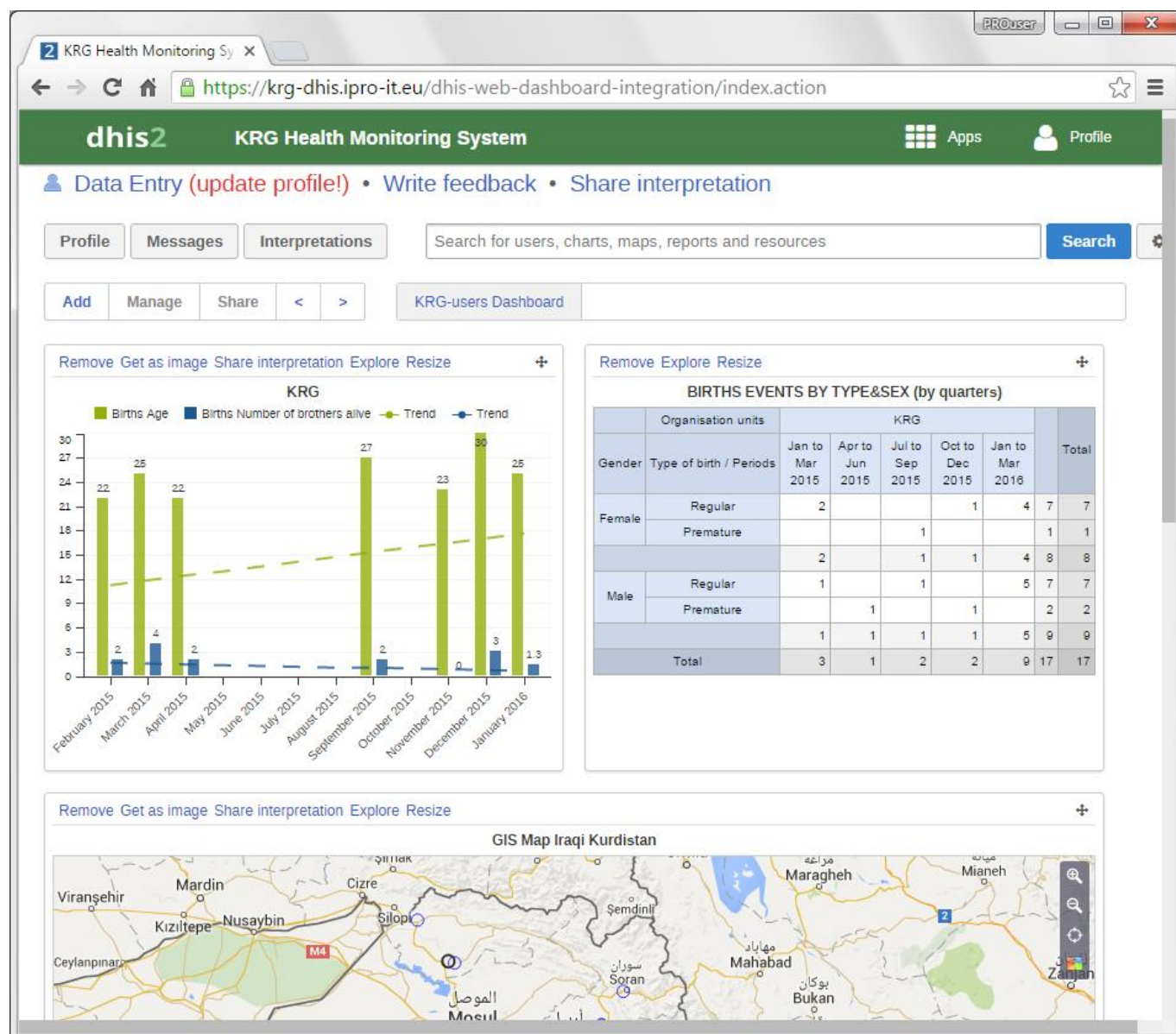


Fig. 2

Once you have successfully logged in you will see the System **Dashboard** where you can immediately monitor the latest data in your selected, reports, tables, maps etc.

When you have finished your session we recommend that you log out before closing

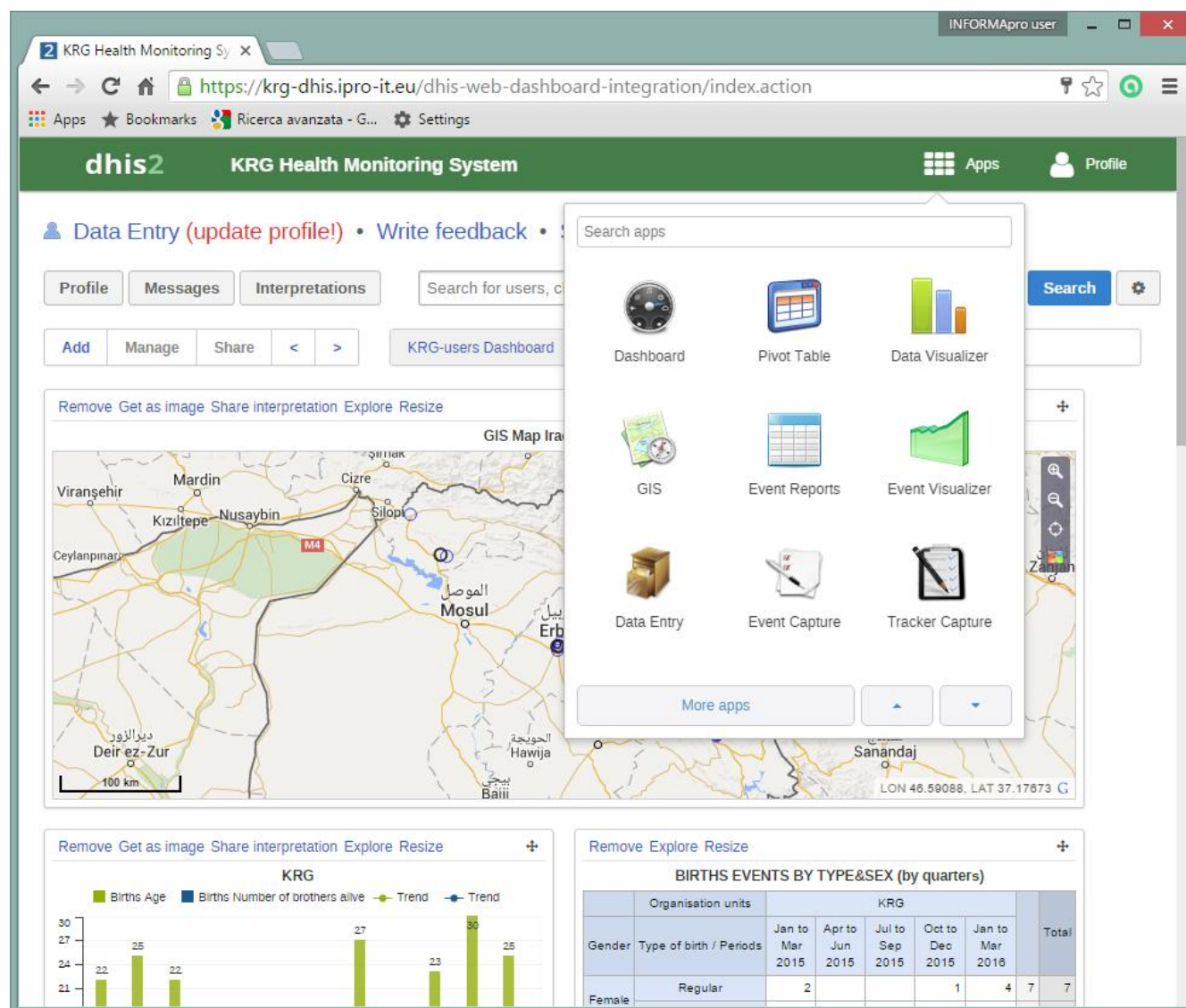
the browser. Use the log out button in the upper right corner (inside the **Profile** menu) and you will be returned to the login screen.

## 2. Navigating the application - Module/App Selection

The KRG Health System has two kind of menu:

- the top menu, which houses areas for apps and the user profile, and
- the left side menu inside most modules to navigate between features inside each module.

The DHIS2 symbol in the top left corner is a fast link to the user-defined start page, the home page. Often this is set to the dashboard module.



The screenshot shows the KRG Health Monitoring System interface. The top navigation bar includes 'dhis2', 'KRG Health Monitoring System', 'Apps', and 'Profile'. A search bar for apps is open, displaying a grid of application icons: Dashboard, Pivot Table, Data Visualizer, GIS, Event Reports, Event Visualizer, Data Entry, Event Capture, and Tracker Capture. Below the map, there are two data visualization components: a bar chart for 'KRG' and a table for 'BIRTHS EVENTS BY TYPE&SEX (by quarters)'. The table shows data for 'Female' with 'Regular' type of birth, with values of 2 for Jan-Mar 2015, 1 for Oct-Dec 2015, and 4 for Jan-Mar 2016, totaling 7.

Organisation units		KRG					Total
Gender	Type of birth / Periods	Jan to Mar 2015	Apr to Jun 2015	Jul to Sep 2015	Oct to Dec 2015	Jan to Mar 2016	
Female	Regular	2			1	4	7

Fig. 3

### 2.1. The top menu - access to the modules

KRG Health System consists of various apps (major components) which each have specific features, such as data entry, reporting, dashboard. You can access these from the top menu under Apps.

Under profile, details relating to your user account, general user settings and information about the system can be found.



To move to a new app you need to move the mouse pointer to one of the top menu items, Apps or Profile, a sub-menu with additional items will then appear. Click on the item you would like to open.

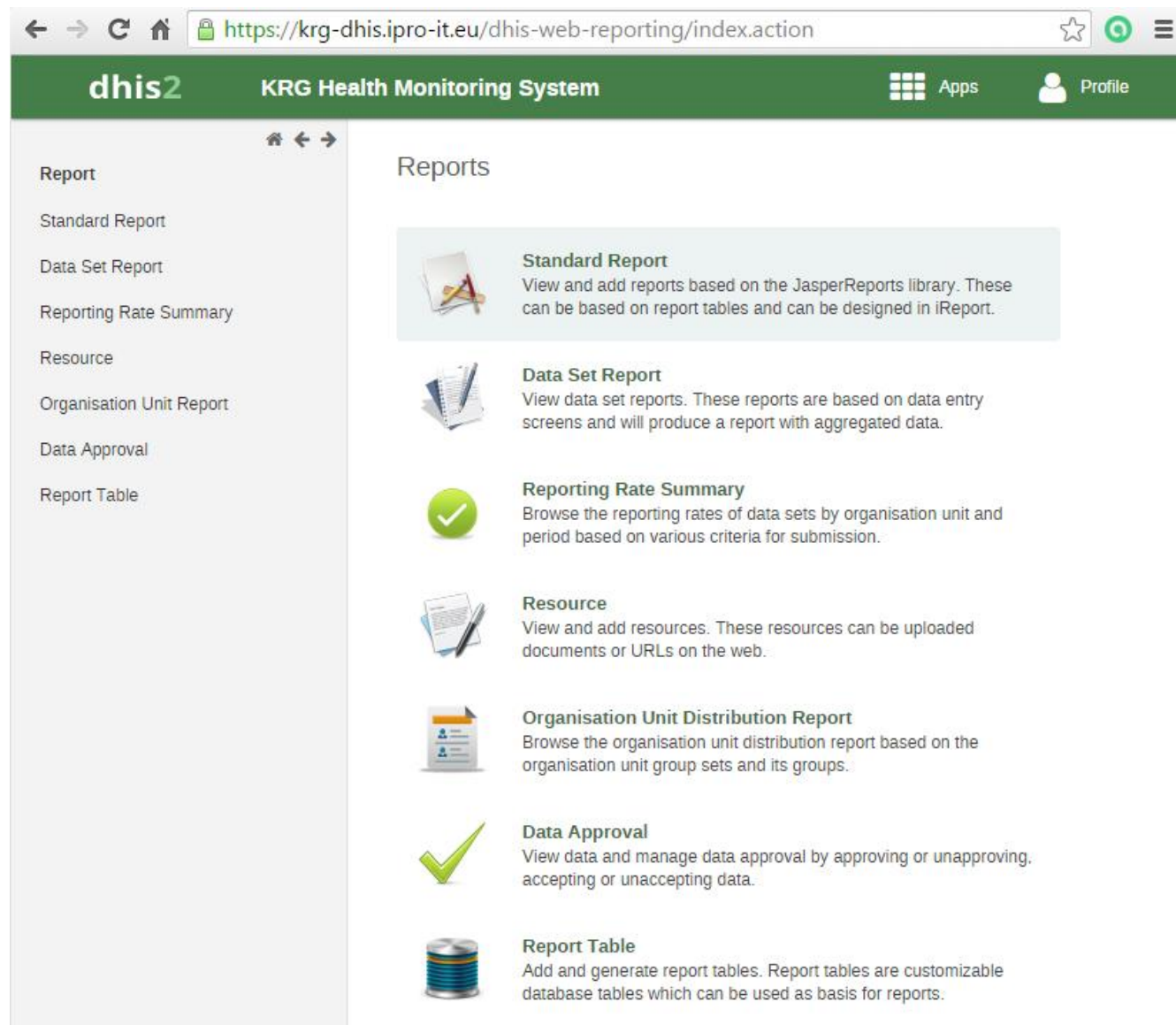


Fig. 4

## 2.2. Navigation inside modules

When you open most of the apps you will see the app main page which lists the major features in the middle of the screen with a short description. Simply click on the feature you would like to open.

When inside an app you will always see the left side menu with links to its features. Use this menu to jump between features. This is particular useful for navigation within the app.

The data entry, the Event capture and Dashboard modules do not have a menu system as they only contain one feature, everything is in one page, so there is no need for a menu there.

### 3. Event Capture App

#### 3.1. Event Capture overview

The event capture app allows users to register events that occurred at a particular time and place. An event can happen at any given point in time. This stands in contrast to routine data, which can be captured for predefined, regular intervals. **Events** in the KRG Health System are linked to a program. Hence, the event capture app lets you select the **organisation unit** and **program** and specify a **date** when an event (also known as case or record) happened, before entering information for the event.

#### 3.2. Capturing Events



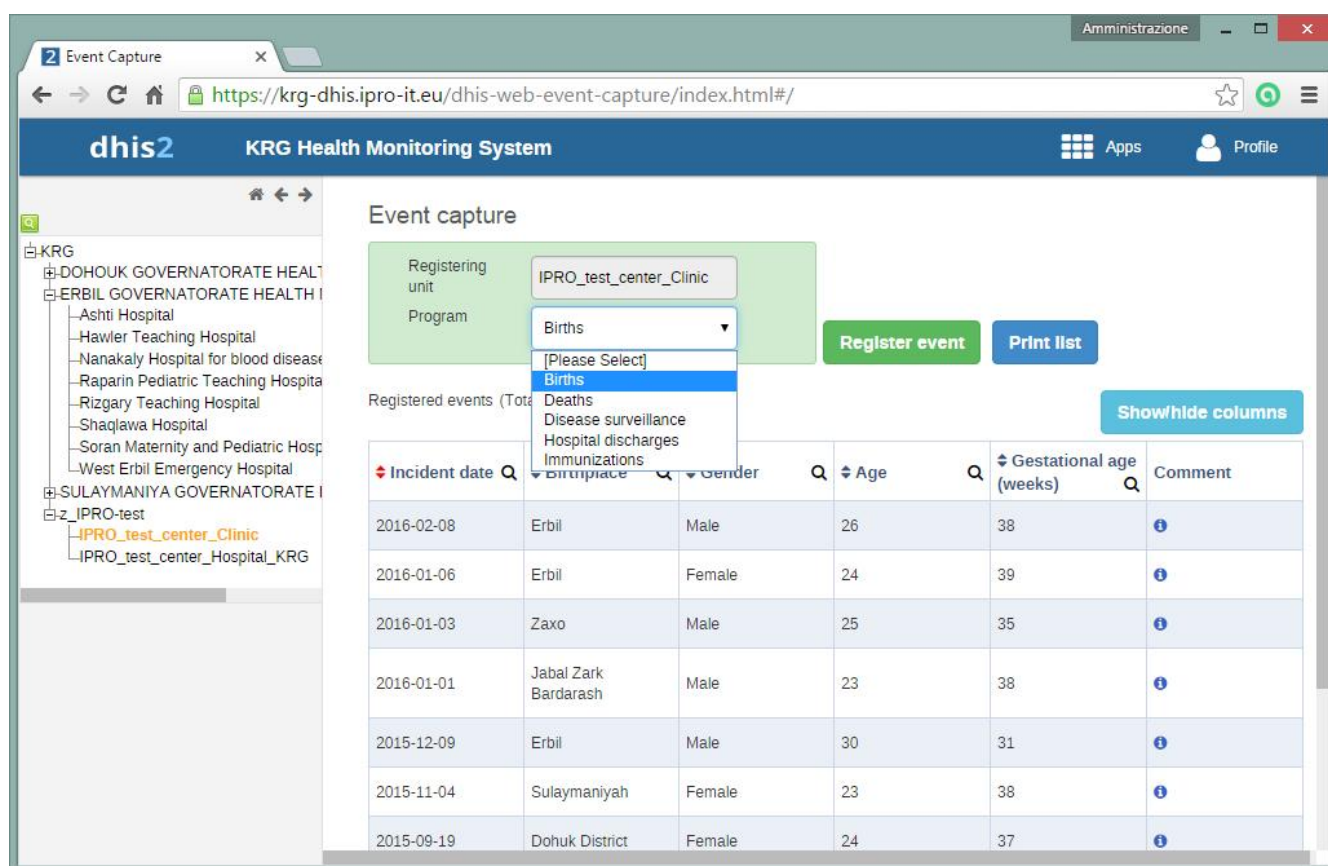
Fig. 5

To capture an event, the first step is to select an **organisation unit** from the left-side organisation unit tree.

The organization unit (referred also as **org unit**) is the medical centre or public health facility, where the event capture and all other data manipulation (entering, modifying, reporting and analysing data) are performed.

Locate the org unit you want to register data for in the tree menu to the left. Expand and close branches by clicking on the +/- symbols. A quick way to find an org unit is to use the search box just above the tree (the green symbol), but you need to write in the full name to get a match.

After selecting an org unit, the list of programs will display the programs which have been associated with the selected organisation unit and which have been given access to the current user.



**Fig. 6**

Events are displayed in a tabular fashion. As seen in the screenshot, each row corresponds to an event. The columns display information about the events, more specifically they display data for data elements which are part of the program.

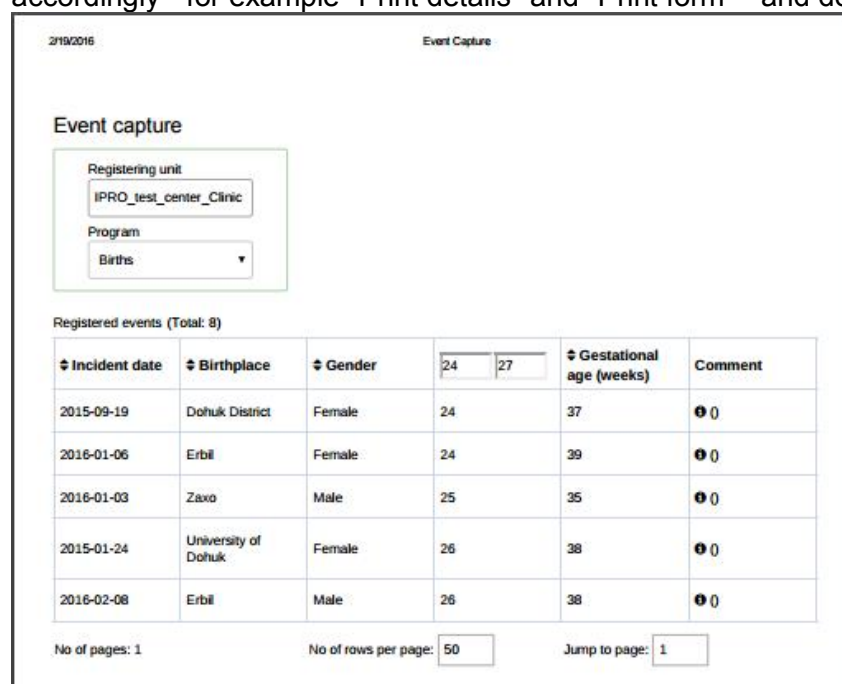
All event related operations are accessible from the screen shown above. The operations currently available are:

1. **Capturing data:** this is available by clicking the "Register event" button.
2. **Showing/hiding columns:** this is to allow users decide which columns to show/hide in the table of events. This feature is especially important when we have a long list of data elements assigned to a program stage.
3. **Editing:** the rows in the table are clickable, clicking them shows three menus - Edit, Edit in grid and Remove. The edit function takes you to a new page where information for the selected event can be updated. The edit in grid function allows you to edit the selected event within the table but only those columns (data elements) visible in the grid. If more columns are required it is possible to add using the "Show/Hide columns" button to specify which columns should be displayed in the list.
4. **Sorting:** this can be done by clicking the sorting icon of each column header. A red sorting icon implies the current sorting column. However, the sorting functionality works only within the page displayed. Currently, it is not possible to do sorting from server side.

5. **Filtering:** this is done by clicking the small search icon shown to the right of each column header. Clicking them provides an input field to type a filtering criteria. The system starts applying the filter the moment a user starts to type. During filtering it is possible to define start and end dates for date type data elements and lower and upper limits for number types. Server side filtering is not-support at the moment.

6. **Paging:** The list of events can be paged by using the paging section at the bottom of the list. Paging allows you to quickly move between pages of events and to change the page size, i.e. the number of events per page.

7. **Printing:** The "Print list" button allows to print the list of events. This button also changes its label accordingly - for example "Print details" and "Print form" - and does the printing functionality.



2/19/2016 Event Capture

Event capture

Registering unit  
I-PRO\_test\_center\_Clinic

Program  
Births

Registered events (Total: 8)

Incident date	Birthplace	Gender	24 27	Gestational age (weeks)	Comment
2015-09-19	Dohuk District	Female	24	37	0
2016-01-06	Erbil	Female	24	39	0
2016-01-03	Zaxo	Male	25	35	0
2015-01-24	University of Dohuk	Female	26	38	0
2016-02-08	Erbil	Male	26	38	0

No of pages: 1      No of rows per page: 50      Jump to page: 1

Fig. 7

The event capture app works offline, in the sense that if Internet connectivity drops during your working session, you can continue to capture events which will be stored locally in your web browser (client). When connectivity has returned the system will ask to upload locally stored data, and sends it to the server where it is stored. Note that if the Web browser is closed while in offline-mode, it is not possible to reopen a new browser window and continue the working session; however the data will still be saved locally and can be uploaded to the server the next time the machine is online and the user has logged into the server.



← → ↻ 🏠 <https://krg-dhis.ipro-it.eu/dhis-web-event-capture/index.html#/>

**dhis2** KRG Health Monitoring System Apps

🏠 ← →

- [-] KRG
  - [-] DOHOUK GOVERNATORATE HEALTH
  - [-] ERBIL GOVERNATORATE HEALTH
    - [-] Ashti Hospital
    - [-] Hawler Teaching Hospital
    - [-] Nanakaly Hospital for blood disease
    - [-] Raparin Pediatric Teaching Hospital
    - [-] Rizgary Teaching Hospital
    - [-] Shaqlawa Hospital
    - [-] Soran Maternity and Pediatric Hospital
    - [-] West Erbil Emergency Hospital
  - [-] SULAYMANIYA GOVERNATORATE HEALTH
  - [-] z\_IPRO-test
    - [-] IPRO\_test\_center\_Clinic
    - [-] IPRO\_test\_center\_Hospital\_KRG

### Event capture

Registering unit:

Program:

Section:

### New event

Date of birth\*

#### Mother info

Data element	Value
Age	<input type="text"/>
Residence	<input type="text" value="Select or search from the ..."/>
Previous pregnancies	<input type="text"/>
Previous abortions	<input type="text"/>

#### Newborn info

Data element	Value
Birthplace	<input type="text" value="Select or search from the ..."/>
Gender	<input type="text" value="Select or search from the ..."/>

**Fig. 8**

If the selected program's program stage is configured to capture GPS coordinate, the app provides two ways of capturing coordinates. The first is two simple text boxes so that a user can fill in proper latitude and longitude values. The second option is using google map, where it is possible to point and click for coordinates. The google map option also displays polygons and points that are defined for organisation units.

## 4. Dashboard and Reporting

### 4.1. Dashboard

Dashboards are intended to provide quick access to different analytical objects (maps, charts, reports, tables, etc) to an individual user. Dashboards can also be shared with user groups. For instance, a user or administrator could create a dashboard called "Malaria" which might contain all relevant information on malaria. This dashboard could then be shared with the user group called "Malaria control", which might consist of all users of the malaria control programme. All users within this group would then be able to view the same dashboard.

The Dashboard in the figure is called “**KRG-users Dashboard**”, shared with all users of this group.

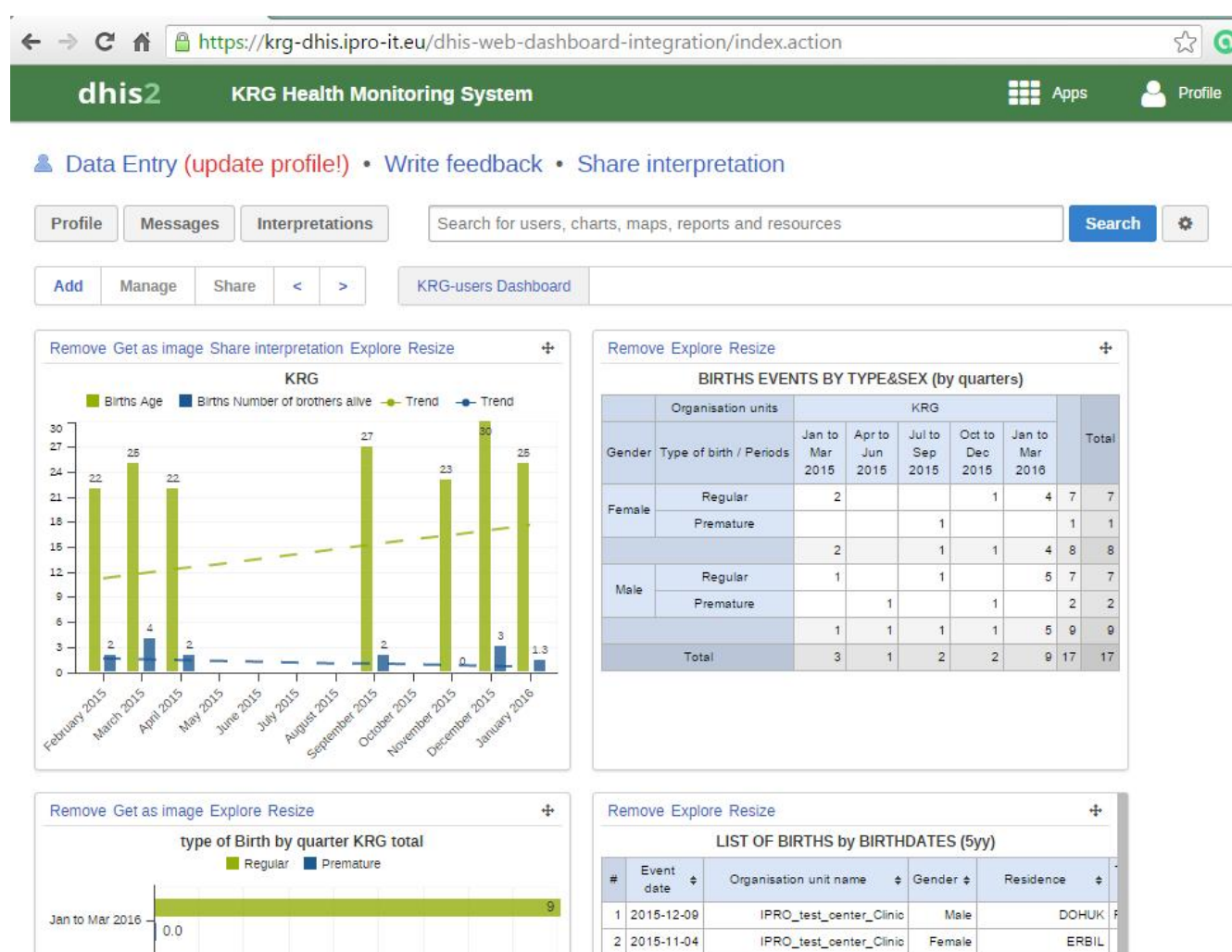


Fig. 9

The dashboard can contain any number of objects (charts, maps, reports, tables, resources, etc). These can be freely arranged on the dashboard as you wish. Dashboard items can be located and added by searching for favourites, resources, users or messages in the available search box and clicking on the "Add" button.

## 4.2. Using Event Reports

The event reports app enables analysis of events in two fashions.

- Pivot table-style analysis with aggregated values of events
- Lists of events based on queries / filters

We will explain the functioning of the **Event Report** App. All reporting Apps – like **Pivot Table** and **Data Visualizer** have similar behavior.

By selecting "**Aggregated values**" button from the top-left menu you can use the event reports app to create pivot tables with aggregated numbers of events. By selecting the "**Events**" button you can see all single events filtered by the specified parameters.

An event report is always based on a program. You can do analysis based on a range of dimensions. Each dimension can have a corresponding filter.

Dimensions can be selected from the left-side menu and includes the following:

- **Data elements:** Start by selecting the program and program stage for the event report. The data elements associated with the selected program will be listed under available items.

Each data element acts as a dimension, and can be selected by double-clicking on it. After selecting a data element, it will be visible under "selected data items". Here you can specify a filter for each data element, with operators such as "greater than", "in" or "equal" together with a filter value.

- **Periods:** For the period dimension you have three options: relative periods, fixed periods and start/end dates. Relative periods can e.g. be "last 12 months", and has the advantage that it keeps the data in the report up to date as time goes. Fixed periods can e.g. be "January 2015". You can switch to start/end dates by selecting from the drop-down menu under the periods tab, which lets you specify flexible dates for the time span in the report.

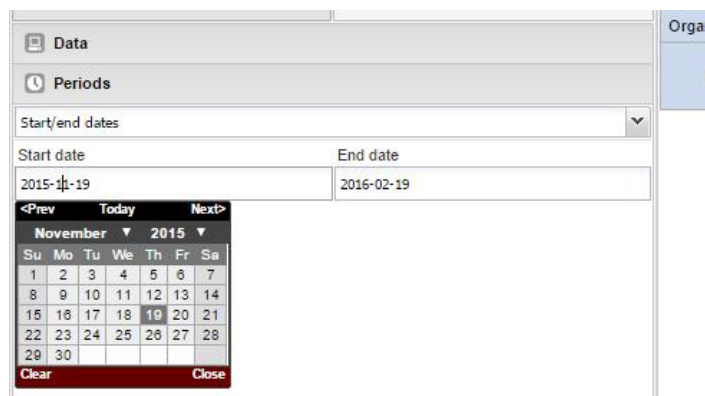


Fig. 10

- **Organisation units:** The organisation unit dimension lets you select any org unit from the hierarchy. You can use the org unit mode selector to select org units explicitly, by org unit hierarchy levels and by org unit groups.

The example below shows the a table with aggregate and individual event data for the births events by type and sex aggregated by quarters.

## BIRTHS EVENTS BY TYPE&SEX (by quarters)

You can visualize the Aggregated event report, by clicking on the “Aggregates values” button.

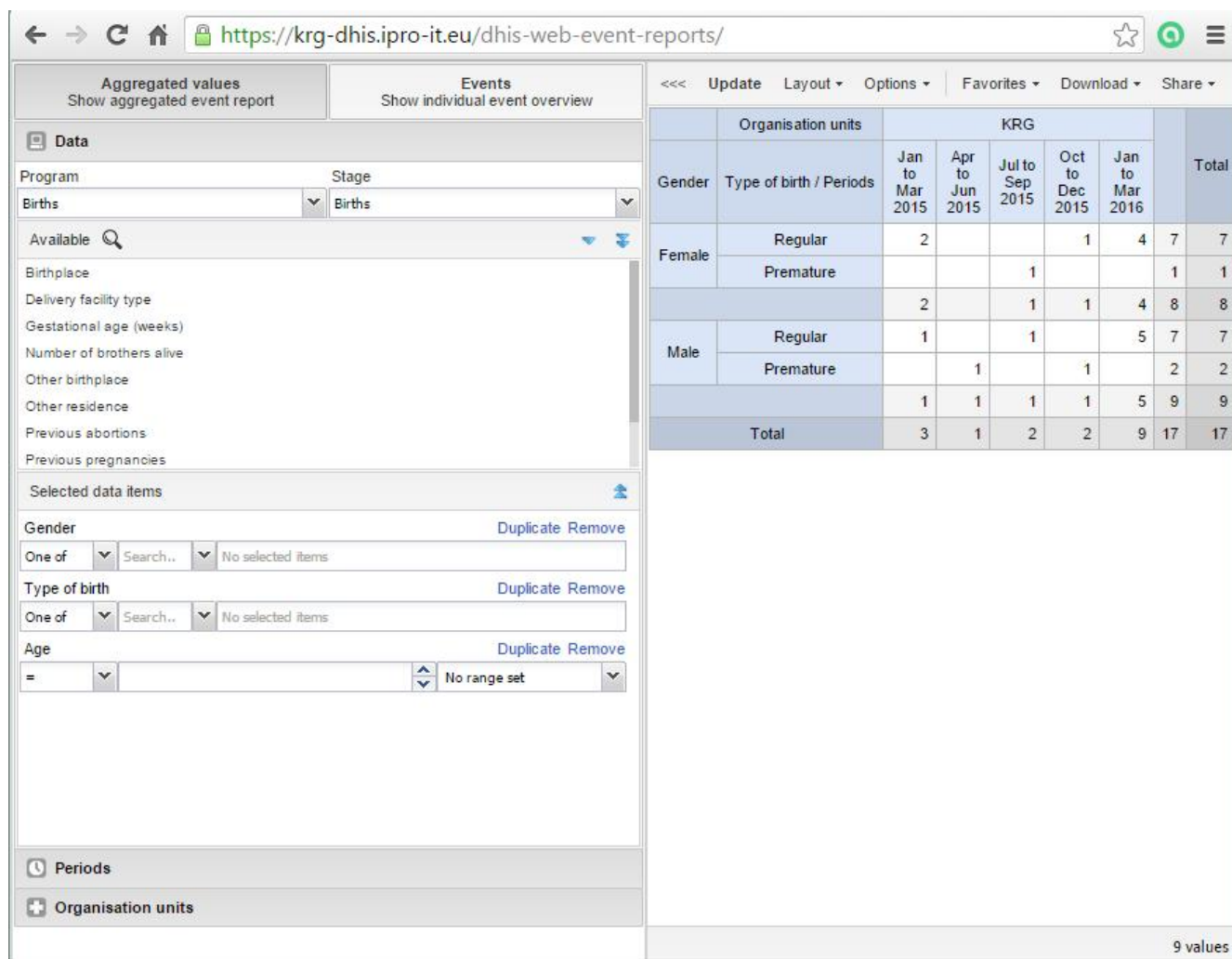


Fig. 11

Alternatively you can visualize the individual events – by clicking on the “Events” button on the top of the Event Report visualizer.

After making the selections in all dimensions, you have to select the “**Update**” link to make the changes effective.

Finally, you have to make this Report available for future use and visualization on the Dashboard, by adding it to the “Favorites” giving it some meaningful name – for example BIRTHS EVENTS BY TYPE&SEX (by quarters).

This name can be used also to add its icon to the Dashboard.

By selecting “Explore” on the report icon, you will jump to the reporting App.



Aggregated values Show aggregated event report		Events Show individual event overview		Update		Layout		Options		Favorites		Download		Share	
#	Event date	Organisation unit name	Gender	Type of birth	Age										
1	2015-12-09	IPRO_test_center_Clinic	Male	Premature	30										
2	2015-11-04	IPRO_test_center_Clinic	Female	Regular	23										
3	2015-09-19	IPRO_test_center_Clinic	Female	Premature	24										
4	2015-01-24	IPRO_test_center_Clinic	Female	Regular	26										
5	2015-09-09	IPRO_test_center_Hospital_KRG	Male	Regular	30										
6	2015-03-12	IPRO_test_center_Hospital_KRG	Female	Regular	25										
7	2015-04-20	IPRO_test_center_Hospital_KRG	Male	Premature	22										
8	2015-02-06	IPRO_test_center_Hospital_KRG	Male	Regular	22										
9	2016-01-06	IPRO_test_center_Clinic	Female	Regular	24										
10	2016-01-03	IPRO_test_center_Clinic	Male	Regular	25										
11	2016-01-01	IPRO_test_center_Clinic	Male	Regular	23										
12	2016-02-08	IPRO_test_center_Clinic	Male	Regular	26										
13	2016-02-10	IPRO_test_center_Hospital_KRG	Female	Regular	20										
14	2016-02-02	IPRO_test_center_Hospital_KRG	Male	Regular	34										
15	2016-01-11	IPRO_test_center_Hospital_KRG	Male	Regular	28										
16	2016-02-11	IPRO test center Hospital KRG	Female	Regular	23										

Fig. 12

## 5. Data Entry for aggregate data

### 5.1. Data Entry App

An alternative way to enter directly only the aggregate data is using the Data Entry App/module. When there is no information about the single events, we can insert directly the aggregate data.

To open the data entry window click on the App tab displayed in the main menu. A drop down menu will appear listing the Apps provided by the system. Click on the Data Entry App.



Data Entry

The data entry module is where aggregate data is manually registered. Data is registered for an organisation unit, a period, and a set of data elements (data set) at a time. A data set often corresponds to a paper-based data collection tool.

## Selecting the data entry form

To start entering data the first step is to open the correct form. Follow these steps:

Locate the org unit you want to register data for in the tree menu to the left. Expand and close branches by clicking on the +/- symbols. A quick way to find an org unit is to use the search box just above the tree (the green symbol), but you need to write in the full name to get a match.

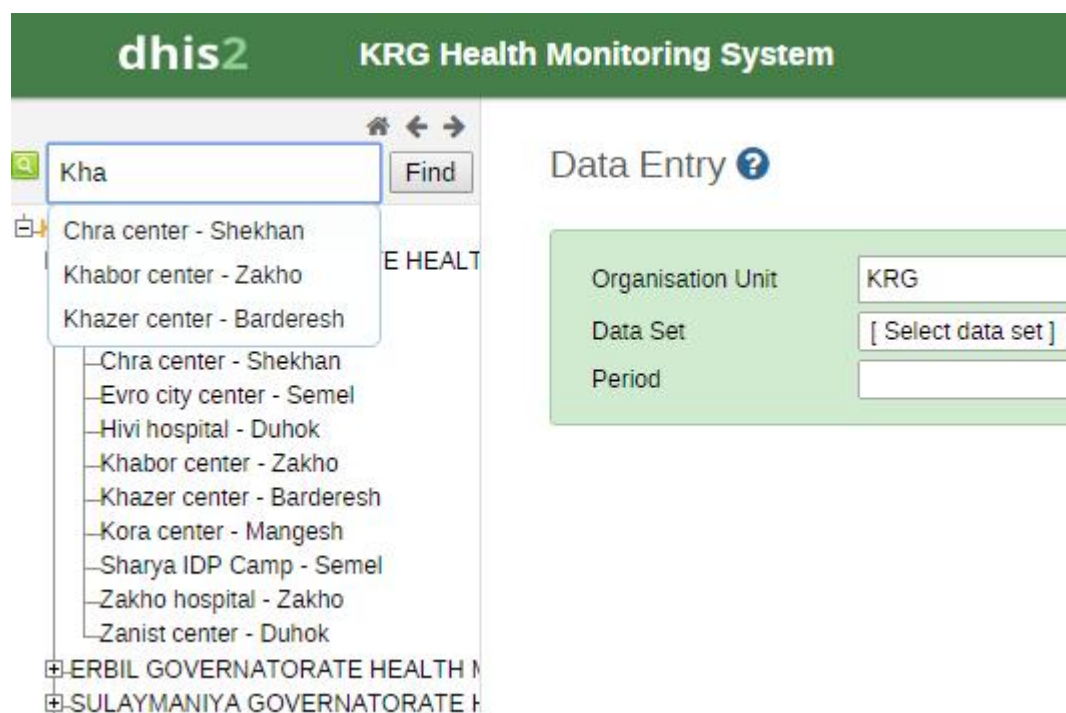


Fig. 13

Select a data set from the dropdown list of data sets available to your selected org unit.

Select a period to register data for. The available periods are controlled by the dataset's period type (reporting frequency). You can jump a year back or forward by using the arrows next to the period.

Now you should see the data entry form.

**dhis2** KRG Health Monitoring System

Search: Kha Find

Navigation: Home, Back, Forward

IPRO\_test\_center\_Clinic - De

**Data Entry**

Organisation Unit: IPRO\_test\_center\_Clinic

Data Set: Births

Period: December 2015 [Prev year] [Next year]

**Type of abortion**

Filter in section	Natural	Voluntary
Number of abortions	4	10

**Gender and type of delivery**

Filter in section	Male		Female	
	Natural	Cesarean	Natural	
Number of births	50	5	46	
Number of premature births	1	2	1	

Fig. 14

## Entering data

Simply start entering data by clicking inside the first field and type in the value. Move to the next field using the Tab button. Shift+Tab will take you back one step. The values are saved immediately and do not require any save/finished button click. A green field indicates that the value has been saved in the system (on the server). On a slow connection it might take some time before the values are saved.

**Input validation:** If you type in an invalid value, e.g. a character in a field that only accepts numeric values you will get a pop-up that explains the problem and the field will be coloured yellow (not saved) until you have corrected the value. If you have defined a min/max range for the field (data element+organisation unit combination) a pop-up message will notify you when the value is out of range, and the value will remain unsaved until you have changed the value (or updated the range and then re-entered the value).

**Disabled fields:** If a field is disabled (grey) it means that the field should not be filled. The cursor will automatically jump to the next open field.

**Data history:** By double-clicking on any input field in the form a data history window opens showing the last 12 values registered for the current field (organisation unit+data element+categoryoptioncombo) in a bar chart. This window also shows the min and max range and allows for adjusting the range for the specific organisation unit and data element combination.

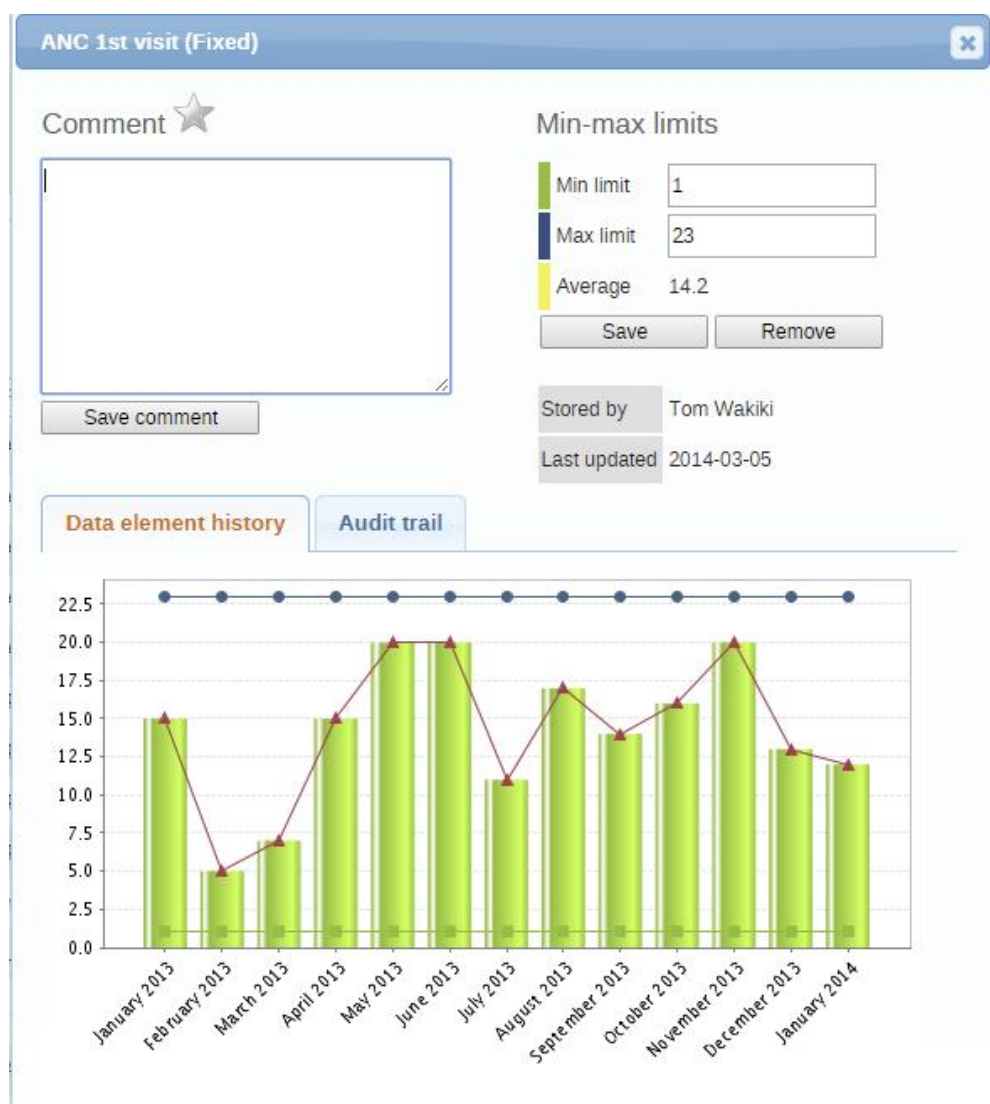


Fig. 15

**Follow Up:** In the data history window there is also a feature to tag or star a value. E.g. a suspicious value that needs further investigation can be kept in the system, but marked for Follow-Up. In the **Data Quality module** you can run a Follow-Up analysis and view all values marked for Follow-Up, and then later edit the values if proved incorrect.

**Audit trail:** The audit trail allows you to view other data values which have been entered prior to the current value. As an example, the following data element was changed from its original value to 120. The audit trail shows when the data value was altered along with which user made the changes.

**Editing and deleting data:** If you wish to enter data which has already been entered, simply replace the data entry value with the update values.

If you want to delete a data value completely, you should select the value of interest, and press "Delete" on your keyboard. If you enter a zero and the data element has been configured to not store zeros, the previous data value (i.e. the one you wish to modify) will not be overwritten with the new value.



Therefore, it is better practice to delete the data value completely (waiting for the cell to turn green) and then to enter the new value.

**Validating data in the form:** When all the available values for the form has been filled in you can run a validation check on the data in the form. Click on the "Run Validation" button in the top right corner. All validation rules which involves data elements in the current form (dataset) will be run against the new data. Upon completion you will be presented with a list of violations or a simply a message that says "The data entry screen successfully passed validation". See the Data Quality chapter for information on how to define such validation rules.

Validation
✕

Validation Result

The data entry screen has the following validation errors, please correct

Validation rule	Left side	Operator	Right side
Slept under LLIN at measles (fixed < 1y) cannot be higher than measles doses given (fixed < 1y)	7.0	<=	4.0

**Fig. 16**

When you have corrected any erroneous values and are done with the form the recommended practice is to click on the Complete button below the form to register the form as complete. This information is used when generating completeness reports for district, county, province or the national level.

Gender and cause of death

Filter in section	Caused by five major killers		Other	
	Male	Female	Male	Female
Number of deaths	40	45	50	56

Complete

Incomplete

Run validation

**Fig. 17**

**Offline data entry:** The data entry module will function even if during data entry the Internet connectivity is not stable. In order to utilize this functionality, you must login to the server while the Internet is functional, but if during data entry, the Internet link between your computer and the server becomes unstable, data can still be entered into the data entry form, saved to your local computer, and then pushed to the server once the Internet connectivity has been restored. Data can be entered and stored locally while being offline and uploaded to the central server when on-line. This means that the on-line deployment strategy will be more viable in areas with unstable Internet connectivity. The total bandwidth usage is greatly reduced since forms no longer are retrieved from the server for each rendering.

Once the data has successfully synchronized with the server, you will receive a confirmation message that the data has been successfully uploaded to the server.

## 6. Using reporting functionality

The reporting module in DHIS 2 provides a range of reporting alternatives, and this section will explain how to use them to view and analyse data.

**Standard reports:** Standard reports are built on pivot tables, but are more advanced in its design allowing for more cosmetics and styles. These reports can also combine multiple tables and charts in the same report and be made available as one-click reports that are very easy to use. These reports can be downloaded as PDF files which makes them ideal for printing as well as sharing offline.

**Dataset reports:** Dataset reports are simply a printer friendly way to look at the data entry forms with either raw or aggregated data (over time or place). The design used in data entry will be used also in the data set reports. This will work only for data sets that has a custom data entry form set up.

**Dashboard:** The fastest way to view your data. The dashboard can display up to four updated charts as well as shortcuts to your favourite reports, report tables, and map views. Each user can configure a personal dashboard.

**Data Visualizer:** Do flexible visualizations of your data as charts and data tables. Any number of indicators and data elements can be included. Several chart types are available, such as column, stacked column, line, area and pie charts. The charts can be saved in order to be easily retrieved later and can also be put on your personal dashboard. Charts can be downloaded as image and PDF files to your local computer.

**Orgunit distribution reports:** These reports are generated off the orgunit group set information and can show what types (and how many of each type) of health facilities that are located in a given area (any level in the hierarchy). These reports are automatically generated and display the information in both tables and charts, and downloads in PDF, excel, and CSV are available.

**Reporting rate summary:** These reports provide a nice overview of how many facilities that have submitted their data for a given dataset and period. Here you can get both the counts and the percentages showing the reporting rate for all or single data sets.

Fig. 18

**Web-based pivot tables:** The built in pivot table tool is a web-based tool to display indicator data by orgunit and period in a typical pivot table view and allows for pivoting manipulations of the tables. It allows for large amounts of data to be downloaded offline for analysis as well.

**GIS:** Present and analyse your data using thematic maps. You can view both data elements and indicators and given that you have coordinates for all your orgunits you can drill down the hierarchy and view maps for all levels from country polygons to facility points. See the separate chapter on GIS for more details. All the map information is built into DHIS 2 and all you need to do is to register coordinates for your organisation units and the maps will be available.

## 6.1. Reporting App in the KRG Health System

Part of the Reporting App are:

Standard Report

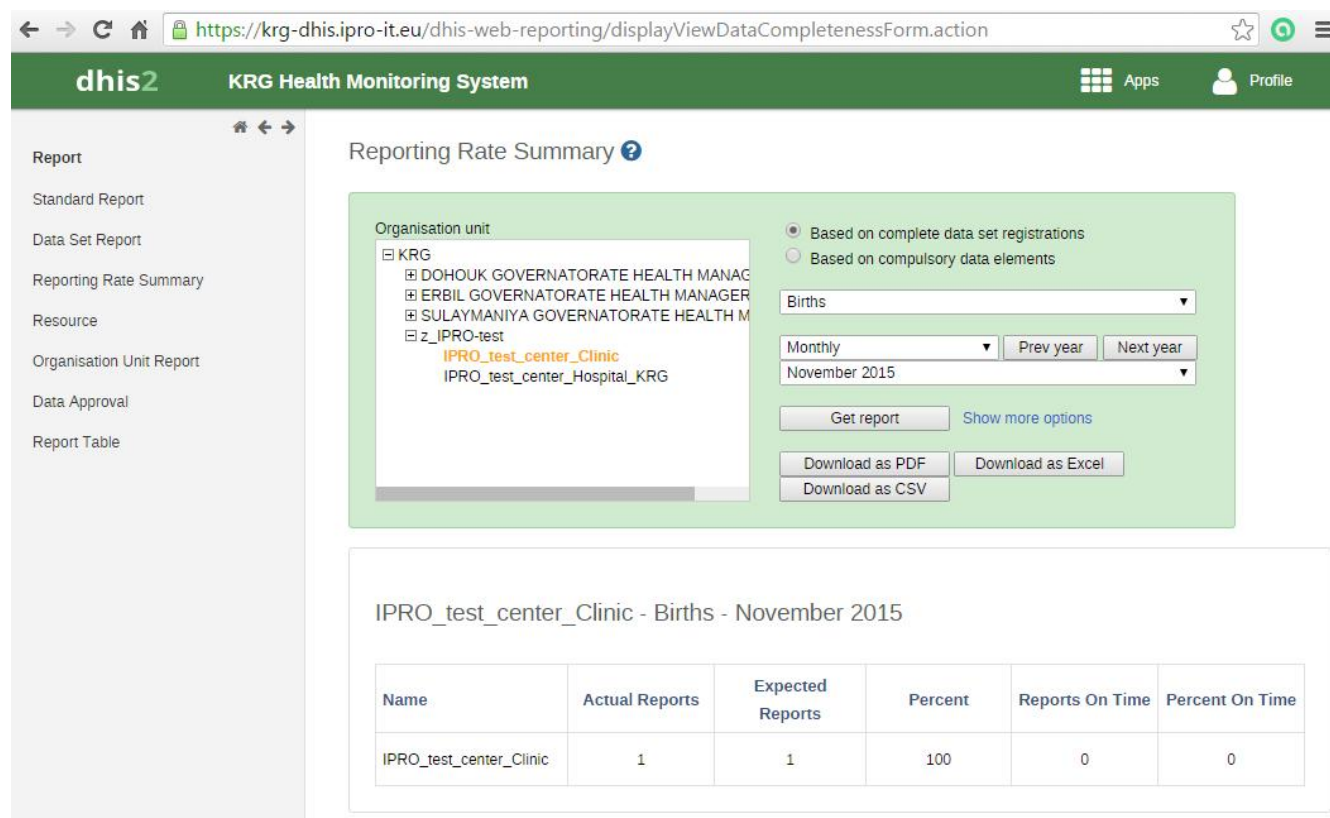
Data Set Report

Reporting Rate Summary

Organisation unit distribution report

Report Table

On the screenshot below you can see an example of the Reporting Rate Summary.



Reporting Rate Summary

Organisation unit

- KRG
  - DOHOUK GOVERNATORATE HEALTH MANAG
  - ERBIL GOVERNATORATE HEALTH MANAGER
  - SULAYMANIYA GOVERNATORATE HEALTH M
  - z\_I PRO-test
    - I PRO\_test\_center\_Clinic**
    - I PRO\_test\_center\_Hospital\_KRG

Based on complete data set registrations  
 Based on compulsory data elements

Births

Monthly

November 2015

[Show more options](#)

I PRO\_test\_center\_Clinic - Births - November 2015

Name	Actual Reports	Expected Reports	Percent	Reports On Time	Percent On Time
I PRO_test_center_Clinic	1	1	100	0	0

Fig. 19

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