Red Cross Red Crescent

nyss

a community-based surveillance platform

USER MANUAL

Updated: **July 2021**

Norwegian **Red Cross** IFRC

This manual is a **tool for all users of Nyss**. It can be used as:

- an introduction and instruction for first-time users
- a reference when preparing and carrying out trainings
- a reference if you experience issues or ambiguities with the platform

To **search** for key words in the pdf-file, press **Ctrl+F**

You can always find the latest, most updated version of the manual at https://www.cbsrc.org/resources

Contents

PART 1

Introduction to CBS and Nyss

1 Community-based surveillance (CBS)

Large outbreaks and epidemics are a threat to the well-being of communities everywhere, but especially for societies where resources are scarce. This makes access to health care challenging and surveillance infrastructure may be limited leaving these communities more vulnerable. By extending surveillance beyond facilities and tapping into the existing volunteer networks in local communities, we can save lives.

CBS is defined as the systematic detection and reporting of events of public health significance within a community by community members. In communities with poor health service coverage and weak surveillance systems, CBS can be used to ensure **early warning and early response** to disease outbreaks and epidemics, both for preparedness and in emergencies.

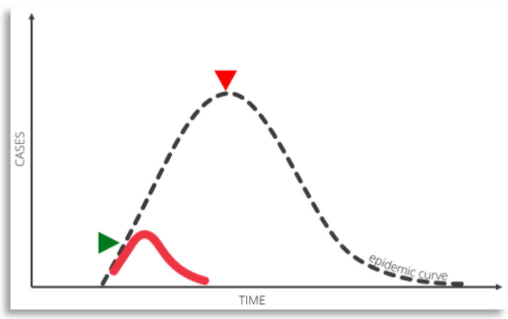


Figure 1: Early warning and early response with CBS

FIGURE 1 shows an epidemic curve, where the epidemic starts to decline and taper off first after an intervention. In contexts where surveillance systems are challenged or missing, a response (▼) often occurs after more time and transmissions have passed, leaving the outbreak detected and responded to at a late stage, when it is more difficult to stop.

By using CBS, interventions can begin at an earlier stage (▶).

NorCross and IFRC have developed several tools to support the implementation of CBS.
You can find them at www.cbsrc.org/resources

www.cbsrc.org also provides more information on NorCross CBS and current implementations.

The ability to scale up CBS-efforts; to cover large areas and to respond quickly – especially during critical times such as during an emergency – demands remote data collection and communication through technology that enables automation of data management processes. As such, Nyss was developed.

2 Nyss – a CBS platform

Norwegian Red Cross has in cooperation with the International Federation of Red Cross and Red Crescent Societies and Belgian Red Cross, developed **an innovative platform for community-based surveillance – Nyss**. Nyss has been created using open source, through extensive collaboration between the technology industry, academia, the Red Cross, and humanitarian sector, and with the support of more than 250 volunteers and contributors from all over the world.

Nyss is a custom software platform for data collection, management, and analysis; tailored to the needs of the Red Cross Red Crescent Movement. Nyss is intended to be the core software solution for CBS movement wide.

Nyss is a Norwegian word. It means to get word or wind of something; to find out about something; to hear of a rumor.

Nyss allows for **real-time detection, reporting, data aggregation and visualization, and sharing of information** on local health risks with relevant actors. In this way, Nyss enables prevention, identification, and response to disease outbreaks, through early warning and early response.

The platform supports Red Cross and Red Crescent volunteers, staff, and delegates, from local to global levels, in decision-making for epidemic response based on reliable information. This ultimately enables **efficient and relevant response to emergencies**.

Volunteers are trained to recognize signs and symptoms of health risks/events that may indicate epidemic-prone diseases and are given a simple mobile phone to report health risks from their community, by sending **short coded SMS**.

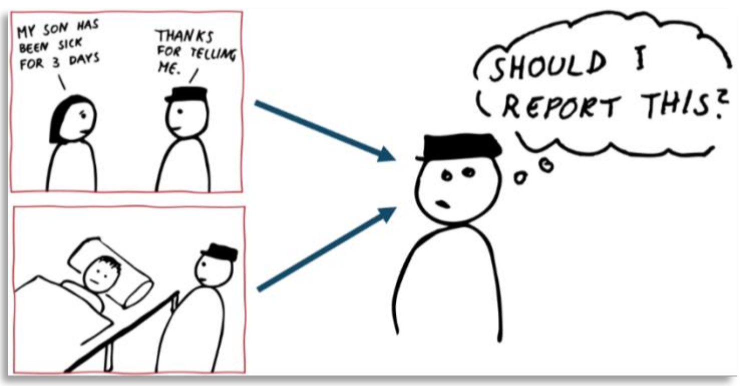


Figure 2: CBS volunteer

Nyss receives the SMSs from community volunteers, analyzes the data, shares analyzed data, and sends **automatic alerts in real-time** to the volunteers' supervisors and health authorities:

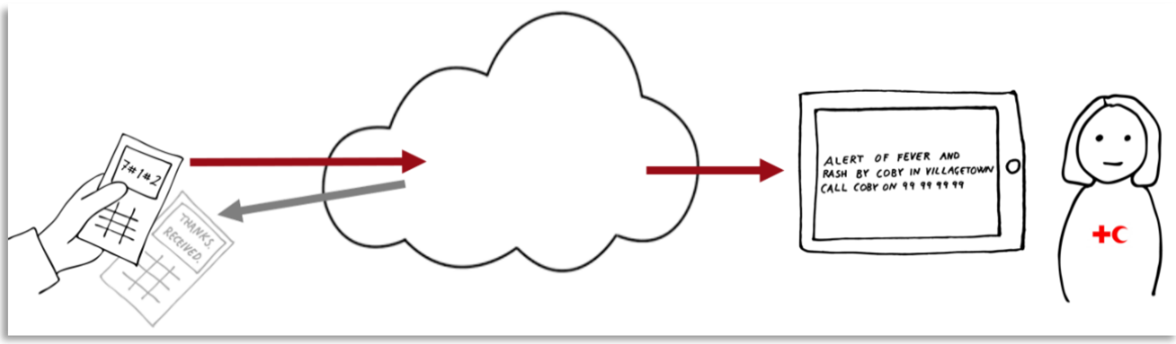


Figure 3: The volunteer reports to Nyss; Nyss analyzes it and automatically alerts to the volunteer's supervisor.

PART 2

Nyss structure and functionality

3 Nyss platform structure

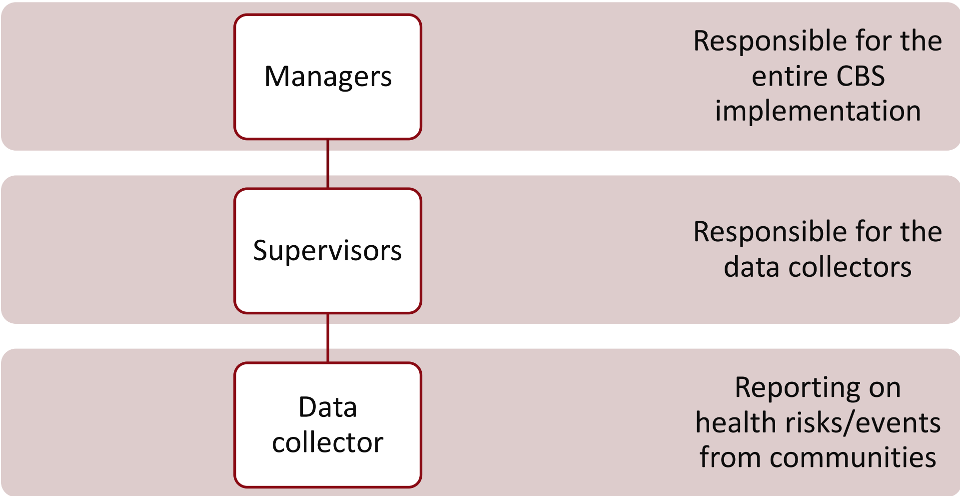
In Nyss, every National Society has their own interface, where you can see information only pertaining to your National Society. This means, that even though Nyss is used in CBS implementations in multiple countries/National Societies, you can only see information pertaining to your own. We call this your **National Society** within Nyss.

Within the National Society, you can create **projects**, which is what enables you to use Nyss for CBS. You may have multiple projects simultaneously, for instance to run both a preparedness and an emergency implementation, or to report on different health risks/events in different locations.

Your National Society and the projects within can be configured to suit your needs, for instance can the platform be displayed in either **English, French, or Spanish** (with more languages to come!). If multiple organizations are collaborating on a CBS implementation, Nyss can be configured to facilitate this as well. Using a **joint project with another organization** ensures that all important health data is shared, while personal data is not (see 13 JOINT PROJECT WITH ANOTHER ORGANIZATION).

The different **user roles** in Nyss all have different access to the information within the platform. By giving those involved in the CBS implementation different user roles, you ensure both data privacy, but also that everyone has the information they need to carry out their job in an efficient manner. The user-based access levels aim at GDPR[1] compliance. Nyss follows a defined hierarchy of user roles and responsibility for the platform usage. These roles have been created to best **reflect the structure in most National Societies**. The main user roles in Nyss are:

[1] The General Data Protection Regulation (GDPR) is a regulation in EU law on data protection and privacy, that became enforceable in 2018.



The community volunteers reporting on health risks/events to Nyss are called **data collectors** within the platform, but do not use or have access to Nyss themselves.

The coming sections will give you an in-depth tour of the main features and structure of Nyss.

3.1 National Society menu and pages

In Nyss, every National Society has their own interface, where you can see information only pertaining to your National Society.

3.1.1 Dashboard

The National Society dashboard displays aggregated data from all projects within the National Society. The dashboard gives an overview of the status, and show:

- An overview of reports, data collectors/points, alerts or data collection point reports, and geographical coverage in numbers.
- A map showing the geographical distribution of reported health risks/events.
- A graph of reported health risks/events by village.

It is possible to filter on dates, group the dates by day or Epi week, location, health risk/event, data collection type, and organization (if more than one organization is involved).

The dashboard is the top menu option in the left side menu, directly under the Nyss logo:

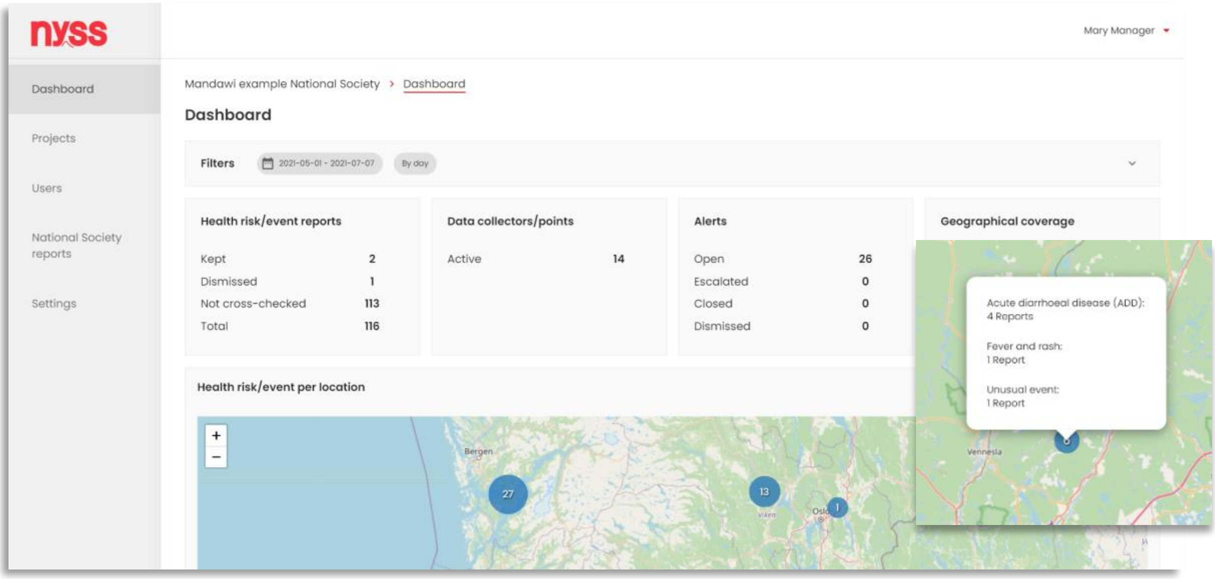


Figure 4: National Society dashboard. Clicking a blue dot on the map will reveal additional info.

READ MORE

8 USE THE DASHBOARDS

3.1.2 Projects

The second option in the left side menu shows an overview of all projects within the National Society. You can see key information about the projects – such as total number of data collectors – and navigate to the different projects by clicking on them:

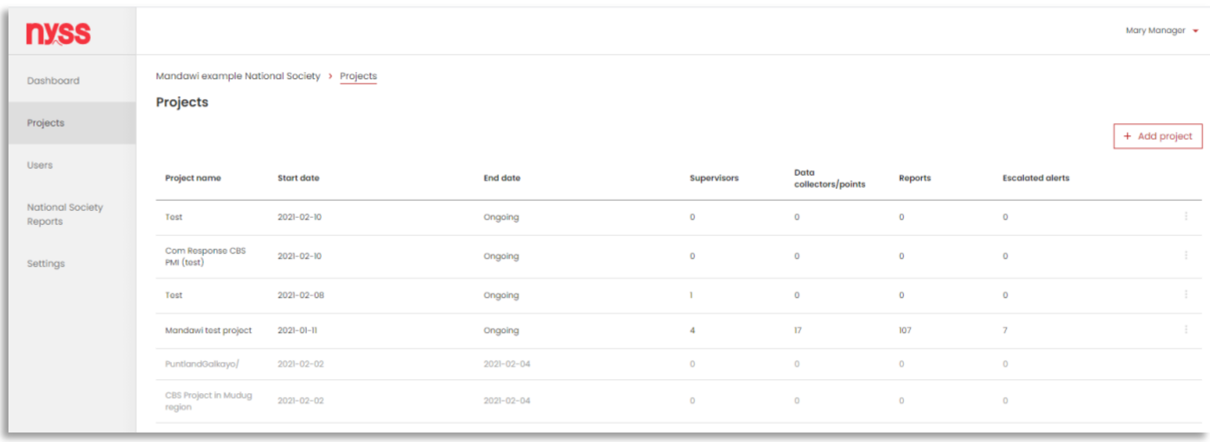


Figure 5: List of projects that are running in the National Society.

READ MORE

6.3 Create a new project

6.6 Edit and close projects

3.1.3 Users

The third menu option shows an overview over all Nyss users within the National Society, and data such as their contact information, role, and whether they are tied to specific organizations and/or projects:

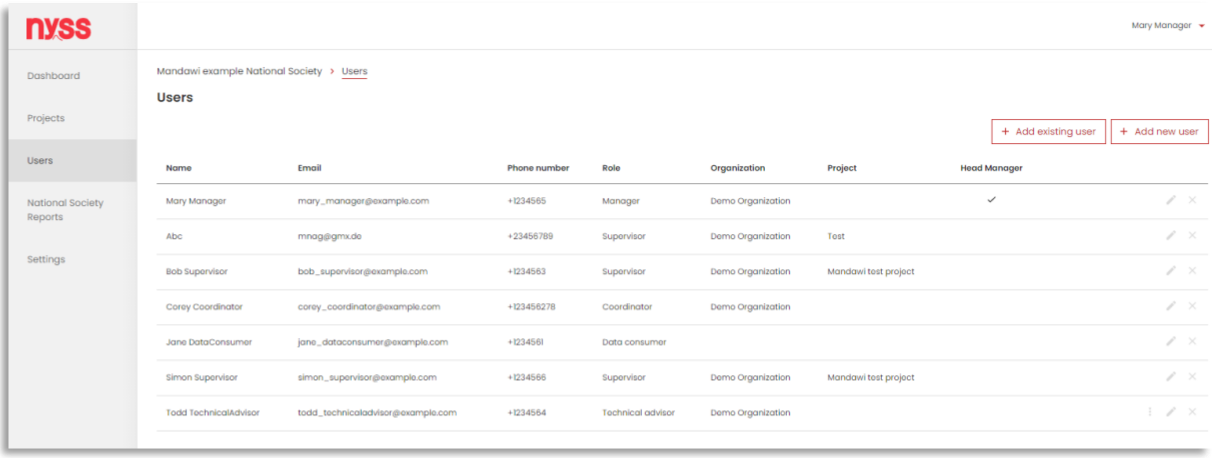


Figure 6: List of users within the National Society.

READ MORE

6.7 Setup of users

3.1.4 National Society reports

The fourth menu option shows a list of all reports that have been sent to Nyss, from all projects within the National Society, sorted by date.

The first tab shows all **correct reports**, meaning reports that are formatted correctly. It is possible to filter on location, health risk/event, data collection type (from data collectors or data collection points), and report cross-checking status:

reports that have been cross-checked and kept or dismissed, or not yet cross-checked (see 9.2.5 CROSS-CHECKING REPORTS).

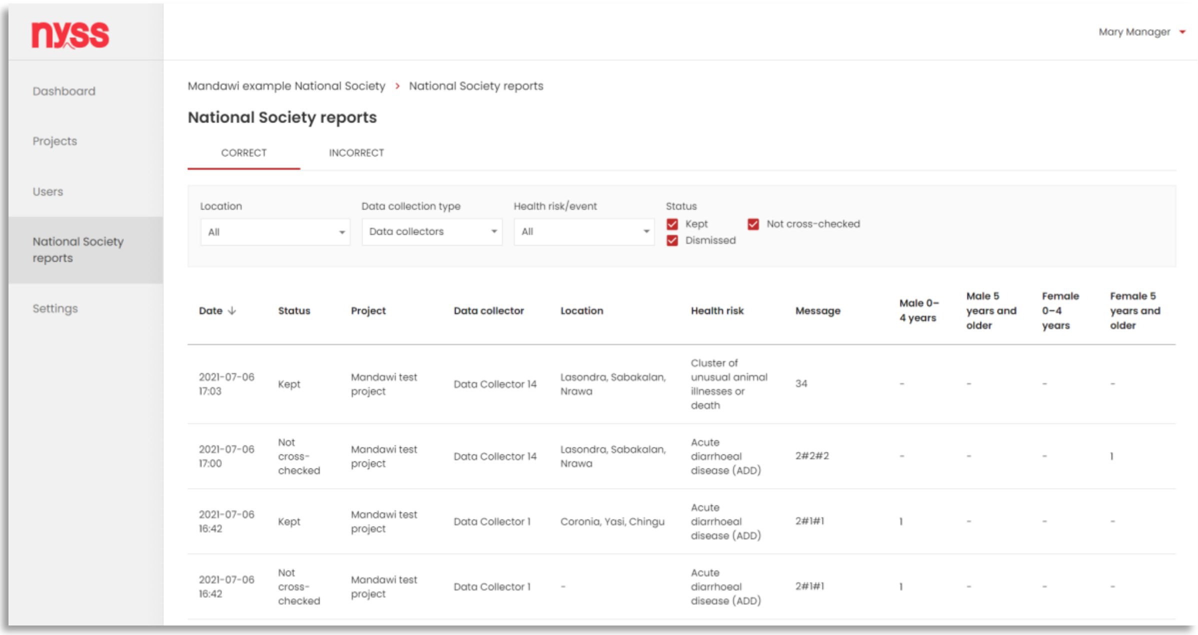


Figure 7: List of correct reports from the National Society projects.

The second tab shows all **incorrect reports**; reports with the wrong format, reports on a health risk number not used in the project, etc. It is possible to filter on location and data collection type, as well as error type:

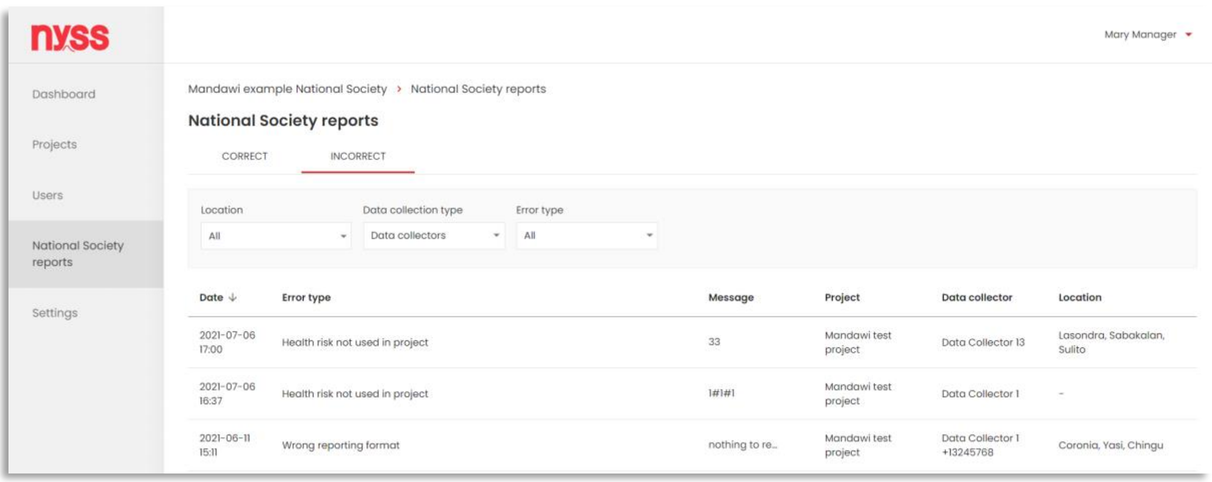


Figure 8: List of incorrect reports from the National Society projects.

READ MORE

9.1 NATIONAL SOCIETY REPORTS

3.1.5 Settings

The last menu option is where the main settings for the National Society is set.

The first tab provides an **overview** of the main settings, such as name, country, and preferred language for Nyss:

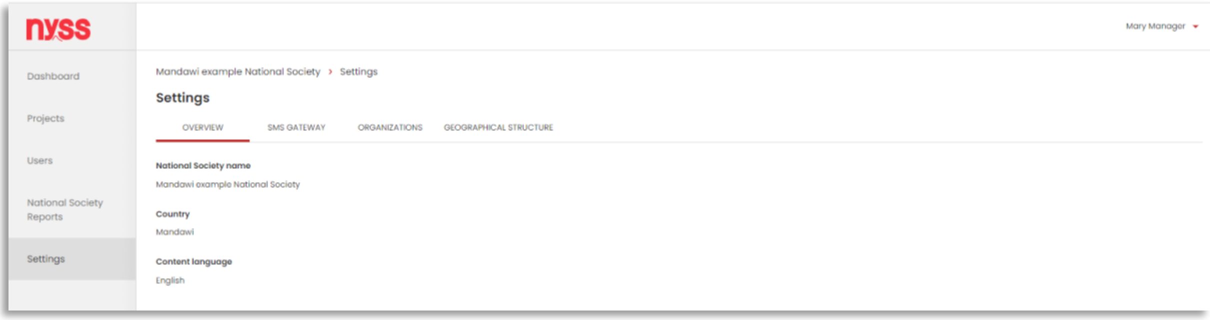


Figure 9: National Society settings, Overview

Under the second tab, the settings for the **SMS gateway** – the hardware device enabling SMS reports to be sent to and from Nyss – are configured:

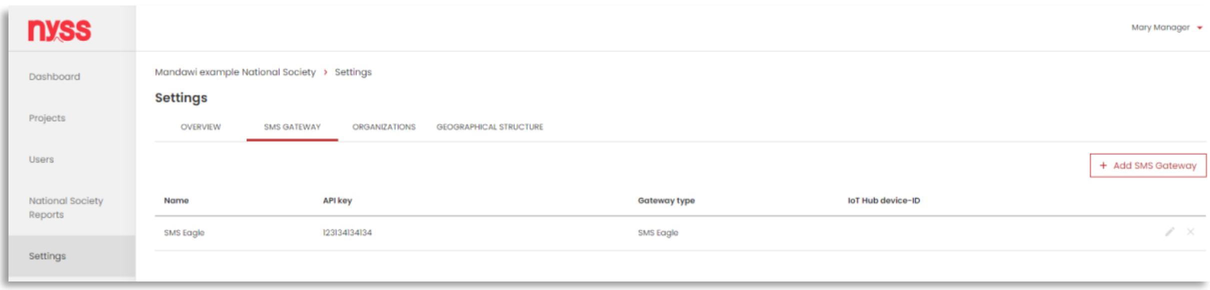


Figure 10: National Society settings, SMS Gateway

The third tab lets you add additional **organizations** for a joint project with another organization in Nyss (if applicable. See 13 JOINT PROJECT WITH ANOTHER ORGANIZATION):

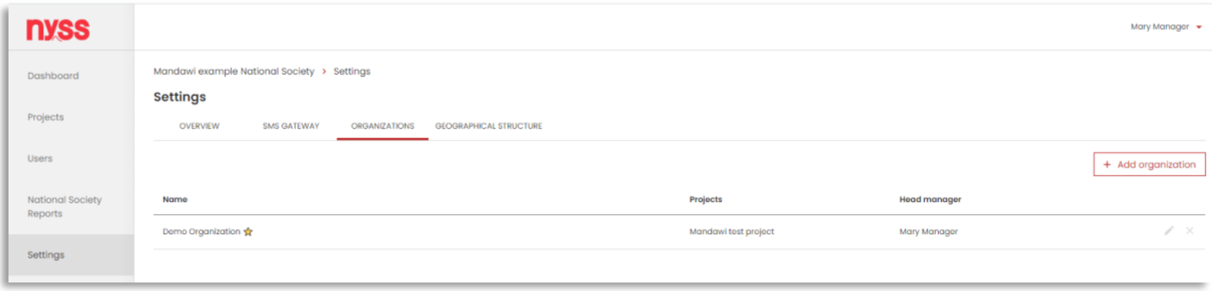


Figure 11: National Society settings, Organizations

The fourth and final tab, lets you manually set up of the **geographical structure** of your implementation location(s):

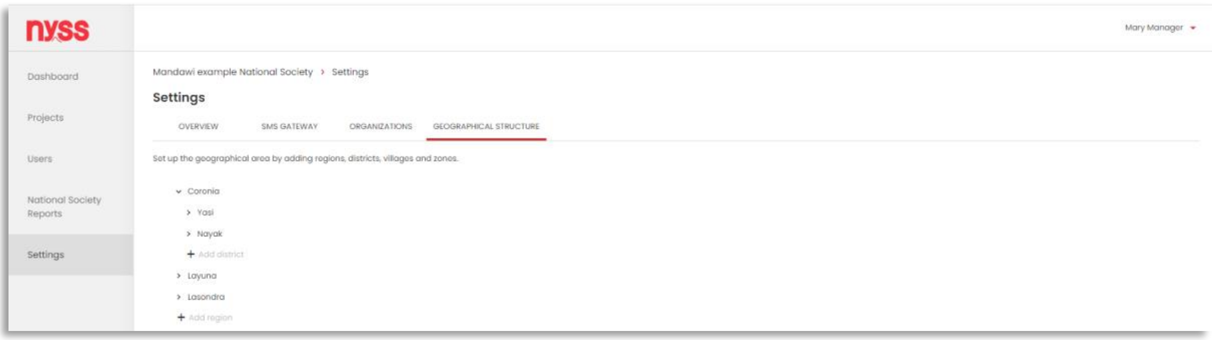


Figure 12: National Society settings, Geographical structure

READ MORE

6

SETUP OF A new implementation

3.2 Project menu and pages

Once a project in the list shown in FIGURE 5 is clicked, the left side menu changes, and now offers different project-level pages:

3.2.1 Project dashboard

The Project dashboard displays data from this specific project. The dashboard gives an overview of the status, and show:

- An overview of reports, data collectors/points, alerts or data collection point reports, and geographical coverage in numbers.
- A map showing the geographical distribution of reported health risks/events.
- Several graphs and tables showing number of reports by health risk/event, reported health risks/events by village, and reported health risk/event by sex and age.

It is possible to filter on dates, group the dates by day or Epi week, location, health risk/event, data collection type, and organization (if more than one organization is involved). You can also choose to only see the data from the reports from data collectors in training.

The project dashboard is the landing page for all supervisors. For other users, the Project dashboard is the top menu option in the left side menu, directly under the Nyss logo, once a project has been selected on the Projects page:

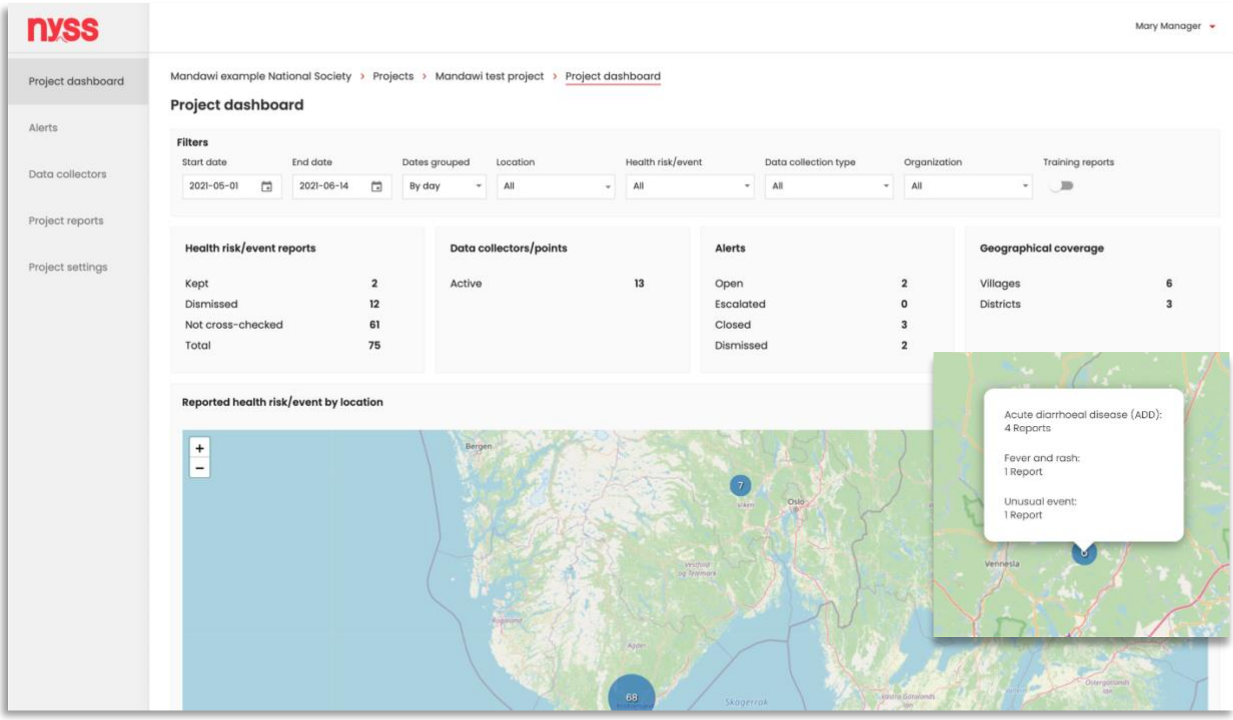


Figure 13: Project dashboard, top section. Clicking a blue dot on the map will reveal additional info.

At the bottom of the page there is a **Generate PDF** button, so that the dashboard can be easily shared with those that do not have access to Nyss:

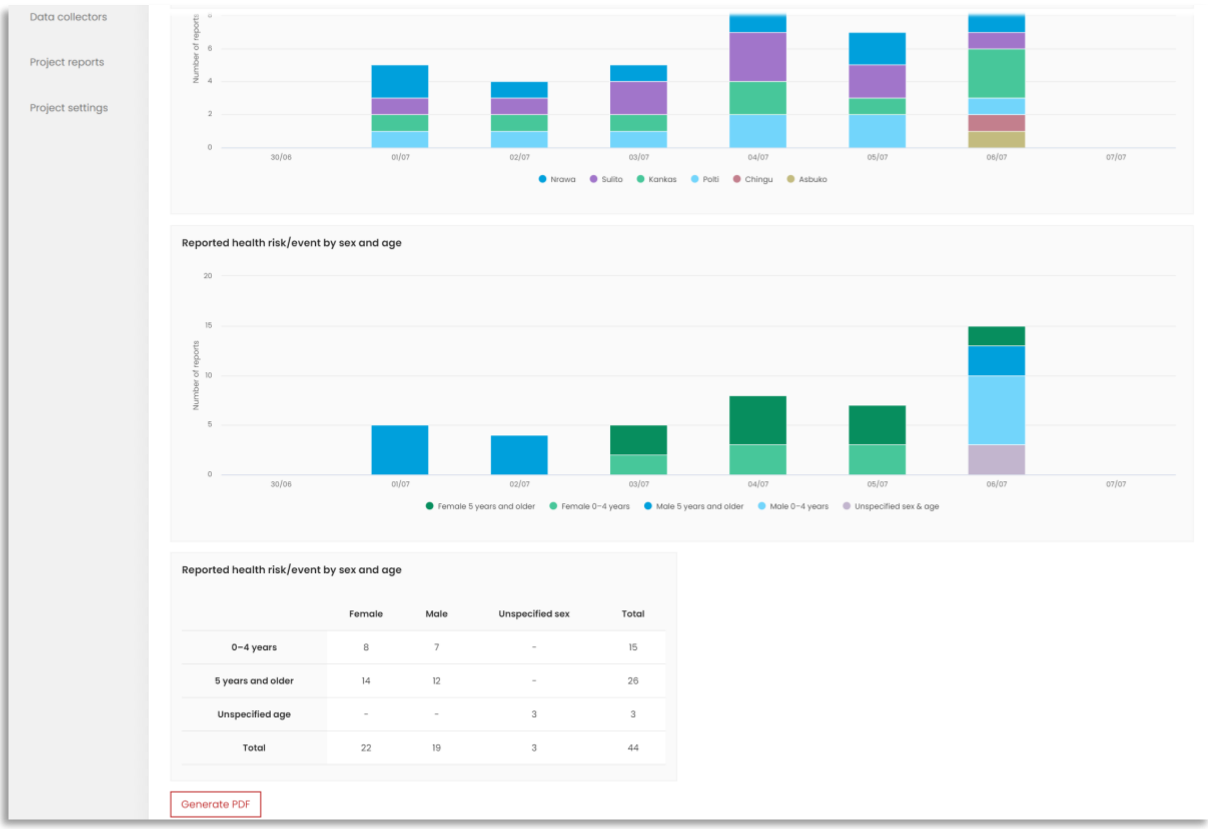


Figure 14: Figure 10: Project dashboard, bottom section.

READ MORE

8

3.2.2 Alerts

An alert is what Nyss automatically triggers when a certain amount of a health risk/event is being reported, within a certain timeframe and geographical area.

Alert rules are set so that alerts can be triggered on a single incoming report, or after X amount of reports is received. If it is set to trigger after X amount of reports are received, Nyss looks for other reports of the given health risk/event, within the set time and distance perimeters. When enough reports are found, an alert is automatically triggered.

The **alert rule**, where the amount of reports, the timeframe and geographical perimeters are set, is configured in the project settings.

The second menu option in the left side menu, shows an **overview over all alerts** that have been triggered within the project. They are sorted by their status but can also be sorted by the time the alert was triggered. Additionally, the alerts can be filtered on location, health risk/event, and alert status, as well as exported to Excel:

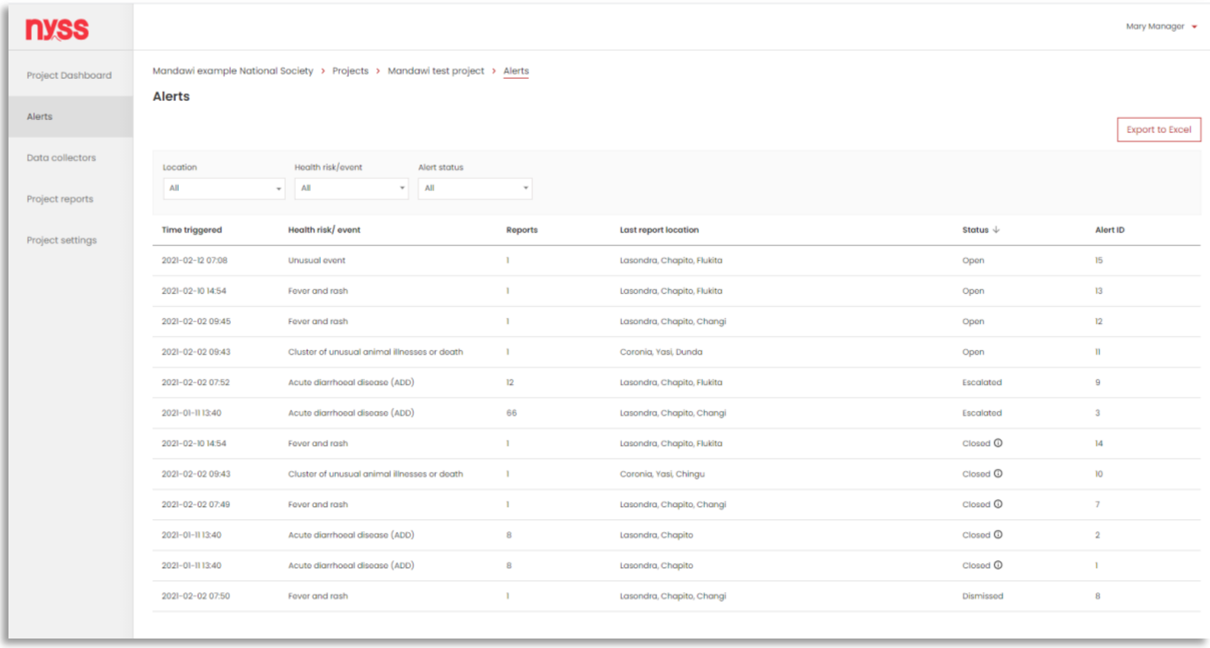


Figure 15: List of alerts triggered within the project.

READ MORE

6.3.1.3 SET ALERT RULE
10 WORKING WITH ALERTS

3.2.3 Data collectors

The third menu option shows an **overview of all data collectors** (volunteers) and/or data collection points (e.g., oral rehydration stations in an emergency CBS implementation).

The first tab, labeled **Collectors/Collection points**, displays a list of all data collectors and/or data collection points:

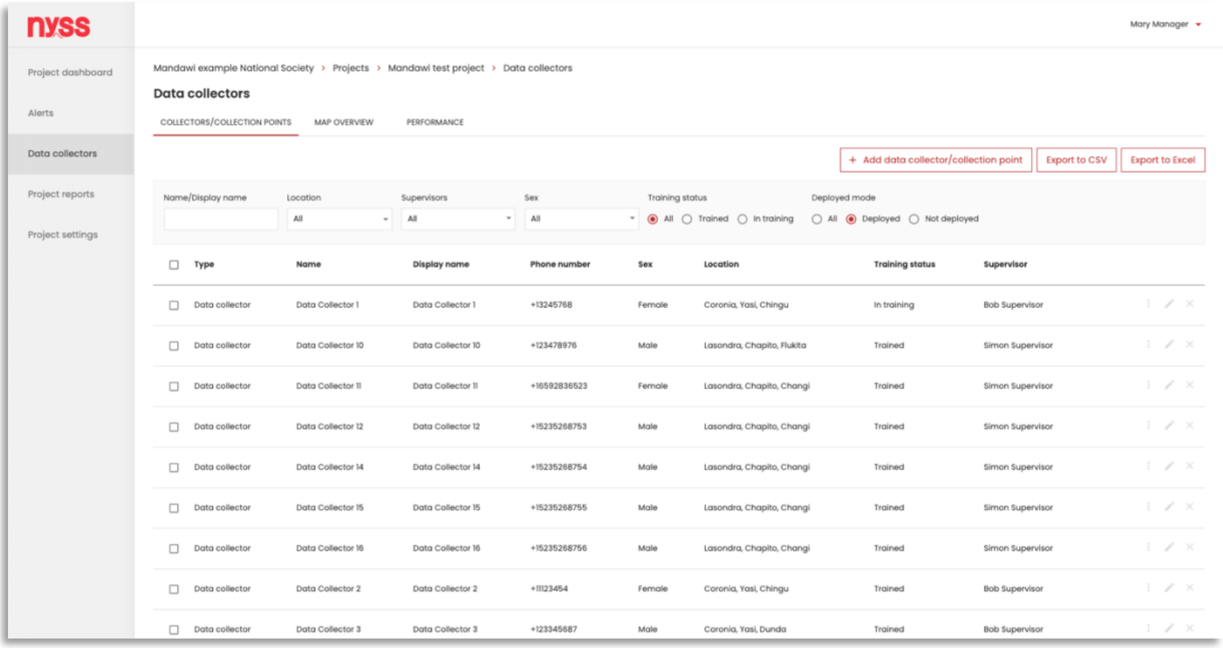


Figure 16: List of data collectors and/or data collection points.

The filter at the top enables you to search for a specific name, filter on location, supervisor, or sex, as well as choosing to see only trained volunteers or those currently in training, and deployed volunteers (expected to report) or not. This list can also be exported into both Excel and CSV formats.

Data collectors can be added and edited from this page.

READ MORE

7

The second tab, labeled **Map overview**, displays all data collectors and/or data collection points in a map, including information on their reporting:

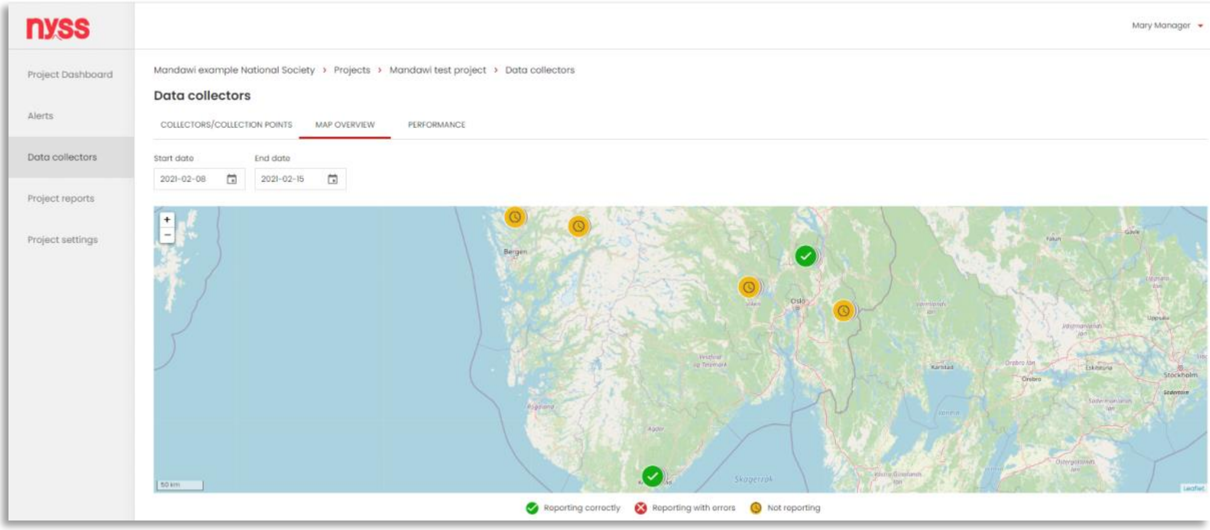


Figure 17: Map on data collectors and/or data collection points.

The map overview can be zoomed in on for additional details and filtered on dates.

The third and final tab, labeled **Performance**, display the data collectors' performance:

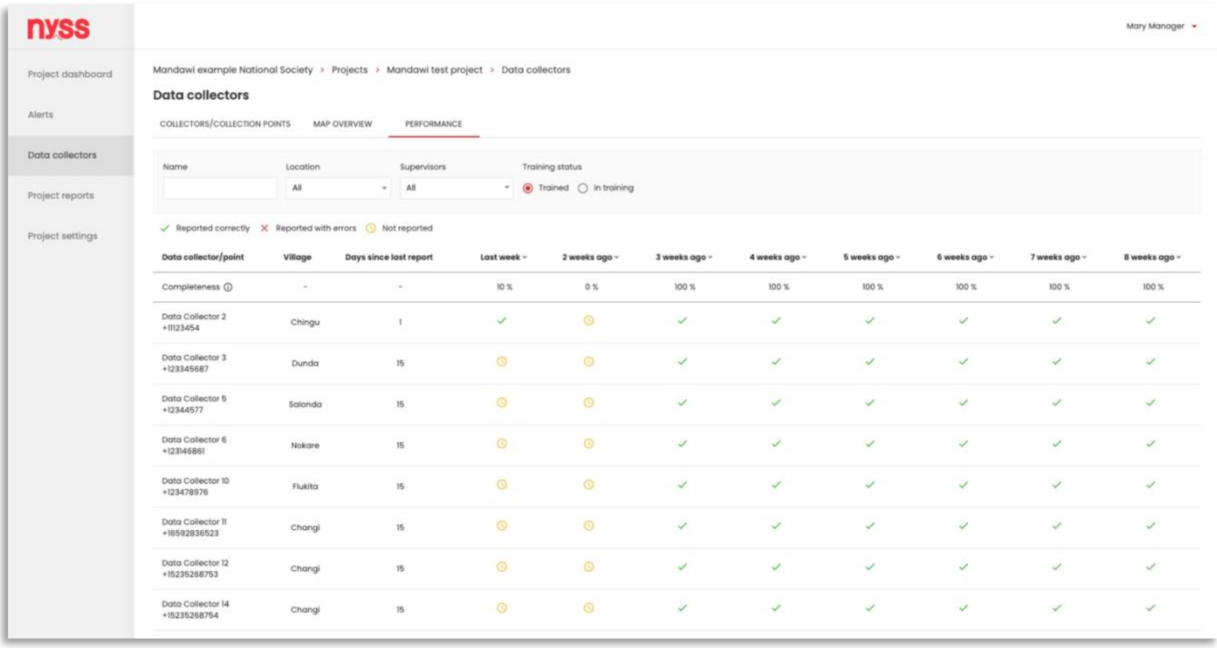


Figure 18: Performance table for data collectors

The table displays information on their reporting throughout the last 8 weeks, so that it is easy to notice if/when a data collector needs followed up or retrained. The table also includes a completeness indicator for the project per week. The filter at the top lets you search for a specific name, and filter on location and/or which supervisor the data collector "belongs" to, as well as viewing trained data collectors or those currently in training.

READ MORE

7 DATA COLLECTORS AND DATA COLLECTION POINTS

4.3 USER ROLES AND ACCESS: SUPERVISOR

3.2.4 Project reports

The fourth menu option has two tabs. The **Correct** tab shows all reports that are formatted correctly, sent from data collectors in this project only, sorted by date. It is possible to filter on location, health risk/event and data collection type, as well as report cross-checking status: reports that have been cross-checked and kept or dismissed, or not yet cross-checked (see 9.2.5 CROSS-CHECKING REPORTS). You can also choose to see training reports. The list can be exported to Excel and CSV, and reports can be sent from this page:

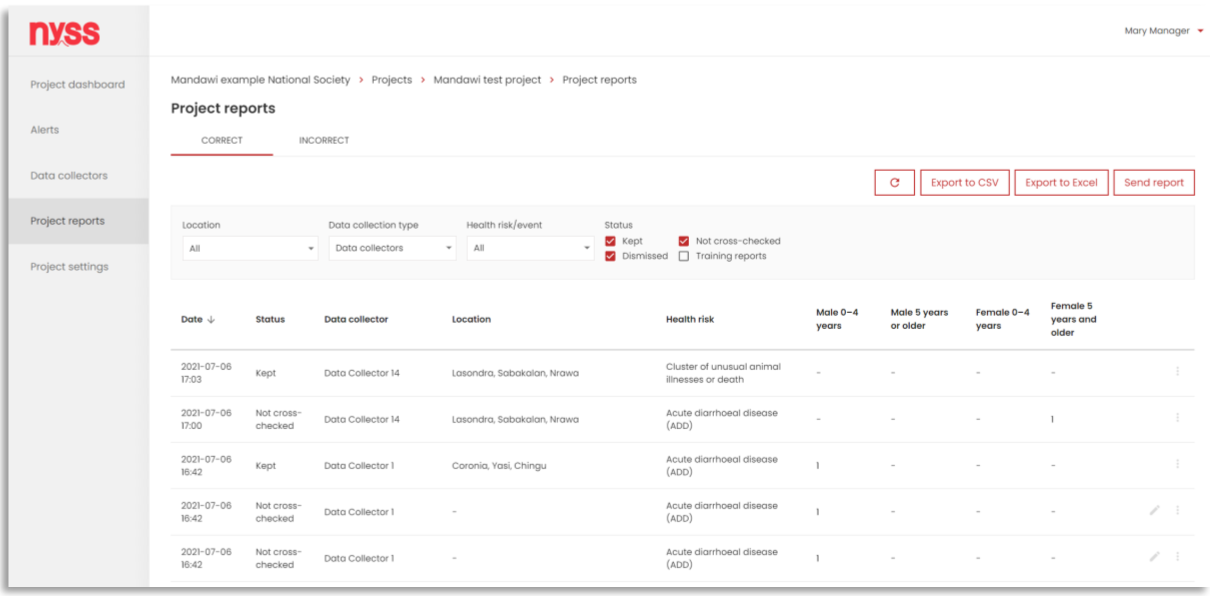


Figure 19: List of correct reports within the project.

The **Incorrect** tab shows all incorrect reports; reports with the wrong format, reports on a health risk number not used in the project, etc. It is possible to filter on location, data collection type, and error type. You can also choose to see real and/or training reports:

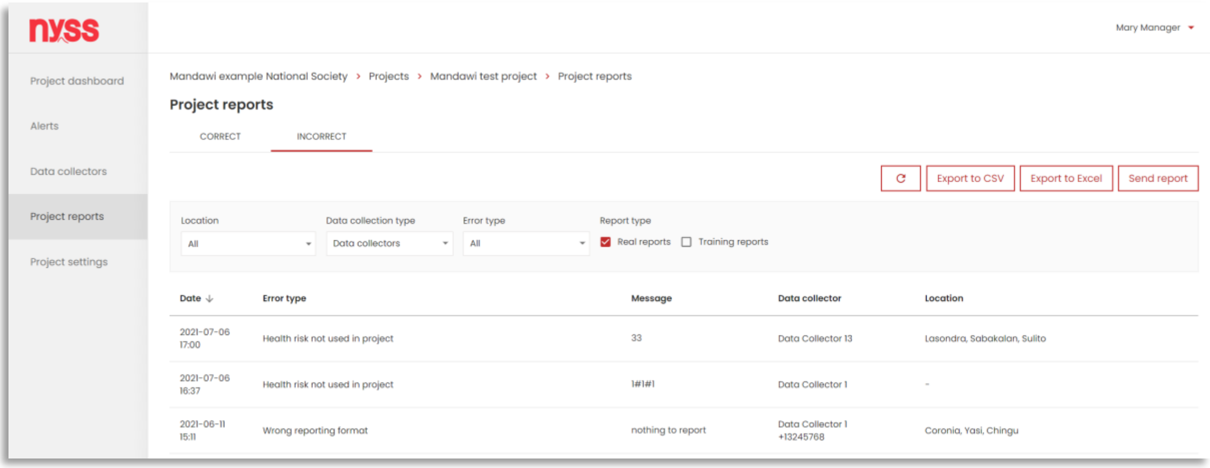


Figure 20: List of incorrect reports within the project.

READ MORE

9.2 PROJECT REPORTS

3.2.5 Project settings

The last menu option is **Project settings**, where the following can be configured under the first tab: project name, time zone, whether the project is a joint project with another organization, and which health risks/events the data collectors will be reporting on:

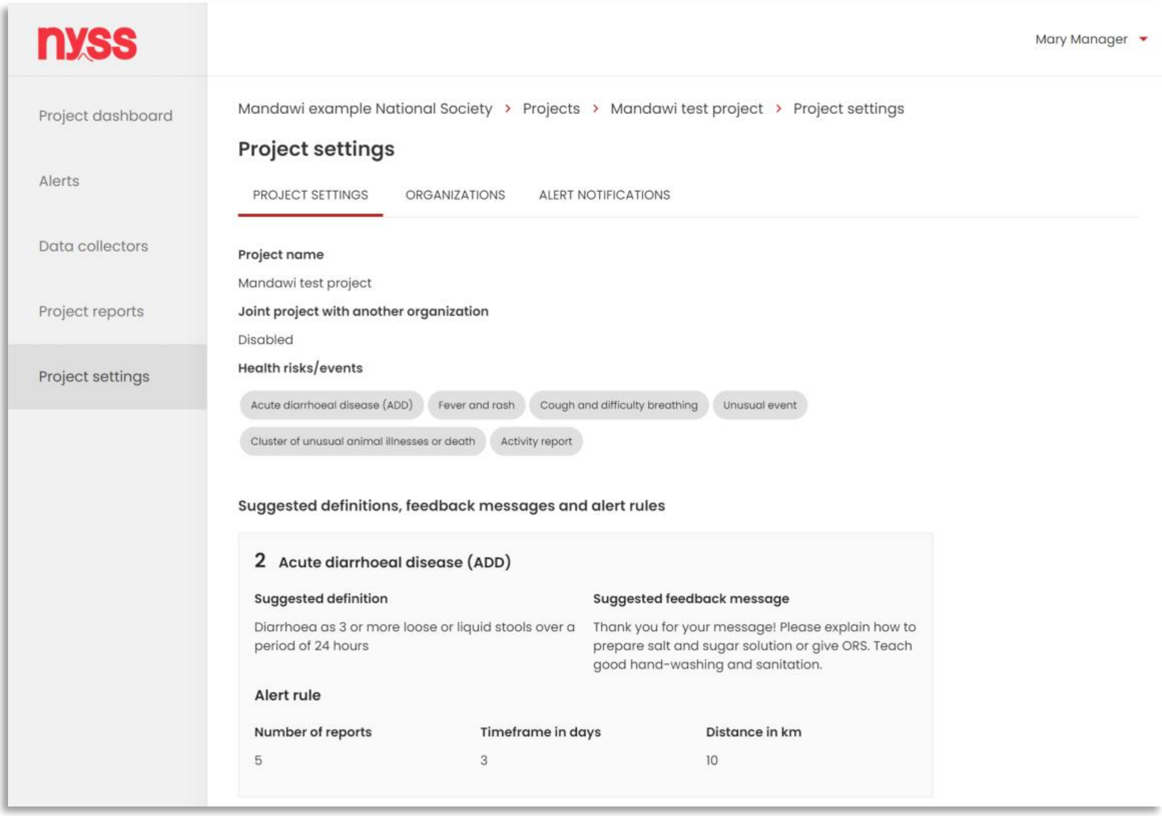


Figure 21: Project settings

These health risks/events can be picked from a predefined list, established by the Red Cross Red Crescent CBS Technical Working Group.

Once the health risks/events have been added, the suggested definition and feedback message can be changed, for instance to adapt it to locally known wording or local languages. The alert rule is also set here.

READ MORE

6.3 CREATE A NEW PROJECT

On the second tab, labeled **Organizations**, you may see which organizations (that have already been added in the National Society settings) that are involved in the project:

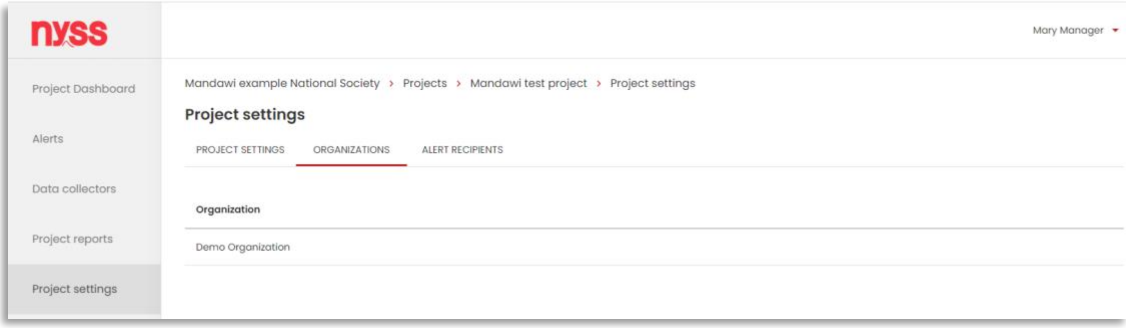


Figure 22: Project settings, Organizations tab.

On the third tab, labeled **Alert notifications**, it is possible to configure who should be contacted,

a) when an alert has been triggered, but nobody has escalated or dismissed it (Unhandled alert notification recipient)
b) when an alert has been cross-checked and escalated (Escalated alert notification recipient, shown in the table):

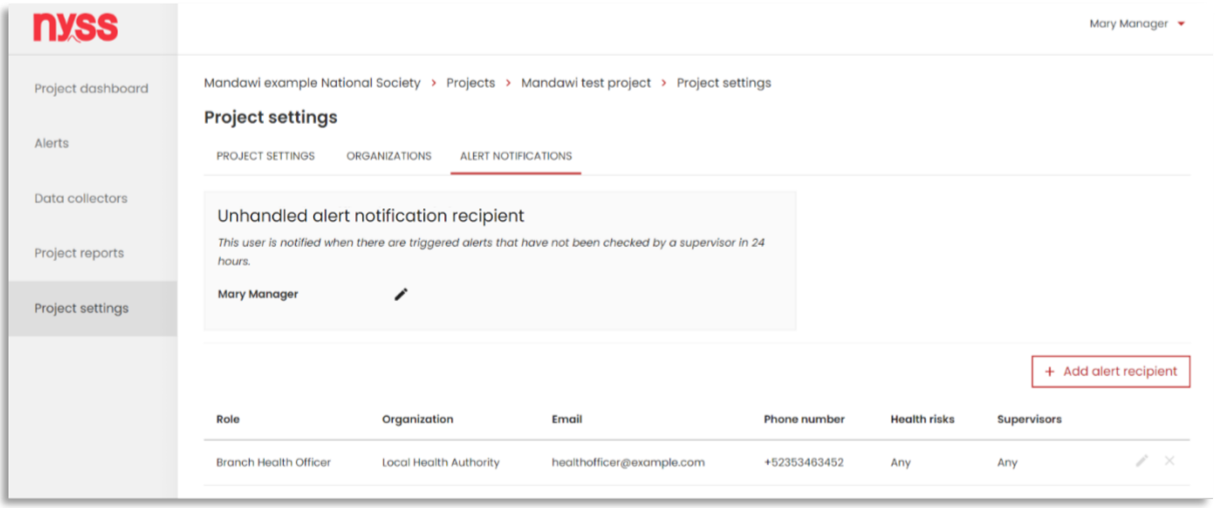


Figure 23: Project settings, Alert notifications tab.

Escalated alert notification recipients can be configured to be notified of all alerts, or only alerts regarding specific health risks/events or connected to specific supervisors (and thus, geographical areas).

READ MORE

ADD another organization

4 User roles and access

As mentioned above, Nyss follows a defined **hierarchy of user roles and responsibilities** for the platform usage.

Some roles are needed for CBS to work with Nyss:

- A **head manager** responsible on behalf of the National Society,
- volunteers, in Nyss called **data collectors**, in the communities that will not use Nyss themselves, but will report to the platform, and
- **supervisors** to follow up on data collectors and their reports.

Additionally, these optional roles are often added:

- additional **managers**,
- **head supervisors**, if there are supervisors responsible for other supervisors in the project,
- a **technical advisor** if the National Society is getting external technical support from a Partner National Society, IFRC or ICRC, and/or
- **data consumers** if partners and stakeholders such as the Ministry of Health want access to anonymized information.

What follows is a short description of each role and their access:

4.1 Manager

Managers are often **employees** within the National Society and have a manager role in their existing National Society structure. Managers are **responsible** for the overall setup, implementation, monitoring, and closing of CBS and Nyss. Sometimes, managers are in charge of certain supervisors each (see 4.3 SUPERVISOR).

Managers have the following access:

National Society level	Project level
YES	YES
View and edit	*View and edit*

Their landing page is the National Society dashboard.

4.1.1 Head manager

The head manager is **the first user** that is added to a National Society. This role can be filled by either an internal manager (preferrable) or an external technical advisor (see 4.2 TECHNICAL ADVISOR).

The head manager's main purpose is to **accept the Nyss platform agreement** upon first login. By doing so, they confirm that they have the legal authority to act on behalf of the National Society and accept the agreement regarding conditions for data protection for use of Nyss.

The head manager will usually add additional users, at least all managers, to Nyss.

Head managers have the same access and landing page as managers (see 4.1 MANAGER).

4.2 Technical advisor

Technical advisors are often **delegates or staff from a Partner National Society, IFRC, or ICRC**. They have expertise in public health and CBS and give technical support to the National Society implementing Nyss. In an emergency context, technical advisors can also deploy CBS with Nyss and act as managers, including head manager.

Technical advisors have the same access and landing page as managers (see 4.1 MANAGER).

4.3 Supervisor

Supervisors are most often **local employees or long-standing volunteers** within the National Society. Supervisors are **assigned to one specific project** within a National Society.

Supervisors are **responsible for a group of data collectors** within a geographical area. They are responsible for training, supervision, and support of the data collectors, monitoring and cross-checking reports sent by the data collectors, and monitoring and cross-checking alerts triggered by these reports. **Cross-checking** ensures that the reports a) meet the health risk/event definition the data collectors have been trained to detect and b) were sent on purpose. Cross-checking – contacting the data collector who sent the report – is usually done **via phone**, or however decided for the project. The outcome, however, is recorded in Nyss.

Supervisors have the following access:

National Society level	Project level
NO	YES*
No access	*View and edit* **when assigned*

Their landing page is the project dashboard.

4.3.1 Head supervisor

In some projects there is a need for an extra level of responsibility between supervisors and managers. Head supervisors can be connected to data collectors directly, but they can also have other supervisors linked to them. The head supervisor can then see data pertaining to these supervisors, and all data collectors they are responsible for. The head supervisor is an optional user role.

Head supervisors have the same access and landing page as supervisors (see 4.3 SUPERVISOR).

4.4 Data consumer

Data consumers are **external parties** who have been granted access to the information, for instance the Ministry of Health, local/regional health authorities, other governmental authorities, or other partners/organizations you collaborate with, but that are not directly involved in the data collection.

Before a data consumer can get access to Nyss, the planning and design of CBS should be done in collaboration with the Ministry of Health or relevant authorities in the respective country; preferably the CBS protocol should be signed by the Ministry of Health.

Data consumers have the following access:

National Society level	Project level
PARTIALLY	PARTIALLY
View access to dashboard + list of projects	*View access to dashboard*

Their landing page is the National Society dashboard.

5 Report types

There are different types of reports that can be sent to Nyss and that the project can choose to use:

5.1 Regular / single report

A single report consists of **one number** representing the health risk/event detected.

For instance, if a data collector detected a cluster of three or more animals with illness or sudden deaths that is unusual and unknown cause, within one small village area in the past two week period, that would match the definition of health risk 34, and they would send this SMS:

Figure 24: Example of single report

Single reports can be used for both **human and animal health risks**.

5.2 Regular / single report with sex and age

If the health risk is related to a person, e.g. a human health risk, information about the sex and age group can be added, if this is decided as a standard reporting format by the project.

Sex and age are also represented with numbers:

- **Sex** is represented by 1 = male or 2 = female
- **Age group** is represented by 1 = 0-4 years old or 2 = 5 years and older

The numbers are then separated by hashes and must follow the structure of health risk/event # sex # age.

For instance, if a data collector detected a four-year-old girl that was showing signs and symptoms of coughing and having difficulty breathing (health risk 9), they would send this SMS:

Figure 25: Example of single report with sex and age, related to a person.

5.3 Aggregated reports

An aggregated report is one report, acting as **a summary of several cases**, and can be used if this is decided as a standard reporting format by the project.

If a data collector sees a high number of health risks/events in their community – and particularly during an outbreak – they can send aggregated reports at the end of the day instead of multiple single reports.

The change from single to aggregate reports can be made in the middle of a project, and is often decided by a manager after analysis of incoming data (often when there is a steep increase in cases).

Aggregated reports consist of 5 numbers:

- the health risk/event
- number of males 0-4 years old
- number of males 5 years and older
- number of females 0-4 years old
- number of females 5 years and older

For instance, if in a day a data collector detected signs and symptoms of coughing and having difficulty breathing (health risk 9) in two males age 0-4, one male age 5 or older, six females age 0-4 and four females age 5 or older, they would send this SMS:

Figure 26: Example of aggregated report

The aggregate report always needs the 5 numbers separated by hashes and must follow the structure of health risk/event # males 0-4 years old # males 5 years and older # females 0-4 years old # females 5 years and older.

This also applies even if there are 0 cases in any sex/age group: If the symptoms reported on in FIGURE 26 were only seen in females, the report would have been as follows: 9#0#0#6#4

5.3.1 DCP/ORP report

Nyss is also designed to be the reporting mechanism for **oral rehydration points** (ORPs) during diarrheal outbreaks. When used for this, **data collection points** (DCPs) are registered instead of individual data collectors.

DCPs send aggregated reports at the end of the day, but **report on more information** compared to community data collectors. Using the information from the reporting card used at ORPs, a DCP/ORP report also includes:

- Number of people referred to health facility
- Number of deaths reported to the ORP
- Number of people coming from other villages

These three points are added as additional numbers at the end of the aggregated report, so that the DCP/ORP report always has 8 numbers separated by hashes:

health risk/event # males 0-4 years old # males 5 years and older # females 0-4 years old # females 5 years and older # people referred # people died # people from other villages

An example report could be: 1#5#15#3#17#5#2#6. Here we can see that it has been reported on acute watery diarrhea (health risk 1), 5 males age 0-4, 15 males age 5 or older, 3 females age 0-4 and 17 females age 5 or older. Additionally, 5 people were referred to a health facility, 2 deaths were reported to the ORP and 6 people came from other villages.

5.4 Activity / zero report

If the data collector has seen no health risks/events in one week (or any other agreed upon time period), they send an activity/zero report (99).

The activity/zero report lets the supervisor know that the data collector is still active within their community, but that there has been nothing to detect.

5.5 Feedback message

Data collectors receive feedback messages from Nyss, letting them know that the report is successfully received. The feedback message can also contain practical advice on how to respond to the reported health risk/event:

Figure 27: Feedback message.

PART 3

Setup of Nyss

6 Setup of a new implementation

When implementing CBS with Nyss, some initial setup needs to be done in the platform.

6.1 Creating the National Society

A National Society in Nyss is **created by the NorCross CBS team**, upon request from a National Society, a partner National Society, IFRC, ICRC or external partners. Prior to the request, they must have conducted a **CBS needs and feasibility assessment**, where Nyss has been established as the preferred solution for data collection and analysis. Preferably, they have also completed (or at least started to develop) a **CBS protocol** for the implementation.

The CBS Assessment Guide and the CBS Protocol Template can be accessed in the CBS Resource library: www.cbsrc.org/resources

When creating the National Society, the NorCross CBS team will **configure the basic settings** (see 3.1.5 SETTINGS), such as National Society name (based on what the requesting party prefers), country and content language.

The NorCross CBS team will usually also support you in the **setup of the SMS gateway** (see 14 SETUP OF NYSS HARDWARE).

Finally, the NorCross CBS team will **add the first user**: the head manager.

6.1.1 Log into Nyss

The following user roles can do this:
all users

Once you have been added as a user in Nyss, you will receive an email from the platform. It will look similar to this:

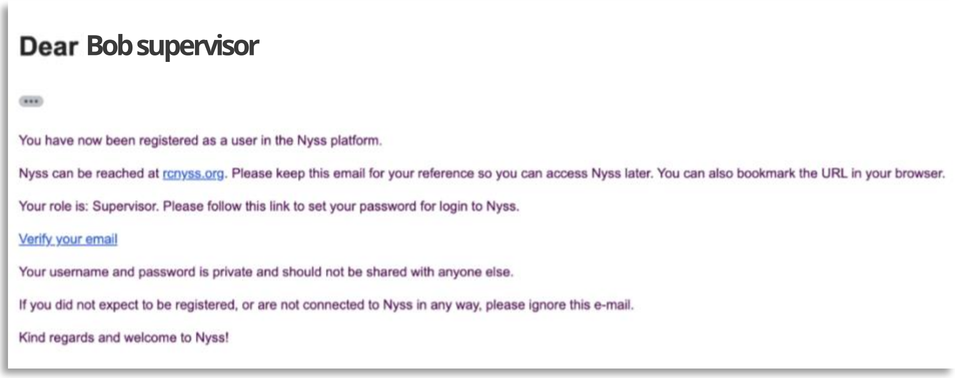


Figure 28: Confirmation email to new Nyss users.

The email includes the link to Nyss, and a link to set your password for Nyss. The link takes you to a page where you are asked to set your password before logging in:

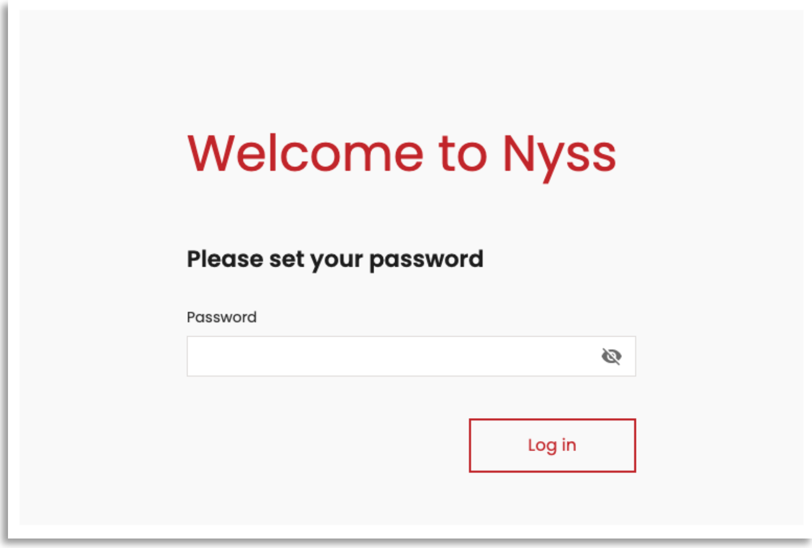


Figure 29: Set password for Nyss.

Once your passport is set, you will be able to log in from www.rcnyss.org:

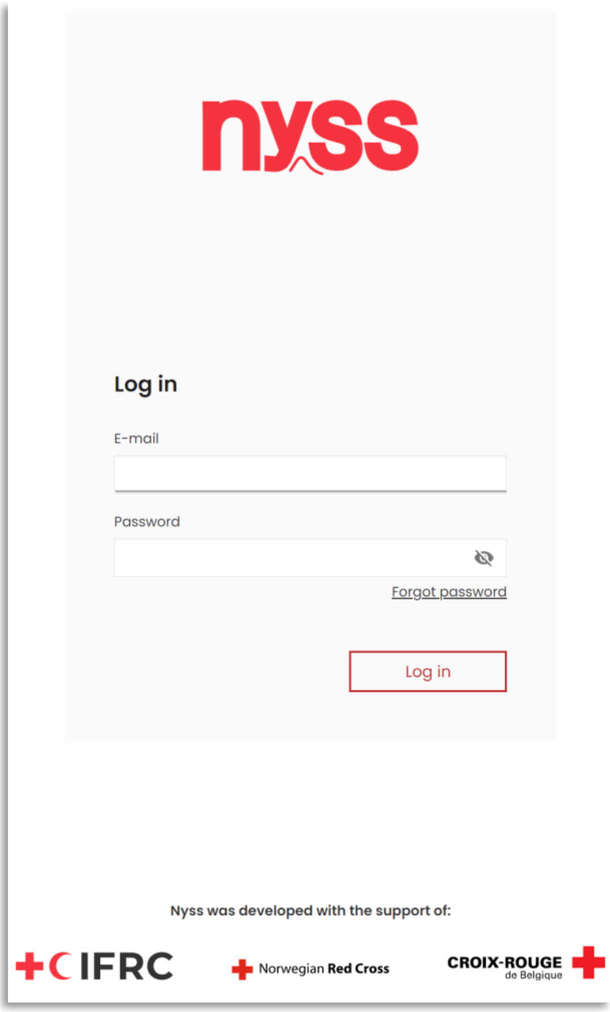
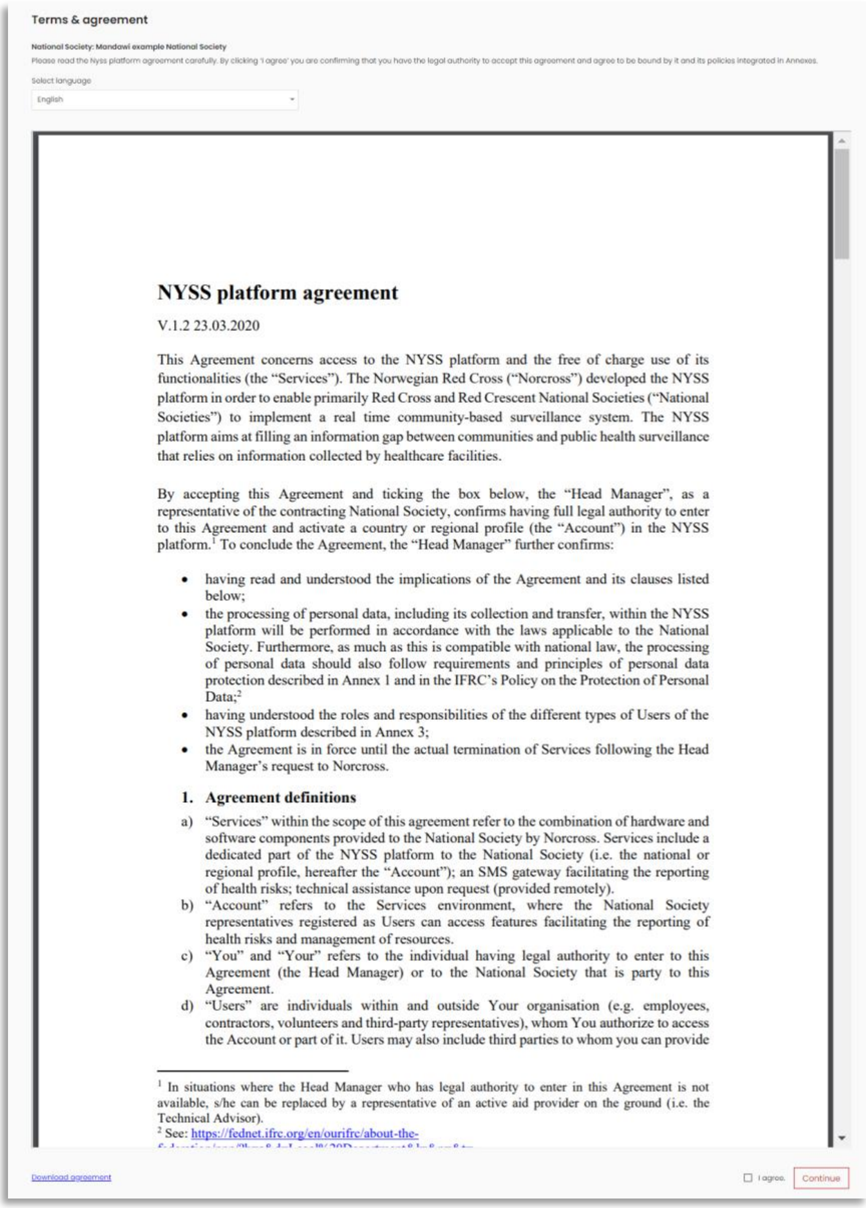


Figure 30: Nyss login page.

6.1.1.1 Accept Nyss platform agreement

The following user roles can do this:
head manager

This is only done by the head manager, and only the first time a new head manager logs in (or whenever there is an updated version of the agreement). The agreement appears when logging in:



NYSS platform agreement

V.1.2 23.03.2020

This Agreement concerns access to the NYSS platform and the free of charge use of its functionalities (the "Services"). The Norwegian Red Cross ("Norcross") developed the NYSS platform in order to enable primarily Red Cross and Red Crescent National Societies ("National Societies") to implement a real time community-based surveillance system. The NYSS platform aims at filling an information gap between communities and public health surveillance that relies on information collected by healthcare facilities.

By accepting this Agreement and ticking the box below, the "Head Manager", as a representative of the contracting National Society, confirms having full legal authority to enter to this Agreement and activate a country or regional profile (the "Account") in the NYSS platform.[1] To conclude the Agreement, the "Head Manager" further confirms:

- having read and understood the implications of the Agreement and its clauses listed below;
- the processing of personal data, including its collection and transfer, within the NYSS platform will be performed in accordance with the laws applicable to the National Society. Furthermore, as much as this is compatible with national law, the processing of personal data should also follow requirements and principles of personal data protection described in Annex 1 and in the IFRC's Policy on the Protection of Personal Data;[2]
- having understood the roles and responsibilities of the different types of Users of the NYSS platform described in Annex 3;
- the Agreement is in force until the actual termination of Services following the Head Manager's request to Norcross.

1. Agreement definitions

a) "Services" within the scope of this agreement refer to the combination of hardware and software components provided to the National Society by Norcross. Services include a dedicated part of the NYSS platform to the National Society (i.e. the national or regional profile, hereafter the "Account"); an SMS gateway facilitating the reporting of health risks; technical assistance upon request (provided remotely).

b) "Account" refers to the Services environment, where the National Society representatives registered as Users can access features facilitating the reporting of health risks and management of resources.

c) "You" and "Your" refers to the individual having legal authority to enter to this Agreement (the Head Manager) or to the National Society that is party to this Agreement.

d) "Users" are individuals within and outside Your organisation (e.g. employees, contractors, volunteers and third-party representatives), whom You authorize to access the Account or part of it. Users may also include third parties to whom you can provide

[1] In situations where the Head Manager who has legal authority to enter in this Agreement is not available, s/he can be replaced by a representative of an active aid provider on the ground (i.e. the Technical Advisor).

[2] See: https://fednet.ifrc.org/en/ourifrc/about-the-

Figure 31: Nyss platform agreement.

1. Select language in the dropdown menu at the top of the screen:

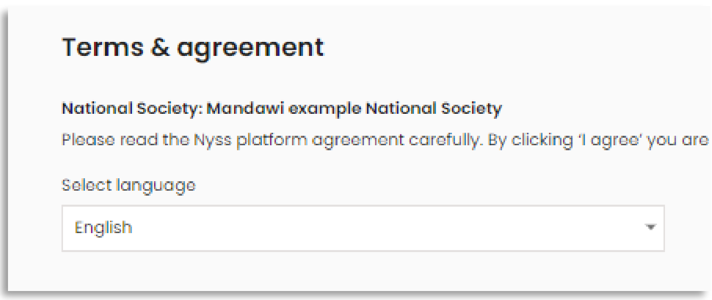


Figure 32: Nyss platform agreement, select language.

The agreement is available in the same languages as the platform itself.

2. Read the agreement and annexes.
3. Download the agreement (optional), by clicking the Download agreement link at the bottom left of the screen:

Figure 33: Download Nyss platform agreement.

4. Once ready, check the box next to "I agree" in the bottom right, and click the Continue button:

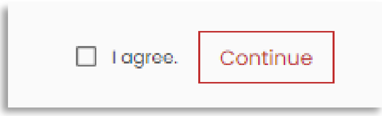


Figure 34: Agree to Nyss platform agreement.

By agreeing to this document, the head manager confirms that they have the legal authority to act on behalf of the National Society and accepts the agreement regarding conditions for data protection for use of Nyss.

If the head manager role is handed over to another person – for instance if the current head manager leaves their position or role – the new head manager will be asked to accept the agreement. Another manager or technical advisor can be assigned the role of head manager by either the current head manager or by the CBS NorCross team upon request.

6.1.2 Setup of geographical structure

The following user roles can do this:
(head) manager | **technical advisor**

The geographical structure of the country or area of implementation is set up manually in Nyss. Data collectors are later added to these locations, so that Nyss can pinpoint where reports are coming from.

Geographical structure must be added in three hierarchical levels, with a fourth level possible:

1. region,

2. district,
3. village, and
4. zone (optional)

> Not all countries or areas have “regions” or “districts”. In Nyss these terms are only used to distinguish between different sizes/levels of geographical structure.

The geographical structure is set up as follows:

1. Go to Settings in the left side menu.
2. Click the Geographical structure tab.

6.1.2.1 Add regions to geographical structure

3. Type its name into the Add region field and click Add.

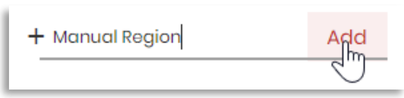


Figure 35: Adding a region

4. Repeat until all wanted regions are added.

6.1.2.2 Add districts to geographical structure

5. Click the > next to the region name, so that the field Add district appears:

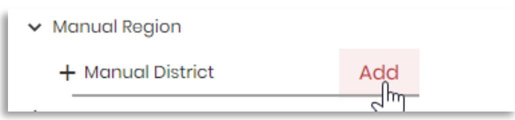


Figure 36: Add district

6. Type the district name into the Add district field and click Add.
7. Repeat until all wanted districts are added.

6.1.2.3 Add villages and zones to geographical structure

8. Continue by adding villages and zones (if using) in the same way until the geographical structure is complete.

6.2 Edit National Society

The following user roles can do this:
(head) manager | **technical advisor**

6.2.1 Edit main National Society settings (Overview)

1. Go to Settings in the left side menu.

2. Click the Edit button, and the Edit National Society form will appear:

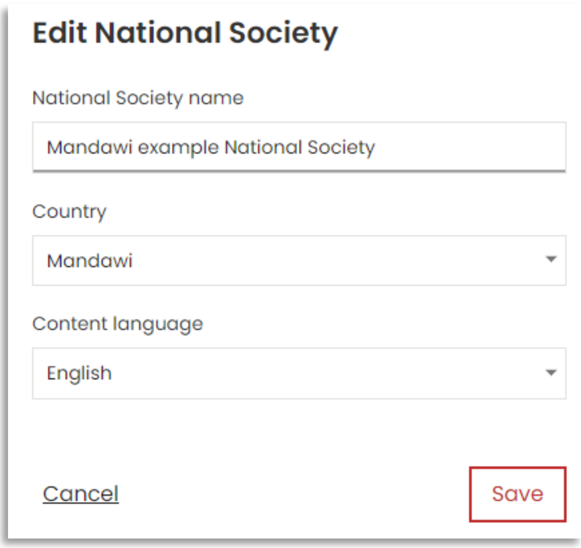


Figure 37: Edit national Society form.

The content language is the default language of Nyss for all users in the National Society.

6.2.2 Edit SMS Gateway settings

This is usually done by, or with the help of, IT personnel. Please refer to 14.2.8.1 SETUP OF SMS GATEWAY IN Nyss.

6.2.3 Edit or delete geographical structures

1. Go to Settings in the left side menu.

2. Click the Geographical structure tab.
3. Find the location you want to edit or delete and hover over its name
4. Click the pen symbol next to the name to edit or the trash can to delete:

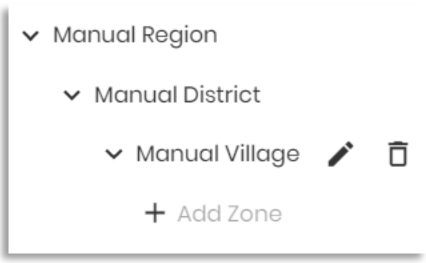


Figure 38: Edit or delete a location

6.2.4 Delete National Society

If a National Society no longer wishes to use Nyss, the National Society can be archived. This is done by the NorCross CBS team upon request.

6.3 Create a new project

The following user roles can do this:
(head) manager | **technical advisor**

6.3.1 Add a project

1. Go to Projects in the left menu.
2. Click the + Add button.

This form then appears:

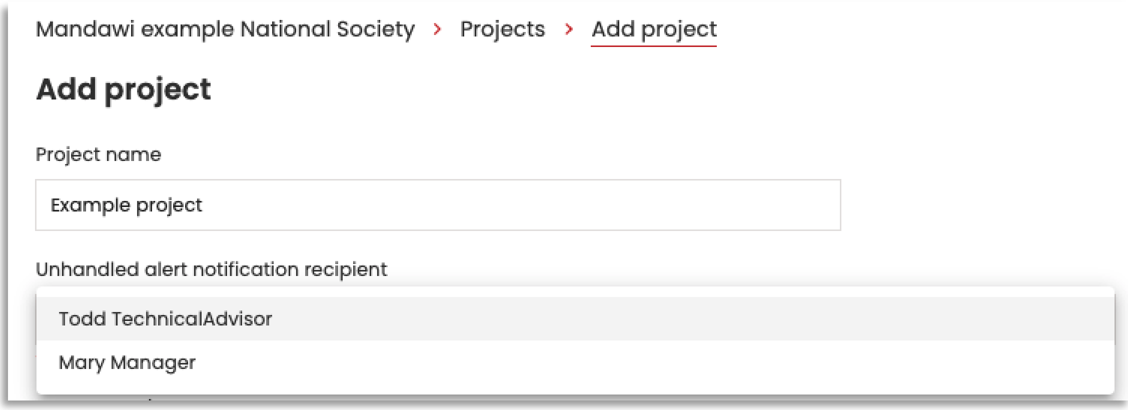


Figure 39: Add project

3. Fill out the project name and the Nyss user that should be contacted if a triggered alert is unhandled (e.g., not escalated to authorities or dismissed) for more than 24 hrs. You can choose between all managers and technical advisors.

6.3.1.1 Choose health risks/events

1. Click on in the health risks/events field to get a list of all possible options:

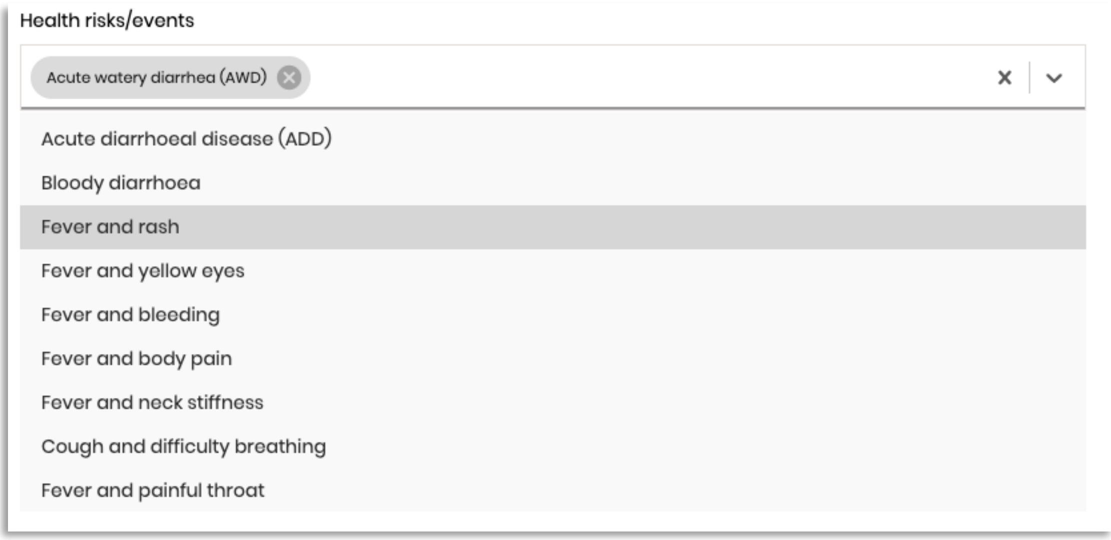


Figure 40: Adding health risks/events

2. Click on the health risks/events you want the project to focus on, and make sure you include Activity/zero report (99).

An **Activity/zero report** is sent by data collectors on an agreed upon regular basis (usually weekly), when they have not detected any health risks/events. An activity/zero report tells the supervisor that the data collector is still active and reporting from their community, and not in need of any follow-up.

6.3.1.2 Edit health risk/event definition and feedback message

The health risks/events you picked are now added below, including pre-filled fields with suggestions for definition and feedback message. These are specific for each health risk/event, and the fields can be edited any time to align with local definitions and local language by clicking in the fields:

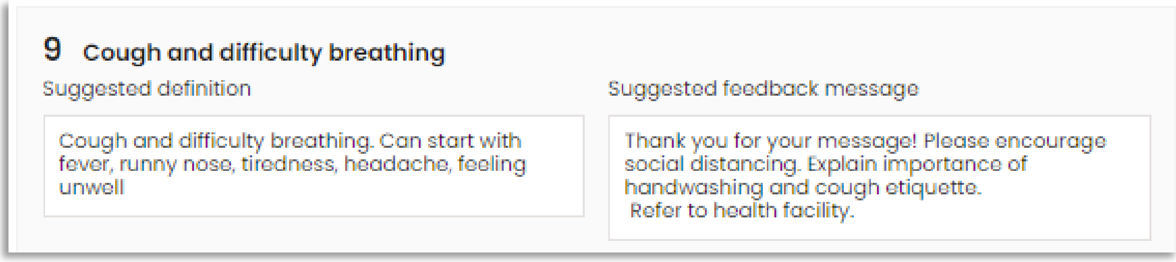


Figure 41: Health risk/event definition and suggested feedback message.

The **definition** is to help supervisors cross-check the reports.

The **feedback message** is the message the data collectors automatically receive after having sent a report.

3. Make changes to the definition(s) and feedback message(s) (optional).

6.3.1.3 Set alert rule

The alert rule fields are displayed below the suggested definition and feedback message for each health risk. They are blank by default:

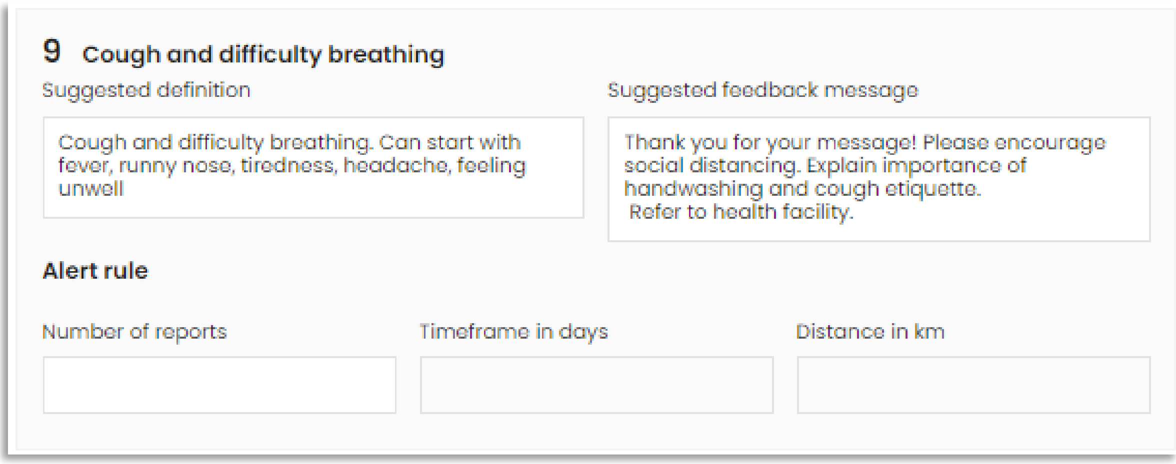


Figure 42: Blank alert rule.

The **alert rule** defines when an alert is triggered.

The alert rule states how many reports need to come in, within which timeframe, and how close the locations reported from need to be geographically.

Alert rules are set so that alerts can be triggered on a single incoming report, or after X amount of reports is received. If it is set to trigger after X amount of reports are received, Nyss looks for other reports of the given health risk/event, within the set time and distance perimeters. When enough reports are found, an alert is automatically triggered.

The alert rule can either be configured with a combination of all three perimeters, such as this example, where an alert would be triggered when 5 reports of the health risk/event come in, within one week, from locations within a radius of 20 km:

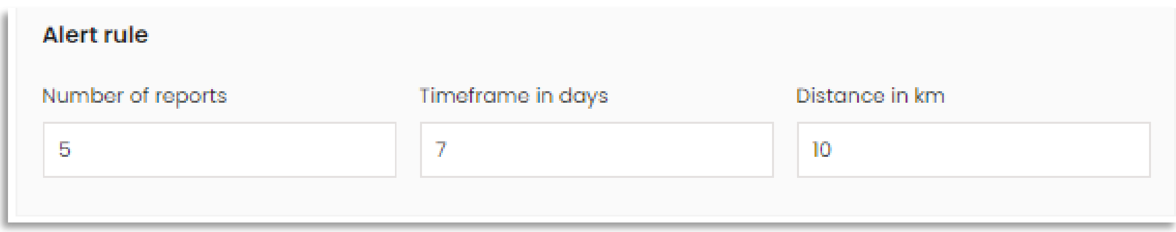


Figure 43: Alert rule configuration.

As soon as a number higher than “1” is entered into the number of reports-field, the fields for timeframe and distance become editable.

Some health risks/events are serious enough that you want to **trigger an alert for every report** that comes in. In this case, enter a “1” in the field for number of reports, and the other two fields will remain disabled. You do not have to fill in anything for days and distance, as every report will trigger an alert:

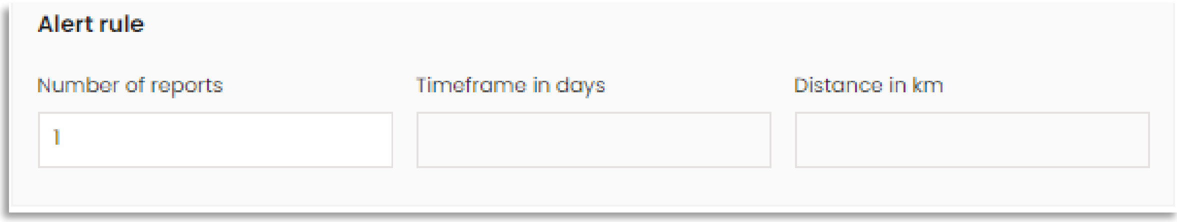


Figure 44: Alert rule of "1".

The **Activity/zero report** will not trigger alerts. Thus, there is no need to define alert rules for them.

4. Define and fill in the alert rule(s).
5. When ready, click the Add button.

6.4 Add another organization

If the project is a joint project between multiple organizations, please refer to 13 JOINT PROJECT WITH ANOTHER ORGANIZATION for additional setup steps and more information.

6.5 Add escalated alert notification recipients

The following user roles can do this:
(head) manager | **technical advisor**

Escalated alert notification recipients are those that should follow up on an alert after the supervisor(s) have talked to the data collector(s) and cross-checked the reports within the alert (see 10.2.1 CROSS-CHECKING REPORTS IN ALERTS), and enough reports have remained in the alert that it still meets the alert rule. The supervisor will then escalate the alert, which triggers Nyss to automatically notify the applicable notification recipients.

An **escalated alert notification recipient** is typically someone in charge of following up and responding to an escalated alert, such as a health facility, a district health officer, a veterinarian, etc.

1. Go to Projects in the left menu.
2. Click the Project you want to add alert notification recipients to.
3. Go to Project settings in the left menu.
4. Click the Alert notifications tab.
5. Click the + Add button above the table.

This form then appears:

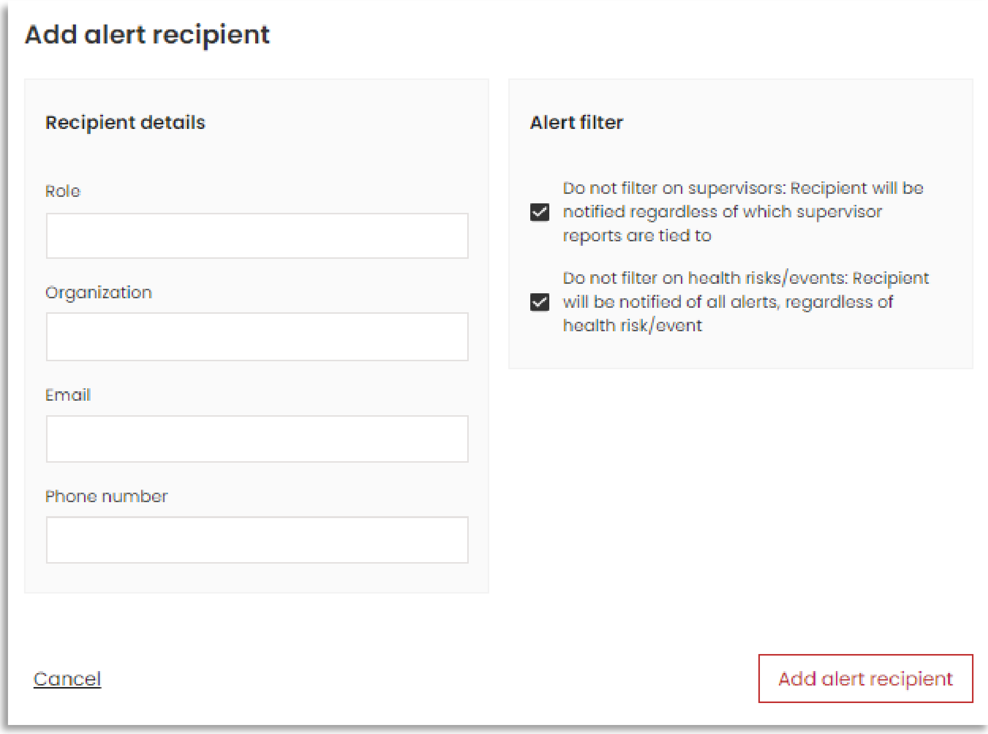
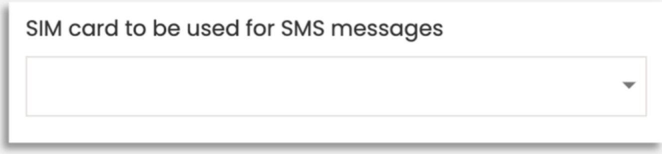


Figure 45: Add escalated alert notification recipient form.

6. Fill out the Recipient details on the left side of the form.

Recipients added with their email, will be notified via **email**.
Recipients added with phone number, will be notified via **SMS**.
Recipients added with both, will be notified via **both**.

> If the Nyss hardware is set up with two SIM-cards (see 14.2.5 SETUP SIM CARD(S) for more information), you will also need to pick which one (e.g., which provider) Nyss should send text messages from to this recipient:
>
> 
>

On the right side of the form, an **alert filter** can be configured. By default, this is set to no filtering. This means that the alert notification recipient will be notified of all alerts, regardless of where the alert is coming from (which supervisor(s), and thus geographical area, the reports in the alert are tied to), and regardless of which health risks/events the alert is of.

There are, however, many scenarios where the recipient will only be responsible to respond to the alert, or need to know of it, if it meets specific criteria:

6.5.1 Add alert filter on supervisors

If the recipient is only responsible to respond to, or need to know of the alert when it comes from **a specific area**, you can filter on supervisors:

7. Uncheck the top checkbox, to see an input field where you can pick the relevant supervisors:

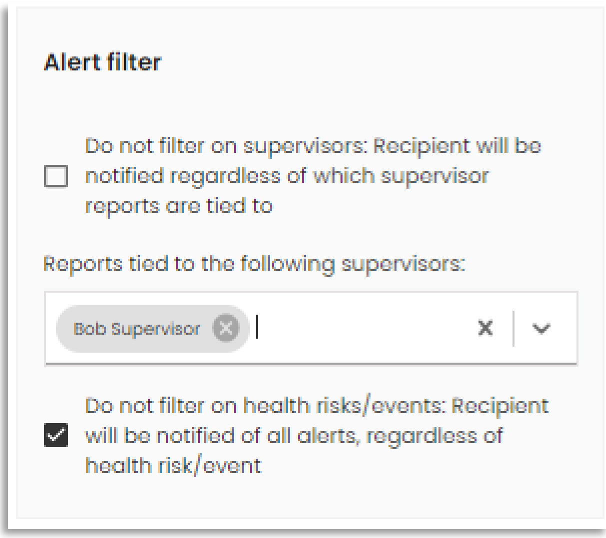


Figure 46: Alert filter on supervisors.

8. Add all relevant supervisors.

The recipient will only receive notifications of alerts with reports tied to the supervisors picked.

6.5.2 Add alert filter on health risks/events

If the recipient is only responsible to respond to, or need to know of the alert when it is of **a specific health risk/event** (e.g., human vs. animal health risks), you can filter on these:

9. Uncheck the bottom checkbox, to see an input field where you can pick the relevant health risks/events:

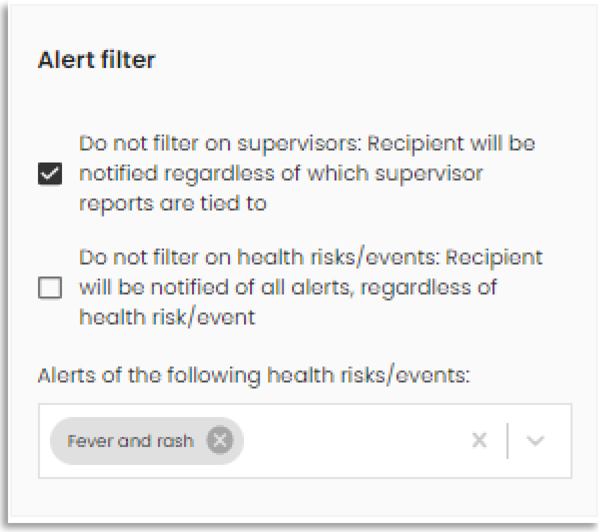


Figure 47: Alert filter on health risk/event

10. Add all relevant health risks/events.

The recipient will only receive notifications of alerts of the health risks/events picked.

11. When ready, click the Add button.

6.6 Edit and close projects

The following user roles can do this:
(head) manager | **technical advisor**

All aspects of a project may be edited, including:

- Project name
- Organizations
- Which health risks/event the project is reporting on
- Definitions of chosen health risks/events
- Feedback messages for reports on chosen health risks/events
- Alert rules for chosen health risks/events
- Unhandled alert notification recipient
- Escalated alert notification recipients

6.6.1 Edit main project settings

1. Go to Projects in the left menu.
2. Click the project you want to edit.
3. Go to Project settings in the left menu.
4. Scroll down to the bottom of the page and click the Edit button.
5. Edit the setting(s) you want to change.
6. When you are ready, scroll down and click the Save button.

6.6.2 Edit or delete health risks/events, definition, feedback message and/or alert rule

1. Go to Projects in the left menu.
2. Click the project you want to edit.
3. Go to Project settings in the left menu.
4. Scroll down to the bottom of the page and click the Edit button.
5. Edit or delete the health risks/events you want to change.
6. When you are ready, scroll down and click the Save button.

6.6.3 Edit unhandled alert notification recipient

1. Go to Projects in the left menu.

2. Click the project you want to edit.
3. Go to Project settings in the left menu.
4. Click the Alert notifications tab.
5. In the grey box labeled Unhandled alert notification recipient, click the pencil behind the current user to edit.

6.6.4 Edit or delete alert notification recipients

6. Go to Projects in the left menu.
7. Click the project you want to edit.
8. Go to Project settings in the left menu.
9. Click the Alert notifications tab.
10. Find the alert notification recipient you want to edit or delete, and click the pencil to edit or the X to delete:

Figure 48: Edit or delete alert notification recipient.

6.6.5 Close project

When a project is no longer running/operational, it should be closed.

When a project is closed, all data collectors in the project are pseudonymized (all personal information is removed). It will not be possible to send reports to the project anymore.

The project dashboard and the reports will still be accessible.

Some supervisors are connected to only one project. To close a project, all supervisors tied to (only that) project must be deleted first.

Closing a project is an action that cannot be regretted.
It is not possible to re-open a closed project.

1. Go to Projects in the left menu.
2. Find the project you want to close.
3. Click on the three dots on the far right of the project, and a button will appear:

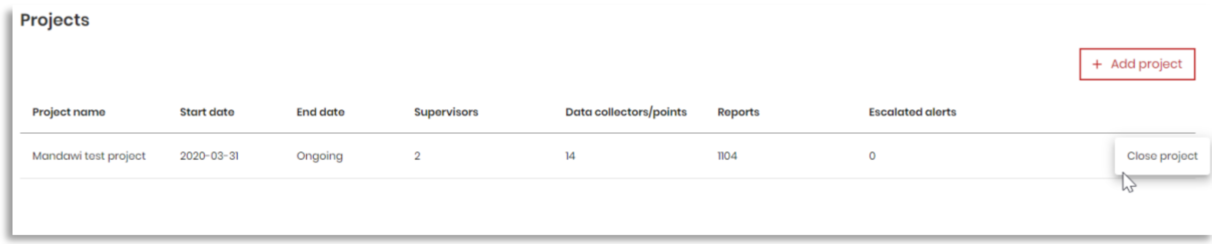


Figure 49: Click close project in the project list, to close a project.

4. Click Close project to confirm.

6.7 Setup of users

Managers, technical advisors, supervisors, and data consumers are users of Nyss and have access to the parts of Nyss they respectively need to use.

All users in a National Society can be found under Users in the National Society left menu.

Data collectors and data collection points are not users of Nyss; see 7 Data collectors and data collection points for more information.

6.7.1 Add new user

The following user roles can do this:
(head) manager | **technical advisor**

1. Click on Users in the left menu.

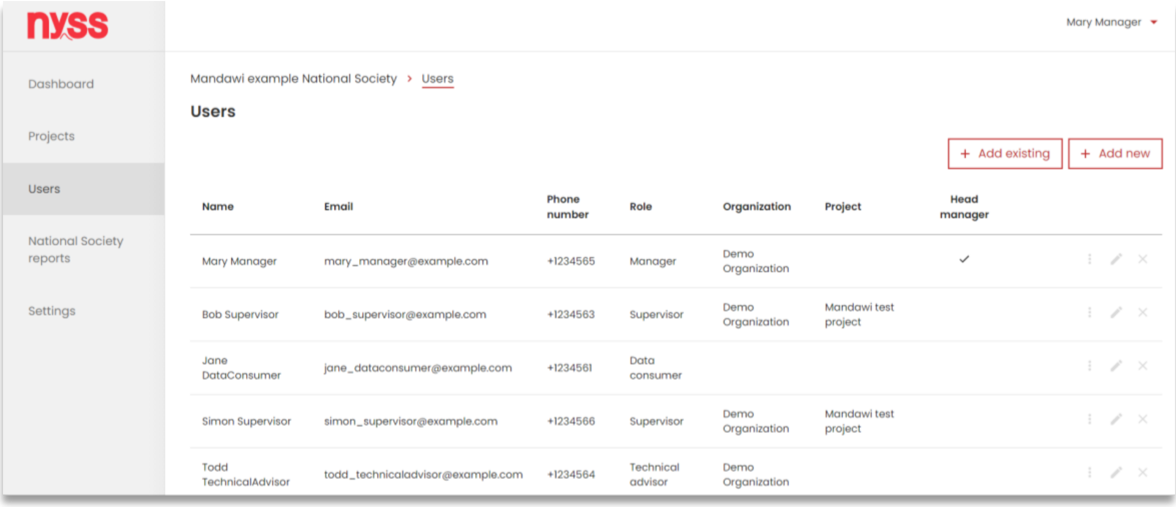


Figure 50: Users page

2. Click on + Add new
3. Fill out the form, and pick the correct user role for the person:

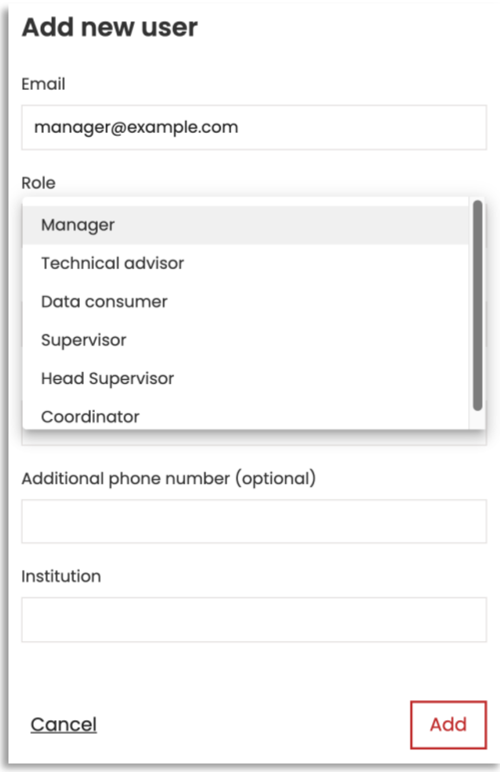


Figure 51: Add new user

When (head) supervisor is chosen as a role, three or four additional fields appear at the bottom of the form:

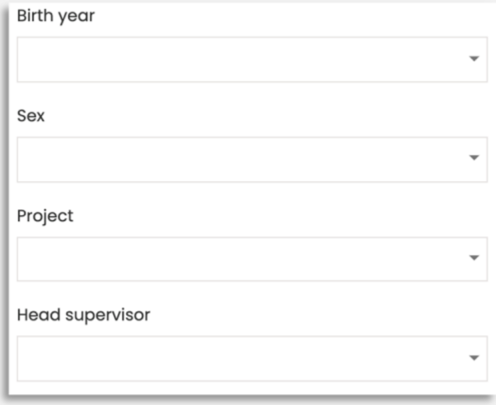
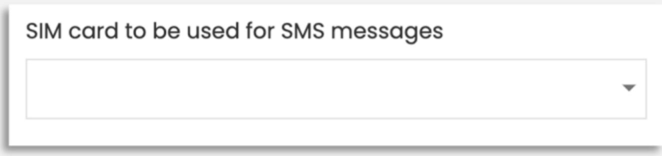


Figure 52: Additional fields when adding a (head) supervisor.

Birth year, sex, and which project the supervisor is tied to is filled out for all supervisors. If the National Society has any head supervisors, a fourth dropdown lets you pick which one (or none).

You must have added at least one project before adding a supervisor.

If the Nyss hardware is set up with two SIM-cards (see 14.2.5 SETUP SIM CARD(S) for more information), you will need to pick which one (e.g., which provider) Nyss should send text messages from to this user:



4. When you are ready, click Add

The new user will now appear on the Users page.

6.7.2 Add an existing user

The following user roles can do this:
(head) manager | **technical advisor**

Existing users are most often technical advisors, as they might be supporting multiple National Societies and thus already have a user in Nyss.

If **the technical advisor is not registered in Nyss yet**, follow the instructions under 6.7.1 ADD NEW USER.

To **add a technical advisor with pre-existing access to Nyss**, follow the steps below:

1. Click on Users in the left menu.
2. Click + Add existing
3. Fill out the email address already used in Nyss and click Add.

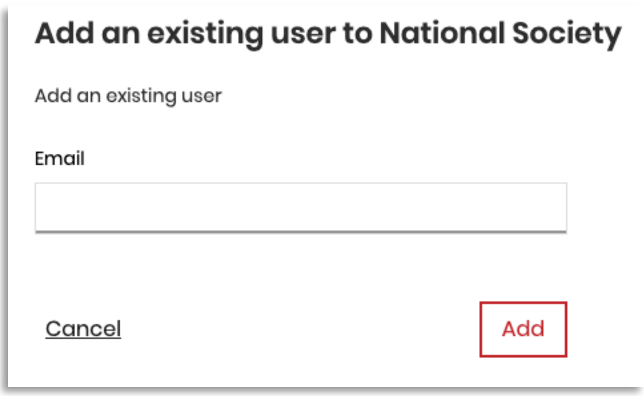
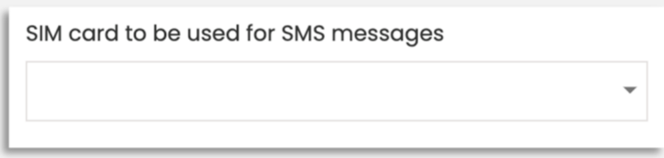


Figure 53: Add existing user

If the Nyss hardware is set up with two SIM-cards (see 14.2.5 SETUP SIM CARD(S) for more information), you will also need to pick which one (e.g., which provider) Nyss should send text messages from to this user:



6.7.3 Set a new head manager

The following user roles can do this:
current head manager

Both **managers and technical advisors** can be set as head managers. The former is most common in preparedness implementations, whereas the latter is more common in emergency implementations, where the technical advisor is a delegate.

Only existing users can be set as head managers, so make sure the person you want to set as head manager is added as a user first.

1. Click on Users in the left menu.
2. Locate the user you want to set as head manager.
3. Click the three dots on the right side of the table, and click Set as head manager:

Figure 54: Set as head manager

The new head manager will need to accept the Nyss platform agreement the first time they log in after this (see 6.1.1.1 Accept Nyss platform agreement).

Before they do so, the current head manager will stay in that role, and the new one will have the state as “pending head manager”.

6.7.4 Edit and delete users

The following user roles can do this:
(head) manager | **technical advisor**

1. Click on Users in the left menu.
2. Locate the user you want to edit or delete.
   a. To edit: Click on the user or the pen on the right side of the table, edit the information in the form and click Save.
   b. To delete: Click on the X on the right side of the table and click Delete user to confirm.

Figure 55: Edit or delete user.

To edit a user’s email address, you will need to delete the user and re-add them.

7 Data collectors and data collection points

Data collectors and data collection points are not users of Nyss themselves, but are registered in the platform so that Nyss can interpret where a report is coming from, and so that a supervisor easily can follow up the data collectors they are responsible for.

7.1 Add a data collector

The following user roles can do this:
(head) manager | **technical advisor** | **(head) supervisor**

Data collectors need to be linked to a supervisor when they are added. You must have added the relevant supervisors before adding data collectors.

By linking data collectors to supervisors, they are also linked to the same project as the supervisor. All information about data collectors are thus found under each project.

Data collectors are linked to a village (and zone when used), that must have been added under 6.1.2 Setup of geographical structure.

1. Go to the project that you want to add a data collector to.
2. Click on Data collectors in the left menu.
3. Click on + Add:

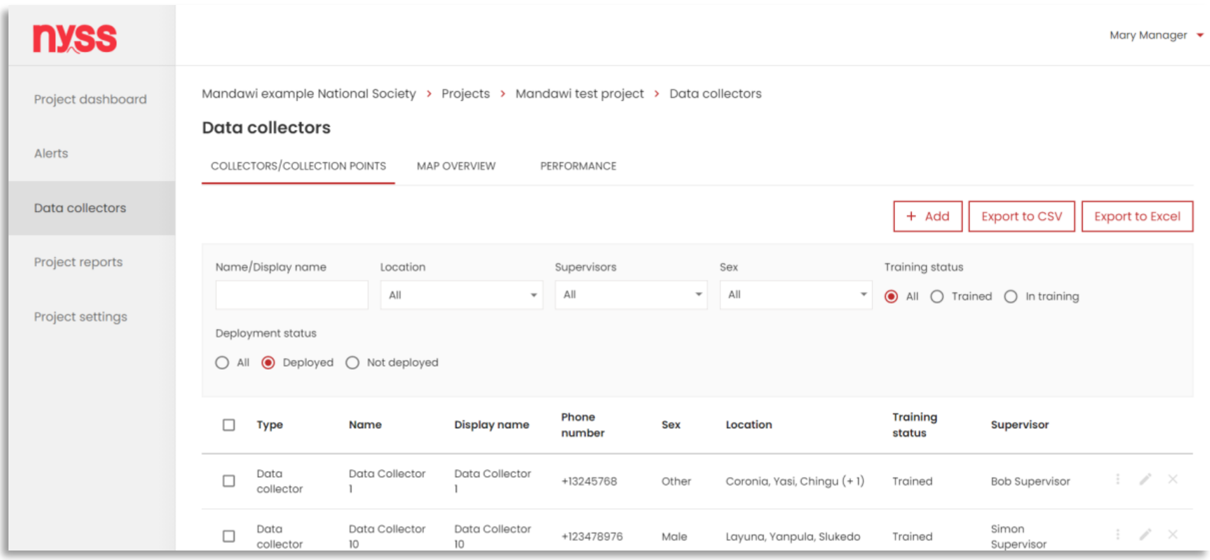


Figure 56: Data collectors page.

A form appears:

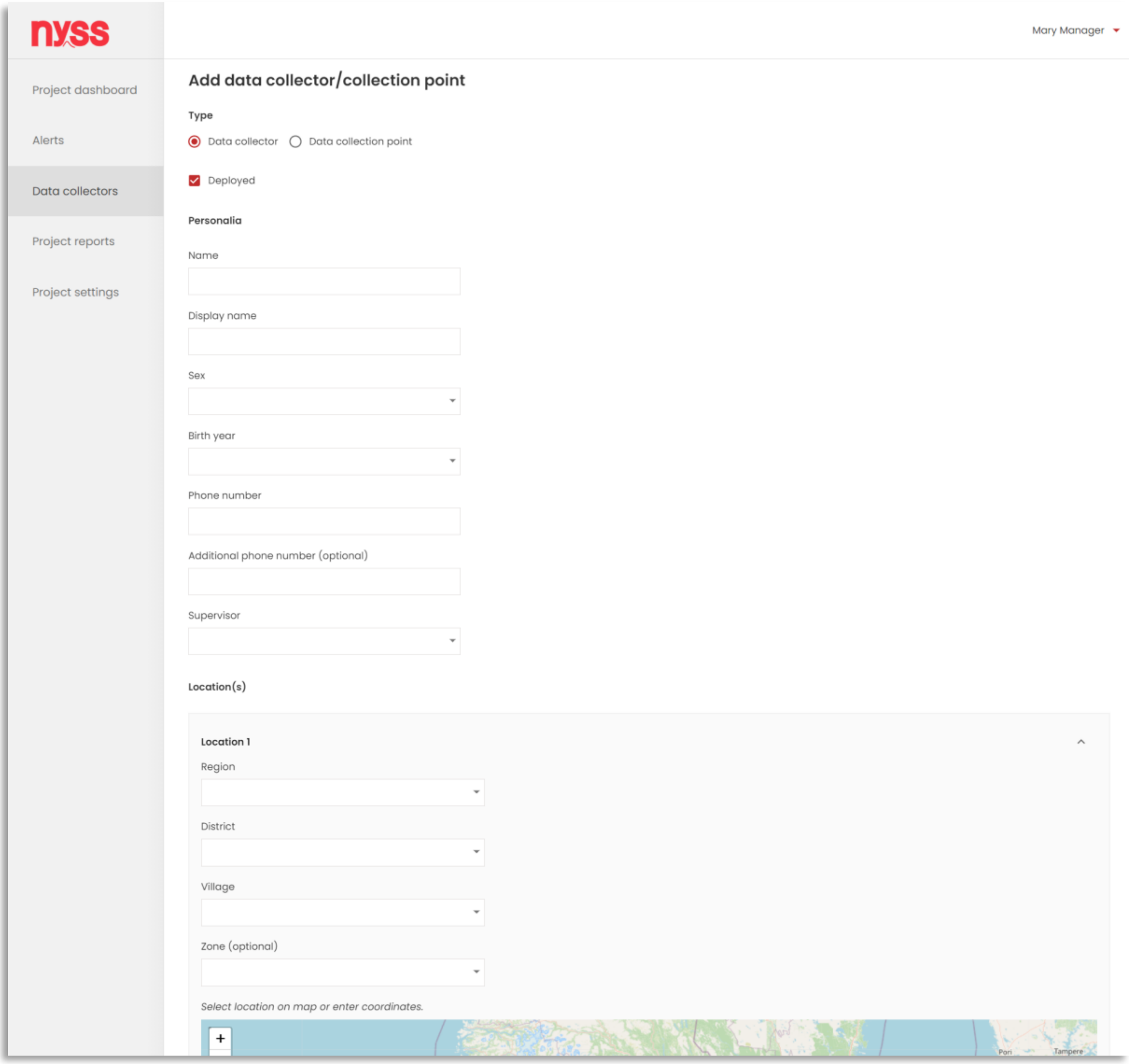


Figure 57: Add data collector form.

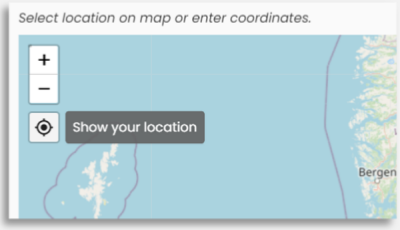
4. Under type, choose Data collector
5. Keep Deployed checked if the data collector will be expected to report regularly (e.g., they will not be on leave/not expected to report)
6. Fill in Name and Display name

> The display name is what is shown on maps in Nyss and is useful when data collectors have long or similar names.

7. Choose Sex and Birth year, and fill inn phone number(s)
8. Choose the Supervisor who will be responsible for the data collector
9. Choose the Region, District, and Village (and Zone if using) that the data collector will be reporting from
10. On the map, pinpoint a central location in the geographical area they will be reporting from. This can be done in two ways:

a. If **you have the latitude and longitude** of that location, fill in the latitude and longitude under the map, and the map will automatically update.
b. If **you do not have the latitude and longitude** of that location, zoom in on the map until you find the correct location, and click the location. The latitude and longitude are automatically updated.

The Show your location button will help you zoom from a global to local level:



11. When you are ready, click Add.

The new data collector will now appear on the Data collection page with the statuses deployed and in training. See how to change this in 11.1.2 CHANGE DEPLOYMENT MODE and 11.1.3 CHANGE TRAINING STATUS.

7.2 Add a data collection point

The following user roles can do this:
(head) manager | **technical advisor** | **(head) supervisor**

To add data collection point, for instance an ORP reporting to Nyss, follow the instructions under 7.1 ADD A DATA COLLECTOR, but pick data collection point as the type instead.

When adding data collection points, the fields for display name, sex, birthyear group, and additional phone number are unnecessary, and thus not included.

Once created, the data collection point will appear on the Data collection page with the statuses deployed and in training. See how to change this and otherwise edit data collectors/collection points in 7 DATA COLLECTORS AND DATA COLLECTION POINTS.

PART 4

Using Nyss – common tasks and workflows

8 Use the dashboards

There are two dashboards in Nyss: on project level and on National Society level. The Project dashboard shows data from that project, while the National Society dashboard shows aggregated data from all projects within the National Society.

The dashboards show key information related to the implementation and visualize reports in maps, bar charts and tables.

The data shown in the dashboards is pseudonymized, meaning personal and sensitive data is removed.

8.1 Filter the dashboard data

The following user roles can do this:
(head) manager | **technical advisor** | **data consumer** | **(head) supervisor** (only on project dashboard)

At the top of the dashboards, you find filter and grouping options. By default, the dashboard shows data from the past 7 days, but you can change this and more by changing the filters.

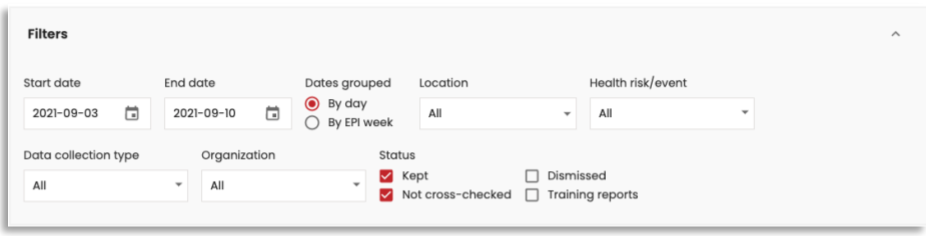


Figure 58: The National Society dashboard filters

The following filter options are available:

- **Date**: by changing the Start date and/or End date you can choose the time period you see data from.
- **Dates grouped**: lets you choose if the data in the graph should be grouped by day or by EPI week.
- **Location**: lets you change from which regions, districts, or villages you see data, making it possible to focus on specific areas.
- **Health risk/event**: filters the data shown to only the selected health risk/event.

- **Data collection type**: lets you choose to see reports from either data collectors or data collection points, or both.
- **Organizations**: lets you filter on which organization to see data from, if there are multiple organizations involved.
- **Report status**: lets you include/exclude reports in the different statuses. The option Training reports is not available in the National Society dashboard. Not available for Data consumers.

8.2 Find key information on the dashboard tiles

The following user roles can do this:
(head) manager | **technical advisor** | **data consumer** | **(head) supervisor** (only on project dashboard)

The tiles/boxes at the top of the dashboard give you a quick overview of the incoming reports and their cross-checking status, deployed data collectors/ points that have been actively reporting in the timeframe chosen in the filter, alerts and their statuses, and the geographical coverage of the implementation:

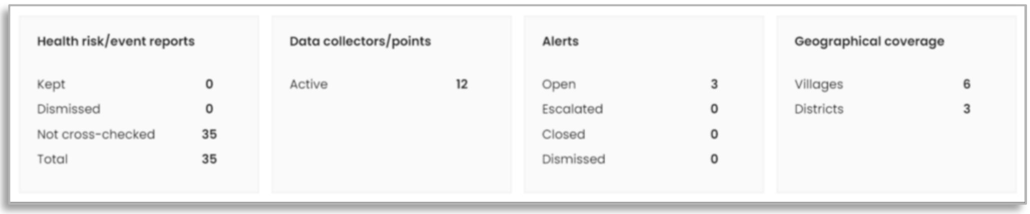


Figure 59: Dashboard tiles with key information.

8.2.1 Data collection point reports tile

Reports by data collection points do not trigger alerts but do include additional data (see 5.3.1 DCP/ORP REPORT).

When Data collection point is chosen as Data collection type in the filter, the Alerts tile disappears, and is replaced with Data collection points reports tile. The tile displays additional information sent to Nyss through the aggregated reporting format used at data collection points: how many were referred to hospital, how many came from other villages, and how many were reported dead.

Figure 60: Data collection point reports tile.

8.3 Use the dashboard map

The following user roles can do this:
(head) manager | **technical advisor** | **data consumer** | **(head) supervisor** (only on project dashboard)

The map in the dashboards show reported health risks/events by location, to provide an overview of the geographical distribution.

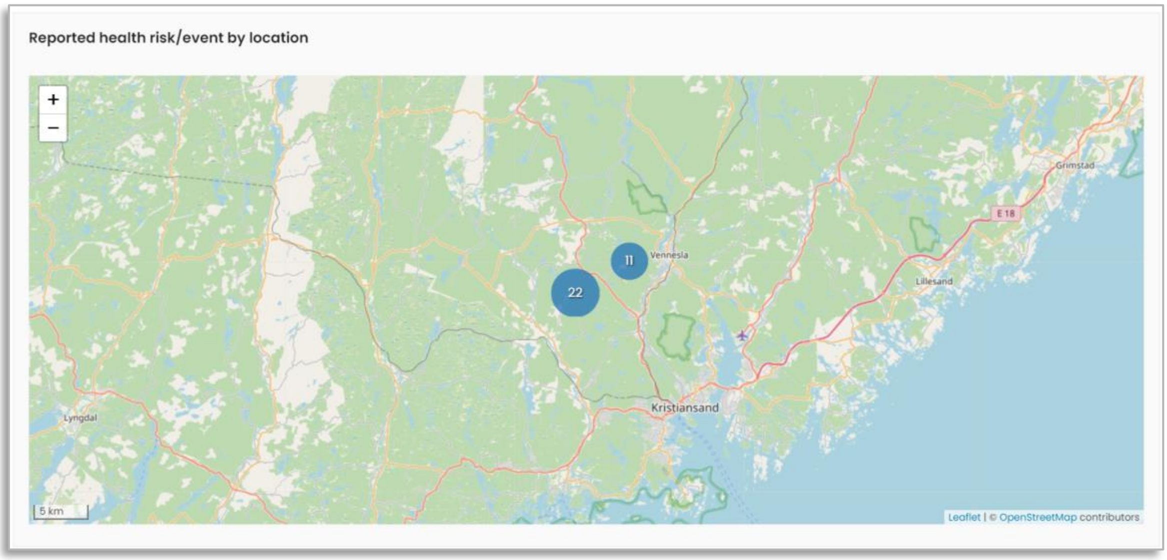


Figure 61: Reports shown on dashboard map.

8.3.1 Blue dots on the dashboard map

Each dot in the map in FIGURE 61 represents one or a cluster of data collector(s) or data collection point(s).

The dots represent the location that the data collector/collection point is registered with – it is not their real-time location or the exact location the report was sent from.

- The size of the dot corresponds with the amount of reports (the more reports, the larger the dot).
- The number in each dot represents the total number of reports that they have sent.
- If you click on a dot, you can see which health risks/events that were reported.
- Data collectors/collection points that are close to each other, are combined in a dot when you are zoomed out. When you zoom in, the dots separate.

8.4 Use the National Society dashboard chart

The following user roles can do this:
(head) manager | **technical advisor** | **data consumer** |

- The chart reacts to the filter, as described in 8.1 Filter the dashboard data. You can for instance filter on only one village, a specific health risk/event, or a specific time period.
- By clicking on the legend below the bars in a chart (the colored dots explaining what the bars mean), you can hide or unhide what is shown.
- By hovering over one of the parts of a bar, more detailed information is shown.

8.4.1 Chart: Reported health risks/events by village

The bar chart shows the number of reports over time, separated by village:

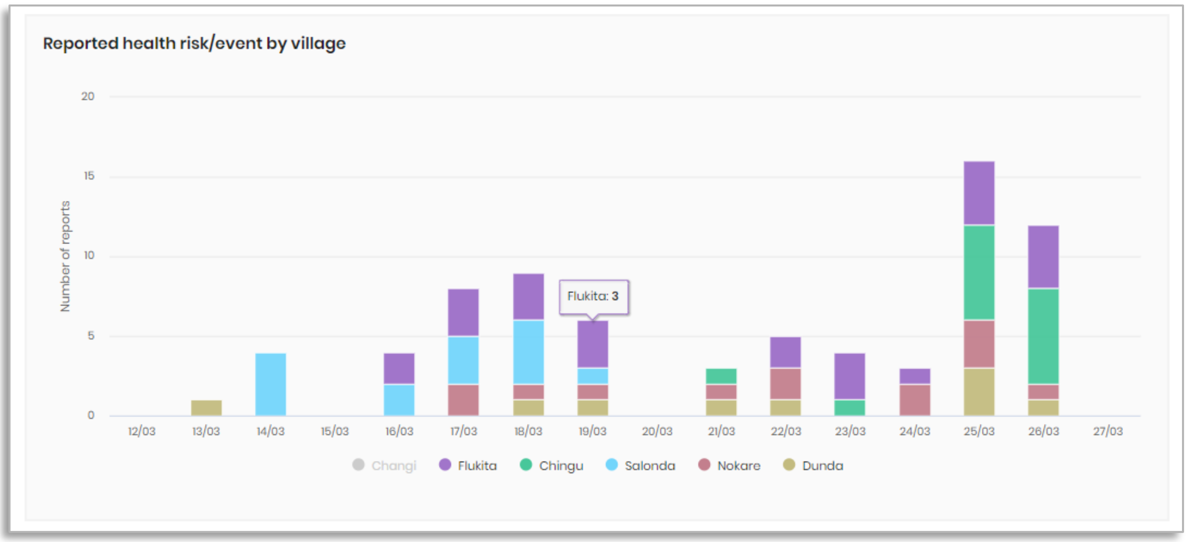


Figure 62: Dashboard chart: Reported health risk/event by village.

Only the ten villages with the highest number of reports are shown. Reports coming from other villages are combined into the category "Other villages".

This quickly draws your attention to where the need is highest.

8.5 Use the Project dashboard charts and table

The following user roles can do this:
(head) manager | **technical advisor** | **data consumer** | **(head) supervisor**

In addition to the chart explained under 8.4.1 CHART: REPORTED HEALTH RISKS/EVENTS BY VILLAGE, the project dashboard has the following charts and table:

8.5.1 Chart: Number of reports by health risk/event

This chart shows the evolution of the number of reports over time, separated by health risks/events:

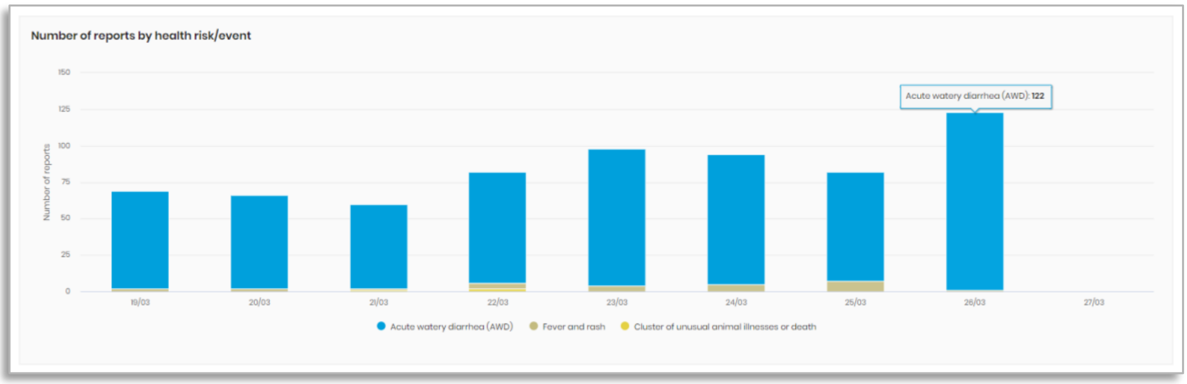


Figure 63: Project dashboard chart: Number of reports by health risk/event within the project.

8.5.2 Chart/table: Reported health risk/event by sex and age

> This chart and table only include reports of human health risks/events, since those are the only reports with sex and age.

8.5.2.1 Reported health risk/event by sex and age chart

This chart shows the evolution of the number of reports over time, separated into sex/age groups:

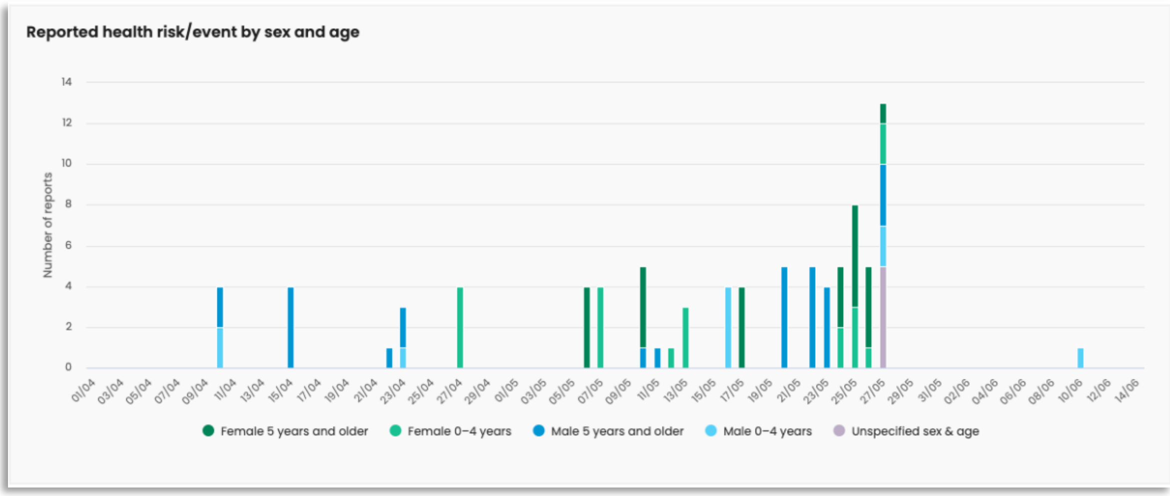


Figure 64: Project dashboard chart: Reported health risk/event by sex and age.

8.5.2.2 Reported health risk/event by sex and age table

This table shows the total number of reports, separated by sex and age, as well as totals across the two properties:

Reported health risk/event by sex and age

	Female	Male	Unspecified sex	Total
0–4 years	20	10	-	30
5 years and older	25	28	-	53
Unspecified age	-	-	5	5
Total	45	38	5	88

Figure 65: Project dashboard table: Reported health risk/event by sex and age

8.5.3 Chart: Data collection point reports by date

This bar chart is only visible when Data collection points is selected in the Data collection type filter at the top. It appears at the bottom of the dashboard.

This bar chart shows the evolution of the number of reports over time, for the additional categories in aggregated reports from data collection points: People referred to hospital, people from other villages, and people that died.

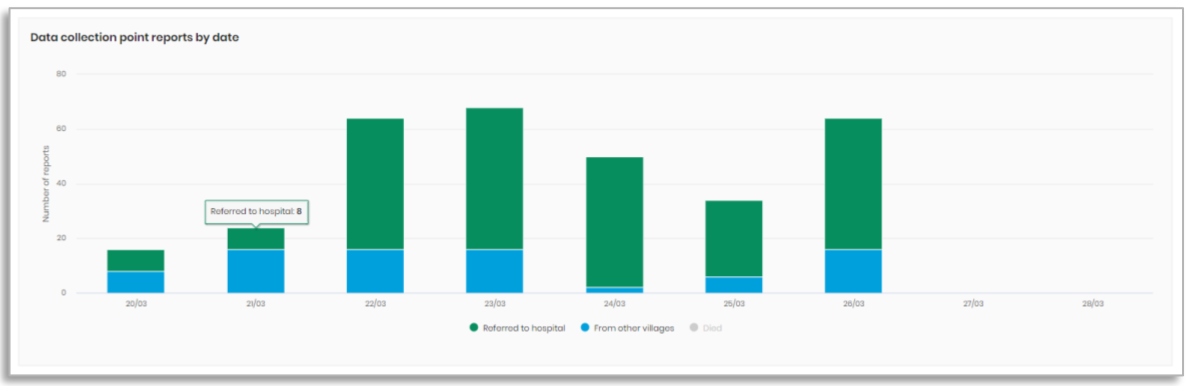


Figure 66: Project dashboard chart: Data collection point reports by date.

8.5.4 Generate PDF from dashboard

At the bottom of the **project dashboard**, there is a Generate PDF button:

Figure 67: Project dashboard: Generate PDF button.

This lets you export the whole dashboard, with your selected filters, to a PDF that can be shared with others.

9 Use the Reports pages

In addition to showing the data in the dashboards, all data from reports can also be viewed in a line list/table; both for the National Society and for each project.

9.1 National Society reports

The following user roles can do this:
(head) manager | **technical advisor**

National Society Reports can be found in the left menu when in the National Society and enables you to see all reports for your National Society, **aggregated across all the different projects**.

On this page, you get an overview over all the reports, and you can filter and sort the information. No further actions are possible.

By default, the tables are sorted on date, with the most recent report at the top.

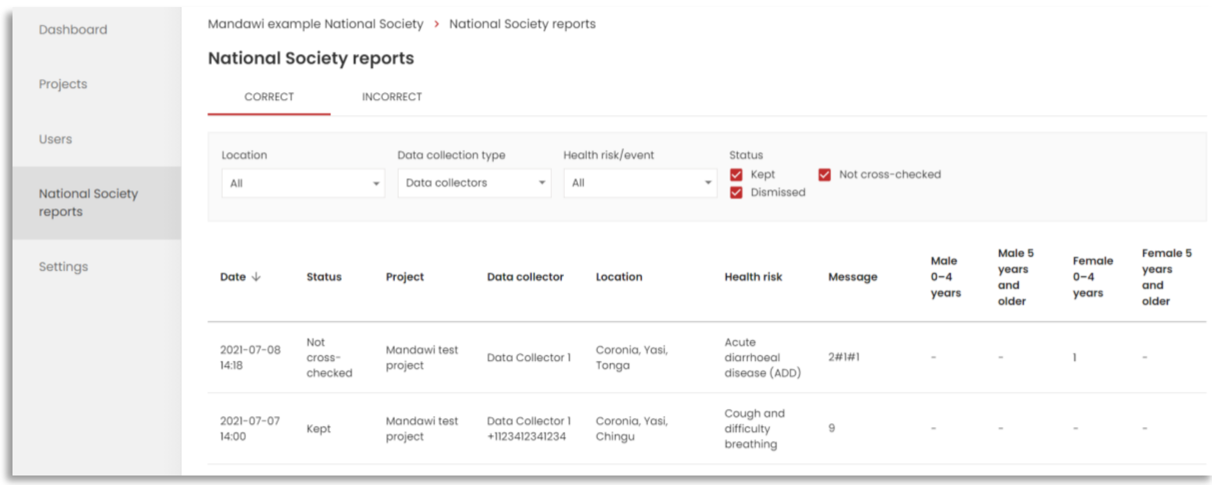


Figure 68: National Society reports

9.1.1 National Society reports: Correct

The first tab shows all **correct reports**, meaning reports that are formatted correctly.

The table shows:

- Date and time,
- crosschecking status (Not cross-checked/Kept/Dismissed),

- project,
- data collector,
- location,
- health risk/event reported,
- message text, and
- number of cases reported in each sex and age group.

The information shown can be filtered by:

- Location,
- data collection type,
- health risk/event, and
- cross-checking status.

9.1.2 National Society reports: Incorrect

The second tab shows all **incorrect reports**; reports with the wrong format, reports on a health risk number not used in the project, etc.

The table shows:

- Date and time,
- error type.
- message text,
- project,
- data collector, and
- location.

The information shown can be filtered by:

- Location,
- data collection type, and
- error type.

9.2 Project reports

The following user roles can do this:
(head) manager | **technical advisor** | **(head) supervisor***
*when assigned

Project reports can be found in the left menu when in a project and shows you a table of reports that have been sent from data collectors/data collection points only in that specific project:

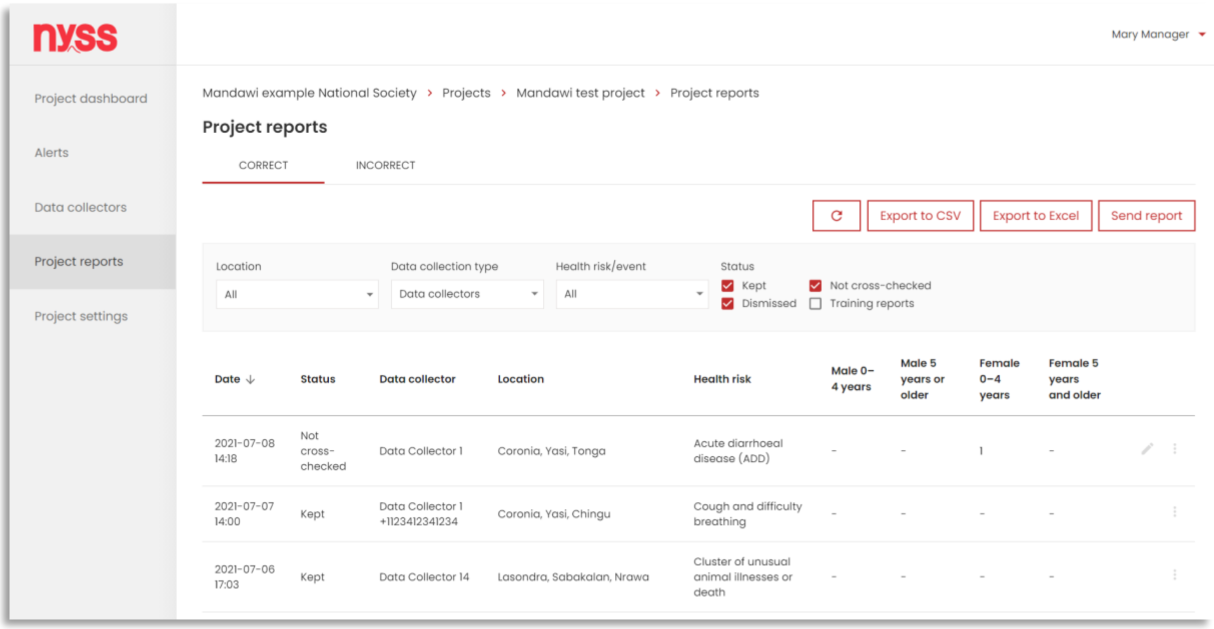


Figure 69: Project reports

By default, the tables are sorted on date, with the most recent report at the top.

9.2.1 Project reports: Correct

The first tab shows all **correct reports**, meaning reports that are formatted correctly.

The table shows:

- Date and time,
- crosschecking status (Not cross-checked/Kept/Dismissed),
- data collector,
- location,
- health risk/event reported, and
- number of cases reported in each sex and age group.

The information shown can be filtered by:

- Location,
- data collection type,
- health risk/event, and

- status (cross-checking status + include/exclude training reports, see 9.2.4 Training reports).

9.2.2 Project reports: Incorrect

The second tab shows all **incorrect reports**; reports with the wrong format, reports on a health risk number not used in the project, etc.

The table shows:

- Date and time,
- error type.
- message text,
- data collector, and
- location.

The information shown can be filtered by:

- Location,
- data collection type,
- error type, and
- report type (real or training reports, see 9.2.4 Training reports).

9.2.3 Export project reports

You have the option to export the list of both correct and incorrect reports, to an excel or CSV file. Click on the buttons Export to excel or Export to CSV to choose which file type you want to export to.

When the correct project reports are exported, it is exported with additional columns:

- Report ID
- EPI year and EPI week
- Region, district, and village (and zone if using)
- Additional calculations (total for sex and birth years)
- ID of linked alert, if applicable
- Data collection point categories, if applicable

9.2.4 Training reports

Data collectors/collection points have a training status, set to either **In training or Trained**. Reports sent by Data collectors/collection points in training are not considered real reports by Nyss. Hence, on the Project dashboard and the Project reports page, it is possible to filter on training reports.

> Training reports enable data collectors/collection points to practice reporting during trainings, by using the same reporting formats and Nyss-number as they will once they start reporting from their community.
>
> This also enables supervisors and managers to practice how to use Nyss and make decisions based on the data coming in during the

9.2.5 Cross-checking reports

> **Cross-checking** ensures that the reports a) meet the health risk/event definition the data collectors have been trained to detect and b) were sent on purpose.
>
> Cross-checking – contacting the data collector who sent the report – is usually done **via phone**, or however decided for the project.
> The outcome however, is recorded in Nyss.

If, upon cross-checking, the supervisor finds out that the report is not valid (sent by mistake, not meeting case definition etc.), the report should be **dismissed**. Reports that have been dismissed will not contribute to alerts.

If, upon cross-checking, the supervisor finds out that the report is valid (sent on purpose and meeting the case definition), the report should be **kept**.

Depending on how the project is set up, supervisors cross-check either **only reports that are part of alerts, or all reports**. For cross-checking reports in alerts, see 10.2.1 Cross-checking reports in alerts.

All reports can be cross-checked directly from the Project reports page:

1. Go to the project where the data collector/collection point is registered
2. Click on Project reports in the left menu
3. Locate the report you have cross-checked
4. Click the three dots on the right side of the table

5. In the tooltip that appears, click Keep report / Dismiss report

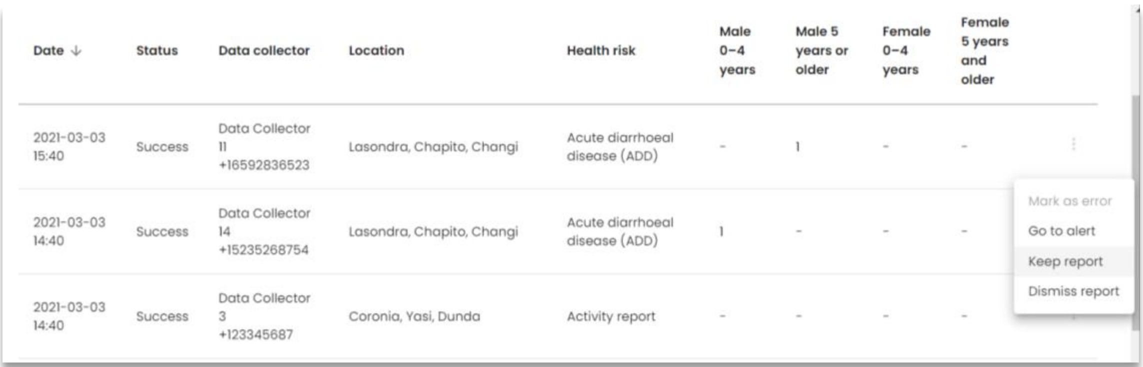


Figure 70: Project reports, cross-checking (keeping or dismissing) reports

9.2.6 Send report from Nyss

Reports can be sent from the reports page. This can be useful if a data collector is having problems with reporting, or an incorrect report should be resent with the correct information.

1. Go to the relevant project
2. Click on Project reports in the left menu
3. Click on the Send report button in the top right corner:

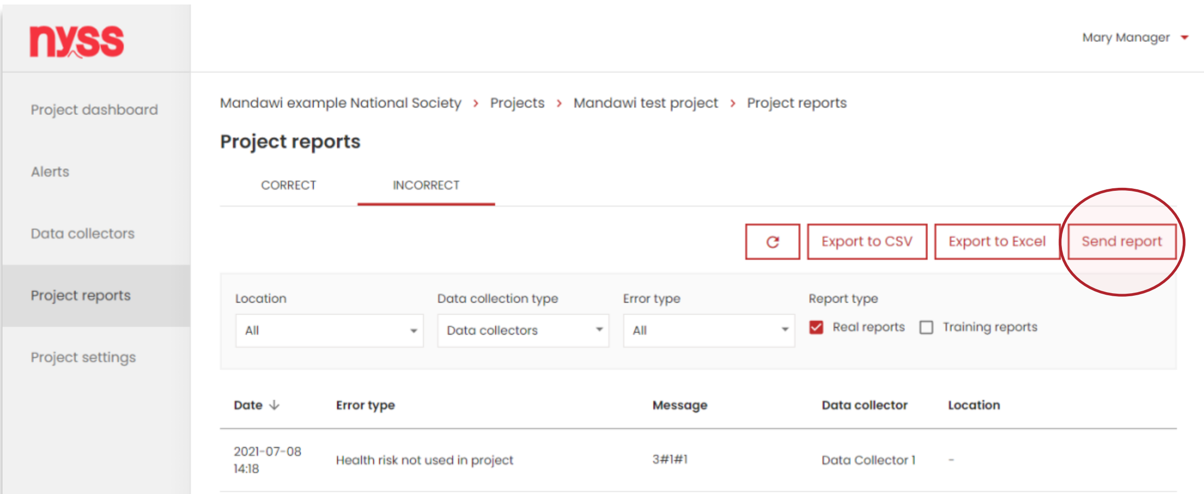


Figure 71: Project reports, send report button

4. In the popup that opens, choose the data collector/collection point, date, time, and the message text:

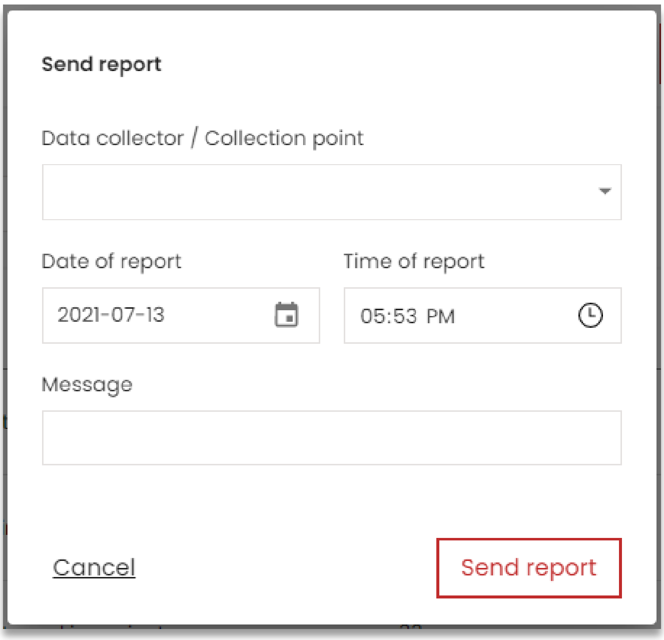
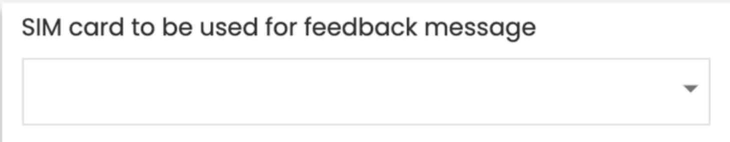


Figure 72: Project reports, send report

If the Nyss hardware is set up with two SIM-cards (see 14.2.5 SETUP SIM CARD(S) for more information), you will also need to pick which one (e.g., which provider) Nyss should send the feedback message from:



5. Click Send report when done

9.2.7 Go to alert

If a report is part of an alert, there is another option available when clicking the three dots on the right side of the table: Go to alert.

Figure 73: Project report, go to alert

Clicking Go to alert will take you to the related **alert details** page (see 10.2 ALERT DETAILS for more information).

10 Working with alerts

An alert is what Nyss automatically triggers when a certain amount of a health risk/event is being reported, within a certain timeframe and geographical area – also known as the alert rule.

The **alert rule**, where the amount of reports, the timeframe and geographical perimeters are set, is configured in the project settings, see 6.3.1.3 SET ALERT RULE.

When an alert is triggered, **supervisors are automatically notified** via SMS. Nyss notifies all supervisors responsible for the data collectors whose reports have contributed to the alert.

10.1 Alerts page

The following user roles can do this:
(head) manager | **technical advisor** | **(head) supervisor**

All alerts in the project can be viewed on the alerts page:

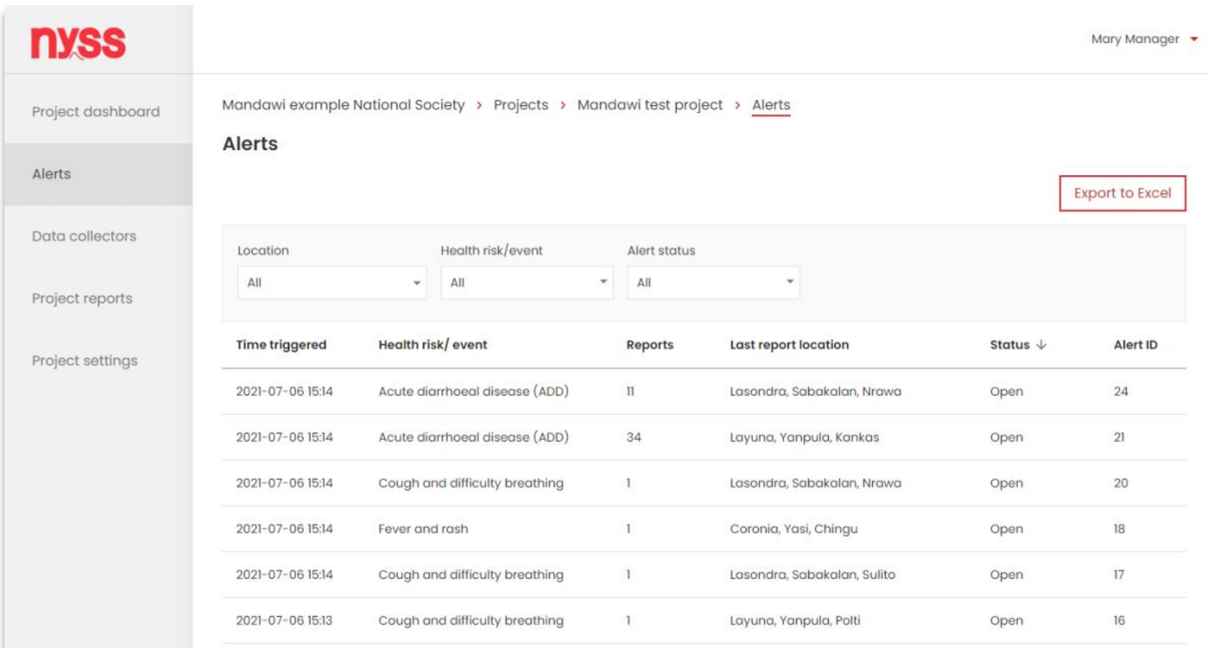


Figure 74: Alerts page

The table shows:

- Date and time the alert was triggered,

- health risk/event,
- number of reports in the alert,
- the location of the last report,
- alert status (open, escalated, dismissed, or closed), and
- alert ID

The information shown can be filtered by:

- Location,
- health risk/event, and
- alert status.

It is also possible to **export the alerts** by using the Export to Excel button in the upper right corner.

The table is **sorted on alert status** by default, so that open and then escalated alerts are shown first, as these are the statuses that require some action.

It is also possible to sort on time triggered.

10.1.1 Alert statuses

Alerts can have **four different statuses**:

10.1.1.1 Open alerts

When an alert has been triggered, it gets the status **Open** in Nyss. Open alerts should be acted upon immediately to ensure a timely response. The reports in the alert need to be cross-checked, so that it becomes clear whether the alert should be escalated or dismissed.

As long as an alert is open, new incoming reports of the same health risk/event will be added to the alert.

If the responsible supervisor(s) do not escalate or dismiss the alert within 24 hours, a notification is sent to the escalated alert notification recipient (see 6.4 ADD ANOTHER ORGANIZATION

IF THE project is a joint project between multiple organizations, please refer to 13 JOINT PROJECT WITH ANOTHER organization for additional setup steps and more information.

Add escalated alert notification recipient).

10.1.1.2 *Escalated alerts*

If enough reports are kept when cross-checking, so that the alert rule is still met, the supervisor(s) get the ability to escalate the alert. The alert status then changes to **Escalated**.

10.1.1.3 *Closed alerts*

An alert should stay escalated for as long as the response is awaited or ongoing. Once those responsible for responding declare the situation properly dealt with and no longer an ongoing issue, the alert should be closed by the supervisor or manager. The alert status then changes to **Closed**.

10.1.1.4 *Dismissed alerts*

If enough reports are dismissed when cross-checking, so that the alert rule is no longer met, the supervisor(s) get the ability to dismiss the alert. The alert status then changes to **Dismissed**.

10.2 Alert details

The following user roles can do this:
(head) manager | **technical advisor** | **(head) supervisor**

When clicking an alert on the alert page, you go to the details page for that alert.

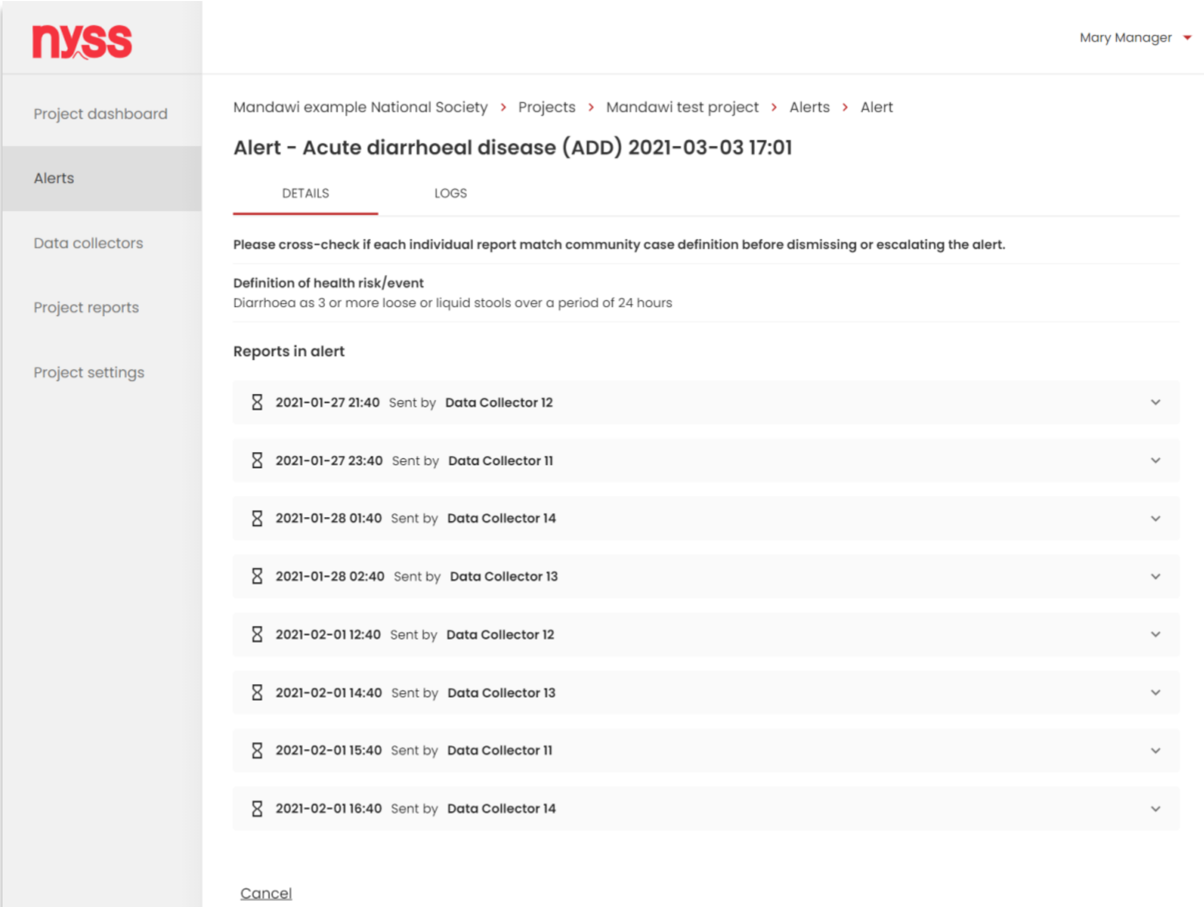


Figure 75: Alert details.

The Alert details page shows information on:

- Which health risk/event the alert has been triggered for,
- when the alert was triggered,
- definition of the health risk/alert for easy reference, and
- all reports contributing to the alert.

The reports all have a **symbol** in front of them, with the following meaning:

- Hourglass = not cross-checked report
- Green checkmark (✓) = kept report
- Red cross (X) = dismissed report

Reports that were cross-checked before the alert was triggered, or that have been cross-checked by other supervisors, will show up with green checkmarks or red Xs:

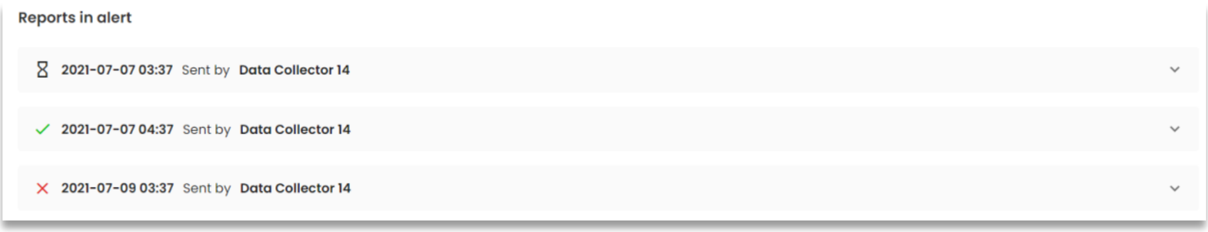


Figure 76: Alert details, report status symbols

10.2.1 Cross-checking reports in alerts

As soon as the alert notification is received, it is important that **supervisors cross-check the reports** by contacting the data collectors with reports in the alert. The SMS notification sent to supervisors includes a direct link to the alert details page.

On the alert details page, supervisors can see detailed information on each report coming from a data collector they are responsible for. By clicking on the v to the far right on the report, the report will expand, showing additional details:

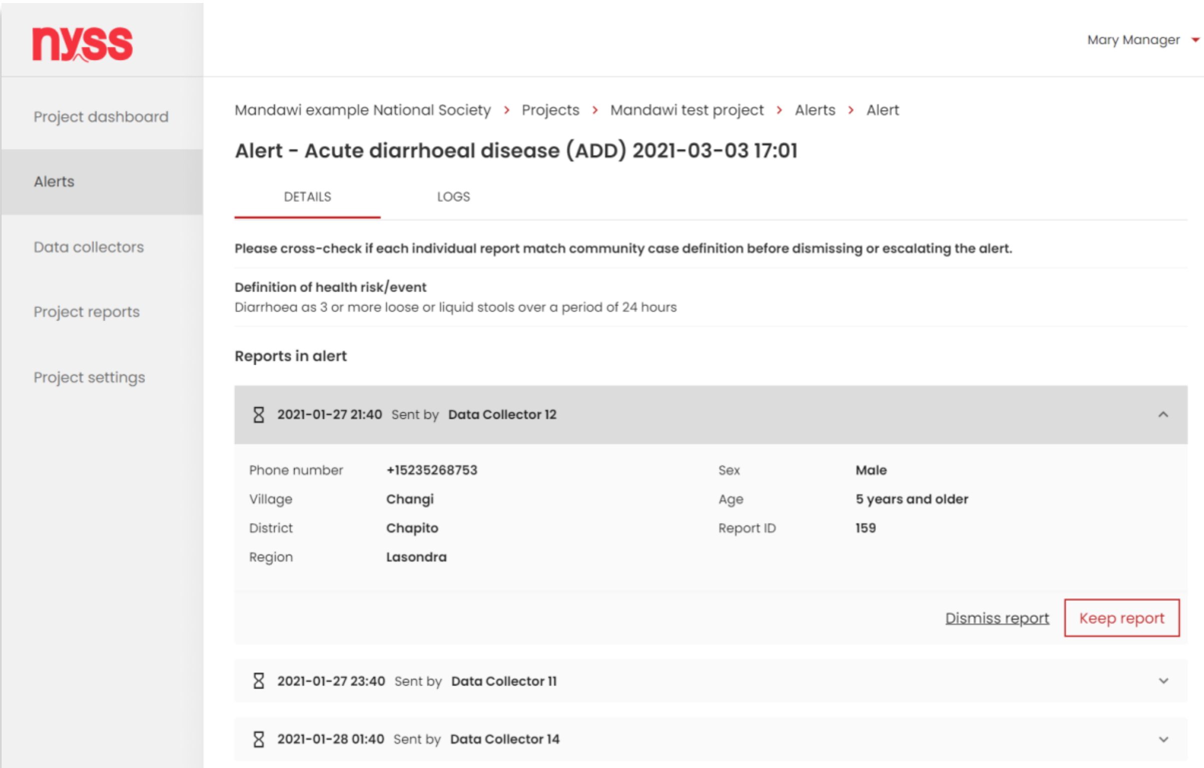


Figure 77: Alert details, report details.

The report details include the phone number of the data collector and the location that they have reported from, sex and age if reported, and a unique report ID.

Finally, there are two buttons: Dismiss report and Keep report.

10.2.1.1 Dismiss or keep report in alert

If, upon cross-checking, the supervisor finds out that **the report is not valid** (sent by mistake, not meeting case definition etc.), they should dismiss the report, by clicking on Dismiss report. When a report is dismissed, it no longer counts towards the alert rule.

There will be a confirmation in the bottom right corner of the report, stating that it is dismissed, and the report will be marked by a red X:

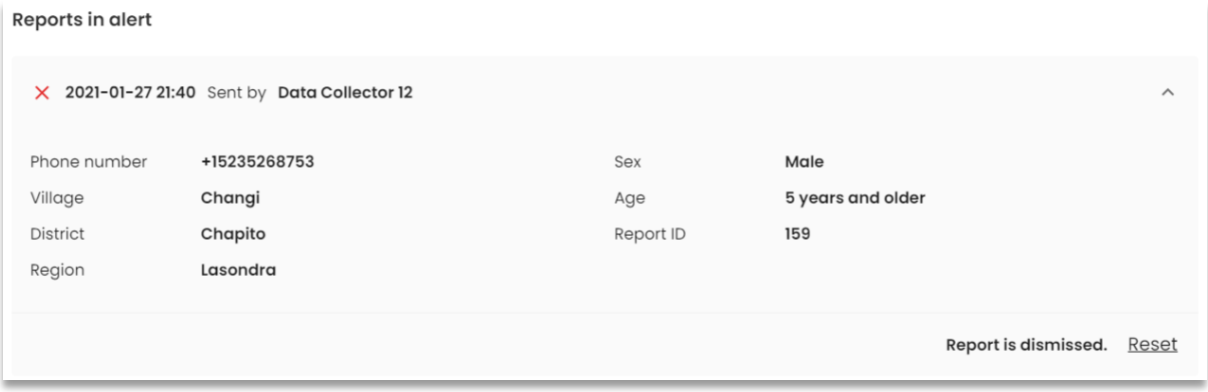


Figure 78: Dismissed report.

If, upon cross-checking, the supervisor finds out that **the report is valid** (sent on purpose and meeting the case definition), they should keep the report, by clicking the Keep report-button. When a report is kept, it still counts towards the alert rule.

There will be a confirmation in the bottom right corner of the report, stating that it is kept, and the report will be marked by a green ✓:

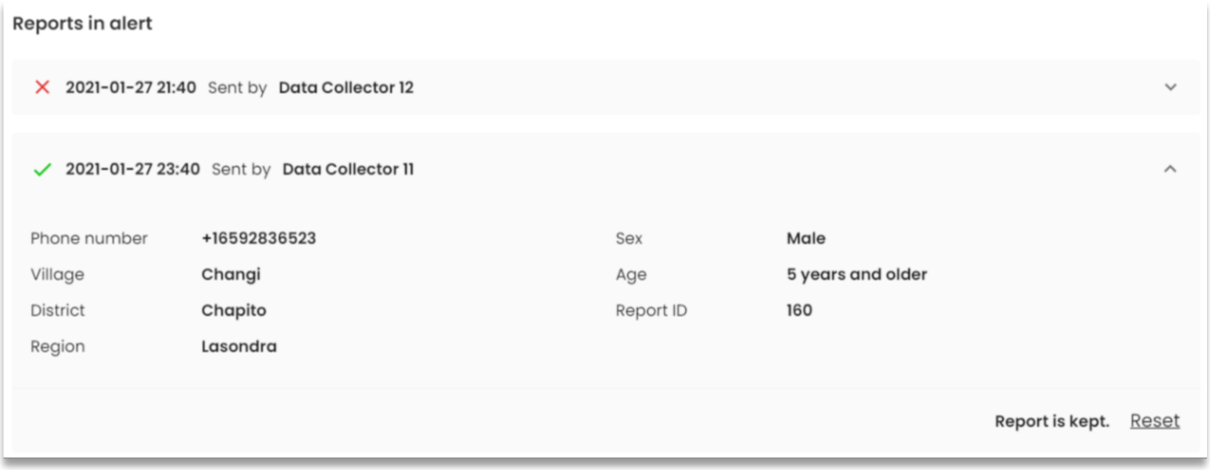


Figure 79: Kept report.

Click on Reset to correct a report that was wrongly dismissed or kept. This is especially important to do before escalating an alert and notifying authorities:

10.3 Escalate alert

The following user roles can do this:
(head) manager | **technical advisor** | **(head) supervisor**

If enough reports are kept, so that the **alert rule is still met**, a message will pop up at the bottom of the screen, telling the supervisor to escalate the alert:

Figure 80: Popup message, the alert should be escalated.

The Escalate alert button also appears:

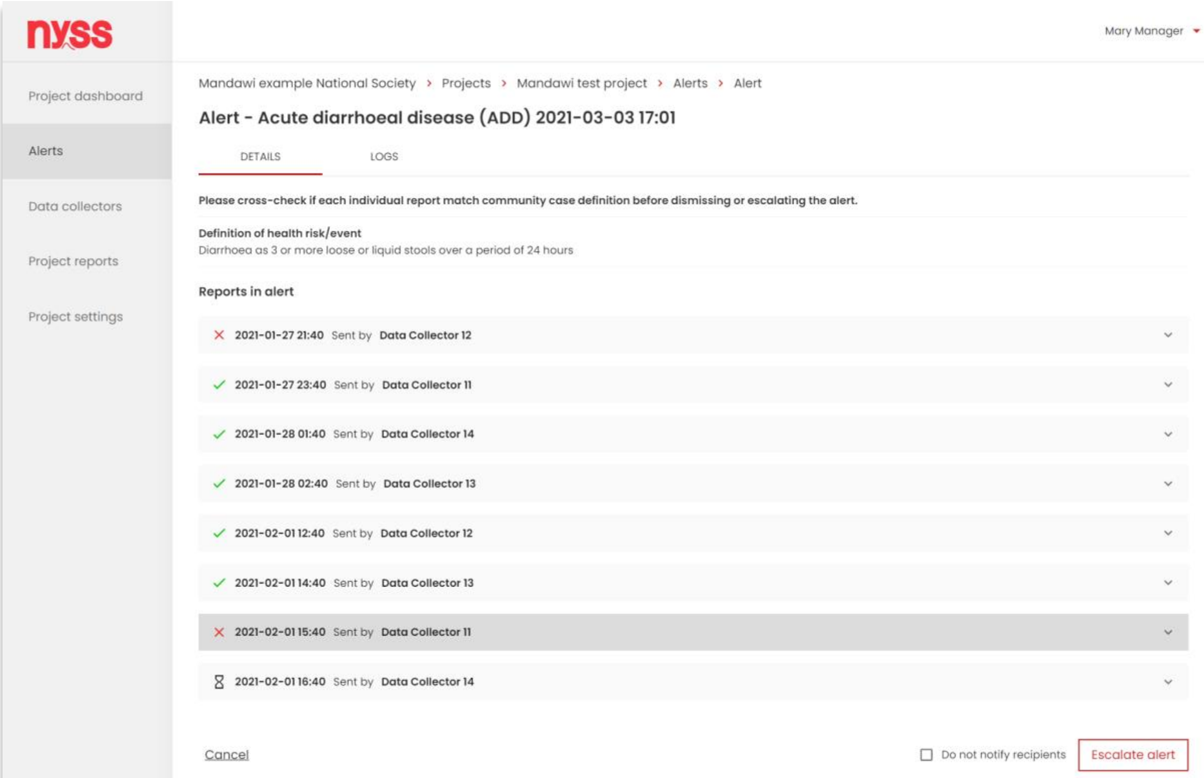


Figure 81: Escalate alert.

When an alert is escalated, a notification is sent to the applicable alert recipients (see 6.4 ADD ANOTHER ORGANIZATION

IF THE project is a joint project between multiple organizations, please refer to 13 JOINT PROJECT WITH ANOTHER ORGANIZATION for additional setup steps and more information.

Add escalated alert notification recipient).

When the Escalate alert button is clicked, a popup box appears, asking the supervisor to both confirm and to inform the data collectors in their area.

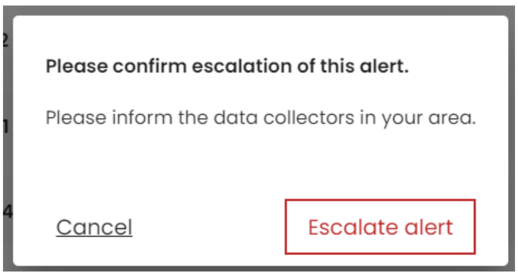


Figure 83: Alert escalation confirmation.

If you did not check the Do not notify recipients checkbox; once the escalation is confirmed by clicking the second Escalate alert button, a notification is automatically sent to those recipients configured under Alert notifications in the Project settings (3.2.5 PROJECT SETTINGS).

Once an alert is escalated, new reports will not be added to it. New reports of the same health risk/event will instead trigger new alerts.

When an alert has been escalated, it is wise to inform data collectors in both the affected and nearby areas. This enables them to be more proactive within their communities, both to potentially detect more suspected cases, but also to tailor health promotional messaging and/or activities.

10.4 Dismiss alert

The following user roles can do this:
(head) manager | **technical advisor** | **(head) supervisor**

If enough reports are dismissed, so that the alert rule is no longer met, a message will pop up at the bottom of the screen, telling the supervisor to dismiss the alert:

Figure 84: Popup message telling the user to dismiss the alert

The cross-checking status of the reports in the alert will be saved, and kept reports can contribute to new alerts.

10.5 Close alert

The following user roles can do this:
(head) manager | **technical advisor** | **(head) supervisor**

An alert should stay escalated for as long as the response is awaited or ongoing. Once those responsible for responding declare the situation properly dealt with and no longer an ongoing issue, the alert should be closed by the supervisor or manager.

When closing an alert, there is a confirmation popup. Upon clicking Close alert, you will be redirected to the Event log page to add additional details:

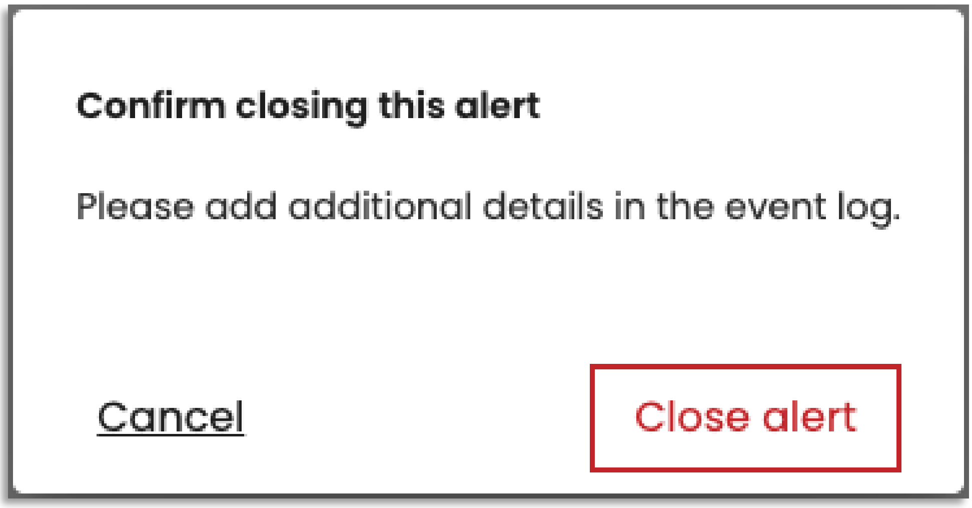


Figure 85: Close alert popup

10.6 Event log

The following user roles can do this:
(head) manager | **technical advisor** | **(head) supervisor**

Next to the Details tab, there is a Event log tab, showing any update and action taken related to the alert:

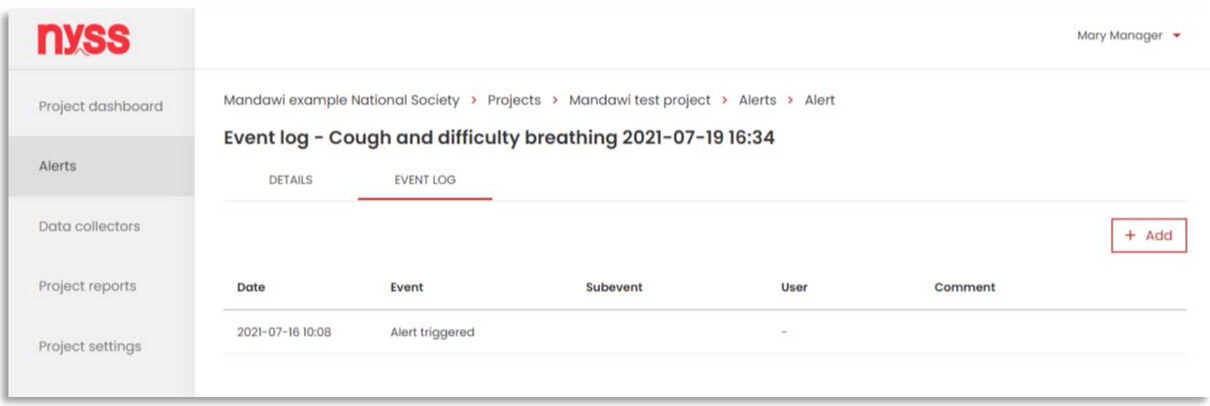


Figure 86: Event log tab

Once reports are kept or dismissed, or an alert changes status, the **table gets automatically updated** with new information:

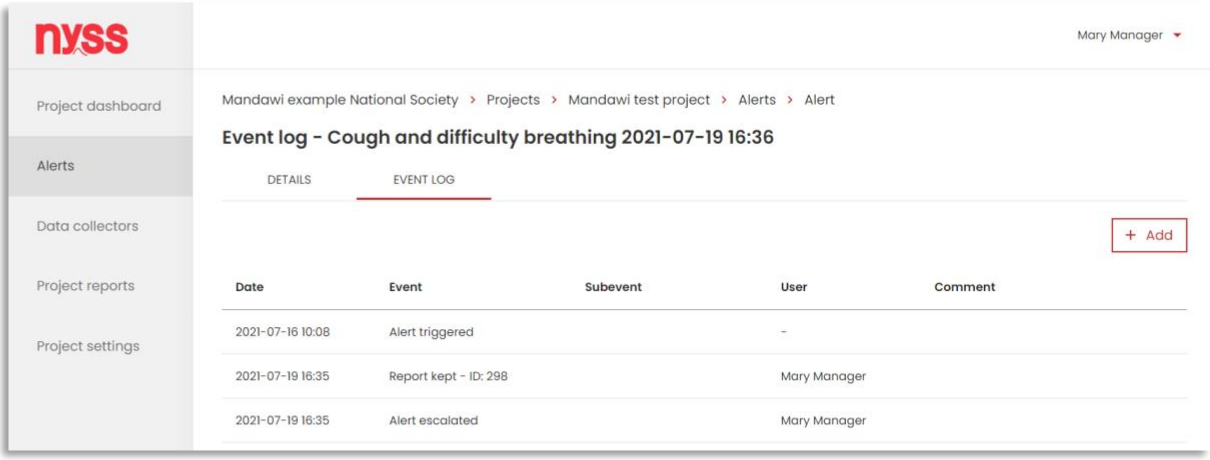


Figure 87: Event log, new automatic entries

10.6.1 Add event on alert

Events can also be added manually on an alert, by clicking the + Add button. A popup then appears, letting you add what kind of event, the time of the event, and an optional comment:

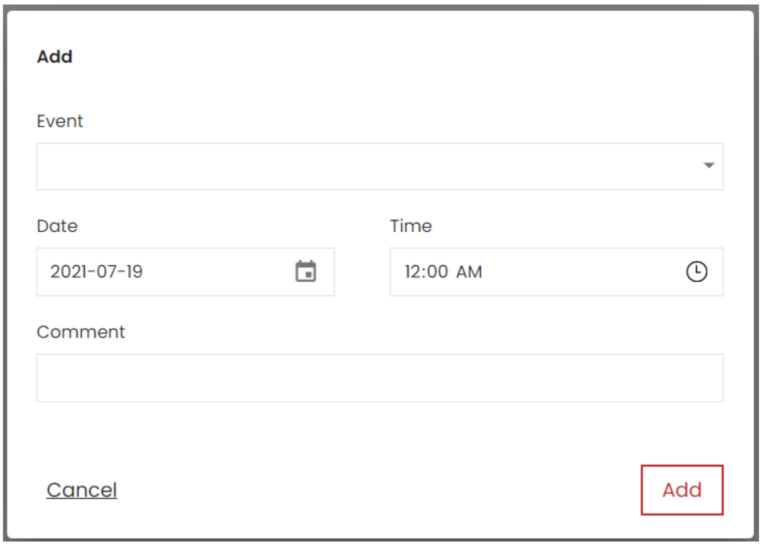
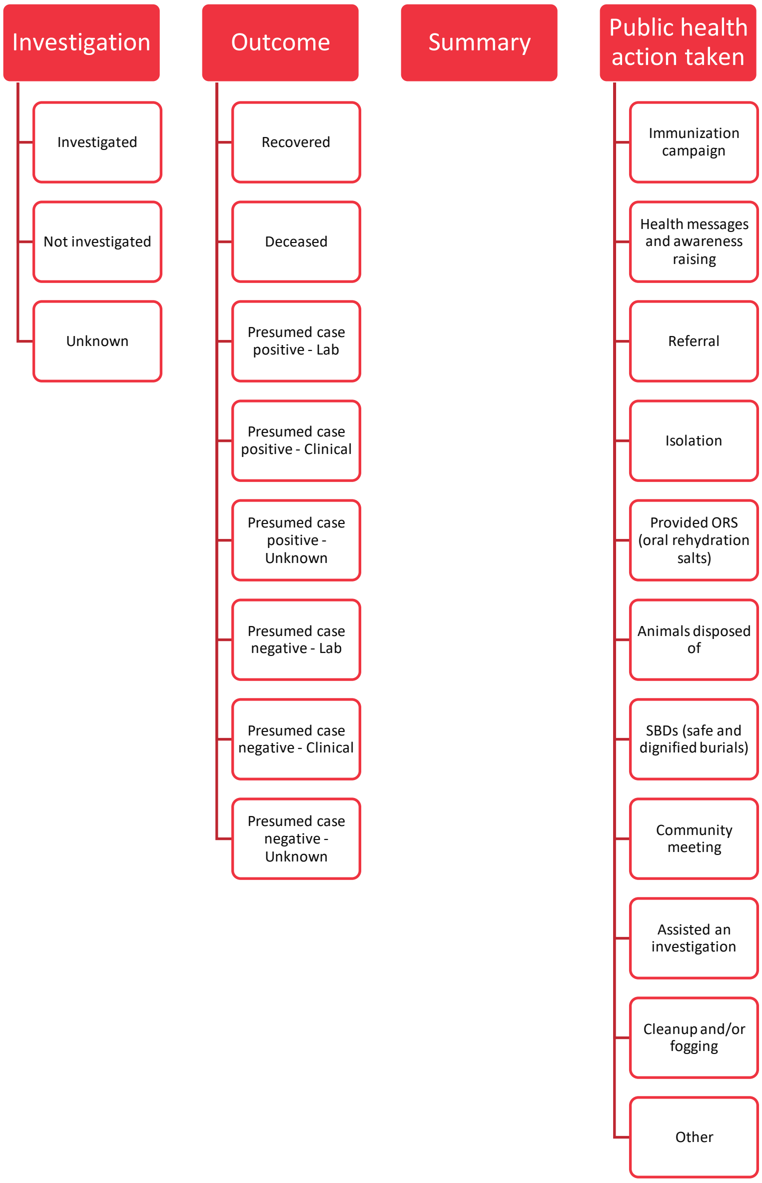


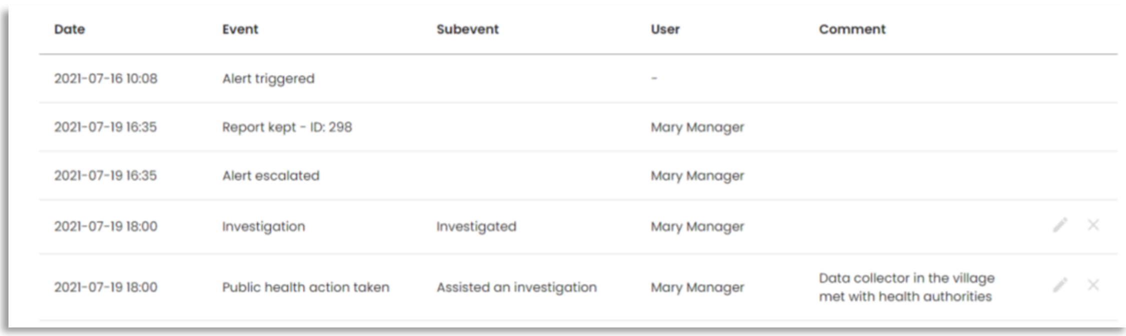
Figure 88: Add event on alert

Nyss lets you pick between four different types of events, and related subevents:



10.6.2 Edit or delete alert event

Manually added events can be **deleted**, or partially **edited**, by clicking on the X or pencil on the right-hand side:



Date	Event	Subevent	User	Comment
2021-07-16 10:08	Alert triggered		-	
2021-07-19 16:35	Report kept - ID: 298		Mary Manager	
2021-07-19 16:35	Alert escalated		Mary Manager	
2021-07-19 18:00	Investigation	Investigated	Mary Manager	
2021-07-19 18:00	Public health action taken	Assisted an investigation	Mary Manager	Data collector in the village met with health authorities

Figure 89: Delete or edit alert event

The comment is the only editable information. If you have entered the wrong event or time; delete the event and add it correctly.

10.7 "An alert was not triggered"

If you experience that alerts do not trigger the way you expected them to, please revisit the alert rules set for the health risks/events in your project (see 6.3.1.3 SET ALERT RULE).

11 Use the Data collectors page

Data collectors can be found in the left menu when in a project and provides an **overview of all data collectors in the project and their performance**.

11.1 Collectors/collection points

The following user roles can do this:
(head) manager | **technical advisor** | **(head) supervisor***
*when assigned

The first tab, **Collectors/collection points**, shows all data collectors in the project:

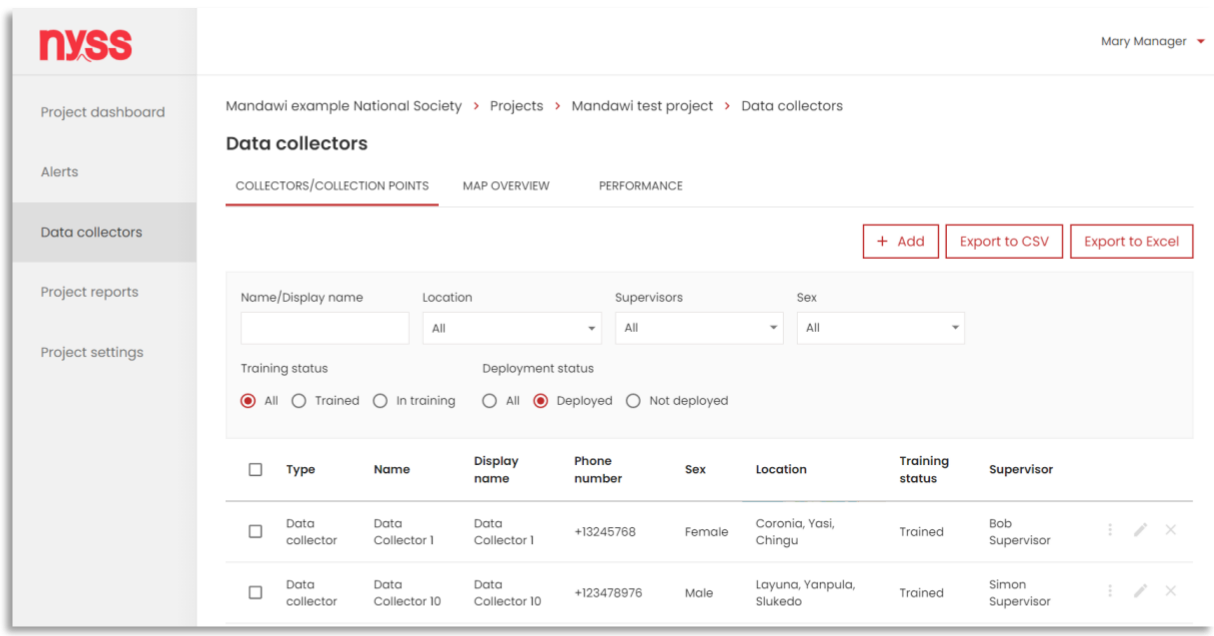


Figure 90: Data collectors/collection points

The table shows:

- Data collection type (data collector or data collection point),
- name of data collector/collection point,
- display name,
- phone number,
- sex,
- location,
- training status, and
- the supervisor in charge of the data collector/collection point.

The information shown can be filtered by:

- Location,
- supervisor,
- sex,
- training status (in training or trained), and
- deployment mode (deployed or not deployed).

Additionally, you have can search for data collectors/collection points by name/display name.

The list of data collectors/data collection points can be **exported to an excel or CSV file**. Click on the buttons Export to excel or Export to CSV to choose which file type you want to export to.

11.1.1 Add data collector/collection point

How to **add data collectors/collection points** is described under 7 DATA COLLECTORS AND DATA COLLECTION POINTS.

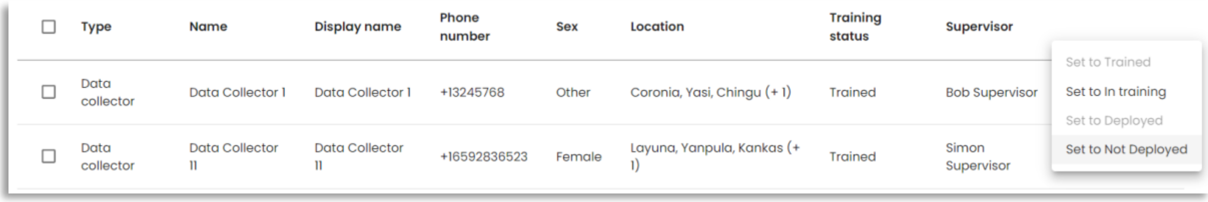
11.1.2 Change deployment mode

A deployed data collector is expected to report according to the agree-upon schedule (at minimum, an Activity/zero report as frequent as decided by the project).

If a volunteer needs to go on leave for a period, and thus is not expected to report, they can be set to not deployed. This is particularly useful to ensure that completeness is calculated correctly under the Performance tab (see 11.3 PERFORMANCE).

To change the deployment mode of a data collector/collection point, do as follows:

1. Go to the Data collection page.
2. Locate the data collector/collection point you want to change the deployment mode of and click the three dots on the right of the table.
3. Click Set to deployed / Set to not deployed:



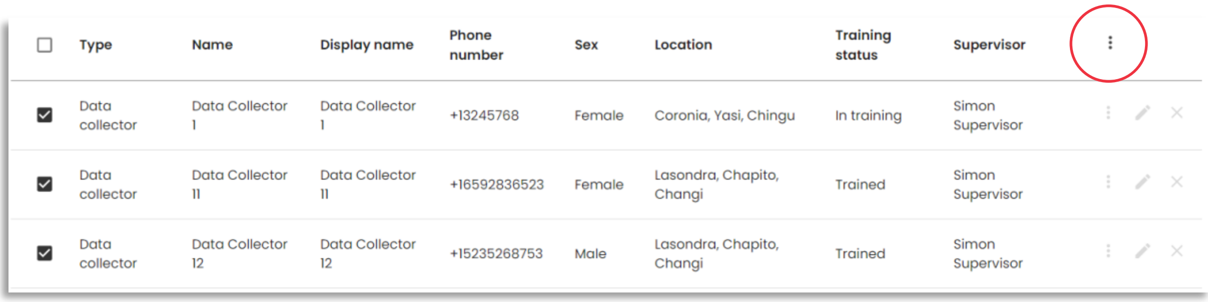
Type	Name	Display name	Phone number	Sex	Location	Training status	Supervisor
Data collector	Data Collector 1	Data Collector 1	+13245768	Other	Coronia, Yasi, Chingu (+ 1)	Trained	Bob Supervisor
Data collector	Data Collector 11	Data Collector 11	+16592836523	Female	Layuna, Yanpula, Kankas (+ 1)	Trained	Simon Supervisor

Figure 91: Change deployment mode of data collector

11.1.2.1 Change deployment mode for multiple data collectors/ points

Deployment mode can be edited simultaneously for multiple data collectors/ collection points, through multi-select:

1. Go to the Data collection page.
2. Locate the data collectors/collection points you want to change the deployment mode for and check the checkbox on the left of the table.
3. Click the three dots that have appeared in the table header and select Set to deployed / Set to not deployed.



Type	Name	Display name	Phone number	Sex	Location	Training status	Supervisor
Data collector	Data Collector 1	Data Collector 1	+13245768	Female	Coronia, Yasi, Chingu	In training	Simon Supervisor
Data collector	Data Collector 11	Data Collector 11	+16592836523	Female	Lasondra, Chapito, Changi	Trained	Simon Supervisor
Data collector	Data Collector 12	Data Collector 12	+15235268753	Male	Lasondra, Chapito, Changi	Trained	Simon Supervisor

Figure 92: Data collectors, multi-select

11.1.3 Change training status

All data collectors/ collection points get the status in training automatically after being registered.

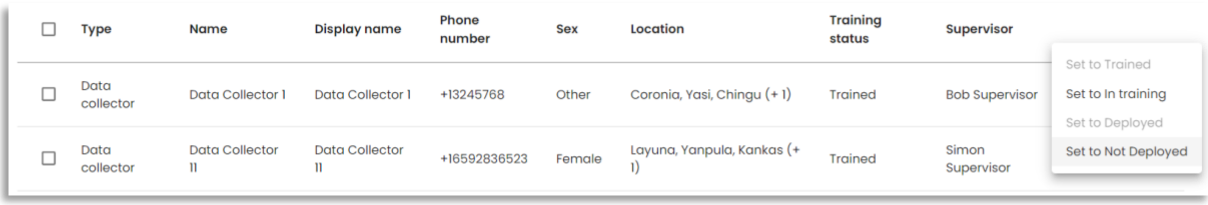
This status lets them to practice reporting to Nyss during trainings, as Nyss does not read training reports as real reports – neither do they trigger alerts.

Once a data collector/data collection point has been trained, their status can be changed.

If a refresher training is held, the training status can be changed back for the duration of the training.

To change the training status of a data collector/collection point, do as follows:

1. Go to the Data collection page.
2. Locate the data collector/collection point you want to change the training status of and click the three dots on the right of the table.
3. Click Set to trained / Set to in training:



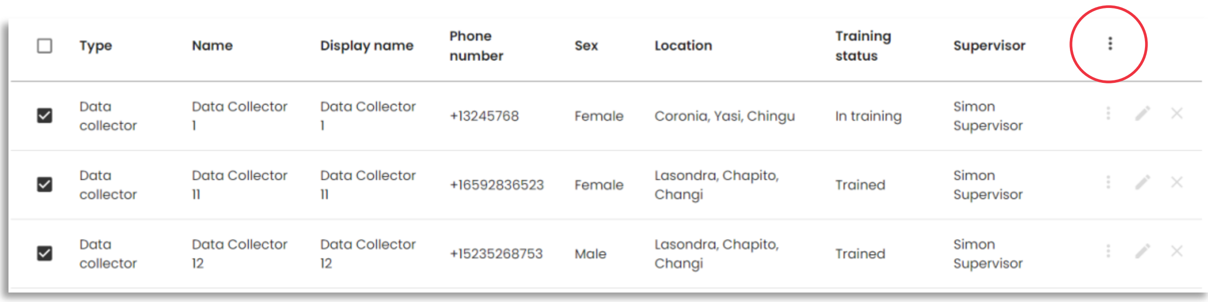
	Type	Name	Display name	Phone number	Sex	Location	Training status	Supervisor
☐	Data collector	Data Collector 1	Data Collector 1	+13245768	Other	Coronia, Yasi, Chingu (+ 1)	Trained	Bob Supervisor
☐	Data collector	Data Collector 11	Data Collector 11	+16592836523	Female	Layuna, Yanpula, Kankas (+ 1)	Trained	Simon Supervisor

Figure 93: Change training status of data collector

11.1.3.1 *Change training status for multiple data collectors/ points*

Training status can be edited simultaneously for multiple data collectors/ collection points, through multi-select:

4. Go to the Data collection page.
5. Locate the data collectors/collection points you want to change the training status for and check the checkbox on the left of the table.
6. Click the three dots that have appeared in the table header and select Set to trained / Set to in training.



	Type	Name	Display name	Phone number	Sex	Location	Training status	Supervisor
☑	Data collector	Data Collector 1	Data Collector 1	+13245768	Female	Coronia, Yasi, Chingu	In training	Simon Supervisor
☑	Data collector	Data Collector 11	Data Collector 11	+16592836523	Female	Lasondra, Chapito, Changi	Trained	Simon Supervisor
☑	Data collector	Data Collector 12	Data Collector 12	+15235268753	Male	Lasondra, Chapito, Changi	Trained	Simon Supervisor

11.1.4 Edit or delete data collector/collection point

1. Go to the Data collectors page.
2. Locate the data collector/collection point you want to edit or delete.
   a. To edit: Click on the data collector/collection point or the pen on the right side of the table, edit the information in the form and click Save.

b. To delete: Click on the X on the right side of the table and click Delete data collector/point to confirm.

> When removing a data collector/collection point, the person/point is removed from the Data collectors page.
>
> The person/point cannot report anymore, but all previous reports are still shown on the dashboard pages and the reports pages.
>
> The personal information is removed from the Projects reports page.

11.1.5 Replace supervisor

If there is a change in which supervisor is responsible for certain data collectors, you can easily change this in Nyss.

To replace the supervisor of one individual data collector/collection point, edit it as described under 11.1.4 EDIT OR DELETE DATA COLLECTOR/COLLECTION POINT.

To **replace the supervisor or multiple data collectors**, you may do it simultaneously for all, through multi-select:

7. Go to the Data collection page.
8. Locate the data collectors/collection points you want to replace the supervisor for and check the checkbox on the left of the table.
9. Click the three dots that have appeared in the table header, and select Replace supervisor.

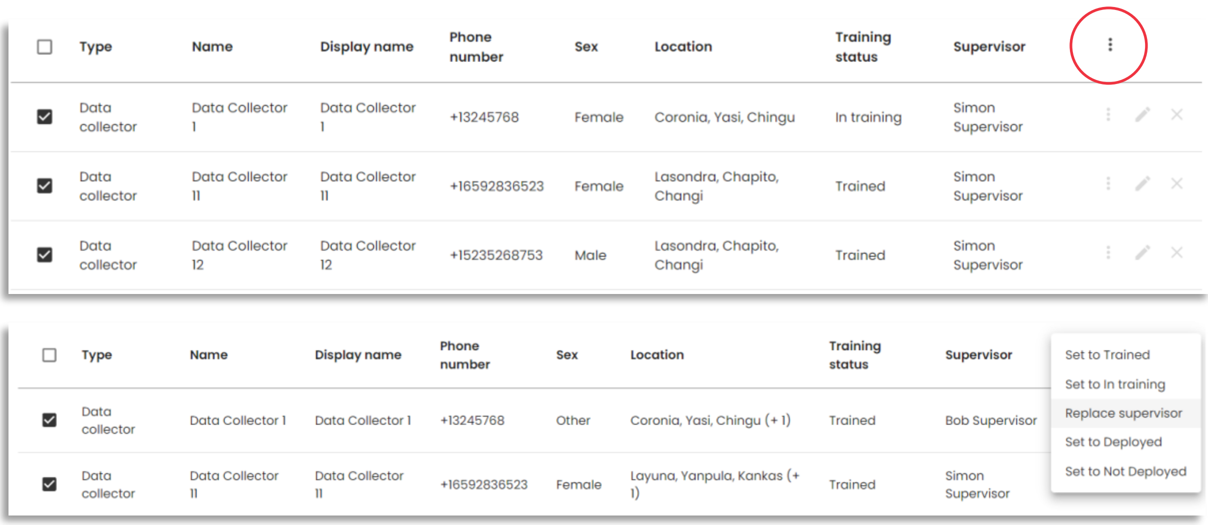


Figure 94: Data collectors, mass-selection of multiple data collectors

A popup appears, that lets you pick which supervisor you want to assign the selected data collectors to:

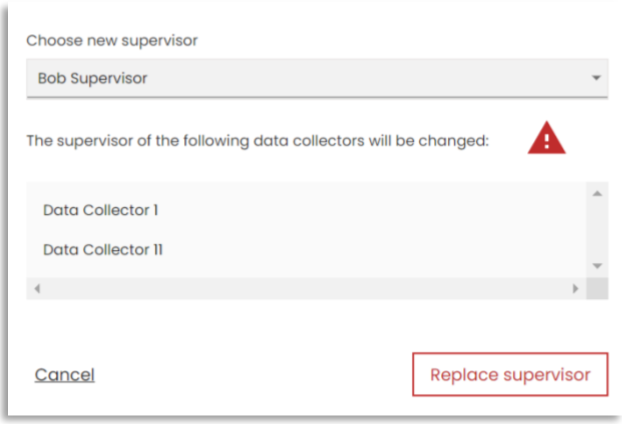


Figure 95: Choose new supervisor popup

The popup also shows you which data collectors the change will take place for.

10. Click Replace supervisor to confirm.

11.2 Map overview

The following user roles can do this:
(head) manager | **technical advisor** | **(head) supervisor***
*when assigned

The second tab shows a map of **all trained and deployed data collectors/ collection points**. Their locations on the map are based on the location(s) they are registered with:

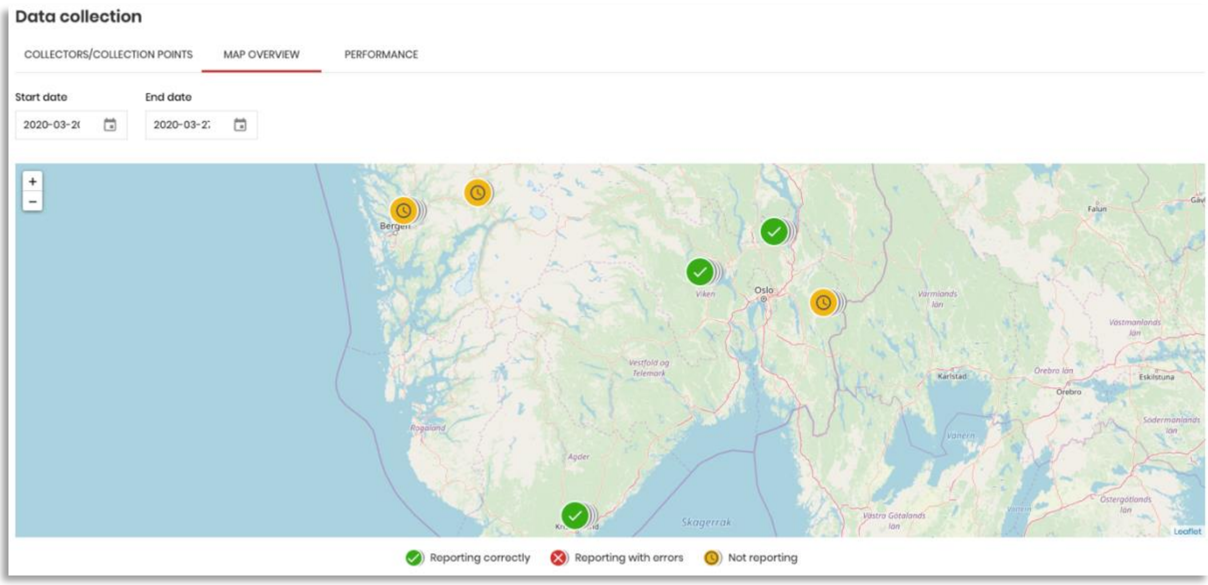


Figure 96: Map overview

All data collectors/data collection points are presented either as green, yellow, or red dots depending on how they are reporting:

- Green ✓ = reporting correctly
- Red X = reporting incorrectly
- Yellow 🕓 = not reporting

This enables you to visually see how both the different locations and data collectors/collection points are performing.

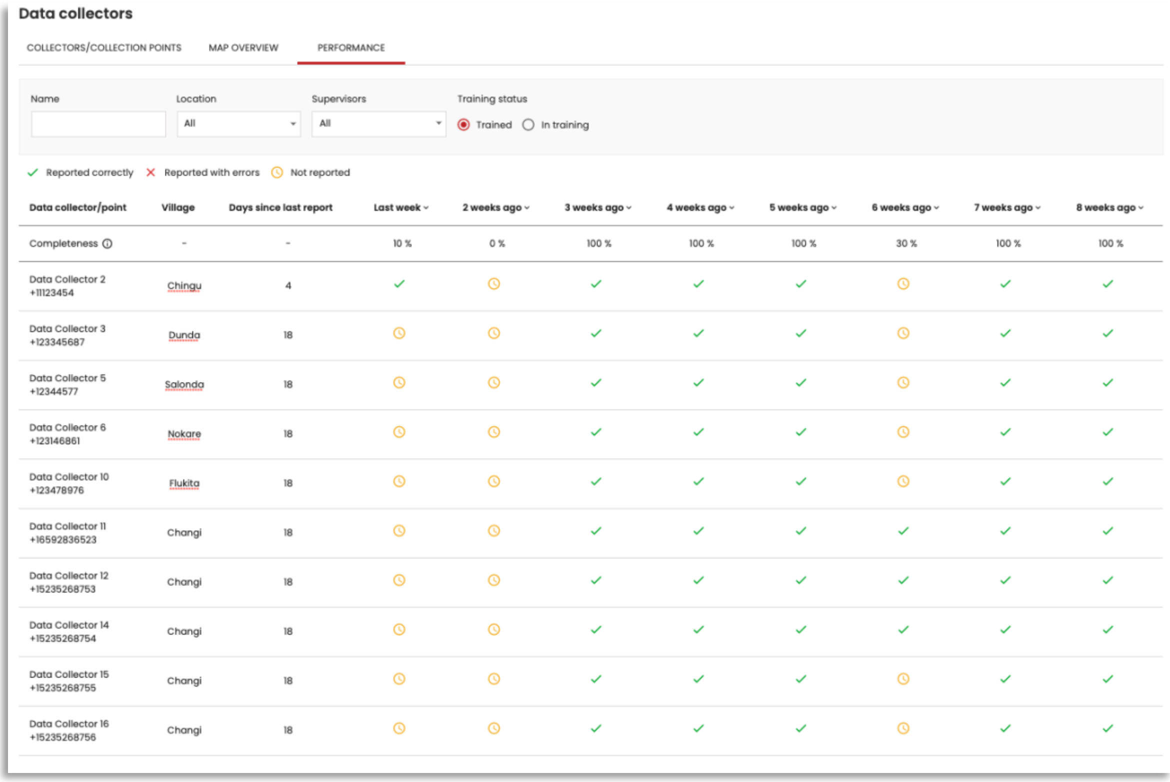
When you zoom out, the dots will cluster, and the ones that need your attention will be most visible (red taking precedence over yellow, and yellow over green). When you zoom in, the dots will spread and when you are down at individual level, you can click the dot to see the display name of the data collectors.

You can also filter on time period, by choosing start and end dates.

11.3 Performance

The following user roles can do this:
(head) manager | **technical advisor** | **(head) supervisor***
*when assigned

The third and last tab shows a table of **all deployed data collectors/data collection points** and how they are performing. This makes it easy to immediately see who needs to be followed up (those not reporting or reporting incorrectly):



Data collector/point	Village	Days since last report	Last week	2 weeks ago	3 weeks ago	4 weeks ago	5 weeks ago	6 weeks ago	7 weeks ago	8 weeks ago
Completeness ⓘ	-	-	10 %	0 %	100 %	100 %	100 %	30 %	100 %	100 %
Data Collector 2 +11123454	Chingu	4	✓	◷	✓	✓	✓	◷	✓	✓
Data Collector 3 +123345687	Dunda	18	◷	◷	✓	✓	✓	◷	✓	✓
Data Collector 5 +12344577	Salonda	18	◷	◷	✓	✓	✓	◷	✓	✓
Data Collector 6 +123146861	Nokare	18	◷	◷	✓	✓	✓	◷	✓	✓
Data Collector 10 +123478976	Flukita	18	◷	◷	✓	✓	✓	◷	✓	✓
Data Collector 11 +16592836523	Changi	18	◷	◷	✓	✓	✓	✓	✓	✓
Data Collector 12 +15235268753	Changi	18	◷	◷	✓	✓	✓	✓	✓	✓
Data Collector 14 +15235268754	Changi	18	◷	◷	✓	✓	✓	✓	✓	✓
Data Collector 15 +15235268755	Changi	18	◷	◷	✓	✓	✓	◷	✓	✓
Data Collector 16 +15235268756	Changi	18	◷	◷	✓	✓	✓	◷	✓	✓

Figure 97: Data collectors, Performance tab

Not deployed data collectors are not expected to report, and thus not included in this table.

How weeks are calculated

The table shows:

- Data collector/collection point (name and phone number),
- village,
- days since last report, and
- how they have been reporting over the previous eight EPI weeks, indicated with these symbols:
    - Green ✓ = reporting correctly
    - Red X = reporting incorrectly
    - Yellow ◷ = not reporting

The information shown can be filtered by:

- Location,
- supervisor, and
- training status (in training or trained).

Additionally, you have can search for data collectors/collection points by name/display name.

11.3.1 Completeness indicator

The top row of the table (under the headers) is the completeness indicator for each of the previous eight EPI weeks. The completeness indicator shows how many percent of the data collectors/collection points were reporting in the given week:

Data collector/point	Village	Days since last report	EPI week 36	EPI week 35	EPI week 34	EPI week 33	EPI week 32	EPI week 31	EPI week 30	EPI week 29
Completeness	-	-	90 %	100 %	36 %	72 %	81 %	90 %	100 %	100 %

Figure 98: Completeness indicator

PART 5

Annexes

12 CBS for preparedness and in emergencies

Nyss can be used for CBS as preparedness for potential outbreaks in a non-emergency setting, preparedness for outbreaks during an emergency, and for monitoring ongoing outbreaks and epidemics.

How Nyss is set up and used does not differ particularly between preparedness and emergency scenarios, but we have detailed some considerations for different contexts below:

12.1 CBS and Nyss for preparedness

CBS and Nyss can be **added to long-term health projects with community activities**

- in contexts with no ongoing outbreaks or emergencies, and/or
- where existing surveillance system are unable to reach all local communities.

By using CBs with Nyss for preparedness, the National Society and Ministry of Health can see in real time where potential health risks/events and transmission is occurring, so that they can respond quickly. Additionally, CBS with Nyss can be used to look at the number of reported health risks/events over time in different places, and with this **plan and guide activities and interventions** in the relevant areas.

When CBS is implemented in a non-emergency setting, volunteers do not necessarily see a high number of health risks/events to report, and **regular refresher trainings** to sustain their knowledge might be of a higher need than in an emergency setting.

Regular monitoring to see the progress of the program and to be able to support the volunteers is necessary.

12.2 CBS and Nyss in emergencies

CBS with Nyss can be used in emergencies to:

- fill a temporary gap in existing surveillance system(s) due to **natural disaster or conflict**, and/or

- monitor health risks/events in the start of, or during, **an ongoing outbreak**.

A National Society can request to use Nyss as a tool during an emergency with national response. If there is need for more support, NorCross has developed a Public Health Emergency Response Unit with in-depth training in CBS (PH ERU CBS), which can be deployed in an emergency. The **PH ERU CBS** consists of delegates and equipment to implement CBS and be self-sufficient for up to four weeks.

> You can read more about the PH ERU CBS here: https://www.cbsrc.org/CBS-in-emergencies

As an emergency response often entails response from several actors, **Nyss can be configured to receive reports from several actors** doing CBS, without sharing any personal data (see 13 JOINT PROJECT WITH ANOTHER ORGANIZATION). Using a joint project with another organization should be approved by the involved authorities.

As emergencies need a more rapid response and potentially last for a shorter period, **volunteers and their supervisors receive a training specific for emergency contexts**.

Monitoring by supervisor is still important but monitoring visits and indicators to report on will be less comprehensive and more specific, due to the limited timeframe for implementation.

13 Joint project with another organization

This section explains what a joint project with another organization is, how to set it up in Nyss, and how it differs from a standard project.

If multiple organizations are collaborating on a CBS implementation, Nyss can be configured to facilitate this as well. This is especially important when it comes to outbreaks, as transmittable diseases know no geographical or organizational boundaries.

Using a joint project with another organization ensures that **all health data is shared, while personal data is not**.

13.1 New user: Coordinator

To ensure that no personal data is shared across organizations, the setup of a joint project with another organization requires a new user role: the coordinator.

The coordinator is most often an **employee from the main organization** involved in the joint project.

13.1.1 Coordinator user access

Once a project becomes joint with another organization, the coordinator is **the only user that can**:

- add, edit, and remove organizations in a National Society,
- add a head manager for each organization,
- see and edit the National Society settings, including the SMS gateway and geographical structure,
- edit project settings (except alert notification recipients, as these will differ between the organizations and their partners)
- close the project, and
- add a replacement coordinator.

Additionally, **the coordinator can see**:

- the National Society and Project dashboards,
- the Users page, but only head managers and data consumers, and

- the Alerts page and alert Details (but cannot perform any actions related to alerts).

Since the coordinator's task is to set up and maintain the high-level settings for the National Society and related project(s), the coordinator **does not have access to**:

- information on any users besides head managers and data consumers,
- actions related to alerts,
- the Event log tab under Alerts,
- Data collectors,
- National Society and Project reports, and
- Alert notification recipient settings.

There **can only be one coordinator** in a joint project.

> The coordinator signs the **Nyss agreement** on behalf of all parties involved in the project. If the coordinator wants each party to sign an agreement, that needs to be done outside of Nyss and facilitated by the coordinator's organization.

13.2 Anonymization of personal data

Once there are multiple organizations involved in a project, all users (except the coordinator) can only see personal data of users and data collectors from their own organization. This pertains to all pages within Nyss, including:

- Users
- Data collectors
- National Society and Project reports
- Alert details

For the **National Society and Project reports pages**, there are also some additional changes:

- Name of data collector/collection point, phone number, and related supervisor will be replaced by the name of the organization they belong to. Information on location, health risk, sex/age, and cross-checking status, or error type and message text is still shown.
- National Society reports shows aggregated reports only from the projects the user has access to.

    - I.e., if organization A is involved in three projects, and organization B is involved in only two of them, a manager from organization A would see aggregated reports from all three projects, while a manager from organization B would only see aggregated reports from the two projects they are involved in.
- Only reports from the user's own organization can be edited, kept, and dismissed.

For the **alert Details page**, there is also this additional change:

- Ability to expand report details to see more information and keep/dismiss is removed on those reports from another organization.
- Alert status can only be changed by a user whose organization has reports in the alert.

13.3 Changes for managers and technical advisors

Once a project is joint with another organization, and the coordinator user has been created, managers and technical advisors lose some access within Nyss. In addition to not seeing personal data from other organizations, managers and technical advisors in joint projects are also not able to:

- close joint project,
- add new coordinator,
- see or edit National Society settings, and
- edit project settings.

13.4 New organization filter

Once multiple organizations are involved, the dashboard filter includes the ability to filter on organization.

13.5 Setup of a joint project

A joint project with another organization can be created as such in the beginning, or an existing project can be changed to include another organization after it has been running for some time.

You may want to **contact your technical advisor** for support in making this change.

13.5.1 Setup of a new joint project

If the joint project and the related National Society is new in Nyss, it will be set up by the NorCross Nyss team, as described in 6.1 CREATING THE NATIONAL SOCIETY., except for one main difference: the first user will not be a head manager, but a coordinator that belongs to the main organization.

13.5.2 Sharing an existing project with other organization

The coordinator can also be added by head manager if they want to collaborate with another organization after the project has been created.

The coordinator can be added on the Users page.

Once the coordinator is added, managers and technical advisors will lose access as described above (13.3 CHANGES FOR MANAGERS AND TECHNICAL ADVISORS).

13.5.3 Adding another organization

The following user roles can do this:
coordinator

To collaborate in a joint project, the other organization needs to be added first to the National Society, and then to the relevant project(s).

13.5.3.1 Add another organization to National Society

1. Go to Settings in the left menu.
2. Click the Organizations tab.
3. Click the + Add button.

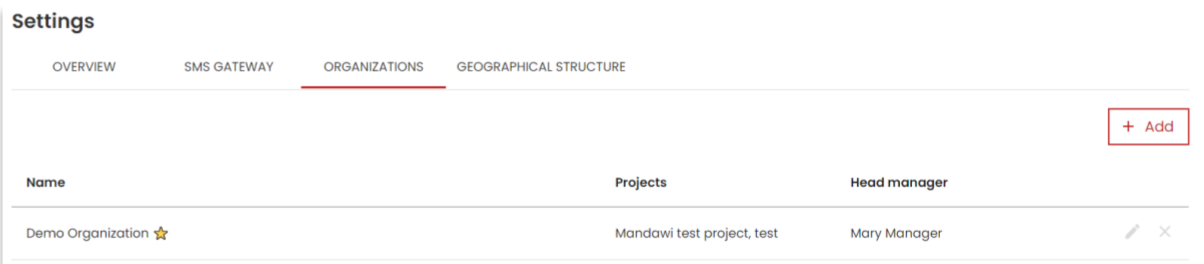


Figure 99: Add organization

4. Fill in the name of the organization and click the Add button.

Organizations can also be edited and removed from this page. The main organization is marked with a star.

13.5.3.2 Add another organization to a project

1. Go to Project settings in the left menu.
2. Click the Edit button at the bottom of the page.
3. Check the checkbox for “Joint project with another organization”.

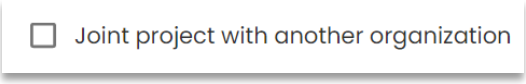


Figure 100: Project settings: Joint project with another organization

4. Click the Save button.

All organizations involved in the project are now listed on the Organizations tab under Project settings. The main organization is marked with a star.

13.5.3.3 Add head manager for another organization

1. Go to Users in the left menu.
2. Click the + Add new button.
3. Fill in the form, including choosing the organization, and click the Add button.

The head manager(s) will now be responsible for adding the remaining users in their organization.

13.5.4 Setup on alert notification recipients

Different organizations may want to notify different recipients upon an alert escalation. Each organization can set up their own notification recipients for a shared project, as described under 6.5 ADD ESCALATED ALERT NOTIFICATION RECIPIENTS.

If working in close-by areas, these notification recipients may overlap – for example a medical doctor at a health care center or a district health authority. In this case, **Nyss makes sure that any alert escalation notification is only sent once**.

14 Setup of Nyss hardware

The most important part of the Nyss kit is the SMSEagle, which is an SMS gateway – linking Nyss and data collectors by sending and receiving the SMS between them:

Figure 101: SMSEagle connecting SMSs and Nyss

The SMSEagle manual at www.smseagle.eu has instructions on how to unpack, transport and maintain the device.

Read more about the SMSEagle here: https://bit.ly/2xF5L0s

14.1 Preparation of the SMSEagle

If you **received an SMSEagle from the NorCross development team**, the SMSEagle has already been prepared, and you can skip to 14.2 SETTING UP THE SMSEAGLE.

If you **ordered an SMSEagle directly from smseagle.eu**, the SMSEagle will need to be prepared by following this tutorial: https://bit.ly/39xEQBh

The preparation the SMSEagle must be carried out by someone with technical expertise. Seek help from your technical advisor, Red Cross Red Crescent contact or a software developer.

A good and stable internet connection and power supply is necessary to use the SMSEagle.

This preparation of the SMSEagle will enable Nyss to send feedback messages and notifications using SMS.

If you were not able to configure the SMSEagle using Azure IOT Hub and the python script as described in the link above, please follow the instructions under 14.2.9 SETUP THE EMAIL TO SMS Poller for an alternative setup.

Before setting up the SMSEagle, you need to acquire a **SIM card** from your preferred provider.

The SMSEagle can support up to two SIM cards, which is useful if you need two providers to ensure good mobile network coverage in the project areas.

14.2 Setting up the SMSEagle

14.2.1 Connecting the cables

You need two types of cable for your SMSEagle. These are a part of the Nyss kit, but can also be bought separately:

- **Power cable** (black cables in FIGURE 102): a 12V/1A power adapter connected to a green plug. This needs to be plugged into an electrical socket.
- **Network cable** (red cable in FIGURE 102): also called 'ethernet cable' or 'internet cable'). This needs to be plugged into an ethernet port, providing internet.

Connect the cables as shown in FIGURE 102:

Figure 102: SMSEagle with the necessary cables connected correctly

The cables are now connected, please proceed to 14.2.2 ANTENNAS.

14.2.2 Antennas

The antennas of the SMSEagle facilitate the reception of the SMS reports. In locations with good mobile reception, the SMSEagle works without antennas connected.

To use the SMSEagle **without antennas**:

1. Place the device at a location with very good mobile phone reception (not inside buildings with stone walls, underground, etc.).

To use the SMSEagle **with antennas**:

1. Connect the antenna to one of the ANT connectors (FIGURE 103, red frame)
2. If you are using two SIM cards to facilitate multiple providers with the SMSEagle: connect the second antenna to the other ANT connector.

Figure 103: SMSEagle: ANT connectors, SIM trays and USB port

The antenna(s) are now connected, please proceed to 14.2.3 RETRIEVE SMSEAGLE IP-ADDRESS.

14.2.3 Retrieve SMSEagle IP-address

The SMSEagle IP-address is necessary to access the SMSEagle settings. The IP-address can be retrieved in three different ways:

14.2.3.1 Retrieve IP-address from NorCross development team

If you got your SMSEagle in the Nyss kit, the IP-address can be retrieved by the NorCross development team, if your SMSEagle is connected to the internet. Contact your technical advisor for assistance.

You can also retrieve the IP-address on your own, in one of two ways:

14.2.3.2 Retrieve IP-address with monitor/projector + USB keyboard

To use this method, you need:

- A USB keyboard, and
- a monitor or projector with an HDMI connector and cable.

1. Disconnect the power cable from the SMSEagle
2. Connect the keyboard to the USB port on the SMSEagle (see FIGURE 103 above, blue frame)
3. Connect the monitor or projector to the SMSEagle using the HDMI cable:

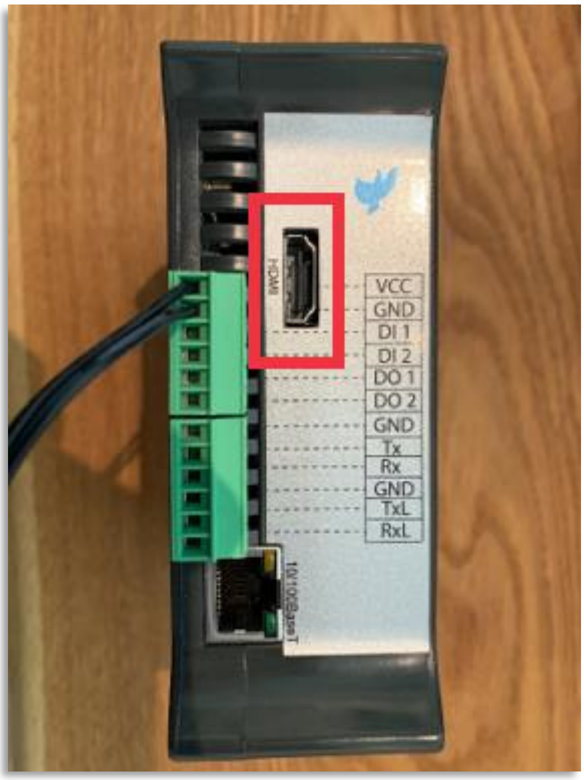


Figure 104: SMSEagle, HDMI-port

4. Connect the power cable to the SMSEagle

The SMSEagle will now turn on. After 30-60 seconds, it will ask you to type in a user.

5. Type root
6. Click the enter key on your keyboard

The SMSEagle will now ask you to type in the password.

7. Type fly2thesky
8. Click the enter key

The next screen will look something like this:

```
root@10.0.0.12's password:
Last login: Thu Mar 19 14:03:16 2020 from 10.0.0.112
smseagle:~#
```

9. Type ip addr
10. Click the enter key

You will see something like what you can see below. The IP-address of your SMSEagle is in the position marked with the red box (in this case it is 10.0.0.12):

```
ast login: Thu Mar 19 14:05:16 2020 from 10.0.0.112
smseagle:~# ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast
    link/ether 78:a7:14:55:2b:12 brd ff:ff:ff:ff:ff:ff
    inet 10.0.0.12/24 brd 10.0.0.255 scope global eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::5109:30b5:3954:6dfd/64 scope link
       valid_lft forever preferred_lft forever
smseagle:~#
```

14.2.3.3 Retrieve IP-address with Advanced IP Scanner

To use this method, you need:

- A computer

1. Connect to the same network as the SMSEagle, either via ethernet-cable or Wi-Fi
2. Open an internet browser, such as Chrome, Firefox, Edge or similar
3. Go to https://www.advanced-ip-scanner.com/
4. Download Advanced IP Scanner
5. Install the program and open it

You should arrive at the following screen:

Figure 105: Advanced IP Scanner

6. Press the Scan button

The program will find the IP-address for you automatically – in this example the IP-address is 10.0.0.12:

Figure 106: IP-address found

14.2.4 Open SMSEagle web interface

1. Make sure your computer is connected to the same internet as the SMSEagle, either via ethernet-cable or Wi-Fi
2. Open an internet browser, such as Chrome, Firefox, Edge or similar
3. In the address bar (where you type in web addresses), type the IP-address that you retrieved in 14.2.3 RETRIEVE SMSEAGLE IP-ADDRESS above.

You have now opened the SMSEagle web interface, please proceed to 14.2.5 SETUP SIM CARD(S).

14.2.5 Setup SIM card(s)

1. Go to SMSEagle web interface → Settings → Maintenance
2. Enable the modem connected to your antenna
   a. If **you connected your antenna to ANT 1**: enable modem #1 (toggle switch to the right so it turns green)
   b. If **you connected your antenna to ANT 2**: enable modem #2 (toggle switch to the right so it turns green)
3. Enter the PIN code, if applicable
   a. If **your SIM card does not have a pin code**, make sure that both SIM Card PIN fields are empty.
   b. If **your SIM card has a PIN code**, add the PIN code of your SIM card in the input field connected to your antenna:
      i. If **you connected your antenna to ANT 1**: add the PIN code in the SIM Card PIN 1 field
      ii. If **you connected your antenna to ANT 2**: add the PIN code in the SIM Card PIN 2 field

Your web interface should now look similar to FIGURE 107.

In this example, modem #1 is enabled (because the antenna is connected to ANT1), and thus the PIN code (0000) has been added to SIM Card PIN 1.

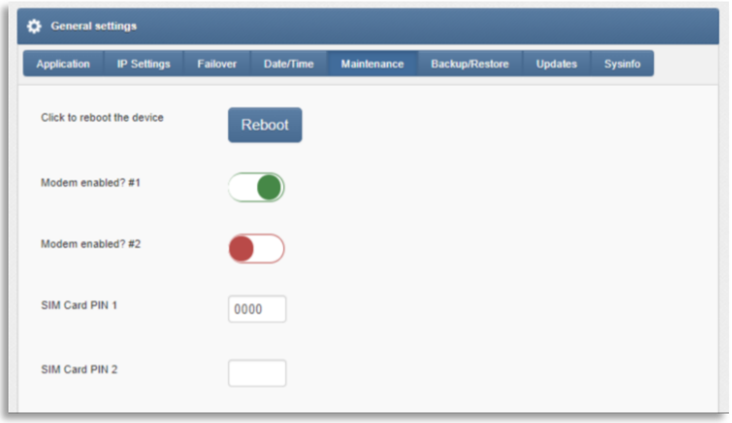


Figure 107: SMSEagle general settings

4. Click Save
5. Go to SMSEagle web interface → Settings → Maintenance
6. Click Reboot

Once the SMSEagle has rebooted, you have completed the setup in the web interface. Please proceed to 14.2.6 INSERT SIM CARD(S).

14.2.6 Insert SIM Card(s)

1. Disconnect the power cable from the SMSEagle
2. Identify the SIM tray that is connected to your antenna:
    a. If **you connected your antenna to ANT 1**: you want to take out the tray from SIM1
    b. If **you connected your antenna to ANT 2**: you want to take out the tray from SIM2
3. Take out the correct tray by pushing on the small yellow button with a pencil or similar:

Figure 108: Take out SIM tray for SIM 1

4. Place the SIM card in the tray, with the chip facing up:

Figure 109: Correct placement of SIM card in tray

5. Insert the SIM tray back into the SMSEagle:

Figure 110: Inserting the SIM card and SIM tray into the SMSEagle

6. If using two SIM cards, repeat steps 3 and 4 for the second SIM card
7. Reconnect the power cable to the SMSEagle

8. Wait until the SMSEagle has turned back on

In the web interface, you should now see the text: "Modem Status:" and the statuses of SIM1 and SIM2. The SIM tray(s) you used, should have the status Connected:

Figure 111: SMSEagle Modem Status

When the modem status reads Connected, you have successfully inserted the SIM card(s). Please proceed to 14.2.7 SETUP TIME ZONE.

14.2.7 Setup time zone

Nyss needs all reports to come in in Coordinated Universal Time (UTC (+0)). This is set in the SMSEagle web interface:

1. Go to SMSEagle web interface → Settings → Date/Time
2. Set the time zone to any UTC time zone that does not have daylight savings time (e.g. Africa/Dakar)
3. Press Save

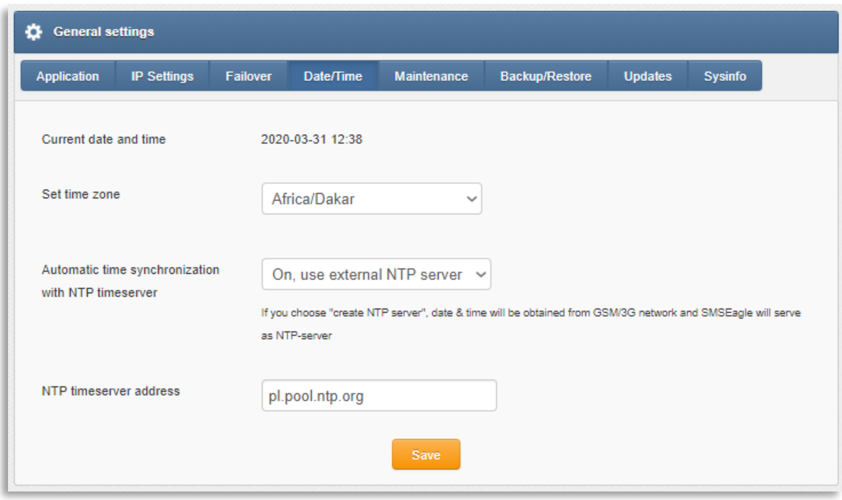


Figure 112: Setting the time zone for the SMSEagle

You have now successfully set the time zone. Please proceed to 14.2.8 CONNECT NYSS AND THE SMS GATEWAY.

14.2.8 Connect Nyss and the SMS gateway

The purpose of the SMSEagle is to feed the SMS reports from the data collectors into Nyss. For that to work, it needs to have an internet address to send the SMS to and an API key for authentication.

14.2.8.1 Setup of SMS gateway in Nyss

The following user roles can do this:
(head) manager | **technical advisor**

1. Log into Nyss and go to your National Society Settings
2. Click on SMS gateway, underlined in red:

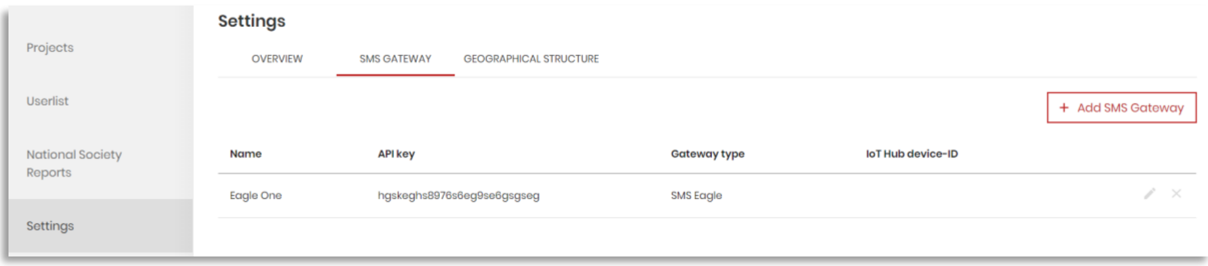


Figure 113: SMS Gateway settings for a National Society

3. Click on + Add SMS Gateway

You should now see this form:

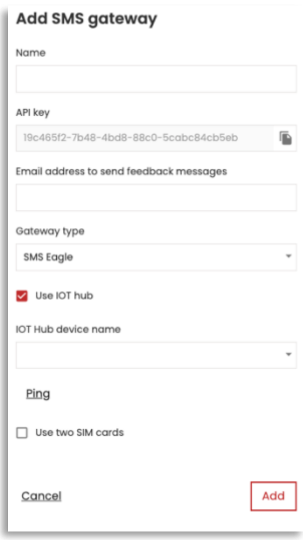


Figure 114: Add SMS gateway form

4. Fill in the name field and copy the API key
    a. Name: This can be anything you like, for instance “<National Society> SMSEagle”
    b. API key: The API key is an auto-generated secure key that can be copied for the coming configuration of the SMSEagle.

5. The platform can send feedback messages and notifications with two different options: Azure IOT Hub or an external email account.
    a. If you want to use a direct connection to the SMSEagle, using the **Azure IOT Hub**:
        i. Check off the Use IOT hub checkbox (see FIGURE 114) Under the checkbox, there is an IOT HUB device name dropdown menu giving you a list of the SMSEagles that are currently available.
        Only one of those will be your SMSEagle. Please refer to your technical advisor on which one to choose.
        ii. Choose the correct SMSEagle in the dropdown menu IOT HUB device name
    b. If you want to use a separate **external email account**, follow the instructions under 14.2.9 SETUP THE EMAIL TO SMS Poller and return here.

6. Gateway type: Should be set to SMS Eagle
7. Click Create SMS gateway
8. Go back to the SMSEagle web interface
9. Click on Callback URL in the left menu:

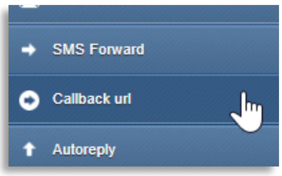


Figure 115: Callback URL option in SMSEagle web interface

The interface varies depending of what version of the SMSEagle you have. The important thing is that you fill in the entries described here:

10. Fill in the form as follows:
    a. **Enable callback of custom URL on incoming SMS**: Choose Yes
    b. **URL**: *https://nrx-cbs-nyss-funcapp-prod.azurewebsites.net/api/enqueueSmsEagleReport*

c. **URL method**: Choose POST

d. **API key of your service**: Enter the API key you copied from Nyss in point 4.

11. Click Save
12. Click Test URL

If you configured everything correctly, should get a green 200 response from the server:

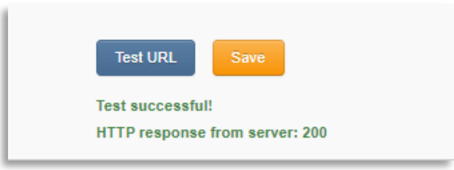


Figure 116: Test URL successful
/

With newer SMSEagles you can set up multiple Callback URLs in a list. Set up one, and then edit it according to point 8. a.-d.

The configuration should look like this (depending of your SMSEagle version):

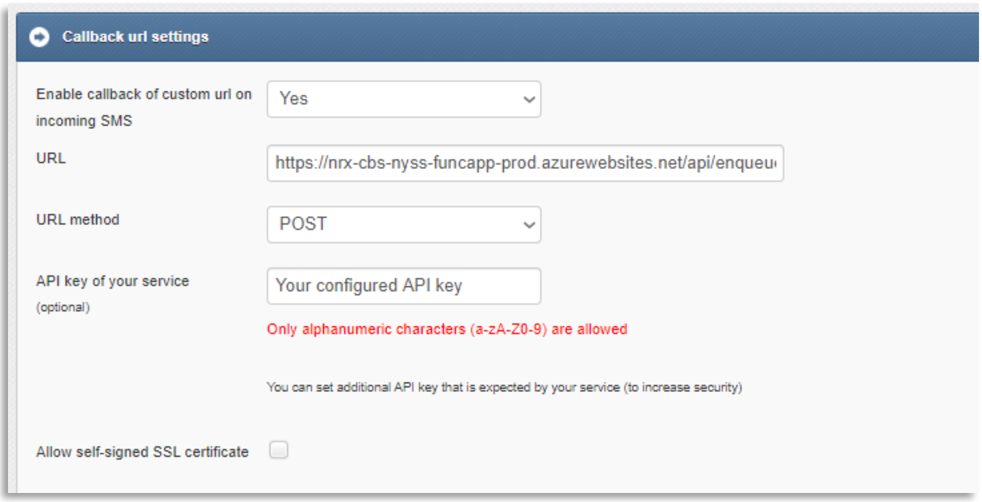


Figure 117: Configuration of callback URL settings

14.2.8.2 Edit an SMS gateway

1. Click on Settings in the *left menu*
2. Click on SMS gateway
3. Click on the SMS gateway you want to edit or the pen icon on the far right
4. When you are done editing, click Update SMS gateway

14.2.8.3 Delete an SMS gateway

1. Click on Settings in the left menu
2. Click on SMS gateway
3. Locate the SMS gateway you want to delete, and click on the cross symbol on the right side

A tooltip then appears:

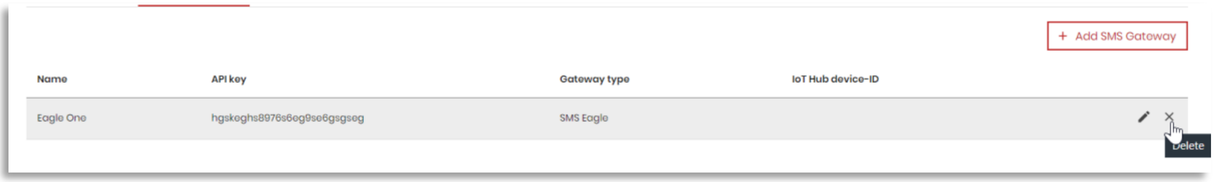


Figure 118: SMS Gateway settings for a National Society

4. Click on Delete to delete the SMS gateway

14.2.9 Setup the email to SMS Poller

1. Choose an **email address** with IMAP access you want to use for this purpose

> The email must be GDPR compliant. Gmail and similar should **not** be used. You can ask your technical advisor for a compliant email account.

2. Choose a **password**
   There is a bug in the 'Email To SMS Poller', which makes it necessary to use a **password without special signs**. Best practice would be a random combination of letters.
3. Log into Nyss in another browser or tab, and follow the steps detailed under 14.2.8.2 EDIT AN SMS GATEWAY to enter the *edit SMS gateway form*
4. Enter the email address you want to use into the field Email address to send feedback messages:

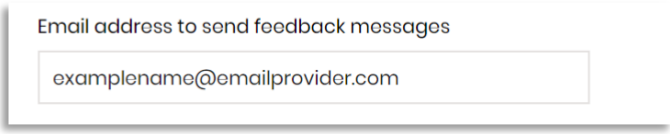


Figure 119: Correct email format

5. When you are done editing, click Update SMS gateway and close the browser window or tab
6. Go to the SMSEagle web interface
7. Click on Email To SMS Poller in the left menu
8. Fill out the host of the email provider you are using for this purpose
9. Fill out the username for the email
10. Fill out the password for the email
11. Fill out the rest of the form according to the information seen in Figure 120:

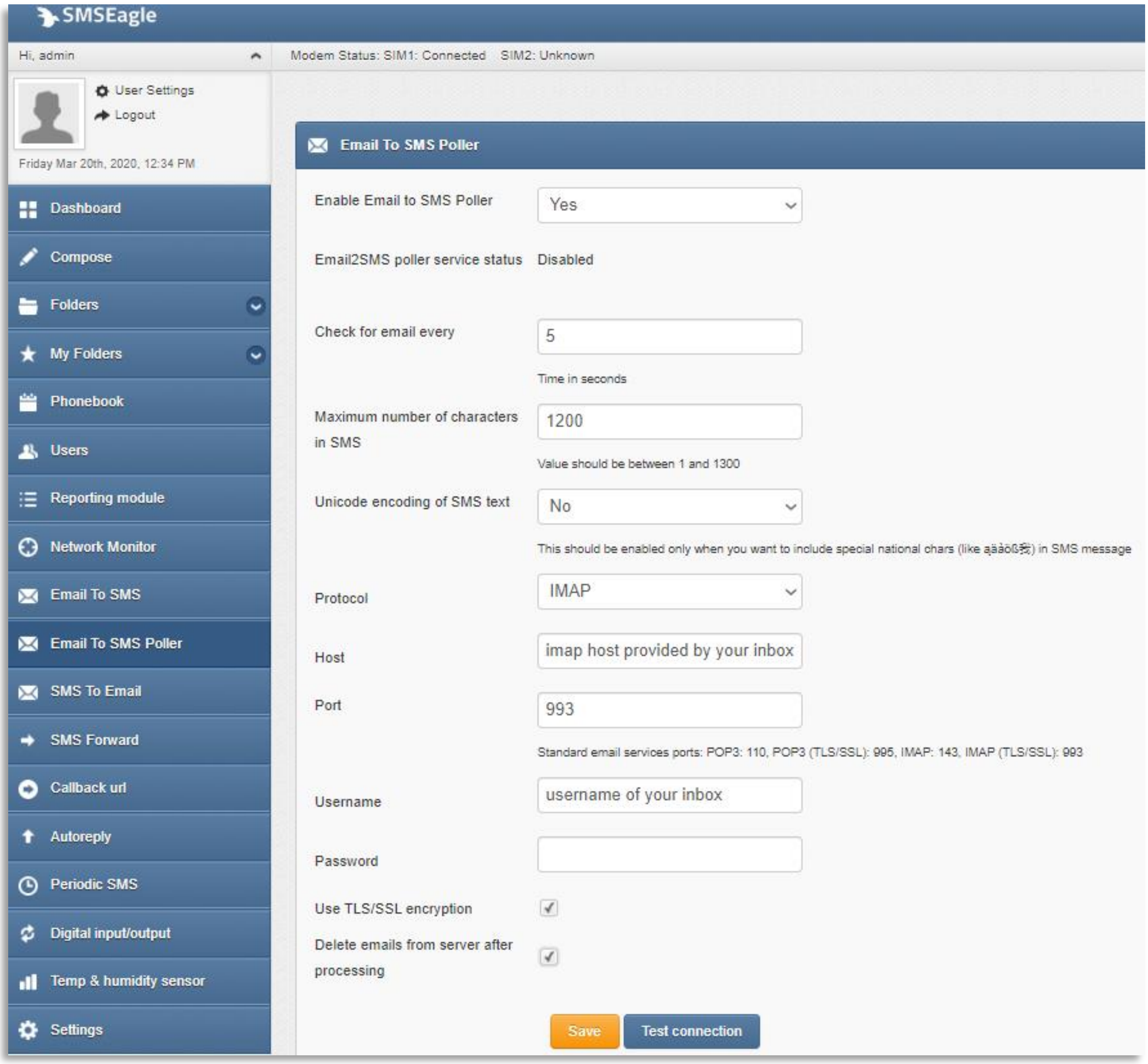


Figure 120: Email to SMS Poller settings

12. Click Save
13. Go to Settings → Maintenance
14. Click Reboot:

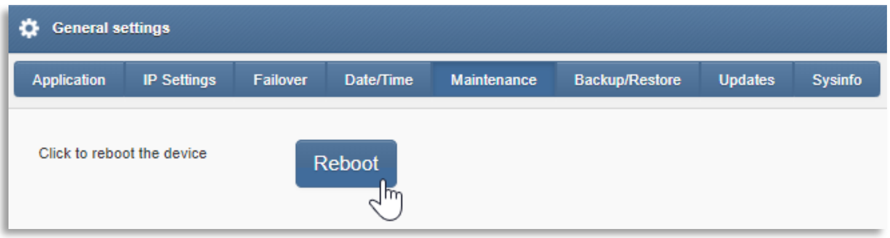


Figure 121: How to reboot the SMSEagle

15. Return to Email to SMS Poller via the left menu

"Email2SMS poller service status" should now be Enabled:

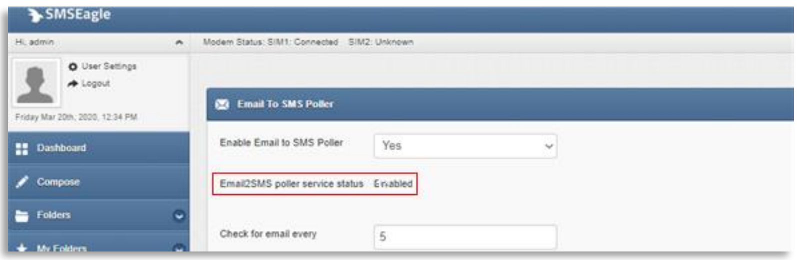


Figure 122: Email2SMS service status: Enabled

If it is Enabled, you have completed the email to SMS Poller setup.

If it still is Disabled, make sure that you have entered all details correctly in the previous instructions.

If it still does not work, please continue to 14.2.10 Fix Email to SMS Poller bug:

14.2.10 Fix Email to SMS Poller bug

The SMSEagle's plugin for Email to SMS Poller has a known bug related to the password.

It can be triggered when changing one of the fields in the email poller plugin, without changing the password field. Even if the password has not changed, it is advisable to copy it into the field again.

14.2.10.1 Symptoms of the bug

In the frontend the only visible sign is that the Email To SMS Poller is always Disabled, even though it is set to enabled. You can restart and so on, nothing seems to work.

If you check the Syslog, the following error message is connected to this bug:

```
Dec 10 17:27:48 smseagle systemd[1]: Starting LSB: init-Script for system wide fetchmail daemon...
Dec 10 17:27:48 smseagle fetchmail[1308]: Starting mail retriever agent:
fetchmailfetchmail:/etc/fetchmailrc:4: syntax error at ssl
Dec 10 17:27:48 smseagle fetchmail[1308]: failed!
Dec 10 17:27:48 smseagle systemd[1]: fetchmail.service: control process exited, code=exited status=1
Dec 10 17:27:48 smseagle systemd[1]: Failed to start LSB: init-Script for system wide fetchmail daemon.
Dec 10 17:27:48 smseagle systemd[1]: Unit fetchmail.service entered failed state.
Dec 10 17:27:48 smseagle rcsyscfg[440]: Job for fetchmail.service failed. See 'systemctl status
fetchmail.service' and 'journalctl -xn' for details.
Dec 10 17:27:48 smseagle logger: Email Poll daemon started
Dec 10 17:27:48 smseagle rcsyscfg[440]: Email Poll daemon started
```

Even though it says the poll daemon is started in the end, the service status will stay disabled.

The syslog can be found either in the user interface under Settings → SysInfo → System Log at the bottom, or under /var/log/syslog if you ssh into the SMSEagle. There you can also find older log files.

The last symptom, which makes it fail, can be seen in the fetchmail configuration file. If you ssh into the SMSEagle, then go to the file/etc/fetchmailrc, it should show the password you have set for the email address in clear text.

Line 16 in the file should show something like this:

> poll imap.gmail.com proto imap port 993 user <youremailadress> with password <passwordincleartext> mda "/mnt/nand-user/smseagle/fetchmail/daemon.sh" ssl

If the password in the file is something else than what you have set in the frontend, then it makes sense that it cannot work. We have frequently seen that it has been set to “10” in the file. There is therefore possibly a bug somewhere in the PHP script that transfers the user input for the password into that file.

14.2.10.2 Workaround

You can avoid the bug by going to the SMSEagle web interface → Email To SMS Poller and enter something simple into the password field, like “asd”. Then save and reboot. The Enable poller dropdown can stay at “Yes” the whole time.

Just to be safe you could check if you have “asd” now in the /etc/fetchmailrc file.

After that you can put in your actual password into the password field in the user interface and reboot. The service status should now be on enabled.

Make sure that your password does not contain any special characters; that it is a random string of letters.

15 Technical structure of Nyss

In principle the Nyss platform is a web application. This section describes the technical architecture of the web application. For more information about the hardware, see 0 .

Nyss is built using a **.NET Core backend and a React frontend**. The complete codebase is frequently pushed to a public repository, which can be found here: https://github.com/nyss-platform-norcross/nyss.
Apart from the SMS gateway, which is physically located in every country using Nyss (see 14 SETUP OF NYSS HARDWARE), Nyss consists of several cloud based components, that are running on a **Microsoft Azure subscription**. With Microsoft Azure regions, we can ensure that all components, including the database, are stored on servers that are physically located in North Europe.

For the cloud-based part, we have followed a **multi tenancy** approach in this case, which means we can serve many countries and users with only one instance. This enables us to roll out quickly and run the platform at lower maintenance costs. With different access levels for different users, who are tied to one National Society, we can mitigate the risk of cross tenant data sharing.

The user facing entrance point, is an Azure WebApp. This WebApp handles any communications with other components, the database and so on. Data is persisted in Azure SQL databases, using **transparent data encryption**[2].

Asynchronous messaging is used to handle incoming reports, alerts and notifications using **Azure Service Bus** as the message broker. Reports are received by the SMS gateway and then posted to a public HTTP endpoint hosted by an **Azure Function App**. This endpoint does nothing more than putting the report on a message queue. The queue is read one message at a time by an internal Azure Function App and then the report is sent to the **ReportAPI**, an internal API running on a Web App. The ReportAPI handles report validation[3] and alerts. Both the ReportAPI and the internal function app are running within a virtual network and are **not accessible from the outside**.

When a report is validated successfully, a message is put to the alert queue, thereby triggering the alert handling. Depending on the result of this, a message

[2] https://bit.ly/34ca8wx
[3] Incoming reports are validated to ensure they have the right format, that the sender number is registered as a data collector/collection point, and that the project the data collector/collection point is registered to has the reported health risk/event.

is put to the notifications queue. The notifications[4] queue is read by the same Function App as the one receiving the reports, and the notifications are sent through a third-party email provider.

To send SMS notifications or feedback messages, we use the SMS gateway. This can be done either by an additional Email inbox, which can be accessed via IMAP or POP by the SMS gateway, or a direct MQTT link to the SMS gateway using Azure IOT Hub (depending upon user choice).

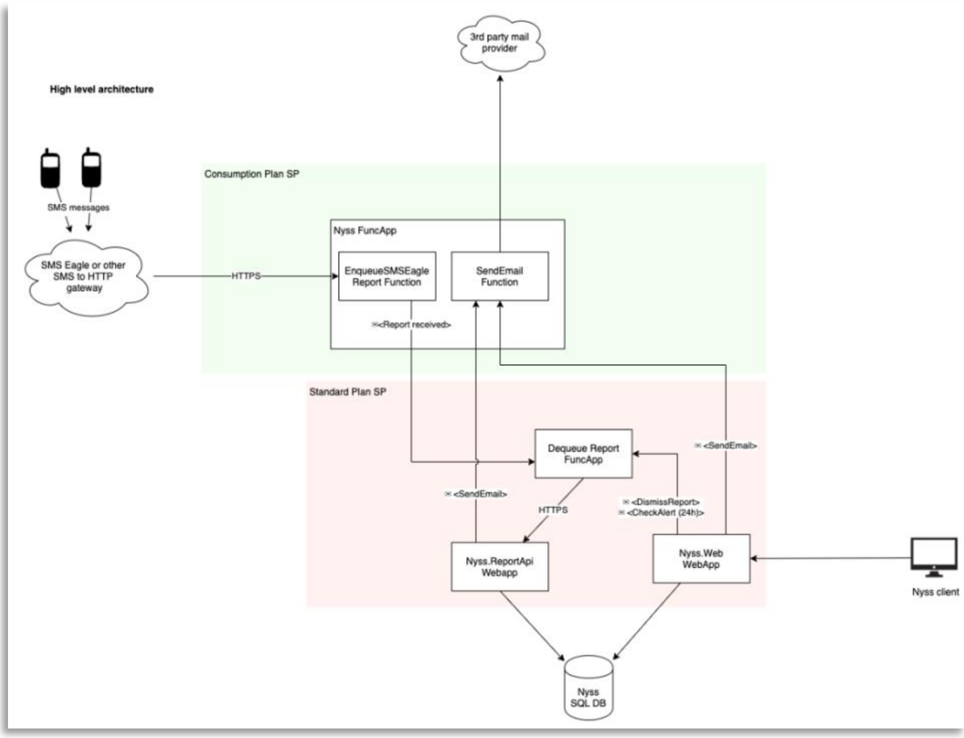


Figure 123: High-level architecture of Nyss

[4] Notifications are sent out using SMS or email upon various events in the platform, such as when an alert is triggered.

16 Table of figures