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# 2 Nyss – a community-based surveillance platform

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

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

## 2.1 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.

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.

## 2.2 What is Nyss

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.

**Figure 1**: Early warning and early response with CBS

**Figure 1** shows an epidemic curve, where the epidemic first starts to decline and taper off after 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 and Nyss, interventions can begin at an earlier stage (▲). **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 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 given a simple phone to be responsible for reporting health risks in their community, by sending short coded SMS.
Nyss receives an SMS from community volunteers, analyzes the data, shares analyzed data and sends automatic alerts in real-time to Nyss supervisors and health authorities:

2.2.1 The meaning of Nyss

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

2.2.2 Reporting to Nyss

The community volunteers who are trained to carry out CBS, are called **data collectors** in Nyss. The data collectors report health risks/events in their community by sending a coded SMS to Nyss. There are different types of reports that can be sent:
2.2.2.1 Single report

A single report consists of a number representing the health risk/event detected. Figure 4 shows an example; this is the SMS that should be sent if a data collector discovered 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 (health risk/event 34):

![Image of a phone with the number 34]

Figure 4: Example of single report, not related to a person

If the health risk is related to a person, information about the sex and age group is added, 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 separated by hashes and must follow the structure of health risk/event#sex#age as shown in Figure 5:
2.2.2.2 Aggregated reports

An aggregated report is one report, acting as a summary of several cases. 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 is often decided by a manager after analysis of incoming data. This will entail a refresher training for the data collectors, carried out by the supervisors.

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
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** as shown in Figure 6.

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

### 2.2.2.3 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 ORP reporting card, a DCP/ORP report also includes:

- Number of people referred to health facility
- Number of people died at 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:
An example report could be: 1#5#15#3#17#5#2#6. Here we can see that it’s been reported on acute watery diarrhea (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 died at the ORP and 6 came from other villages.

2.2.2.4 Activity report and zero report

If the data collector has seen no health risks/events in one week, they send an activity report (99) or a zero report (98), depending on what the National Society has chosen. The activity report/zero report lets the supervisor know that the data collector is still active within their community, but that there has been nothing to detect.

2.2.2.5 Feedback message

Data collectors receive feedback messages from Nyss, letting them know that the report is successfully received (see FIGURE 7). The feedback message can also contain practical advice on how to respond to the reported health risk/event (see FIGURE 8).
2.3 Platform functions
The day-to-day usage of Nyss can be divided into four parts: **Dashboards, projects, reports and alerts**.

2.3.1 Dashboards
The dashboards in Nyss give an overview of the current status:

- The geographical distribution of reported health risks/events
- Health risks/events reported over time, shown in different graphs and tables
- An overview of reports, data collectors and alerts
Figure 9: Project dashboard with key numbers and map of reports

Figure 10: Project dashboard with charts

For more information about dashboards, see 0
Dashboards.

2.3.2 Projects

In Nyss, every National Society has their own interface, where you can see information only pertaining to your National Society. To use Nyss, you additionally need to create at least one project. **Projects allow for having several implementations simultaneously** within a National Society if necessary, for instance to run both a preparedness and an emergency implementation, or to report on different health risks/events in different locations:

![List of projects running in your National Society](image)

*Figure 11: List of projects that are running in your National Society.*

2.3.3 Reports

In Nyss, the coded SMS reports are combined with information about the data collector who sent the report. This enables the supervisors to follow up on each individual report:
If the SMS is formatted correctly, Nyss gives it the status Success. If formatted wrong, Nyss gives it the status Error. Erroneous reports do not contribute to alerts.

For more information on reporting, see 2.2.2 REPORTING TO NYSS.

### 2.3.4 Alerts

When a certain amount of the same health risk/event is being reported successfully from data collectors, within a certain timeframe and a certain geographical area, Nyss triggers an alert. **Nyss notifies the supervisor when an alert is triggered.**

The combination of number of reports, timeframe and geographical area that is needed to trigger an alert, is called the alert rule. The alert rule can be set per health risk/event within each project, as shown in Figure 13. This is done when setting up a new project and can be edited by managers and technical advisors later, see 4.2 PROJECTS.
When an alert is triggered, the supervisor follows up and cross-checks the underlying reports with the data collectors who sent them, to ensure that they match the health risk/event definition. An overview of all underlying reports can be seen in the detailed view of an alert:

Supervisors, managers and technical advisors can at any time consult the project’s Alerts page in Nyss, to see an overview of the alerts and the underlying reports in the Alerts list.
Figure 15: The alerts page shows all alerts in a project

For more about alerts, see 0
2.4 Preparedness and emergencies

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

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

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:

2.4.1 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.
- where existing surveillance system are unable to reach all local communities

By using 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 they can respond quickly. Additionally, it 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 where alerts haven’t necessarily been escalated.

When CBS is implemented in a non-emergency setting, data collectors 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 progress of the program and to be able to give support to the data collectors is necessary.

2.4.2 CBS and Nyss in emergencies

CBS and Nyss can be used in emergencies to:

- fill a temporary gap in existing surveillance system due to natural disaster or conflict
- 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 CBS configuration (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 receive reports from several actors within the Movement doing CBS, in addition to sharing the data received with different actors. Using Nyss across organizations, should be agreed with the authorities in the country leading the emergency response.

As emergencies need a more rapid response and potentially last for a shorter period, data collectors and 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 and can be limited to indicators and data being extracted from the platform.
2.5 User overview and access

The users of Nyss are registered with different roles and different access levels, to give all users access to the information and functions they need, but not unnecessary access to personal information. The user-based access levels aim at GDPR 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. Who should fill the different roles within the National Society is up to them to decide, but some tasks need to be filled:

- A head manager responsible on behalf of the National Society
- Data collectors in the communities that are to use CBS
- Supervisors to follow up on data collectors and their reports

In addition to this, optional roles can be added:

- Additional managers
- Additional supervisors
- A technical advisor if the National Society is getting external support from a partner national society, IFRC or ICRC
- Data consumers if partners such as the Ministry of Health want access to the dashboards

2.5.1 Global coordinator

The global coordinator is an employee in the Nyss team (NorCross/IFRC). The global coordinator oversees the list of health risks/events (see Figure 16), and enables new implementations of Nyss, by adding a new National Society.

The global coordinator can perform the following tasks:

**Global settings**

- See other global coordinators
- See, add, edit and delete health risks/events list

**National Societies**

- See, add, edit and delete/archive National Societies
- See National Society dashboard
• See, add, edit and delete managers, technical advisors and data consumers
• Can set managers and technical advisors as head manager

2.5.2 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.

Managers can perform the following tasks:

**National Societies**

• See and edit National Societies that they are assigned to
• See, add, edit and delete SMS gateway settings
• See, add, edit and delete geographical structure within National Society
• See National Society dashboard
• See National Society Report list
• See, add and edit users within the National Society

**Projects**
- See, add, edit and delete projects
- See project dashboard
- See and edit project report list
- Mark training reports as errors
- See alert overview
- See, add, edit and delete data collectors and data collection points
- See data collection performance
2.5.3 Head manager

The head manager is the first user that the global coordinator adds to a National Society. The head manager role can be filled by either a manager or a technical advisor.

Upon the head manager’s first log in, they need to confirm that they have the legal authority to act on behalf of the National Society and accept an 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 needs to accept the agreement.

Another manager or technical advisor can be assigned the role of head manager by either the global coordinator or the head manager.

Head managers can additionally perform the same tasks as managers (see 2.5.2 Manager).

2.5.4 Supervisor

Supervisors are most often either volunteers or local employees within the National Society. Supervisors are assigned to one project within a National Society.

Supervisors are responsible for a group of data collectors within a geographical area. They are responsible for monitoring reports and cross-checking alerts coming from their data collectors. They are also responsible for training, supervision and support of the data collectors.

Supervisors can perform the following tasks:

**National Societies**

- Does not have access to information that regards to the whole of the National Society

**Projects**
• See the project they are assigned to
• See the dashboard of the project they are assigned to
• See the report list of the project they are assigned to
• See, cross-check, dismiss, escalate and close alerts within the project they are assigned to
• See, add, edit and delete data collectors and data collection points within the project they are assigned to

2.5.5 Technical advisor

Technical advisors are often delegates or staff from a partner National Society or IFRC. 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 with Nyss and act as managers, including head manager.

Technical advisors can perform the same tasks as managers and have the same access level (see 2.5.2 Manager).

2.5.6 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.

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. Which health risks/events to report on with Nyss should be agreed on with national authorities and

Data consumers can perform the following tasks:

National Societies
• See National Societies that they are assigned to
• See the National Society dashboard

Projects

• See the project list
• See the dashboards of all projects within the National Society

2.6 Technical structure

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](https://github.com/nyss-platform-norcross/nyss).

Apart from the SMS gateway, which is physically located in every country using Nyss (see 0
SETUP – 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 encryption1.

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 validation2 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 is put to the notifications queue. The notifications3 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).

---

1 https://bit.ly/34ca8wx
2 Incoming reports are validated to ensure they have the right format, that the sender number is registered as a data collector/data collection point, and that the project the data collector/data collection point is registered to has the reported health risk/event.
3 Notifications are sent out using SMS or email upon various events in the platform, such as when an alert is triggered.
Figure 19: High-level architecture of Nyss
3 Setup – hardware

The most important part of the Nyss kit is the SMSEagle, which is a so-called SMS gateway. We use this to feed the SMS reports from the data collectors into Nyss.

The SMSEagle manual at [www.smseagle.eu](http://www.smseagle.eu) has instructions on how to unpack, transport and maintain the device.

Read more about the SMSEagle here: [https://bit.ly/2xF5L0s](https://bit.ly/2xF5L0s)

3.1 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 3.2 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](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.

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 3.2.9 Setup the email to SMS Poller for an alternative setup.

3.2 Setting up the SMSEagle

3.2.1 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 20](#)): 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 20**): 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 20**:

![Figure 20: SMSEagle with the necessary cables connected correctly](image)

The cables are now connected, please proceed to **3.2.2 Antennas**.

### 3.2.2 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 21, 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.

The antenna(s) are now connected, please proceed to 3.2.3 RETRIEVE SMSEAGLE IP-ADDRESS.

3.2.3 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:

3.2.3.1 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:

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

To use this method, you need:
- A USB keyboard
- 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 21 above, blue frame)
3. Connect the monitor or projector to the SMSEagle using the HDMI cable:

![Figure 22: SMSEagle, HDMI port](image)

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:
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):

3.2.3.3 Retrieve IP-address with “AdvancedIPScanner”

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
4. Download “AdvancedIpScanner”
5. Install the program and open it

You should arrive at the following screen:
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:

3.2.4 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 3.2.3 **RETRIEVE SMSEAGLE IP-ADDRESS** above.

You have now opened the SMSEagle web interface, please proceed to 3.2.5 **SETUP SIM CARD(S)**.

3.2.5 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. Check if your SIM card has a PIN code
   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”
      ii. If you connected your antenna to ANT 2: add the PIN code in the “SIM Card PIN 2”

Your web interface should now look similar to Figure 25.

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 25: SMSEagle general settings](image)

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 3.2.6 INSERT SIM CARD(S).
3.2.6 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 26: Take out SIM tray for SIM 1](image)

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

   ![Figure 27: Correct placement of SIM card in tray](image)

5. Insert the SIM tray back 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:

![SMSEagle Modem Status](image)

When the modem status reads Connected, you have successfully inserted the SIM card(s). Please proceed to 3.2.7 SETUP TIME ZONE.

3.2.7 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

You have now successfully set the time zone. Please proceed to 3.2.8 Connect Nyss and the SMS gateway.

3.2.8 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.

3.2.8.1 Create an API key

The API key needs to be unique. To ensure this, we need to use a very long string of random numbers. We suggest that you use a UUID.

Read more about UUID (Universally Unique Identifier) here: https://bit.ly/33ZDg9T

You can write a UUID yourself, or you can easily generate one with a UUID generator, like this: https://bit.ly/2UP1dwC
3.2.8.2 **Setup SMS gateway in Nyss**

The following users can access the SMS gateway settings:

manager | technical advisor

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

![SMS Gateway settings for a National Society](image)

3. Click on + Add SMS Gateway

You should now see this form:
4. Fill in the name and API key fields
   a. **Name**: This can be anything you like
   b. **API key**: The API key/UUID that you created under 3.2.8.1 **CREATE AN API KEY**.

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 33)
         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 3.2.9 **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**:
The interface varies depending on 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
   c. **URL method**: Choose POST
   d. **API key of your service**: Enter the API key you created under 3.2.8.2 and that you added in 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:

![Test URL successful](image)

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 on your SMSEagle version):
3.2.8.3 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

3.2.8.4 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 toolpin then appears:

4. Click on Delete to delete the SMS gateway
3.2.9 Setup the email to SMS Poller

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

   ![Warning]

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

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 something not too simple, like a random string of letters.

3. Log into **Nyss** in another browser or tab, and follow the steps detailed under 3.2.8.3 **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 38: 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 39**:
12. Click **Save**
13. Go to **Settings → Maintenance**
14. Click **Reboot**:

"Email2SMS poller service status" should now be **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 3.2.9.1 **Fix Email to SMS Poller bug**:

### 3.2.9.1 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.

#### 3.2.9.1.1 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:
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 actually 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:

```plaintext
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.

### 3.2.9.1.2 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.
4 Setup of Nyss

When implementing Nyss, some setup also needs to be done in the platform.

4.1 Setup of National Society

A National Society in Nyss is set up upon request from a National Society, a partner National Society, IFRC, ICRC or external partners who has conducted a CBS needs and feasibility assessment and decided to implement CBS either as a preparedness or emergency response (see 2.4 PREPAREDNESS AND EMERGENCIES).

4.1.1 Create a National Society

The following users can create a National Society:

- **global coordinator**

1. **Click + Add National Society:**

   ![Figure 42: Adding a National Society](image)

2. **Fill in National Society name, see Figure 43.**

   The name can be anything the Red Cross Red Crescent National Society Requests. It can also be edited by managers and technical advisors in the National Society later.
3. Fill in Country
4. Choose Content language

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

5. Click Create National Society

### 4.1.2 National Society settings

The following users can edit the National Society settings:

- **manager**
- **technical advisor**

To access the settings, click *Settings* in the *left menu*. You then arrive at the **National Society settings overview**.

The overview shows you the basic settings of the National Society. You can edit it by clicking the *Edit National Society* button.
The next tab is the *SMS Gateway settings*. Please refer to 3.2.8.2 **Setup SMS Gateway in Nyss**.

The last tab is the *Geographical Structure*. This is where you set up the geographical structure of the National Society.

### 4.1.2.1 Setup of geographical structure

Geographical structure can be added in four (4) levels: region, district, village and zone (optional). The locations are not tied to GPS locations, but used to pinpoint report origin, as data collectors are added to specific locations.

#### Add a region

1. Type its name into the **Add region** field
2. Click **add**
3. Repeat until all applicable regions are added

**Add a district** below a region

1. Click the > next to the region name

The field *Add district* then appears:

![Figure 46: Add district](image)

2. Type the district name into the field
3. Click *add*
4. Repeat until all applicable districts are added

**Add a village** below a district

1. Click the > next to the district name

The field *Add village* then appears:

![Figure 47: Add village](image)

2. Type the village name into the field
3. Click *add*
4. Repeat until all applicable villages are added

**Add a zone** below a village (optional)

1. Click the > next to the village name
The field **Add zone** then appears:

![Add zone](image)

2. Type the district name into the field  
3. Click **Add**  
4. Repeat until all applicable zones are added

### 4.1.2.1.1 Edit or delete location

1. Find the location you want to edit or delete  
2. Hover over its name  
3. Click the pen symbol next to the name to edit or the trash can to delete:

![Edit or delete location](image)

### 4.2 Projects

The following users can create, edit and close projects:  
**manager** | **technical advisor**

Additionally, **supervisors** can view the project they are assigned to.

To use Nyss, **you must have at least one project**. Projects allow for having several implementations simultaneously within a National Society if necessary,
for instance to run both a preparedness and an emergency implementation, or to report on different health risks/events in different locations.

4.2.1 Projects page

The Projects page (Figure 50) gives you an overview over all the projects within the National Society. You can navigate to the different projects by clicking on them.

![Figure 50: Projects page](image)

4.2.2 Create project

1. Click Projects in the left menu
2. Click + Add project

The Add project page appears:

![Figure 51: Add project](image)

3. Fill out the project name
4. Choose the correct time zone
5. Click on the health risks/events you want to report on:
6. Make sure you have included Activity report (99) or Zero report (98)

The health risks/events you picked are now added below, including pre-filled fields with suggestions for health risk/event definition and feedback message. The definition is there to help supervisors cross-check the reports in an alert. The feedback message is the message the data collectors receive after having sent a report.

These fields can be edited any time to align with local definitions and local language:

![Health risk/event definition and feedback message](image)

7. Make changes to the definition(s) (optional)
8. Make changes to the feedback message (optional)
9. Decide and fill in the alert rule (see 2.3.4 ALERTS)

The definition, feedback message and alert rule are all specific to the different health risks/events. The combination of the information you add here, will together define when an alert is triggered.
For instance, if you want an alert when 5 cases of acute diarrheal disease are reported within a week from locations that are all within a radius of 20 km, you fill in 5 reports in 7 days within 20 km:

<table>
<thead>
<tr>
<th>Alert rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of reports</td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>

*Figure 54: Alert rule*

If you want an alert to be triggered for every report of a specific health risk/event, you write “1” in the field number of reports, as shown in *Figure 55*.

You do not have to fill in anything for days and distance as every report will trigger an alert:

<table>
<thead>
<tr>
<th>Alert rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of reports</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

*Figure 55: Alert for every report*

The activity report and zero report are not read by Nyss as health risks/events and will not trigger alerts, thus does not need to be filled.

10. Add the email and/or phone number (making sure to start with + and your country code) of notification recipients, see *Figure 56*.

This should be the contact info of those in charge of following up an escalated alert, such as a health facility or a district health officer.
4.2.3 Edit project

All aspects of your project may be edited, including:
- Project name
- Time zone
- Health risks/events; including their definitions, feedback messages and alert rules
- Notification recipients (to delete an email address or a phone number, click the trash can symbol next to it)

1. Go to the project you want to edit
2. Click Project settings in the left menu

You will see the current project settings.

3. Scroll to the bottom of the page
4. Click Edit project
5. When you are done editing, scroll to the bottom again and click Update project
4.2.4 Close project

When a project is no longer running/operational, it should be closed. By doing so, all data collectors are pseudonymized (all personal information is removed), but the reports themselves will remain.

The dashboard and the reporting list are still accessible, but it will not be possible to send reports to the project anymore.

Supervisors linked to that specific project need to be deleted as users before closing the project.

1. Locate the project you want to close
2. Click on the three dots on the far right of the project you would like to close

You will then see a tooltip asking you to confirm that you want to close the project:

3. Click Close project

Figure 57: Click close project in the project list, to close a project.
4.3 Setup of users

Managers, technical advisors, supervisors and data consumers are users of Nyss and have login access to the parts of Nyss they respectively need to use. All users in a National Society can be found under User list in the left menu.

Data collectors and data collection points are not users of Nyss and do not have login access, but they are registered, so that Nyss is able to receive their reports. Data collectors and data collection points are linked to projects and can be found under Data collection in the left menu when you are inside a project. See 4.4 Data collectors and data collection points.

4.3.1 Adding a manager

The following users can add, edit and delete managers:

- global coordinator
- manager
- technical advisor

1. Click on User list in the left menu

![Figure 58: User list](image)

2. Click on + Add new user

You will now see a form that you need to fill out:
3. Fill in email address
4. Choose Manager as the role
5. Fill in name
6. Fill in phone number(s), making sure to start with + and your country code
7. Fill in the organization they work for, e.g. “Mandawi Red Crescent”
8. Click Create user

The new manager will now appear in the User list.

### 4.3.1.1 Setting a Head manager

The following users can set a manager to head manager:

- global coordinator
- current head manager

1. Click on User list in the left menu
2. Locate the user you want to set as head manager

Both managers and technical advisors can be set as head manager. The former is most common in preparedness implementations, whereas the latter is more common in emergency implementations, where the technical advisor is a delegate.
3. Click the three dots to the right of the personal information
4. Click Set as head manager

The new head manager will need to tick off the “Nyss platform agreement” (see 2.5.3 HEAD MANAGER) the first time they log in after this.
Before they do so, they will have the state as “pending head manager”.

4.3.2 Adding a technical advisor

The following users can add, edit and delete managers:

- global coordinator
- manager
- technical advisor

In a preparedness implementation, where a National Society is responsible for the implementation of Nyss, it should be a manager who adds the technical advisor, based on who they have agreed to get support from and want to grant access to.

1. Click on User list in the left menu
2. Choose what type of user to add:
   a. If the technical advisor is already registered in Nyss, e.g. as the technical advisor for another National Society, click + Add existing user

   Figure 61: Add existing user

   i. Fill out their email address
**ii.** Click **Add**

**b.** If **the technical advisor is not registered in Nyss yet**, click **+ New user**

You will now see the **Add new user form** (Figure 59).

1. Fill in **email address**
2. Choose **technical advisor** as their role
3. Fill in **name**
4. Fill in **phone number(s)**, making sure to start with + and your country code
5. Fill in the **organization** they work for
6. Click **Create user**

The new technical advisor will now appear in the **User list**.

### 4.3.3 Adding a data consumer

The following users can add, edit and delete data consumers:
- **global coordinator** | **manager** | **technical advisor**

In a preparedness implementation, where a National Society is responsible for the implementation of Nyss, it should be a manager who adds the data consumer, based on who they want to grant access to.

1. Click on **User list** in the **left menu**
2. Click on **+ Add new user**

You will now see the **Add new user form** (Figure 59).

3. Fill in **email address**
4. Choose **Data consumer** as the role
5. Fill in **name**
6. Fill in **phone number(s)**, making sure to start with + and your country code
7. Fill in the **organization** they work for, e.g. “Ministry of Health”
8. Click **Create user**
4.3.4 Adding a supervisor

The following users can add, edit and delete supervisors:

**manager | technical advisor**

In a preparedness implementation, where a National Society is responsible for the implementation of Nyss, it should be a manager who adds the supervisor.

Supervisors need to be linked to a project when they are added. See 4.2 Projects.

1. Click on **User list** in the **left menu**
2. Click on **+ Add new user**

You will now see the **Add new user form** *(Figure 59)*.

3. Fill in **email address**
4. Choose **Supervisor** as the role

Additional fields now appear:
These fields are necessary to ensure an even sex/age distribution among supervisors, and to grant them access to the project they will be working with.

5. Fill in **name**
6. Fill in **phone number(s)**, making sure to start with + and your country code
7. Fill in the **organization** they work for, e.g. “Mandawi Red Crescent”
8. Fill in **birth group**
9. Fill in **sex**
10. Choose **project**
11. Click **Create user**

The new supervisor will now appear in the **User list**.

### 4.3.5 Editing users

1. Click on **User list** in the **left menu**
2. Click on the user you want to edit or the pen icon on the far right

The edit user form then appears:

![Form to edit a user. The forms for managers and supervisors look a little different.](image)

3. When you are done editing, click Update user

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

4.3.6 Deleting users

1. Click on User list in the left menu
2. Click on the cross icon on the far right of the user you would like to delete

You will then see a tooltip asking you to confirm that you want to delete this user.

3. Click Confirm removing user to remove the user from the list:

In many situations it is not possible to delete a user.

If a supervisor has data collectors/data collection points connected to them, the data collectors/data collection point need to be connected to a different supervisor before the supervisor can be deleted.

If such an issue occurs, Nyss will tell you what the problem is with a black popup at the bottom of the screen.

4.4 Data collectors and data collection points

The following users can add, edit and delete data collectors and data collection points:

manager | technical advisor | supervisor
In a preparedness implementation, where a National Society is responsible for the implementation of Nyss, it should be a manager or supervisor who adds the data collector or data collection point.

### 4.4.1 Adding a data collector

Data collectors need to be linked to a supervisor when they are added. See **4.3.4 Adding a Supervisor**.

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 also need to be linked to a village (and zone when applicable). See **4.1.2.1 Setup of geographical**.

1. Go to the project that you want to add a data collector to
2. Click on **Data collection** in the *left menu*

![Figure 67: Data collection list](image)

3. Click on **+ Add data collector/collection point**

A form appears:
4. Under type, choose **Add data collector**
5. Fill in **name**
6. Fill in **display name**

The display name is what is visible in the Map overview and Performance table of data collectors/data collection points (see 0
7. Fill in sex
8. Fill in birthyear group
9. Fill in phone number(s), making sure to start with + and your country code
10. Place the data collector in a central point in the geographical area that they will be responsible for reporting from
   a. You do not have the latitude and longitude of that location:
      i. Scroll on the map until you find the correct location
      ii. Click the location

   The latitude and longitude are automatically updated with the location the data collector will be responsible for.

   b. You have the latitude and longitude of that location:
      i. Fill in the latitude and longitude

   The map is automatically updated with the location the data collector will be responsible for.

   c. You are using a mobile device to register
      i. Click Use current location:
The map, latitude and longitude are automatically updated with the location the data collector will be responsible for.

11. Choose the correct region
12. Choose the correct district
13. Choose the correct village
14. Choose the correct zone (if applicable)
15. Choose the supervisor who will be responsible for the data collector

The new data collector will now appear in the Data collection list in the project:
4.4.2 Adding a data collection point

Data collectors need to be linked to a supervisor when they are added. See 4.3.4 ADDING A SUPERVISOR.

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 also need to be linked to a village (and zone when applicable). See 4.1.2.1 SETUP OF GEOGRAPHICAL

1. Go to the project that you want to add a data collection point to
2. Click on Data collection in the left menu
3. Click on + Add data collector/collection point (see Figure 67)
4. Under type, choose Add data collection point

A form appears, with fewer fields than the registration form for data collectors, as we are registering points and not individuals:
5. Fill in name of the data collection point
6. Fill in phone number of the phone reporting from the data collection point, making sure to start with + and your country code
7. Place the data collection point as close as possible to where it will be placed
   a. **You do not have the latitude and longitude** of that location:
      i. Scroll on the map until you find the correct location
      ii. Click the location

The latitude and longitude are automatically updated with the location where the data collection point will be placed.

b. **You have the latitude and longitude** of that location:
   i. Fill in the latitude and longitude
8. Choose the correct region
9. Choose the correct district
10. Choose the correct village
11. Choose the correct zone (if applicable)
12. Choose the supervisor who will be responsible for the data collection point
The new data collection point will now appear in the Data collection list in the project with the status in training. See how to change this in 4.4.3.1 CHANGE TRAINING STATUS OF A DATA COLLECTOR/DATA COLLECTION POINT below.

4.4.3 Edit data collector/data collection point

1. Go to the project where the data collector/data collection point is registered
2. Click on Data collection in the left menu
3. Click on the data collector/data collection point you want to edit or the pen icon on the far right

The edit data collector or edit data collection point form then appears:
4. When you are done editing, click **Update data collector/Update data collection point**
4.4.3.1 Change training status of a data collector/data collection point

All data collectors/data collection points get the status in training automatically after being registered. This status enables them to report to Nyss while still in training, 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 in Nyss, and their reports will then be registered as real. For the data collector/data collection point themselves, the way they report does not change, which makes training easier.

Likewise, if a refresher training is held, and the reports sent should be marked accordingly, the training status can be

1. Go to the project where the data collector/data collection point is registered
2. Click on Data collection in the left menu
3. Locate the data collector/data collection point you want to change the training status on
4. Click the three dots to the right of the personal information

You will then see a tooltip asking you to confirm that you want to set the data collector/data collection point to Trained/In training:

5. Click Set to Trained / Set to In training

4.4.4 Delete data collectors/ data collection point

5. Go to the project where the data collector/data collection point is registered
1. Click on Data collection in the left menu
2. Click on the cross icon on the far right of the data collector/data collection point you want to delete
You will then see a tooltip asking you to confirm that you want to delete the data collector/data collection point:

![Figure 74: Delete data collector/data collection point](image)

3. Click **Confirm removing data collector/point**

When removing a data collector/data collection point, the person/point is removed from the list. The data collector/data collection point cannot report anymore, but all previous reports are still in the *dashboards* and the *Project reports* list. The personal information is removed from the *Project reports*. 
5 Dashboards

Dashboards in Nyss show key information related to your 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.

5.1 Filtering the dashboard data

At the top of the dashboard page, 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.

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

5.2 National Society dashboard

The following users can access the National Society dashboard:

- global coordinator | manager | technical advisor | data consumer
The **National Society dashboard** is the landing page for all managers when they log into Nyss.

The **National Society dashboard** shows all data for your National Society, aggregated across all the different projects.

### Figure 76: National Society dashboard

#### 5.2.1 Key information of your National Society

The tiles/boxes at the top of the dashboard give you a quick overview.
Reports by data collection points do not trigger alerts. Thus, when the Data collection point filter is active, the Alerts tile is replaced with a Data collection point reports tile:

Furthermore, the tiles give you information on the following:

**Reports**
- Numbers of reports that have been sent in in your National Society
- The specific numbers of successfully interpreted and erroneous reports

**Data collectors/points**
- Number of data collectors or data collection points that have been actively reporting during the time set by the date picker filters

**Alerts**
- Number of alerts that have been escalated for all projects
- Number of alerts that have been dismissed for all projects
- Number of alerts that have been closed for all projects

**Data collection point reports**
- Number of reports about people referred to a hospital
- Number of reports about people coming from other villages to the data collection point
- Number of reports about people that have died
5.2.2 Health risks/events per National Society location

To get an overview of the geographical distribution of the locations of reported health risks/events, we represent the data on a map:

- Each dot in the map in **FIGURE 79** represents one registered data collector or data collection point.
- The number in each dot represents the total number of reports that they have sent.
- If you click on a dot, a tooltip shows, which separates the number of reports by health risk/event.
- Data collectors and data collection points that are close to each other, are grouped in the map when you are zoomed out.
- If you were to zoom in, the dots would separate.

The dots do not represent a real time location from where the report was sent, but the location that the data collector/data collection point was initially registered to.

5.2.3 Reported health risks/events by village

To show the evolution of number of reports over time, separated by village, we show the data in a bar chart.
By clicking on a village in the legend (the village names under the bar chart), you can hide or unhide them. In Figure 80 above, the village Changi was excluded from the chart.

- If you hover over one of the parts of a bar, the number of reports on that day from that village is shown in a tooltip. In Figure 80 above, the village Flukita had 3 reports on March 19th.

5.3 Project dashboard

The following users can access the National Society dashboard: manager | technical advisor | data consumer | supervisor (only projects they are assigned to)

The Project dashboard is the landing page for all supervisors when they log into Nyss.

The Project dashboard shows reports for only the one project.
**Figure 81: Upper portion of the Project dashboard**
Figure 82: Lower portion of Project dashboard

Figure 83: Project dashboard filtered on data collection points, making an additional bar chart appear
5.3.1 Key information of your project

The tiles/boxes at the top of the dashboard give you a quick overview:

![Dashboard with tiles]

Reports by data collection points do not trigger alerts. Thus, when the Data collection point filter is active, the Alerts tile is replaced with a Data collection point reports tile:

![Dashboard with Data collection points filter]

Furthermore, the tiles give you information on the following:

**Reports**
- Numbers of reports that have been sent in in your project
- The specific numbers of successfully interpreted and erroneous reports

**Data collectors/points**
- Number of data collectors or data collection points that have been actively reporting during the time set by the date picker filters

**Alerts**
- Number of alerts that have been escalated within the project
- Number of alerts that have been dismissed within the project
- Number of alerts that have been closed within the project

**Data collection point reports**
- Number of reports about people referred to a hospital
- Number of reports about people coming from other villages to the Data collection Point
- Number of reports about people that have died
5.3.2 Health risk/event per project location

To get an overview of the geographical distribution of the locations of reported signs and symptoms, we represent the data on a map:

![Map over health risk/event per project location](image)

**Figure 86: Map over health risk/event per project location**

- Each dot in the map in **Figure 86** shows one registered data collector or data collection point.
- The number in each dot represents the total number of health risks/events reported by that data collector/data collection point.
- If you click on a dot, a tooltip shows, which separates the number of reports by health risk/event.
- Data collectors and data collection points that are close to each other, are grouped in the map when you are zoomed out.
- If you were to zoom in, the dots would separate.

The dots do not represent a real time location from where the report was sent, but the location that the data collector/data collection point was initially registered to.

5.3.3 Number of reports by health risk/event

This bar chart shows the evolution of the number of reports over time, separated by health risks/events:
The number of reports shown react to the filters, as described in 5.1 **FILTERING THE DASHBOARD DATA**. You can for instance filter on only one village, or filter on a specific time period.

- By clicking on a health risk/event in the legend, you can hide or unhide them.
- By hovering over one of the parts of a bar, the number of reports on that health risk/event on that day is shown in a tooltip. In **FIGURE 87** above, there were 122 reports of acute watery diarrhea on March 26th.

### 5.3.4 Reported health risk/event by village within a project

To show the evolution of number of reports over time, separated by village, we show the data in a bar chart.

In this chart, only the ten villages with the highest number of reports of your project are shown. All other reports are combined into the category “Other villages”.

**Figure 87**: Number of reports by health risk/event within a project

**Figure 88**: Reported health risk/event by village within a project
Outside of showing data from only one project, this bar chart works the same as the one on the National Society dashboard (see 5.2.3 Reported health risks/events by village). In Figure 88 above, the village Changi has been excluded from the chart and there were 2 reported health risks/events in Flukita on March 22\textsuperscript{nd}.

5.3.5 Reported health risk/event by sex and age

To show the evolution of the number of reports over time, separated into sex/age groups, we show the data in a bar chart.

A notable difference between this bar chart and those described in the previous sections, is that it only counts reports of human health risks/events, since those are the only reports where sex and age are reported on. This quickly draws your attention to where the need is highest.

- You may filter on specific locations or health risk/event, as described in 5.1 Filtering the dashboard data. You can for instance filter on only one village, or filter on a specific time period.
- By clicking on a sex/age group in the legend, you can hide or unhide them. In Figure 89 above, males age 0-4 have been excluded from the chart.
- By hovering over one of the parts of a bar, the number of reports on that sex/age group on that day is shown in a tooltip. In Figure 89 above, there were 7 reports on females 5 years or older on March 25\textsuperscript{th}. 

Figure 89: Evolution of the number of reports over time, separated into sex/age groups
5.3.6 Table of reported health risk/event by sex and age

To give an overview of the total number of reports, separated by sex and age, as well as totals across the two properties, we show the data in a table:

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–4 years</td>
<td>98</td>
<td>188</td>
<td>286</td>
</tr>
<tr>
<td>5 years and older</td>
<td>107</td>
<td>181</td>
<td>348</td>
</tr>
<tr>
<td>Total</td>
<td>205</td>
<td>307</td>
<td>602</td>
</tr>
</tbody>
</table>

*Figure 90: Table of reported health risk/events by sex and age*

5.3.7 Bar chart for reports from data collection points

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

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 quickly draws your attention to where the need is highest.

*Figure 91: Bar chart for additional data collection point categories*
- You may filter on specific locations or health risks/events, as described in 5.1 Filtering the dashboard data.
- By clicking on a category in the legend, you can hide or unhide them. In Figure 91, people that died have been excluded from the chart.
- By hovering over one of the parts of a bar, the number of reports on that sex/age group on that day is shown in a tooltip. In Figure 91 above, there were 8 people referred to hospital on March 21st.

5.3.8 Report type filter

The filtering options on the project dashboard are mostly the same as on the National Society dashboard, and are described in 5.1 Filtering the dashboard data. In addition, the project dashboard has one additional filtering option: Report type:

![Figure 92: Project dashboard filters](image)

The project dashboard allows you to filter and show reports by data collectors that are in training mode. With this filter you can choose to see only training reports.

5.3.9 Generate pdf from dashboard

At the bottom of the project dashboard, there is a Generate PDF from dashboard button (see Figure 82). This gives you the possibility to export the whole dashboard, with your selected filters, as a PDF. This makes it easy to update concerned parties with data from Nyss.

The created PDF shows all the various graphs from the project dashboard.
6 Data collection page

The following users can access the Data collection page: **manager | technical advisor | supervisor** (only projects they are assigned to, and only data collectors / data collection points assigned to them)

*Data collection* can be found in the *left menu* when in a project, and consists of:

- the list of data collectors/data collection points
- a map with location and status of the data collectors/data collection points
- a performance overview

6.1 Collectors/collection points

In the list of *collectors/collection points*, you can filter per supervisor, sex, location, and the training status (in training or trained):

![Figure 93: Data collection, list with filters](image)

Additionally, you have the option to export the list of data collectors/data collection points 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.

This is also where you add new data collectors/data collection points as described in 4.4.1 **Adding a data collector** and 4.4.2 **Adding a data collection point**.
6.2 Map overview

The next tab under *Data collection* is *Map overview*. When you click here, you will see a map of all registered data collectors/data collection points. Their locations are based on the location they were registered with:

![Map overview](image)

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 = reporting with errors
- Yellow = not reporting

This enables you to see how both the different locations and individuals 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 dates in the “start date” and “end date” fields.
6.3 Performance

The third and last tab under Data collection, is Performance. Clicking here takes you to a table of all the data collectors/data collection points:

This table gives an overview of each registered data collector or data collection point; how many days it has been since they last sent a report, as well as their weekly performance over the last 8 weeks. This makes it easy to immediately see who needs to be followed up.
7 Report lists

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

7.1 National Society reports

The following users can access the National Society Reports list: 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:

The line list consists of all the reports that have been sent from data collectors/data collection points, as well as reports received from phone numbers not tied to a data collector – these will show as error reports.

The line list shows:

- Date and time
- Name of data collector
- Location
- Supervisors
- Health risk/event reported
- Number of cases reported in each sex and age group

The information shown from the line list can be filtered by:

- Data collection type (data collectors or data collection point)
• Location
• Health risk/event
• Status (error or success)

7.2 Project reports

The following users can access the Project reports list:
manager | technical advisor | supervisor (only projects they are assigned to)

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

![Project reports list](image)

The line list shows:
• Date and time
• Status
• Name of data collector
• Location
• Supervisors
• Health risk/event reported
• Number of cases reported in each sex and age group
The information shown from the line list can be filtered by:

- Data collection type (data collectors or data collection point)
- Location
- Health risk/event
- Status (error or success)
- Report type (real reports or training reports, see 7.2.1 REPORT TYPE)

You have the option to export the project 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 a report is exported, it is exported with additional columns:

- Additional calculations (total for sex and birthyear groups)
- EPI year and EPI week
- The report text as it was sent by SMS
- Data collection point categories (if applicable)

### 7.2.1 Report type

There are two report types. Data collectors/data collection points have a training status, set to either In training or Trained. Reports sent by Data collectors/data collection points in training are not considered real reports by Nyss. Hence, in the Project dashboard and Project reports lists it is possible to filter between the two report types, by picking either real reports or training reports.

The ability to mark reports as training reports enables data collectors/data collection point to report during training, exactly how they will once they start reporting from their community.

This also enables supervisors and managers to look at data like what they will receive in real life and practice how to use

### 7.2.2 Mark report as error

Sometimes a report has been formatted correctly, and thus marked by Nyss as Success, but the content was still wrong. The data collector/data collection point may have entered the wrong health risk/event, sex or age group. Upon cross-
checking, both real reports and training reports can then be marked as an error (unless the report has contributed to triggering an alert):

1. Go to the project where the data collector/data collection point that sent the report is registered
2. Click on Project reports in the left menu
3. Locate the report you want to mark as error
4. Click the three dots to the right of the report information

You will then see a tooltip asking you to confirm that you want to mark the report as an error:

![Figure 98: Mark a report as error](image)

5. Click Mark as error

The report then gets the status Marked as error and is treated as an error report.
8 Alerts

The following users can access the alerts:
**manager | technical advisor | supervisor** (only projects they are assigned to)

This section explains how alerts are handled, and the different states of an alert:

---

**8.1 Triggering alerts**

As explained in 2.3.4 ALERTS, alert rules are set so that alerts can be triggered on a single incoming report, or after X reports are received. If it is set to trigger after X reports are received, Nyss looks for other reports of the given health risk/event, within the set time and distance range. When enough reports are found, an alert is triggered and a notification with a link to the alert page is sent to the supervisor(s) responsible for the data collector(s) who sent the report(s). Reports by data collection points do not trigger alerts.
8.1.1 “An alert wasn’t 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 (4.2 PROJECTS).

Go to Project settings and verify that the alert rule for the health risk/event you are expecting alerts from is set correctly.

8.2 Open alert

The triggered alert is now displayed in the Alerts list as open. The supervisor(s) must cross-check the underlaying reports to see that they match the relevant health risk/event definition. New reports that match the alert rule are added to the alert while it is open.

Click on the alert to see the Alert Details:

Under the tab Logs you can see all the actions that have been taken related to this alert:
As seen in Figure 100, the phone number of the data collector who reported is readily available, so that the supervisor can contact them directly to cross-check. The reports are then kept or dismissed, by clicking on either button.

If the responsible supervisor does not escalate or dismiss the alert within 24 hours, a notification is sent to the head manager, who will then be responsible for cross-checking or assigning a supervisor to cross-check the alert.

The reset button can be clicked if a report was dismissed or kept by mistake. If enough reports are kept, so that the alert rule is still met; a message will pop up, telling the supervisor that the alert should be escalated:

The Escalate alert button also appears:
When an alert is escalated, a notification is sent to the supervisors responsible for the data collectors who sent the reports. Additionally, those added as notification recipients under 4.2 PROJECTS will be notified.

If the notification recipients are already aware of the alert, you may tick the checkbox Don't notify recipients:

New reports that match the alert rule, are still added to the alert while it is escalated. Thus, we avoid triggering new alerts in cases where health authorities and/or other relevant parties are already aware of the situation.

8.3 Dismiss alert

When a supervisor cross-checks the report(s) and see that they do not match the health risk/event definition, they should dismiss the report:
If the alert no longer contains enough reports to match the alert rule, a message will pop up telling the supervisor to dismiss the alert:

Figure 105: Alert details, an alert that should be dismissed

If an alert is dismissed but contains some reports that did match the health risk/event definition and thus are kept, these reports are saved in the system and can contribute to trigger new alerts. They will then be displayed in the new alert as reports already cross-checked.

8.4 Close alert

An alert should stay escalated for as long as health authorities and/or other relevant parties are monitoring and handling the situation and are expecting to receive more reports from that area.

When they 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 an optional comments field for the supervisor or manager to input a reason why it’s being closed:
Figure 107: Escalated alert to be closed with an optional comment

Future reports for this health risk/event will now trigger a new alert.
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