SORMAS Manual

Document version 5.1 of 30.07.2021

SORMAS version: 1.61.2

Overview of contents

Protection of confidentiality

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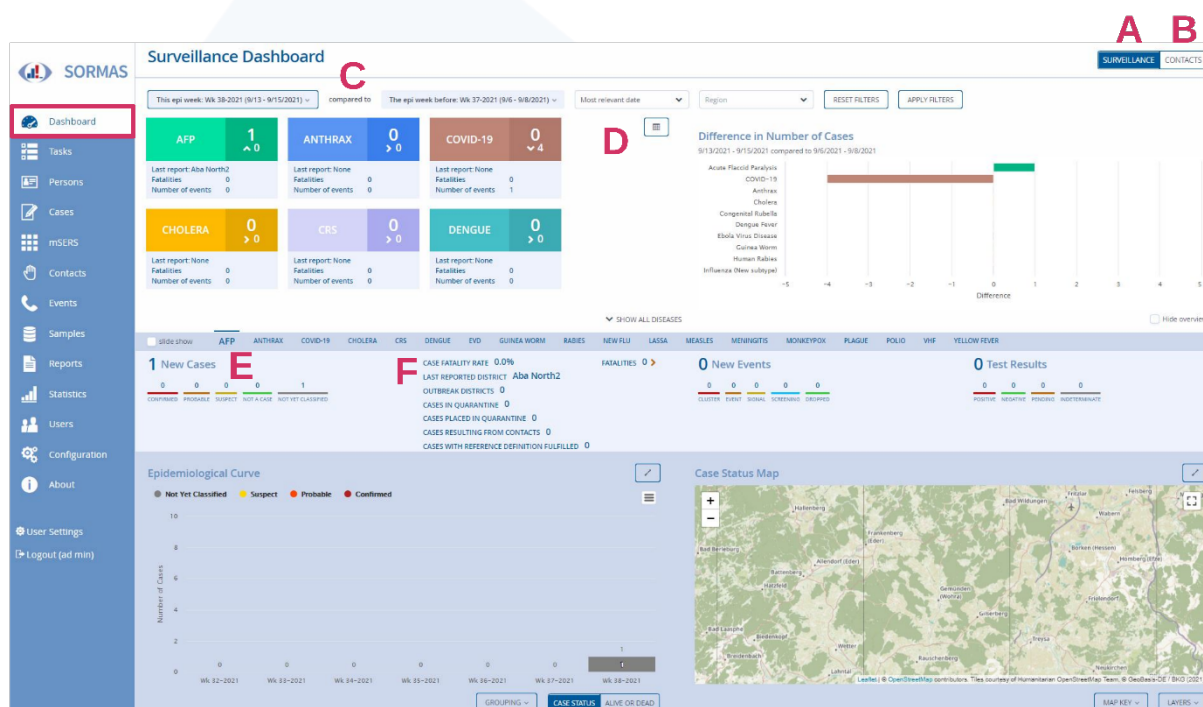
1. Dashboard

The overview, also called dashboard, is the presentation of the current data stock on the case and contact events of a selected period. It is available in different formats. The following text uses the markings on the illustrations to explain the functions.

On the left side, you can see the blue menu ribbon. You can identify where you are by the menu item with a white background, in this case the "Dashboard". The dashboard features two possible views: **"Surveillance"** (**A**) and **"Contacts"** (**B**). You can toggle between these two views by clicking the corresponding button at the top right. The currently active view is displayed with a blue background.

1.1. Surveillance dashboard

The "Surveillance" view provides various data and display formats for the current outbreak situation.

1.1.1. Evaluated period

Directly below the header "Surveillance Dashboard", the **period to be evaluated** can be selected. SORMAS automatically selects a reference period in order to evaluate the data relative to the previous period. Initially, the default period is "This epi week" compared to "The epi week before". This is short for "epidemiological week", which always refers to the period spanning from Monday of the same week to the present day. Please note that the count for the epidemiological weeks differs from the calendar weeks in 2021 because the 1st of January 2021 was a Friday. Clicking the respective button allows you to select further options (**C**), e.g. the current day or the day before the current day or a user-defined period. If a user-defined period is selected and confirmed by clicking the "Apply filters" button, SORMAS automatically selects a preceding period that includes an identical number of days or the same period from the previous year for the comparison.

The dashboard is set to **"Most relevant date"** (**D**) by default. With this setting, case count data refer to the symptom onset date if available and to the report date if no symptom onset date is available. This drop-down menu allows you to select the alternative settings "Symptom onset date" or "Case

report date" and have the dashboard figures displayed based on these dates. The dashboard overview includes all cases that have the case classifications 0 or A-E assigned; cases featuring the category "X. Not a case" are not included in the calculation.

1.1.2. Reference information

The row below the evaluated period contains two blocks for display. On the left, the current outbreak events (in our example AFP with 1 new cases) (**E**) are shown in key figures. The number of new cases in the selected reference period is shown below. A small arrow indicates whether the figures have an increasing or decreasing trend. In addition, the fatalities during the selected period and the number of occurred events are displayed. Clicking the table icon in the centre displays the collapsed box is shown in detail as a table. To the right of this information box (**F**), a comparison view with the week before is provided. The graph shows the difference in the number of cases compared to the previous period. Hovering the mouse over the brown bar in this diagram displays the difference in the number of infected individuals. Select the option "Hide dashboard" to conceal this comparison overview.

1.1.3. Key figures

Separated by a darker bar, the row below the comparative data contains key figures on the infection events with subdivisions. In this row, from left to right:
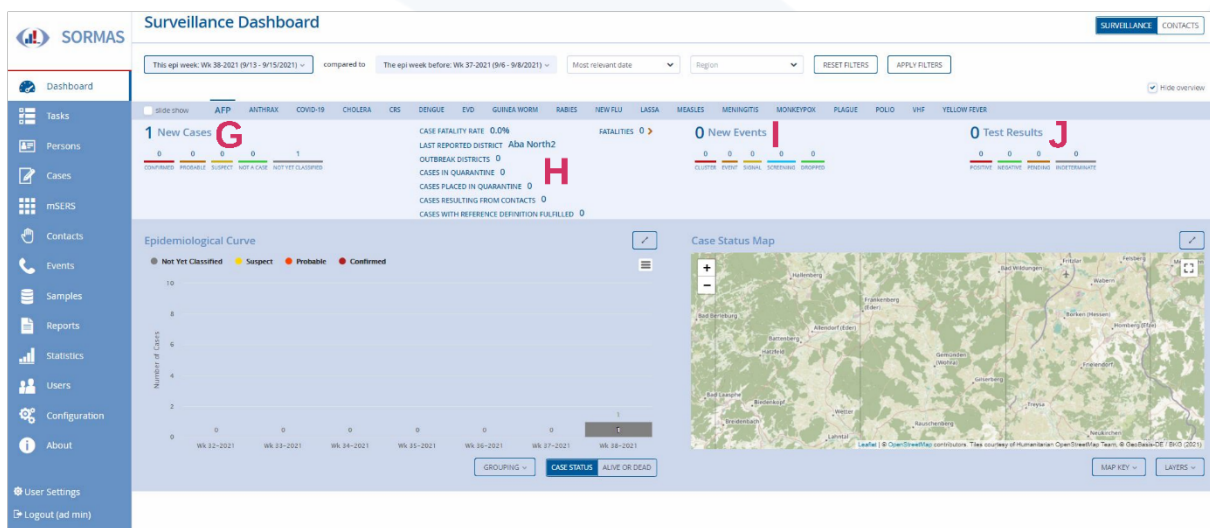
- 1st block **"New cases"** (**G**): The number of new cases during the selected period, broken down by case classifications. The calculation does not include the category "X. Not a case".
- 2nd block (**H**): Key figures on the **case fatality rate**, the number of **outbreak districts**, **cases in quarantine** and **cases placed in quarantine** (i.e. added as "new" quarantine cases during the selected period under consideration), as well as the contacts that were converted into a case, referred to as "cases resulting from contacts".
- 3rd block **"New Events"** (**I**): Overview of the **new events**, broken down by the categories "Cluster", "Event", "Signal", "Screening" and "Dropped". The functions and definitions of the **"events"** will be discussed in chapter 5.
- 4th block **"Test Results"** (**J**): Current figures on **test results**, i.e. laboratory samples broken down by "positive", "negative", "pending" and "indeterminate" (see chapter 7).
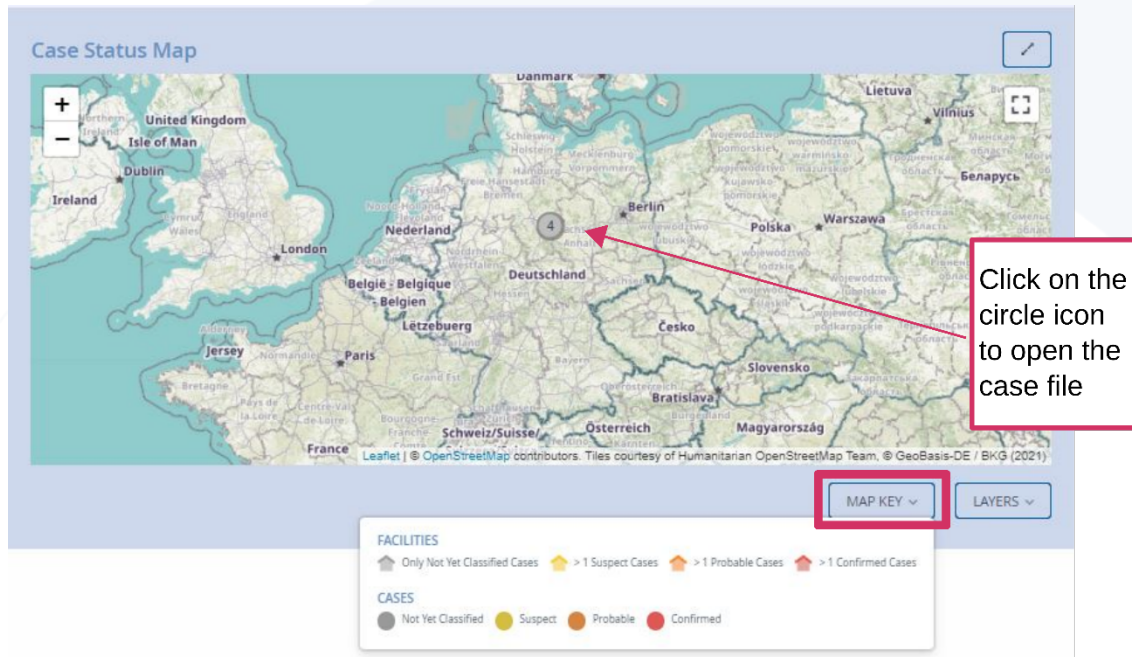
1.1.4. Epidemiological curve

The lower section of the page contains two large diagrams. On the left, the "Epidemiological curve" based on case classifications is shown. The colouring of the individual categories matches the legend above.
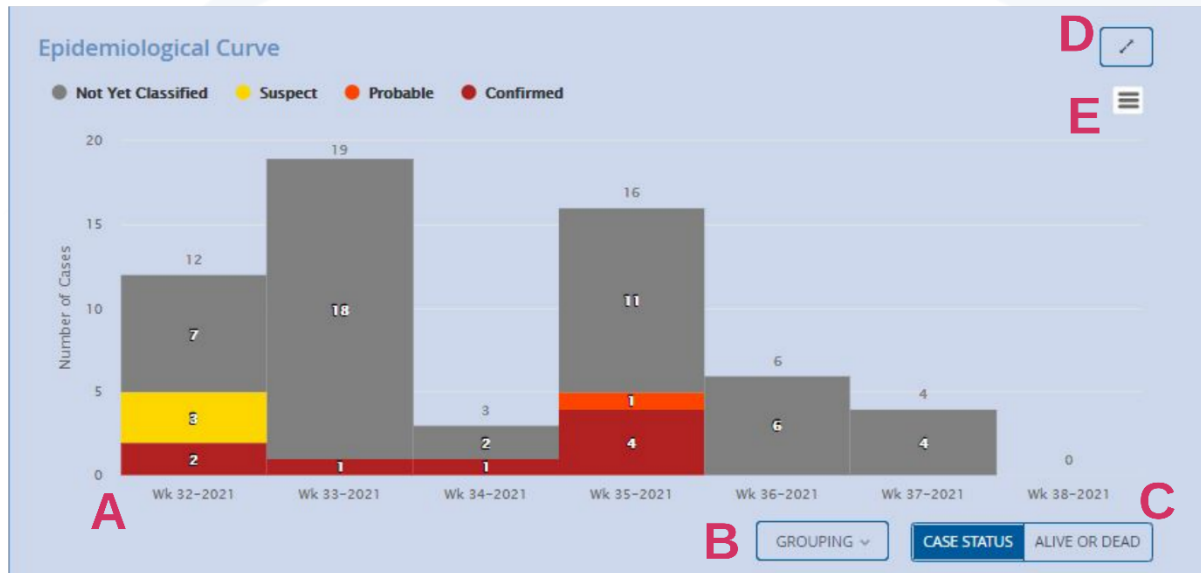
Irrespective of the selected period below the heading "Surveillance Dashboard", this curve displays an overview of the cases from the last seven weeks (**A**) by default. This setting can be changed in the "Grouping" menu, e.g. to cases per days or months (**B**). The setting for always showing at least 7 entries can be deselected. If the selected period is "This epi week", SORMAS will show the present epi week or the current month or the days of the ongoing epi week when the setting is deselected. If a user-defined period is selected, SORMAS will show all days, weeks or months of the user-defined period in the epidemiological curve when the minimum of 7 entries is deselected. Furthermore, the curve can be switched from "Case status" to "Alive or dead"; in this case, the status of cases is displayed for the same period (**C**). Click on the two arrows with opposite directions at the top right (**D**) to enlarge the view. Below this (**E**), the hamburger button can be used to download the graph or request an export of the selected data, either as an image in various formats (png, jpeg, pdf) or in the form of raw data (csv, xls).

1.1.5. Case status map

The "Case status map" is located to the right of the "Epidemiological curve". It uses map material from OpenStreetMap, all entries remain on your own SORMAS instance. This map displays the cases of your district, broken down by case classification, thus enabling you to identify their locations. Facilities are listed separately in this view. The cases are always displayed if, after entering the full address data in the case entity, the so-called "geo button" has been pressed at the appropriate place, which calculates the GPS coordinates from the address data entered and transfers them to the map (the geo button is discussed in the chapters on cases, contacts and events).

Similar to the "Epidemiological curve", the "Case status map" can also be enlarged by clicking the double arrow to the right above the map. In addition, the map can be zoomed in or out using the plus and minus icons or the mouse. Clicking on the icons shown, which are explained in the legend (map key), opens the corresponding case entity in a new browser window.
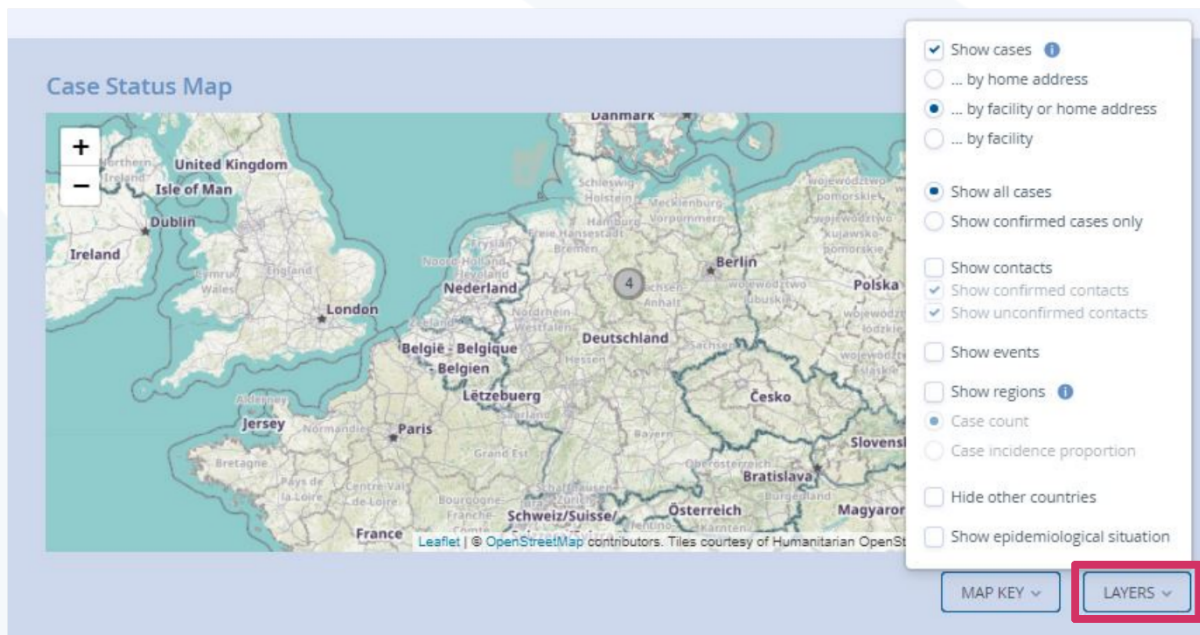
Besides the legend there is also a button for different "layers" below the map. Clicking this field opens the selection list shown above. It enables you to place different filters over the map in order to increase or reduce the amount of information shown. For example, you can show only the confirmed cases (case classifications C, D and E) in the map or view a breakdown of cases by facility and/or home address. Furthermore, in addition to cases, contacts (squares) and events (triangles on their tips) can also be displayed on the map. Furthermore, "Show epidemiological situation" can be selected to show the epidemiological situation of the whole year, regardless of all other filters listed above.

1.2.   Contacts dashboard

The dashboard can also be output for the contact situations by clicking on the **"Contacts"** field at the **top right**. Based on their reporting date, the contacts dashboard contains various data on the recorded contact situations of the current outbreak.
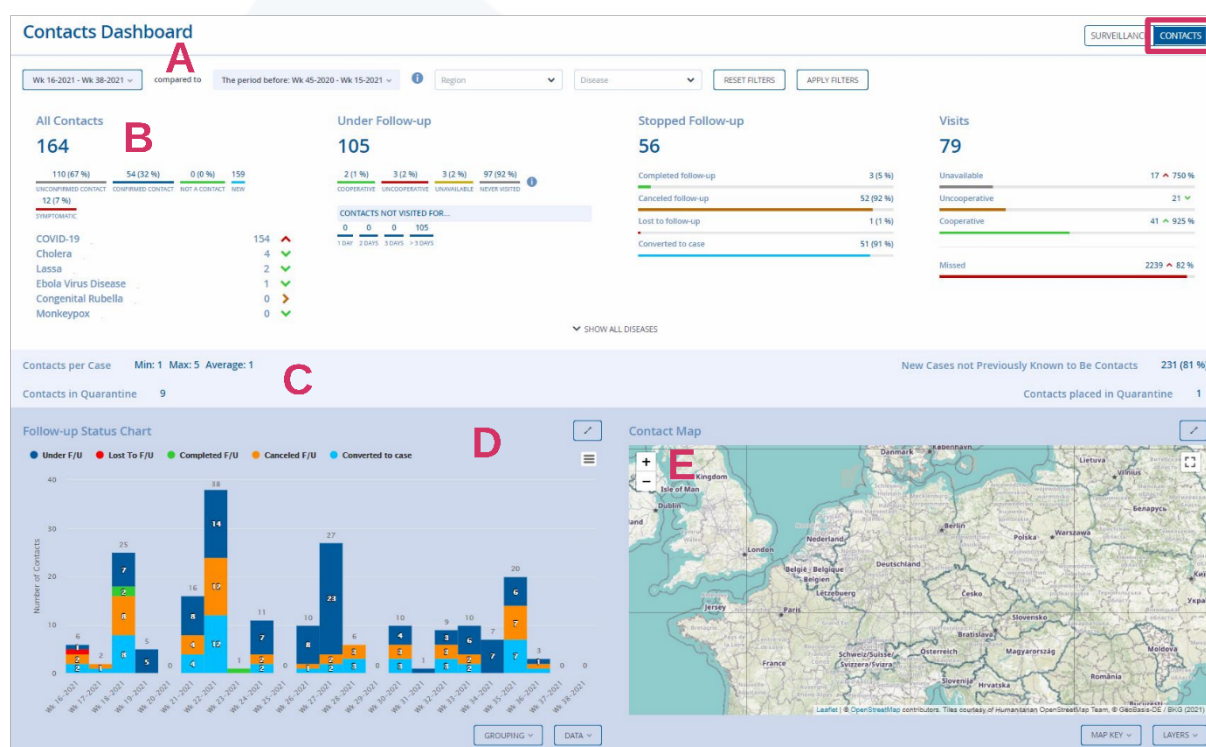
1.2.1. Evaluated period

Directly below the header "Contacts Dashboard", the period to be evaluated can be selected (**A**). A reference period can be selected here in order to evaluate the data relative to the previous period. Initially, the default period is "This epi week" compared to "The epi week before". This epidemiological week always includes the period spanning from Monday of the same week to the present day. Further options can be selected by clicking their respective buttons (see chapter 1.1.1).

1.2.2. Key figures on contacts and follow-up

The row below the evaluated period (**A**) contains various key figures on contact situations and follow-up (**B**). In this row, from left to right:

- 1st block **"All Contacts"**: Overview of all contacts registered during the period. These are broken down by **unconfirmed** or **confirmed** contacts and by **new** contacts recorded, **symptomatic** or cases **without contact** (for example, if it turns out subsequently that in contrast to previous statements no contact had taken place). A contact is considered

confirmed when an appropriately authorised person (the contact person himself/herself if of age, legal guardian in the case of children, etc.) has verified that there was actually a contact situation with an infected person.

- 2nd block **"Under follow-up"**: Overview of the current status of the follow-up, broken down by willingness to cooperate (did the person provide information) and status (was the person available or not available). In addition, a display of how many contacts have not been called during which time period.
- 3rd block **"Stopped follow-up"**: If a follow-up is cancelled, for example if the contact has been **converted to a case**, or because it turns out that the disease is not COVID-19 after all, this is listed here. If tracking is not possible at all, for example due to incorrect contact data, this is also displayed.
- 4th block **"Visits"**: Overview of calls recorded in SORMAS, broken down by willingness to cooperate ("Cooperative", the person provided information, "Uncooperative", the person did not want to provide information) and status ("Not available", the person was not reached). The number of all visits that were not made in the period under consideration ("Missed") is listed as well.

Directly below this are key figures on the average (as well as minimum and maximum) number of contacts per case, the contacts in quarantine, or those who had to go into quarantine during the set evaluation period, as well as new cases that were not previously known as contacts (**C**).

1.2.3. Follow-up status chart

Similar to the diagram for the epidemiological curve in the surveillance dashboard, the lower half of the contacts dashboard contains a visualisation of the follow-up situation (**D**):
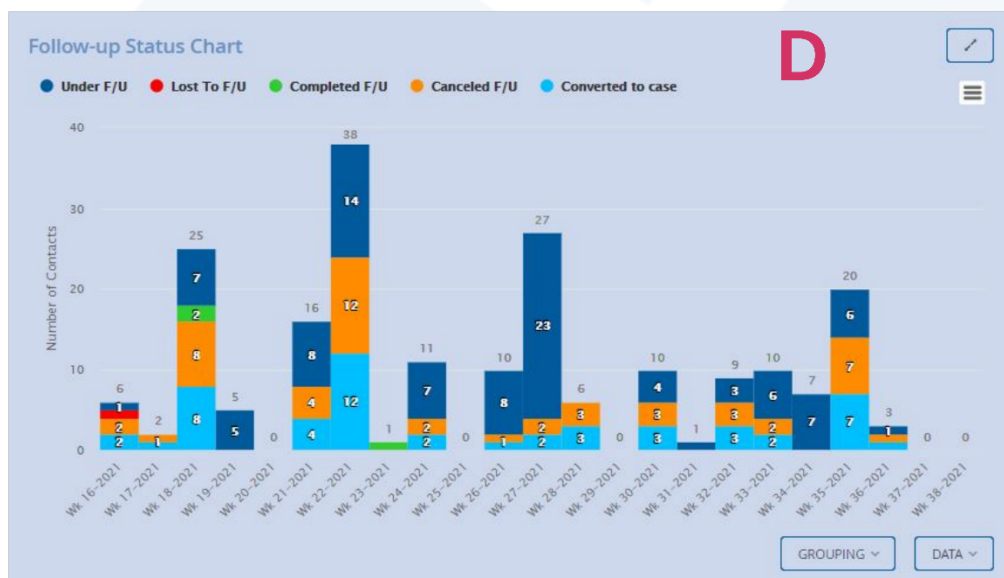
By default, the last seven weeks are shown; different grouping is possible here as well (cf. chapter 1.1.5). The colouring of the individual columns is explained in the legend above the chart. The illustration features a so-called "mouse-over effect", i.e. by clicking on the individual bar segments or by simply pausing with the mouse on the respective segment, individual categories can be highlighted. Moving the mouse over the legend produces a highlighting effect, too. This can be seen in the above figure. Click on the two arrows with opposite directions at the top right to enlarge the view. Below this, the hamburger button can be used to download the figure or request an export of the selected data, either as an image in various formats (png, jpeg, pdf) or in the form of raw data (csv, xls).

1.2.4. Contact map

To the right of the "Follow-up status chart" there is the "Contact map" (**E**). It uses map material from OpenStreetMap, all entries remain on your own SORMAS instance. This map displays the contacts of your own district. The contacts are always displayed if, after entering the full address data in the case entity, the so-called "geo button" has been pressed at the appropriate place, which calculates the GPS coordinates from the address data entered and transfers them to the map (the geo button is discussed in the chapters on cases, contacts and events).
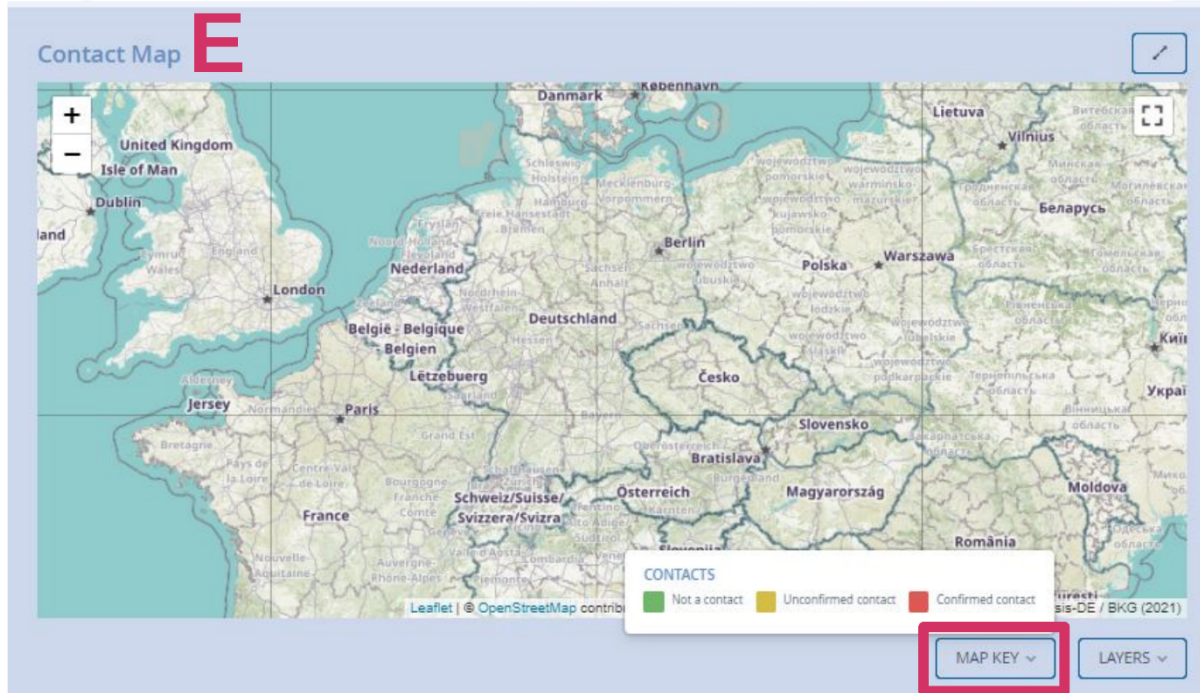
Similar to the "Follow-up status chart" Epidemiological curve, the "Contact map" can also be enlarged by clicking the double arrow to the right above the map. You can also zoom into or out of the map. Clicking on the icons shown in the map, which are explained in the legend (map key), opens the corresponding contact entity in a new browser window.

Besides the legend there is also a button for different "layers" below the map. Clicking this field opens the selection list. Similar to the case status map (see chapter 1.1.5), it enables you to place different filters over the map in order to increase or reduce the amount of information shown.

1.2.5. Disease network diagram
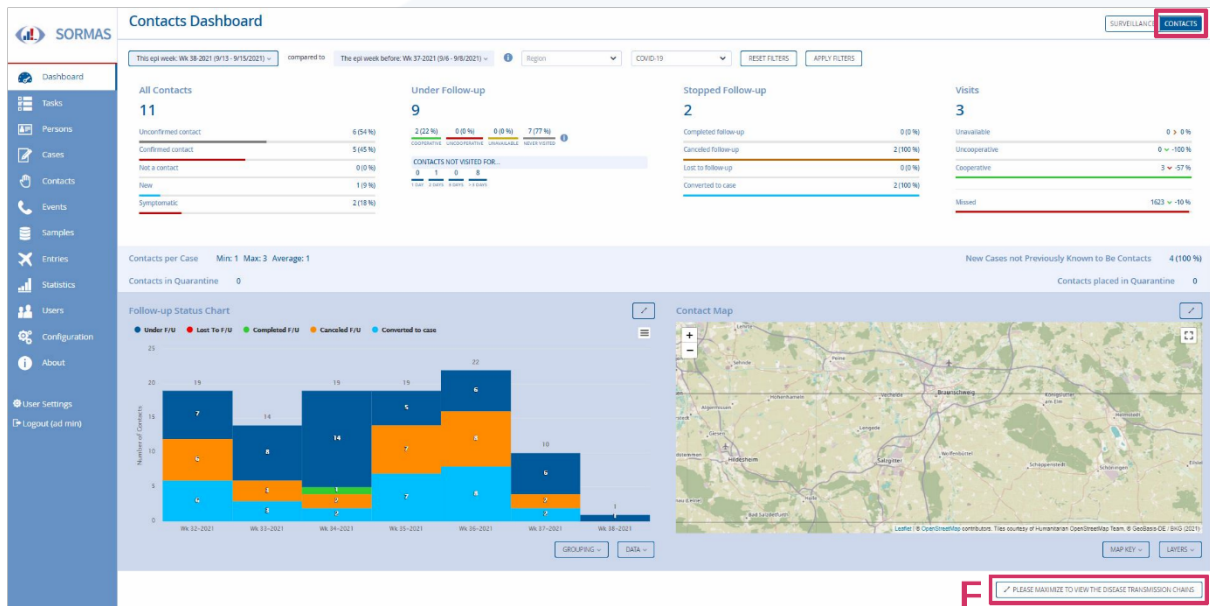
Clicking "Please maximize to view the disease transmission chains" (**F**) below the "Contact map" in the contacts dashboard opens a new view showing the disease network diagram.
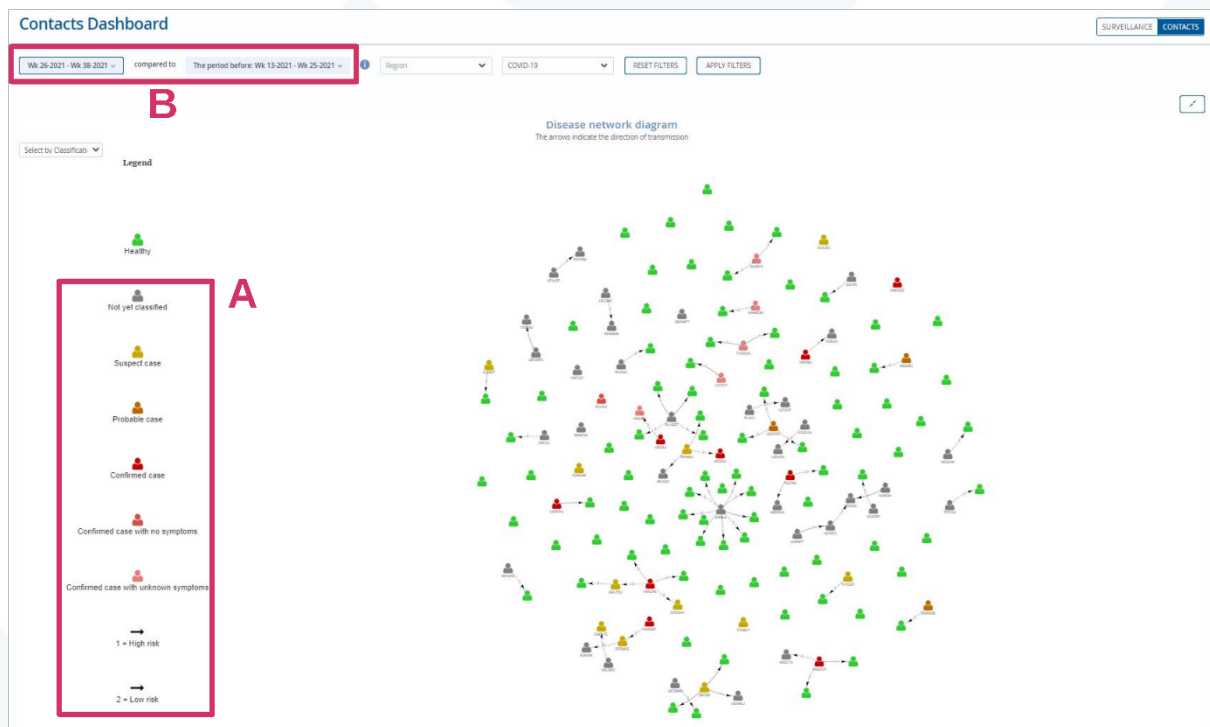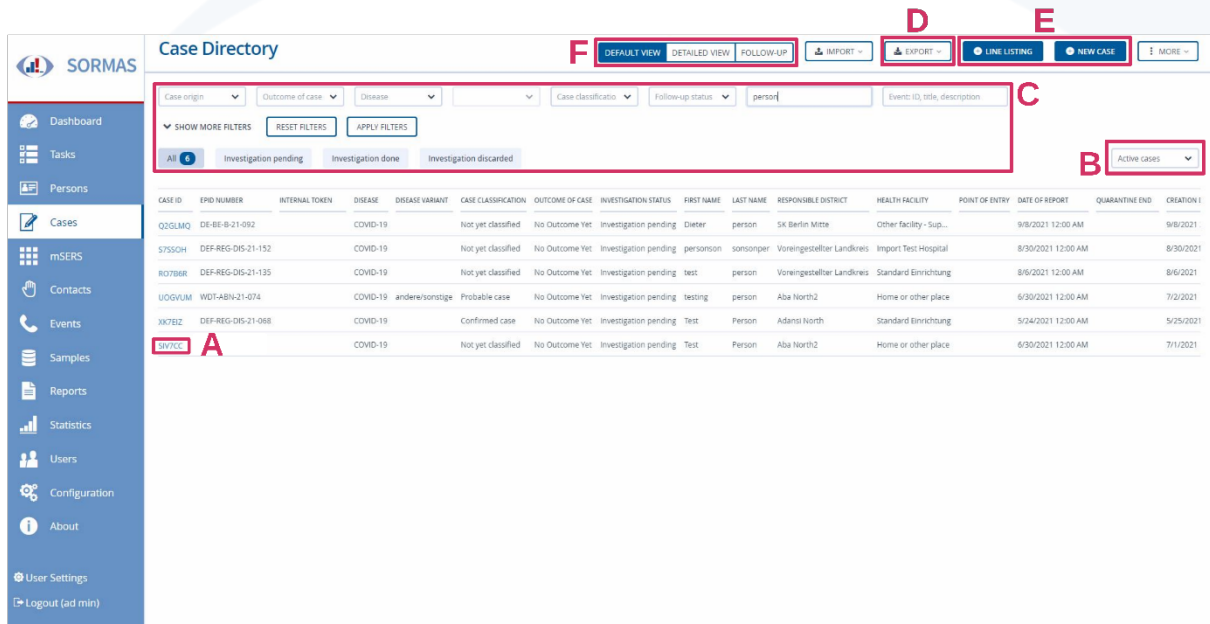
In accordance with the colour definitions from the legend on the left (**A**), all cases and contacts are displayed here according to their relationships with each other. Directly below the header "Contacts Dashboard", the period to be evaluated and the reference period can be selected here once again (**B**). Different connecting arrows represent the respective risk of the encounter. For cases, i.e. infected persons, the corresponding case ID, which is automatically generated by SORMAS when a new case is created, is shown below the figures. The figures in the diagram can be moved and separated using drag & drop. While doing so, the persons who had been in contact will remain interconnected by arrows. In this way, coherent clusters can be visually identified. A distinction is made between high and low risk

(contact category I and II). Dashed arrow connecting lines represent a low risk. All green figures represent persons (cases or contact) without symptoms.

2. Cases

Clicking on the Cases menu item in the blue menu ribbon takes you to the case directory.

2.1.   Case directory

In the case directory, the cases entered in SORMAS are listed in a tabular form and can be opened by clicking on the blue case ID in the first column (**A**). The case ID is assigned automatically by SORMAS. The case directory displays "Active cases" by default. SORMAS automatically archives cases after 90 days. Using the selection box on the right above the table (**B**), you can select between active (default) and archived cases or all cases (active + archived cases). More filter options are provided directly above the tabular list (**C**), which are explained in more detail in chapter 2.1.1.

The data from the case directory can be exported in various levels of detail as a csv entity (**D**).

Cases can be registered using the "**New case**" or "**Line Listing**" fields (**E**).

The case directory can be output as a default view, detailed view or in the follow-up overview (**F**).
- The **default view** is the preselected view when calling up the case directory and contains a tabular overview of selected information, such as case classification, outcome of disease, vaccination status, investigation status, symptom journal status (registered, not registered) and name/first name.
- In addition to the columns known from the default view, the **detailed view** displays further personal information on the respective case, such as gender, age, private address or telephone number.
- The **follow-up view** lists the follow-up entries made for the respective cases. They can be created in two ways: Either visits made are documented in the "Follow-up" tab in the corresponding case entity or the entry is generated using a symptom journal maintained by the infected person (the latter is recognisable by a mobile phone image within the rectangle, **A**).
  On the right above the tabular follow-up view, the time period can be selected accordingly (**B**).
  A legend of the visit history shown in the directory is located below the directory (**C**).

2.1.1. Filter functions

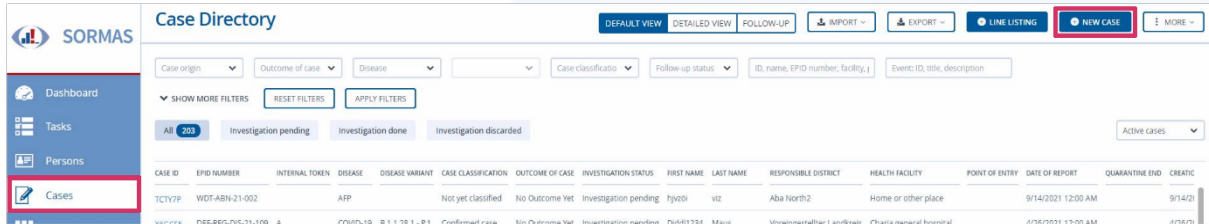The case directory enables you to filter the data displayed by various

filter criteria. For this purpose, several selection fields are provided above the tabular view, which can be used to limit the displayed cases, for example, exclusively to those whose investigation is still pending (**A**).

Further filter options are provided directly below the "Case Directory" heading. For example, only cases of a certain case classification can be displayed here, or only cases that are currently under follow-up (using the "Follow-up status" filter). There is also an option to make a specific search by name (**B**), case ID, EPID number or facility. Clicking "Show more filters" (**C**) opens further filter options, which can be activated via the "Apply filters" button and deactivated via the "Reset filters" button (**D**). Clicking "Show fewer filters" subsequently collapses the expanded filter options (not shown in the figure).

2.1.2. New case

Using the **"New case"** button, a new case can be created from the default or detailed view.

Clicking "New case" opens a separate input box where first of all personal information is entered. Mandatory fields are marked with a red asterisk; they must be filled in before the case can be saved.

The "Case origin" field (**A**) is **always left at the default setting "In-country"**. This setting is required for example for Germany in order to display all relevant fields for further processing. The field is NOT intended for entering journeys (this is done in the "Epidemiological data" tab), but will be used in African countries for registering cases in airports.

The date of report (**B**) indicates the day the case was reported to the public health authority. This field is populated with the current day by default. Where necessary, please change this date to the date of the diagnostic finding, because otherwise errors in the reporting statistics will occur.

Next to the "Disease" field, a mutation variant can be entered in case of corresponding evidence, or the status of a corresponding evidence can be entered (**D**).
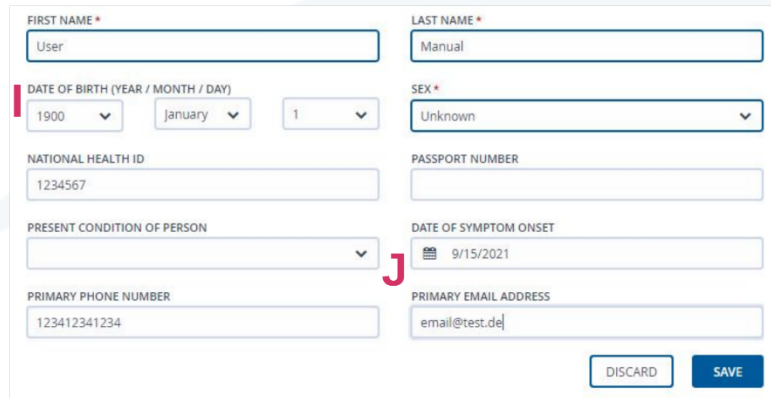
For the responsible jurisdiction (**E**), the relevant region, district and community need to be entered for the responsible authority processing and reporting the case. A preceding LK indicates a rural district, while a preceding SK indicates an urban district. When typing, only parts of words can be entered, whereupon suitable suggestions from the drop-down menu appear.

If a place of stay is assigned to a case that differs from the responsible jurisdiction (**F**), a corresponding documentation section can be expanded by ticking the checkbox below (**G**). This feature can be used, for example, for improved representation of cases that are currently being treated in a clinic if the place of stay is detached from the responsible jurisdiction. So, if the clinic is in a different district than the original place of stay, this can now be documented and has no negative influence on the access rights. Observe internal office procedural instructions on how to proceed in the event of unclear responsibilities/different places of stay. In this context, be sure to take into This requires another tick to be placed next to "Prevent transmission to reporting software"(**H**).

Note for authorities that previously used the no longer available field "Reporting district" to make this distinction: The "Reporting district" field has been eliminated in version 1.61. If any entries were made in "Reporting district" AND "Responsible district", the information in "Reporting district" will automatically become the new "Responsible district" and the information in "Responsible district" will become the new "Place of stay". The district that now is stated in "Place of stay" (and which previously had been the "Responsible district") can continue to transmit the case to SurvNet. If you wish to suppress this, you can select the checkbox "Prevent transmission to reporting software" in the case entity. A note will appear stating that transmission of this case is actively being prevented.

In the selection box "Place of stay" (**F**) indicate whether the affected person is spending the isolation period in a facility or is staying at home/in a private location. A facility can be described in more detail using the additional fields that appear after selection; a private address can be provided with additional information such as "floor, block of flats, etc." under the "Facility description" field that appears, if required. The address as such will only be entered (in the "Case person" tab) when editing the case entity itself.

The date of birth (I) should be entered for further identification, but it is not a mandatory field so that the case can be recorded even if the data is not yet complete. Similarly, if applicable and available, a primary telephone number (other telephone numbers can be stored elsewhere), primary email address and date of symptom onset should be noted (J). Saving your entries takes you to the newly created case entity (see chapter 2.2).

2.1.2.1. Mechanism for detecting duplicates

This guide explains the detection of potentially duplicate persons, cases, contacts and events in SORMAS – how the process works in general and which variables are taken into account:

General information

Duplicate detection is always based on the responsibility of the user who creates persons, cases, contacts or event participants or imports them into the system. Data that is not accessible to the user will not be taken into account, so that the creation of duplicates is theoretically possible even with consistent use of duplicate detection by each user. To remedy this, users with the appropriate rights have access to special "Merge Duplicates" views for cases and contacts, accessible via the directories, where they can clean up the system by merging duplicate data. **Please note that currently there is no duplicate detection if data is transferred to SORMAS via the ReST interface!**

Persons

Whenever a user attempts to create data relating to people - cases, contacts or event participants - the system checks for similar people before performing a subsequent duplicate detection of the actual case, contact or event participant. A person is rated as a potential duplicate if this person meets the following requirements. Any variable not specified for the person created is ignored in this calculation.

> ➢ The person must have a similar name.
>
> To detect similar names, we use PostgreSQL's pg_trgm module, which uses trigrams to calculate the similarity between two strings, in this case the names of two people. The default threshold for similarity is 0.65. This threshold can be adjusted by changing the value of the namesimilaritythreshold server property. The higher the value, the more similar the names must be in order to be recognised. An interchange of first and last name is recognised; UE/Ü is recognised for first and last names; separators are recognised for first and last names.

> ➢ Both persons must have the same or no gender (if specified in the person created).

➢ The gender "Unknown" matches any other gender, so the system would recognise a person with the gender "Unknown" as a potential duplicate of a person with the gender "Male", "Female" or "Other" as long as all other requirements are met.

➢ The two persons must not have a different year, month or day of birth.

➢ People are also recognised as potential duplicates if their year, month or day of birth is blank. They are only excluded if there is an actual different value.

➢ Neither person may have a different national health identifier.

Important: All of the above requirements will be ignored (except for the association requirement) if the two persons have the same passport number.

A configuration option allows the following setting, which is disabled by default, to be enabled: The person must be linked to at least one case, contact or event participant. If the server property duplicatechecks.excludepersonsonlylinkedtoarchivedentries is enabled, the associated case or contact, or the event the event participant is assigned to must also be active, i.e. neither deleted nor archived.

Cases

When a user attempts to create a case and a potentially duplicate person is identified and selected, the system will additionally be checked for similar cases of the selected person. A case is rated as a potential duplicate if it meets the following requirements. Any variable not specified for the case created is ignored in this calculation. Only cases that have not been marked as deleted are considered, including archived cases.

➢ Both cases must have the same disease.

➢ Both cases must have the same region of stay or, if the region of stay is empty, the same responsible region.

➢ The reporting dates of both cases must be within 30 days of each other.

Contacts

When a user attempts to create a contact and a potentially duplicate person is identified and selected, the system will additionally be checked for similar contacts of the selected person. A contact is rated as a potential duplicate if it meets the following requirements. Any variable not specified for the contact created is ignored in this calculation. Only contacts that have not been marked as deleted are considered, including contacts of archived cases.

➢ If no initial case is selected, both contacts must have the same disease.

➢ If an initial case is selected, both contacts must have the same initial case.

➢ The reporting dates of both contacts must be within 30 days of each other.

➢ The dates of the last contact of both contacts must be within 30 days (if specified for the contact created).
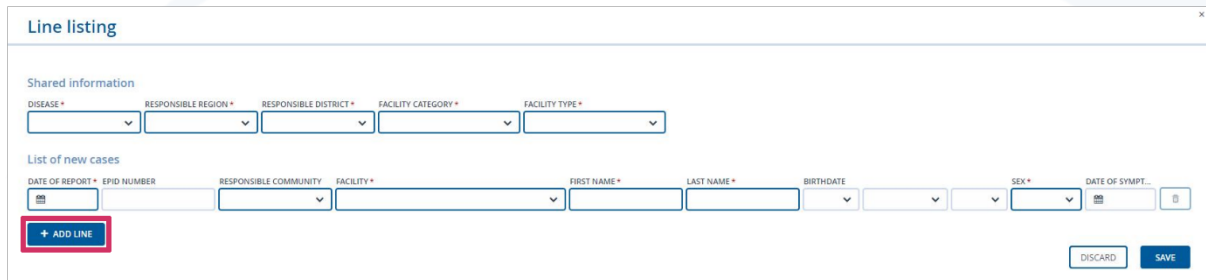
Event participants

When a user attempts to create an event participant and a potentially duplicate person has been identified and selected, the system additionally checks whether there is already an event participant

in the associated event for the selected person. In this case, an error message is displayed to the user informing them of this circumstance and preventing them from creating a duplicate event participant.

2.1.3. Line listing
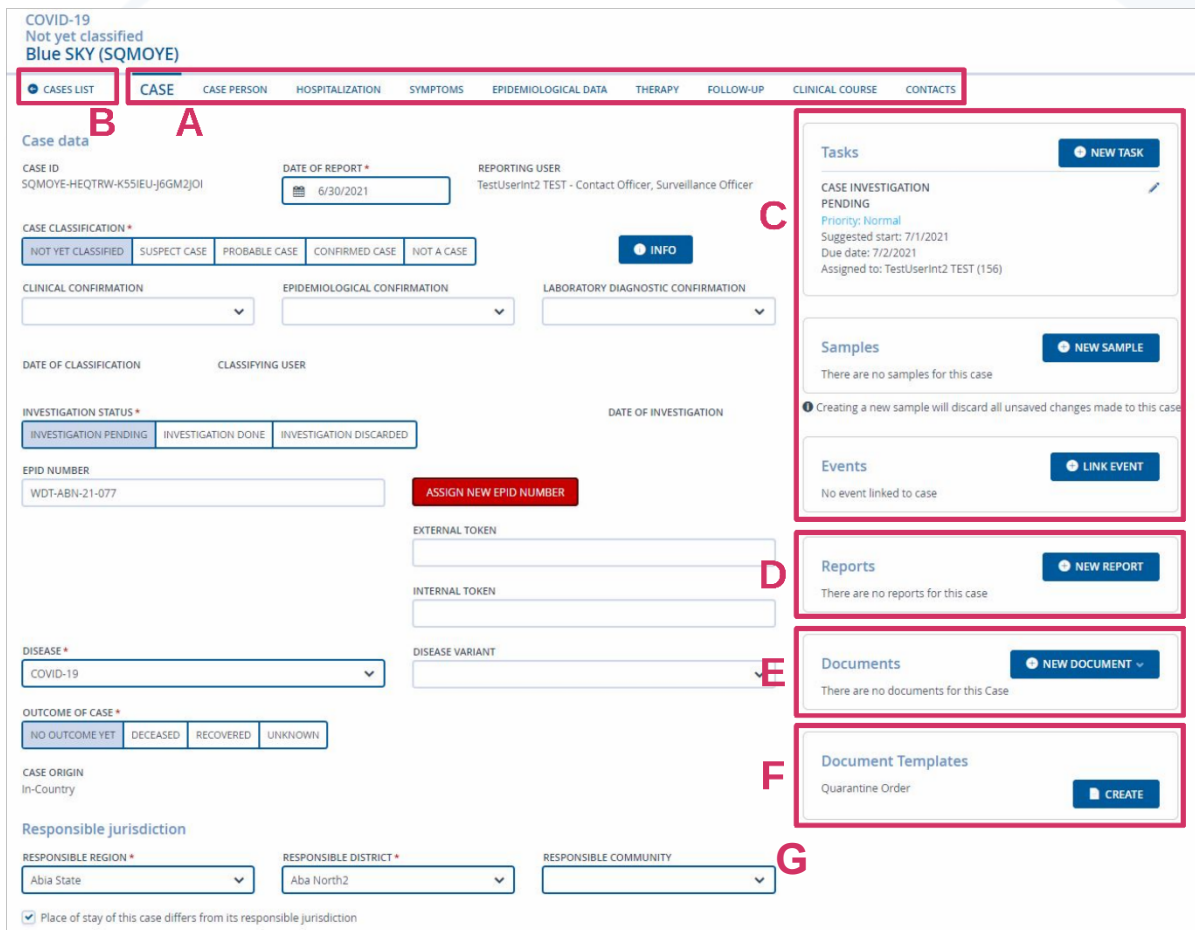
With this variant of case entry, you can efficiently create **outbreaks in facilities** where persons reside or are accommodated for a certain period of time (for example, nursing homes, hospitals, etc.). To do this, the mandatory fields in the top row are filled in first, before the reporting date, responsible community and the facility are entered in the second row.

The administrator stores the facilities relevant for this region, so they can be selected via the drop-down menu. By clicking "Add line", the line with these details is listed again below, so that a different infected person can be created per line as a case for the same facility.

2.2.   Case entity

Once a new case has been successfully created and saved, you are taken to the case data. It is divided like an entity into several pages, arranged from left to right, which are called tabs (**A**). On the far left, marked with an arrow, you can return to the case directory if you want to leave the entity (**B**). In the upper right-hand area of the page you will find linking options; this is where you can create or link **tasks**, **samples** and **events** (**C**) for the case.

In the **reporting software** section (**D**), the case can be transmitted to the reporting software by all users with authorisation to process cases. To do so, click the "Send" button. When changes are made to the case entity, click "Send" again to overwrite the transmitted record (if your authority provides for this process – otherwise administrators can use filter settings to send multiple cases/changed cases etc. in bulk processing mode). An option for filtering by (not yet) transmitted or changed cases is available in the case directory. Accordingly, the admin can also send multiple cases in bulk processing mode in the case directory.

If the case has been reported by means of laboratory evidence, this is recorded via an entry under "Samples"; if, on the other hand, the report originates from other sources such as a hospital report/medical diagnosis, this must be recorded under **Reports (E)**.

An isolation notice or otherwise relevant letter templates for this case can be created under **Document templates (G)**. They will be stored there by the administrator for selection. Creating notices is also possible in bulk processing mode, refer to chapter 2.2.1.8. A **document storage (F)** is available as well, which can be used to attach documents. The following entity formats can be uploaded at a maximum size of 10MB per document: jpg, png, doc, docx, pdf, xls, xlsx, dot, dotx. These attachments are not
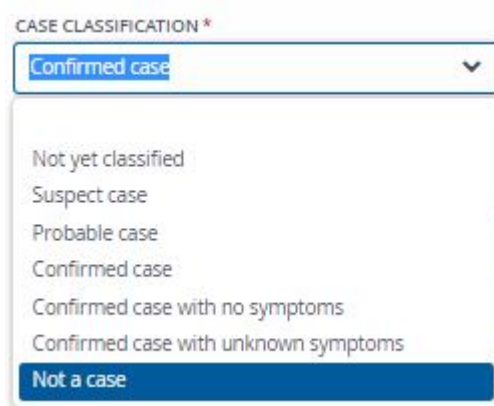
displayed if viewed by a user not having the relevant permissions. In principle, a reporting user always has full access, even if the case does not fall within their own area of responsibility.

2.2.1. Case
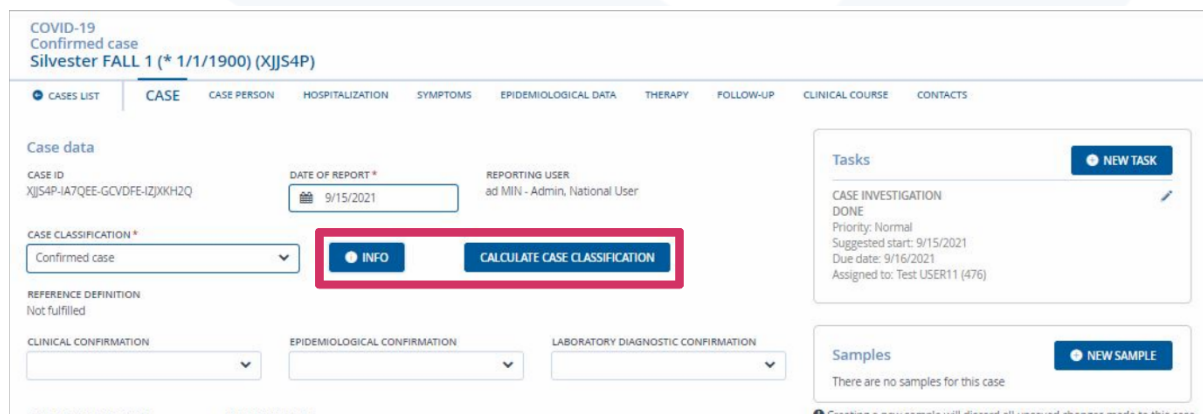
The first tab of a case entity, "Case", provides you with detailed information on the individual case and its classification. All details provided in the input screen when creating the case are already applied here. Other information, such as the case classification or the investigation status, still needs to be entered here.

2.2.1.1. Case classifications

The **case classifications** are based on the specifications set up by the Robert Koch Institute. The default selection initially is "0. Not yet classified".

A	Suspect case
B	Probable case
C	Confirmed case
D	Confirmed case with no symptoms
E	Confirmed case with unknown symptoms
X	Not a case

The case classification is calculated based on certain data available in SORMAS. Case classifications B, C, D and E are taken into account here. The conditions that need to be fulfilled are listed under the "Info" button in SORMAS and are mentioned as follows:

Suspect Classification
... when the case meets **ONE** of the following requirements:
Pneumonia (clinical or radiologic)
Difficulty breathing/Dyspnea
Cough
Runny nose
Respiratory disease requiring ventilation
Acute respiratory distress syndrome

New loss of taste
New loss of smell
Sore throat/pharyngitis

Probable Classification
... when the case meets the following requirements:
ONE OF
- Pneumonia (clinical or radiologic)
- Difficulty breathing/Dyspnea
- Cough
- Runny nose
- Respiratory disease requiring ventilation
- Acute respiratory distress syndrome
- New loss of taste
- New loss of smell
- Sore throat/pharyngitis
ONE OF
- Epidemiological confirmation
- Case linked to a cluster event

Confirmed Classification
... when the case meets the following requirements:
ONE OF
- Pneumonia (clinical or radiologic)
- Difficulty breathing/Dyspnea
- Cough
- Runny nose
- Respiratory disease requiring ventilation
- Acute respiratory distress syndrome
- New loss of taste
- New loss of smell
- Sore throat/pharyngitis
One positive lab result of PCR / RT-PCR, Antigen detection test, Isolation, Sequencing **OR** Antigen detection test (rapid test) for COVID-19

Confirmed Classification - No symptoms
... when the case meets the following requirements:
One positive lab result of PCR / RT-PCR, Antigen detection test, Isolation, Sequencing **OR** Antigen detection test (rapid test) for COVID-19
ANY SYMPTOM Set to **NO**
Chills or sweats; Cough; Diarrhea; Difficulty breathing/Dyspnea; Fever; Headache; Muscle pain; Nausea; Other clinical symptoms; Rapid breathing; Runny nose; Sore throat/pharyngitis; Acute respiratory distress syndrome; Pneumonia (clinical or radiologic); New loss of taste; New loss of smell; Respiratory disease requiring ventilation; Feeling ill; Fast heart rate (Tachycardia); Oxygen saturation < 94 %; Shivering
NONE OF
- **ANY SYMPTOM** Set to **YES**

Chills or sweats; Cough; Diarrhea; Difficulty breathing/Dyspnea; Fever; Headache; Muscle pain; Nausea; Other clinical symptoms; Rapid breathing; Runny nose; Sore throat/pharyngitis; Acute respiratory distress syndrome; Pneumonia (clinical or radiologic); New loss of taste; New loss of smell; Respiratory disease requiring ventilation; Feeling ill; Fast heart rate (Tachycardia); Oxygen saturation < 94 %; Shivering

Confirmed Classification - Unknown symptoms
... when the case meets the following requirements:
One positive lab result of PCR / RT-PCR, Antigen detection test, Isolation, Sequencing **OR** Antigen detection test (rapid test) for COVID-19
ONE OF
- **ANY SYMPTOM** Set to **UNKNOWN**
Chills or sweats; Cough; Diarrhea; Difficulty breathing/Dyspnea; Fever; Headache; Muscle pain; Nausea; Other clinical symptoms; Rapid breathing; Runny nose; Sore throat/pharyngitis; Acute respiratory distress syndrome; Pneumonia (clinical or radiologic); New loss of taste; New loss of smell; Respiratory disease requiring ventilation; Feeling ill; Fast heart rate (Tachycardia); Oxygen saturation < 94 %; Shivering
- **ANY SYMPTOM** Set to **NONE**
Chills or sweats; Cough; Diarrhea; Difficulty breathing/Dyspnea; Fever; Headache; Muscle pain; Nausea; Other clinical symptoms; Rapid breathing; Runny nose; Sore throat/pharyngitis; Acute respiratory distress syndrome; Pneumonia (clinical or radiologic); New loss of taste; New loss of smell; Respiratory disease requiring ventilation; Feeling ill; Fast heart rate (Tachycardia); Oxygen saturation < 94 %; Shivering
NONE OF
- **ANY SYMPTOM** Set to **NO**
Chills or sweats; Cough; Diarrhea; Difficulty breathing/Dyspnea; Fever; Headache; Muscle pain; Nausea; Other clinical symptoms; Rapid breathing; Runny nose; Sore throat/pharyngitis; Acute respiratory distress syndrome; Pneumonia (clinical or radiologic); New loss of taste; New loss of smell; Respiratory disease requiring ventilation; Feeling ill; Fast heart rate (Tachycardia); Oxygen saturation < 94 %; Shivering
- **ANY SYMPTOM** Set to **YES**
Chills or sweats; Cough; Diarrhea; Difficulty breathing/Dyspnea; Fever; Headache; Muscle pain; Nausea; Other clinical symptoms; Rapid breathing; Runny nose; Sore throat/pharyngitis; Acute respiratory distress syndrome; Pneumonia (clinical or radiologic); New loss of taste; New loss of smell; Respiratory disease requiring ventilation; Feeling ill; Fast heart rate (Tachycardia); Oxygen saturation < 94 %; Shivering

Not a case Classification
... when the case meets the following requirements:
One negative lab result for COVID-19
One other positive lab result
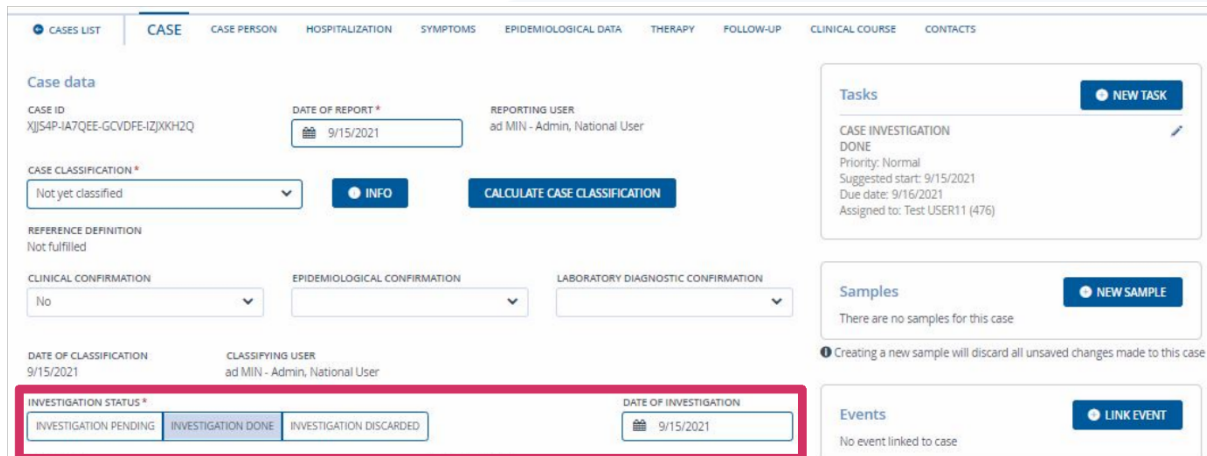
Using the "Calculate case classification" button, the case classification can be checked and updated if necessary.

2.2.1.2. Investigation status
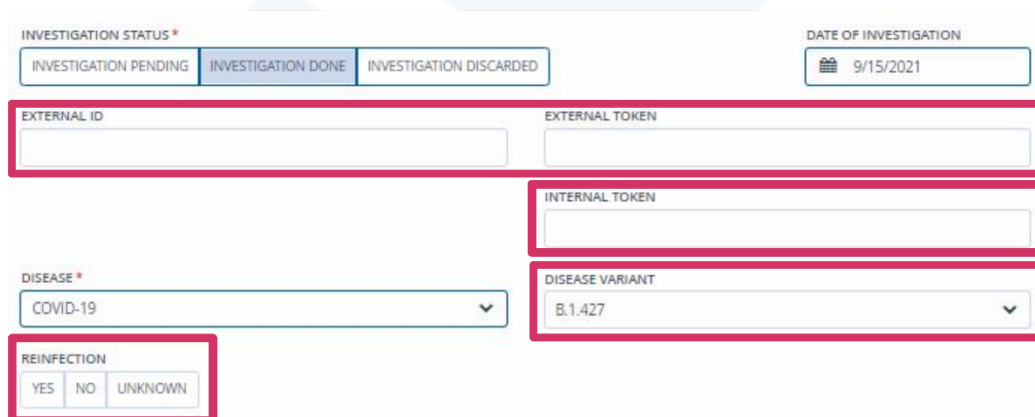
The **investigation status** can be defined directly below. An investigation is considered "done" when confirmation of the case has been established by a test result or a medical diagnosis. If the status is set to "done", a field appears next to it for entering the diagnosis date.

2.2.1.3. Record token

In order to be able to note separate record tokens etc. assigned by the authority, the **Internal token** field is provided**.** This is used exclusively for internal documentation in the health authority and has no effect on sending to the reporting software or similar. This field is intended for better mapping of the work processes in the health authority.

If required, you can record the mutation variant of the virus under **Disease variant** or note the status of corresponding evidence as applicable. If the case on hand is a **reinfection** with the virus, this can be recorded as well. When doing so, remember that reinfected persons must always be recorded as new cases. The program recognises by means of duplicate detection (see chapter 2.1.2.1) that it is the same person, which you can confirm manually in the duplicate detection query, and then creates a new case entity for this reinfection, provided there are more than 30 days between the two infections (otherwise – if there are less than 30 days between them – the program opens the existing case entity). Please always check the applicable guidelines of the WHO as to when a case is to be managed as a reinfection.

2.2.1.4. Responsible jurisdiction and place of stay

You will find the responsible region, district and community (which were recorded when creating the case) under "Responsible jurisdiction". If, however, the case is located at a different location from the responsible jurisdiction (for example, in a clinic in a neighbouring district), this can be marked by ticking the checkbox underneath, whereupon further fields appear to localise the place of stay. If it is not

desired that the case can be reported (for example, if a corresponding arrangement has been made with the authority actually responsible and the authority of the place of stay only keeps the entity for informational purposes of better contact chain tracing), the ability of transmitting can be prevented by setting a check mark.
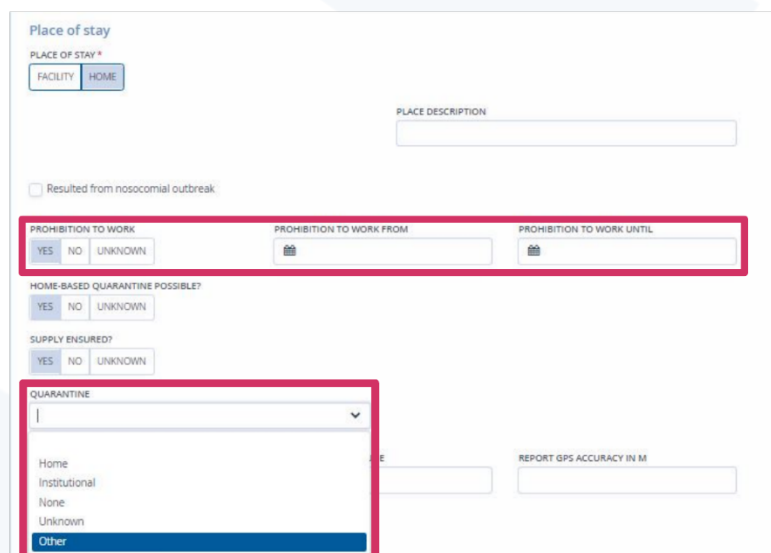
This functionality thus serves to better document cases outside one's own area of responsibility in order to be able to better trace infection chains. The "Prevent transmission to reporting software" checkbox is provided for all instances having an interface connection to the reporting software. If the checkbox is selected, the following note appears: "This case will actively be prevented from being transmitted to the reporting software."

After saving the case, the "Transmit" button in the "Reporting software" box disappears. After deselecting the checkbox and subsequently saving, the button reappears and the case can be transmitted. The respective filter function "Only cases marked with 'Prevent transmission to reporting software'" has been added to the case directory. In bulk processing mode, cases can be processed and sending can be actively prevented or cancelled again via "Change transmission to reporting software" and "Prevent transmission to reporting software".
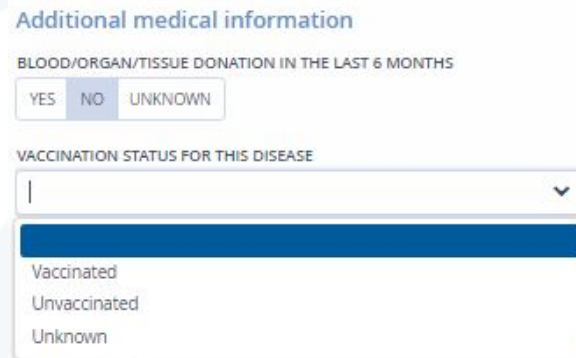
2.2.1.5. Prohibition to work and quarantine

A **prohibition to work** (in accordance with §31 Protection against Infection Act) and the **quarantine period** can be defined for the case. To have the date fields displayed, select an entry from the drop-down menu under "Quarantine". The quarantine end date is pre-calculated to be 10 or 14 days after the reporting date (your authority can have this selection configured – please preferably contact your SORMAS administrator). Manual change/definition is possible at any time. Please note the latest WHO guidelines.
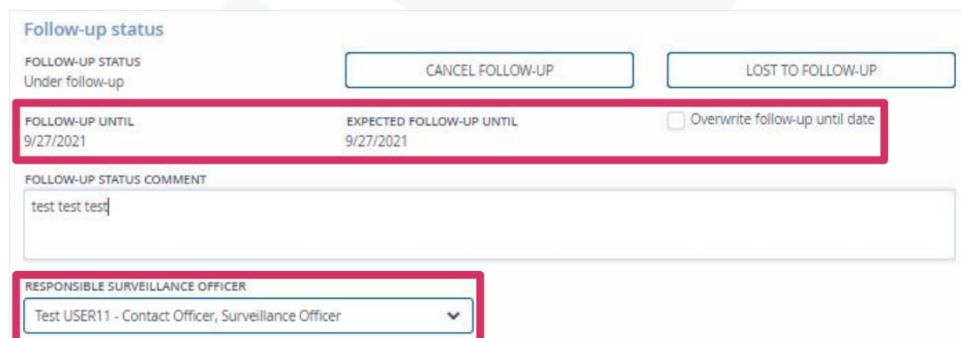
2.2.1.6. Vaccination status

You can record the **vaccination status** under the subheading **"Additional medical information"** on the page. More fields for making specifications appear under the selection option "Vaccinated".

2.2.1.7. Follow-up period

The **follow-up period** is set to 10 or 14 days from the onset of symptoms. If a case is asymptomatic, the sample collection date is used, but only if a positive pathogen test result is stored here. The reporting date will only be used if the first sample date is after the reporting date. As a result, the calculation hierarchy is as follows:

Symptom onset > Date of first sample collection > Reporting date An extension is possible at any time. If the process is cancelled, a comment is mandatory. Should the follow-up status be cancelled before the actual/expected end, the date of the cancellation and the processing user are documented. In addition, the scheduled/expected end of follow-up is displayed next to the actual follow-up date.

If the health authority works with the role distribution of **surveillance officers**, the latter can be selected below. The set-up of user roles is performed by your administrator.

2.2.1.8. Bulk generation of documents (admin function):

The bulk edit mode is also available for the creation of e.g. quarantine documents. To do so, switch on bulk edit mode as usual (available for admin role), select the respective cases and go to the "Bulk actions" drop-down list at the top right above the case/contact table. In this drop-down list, select "Create [quarantine order] documents". You can now select the desired template and create the documents. These are collected in a folder and made available in the download area.

2.2.2. Case person

The "Case person" tab lets you document or view all personal information. This includes details such as the salutation form, first and last name, sex, date of birth and contact addresses. If a date of birth was stored, the person's present age is calculated automatically and shown as well. Under **"Present condition of person"** you can determine whether the person is alive or deceased.

Furthermore, information on the **occupation** (e.g. "working in the health sector") and the place of residence can be entered. If the home address is a facility such as a nursing home or hospital, this should have been entered in the drop-down menu by the administrator of your SORMAS instance. In order for the facilities to be selectable, the region and community must have been selected beforehand. The address of the facility is populated automatically if it had been stored by the administrator. If the facility sought has not yet been entered by the administrator, the facility can be entered manually by selecting "Other facility".

If an exact address is available, it can be linked to GPS coordinates to enable it to be displayed on the overview map in the dashboard (see chapter 1.1.5). This requires the **geo button** to be clicked after entering the address. The GPS coordinates are then automatically transferred to the two fields provided for latitude and longitude and linked to the dashboard. Clicking on the eye symbol displays a small overview map with the calculated position. Information on contact persons (first and last name, telephone number, e-mail address) of facilities can also be stored.

Other addresses, such as a secondary residence or the workplace, can be added via the "New entry" button above the "Addresses" table.

A window opens that corresponds to the input screen of the home address. Note, however, that only the entry under "Home address" will be listed in the case directory. The entries made under other addresses can be found, apart from the entry in the respective case entity, in a database export in the statistics section. There, in the "locations" table, you can search or sort by the addresses themselves or also by the address type, for example.

Location

More contact information, such as phone numbers or e-mail addresses, can be entered at the end of the "Case person" tab. You can define here what information is to be used as the primary contact details. This selection is displayed in the case directory (detailed view) as well as used for contacting by means of the symptom journal – if this is used by the authority. You can create multiple entries by clicking on "New entry".
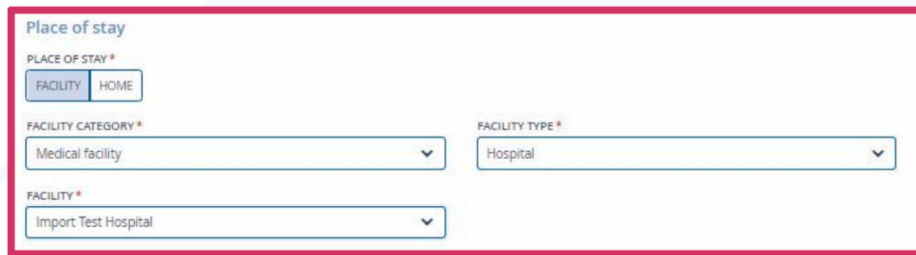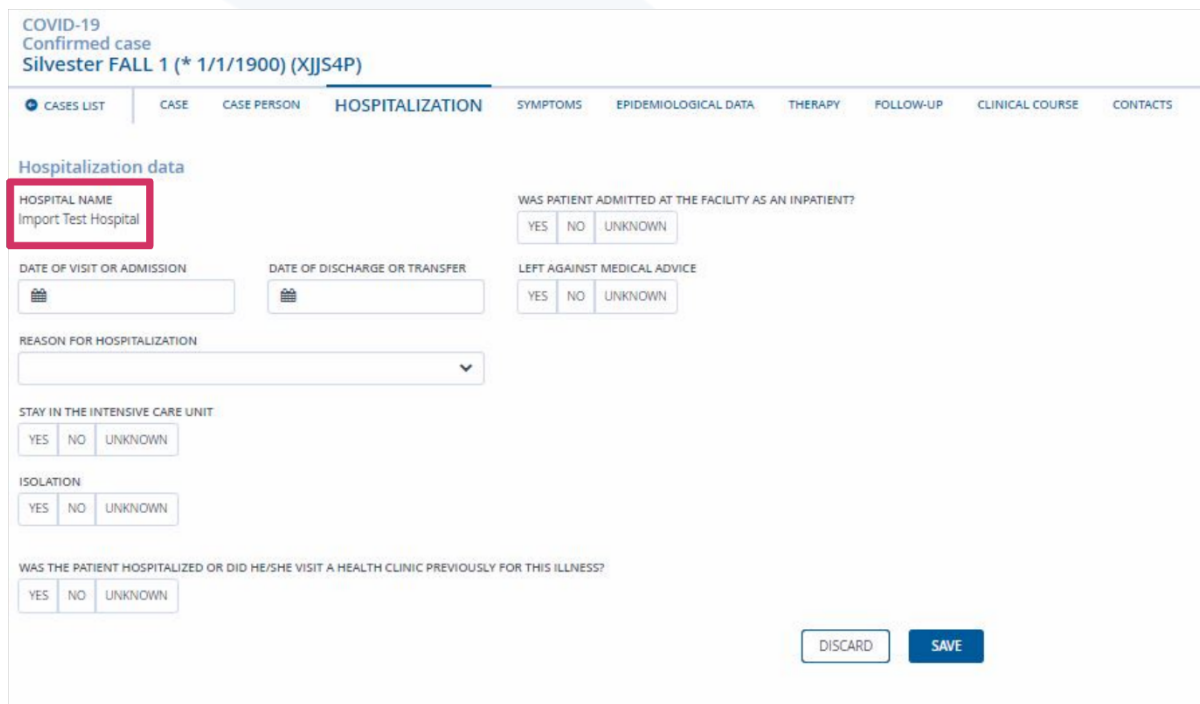
2.2.3. Hospitalization

The "Hospitalization" tab can be used to store more information on a case person's stay in a medical facility. As a prerequisite, the person's place of stay must have been set accordingly. For this purpose,

the place of stay type "Facility" must have been selected in the "Case" tab. The facility category and type are automatically set to "Medical facility" and "Hospital":

After saving the change, "Case transferred" must also be selected in the "Infrastructure data has been changed" note field, if the person was previously at home. The name of the selected facility now appears in the "Hospitalization" tab and the further information on length of stay, inpatient treatment and discharge can be entered.

2.2.4. Symptoms

In the "Symptoms" tab you can enter already existing or newly appeared signs of disease as well as the date of symptom onset. The information in this tab is also automatically supplemented by newly reported symptoms from the follow-up as soon as a new follow-up visit has been noted (see also chapter 2.2.7). The entries are included in the automatic calculation of the case classifications.

In addition, three buttons are available that can speed up data entry:

- **Clear all:** Removes all entries from the list of symptoms.
- **Set cleared to No:** Sets all symptoms where no entry has been made to "No".
- **Set cleared to Unknown:** Sets all symptoms where no entry has been made to "Unknown".

2.2.5. Epidemiological data

The "Epidemiological data" tab is used to summarise all known information on infection events. Detailed information, including entries on exposition locations, can be provided under "**Exposure details known**". Clicking "Yes" displays a table. New entries are made here using the "New entry" button.

The **exposure details**, such as start and end, as well as a detailed description can be captured in the input screen that opens. The type of activity (e.g. work or return from travel) is the only mandatory detail that must be provided.

In addition, information can be provided on the conditions of exposure (e.g. "Were masks worn?", "Did the exposure take place indoors or outdoors?", "Was the distance less than 1.5m?", "Was the exposure longer than 15min?") and the place of exposure can be entered. The specification of the place is based here on the already known screen from the "Case person" tab.

It is also possible to provide information on the person's activity as a case related to care, accommodation or activities in facilities. If, for example, the person continued to work as a medical care stuff AFTER being infected, a new entry needs to be generated by clicking on "Yes" under "Activity details known" using the table that appears.

After clicking "New entry", a screen opens for describing the activity as a case, that looks similar to the input screen for exposure details. Detailed information on the period of time, role/activity and place can be provided.

2.2.6. Therapy and clinical course

The "Therapy" and "Clinical course" tabs enable users to document the prescriptions, performed treatments, clinical assessments and previous illnesses. The tabs are only visible to SORMAS user roles with medical role permissions (physicians).
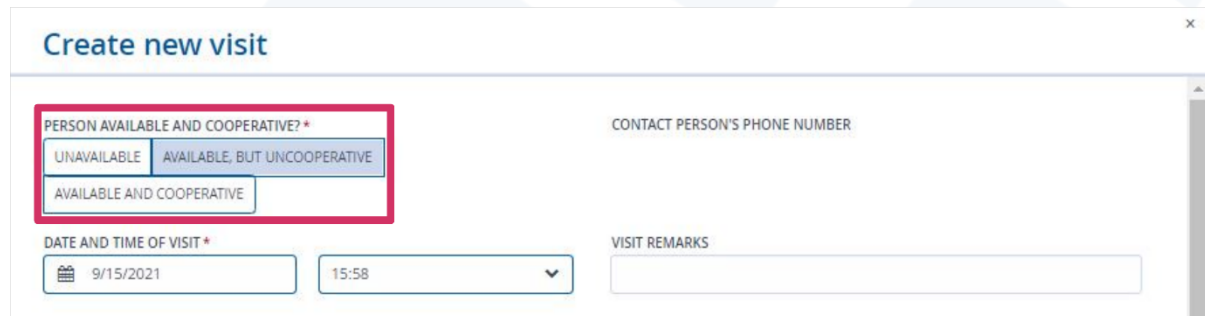
2.2.7. Follow-up

The "Follow-up" tab summarises all information on recorded follow-up visits and provides the option to document new visits. All previously recorded visits are displayed in a table, new visits can be added via the "New visit" button. Existing entries can be opened and edited via the pencil and paper icon in the first column. The last column in the table contains the name of the employee who created the new follow-up visit.

2.2.7.1. Creating a new follow-up visit

When documenting a new visit, first of all the date and time should be entered, as well as whether the person was available and cooperative. In case of unavailability or lacking cooperation, no further entries are possible. Comments on the visit can be entered to the right.

If the person visited is available and cooperative, the body temperature and symptoms can be entered below. Furthermore, the three buttons "Clear all", "Set cleared to Unknown" and "Set cleared to Unknown" are provided to speed up data entry:

- **Clear all:** Removes all entries from the list of symptoms.
- **Set cleared to No:** Sets all symptoms where no entry has been made to "No".
- **Set cleared to Unknown:** Sets all symptoms where no entry has been made to "Unknown".

Clinical Signs and Symptoms

Please tick an answer for ALL symptoms indicating if they were present at the time of this visit:

Clear all   Set cleared to No   Set cleared to Unknown

GENERAL

Chills or sweats	YES NO UNKNOWN		Headache	YES NO UNKNOWN	
Feeling ill	YES NO UNKNOWN		Muscle pain	YES NO UNKNOWN	
Fever	YES NO UNKNOWN		Shivering	YES NO UNKNOWN	

At the end of the form, there is an option to record the first of the symptoms that occurred and the date of occurrence. Only symptoms for which the setting is "Yes" can be selected. All symptoms entered via a follow-up visit automatically appear in the Symptoms tab when saved, and the information there is supplemented when further symptoms are added. Setting "No" for symptoms in the follow-up visit, on the other hand, does not lead to a change in the entries in the Symptoms tab. For the comment field on the symptoms, notes written here are transferred to the Symptoms tab or added separated by a comma.

2.2.8. Contacts

The "Contacts" tab lists all contact persons linked to this case. Clicking a contact ID opens the corresponding contact entity. New contacts can be created using the "New contact" (single contact) or "Line listing" button (multiple contacts at a time). A form sheet for entering the contact details opens (see chapter 3.2). The current source case is automatically linked to the contact here. After creating a new contact situation via "New contact", the respective contact entity is opened directly or, when creating via "Line listing", the contact directory is opened afterwards.

2.2.8.1. Duplicate detection during contact entry

If a person is entered whose name has similarities to a person already stored in SORMAS, the duplicate detection window appears after the person is saved (see chapter 2.1.2.1 for the duplicate detection mechanism). You can check here whether identical persons are involved. If so, select this person from the table and save. If this is not the case, tick the "Create a new person" field at the bottom left. The duplicate detection searches the database for both active and archived persons.

Pick or create person

The database already contains at least one person that seems to be very similar to the personal details of the created contact.

Please look through the list of persons. If you feel certain that one of those persons matches your contact person, select it and click on the *Save* button. Otherwise, click on *Create New Person* to create a new person for your contact.

If you are unsure, you can discard this window and cancel the contact creation process.

FIRST NAME	LAST NAME	NICKNAME	AGE AND BIRTH DATE	SEX	PRESENT CONDITION OF PERSON	DISTRICT	COMMUNITY	CITY	NATIONAL HEALTH ID	PASSPORT NUM
asa123	asdas			Male						

● Select a matching person
○ Select a different person

FIRST NA...	LAST NAME	NICKNA...	AGE AND BIRTH DA...	SEX	PRESENT CONDITION OF PERS...	PRIMARY PHONE NUMB...	DISTRI...	COMMUNI...	POSTAL CO...	CI...	STRE...	HOUSE NUMB...
asa123	asdsa		120 (1901)	Ma...								
aSDas	ASas			Ma...								

○ Create a new person

DISCARD   SAVE
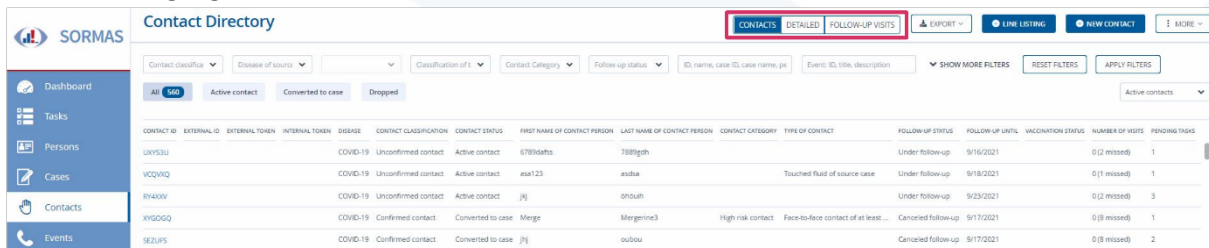
3. Contacts

This section describes how contacts are managed in SORMAS. Please note that SORMAS works with **contact *situations***, thus guaranteeing exact epidemiological documentation. This becomes evident when contact persons were involved in several contact situations for different source cases – as a result, several contact situation entities are created for the same contact person (the programme recognises these by means of duplicate detection, see chapter 2.1.2.1). The personal data and recorded follow-up visits are synchronised between the individual contact situations created and do not have to be entered again.

3.1.   Contact directory

The contact directory is called via the "Contacts" menu item in the blue menu ribbon on the left. It contains a tabular overview of all contact situations and provides the option of filtering and exporting them similar to the case directory (for more details on filter options, refer to chapter 3.1.2). The contact directory can be sorted in ascending or descending order according to the various criteria shown by clicking on the respective column heading.

The buttons at the top of the screen can be used to select the different views of the contact list; the selection is highlighted in dark blue:

- The **default view "Contacts"** is preselected when calling the contact directory and contains a tabular overview of selected information, such as contact classification, contact status, contact category, vaccination status and type of contact.
- In addition to the columns known from the contact list, the **detailed view** displays further personal information on the respective contact person, such as sex, age, district and address as well as the linked source case and the reporting SORMAS user.
- The follow-up entries made for the respective contact situations are listed under **Follow-up visits**. They can be created in two ways: Either visits made are documented in the "Follow-up" tab in the corresponding contact entity (see chapter 3.3.2.7) or the entry is generated using a symptom journal maintained by the contact person (the latter can be recognised by a mobile phone image within the rectangle).

The overview of follow-up visits lists the first and last name of the contact person with the date of the last contact and an overview of the follow-up visits made in the last 14 days. The legend of the different coloured fields is listed below the table (**A**).

This list can be used to get a quick overview of the follow-up status of each contact. The displayed period can be precisely adjusted with the help of the "From" and "To" fields displayed directly above the list (**B**), or scrolled forward and back with the "Previous" and "Next" buttons.

3.1.1. Export

In the header area of the contact directory, SORMAS offers the possibility to export the currently displayed data. The export takes place in a CSV file, which can then be read in and edited in a spreadsheet programme. The export button is only shown in the "Contacts" and "Detailed" views.

The exported data corresponds to the records shown in the list, which can be customised using the filter function, as described below. Depending on the number of data records selected, the export may take a while to complete.

Three different export formats are offered:

- **Basic export:** This file contains basic information about the respective contact event such as contact classification and status, first and last name, address, phone number as well as the ID of the assigned source case and the reporting SORMAS user.

- **Detailed export:** This file contains the basic information of the "basic export" and additionally information from the contact sheet such as quarantine periods, reported symptoms and assigned events, if any.

- **Follow-up export:** This export contains the information from the follow-up view as well as detailed information on the individual visits such as date and time, the status of the person called (available, cooperative) and the symptoms of the contact person.

3.1.2. Filter functions

The contact directory enables you to filter the data displayed by various filter criteria. This is done by means of several selection fields directly above the tabular view, which can be used to limit the contact situations according to **"Active contact"**, **"Converted to case"** and contacts with follow-up status **"Dropped"** (**A**).
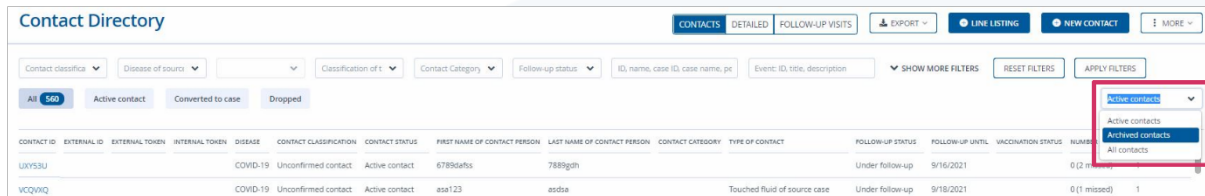
Clicking "Show more filters" (**B**) opens further filter options, which are activated via the "Apply filters" button and deactivated via the "Reset filters" button (**C**). Clicking "Show fewer filters" subsequently collapses the expanded filter options (not shown in the figure).

Some filter options are provided directly below the "Case Directory" heading. These can be used, for example, to view only contacts with a specific case classification (**A**). In addition to the 'Disease' filter, the 'Virus variants' filter (**B**) is available to search the list of contacts for source cases with virus variants. First of all, please select the disease; only then can virus variants be selected. Contacts who are currently subject to follow-up can be found using the "Follow-up status" filter. It is also possible to search specifically for the name, case ID, EPID number (**C**) or a contact situation related to an event (**D**).

Below, you will find filter options such as "Vaccination status" (**E**) or "Relationship with case" (**F**), which can be used, for example, to filter contacts living in the same household.
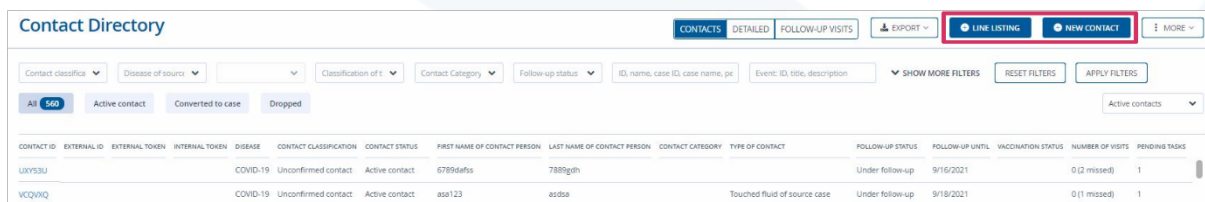
For the normal and detailed contact list, there is the option to switch the display from active, i.e. currently relevant contacts, to archived contacts. SORMAS archives contact data as soon as the associated case has been archived, or automatically after 90 days if no case is linked.

3.2.   Creating and editing contacts

The following section describes how a new contact situation is created and how existing contacts are viewed and edited.

3.2.1. Creating a new contact situation

A new contact situation can be created either with the help of the **"New contact"** button or by means of the **line listing for contacts** in the header of the contact list.

3.2.1.1. Creating a single new contact situation using "New contact"

A window titled "Create new contact" opens. The mandatory fields are marked by a red asterisk. These are:

- First name, last name and sex of contact person
- The reporting date of the contact
- The disease of the source case (COVID-19)
- The responsible federal state as well as the rural/urban district (always precede with LK/SK; typing in parts of words is also possible, suitable suggestions from the drop-down menu will then be displayed).

All other fields are optional; they can, however, be used to enter further relevant information such as contact data including phone number or e-mail address.

Create new contact

FIRST NAME OF CONTACT PERSON *

LAST NAME OF CONTACT PERSON *

DATE OF BIRTH (YEAR / MONTH / DAY)

Year ⌄   Month ⌄   Day ⌄

SEX *

⌄

NATIONAL HEALTH ID

PASSPORT NUMBER

PRIMARY PHONE NUMBER

PRIMARY EMAIL ADDRESS

RETURNING TRAVELER

YES | NO | UNKNOWN

REPORT DATE *

📅 10/14/2021

DISEASE OF SOURCE CASE *

⌄

Assignment of an existing source case

If the source case is known by name and already recorded in the system, it can be searched for by clicking on the "Choose case" button and linked to this contact.

RETURNING TRAVELER

YES | NO | UNKNOWN

REPORT DATE *

📅 9/15/2021

DISEASE OF SOURCE CASE *

⌄

Please select the source case for this contact, if known

CHOOSE CASE

CASE ID IN EXTERNAL SYSTEM

☐ Multi-day contact
DATE OF LAST CONTACT

📅

The assignment can also be made at any other time after creating the contact. Clicking on the "Choose case" button opens a search window where the name or the ID of the case can be searched for. A click on the source case found, which can be identified by the date of birth, for example, highlights the corresponding line and a click on the "Confirm" button transfers the case to the current contact.

Contact situations without known source case

If no source case is known, if the source case has not yet been created in SORMAS or if, for example, travellers are being created, the step just described (chapter 3.2.1.1) of assigning a source case via the "Chose case" field can be omitted. To record the connection to a source case that does not yet exist in SORMAS but does exist in other databases, the field below, "Case ID in external system", can be used

instead of the "Choose case" field. This means that the two persons are not linked in SORMAS, but the information can be viewed and the link can still be established as soon as the source case has also been created in SORMAS.

Selecting the type of contact and contact category

As soon as the selection in the field "Disease of source case" has been set to "COVID-19", another section appears in the input window that allows the selection of the **type of contact** (**A**) as well as the **contact category** (**B**) (category I: close contact, category II: lower risk of infection). For more information on the terminology for contact categories please visit the following WHO website.

Ticking a box below **"Type of contact"** entails the automatic selection of the associated contact category. The category can also be selected/modified manually. The latter, however, requires that the tick is also changed or removed. Since only one tick can be set here in principle, the epidemiologically more relevant situation should be selected under "Type of contact", i.e. the description of the situation that indicates the highest risk of infection.

Saving the new contact
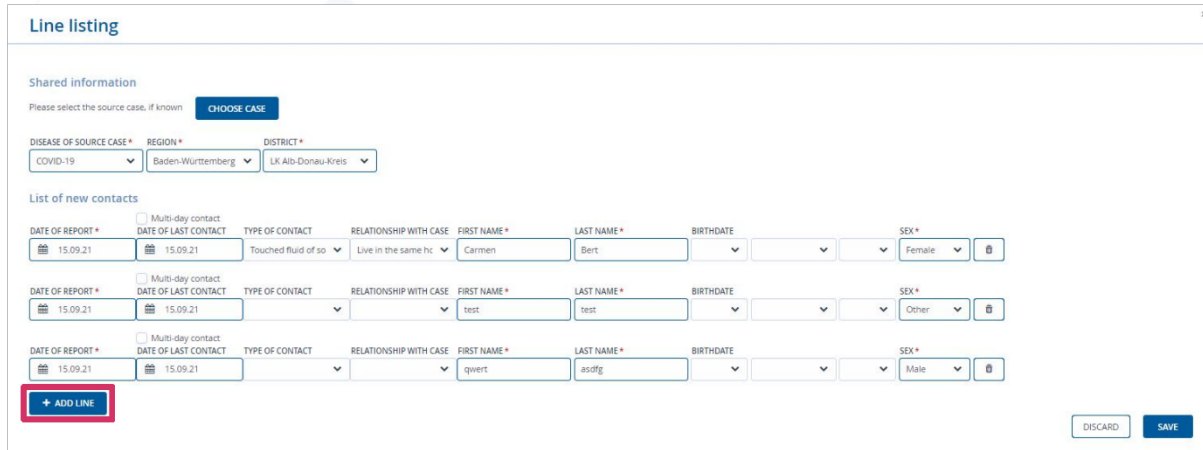
After completing the form, the new contact can be saved with the "Save" button or all entries can be deleted with "Discard". After successfully saving the contact, the view of the newly created contact

situation is automatically called up – the view changes directly to the "contact entity". Likewise, the following applies: If the person (also with similar spelling) has already been created in the program, duplicate detection is triggered (see chapter 2.1.2.1).

3.2.1.2. Creating multiple new contact situations via the line listing for contacts

For contacts, too, the function of a line listing is available to you for quick entry of contact situations. This allows you to create several contacts of the same responsible region and rural/urban district by creating a line for each contact via the blue "Add line" button. Fill in at least the mandatory fields here; the selection options are identical to those described in the previous chapter.

3.3. Contact entity

3.3.1. Opening, viewing and editing an already created contact situation

Starting from the contact directory ("Contacts" menu ribbon), individual contact situations that were previously searched for using filter options, for example, can be called up by clicking on the contact ID in the first column of the displayed list.

3.3.2. Contact – first page of contact data
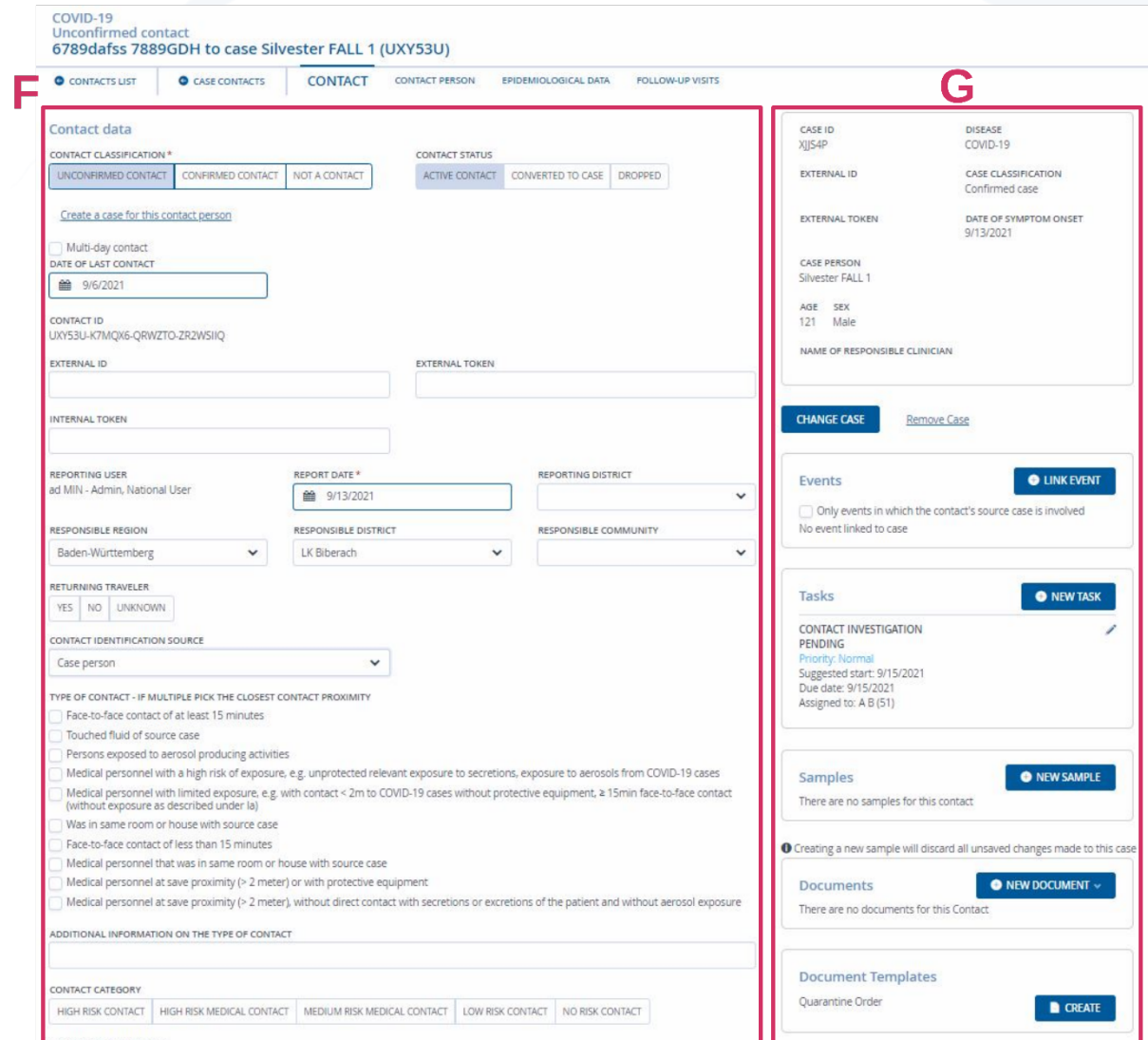
After doing so, you are on the **"Contact"** tab of the contact entity (**A**). The "Contacts list" button (**B**) you see on the far left closes the currently opened entity and takes you back to the contact overview.

If a source case has already been assigned, this is indicated in the header (**C**). Please note that the ID in brackets is the ID of the contact and not the one of the assigned source case. The ID "UXY53U" therefore is the ID of '6789dafss 7889GDH' in our example. The ID of 'Silvester FALL1', however, is the ID you can see in the first box with grey outline on the right half of this page (**D**). Another button, "Case contacts" (**E**), is displayed, which allows for direct access to all contacts assigned to this source case.

The "Contact" tab contains all relevant information on the contact situation. The tab is divided into two sections. The section on the left (F) contains the main form with information on the contact classification ("Unconfirmed", "Confirmed", "Not a contact"), quarantine, type of contact and contact category as well as medical information (pre-existing conditions). The individual sections are described in more detail below.

On the right-hand side (G), there are various boxes that can be used to implement links to the source case as well as to events, tasks, samples and document templates, and to display already existing links, or existing tasks or sample results. If no source case is linked to the contact, the button "Select source case" appears first, with which the corresponding link can be created to a source case that already exists in the system (see illustration above under B). If the contact is already linked to a source case, a brief note about the respective case is displayed in the upper box (see figure below), together with the possibility to change or cancel the case link.

Below the information on the source case, there are four more boxes with which events, tasks and samples can be created for this contact situation and linked. Using the fourth box "Document templates", quarantine notices can be created based on stored templates. The templates for your municipality can be imported by the administrators.

3.3.2.1. Contact data

The **"Contact data"** section on the "Contact" tab contains various information on the contact situation, such as the contact classification (**A**). The contact is considered "confirmed" if the contact person, or a parent or guardian, has confirmed that there was indeed a contact situation with the source case. Note that this selection must be set to "confirmed" if you need to convert the contact into a case at a later date. Therefore, **no separate** entries may be made here by the authority. The record token is set

automatically by SORMAS once the data record has been transmitted to SurvNet. The responsible region and district can be set directly below (**C**). You can also document whether the contact event involved a traveller (**D**).

3.3.2.2. Contact categorisation

Below the contact data you can see the settings for contact categorisation or type of contact. The correspond to the selection options already described in detail in chapter 3.2.

3.3.2.3. Conversion into a new case

If a new case develops from a contact, it can be created directly from the contact situation by clicking on the "Create a case" button. This can only be done for "confirmed contacts". As soon as a contact situation has been converted into a case, SORMAS aborts the follow-up in this contact situation entity and marks it as "Converted to case" under "Contact status". Follow-up subsequently is continued via the case entity. Please check the reporting date in the case entity of the converted contact and change it to the date of the positive finding if necessary.
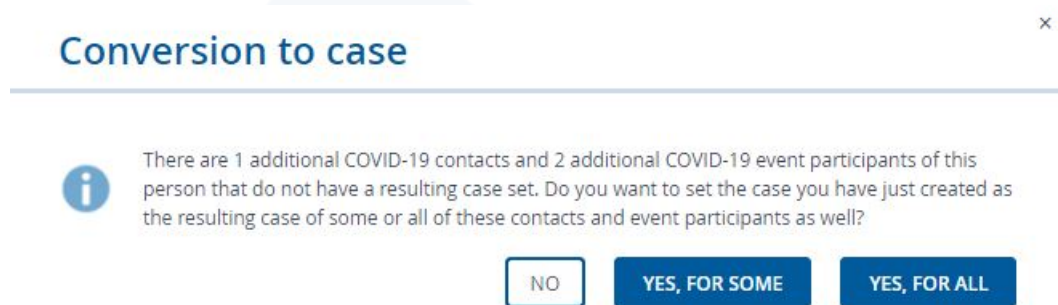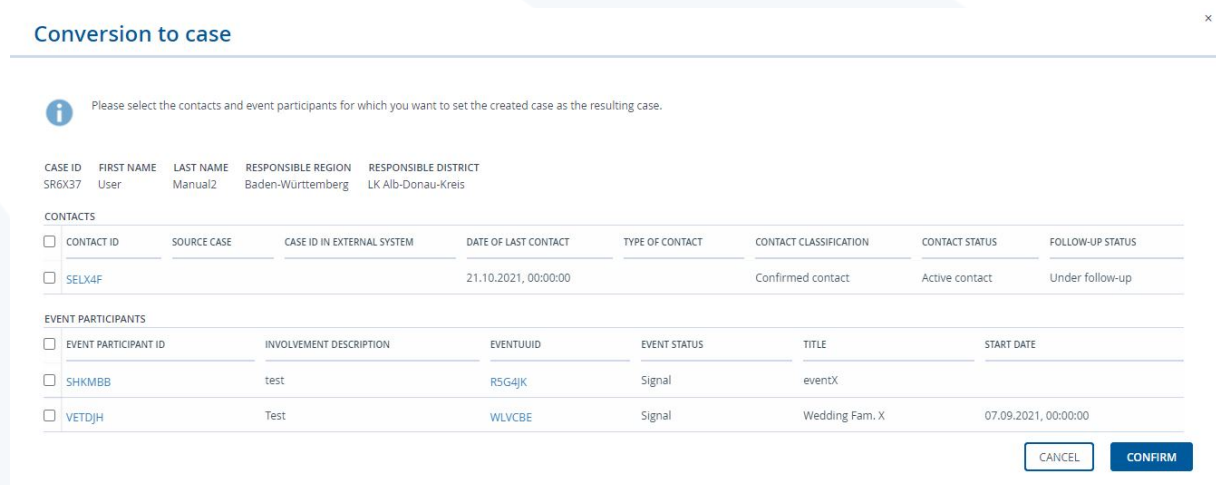
If there are other contact situation and event participant entities for the person of the contact situation that you want to convert into a case, you will be asked during the conversion whether you want to simultaneously define the newly created case entity as the resulting case for all these other entities of the same person. If you confirm this with 'Yes', all contact situation or event participant entities of the same person will then indicate that they were converted into a case. This is expedient if the contact situations or attendance to an event are temporally related/close together. Older contact situation entities from other contexts, where a corresponding conversion would not make sense, can be omitted instead by selecting "for some only". The process in detail is as follows: In the contact situation entity, you click "Create a case ...", which takes you to the following window, where you will create a case entity for the person.

After clicking "Save", the following query appears:

In this example, the person 'User MANUAL2' was a 1-time contact of the case 'Biene Maya' – "convert" was clicked in this contact situation entity – and additionally 2-time event participant in an event. Select "Yes to all" in order to identify 'User MANUAL2' as a converted case in the two other entities, i.e. the contact situation entity for Biene Maya and the event participant entity. In the event participant list, the case ID in the "Case ID" column immediately shows that 'User MANUAL2' is a case.

If you select "Yes, for some", you can independently tick the entities for which the conversion link will be established:

Once you have made your selection, you will find yourself in the newly created case entity of 'User MANUAL2:

As a result, the two contact situation entities still exist, but with follow-up cancelled by the system and marked accordingly as "converted to case".

3.3.2.4. Setting a quarantine

A **quarantine** can be entered below the contact category. You can define the place of quarantine, differentiated by **home** (e.g. private address) and **facility** (e.g. the address of a nursing home) quarantine, and the respective period for this. The automatic calculation of the quarantine end can be configured to be 10 or 14 days (your authority can have this selection configured by Netzlink – please preferably contact your SORMAS administrator). The quarantine end can also be changed manually in the contact entity. Please note the relevant RKI guidelines (Link).
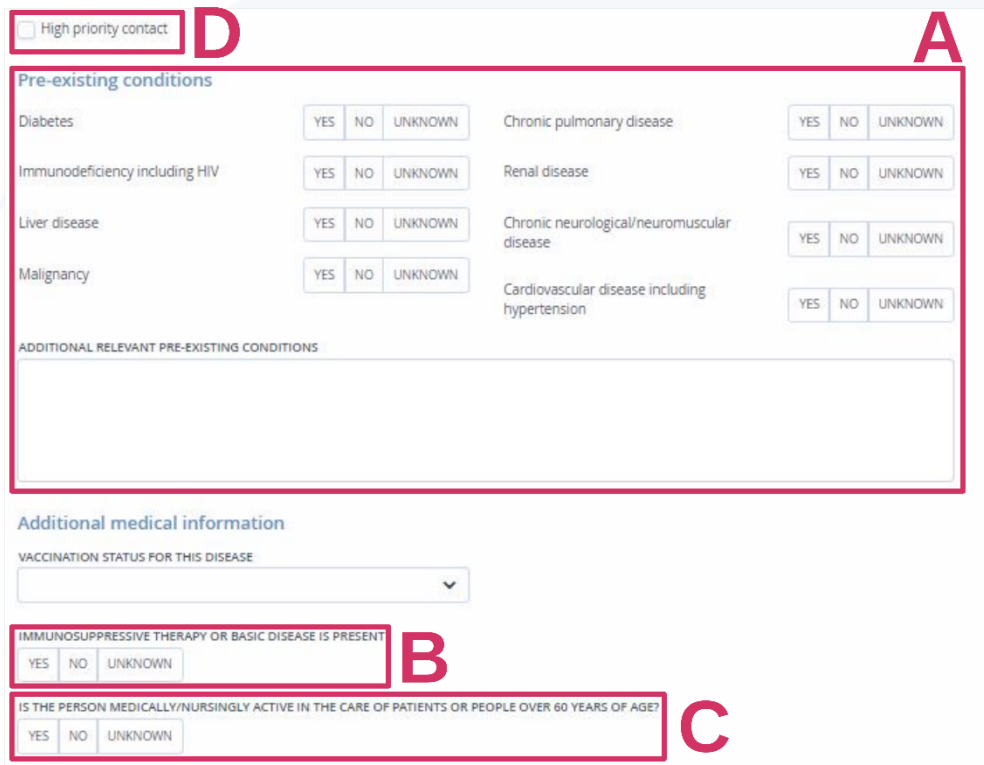

Once a quarantine has been defined and the contact entity has been saved, a quarantine notice can be generated via the "Document template" button on the right half of the page, which can then be sent. This requires the corresponding template to be stored in advance by the administrator of your SORMAS instance.

3.3.2.5. Pre-existing conditions and other medical information

The section "Pre-existing conditions" in the "Contact" tab provides the option to document medically relevant information on pre-existing conditions (A) and whether there is an immunosuppressive therapy or basic disease (B). Furthermore, you can record whether the person is involved in the
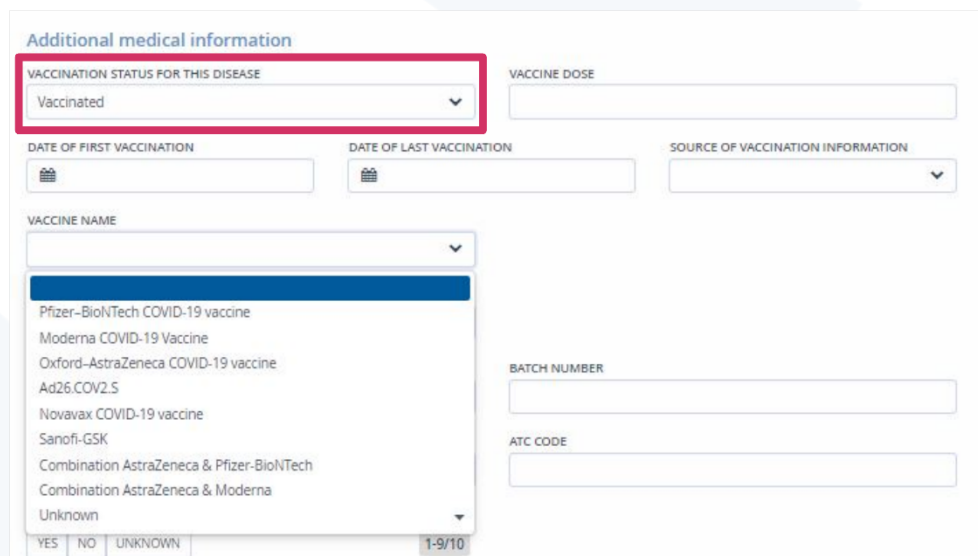
medical/nursing care of patients or people over 60 years of age (**C**) or whether there are immunosuppressive therapies or basic diseases.

Above the pre-existing conditions, you can record whether this is a **high priority contact** (**D**).

3.3.2.6. Vaccination status

In the "Additional medical information" section, you can record the contact's **vaccination status**. If "vaccinated" is selected as the status, further fields appear which can be used to save details of the vaccination (date of the first and last vaccination, name of the vaccine, etc.).
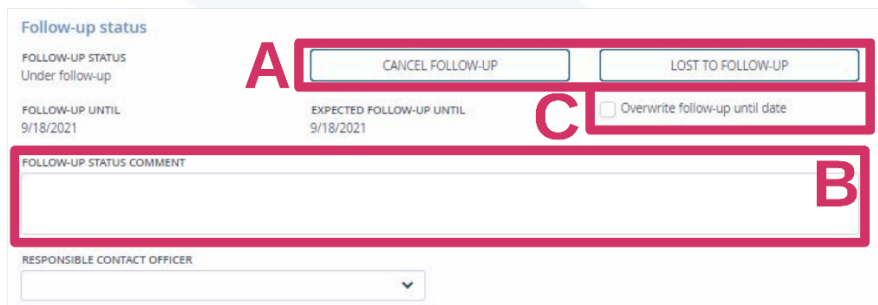
3.3.2.7. Follow-up status

At the bottom of the contact tab you can find the contact follow-up settings. When creating a new contact, follow-up is automatically activated for a period of 10 or 14 days (your authority can have this selection configured by Netzlink – please preferably contact your SORMAS administrator). The **hierarchy of the calculation basis of the follow-up period for contacts** is as follows: Date of last contact > date of first sample collected > reporting date.

In addition, a SORMAS user can be defined as the contact person, provided that your authority has decided on a corresponding role assignment of these user rights (in SORMAS, you can work with different user roles, each having different user rights).

Use the two buttons **"Cancel follow-up"** and **"Lost to follow-up"** (**A**) to abort follow-up or mark it as infeasible. In both cases a comment is mandatory in the **"Follow-up status comment"** field (**B**). The follow-up is automatically cancelled by the system if the contact is converted to a case or if "Not a contact" is selected in the contact classification. This is then automatically indicated in the follow-up status comment field.

With the help of the selection box "Overwrite follow-up until date" (**C**), the period of contact follow-up can be adjusted manually. It can only be shortened if there is an earlier onset of symptoms.

3.3.3. Contact person

The "Contact person" tab displays all information regarding the current contact person. This includes details such as the salutation form, first and last name, sex and date of birth. If a date of birth was stored, the person's present age is calculated automatically and displayed. Under "Present condition of person" you can record whether the person is alive or deceased.

Furthermore, information on the **occupation** (e.g. "working in the health sector") and the **place of residence** can be entered. If the home address is a facility such as a nursing home or hospital, this must have been entered beforehand by the administrator of the SORMAS instance. In order for the facilities to be selectable, the region and community must have been selected beforehand. The facility address is populated automatically, provided it had been stored by the administrator.

If an exact address is available, it can be linked to GPS coordinates to enable it to be displayed on the contacts map in the contacts dashboard (see chapter 1.2.4). This requires the black icon (geo button) to be clicked after entering the address. The GPS coordinates are then automatically transferred to the two fields provided for latitude and longitude and linked to the dashboard. Clicking on the eye symbol displays a small overview map with the calculated position.

Other addresses, such as a secondary residence or the workplace, can be added via the "New entry" button above the "Addresses" table.

A window opens that corresponds to the input screen of the home address.

More contact information, such as phone numbers or e-mail addresses, can be entered at the end of the "Case person" tab.

Contact information

BIRTH NAME

NICKNAME   MOTHER'S MAIDEN NAME

MOTHER'S NAME   FATHER'S NAME

NAMES OF GUARDIANS

COUNTRY OF BIRTH   CITIZENSHIP

New entry

PRIMARY CONTACT DETAILS	OWNER	OWNER NAME	TYPE OF CONTACT DETAILS	CONTACT INFORMATION

A window for entering potential contacts opens under "New entry". E-mail, phone or other contact addresses can be selected under "Type of contact details". The number or e-mail address is entered under "Contact information". Notes on availability or the like can be entered under "Additional information". If you tick the box next to "Primary contact details", you define that these contact details will appear in directories and will be used for the symptom journal (provided the latter is actually used by the authority).

Person contact details   ×

☐ Collect contact details of another person or facility

TYPE OF CONTACT DETAILS

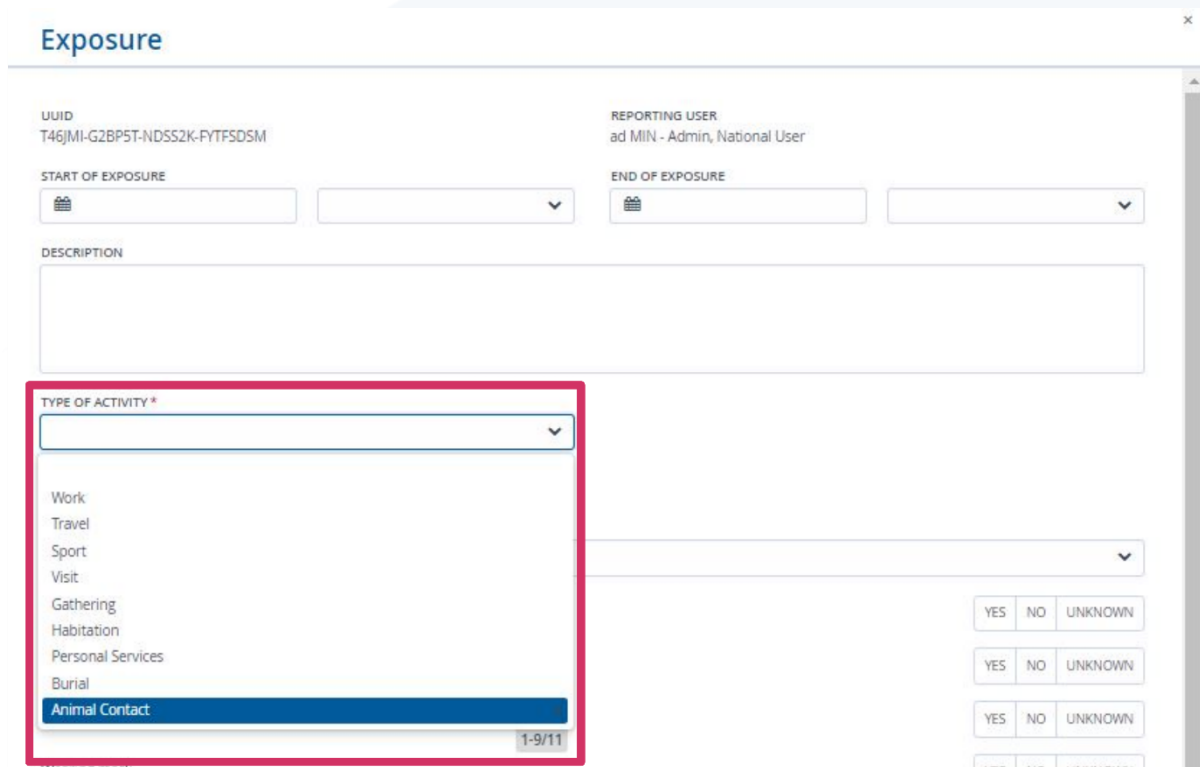CONTACT INFORMATION   ADDITIONAL INFORMATION

☐ Primary contact details

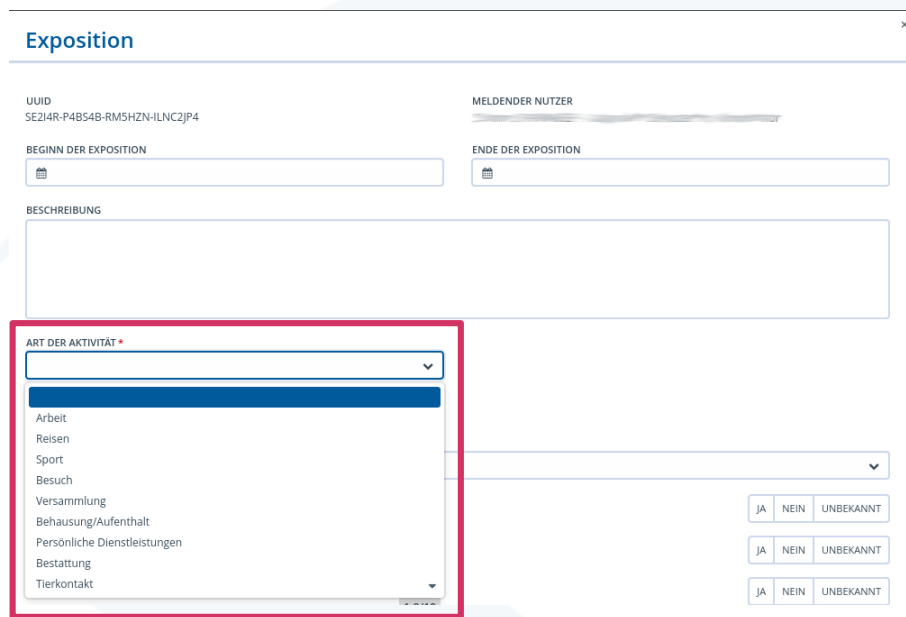DELETE   DISCARD   DONE

3.3.4. Epidemiological data

The "Epidemiological data" tab is used to summarise all known information on infection events. Detailed information, including entries on exposition locations, can be provided under "**Exposure details known**". Clicking "Yes" displays a table. New entries are made here using the "New entry" button.

The **exposure details**, such as start and end, as well as a detailed description can be captured in the input screen that opens. The type of activity (e.g. work or return from travel) is the only mandatory detail that must be provided.

In addition, information can be provided on the conditions of exposure (e.g. "Were masks worn?", "Did the exposure take place indoors or outdoors?", "Was the distance less than 1.5m?", "Was the exposure longer than 15min?") and the place of exposure can be entered. The specification of the place is based here on the already known screen from the "Contact person" tab.

3.3.5. Follow-up visits
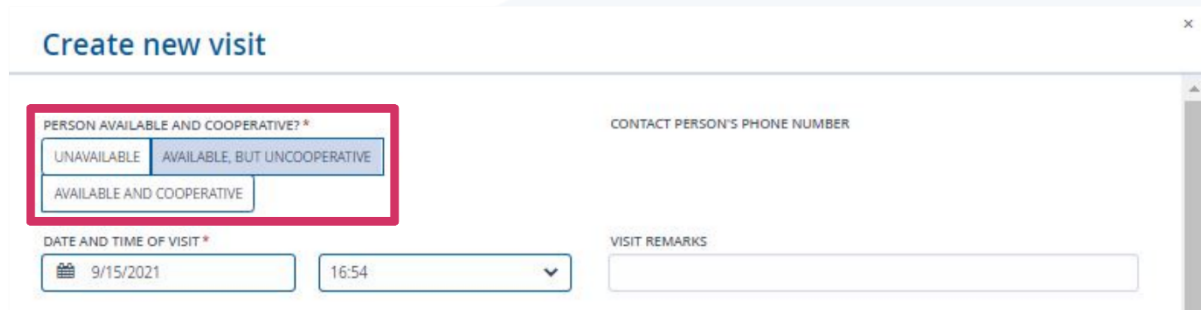
The "Follow-up visits" tab summarises all information on visits made and provides the option to document new visits. All visits that were previously made and recorded are displayed in a table, new visits can be added via the **"New visit"** button. The last column in the table (not shown, "Origin of visit") contains the name of the employee who entered the visit details.
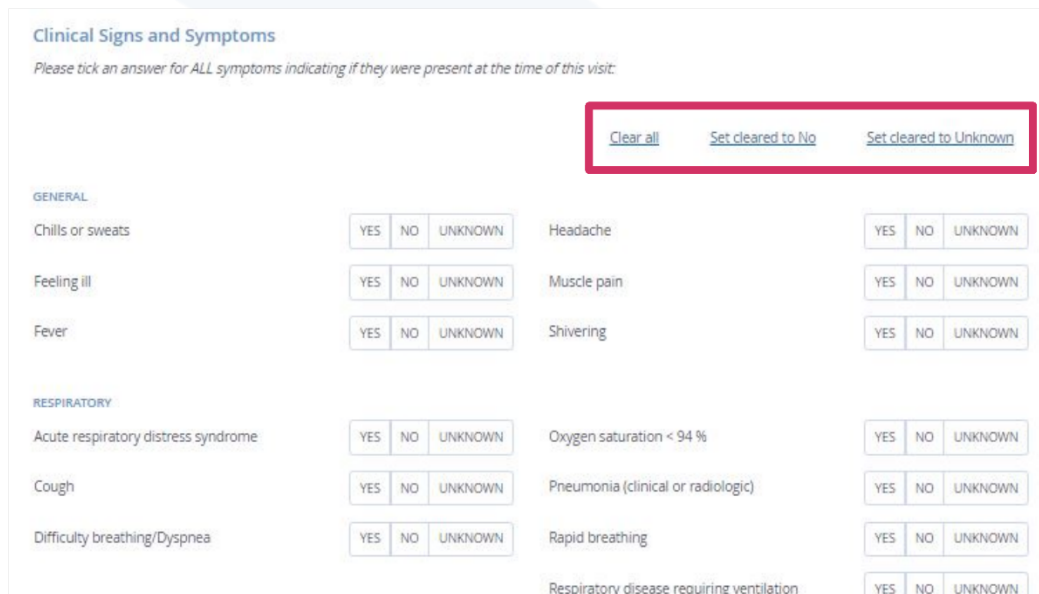
3.3.5.1. Creating a new follow-up visit

When documenting a new visit, first of all the date and time should be entered (the default view shows the current time when opening the window), as well as whether the person was available and cooperative. In case of unavailability or lacking cooperation, no further entries are possible.

If the person visited is available and cooperative, the body temperature and symptoms can be entered below. Furthermore, the three buttons "Clear all", "Set cleared to Unknown" and "Set cleared to Unknown" are provided to speed up data entry:

- **Clear all:** Removes all entries from the list of symptoms.
- **Set cleared to No:** Sets all symptoms where no entry has been made to "No".
- **Set cleared to Unknown:** Sets all symptoms where no entry has been made to "Unknown".

At the end of the form, there is an option to record the first of the symptoms that occurred and the date of occurrence. Only symptoms for which the setting is "Yes" can be selected.

All symptoms entered via a follow-up visit automatically appear in the Symptoms tab when saved, and the information there is supplemented when further symptoms are added. Setting "No" for symptoms in the follow-up visit, on the other hand, does not lead to a change in the entries in the Symptoms tab of the contact entity. As regards the comment field on the symptoms in the follow-up visit, notes written here are copied to the 'Symptoms' tab or added separated by a comma.

4. Tasks
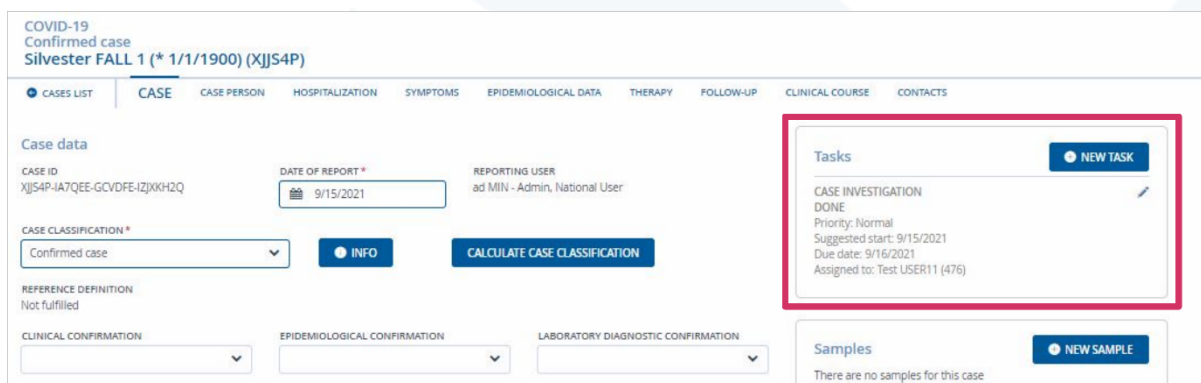
Tasks in SORMAS facilitate the coordination of work processes and can be defined context-independently or context-specifically. Context-independent tasks enable individually usable task management. Context-specific tasks can be written specifically for cases, contacts and events. Tasks can always be assigned to a SORMAS user. Using a quick filter setting, you can make your personal tasks that have been assigned to you immediately visible in task management (see chapter 4.2.2).

4.1. Creating and assigning a new task

There are several ways of creating new tasks, depending on the context you are creating them for: Tasks can be created context-specifically via the menu items "Cases", "Contacts" and "Events"; context-independent task creation is possible via the menu item "Tasks". For both options there is a pre-selection of possible task types. Under "other task" and using the comment function, self-defined tasks can also be created and managed. If required, you can also export created tasks from SORMAS.
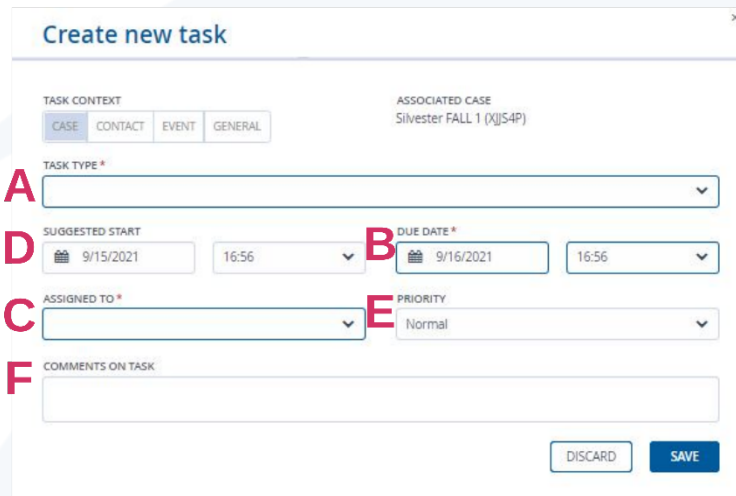
4.1.1. Creating context-specific tasks via Cases/Contacts/Events

If a new task is to be created for a specific case, contact or event, this can be done on the first page of the corresponding entity. On the right-hand side you can see boxes outlined in grey there. One of them is titled "Tasks". Use the associated "New task" button to open the respective input window.

In this input window, the mandatory fields must first be filled in. In addition to the task type (**A**) this also includes the due date (**B**). Each task must also be assigned to a person in charge of processing it (**C**). Optionally the start date (**D**) can also be set.
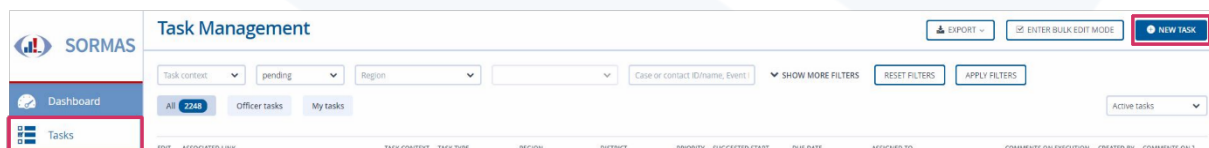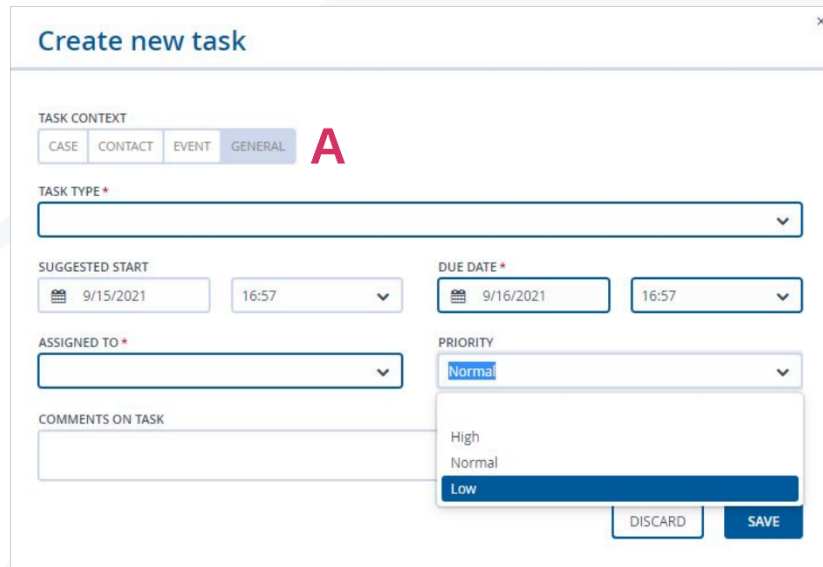
Each task can be assigned a three-level priority (**E**). In the task list, you can filter for those with high priority; the task is then distinguished from the others in the overview by colour. It is possible to store notes in the "Comments on task" field (**F**) (4096 characters).

4.1.2. Creating a context-independent task using the Tasks tab in the menu ribbon

In the menu ribbon, under the "Tasks" tab, context-independent tasks can be created that do not contain a link to a case, contact or event. To do so, click on the "New task" button in the "Tasks" menu.

If a task is created in the Tasks menu item, it is automatically assigned to the task context "General" (**A**).
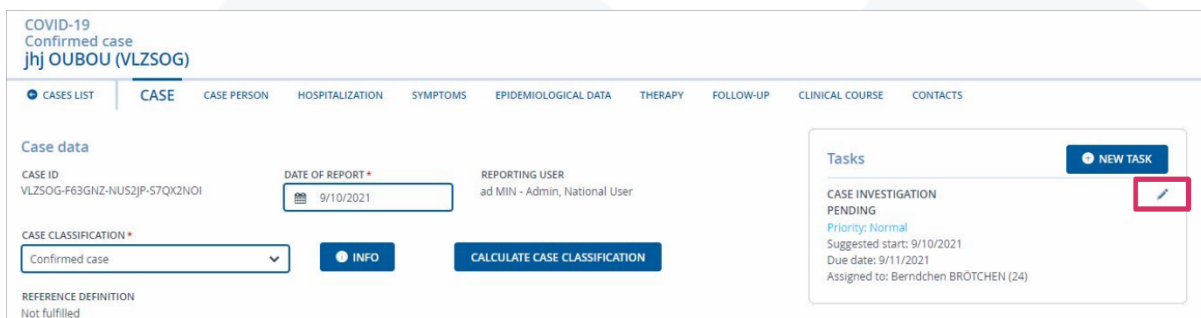
4.2.   Editing tasks
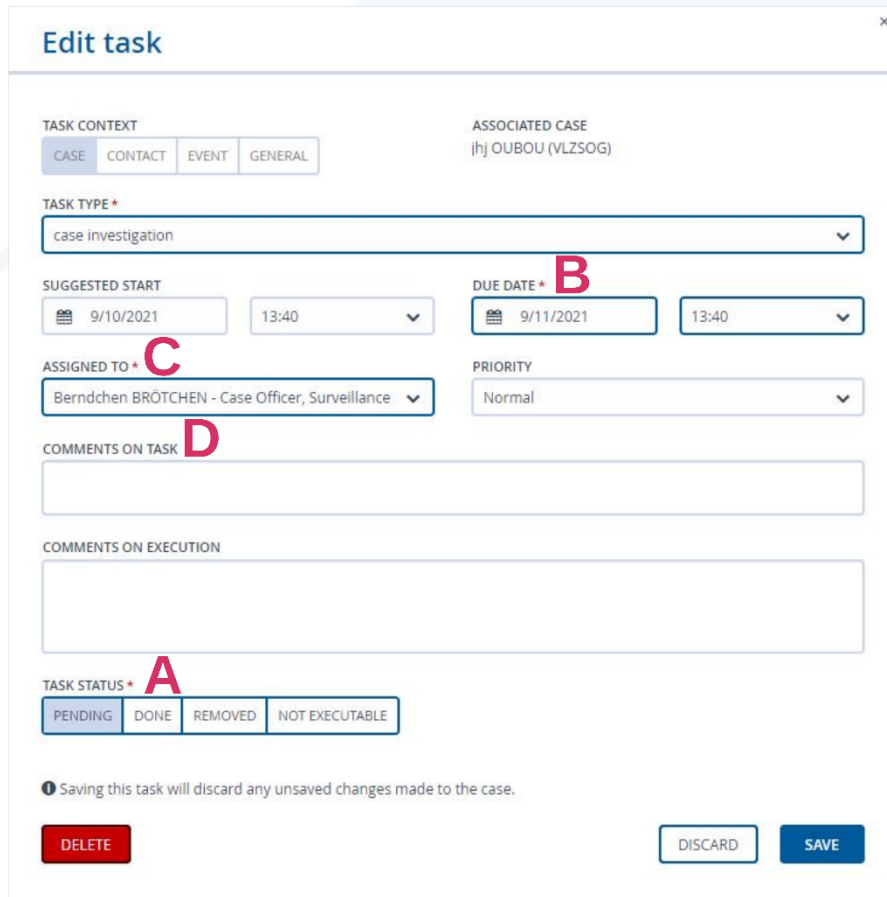
All existing tasks can be viewed and edited in task management ("Tasks" menu item). Those tasks that are linked to a case, contact or event can also always be called up in the respective entity.

4.2.1. Calling context-specific tasks via Cases/Contacts/Events
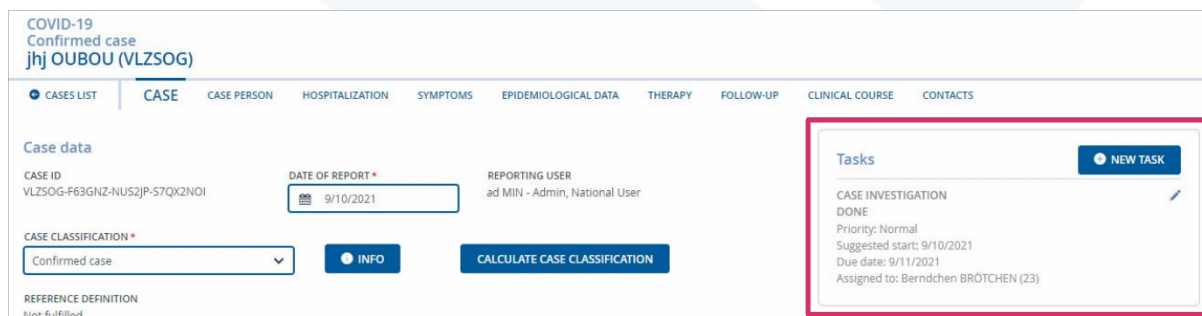
If you want to edit a task that has been assigned to a specific person (i.e. a case, a contact or an event participant) or an event, you can select the corresponding entity and **click on the pencil icon** on the first page of the respective entity, on the right in the "Tasks" box, to open the task.

The task then opens. It can now be commented on or the task status (**A**) can be adjusted (e.g. from "pending" to "done"). Furthermore, it is possible to change the due date (**B**) and/or assign the task to a different person (**C**). When doing so, it is often useful to enter a reason in the comment box (**D**). After changes have been made, click on 'Save' to make them visible to other colleagues.
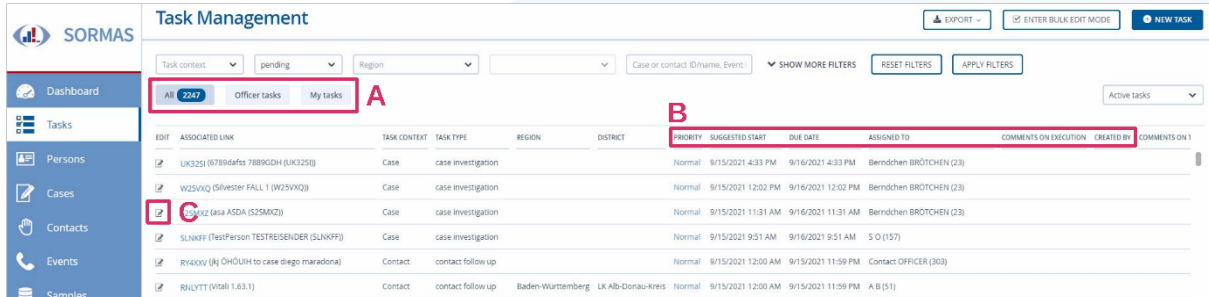
When a task has been completed, it appears greyed out in the entity, but can still be viewed afterwards via the pencil icon. Tasks are archived as soon as the associated case, contact or event has been archived.

4.2.2. Calling all tasks, own tasks or co-worker's tasks from the Tasks menu item

In task management, under the "Tasks" menu item, **all tasks** of any context can be seen that have been created. Using the filter options (**A**), individual tasks can be searched for. It is also possible to display only one's own tasks or those of colleagues. In addition, relevant information about the tasks is given in table (**B**), such as their prioritisation, the processing status, the due date and who created and was assigned the task. To edit a task from the table, click on the corresponding pencil-and-paper icon (**C**). This opens the task and it can be further processed as described in the previous chapter.

If a task has been saved as "done", it can only be found in the task management if the corresponding filter is set to searching for "done" tasks, which then appear as greyed-out entries in the table.

To take a look at the entity (case, contact or event) associated with a task, you can click directly on the right in the task management on the ID indicated in the second column.

4.2.3. Assigning tasks to teams

SORMAS works with a user role concept in which individual users are given different authorisations by assigning and combining user roles. A task can always only be assigned to **one** user in SORMAS. There are different options for designing work processes in teams. For example, the administrator could create a user in SORMAS for team management. Other employees could assign all the tasks they actually want to assign to the whole team to this user. The team manager then distributes these tasks in turn to the responsible staff members from their own team. This ensures that the team manager assigns the tasks to the employees available on that day, while at the same time it remains reproducible which person is represented by which user. It is also possible for the members of this team to assign themselves the tasks that have been assigned to this team user (according to the internally defined process), as it is possible in SORMAS to view the tasks of the members and to change responsibilities. The comment field can also be used for editing notes such as employee initials.

4.2.4. Bulk editing of tasks – function for administrators
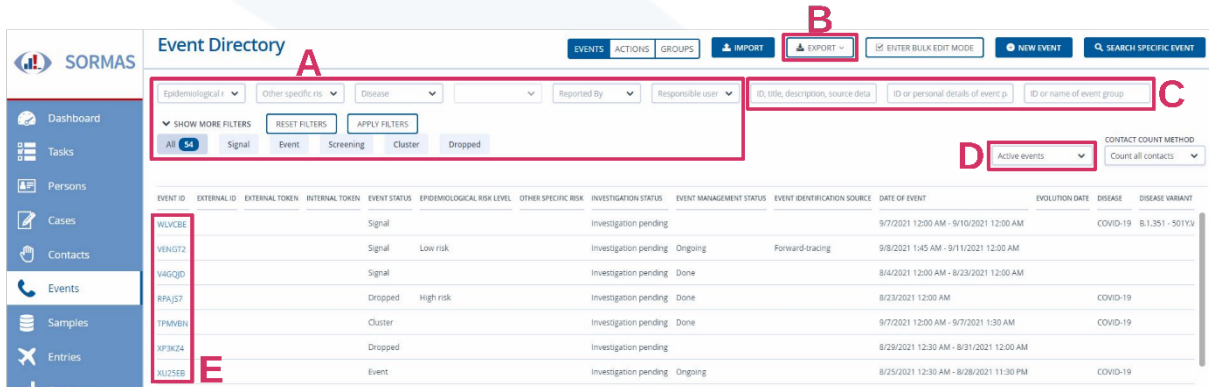
An option for bulk editing of tasks is available to users with the admin role. This option includes assigning tasks, assigning a priority and adjusting the task status. Furthermore, in addition to the deletion option, a bulk archiving and editing option has been created.

5. Events

Events can be created and managed in SORMAS. Events are signals (hints from the public, police or media, for example), screenings (medical series tests), outbreaks with more than one confirmed case (clusters) or various other occurrences (events) associated with a COVID-19 outbreak. Event participants can be created and associated documents, e.g. lists of participants, can be saved. In addition, document templates can be stored for download, e.g. cover letters to facilities or schools. Furthermore, a location specification as well as a super- and subordination of events is possible, so that outbreaks can be specifically assigned and hierarchically structured. Persons who are connected with the outbreak can be recorded as event participants without necessarily having been in a close contact situation with the infected person. They are not quarantined or followed up by calls, but can be converted to a contact or case with one click if needed.

5.1. Event directory

Select "Events" from the blue ribbon menu on the left. This takes you to the event directory.

The event directory displays all events, clusters, signals and screenings that have been created in your instance. You can display the directory according to your needs by using filters (**A**) or sorting with a click on table headings and export it (**B**). You can also search for an event by entering the event ID, the event title or the description (**C**). Always select the "Apply filters" field or press ENTER to confirm your selection. After 90 days, events are automatically archived by the programme; you have the option of displaying archived events instead of the active ones, or both (**D**). To open an existing event that is displayed in the table, click on the blue event ID in the first column (**E**). This takes you directly to the event information, i.e. the 'file' for this event.

5.2.   Creating a new event

At the top right of the event directory you will find the **"New event"** button, which you can use to open the corresponding input window.

All information about this event is entered in the input screen. The program automatically assigns an event ID and initially records the time of creation as the reporting date of the event (**A**).

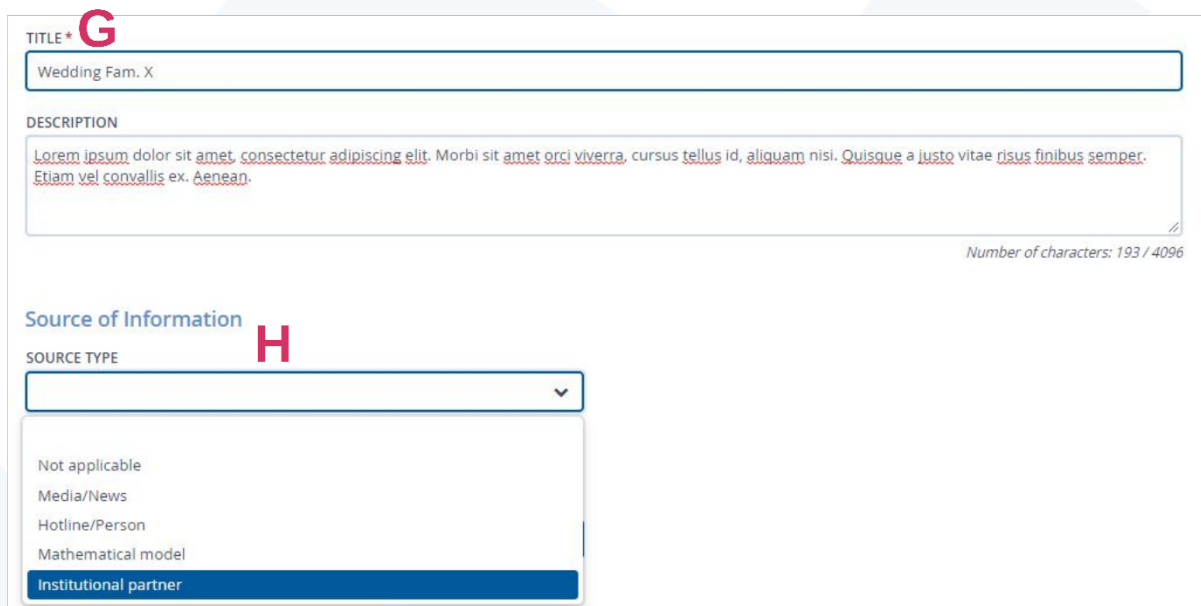The **event status** (**B**) can be selected first:

- Any pieces of information or hints about COVID-19 are referred to as **"signal(s)"** . There are different sources of signals, these can be reported, for example, by the public or the police by telephone, e-mail or in person. However, they can also be uncovered via social media, news, Twitter analytics or algorithms. A signal includes the reporting persons, the reporting date, a description of the signal and the case(s) related to the signal. A signal could be, for example, the indication of a demonstration by COVID deniers.

- An **"event"** is related to COVID-19. It has at least one suspected case and may have multiple contacts or participants. These can be converted into cases if necessary. An

event includes the reporting date, a description of the event and the localisation. Such an event could be, for example, a choir rehearsal or a wedding celebration.

- **"Screening"** refers to the collection of samples and testing for COVID-19 in a defined group of people. Screenings feature participants and a location. Participants can additionally be assigned samples and laboratory results. Here, for example, a serial examination can be created in a care facility.

- A **"cluster"** refers to the common occurrence of at least two cases that are related to each other (e.g. daycare groups or school classes). Clusters have at least two cases, contacts or participants and a location. These may also be nosocomial clusters. Contacts and participants can be converted into cases. Clusters are created around a case; however, new cases can also be added to an existing cluster. If it makes sense, several "regional" clusters can also be expanded into a statewide or national cluster.

The status "Dropped" can be selected (at a later date) if it turns out that the event was not related to COVID-19 after all or was cancelled. The use of the **event management status** field (**C**) can be specifically defined by each authority. One possibility would be to use it as an overview of what progress your authority has made in investigating and processing the event.

The **event date** should be noted (**D**). The "event evolution date" (**E**) (or, depending on the status, also the "signal evolution date", "cluster evolution date", "screening evolution date") provides the option of recording when the event evolved into an outbreak worth investigating. For example, if a school class with initially one infected pupil was recorded as an event and after a few days further positive cases from this school class become known, the event should be classified as a cluster (you do this manually, it does not happen automatically). The cluster evolution date is the date when you make this change, i.e. as soon as the new cases from this school class become known.

It is important to choose a specific **title** (**G**) for the events, as these can be filtered later in the event directory, or the event titles can be searched for specifically. A name that is too general, e.g. birthday party, can make it difficult to identify the correct event when searching. Preferably define a standard procedure for this. The event can be described in more detail using free text.

The **source of information** (**H**) for the event can be selected and described in more detail. Depending on your selection, different fields appear for specifying the source.

Entering the location under **"Type of location**" (**J**) allows for an accurate assignment;

you can enter both facilities and private addresses, public places or means of transport here (e.g. bus, plane etc.). When entering the address, you can also use the geo button (**K**), which calculates the GPS coordinates automatically and transfers them to the maps in the surveillance and contact dashboards. The address for facilities is entered automatically, provided it has been stored by the administrator.

Save your entries as usual with the button at the bottom right.

5.2.1. Adding event participants

Use the **"Event participants"** tab to manually enter event participants or automatically import entire lists. All event participants will be listed in the table with their details, such as name, age, vaccination status, sample collections etc.

In order to create an entry manually, click the **"Add person"** button on the right above the list. The input window opens, where you must enter the type of participation (e.g. guest etc.) and first and last names before clicking "Save".

If a person with the same or a similar name already exists, the **duplicate detection** window opens. Then check, for example by the date of birth, whether it is the same person. If this is the case, select the correct person from the table (**A**) and save it. If it is not the same person, you can create a new person (**B**), who is then initially listed as event participant.

Another window titled "Edit person" appears, in which the personal data, such as address, telephone number or e-mail address can be entered. Save these entries as well. The person is now included in the list of event participants.

Edit person   ×

RESPONSIBLE REGION   RESPONSIBLE DISTRICT

REPORTING USER
ad MIN - Admin, National User

INVOLVEMENT DESCRIPTION

Person information
PERSON ID
RIZXBM-D5NNAD-3T63Z5-NJUUSHAQ

FIRST NAME *   LAST NAME *
Mickey   Mouse

SALUTATION

DATE OF BIRTH (YEAR / MONTH / DAY)   AGE   UNIT   LAST UPDATED
1969   March   4   52   Years   9/15/2021

SEX *   PRESENT CONDITION OF PERSON
Male

PASSPORT NUMBER   NATIONAL HEALTH ID

EXTERNAL ID   EXTERNAL TOKEN

INTERNAL TOKEN

Occupation & education
TYPE OF OCCUPATION

5.2.2. Converting event participants into a case or link an existing case to the event

If you want to generate a case from an event participant, you can do this via the "Case ID" column in the list of event participants. If the person has not already been linked to the event as a case, the entry here is "Create".

Clicking "Create" in the "Case ID" column opens the input screen for creating a new case (see chapter 2.1.2). Some details are already filled in, taken from the information that was already provided for this person when they were created as an event participant. Fill in the remaining mandatory fields. Save your entries. If the case or a similar case is already stored in the system, a duplicate detection query follows to see if it is the same person. You check this (based on the date of birth, for example) and can either confirm the proposed person or create a new case if it is not an existing case in the system.

You are taken to the first page of the case entity then. On the right, you can now see the link to the event:

If you want to go back to the event from here, click on the pencil icon of the corresponding event in the "Events" box. This will take you back to the event entity. In the "Event participants" tab you can now see that the case just created is still listed here, but now a case ID is stored in the "Case ID" column. In this way, you can already see from this list which person is linked as a case.

Another option to display all cases for an event can be found in the first "Event" tab in the event information or the event entity. Here you can find the "View event cases" button.

This field takes you to an automatically filtered view of the case directory, which shows you all cases linked to this event.

5.2.3. Converting an event participant to a contact

If you want to record that there was a close contact situation between an event participant and the infected person, you can generate a contact situation for a created event participant at any time so that the person can then be quarantined and followed up as a contact. To do so, click the "Event participant ID" of that person (first column) in the participant list.

This opens the information page for this participant, where there are three boxes with grey outlines on the right-hand side. Select the "New contact" field in the "Contacts" box.

The input screen for this contact situation appears (see chapter 3.2.1). Select the responsible region, district and community here. Use the blue "Choose case" button to link the source case (if already created in the system – otherwise, you can use the "Case ID in external system" field to note another ID if the case is documented elsewhere) and use the fields below to describe the contact situation (not shown in the screenshot below). Saving converts the event participant to a contact and the associated contact entity opens.

5.3.   Links in events: Tasks, actions, documents

In the "Event" tab, you will find numerous linking options on the right: You can link documents, internal tasks, actions (external tasks/notes) as well as event groups and superordinate and subordinate events. Letter/document templates can be stored by the administrator for events so that they can be downloaded by staff members.

5.3.1. Creating tasks for events

If you would like to create a task for yourself or a colleague for an event, you can do this via the **"New task"** button in the respective open event. Use the pencil icon to open existing tasks that you want to edit (see also chapter 4.1).

5.3.2. Creating actions for events

Actions refer to superordinate tasks that have to be executed by external units, i.e. you cannot become active yourself in the health authority for the time being. Enter here, for example, whether you are still waiting for participant lists from external units (organisers, public order office, etc.). Disinfection actions or cordoning-off measures could also be recorded here. In addition, you can upload documents not only in the event itself, but also in the actions, provided an action is stored for an event.

5.3.3. Documents for events

Using the button: **"Store document"**, documents can be uploaded and stored in various formats, e.g. air passenger lists. Using the **"Create"** button, you can also select and download specific letter templates for an authority (handouts etc.), provided they were stored by the administrator beforehand.

5.3.4. Superordinating and subordinating of events

Events can be superordinated and subordinated in SORMAS. This allows outbreaks to be sorted and processed according to topic or location. The function can be used for a variety of situations; for example, depending on the definition in your authority, you can process outbreaks in facilities, larger households or note groups of the same means of transport such as a flight, a cruise ship, a bus line or different classes of a school, etc. To do so, click **"Link event"** in the respective boxes **"Superordinate event"** or **"Subordinate event"**.

Then select an event by searching via the ID, title or description from events already entered in your instance (here, "medical facility" was searched for as an example), or select "New event" at the bottom left to create one. Clicking 'Save' creates the link.

In this example, a specific outbreak (in our example named "Event for the User Manual") was linked as a subordinate event, or cluster, to the superordinate event "outbreaks in medical facilities". The link can be disconnected at any time.

5.3.5. Creating event groups
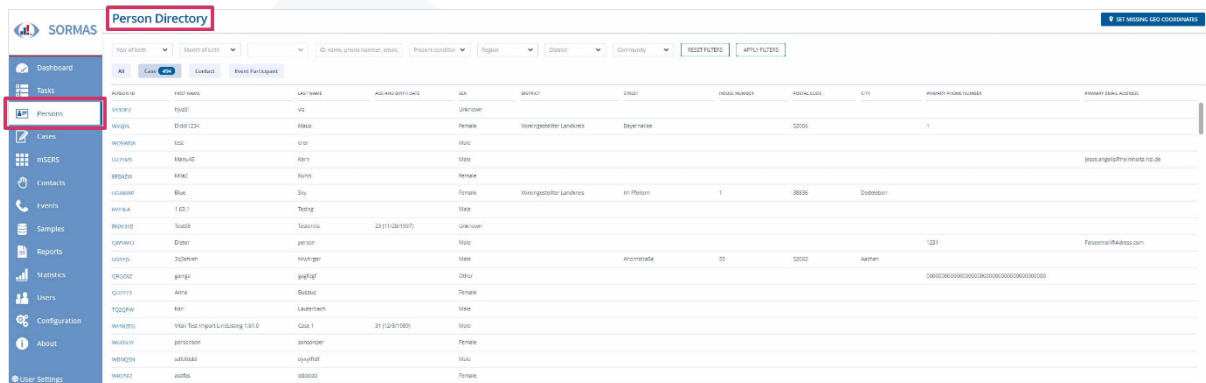
In addition to the hierarchy for events, you are now provided with the option of grouping events. Event groups are basically intended for the management of events, whereas superordination and subordination represent infection events. In the event you will find an "Event groups" box on the right under the superordinate and subordinate events. In addition to the "Events" and "Actions" tabs, the "Groups" tab is now also available in the events directory.

Event groups can be created, edited and linked by the Admin, National User, Surveillance Supervisor, Surveillance Officer, Event Officer and Community Officer. The Admin and National User may delete event groups and the Admin may archive them. Using the bulk editing mode, you can select the corresponding events as an admin and assign them to a new or existing group.

6. Persons
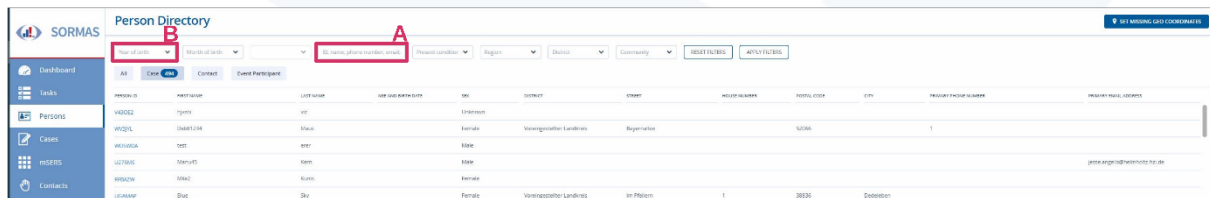
6.1.   Person directory

Clicking on the "Persons" menu item in the blue menu ribbon takes you to the person directory. Here you will find a list of **all persons documented in SORMAS**, regardless of whether they were recorded under cases, contacts or event participants. In the background, the programme manages each natural person only once, while the situations related to COVID-19 – i.e. disease situation managed as "case", contact situation managed as "contact" or participation as "event participant" – are created several times on a situation-specific basis. Please note that it is not possible to enter new persons via the person directory, but only under the menu items Cases, Contacts and Events in the blue menu ribbon.

In the upper area you can see the filter and sorting options available for the people directory. Here, for example, you can search directly for the name of a person (**A**) or the year of birth (**B**). The search function of the person directory therefore helps you above all if you want to check whether a person already exists in your system.
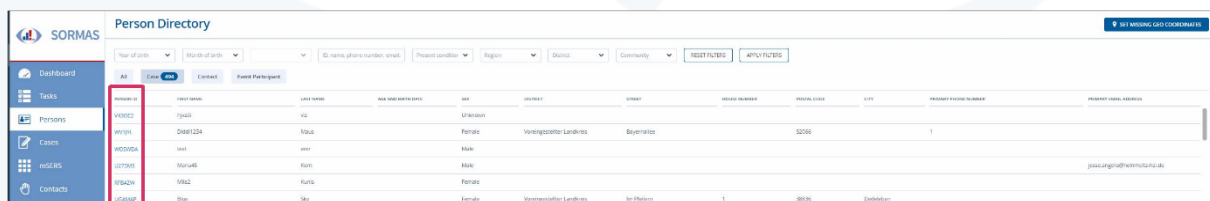
You also have the option of applying a direct filter that you can use to search for persons who can be assigned to at least one case situation or contact situation, or who have been linked to at least one event.

In the list of persons, admins can also set missing geo-coordinates in bulk editing mode via the button positioned at the top right; the function serves to automatically add the geo-coordinates for the home addresses of all persons listed.
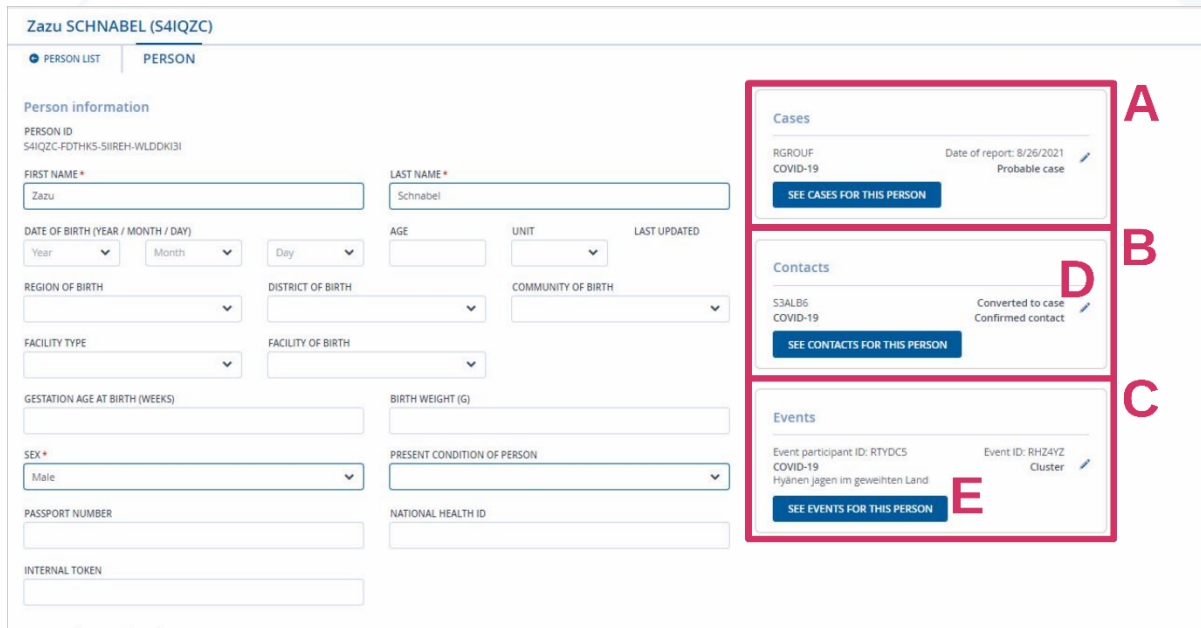
6.2.   Opening the person information page via the person directory

To edit a person listed in the directory, click on the person ID on the left side of the directory.

You will now see the person's data, such as date of birth and address data. The boxes on the right-hand side show the possible links to a case, a contact or an event. This means that if the person has a confirmed COVID-19 disease and has been registered as a "case" at the health authority accordingly, this information will appear in the "Cases" box (**A**). If the person was already registered as a contact person at the health authority, this information is also visible in the "Contacts" box (**B**). If the person was associated with an event, this information will be displayed in the "Events" box (**C**). Thus, it is possible that the same person has entries in all three boxes. If this is the case, then several entities exist for the same person, which reflect the respective situation (case, contact situation, event participant) in relation to COVID-19 or other diseases.

Using the pencil icon in the respective boxes (**D**), you can access and edit the respective case, contact or event entity. The blue "See cases/contacts/events for this person" buttons (**E**) take you to the respective, already filtered directory (i.e. case directory, or contact directory, or event directory), which lists all existing entities for this person as a case/contact or event participant.

At the very bottom of the page there is a general comment field that refers to the natural person. This means that entries in this field will persist regardless of the context for which a record is created for the person.

7. Samples

Clicking on the "**Samples**" menu item in the blue menu ribbon takes you to the sample directory. Here you will find a list of all samples documented in SORMAS, regardless of whether they were recorded under cases, contacts or event participants. Here you can get an overview of all available samples, filter, sort and export the overview according to certain criteria and edit existing samples, for example to add new test results. You will also find the button for retrieving laboratory messages received via DEMIS here.

7.1.   Sample directory

In the upper section you will find the available filter options for the sample directory (**A**). You can combine them as you wish, for example to identify all positive samples from a particular laboratory. All selected filters must be activated via the **"Apply filters"** button or ENTER; the **"Reset filters"** button discards the set filters.

With the predefined filters highlighted in light blue "Not shipped", "Shipped", "Received" and "Referred to other lab" you can filter the list according to the **status of the sample** (**B**). You also have the option to filter the list by active or archived samples or by their context (case/contact/event participant) (**C**).

For **editing** an existing sample, click the sample ID in the first table column (**D**). Calling up an existing sample is not only possible via the sample directory, but also via the first page of the entity for the respective person (click on the pencil icon there).

New samples received via DEMIS can be retrieved, viewed and edited by clicking this button (**E**) in the "Laboratory messages" section. For more detailed information, please refer to the SORMAS-DEMIS interface description https://www.sormas-oegd.de/download/2994/.

7.1.1. Opening and editing sample information

To edit an existing sample, click on the sample ID in the sample directory or on the pencil icon of a sample displayed in the "Samples" box on the first page of a case, contact or event participant entity. All information available on this sample will be displayed.

In the upper section (**A**) you will find the ID assigned by the system for this sample, the date on which the sample was taken and the ID of the associated case/contact/event participant.

The most important details, which at the same time are mandatory information on a sample are as follows:

- **Purpose of the sample**: is usually "External laboratory test" and preset accordingly
- **Date sample was collected**: the sample collection date; the time may also be indicated
- **Type of sample**: the type of sample taken, e.g. throat swab or nasopharyngeal swab
- **Laboratory**: name of the laboratory where the sample is/will be shipped
- **Date of sample dispatch** and the **receipt of the sample at the laboratory**: if the "Sent/dispatched" and "Received" boxes are ticked, the respective date has to be specified
- **Sample condition**: sufficient or insufficient
- **Final laboratory result**: Test result still pending or positive/negative

Using the tabs (**B**), you can either go back to the sample list or directly open the case, contact or event participant associated with the sample. The following options are offered in **three boxes** on the right-hand side of the screen:

- The topmost box (**C**) contains the ID and the most important information about the case, contact or event participant the sample is associated with.
- The **Pathogen tests** box (**D**) displays the results of the pathogen tests already carried out. Use the "New test results" button to record new test results, i.e. new Covid-19 pathogen tests.

- In the **"Additional tests"** box (**E**), the results from other tests not related to COVID-19 – if any – are displayed. The "New test result" button enables you to record such additional tests and their results, such as haemoglobin value in the urine.

Visualisation of laboratory messages in the sample and pathogen test section: The laboratory messages are displayed as follows: An eye icon is displayed for sample and pathogen test lists if an associated laboratory message is pending. Clicking this icon opens the respective laboratory message if it had been processed in SORMAS before. Use the arrows (bottom/centre) to switch between the stored laboratory messages.

7.1.2. Creating new COVID-19 test results manually

To manually enter a new COVID-19 test result, select the "New test result" button in the "Pathogen tests" box on the sample information page. A new window opens.

The following information must be recorded there for a new test result:

A   **Type of test**: The type of test used to analyse the sample must be indicated here, e.g.: Antigen detection test (quick test), PCR test etc. If "PCR/RT-PCR" is selected, the respective test specifications can directly be documented.

B   **Tested disease and disease variant**: The examined disease always is COVID-19. In the adjacent field, all virus variants stored in the database are available for selection. Entering a virus variant includes it in the case information.

C   **Date and time of result**: This must be neither before the sample was taken nor in the future.

D   **Laboratory**: Specifies the laboratory where the test was carried out.

E   **Test result**: Result of the test, e.g. positive. If "positive" is selected, a field for entering the CQ/CT value appears below.

F   **Result verified by lab supervisor**: Specifies whether verification took place.

In addition, further information on this test can be entered in the **"Test result details"** free text field.

If the test result recorded here differs from the current result of the sample, for example if this is set to "Pending", a confirmation prompt is displayed when saving. You now have the option to update the final result of the sample by clicking on "Yes".

7.1.3. Positive test results for contact persons

If you change a pending test result of a contact to "positive", a prompt to automatically convert the person to a case is displayed. Confirm with "Yes" to convert the contact into a case.

7.2.   Exporting the sample directory
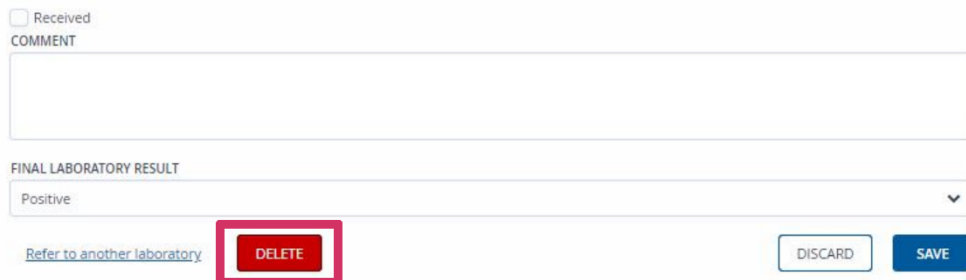
The data of the sample directory can be exported. For this purpose, there is an "Export" button at the top right of the overview that can be used to start a basic or detailed export.

In either case, a CSV file is downloaded. The **basic export** contains all columns that are displayed in the default view of the sample directory. The **detailed export** includes all information that can be recorded for a sample. As this export takes a little more time, the users are informed of this in a warning window. *Caution: A few seconds will elapse before the detailed download begins, so do not close the window too soon.*

7.3.   Deleting a test result (administrator function)

The "Administrator" user role is authorised in SORMAS to **delete test results**. To do so, call up the test result to be deleted via the pencil icon and select the red "Delete" button in the window. **Bulk editing mode**, which can be selected in the sample directory, is also possible here.
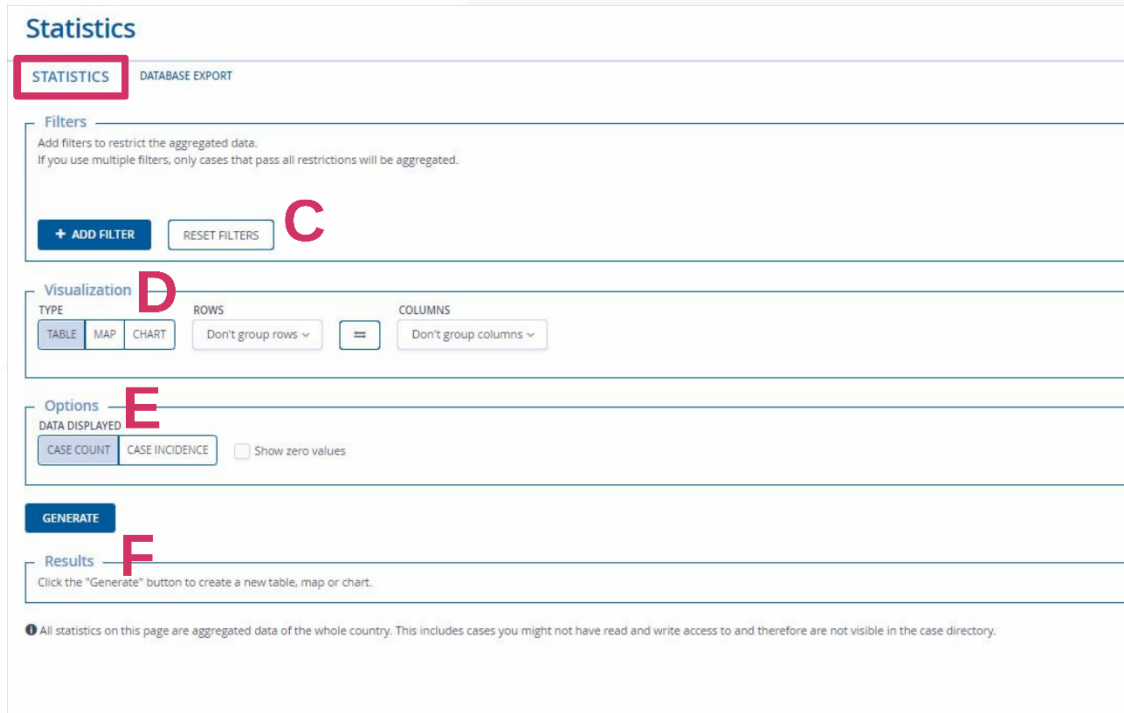
8. Statistics

Clicking on the Statistics menu item in the blue menu ribbon takes you to the SORMAS statistics module. This provides you with individually customisable evaluation options for the cases and thus an overview of possible outbreak events. Furthermore, you can also export the complete database here. In the **"Statistics"** tab (**A**), the evaluations can be displayed both in tabular and graphic form, giving you various options for displaying the current epidemiological situation in the respectively responsible jurisdiction. You can make database exports using the **"Database export"** tab (**B**). Whether for cases, contacts or infrastructure data such as one's own community: All database categories can be filtered and exported individually.

8.1.   Statistics

By default, selecting the Statistics menu item opens the Statistics tab with different evaluation and display options of the epidemiological situation. The tab is divided into the case-specific filter options (**C**), the selection of the visualisation (**D**), settings for the output of the displayed data (**E**) and results (**F**), which are generated by clicking on "Create".

8.1.1. Filters

Using the filter, you can determine to what extent the aggregated data for your evaluation should be restricted. You can add one or more filters (**A**) or reset previously set filters (**B**). To stratify the data, click "Add filter" and then select the respective attribute (**C**).

The drop-down menu in the "Select attribute" field offers you time-, location-, person- and case-specific attributes that you can further specify in the next step.

For example, select the respective sex for the attribute "Sex" or enter the region, the rural or urban district, the community and the city with the postcode, if applicable, for the "Place of residence". You can individually configure the selection.
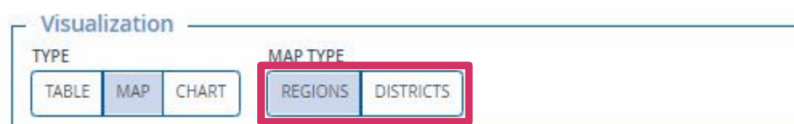
8.1.2. Visualisation

You are provided with various options for visual display. For the visualisation type (**A**), you can choose between an output in tabular form, as a map or in different charts. Below you can see the output as a table for which you group the rows (**B**) and columns (**C**). As with the filter, you select from time-, location-, person- and case-specific characteristics.
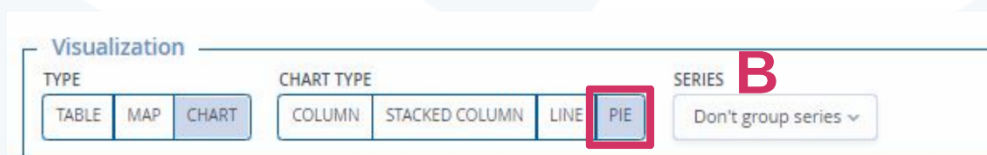

When selecting the visualisation type "Map", you can choose between a map of the regions and a map of the rural and urban districts.

The chart is the third type of visualisation. Here you are offered four different chart types, the column chart, the stacked column chart, the line chart and the pie chart (**A**). Here, too, you can create a grouping with time-, location-, person- and case-specific characteristics for both Y-axis, referred to as 'series' here (**B**), and X-axis (**C**).
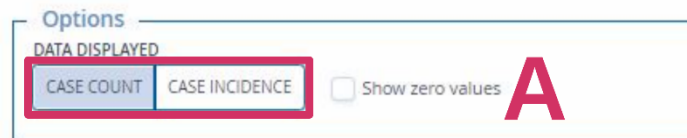

As an exception, only the series (**B**) is grouped for the pie chart since it only has one axis.
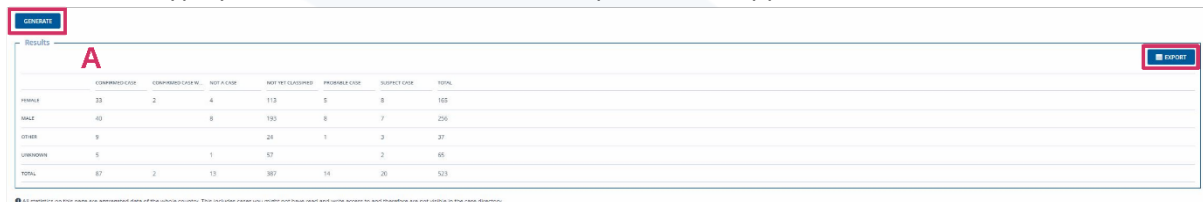
8.1.3. Options

In 'Options' you can set whether the visualisation will be output as a **case count** or **case incidence**. The incidence describes the relative frequency of new cases of the disease in a population/group of people within a certain period of time. It is possible to determine the incidence denominator yourself when selecting "case incidence". This denominator is set to 100,000 persons by default. In addition, you can also display the zero values (**A**) by ticking the box "Show zero values".

8.1.4. Results

By clicking "Generate", the output shows you the number of cases or the case incidence in total. You can further limit this output using the filter function and have it displayed in tabular or graphical form with fully available selection and grouping options of the "Visualisation" field. Depending on the visualisation type you have selected, a table, a map or a chart appears below the blue "Generate" box.
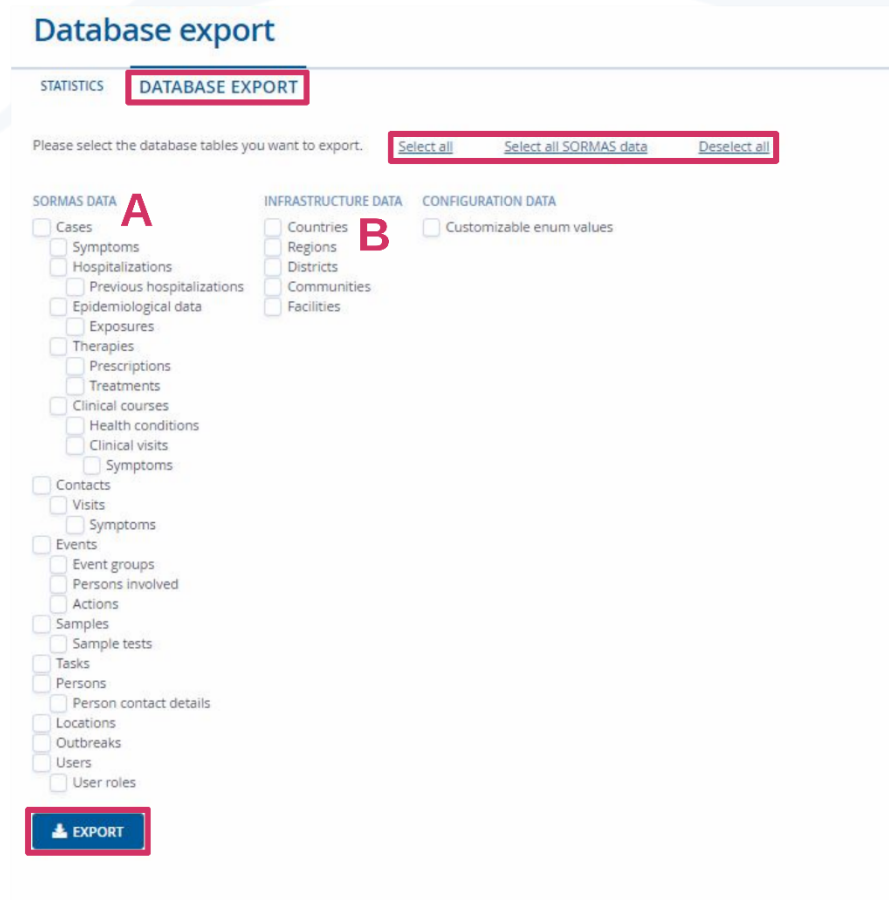
Your evaluation can be exported in Excel format if you opted for a table (**A**) or downloaded in various file formats (PDF, JPEG, XLS) in the case of a chart (**B**) and also printed out.
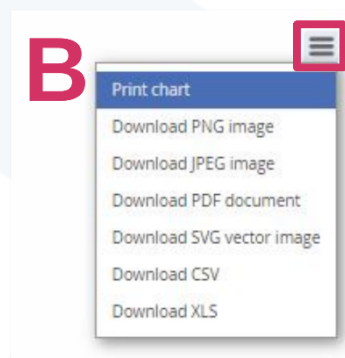
An output as a map allows you to locate the respective cases within the map.

8.2.   Database export

The **"Database export"** forms another part of the statistics module. You can select and export the complete database or only individual database tables here.

8.2.1. Export filter (SORMAS data / infrastructure data)

Within the database export, you are offered various export filters. On the one hand, there is the **SORMAS data** (**A**), which pertains to the cases, contacts, events, samples, tasks, persons, places and outbreaks. On the other hand, there is the **infrastructure data** (**B**), where you can select all countries, regions, rural/urban districts, communities and facilities. The database tables can be selected individually, in total or specifically by **SORMAS data**. You can then export the selected databases via the 'Export' button.

9. Acknowledgements

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On behalf of the entire SORMAS support team, we would like to express our sincere thanks for this!