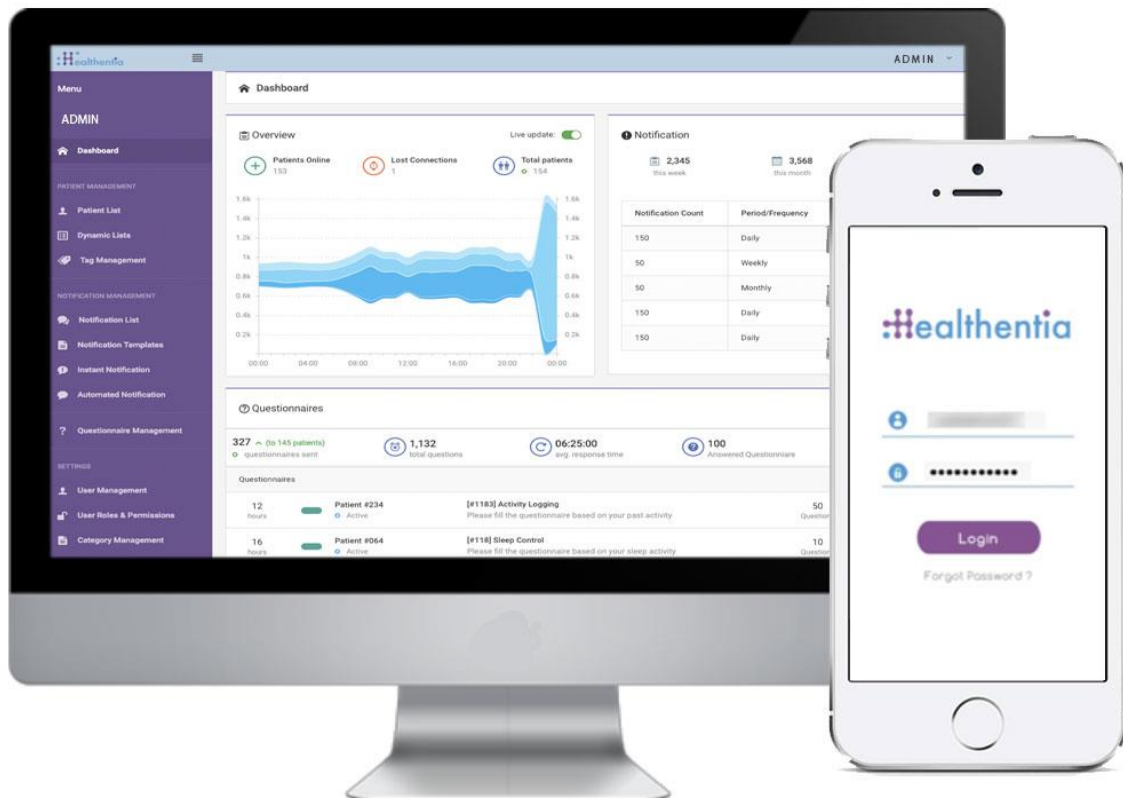




STUDY PORTAL



INVESTIGATOR MANUAL

MAY 2021

HEALTHENTIA v3



Innovation Sprint Sprl
Clos Chapelle-aux-Champs 30
Bte 1.30.30
1200 Brussels, Belgium

v3 (25/05/2021)

HEALTHENTIA is a medical decision support software developed by INNOVATION SPRINT and intended monitor, detect, offer virtual coaching services and generate automatic alerts regarding events, based on Real World Data gathered from patient taking part of clinical investigation, or those using it as a medical or wellbeing device.

The intended use of the device is: Software intended for monitoring of non-vital parameters to support decision making and virtual coaching of patients during clinical trials or under a medical or wellbeing treatment context.

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DOCUMENT HISTORY

version	Date	Author	Description
0.1	6/12/2018	Konstantina Kostopoulou	ToC
1.0	14/3/2019	Konstantina Kostopoulou	Healthentia version 1
1.1	14/5/2019	Konstantina Kostopoulou	Healthentia version 1 -upd
2.0	27/4/2020	Sofoklis Kyriazakos	Healthentia version 2
3.0	25/5/2021	Konstantina Kostopoulou	Healthentia version 3

1 GETTING STARTED

HEALTHENTIA can be used both by individuals and by sponsors of clinical trials. Individuals can report and monitor their outcomes (e.g. symptoms) and activity and receive automatic-generated questionnaires for wellbeing. Aggregated data provided after users' consent, can be processed for conducting non-profit research studies. Clinical trial sponsors can operate HEALTHENTIA to collect ePROM/ePREMs under the appropriate regulatory framework (e.g. Good Clinical Practice) to carry out study protocols, often by the use of a PaaS instance of the platform. Individuals, depending on their consent information, may receive invitation to participate in research studies.

This manual is targeting Organization Admins, Study Admin, Investigators and other authorized personnel of the Study Portal.

1.1 LOGIN/REGISTER AS A PORTAL USER

To login user should go to the login page, which is available in <https://saas.healthentia.com> for the SaaS version, or a specified URL for the PaaS version.

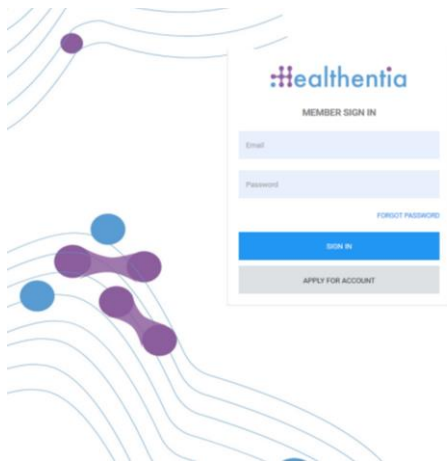


Figure 1: Login page



Figure 2 - Registration page

Users receive an invitation from an Organization Admin to register their account and enter in the portal in the allocated study with an allocated role.

2 STUDY MANAGEMENT

2.1 STUDY OVERVIEW

After log in you are directed to the Study Overview Page – My Studies, which has a list of your available studies and some overall statistics. You can access your Studies, edit them or create a new one.

MY STUDIES

Overall
18 studies
785 participants

Tracked Activity
95218 days
256 subjects

Adherence
6172 events from 376 participants
15216/16141 answered questionnaires

Last week's activity
6 subjects with reported events
1 participants

Show: 10

Create Study Export Clear Filters

Icon	Name	Organization	Codename	Disease	Patients No	Status	Alerts	Actions
	Monoclonal Antibodies	ORG_1	MoAbs	Remote Covid19 Therapy Monitoring	0	ONGOING	0	
	Virtual Ward	ORG_1	VIRTUALWAR	Ovarian Cancer	3	ONGOING	0	
	VITO Demo Study	ORG_18	VITO_Demo	Observational	7	ONGOING	3	
	Digital Check-up	ORG_17	DIG CHECK	Health Assessment	9	ONGOING	7	
	IPF Vaccine Study	ORG_6	IPFVaccine	IPF	69	ONGOING	90	
	iHelp	ORG_16	iHelp	Pancreatic Cancer	3	ONGOING	0	
	Beia	ORG_12	BEIA		4	ONGOING	0	
	KEYRUS Demo	ORG_11	Keyrus		11	ONGOING	10	
	IMEC Demo	ORG_10	imec	Health Monitoring	1	ONGOING	0	
	Med-ex Demo	ORG_9	Med-ex	Physical Activity Monitoring	1	ONGOING	0	

Showing 1 to 10 of 18 entries

CE Innovation Sprint SpA
Chimie-avenue Changin 30
Rue 11, 30
1200 Brussels Belgium

Figure 3 - Study Overview

2.2 SETTING UP A NEW STUDY

From this first page, you have the option to create a new study. Depending on the type of study, investigator provides different information. In Figure 4 one can see the available configurations for the study per se but also the mobile App. There is a selection of available widgets to select for the new study and configure the data sources but also several fields to fill in like Name, Code, logo, Languages, therapeutic area, duration and consents.

Healthentia
Real World Outcomes

Symptom Tracker

DASHBOARD

SUBJECTS

USERS

ALERTS

ECONSENT

MESSAGES

NOTIFICATIONS

QUESTIONNAIRES

SYSTEM

DEVICES

AUDIT TRAIL

CREATE STUDY

GENERAL

Account Settings

Name: * Therapeutic Area: Codename: *

Protocol: Duration in Months: Start Date: 2021/05/14 End Date:

Primary Language: * Add More Languages: Study Logo:

Choose File No file chosen

Additional Services

Video-Chat Multicenter Interactive Map

MOBILE CONFIGURATION

Study Information Page: Study Logo on App:

Choose File No file chosen

Pop-up for Study's terms & Privacy

Short Term's Description: Terms of Use URL:

Privacy Policy URL:

Leave empty for no Privacy Policy

Available Consents

General Terms Allowing Reporting Contacted by doctor in case of need

Additional App Widgets

Treatment Reminder Two-Factor Authentication Liquid consumption Sleep Widget

Activity Widget (Available Integrations)

Fitbit Sync Garmin Sync Apple Health Sync Android Sync

SUBJECT DETAIL PAGE CONFIGURATION

First/Last Name Fiscal Number Study Dates Severity

Managed Fitbit Tracker Description Mobile Description Therapeutic Area

Subject Id Email Phone Number Status

Time Zone Language Gender Weight

Height Birth Date Tags Notes

Cancel Create

CE Innovation Sprint Spot
Chim, Christophe - Ann-Christine JC
Edu 1 10 36
1201, Duvion, Belgium v1 (21/05/2021)

Figure 4 - Create New Study

3 DASHBOARD

The user dashboard contains information of the selected study in tabs, e.g. Interactive map, Study Overview, Measured Activities Overview and Outcomes Overview. This is a customizable set of dashboard tabs; they depend on the Outcomes that each trial collects. The map is connected to a Location question, Measured activity requires a connection the mobile sensors (or fitbit, Garmin, etc) and the reported outcomes tab has a self-service mechanisms for questions asked in the questionnaire to be seen in two types of graphs

3.1 INTERACTIVE MAP

At the configuration of the study, the Study Admin can select to enable the interactive map if there are questions regarding location. Portal users can select parameters through several filters and have an overview of subject outcomes at a geographical level, as presented in Figure 5.

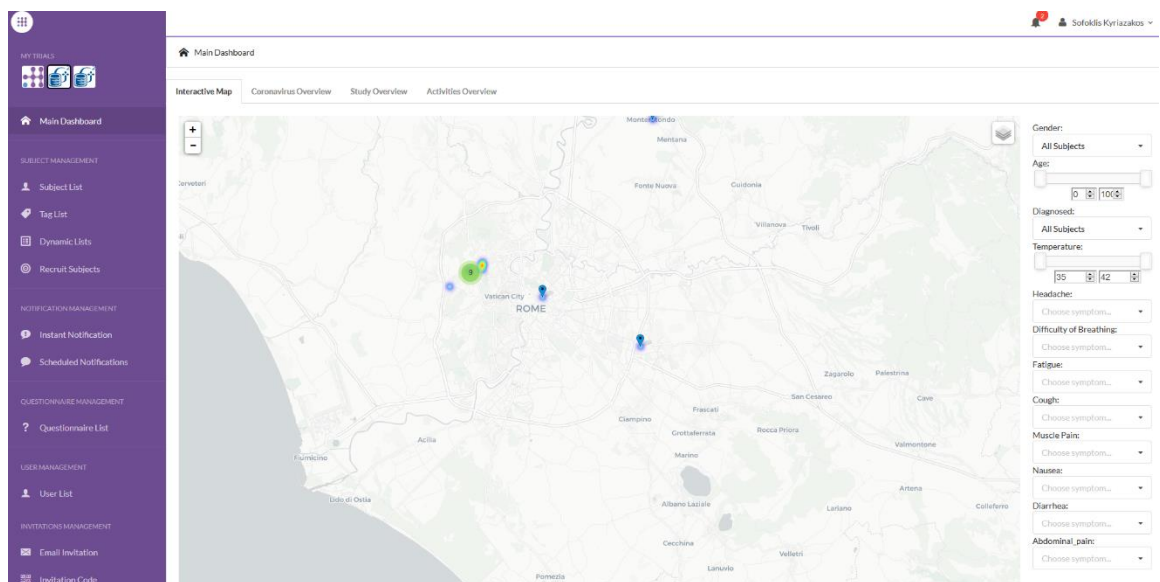


Figure 5: Interactive Map

3.2 BI

Further to the Interactive map, there are other tabs in the Dashboard that can be configured with study Overview statics, like registrations and protocol adherence – Figure 6.

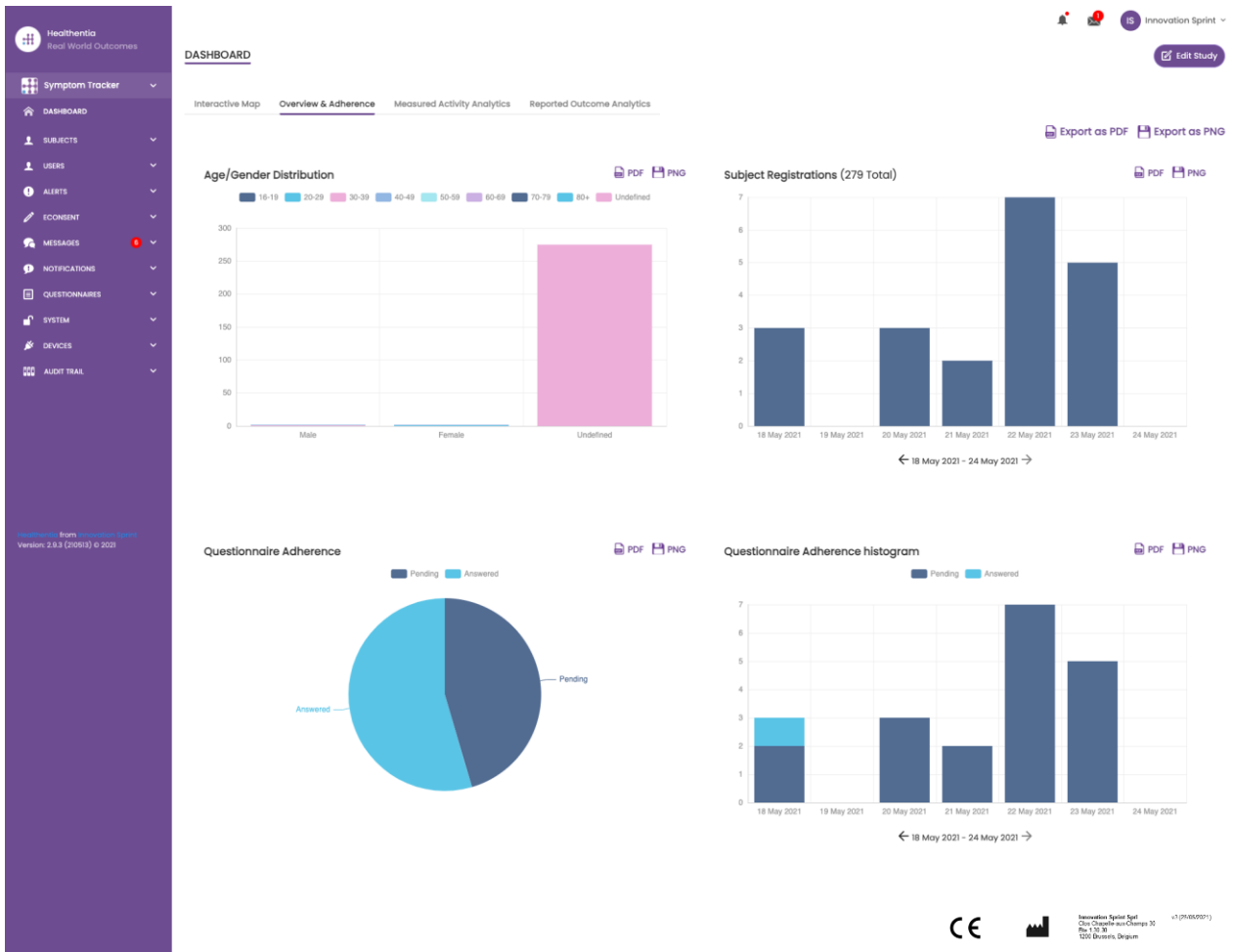


Figure 6: Study registration and compliance overview

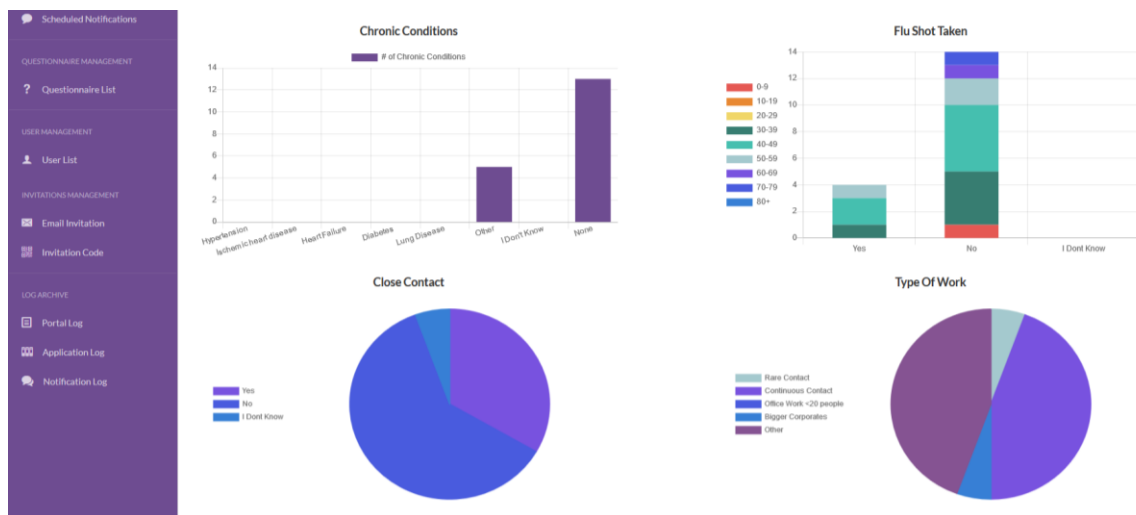


Figure 7: Study statistics overview

Healthentia
Real World Outcomes

Symptom Tracker

- DASHBOARD
- SUBJECTS
- USERS
- ALERTS
- ECONSENT
- MESSAGES
- NOTIFICATIONS
- QUESTIONNAIRES
- SYSTEM
- DEVICES
- AUDIT TRAIL

DASHBOARD

Interactive Map Overview & Adherence **Measured Activity Analytics** Reported Outcome Analytics

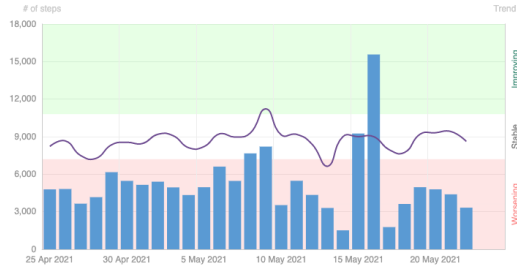
Innovation Sprint
Edit Study

Export as PDF Export as PNG

Physical activity in Average

PDF PNG

Steps 30-days interval 25 Apr 2021 - 24 May 2021



Average Active time (minutes)

PDF PNG

30-days interval 25 Apr 2021 - 24 May 2021

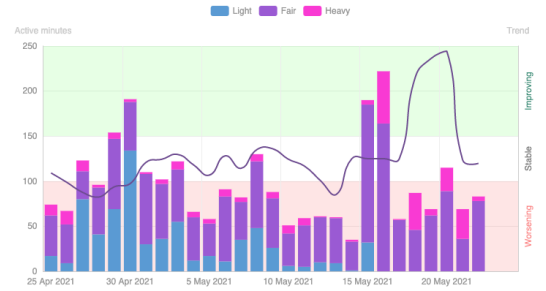


Figure 8: Measured Activity overview

4 SUBJECTS

4.1 ADD A SUBJECT

Subjects are either imported via an integration with an EDC into Healthentia as inactive subjects that are activated once they have logged in to Healthentia, they can be manually added by the button on the Subject List or invited through the system from the Subject Invitations. The email used for the invitation will be recognized by the system to allow them, at registration on the App to enter to the specific Study. **Not using the same email will not enroll the Subject in the correct Study.**

The screenshot shows the 'SUBJECT INVITATION' page with a table of existing invitations and an 'Invite Subject' modal form. The table has columns for Email, Invited On (Browser Time), Role, Joined On (Browser Time), and Invited By. The modal form has fields for Email, Phone Number (required for eConsent), and Invitation Code, with a 'Send Email' button.

Email	Invited On (Browser Time)	Role	Joined On (Browser Time)	Invited By
330d5182-7e49-4d6d-a7a4-81aac6a78e5a@healthentia.com	2021/05/07, 16:15:48	Subject	07/05/2021, 18:13:50	9f714f3f-0c02-4cbf-aa89-e7d75d83adc3@healthentia.com
ff524ee-cf6a-4321-adf3-4aadae35bf08@healthentia.com	2021/05/07, 16:15:04	Subject	11/05/2021, 17:03:03	9f714f3f-0c02-4cbf-aa89-e7d75d83adc3@healthentia.com
4ff2da93-2c3f-4a9e-9996-c28be8f83fbc@healthentia.com	2021/05/07, 16:14:30	Subject	07/05/2021, 16:27:41	9f714f3f-0c02-4cbf-aa89-e7d75d83adc3@healthentia.com

Active	Created On (Browser Time)	Code	Used Slots	Email Only	Document	Action
✓	14/01/2021, 12:44:42	Interface	0/50	YES	Unavailable	🗑️
✓	20/10/2020, 11:03:52	FUGN4N	0/1	NO	-	🗑️
✓	20/10/2020, 11:03:52	WMESEH	0/1	NO	-	🗑️
✗	20/10/2020, 11:02:09	XV5BZ7	0/1	NO	-	🗑️

Figure 9 - Invite Subjects

Similarly, to the Email invitation above, the investigator can invite patients by providing them a code. Subjects can enter this code at the registration, even if they have not received an email. Once they register, they are automatically connected to that specific study only. They can be massively generated to use one per subject and or one can be used for all the subjects for the Study as seen in Figure 10

The screenshot shows the 'INVITATION CODES' page with a table of existing codes and a 'Generate Invitation Code(s)' modal form. The table has columns for Active, Created On (Browser Time), Code, Used Slots, Email Only, Document, and Action. The modal form has a 'No. of Codes' field and a 'Generate' button.

Active	Created On (Browser Time)	Code	Used Slots	Email Only	Document	Action
✓	14/01/2021, 12:44:42	Interface	0/50	YES	Unavailable	🗑️
✓	20/10/2020, 11:03:52	FUGN4N	0/1	NO	-	🗑️
✓	20/10/2020, 11:03:52	WMESEH	0/1	NO	-	🗑️
✗	20/10/2020, 11:02:09	XV5BZ7	0/1	NO	-	🗑️

Figure 10 - Invitation Codes

4.2 SUBJECT RECORD

In the Subject record, the portal user that has permissions to view or edit the patient details and view ePRO related data and measured activity can have access to the different tabs of information coming from different sources. They can even have the ability to complete questionnaires for them.

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Real World Outcomes

SUBJECT DETAILS

Basic Details | **Reported Events** | Questionnaires | Notifications | Measured Activity Analytics | Consent Actions

Show: 10

Event Title	Status	Submitted On (Browser Time)
PHQ-9	Completed	11/05/2021, 17:06:05
GAD-7	Completed	11/05/2021, 17:05:16
EQ-5D-3L	Completed	11/05/2021, 17:04:42

Showing 1 to 3 of 3 entries

CE Innovation Sprint
11/05/2021

Figure 11 - Subject Details

4.3 SUBJECT LIST

The subject's list gathers in a table all patients assigned in the specific study. The list table gives an overview of important elements like dates, Questionnaire adherence, tags, activity status and more.

Healthentia
Real World Outcomes

SUBJECT LIST

Filter by Tags: COVID19 POSITIVE, DOSE 1 COVIDVAX, DOSE 2 COVIDVAX, FEEDBACK, FITBIT TOKEN EXPIRED, HIGH COVID RISK, HIVSRQ SYMPTOM, LOW ADHERENCE, LOW COVID RISK, NOT SYNCED, PAZIENTE FRAGILE, PSYCHIATRIC SUPPORT, PSYCHOLOGICAL SUPPORT

Show: 50

Sr.No	Email	Subject id	Registration Date	Qrs Adherence	Tags	Activity Source	Status	Actions
1	f1f524ee-cf6a-4321-adf3-4aadae35bf08@healthentia.com	15096001	11/05/2021	0 / 6	PSYCHOLOGICAL SUPPORT	NoTracker	ENROLLED	
2	330d5182-7e49-4d6d-a7a4-81aac8a78e5a@healthentia.com	19254317	07/05/2021	0 / 3	DOSE 1 COVIDVAX, NOT SYNCED	Android	ENROLLED	
3	4f12da93-2c3f-4a9e-9996-c28be8f83fbc@healthentia.com	12296802	07/05/2021	0 / 7	PSYCHOLOGICAL SUPPORT, NOT SYNCED	AppleHealth	ENROLLED	
4	9b37ed2a-3b49-444d-8a94-6e26e7c8ddef@healthentia.com	24329179	07/05/2021	0 / 12	HIVSRQ SYMPTOM, PSYCHIATRIC SUPPORT, NOT SYNCED	AppleHealth	ENROLLED	
5	0b0ed1cb-c8ee-4568-85ee-dd729f69df33@healthentia.com	9524489	30/04/2021	0 / 7	FEEDBACK, DOSE 1 COVIDVAX, NOT SYNCED	AppleHealth	ENROLLED	
6	dd1ed84d-20b3-4481-a743-bda58102c22d@healthentia.com	12718649	17/04/2021	1 / 0		NoTracker	ENROLLED	

Figure 12 Subject list

4.4 TAGS & DYNAMIC ALERTS

In the section of Tags, we list all the tags available in the study as seen in Figure 13 to be used for grouping the patients in their entry in the system or depending on their answers in the questionnaires. These tags can be then attached to an Alert seen in Figure 14. All Alerts are featured in a table as seen in Figure 15. As in all sections of the portal all data are exportable to an excel file.

The screenshot shows the 'Tag Management' interface. At the top, there is a breadcrumb 'Home / Tag' and an 'Add Tag' button. Below this, there is a 'Show: 10' dropdown and an 'Export data to excel' button. The main content is a table with the following data:

Title	Created On	Status	Actions
e.g. Chronic	Created On	--Select--	Search, Filter
Acute	10/09/2018	INACTIVE	Edit, Delete
Chronic	08/09/2018	INACTIVE	Edit, Delete
Congenital	13/10/2018	ACTIVE	Edit, Delete
Diagnosed	08/09/2018	ACTIVE	Edit, Delete
language - DE	22/10/2018	ACTIVE	Edit, Delete
language - EN	22/10/2018	ACTIVE	Edit, Delete
Vertigo	15/11/2018	ACTIVE	Edit, Delete

At the bottom of the table, it says 'Showing 1 to 7 of 7 entries' and a pagination control showing '1'.

Figure 13 Tags List

CREATE DYNAMIC ALERT

Name: **Status:**

Portal Alert Message: (You can use [Shortid] to include recipient's Short id in your message)

Push Notification Message:

Email List: (Enter emails separated by spaces or commas)

Email Message: (You can use [Shortid] to include recipient's Short id in your message)

API Endpoint to Call: **API Alert Codename:**

Tags to Apply:

Figure 14 - Create New Alert

Title	Web Alert	Push Alert	Email Alert	API Call	Apply Tag	Status	Actions
COVID-19 POSITIVE	✓	✗	✗	✗	✓	ACTIVE	✉ 🗑
DOSE 1 COVIDVax	✗	✗	✗	✗	✓	ACTIVE	✉ 🗑
DOSE 2 COVIDVax	✗	✗	✗	✗	✓	ACTIVE	✉ 🗑
FEEDBACK	✓	✗	✗	✗	✓	ACTIVE	✉ 🗑
Frailty Alert	✓	✗	✗	✗	✓	ACTIVE	✉ 🗑
HIGH COVID risk	✓	✓	✗	✗	✓	ACTIVE	✉ 🗑
HIVSRQ symptom	✓	✗	✗	✗	✓	ACTIVE	✉ 🗑
Low Adherence	✓	✓	✗	✗	✓	ACTIVE	✉ 🗑
LOW COVID risk	✓	✓	✗	✗	✓	ACTIVE	✉ 🗑
Psychiatric support	✓	✗	✗	✗	✓	ACTIVE	✉ 🗑

Figure 15 - Dynamic Alerts List

4.5 ALERTS DASHBOARD

The Alerts are shown in a separate Dashboard where the portal user has an overview of what tags are allocated and whether a patients requires an immediate action or has low adherence in his reporting of questionnaires.

Triggered On (Browser Time)	Subject Id	Alert Message	Tag	Manager
21/04/2021, 14:21:27	20575866	Patient 20575866 needs psychological support	PSYCHOLOGICAL SUPPORT	Giulia Micheli
20/04/2021, 16:30:02	14455901	Subject 14455901 has «Questionario sulla Salute - EQ-5D-3L» as pending		Giulia Micheli
18/04/2021, 16:30:01	04588190	Subject 04588190 has «Questionario sulla Salute - EQ-5D-3L» as pending		Giulia Micheli
18/04/2021, 13:15:19	14455901	Patient 14455901 is identified as FRAIL	PAZIENTE FRAGILE	Giulia Micheli
18/04/2021, 13:12:09	14455901	Subject 14455901 has an HIVSRQ symptom alert	HIVSRQ SYMPTOM	Giulia Micheli
17/04/2021, 19:19:56	03806999	Patient 03806999 needs psychological support	PSYCHOLOGICAL SUPPORT	Giulia Micheli
17/04/2021, 16:30:02	03806999	Subject 03806999 has «Questionario sulla Salute - EQ-5D-3L» as pending		Subject answered the questionnaire.
15/04/2021, 16:30:01	15929649	Subject 15929649 has «Questionario sulla Salute - EQ-5D-3L» as pending		Giulia Micheli
10/04/2021, 09:10:41	11294295	Patient 11294295 needs psychological support	PSYCHOLOGICAL SUPPORT	Cristina Seguiti

Figure 16 - Alerts Dashboard

4.6 DYNAMIC LISTS

The Dynamic lists are used to group patients in a dynamic way. We create grouping requirements and patients are added automatically in a list when they meet the criteria. The attributes of patients that can be used as criteria for filtering the patient list are status, screening, termination or treatment switch date and even using tags that are explained below. As in all sections of the portal all data are exportable to an excel file, as presented in Figure 17.

DYNAMIC LISTS Add Dynamic List

Show: 10 Export

Sr.No	Title	Description	Created On	Status	Actions
	<input type="text" value="e.g. Subjects"/>	<input type="text" value="e.g. Description"/>	<input type="text" value="Created On"/>	<input type="text" value="--Select--"/>	<input type="text" value=""/>
1	test		05/03/2021	ACTIVE	<input type="text" value=""/>

Showing 1 to 1 of 1 entries 1

Figure 17 Dynamic List table

Dynamic List Detail (Edit Mode)

Home / Dynamic List / Edit

Query Title: Status:

Query Description:

Query Criteria

Patient Attributes

Status: Gender: Screening Date: Study Completion Date:

Weight(kg): Height(cm): Day of treatment switch:

Treatment A: Treatment B:

Filter Patient By Tags:

Figure 18 - Dynamic list details

5 NOTIFICATIONS

5.1 NOTIFICATION LOG

In the section of Notifications, we can see all communication sent by the system to patients, we can create instant notifications or scheduled. All notifications are listed by date in the Notification List and you have an overlook of the content of these notifications and if their type. As in all sections of the portal all data are exportable to an excel file, as presented in Figure 19.

NOTIFICATION LOG

Show: 10 Export Clear Search Filters

Description	Type	Content	Recipients	Sent On (User Time)	Sent On (Your Time)
e.g. Monthly Reminder	-- Select --			24/05/2021	24/05/2021
Treatment Reminder	Treatment Reminder	View Content	View Recipients (1)	24/05/2021, 14:24:09	24/05/2021, 15:24:09
Severity Alert	Severity Alert	View Content	View Recipients (1)	24/05/2021, 13:05:33	24/05/2021, 14:05:33
Treatment Reminder	Treatment Reminder	View Content	View Recipients (1)	24/05/2021, 09:30:07	24/05/2021, 10:30:07
Treatment Reminder	Treatment Reminder	View Content	View Recipients (1)	24/05/2021, 09:00:01	24/05/2021, 10:00:01
Treatment Reminder	Treatment Reminder	View Content	View Recipients (1)	24/05/2021, 08:01:05	24/05/2021, 09:01:05
Treatment Reminder	Treatment Reminder	View Content	View Recipients (1)	23/05/2021, 21:30:14	23/05/2021, 22:30:14
Treatment Reminder	Treatment Reminder	View Content	View Recipients (1)	23/05/2021, 09:30:06	23/05/2021, 10:30:06
Treatment Reminder	Treatment Reminder	View Content	View Recipients (1)	23/05/2021, 09:00:15	23/05/2021, 10:00:15
Treatment Reminder	Treatment Reminder	View Content	View Recipients (1)	23/05/2021, 08:01:29	23/05/2021, 09:01:29
Treatment Reminder	Treatment Reminder	View Content	View Recipients (1)	22/05/2021, 21:30:12	22/05/2021, 22:30:12

Showing 1 to 10 of 6,261 entries 1 2 3 4 5 ... 627

Figure 19 - Notification Log

5.2 INSTANT NOTIFICATIONS

Instant Notifications are the ad hoc messages that the investigator can send to a patient that hold a simple message or accompany a questionnaire. You can select individual recipients for the notification from the full subject list or filter by using tags or Dynamic Lists as seen in Figure 20.

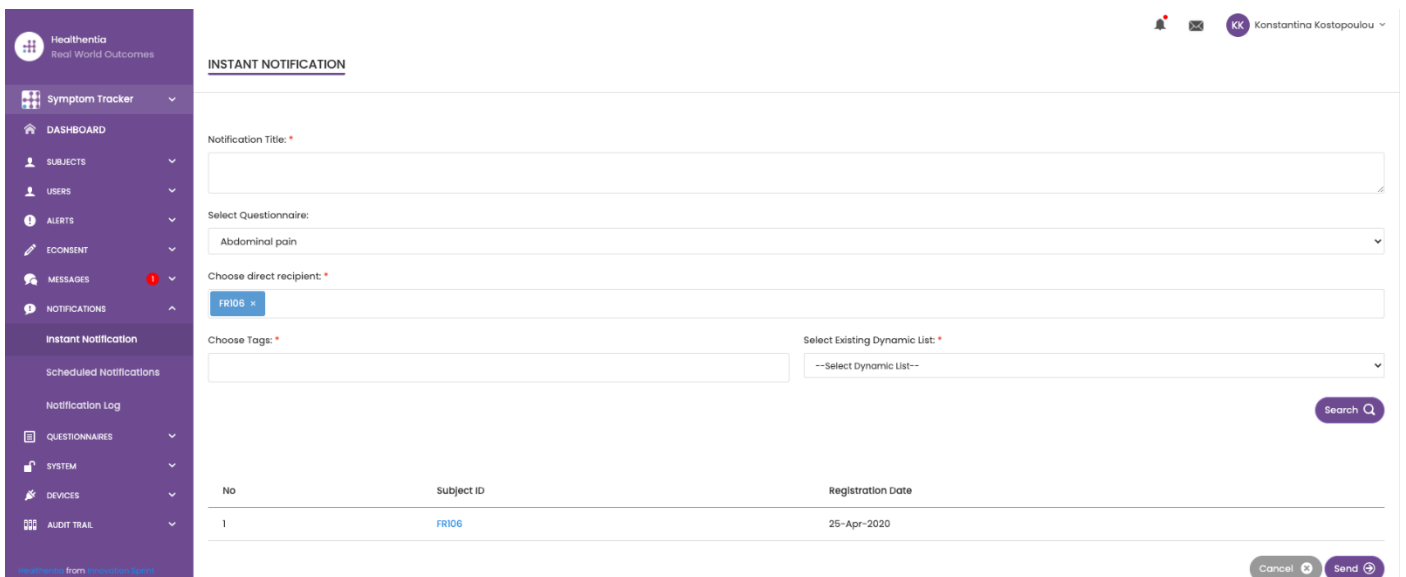


Figure 20 - Instant Notification

5.3 SCHEDULED NOTIFICATIONS

Scheduled notifications are the ones that are created in the beginning of the study and are used to schedule the questionnaires to be sent to a group of recipients based on a filtering by tags or dynamic lists or to the whole list.

The scheduling of a notification can be done based on a regular Date with a Daily, weekly or Monthly interval sent once at a specific time or recurring. The system also allows the coordinator to send notifications based on the protocol’s specific dates and X days before or after these days. You can see the Notifications List at Figure 21 and the New Scheduling Notification at Figure 21

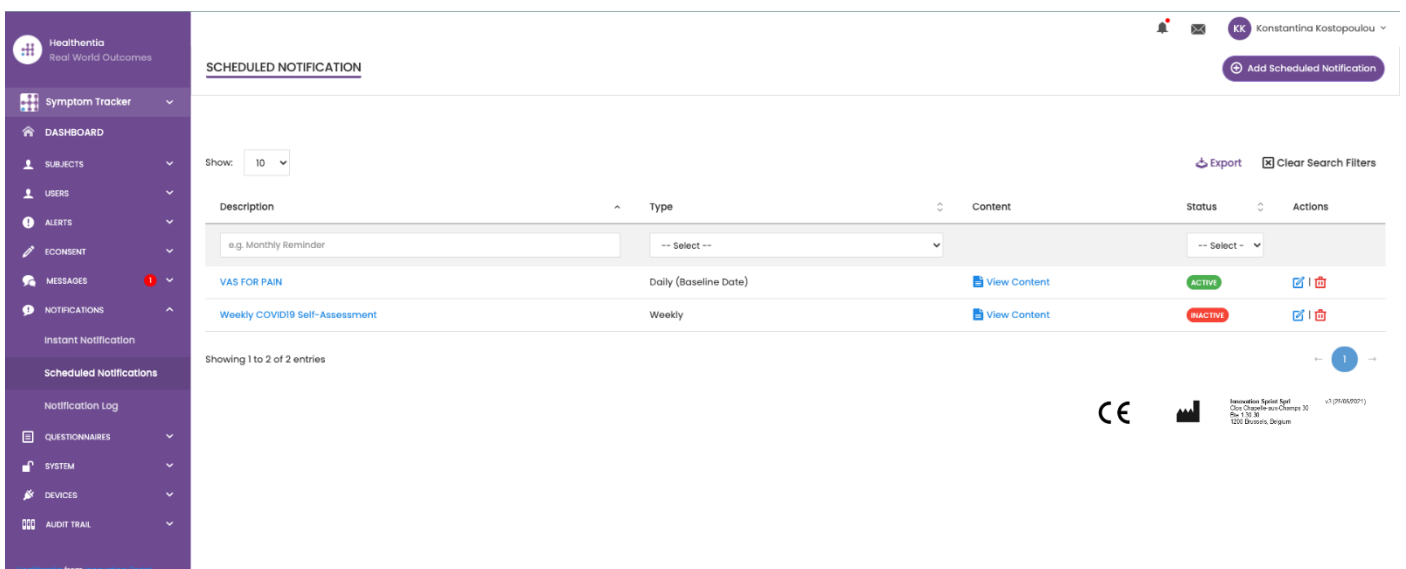


Figure 21 - Scheduled Notifications

Healthentia
Real World Outcomes

Symptom Tracker

DASHBOARD

SUBJECTS

USERS

ALERTS

ECONSENT

MESSAGES

NOTIFICATIONS

QUESTIONNAIRES

SYSTEM

DEVICES

AUDIT TRAIL

EDIT SCHEDULED NOTIFICATION

Description: * VAS FOR PAIN Status: Active

Schedule Type:
 Regular By Baseline Date

Frequency: Daily by Baseline Date End repeat: After Repeat these many times: 10

Recipient Tags: George

Questionnaires: Muscle Pain

Message (Individual Notification):

Schedule Type:
 Regular By Baseline Date

Frequency: Daily End repeat: Never

Cancel Edit

CE ISO 13485:2015

Healthentia - System Build
Client: Constantine Mouton
Date: 11/12/2019
12:00 Brussels, Belgium v1 (25/08/2019)

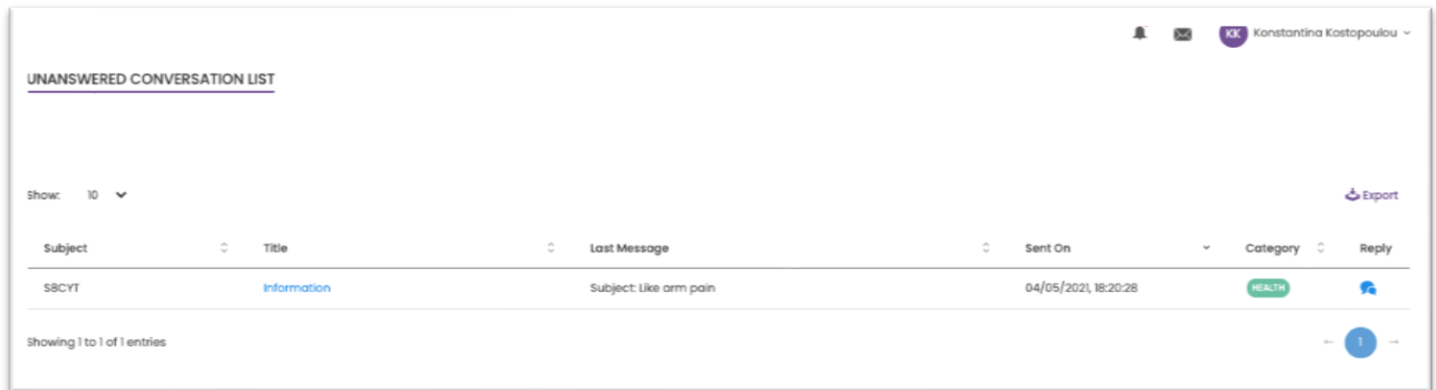
Figure 22 - New Scheduled Notification

6 MESSAGES-TELECONSULTATION

6.1 MESSAGE INBOX

End-users of the mobile app if the feature is enabled they can send a Message to the Investigator/study assistant and start a conversation. If needed the investigator can start a teleconsultation video link that will be valid for 15 minutes. See inbox in Figure 23 and the conversation in Figure 24.

Figure 24.



The screenshot displays a mobile application interface for a message inbox. At the top right, there is a notification bell icon, a WhatsApp icon, and a user profile for 'Konstantina Kostopoulou'. Below this is a section titled 'UNANSWERED CONVERSATION LIST'. A 'Show: 10' dropdown menu is visible. An 'Export' button is located in the top right corner of the list area. The list contains one entry with the following details:

Subject	Title	Last Message	Sent On	Category	Reply
SBCYT	Information	Subject: Like arm pain	04/05/2021, 18:20:28	HEALTH	

At the bottom left, it says 'Showing 1 to 1 of 1 entries'. At the bottom right, there is a blue circular button with the number '1' and arrows, indicating the total number of items in the list.

Figure 23 - Message Inbox

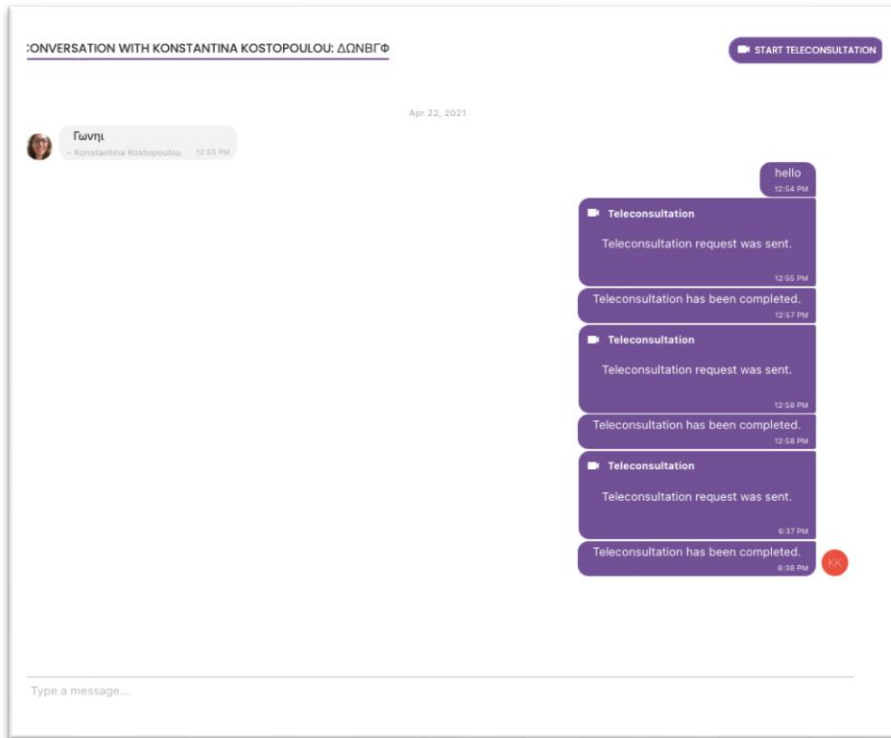


Figure 24 - Message conversation

6.2 TELECONSULTATION

If needed, the investigator can start a teleconsultation video link that will be valid for 15 minutes, as shown in the Figure below.

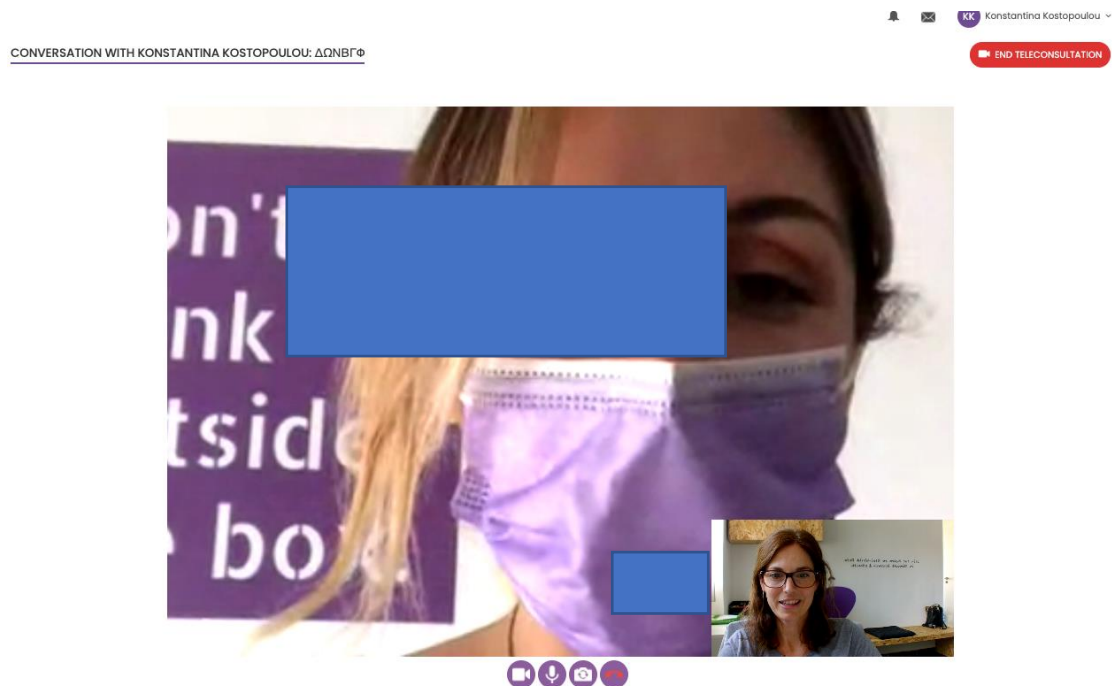


Figure 25 – Teleconsultation

7 ECONSENT

7.1 ECONSENT

If the trial has an active eConsent, the eConsent is triggered by the Healthentia app after the user has registered and agreed with the Terms of the Healthentia application. Each eConsent form must have a unique Version and a unique Title in the context of this study or site (in case of multicenter trials). When creating or editing an eConsent form, users with the appropriate permission shall be able to: (1) add a plain text field to write the "Terms" of the eConsent Form; (2) add a plain text field to write the "Introduction" of the eConsent form; (3) upload a url from a video streaming provider to the eConsent form; and (4) define a Status. An eConsent setup has three status: "draft", "active" and "inactive". While in "draft" mode, the eConsent is editable. Once the investigator changes its status to "active", the eConsent is locked and no longer editable. The "inactive" status is given to eConsent forms that are no longer active but that have been signed at least by one study participant. See Figure 26 and Figure 27.

The screenshot shows the 'E-CONSENT' management interface. On the left is a purple sidebar with navigation items: Symptom Tracker, Dashboard, Deep Phenotyping, SUBJECT MANAGEMENT, PROUSFIT MANAGEMENT, NOTIFICATION MANAGEMENT, QUESTIONNAIRE MANAGEMENT, USER MANAGEMENT, INVITATIONS MANAGEMENT, and LOG ARCHIVE. The main content area has a header with 'E-CONSENT' and an 'Add Econsent form' button. Below the header is a table with the following data:

Title	Version	Files	Questions	Status	Actions
<input type="text" value="e.g. wconsent title"/>				-- S/D --	
OncoTria - Pancreatic Cancer Patient monitoring using tracking technologies for Quality of Life assessment	1			Active	

Below the table, it says 'Showing 1 to 1 of 1 entries'. At the bottom right, there is a CE mark and a small logo for Innovation Sprint.

Figure 26 - eConsent list

Figure 27 - eConsent configuration

The process of signing an eConsent form can only be completed after a mobile app user has verified his identity providing a code received via email or mobile phone. Once the participant has signed the eConsent, a pdf document is created with the name, date and signature of the participant on top of the Terms plain text. The pdf document created after the participant signed the eConsent is saved in the Healthentia Patient documents with type "consent". Once the participant has signed the eConsent, the tag of the eConsent in the subject list changes from "not started" to "requires signature".

ID	Email	Subject ID	Consent Info	Version	Consent Date	Comprehension	Status	File
1	0007766-0470-0993-8611-03648480@healthentia.com	40749	OK/OK/OK - PENDING	1			Needs	
222	0001108-0430-0806-8611-07646102@healthentia.com	40749	OK/OK/OK		10/7/2020		Completed	
2	0200786-0412-0779-0628-03648480@healthentia.com	40749	OK/OK/OK - PENDING	1			Needs	
3	0001807-0970-0106-8611-06520042@healthentia.com	07600	OK/OK/OK - PENDING	1			Needs	
4	0200066-0401-0250-8611-03232005@healthentia.com	07600	OK/OK/OK - PENDING	1			Needs	
5	0001076-0201-0776-0504-03648480@healthentia.com	40749	OK/OK/OK - PENDING	1			Needs	
6	0001080-0430-0806-8611-06520042@healthentia.com	07600	OK/OK/OK - PENDING	1			Needs	
7	0724036-0402-0400-0628-03648480@healthentia.com	07600	OK/OK/OK - PENDING	1			Needs	
8	0007609-0318-0415-8611-06520042@healthentia.com	27600	OK/OK/OK - PENDING	1			Needs	
9	0001802-0430-0806-8611-06520042@healthentia.com	40749	OK/OK/OK - PENDING	1			Needs	
10	0001076-0201-0776-0504-03648480@healthentia.com	07600	OK/OK/OK - PENDING	1			Needs	
11	0001080-0430-0806-8611-06520042@healthentia.com	07600	OK/OK/OK - PENDING	1			Needs	
12	0001076-0201-0776-0504-03648480@healthentia.com	07600	OK/OK/OK - PENDING	1			Needs	
13	0007609-0318-0415-8611-06520042@healthentia.com	07600	OK/OK/OK - PENDING	1			Needs	
14	0001076-0201-0776-0504-03648480@healthentia.com	07600	OK/OK/OK - PENDING	1			Needs	
15	0001080-0430-0806-8611-06520042@healthentia.com	07600	OK/OK/OK - PENDING	1			Needs	

Figure 28 - eConsent PDF list

8 QUESTIONNAIRES

8.1 QUESTIONNAIRE LIST

The portal allows the study coordinators to create a questionnaire with different question types but also allows the questionnaire to be uploaded from a specified excel file. These questionnaires are then sent to the patient through a notification. In the Questionnaire management one can see the list of available questionnaires in the study and the number of questions that each has as well as their status and date created. As in all sections of the portal all questionnaires can be exportable to an excel file.

Title	Codename	Kind	No. of Questions	Types	Created On	Status	Actions
e.g. Diabetic Questionnaire	e.g. Q_MUSCLES	-- Selec	e.g.11	e.g. Initial	02/10	--Select	Q I
Abdominal pain	ISPRINT_ABDPAIN	Simple	1	ADD-EVENT-LIST	26/03/2020	ACTIVE	I I
Add or take photo		Simple	1	ADD-EVENT-LIST	24/04/2020	ACTIVE	I I
Body temperature	ISPRINT_FEVER	Simple	1	ADD-EVENT-LIST	18/03/2020	ACTIVE	I I
Cough	ISPRINT_COUGH	Simple	2	ADD-EVENT-LIST	18/03/2020	ACTIVE	I I
Diarrhea	ISPRINT_DIARRHEA	Simple	1	ADD-EVENT-LIST	26/03/2020	ACTIVE	I I
Difficulty of breathing	ISPRINT_OBREATH	Simple	1	ADD-EVENT-LIST	26/03/2020	ACTIVE	I I
eConsent comprehension Assessment	eCONSENT	Simple	2	ECONSENT QUESTIONNAIRE	16/02/2021	ACTIVE	I I
Emotional State		Simple	1	ADD-EVENT-LIST	06/05/2020	ACTIVE	I I
Fatigue	ISPRINT_FATIGUE	Simple	1	ADD-EVENT-LIST	18/03/2020	ACTIVE	I I
Headache	ISPRINT_HEADACHE	Simple	1	ADD-EVENT-LIST	26/03/2020	ACTIVE	I I
Initial Questionnaire	ISPRINT_COVID19	Simple	11	INITIAL	16/03/2020	ACTIVE	I I

Figure 29 Questionnaire Management

When creating a new one you define the title and questionnaire type (select from a list created by the admin) and upload a characteristic image for it if you want it to be shown on the app and start adding the questions one by one. In the question options you can choose from a variety of UI controls like if the question is a single, multiple, entry text or slider bar as presented in Figure 30.

VIEW QUESTIONNAIRE

Title (EN): Title (IT): Codename:

Types: Status:

Upload Image: Color: Description:

No file chosen

QUESTION LIST

No	Code	Question	UI Control	Routing	Actions
1	COUGH	Do you have a cough?	Single Choice	<input type="button" value="Options Routing"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
2	COUGH_TYPE	Define your cough type:	Single Choice	<input type="button" value="Options Routing"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Figure 30 - Simple Questionnaire Details

VIEW COMPOSITE QUESTIONNAIRE

Title (IT): Codename:

Types: Status:

Upload Image: Color: Description:

No file chosen

QUESTIONNAIRE ROUTING

- Send Questionnaire: IF All the following conditions are met:
 - AND
 - THEN: Send Questionnaire: Continue:
 - Send Questionnaire: Continue:
 - Send Questionnaire: End Questionnaire
- ELSE: New Condition: IF All the following conditions are met:
 - AND
 - THEN: Send Questionnaire: Continue:
 - Send Questionnaire: End Questionnaire
- ELSE: New Condition: IF All the following conditions are met:
 - AND
 - THEN: Send Questionnaire: Continue:
 - Send Questionnaire: End Questionnaire
 - ELSE: Send Questionnaire: End Questionnaire

innovation sprint team
Clara Chagnon - Jean-Champs 30
1050 Brussels, Belgium

Figure 31 - Composite Questionnaire

9 USERS

9.1 ROLES & PERMISSIONS

This section is used by the admin to create the main roles and their permissions in the portal sections. Permissions can be configured for viewing, editing and delete, as depicted in Figure 32.

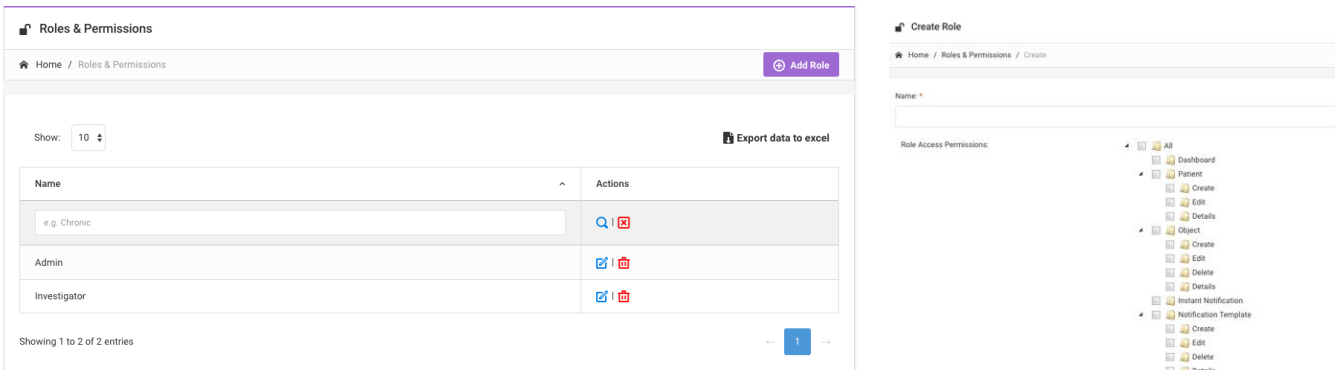


Figure 32 Role Management and Add new Role

9.2 USER LIST

In the users list you can find all the portal users that are assigned in the study. The study admin can create or invite new users or assign existing ones to a specific study with a permission role. The user provides the email of an investigator that triggers an auto generated email to that email. Upon receipt, investigators need to confirm the email and follow a registration. This list can be then exported to an excel, as depicted in Figure 33.

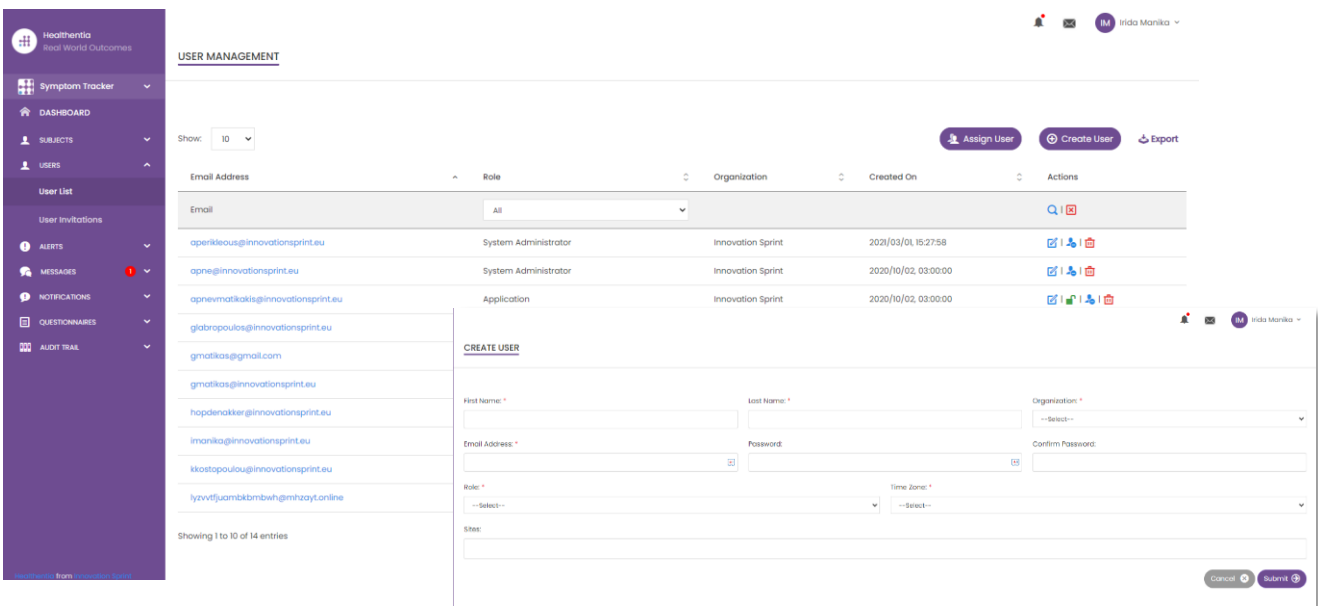


Figure 33 User Management and User Creation

10 AI MODULE

10.1 DEEP PHENOTYPING

Further to the currently supported features of Healthentia, i.e. collecting data from patients and making it available to an EDC for further statistical evaluation, the wealth of information collected is used in real time by the Healthentia AI/ML module to create clusters of patients' phenotypes and provide useful insights for clinical endpoints. Based on the patients' vector data, we create behavioural phenotype models and we cluster patients' profiles into them. Using the clustering mechanism, we can characterise patients' habits and detect deviations from them to generate alarms. The clustering of patients into behavioural phenotypes creates a valuable content to associate them with drug efficacy and support the self-configured adaptive trials. Finally, AI/ML algorithms can train models to predict outcomes, e.g. VAS, QoL, bleedings, falls, before the patients report them, by feeding the system with the automatically collected vectors.

10.2 PREDICTION SERVICES

The deep phenotyping process described in the previous section, enables a number of forecasting services, among them the ability to predict study endpoints, or behavioural biomarkers. In Figure 34, one can see how activity patterns are recognized and characterized, while the system is able to provide predictions or alarms.

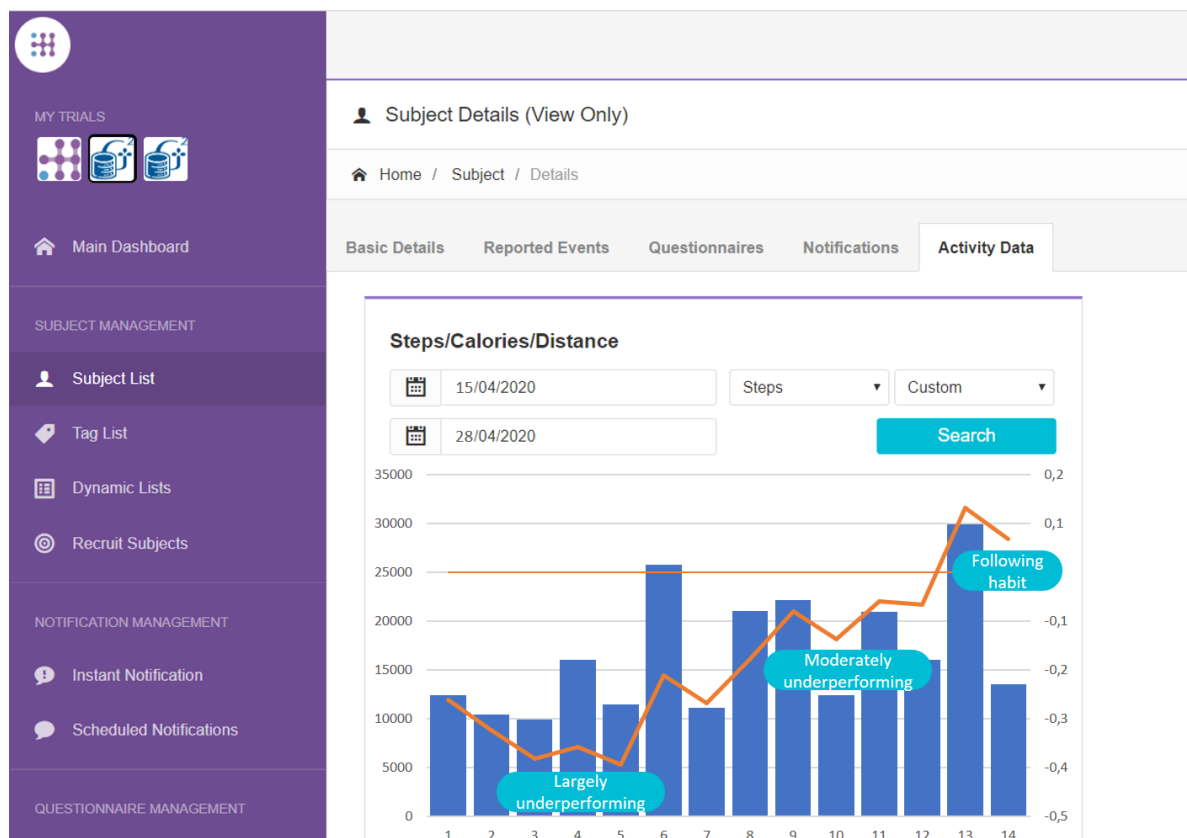


Figure 34: Activity patterns for specific subject

Further to the patten detections, the system uses AI/ML algorithms to break down the distribution of several behavioral biomarkers and evaluate their prediction capacity; see Figure 35 and Figure 36.

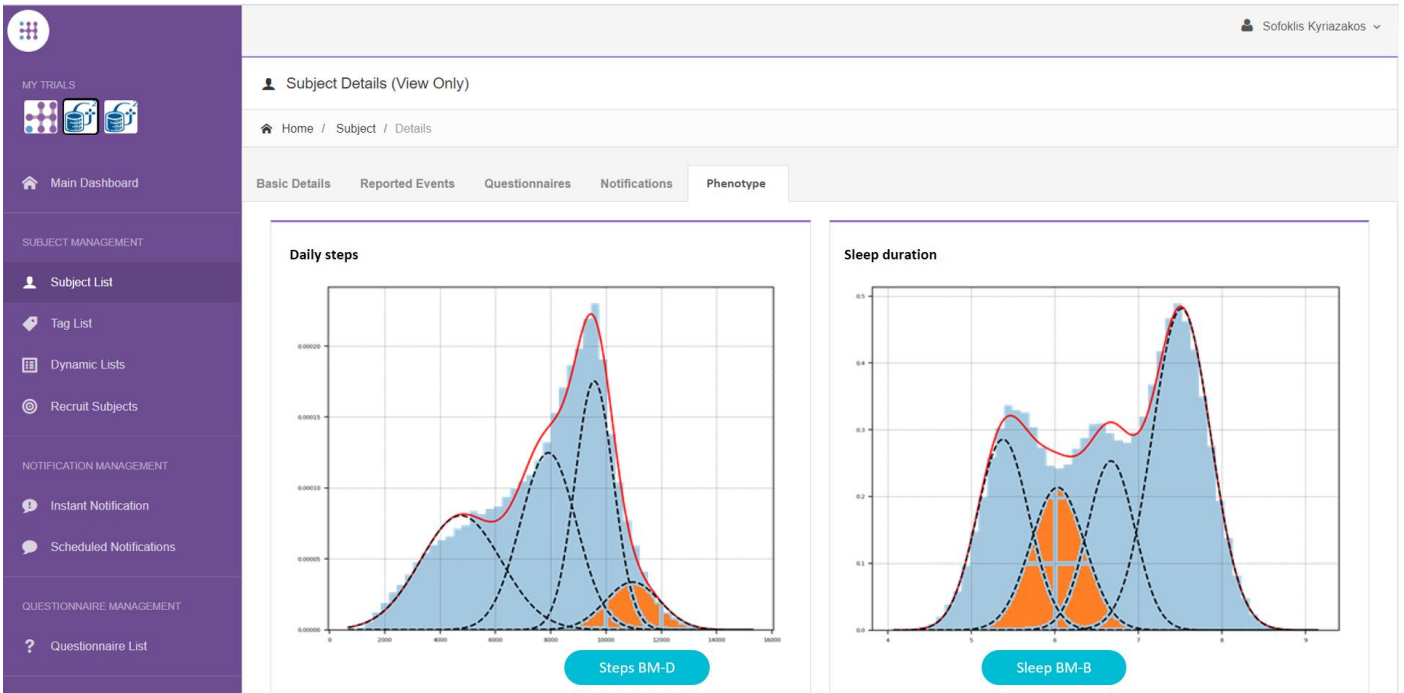


Figure 35: Distribution of activity biomarkers

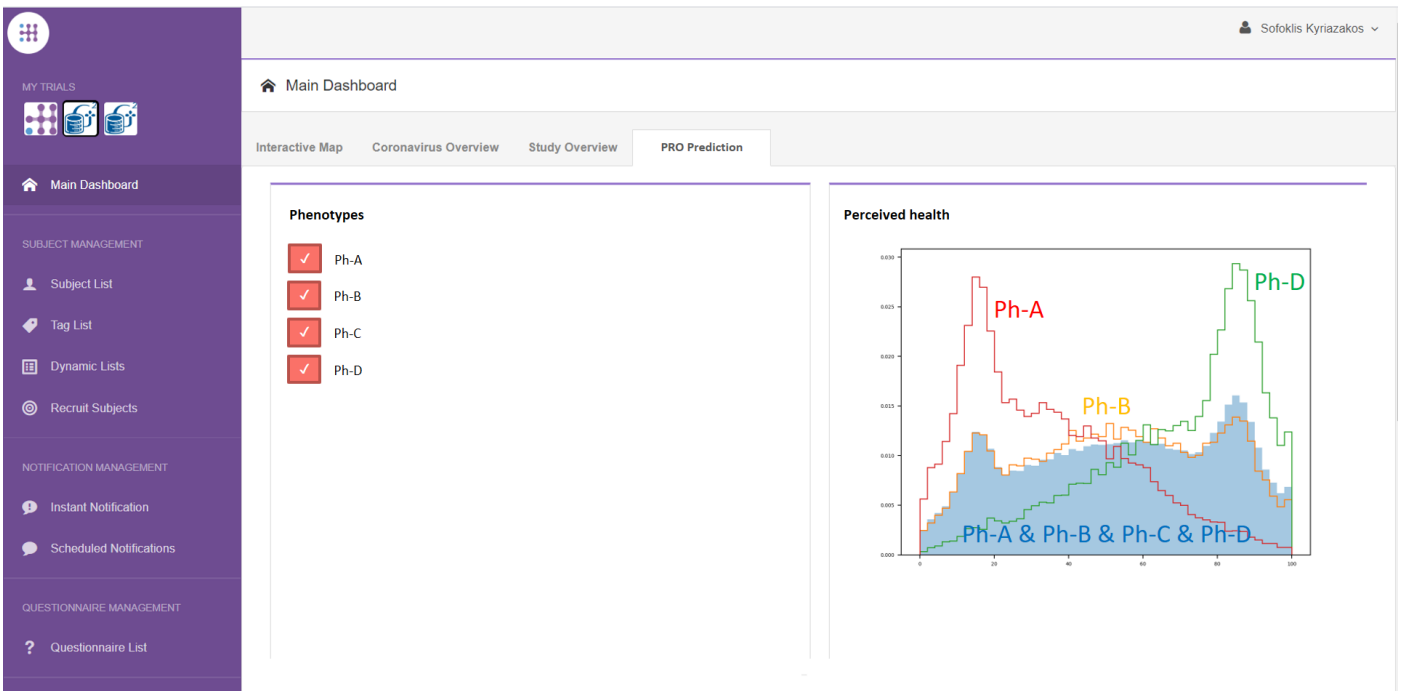


Figure 36: Prediction capabilities of behavioral phenotypes

11 AUDIT TRAIL

11.1 PORTAL LOG

In the section of Log Management all actions that users do from viewing to editing or deleting. The log list of actions can be filtered by date from the top of the page, while each column on the table allows the search for a specific result. You can also sort by alphabetic or numeric order per column. When viewing the log details you can get more information on the reported action. As in all sections of the portal all data are exportable to an excel file.

PORTAL LOG

Show: 10

Email	Role	Description
gmatikas@innovationsprint.eu	System Administrator	Logout by: gmatikas@innovationsprint.eu on 19/05/2021 18:31:40.
gmatikas@innovationsprint.eu	System Administrator	View Details of Subject Id:5C9AA by: gmatikas@innovationsprint.eu on 19/05/2021 18:34:17.
gmatikas@innovationsprint.eu	System Administrator	View List of Subject by: gmatikas@innovationsprint.eu on 19/05/2021 18:34:15.
gmatikas@innovationsprint.eu	System Administrator	View List of Subject by: gmatikas@innovationsprint.eu on 19/05/2021 18:34:14.

Showing 11 to 20 of 218 entries

Log Details

Home / Log / Details

Email: palak@evincedev.com Role: Admin

Action Performed: View Details of Patient Time Stamp: 05/12/2018 10:11:01

Description: View Details of Patient Id:14c0cb00-1e49-4d00-8231-01c30fd3e158 by: palak@evincedev.com on 05/12/2018 10:11:00.

Figure 37 Log Management & Details

11.2 APPLICATION LOG

The application log, provides information about the actions of the subjects, e.g. their participation in questionnaires, as shown in Figure 38

Application Log

Home / Application Log

Show: 10

Clear Search Filters Export data to excel

Subject ID	Description	Log Type	Timestamp
6CEFC	Initial COVID-19 Assessment	Questionnaire	27/04/2020, 17:36:24
HTAXF	Abdominal pain	Questionnaire	27/04/2020, 15:08:36
HTAXF	Diarrhea	Questionnaire	27/04/2020, 15:08:30
HTAXF	Nausea	Questionnaire	27/04/2020, 15:08:24
HTAXF	Muscle Pain	Questionnaire	27/04/2020, 15:08:19
HTAXF	Headache	Questionnaire	27/04/2020, 15:08:04
HTAXF	Fatigue	Questionnaire	27/04/2020, 15:07:51
HTAXF	Difficulty of breathing	Questionnaire	27/04/2020, 15:07:39
HTAXF	Cough	Questionnaire	27/04/2020, 15:07:31
HTAXF	Oxygen saturation	Questionnaire	27/04/2020, 15:07:23

Showing 1 to 10 of 942 entries

Figure 38 Application Log Details