



## WORKFLOW

*HEALTH PORTAL/ user: DOCTOR*

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## 1 LOGIN

Login page (common for all users) – not yet integrated in existing open page – this is just an informative example

HTTP authentication:

Username: **ahm-platform**

password: ahm-project

LOGIN:

username: **user-test**

password: **testing**

*Comment 1:* User has been previously registered on the portal as a doctor and has been given a user name and password.



*Figure 1:* As a doctor I can login to the portal by entering username data.

## 2 DASHBOARD/ Homepage

When doctor logs in Dashboard page opens.

Dashboard varies depending of the user and its role. This presentation is based on the workflow of a doctor.

So at this stage we will present Doctor's Dashboard with following features:

- Patient search,
- List of My recent patients (last viewed patients),
- E-learning,
- Inbox (not yet integrated – this is just an informative example).

Upper pane of the Dashboard (called Header or main navigation bar) contains:

- AHM logo| links to Dashboard page,
- Dashboard icon (button)| links to Dashboard page,
- Inbox icon (button)| links to Inbox ((not yet integrated – this is just an informative example),
- Patients icon (button)|opens Patient list view with no patients in the list,
- Second opinion| links to Second opinion page (not yet integrated – this is just an informative example),
- ICT map (will be integrated within AHM open pages – this is just informative example for demo use).
- Profile|consists of user's name and role, including user's photo and drop down menu with log-out btton (logs user out and redirects user to login page).

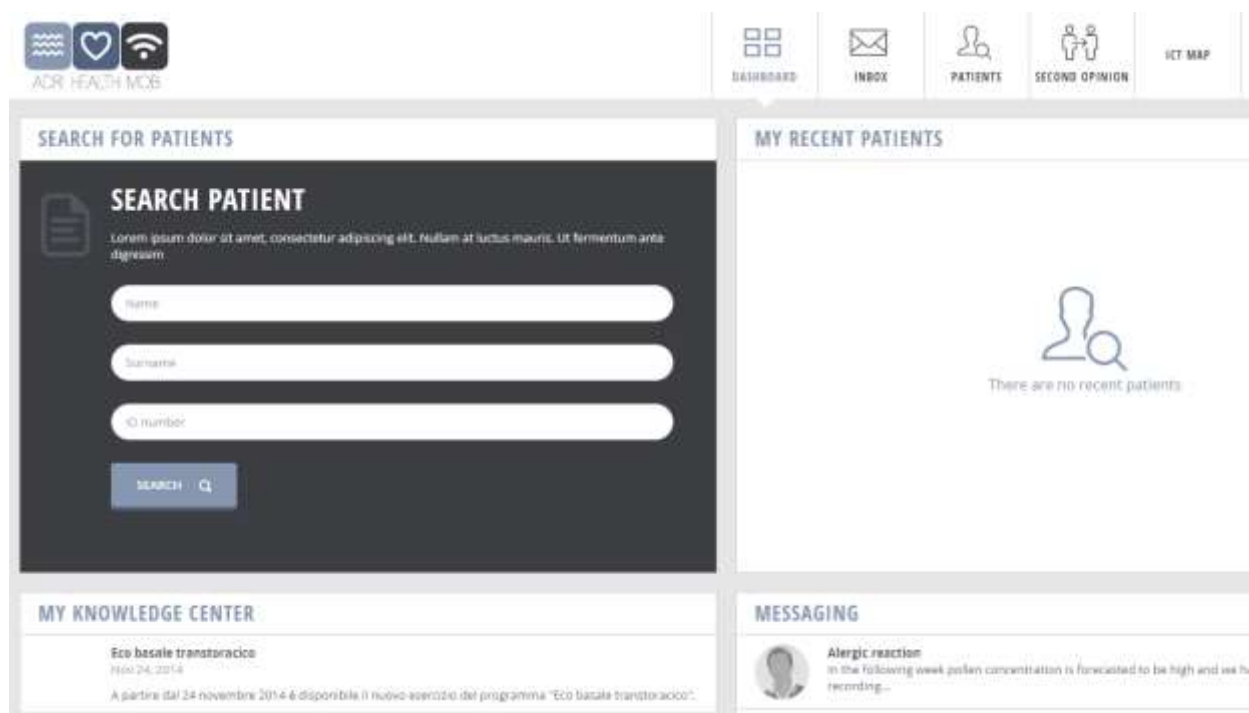


Figure 2: Dashboard.

## 2.1 ICT based map

The ICT based map:

- uses Google maps API to display locations;
- it requires a predefined xml file with medical clinic/pharmacy (in this demo demonstration of some pharmacies and clinics for Lecce are available):
- Example:
  - Pharmacies (Farmacia Del Duomo Di Greco Dr. Francesco, Farmacia Galizia, Farmacia Del Popolo Lolli and Farmacia Casciaro Di Paolo Dr. Casciaro)
  - Medical clinics (Centro Profilassi dei Viaggiatori, Domus Medica, Fisioterapia Campanella, Casa Di Cura Petrucciani)

**Wherein:**

- user can define its location by using GPS;
- User can search for a medical clinic/pharmacy by typing a name, address or city in the input field;
- User can use advanced filtering to get results for only the selected type (medical clinic or pharmacy)
- User can adjust and zoom in/out of the view.

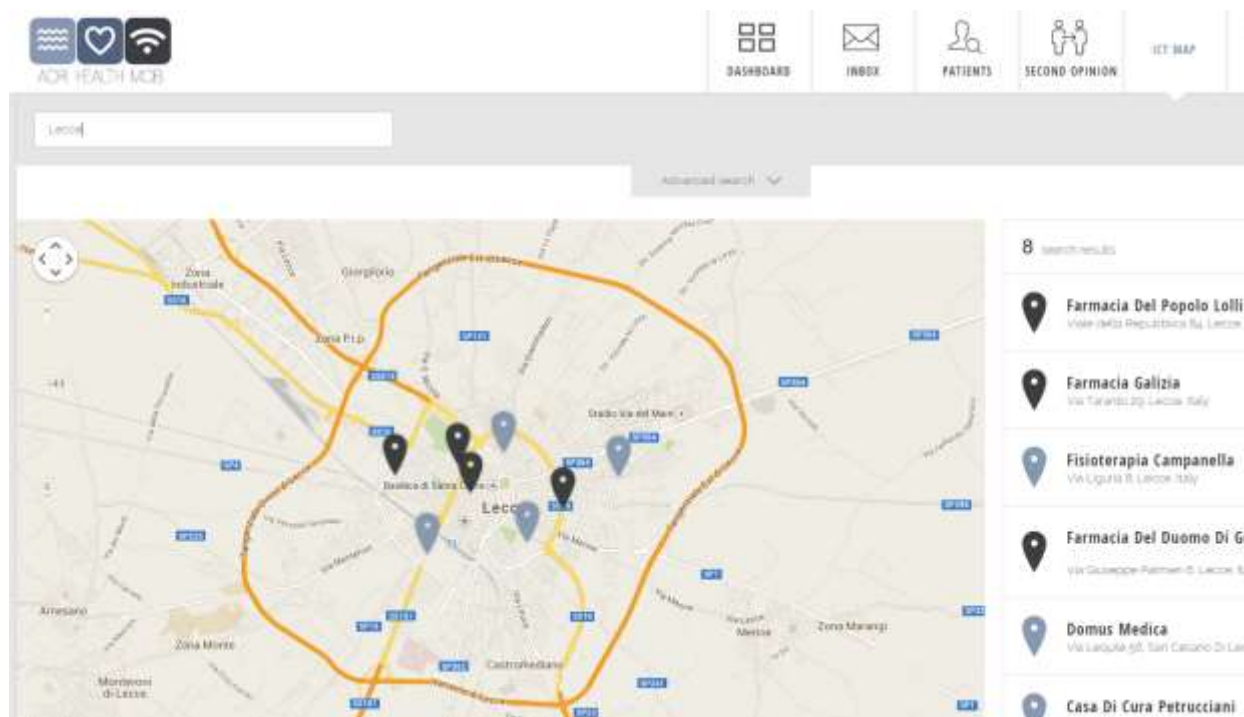


Figure 3: ICT based map – Web application (simple search)

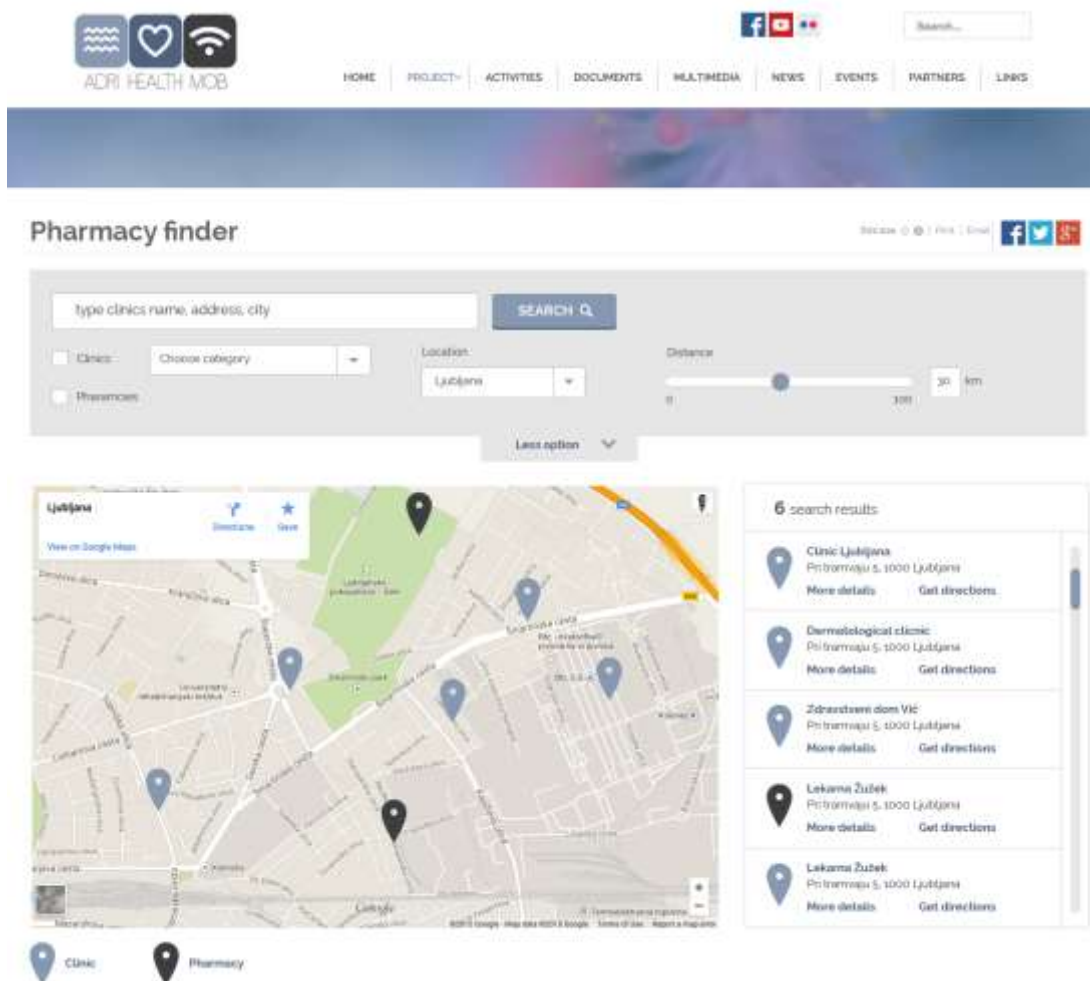


Figure 4: ICT based map – Web application (advanced search)


## 2.2 Patients search

- ➔ As a doctor I can choose one patient from My recent patients list ;  
*Comment:* there is a maximum of 10 recently viewed patients. If there are no recently viewed patients, the list is empty and the user can see »No recent patients data« message.  
 If you click the button »View« Patient Overview page of the selected patient opens.
- ➔ As a doctor I can search for patients;  
*Comment:*
  1. User enters Oliver. Search results page is loaded with list of patients in the result table containig all Olivers on the portal.

### SEARCH FOR PATIENTS

## SEARCH PATIENT

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nullam at luctus mauris. Ut fermentum ante dignissim

### MY RECENT PATIENTS

Figure 5: Search engine for patients



### 3 PATIENTS

Page Patients opens displaying patient list (names starting with a letter O).

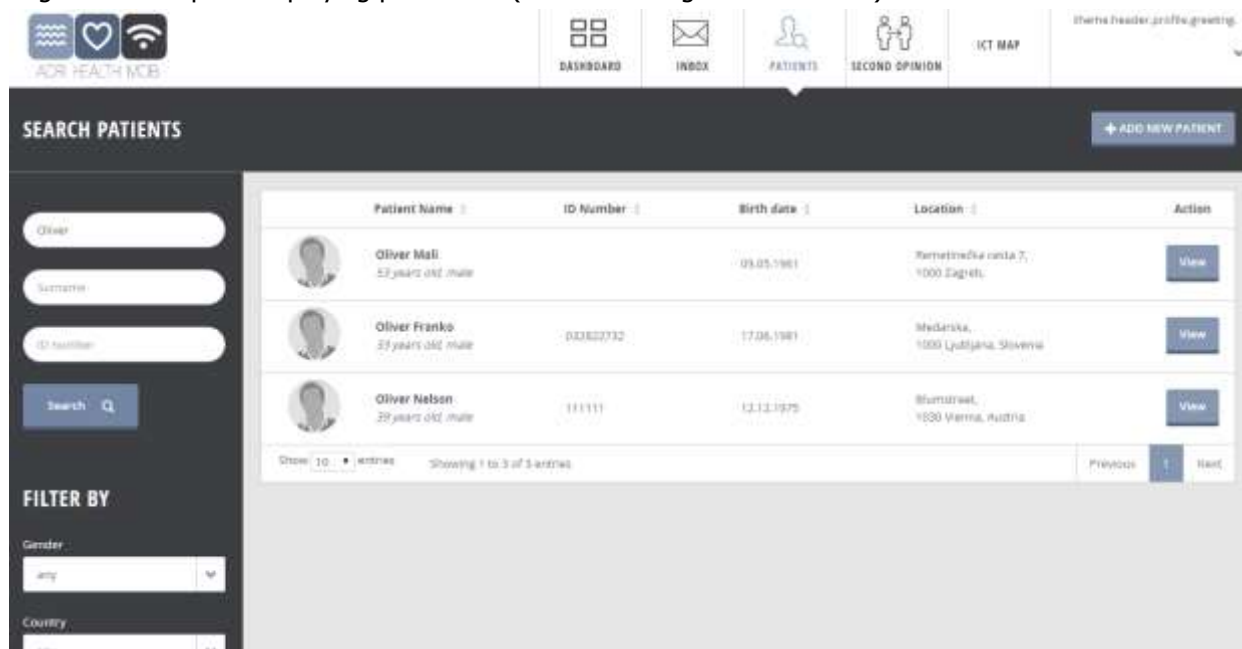


Figure 6: List of patients (as a search result of Oliver input)

After performing search query user can choose to display number of entries of a single page (10, 25, 50 or 100). Defined number of entries is displayed. If more than one page, pagination appears.

➔ filtering search results;

User can either sort results by clicking the column title above the list (data descending or ascending) or using filter fields to narrow the displayed data.

This could be done by selecting pre-set drop downs or by typing additional key words in search fields (without clicking the »Search« button.)

When clicking »Reset filters« all selections are un-done and there is no filter selected.

If user clicks »Search« button again, new search query with new search parameters is conducted.

➔ Selecting the patient (only one patient can be selected at the same time) by clicking button »View«.

*Comment:*

Asking for consent is not part of this scenario.

It is assumed that consent has been given by all displayed patients when registered to the portal.



Figure 7: selecting a patient

### 3.1 Creating new patient (Add new patient)

If doctor wants to Add new patient; he can do that by clicking the button Add new patient form with following data:

- Patient's data: Name, Surname, Gender, Date of birth, Place of birth, Country of origin, Unique ID code, Address, Other contact info;
- General data: Selected doctor, Blood group, height, Weight

Figure 8: Creating new patient

## 4 PATIENT OVERVIEW

User/ Doctor can see Patient's overview with according submenu. Patient's overview is a default preview.

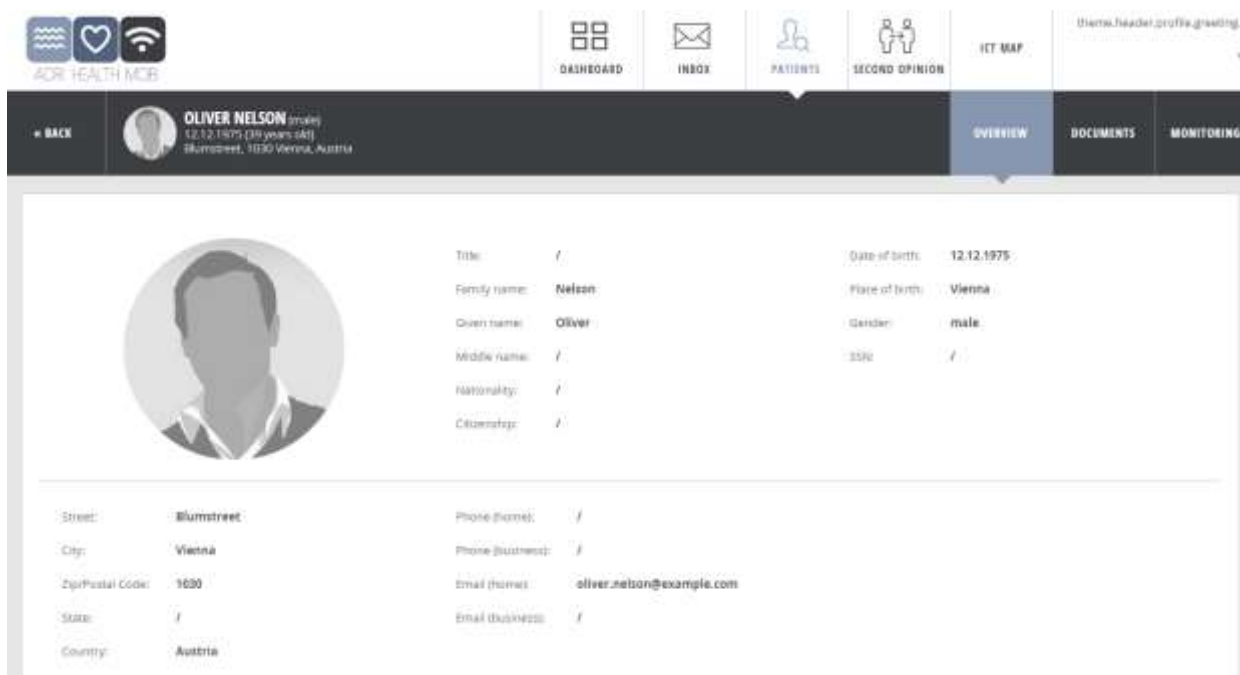
Submenu bar has a function of secondary navigation and consists of the following buttons: Back to search (to return back to patient list and last search result), Patient's summary, Overview button, Monitoring button, Second opinion and History.

User can:

- view patient's summary,
- view patient's documents,
- manages patient's documents: create medical summary and upload patient's documents,
- view patient's monitored values,
- schedule or ask for second opinion.

### 4.1 Patient's Overview

To display patient's demographic data (birth date, age, sex), photo of the patient, contact information about the patient (address(es), e-mail address(es), telephone number(s), blood group, height, weight, BMI).



The screenshot shows a user interface for a patient overview. At the top, there are navigation icons for Dashboard, Inbox, Patients, Second Opinion, and ICT Map. Below this is a header for the patient, Oliver Nelson, with a profile picture and a 'BACK' button. The main content area is divided into two columns. The left column contains a large circular profile picture. The right column contains demographic information: Title (f), Date of birth (12.12.1975), Family name (Nelson), Place of birth (Vienna), Given name (Oliver), Gender (male), Middle name (f), SSN (f), Nationality (f), and Citizenship (f). Below this, contact information is displayed: Street (Blumstreet), City (Vienna), Zip/Postal Code (1030), State (f), Country (Austria), Phone (home) (f), Phone (business) (f), Email (home) (oliver.nelson@example.com), and Email (business) (f).

Figure 9: Patient overview

### 4.2 Remote Patient Monitoring - Patient's Measured values (RPM)

Current scope presents monitoring of measurements divided in four categories (where A & B are within the project scope):

#### **A. Measurements that can be used for different analysis, low effort for patient, non-invasive:**

- *Body temperature*

- *SpO2 (Oximetry reading)*
- *Blood pressure*
- *Body weight (and BMI)*
- *Heart rate*

**B. Measurements that can be used for different analysis, higher-effort for patient, non-invasive:**

- **12-lead ECG** (not yet integrated)

Monitoring page consists of according navigation bar:

- Measurements icons (in each button there is the last measured value or »N/A« if there are no values yet),
- period, date picker.



Figure 10: Previewing patient’s monitored values by using secondary navigation pane

*Comment:* Monitoring navigation bar and patient's submenu create “a sticky navigation bar” that stays at the top of the page while user scrolls down to preview charts of measurements.

→ As a doctor I can configure criteria for previewing patient’s measured values (time frame); time bar and time picker opens.



Figure 11: Previewing patient’s monitored values by selecting time range

User can set previewing time period either by setting values in time frames (from - to) in drop down calendar or by placing time frame in the timeline.

To preview recorded measurements, you have to set the dates first.

Each following display panel consist of dynamic measurement board and dynamic graphical chart.

Presenting some of the displayed measurement:

### a. Body Temperature

Body temperature measurement board:

- last measurement (together with the time of measurement)
- trend of change
- status:

> 37,5	Fever
37 – 37,5	High
37 -35	Normal
< 35	Hypothermia

- min, max and avg. for period



Figure 12: Previewing patient's monitored body temperature

Body temperature chart:

- measured dots represent measurements. Those connected with a line mean measurement was continuous;
- x axis is time according to the time period settings.  
 On the y axis are units of temperature (degrees of Celsius). The default y axis scale is between 32 and 42. The y axis is scaled according to available data so that all measured values can be seen. Values that are below 20 or above 45 are ignored and are not shown on graph.  
 User can see an orientational line at 37 degrees of Celsius.  
 On the right side of the graph user can see the last measured value with a trend indicator of the last change. The user can see the date and time of the last measurement. User can also see minimal, maximal and average values for the selected period;
- User selects a part of the graph by clicking the starting point and dragging the mouse to the end point of the desired period. User releases the click only after selecting the end point and is holding the button from the start to the end point.



Figure 13: Previewing patient's monitored body temperature by using zoom

- On roll-over the user can see an info message above the specific measurement. User can see the value of the measurement;
- The graph is zoomed to the selected period. The zoom influences all panels in the Monitoring view;
- If user clicks on the »magnifying tool« graph is widened to occupy the whole width of the available space. Information that is displayed on the right side of the graph (last value, min, max and average for selected period) is moved under the graph;
- To return to original view user has to click »magnifying tool« again.

#### b. SpO2 (Blood Oxygenation)

SpO2 measurement board:

- last measurement (together with the time of measurement)
- trend of change
- status

100 -95% Normal
92-94% Subnormal
<92 Low



Figure 14: Previewing patient's monitored SpO2

### SpO2 chart:

- On the x axis is time according to the time period settings.  
 On the y axis are units of blood saturation (%). The default y axis scale is between 80 and 100.  
 The y axis is scaled according to available data so that all measured values can be seen. Values that are below 50% and above 100% are ignored and are not shown on graph.  
 User can see orientational lines at 95% and 92%.  
 On the right side of the graph user can see the last measured value with a trend indicator of the last change. The user can see the date and time of the last measurement. User can also see minimal, maximal and average values for the selected period.



Figure 15: Previewing patient's monitored SpO2 single value

### 4.3 Patient's Documents

Module **Documents** covers management with all medical documents. These documents can be created by the doctor, accessed from third party systems or prepared to be sent to third party systems and repositories.

*Comment:* It is assumed that the patient has given the consent to allow the doctor to view his documents. Letter of consent is ment to be uploaded when creating new patient profile.

- As a doctor I can limit data list by applying a filter;
  - limiting documents' list by using »active search« or filtering by pre-set dropdown filters;

ADRI HEALTH MOB

WELCOME DE CAMPBELL

OLIVER NELSON (male)  
 15.12.1979 (40 years old)  
 Brunntalstr. 1100 Vienna, AT

OVERVIEW DOCUMENTS MONITORING HISTORY

DOCUMENT SEARCH

SEARCH

FILTER BY

Document type: Any

Institution: Any

Creation date: Any

Document name	Type	Date & Time	Institution	Author	Format & size	Action
Triage Note	Triage Note	27.11.2014 08:23:28	Statarea International Hospital		text/html / 42.97 KB	Preview Download
Consultation Note	Consultation Note	27.11.2014 08:24:02	Statarea International Hospital		text/html / 58.28 KB	Preview Download
Laboratory Report	LABORATORY REPORT TOTAL	26.11.2014 22:20:10	Statarea International Clinic		text/html / 22.75 KB	Preview Download
Discharge Summary	Summarization of Episode Note	27.11.2014 07:01:58	Statarea International Clinic	Dr. Susanne Smith	text/html / 32.81 KB	Preview Download
referral	Summarization of Episode Note	26.11.2014 22:28:21	Statarea International Clinic		text/html / 42.87 KB	Preview Download

+ ADD NEW DOCUMENT

Figure 16: Previewing patient's documents

- ➔ As a doctor I can preview or print selected document;
  - deleting or editing documents is not supported
  - only one document can be displayed at the same time
- ➔ As a doctor I can create new document; I can select a predefined form and fulfil only specifics data that are selectable from dropdown, based on search from international medicine codes/registries or inserts it manually (not yet integrated – this is just an informative example).

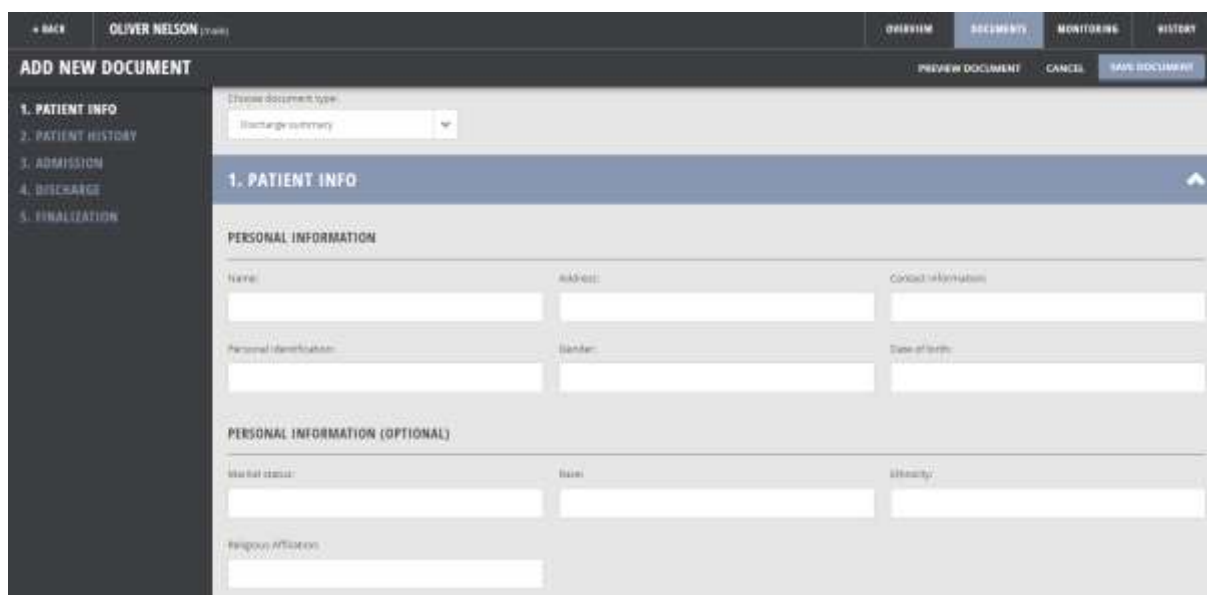


## 5 NOT YET INTEGRATED – JUST AN INFORMATIVE EXAMPLE OF FUNCTIONALITIES:

### 5.1 Creating new document

covers advanced algorithms and solutions (not yet integrated – this is just an informative example).

To create a medical summary document using the portal, the logged in doctor has to select the patient for whom the document will be created, open the document list and click on the button “Create new document”.



The screenshot shows a web interface for creating a new document. At the top, there's a navigation bar with tabs: OVERVIEW, SECURITY, MONITORING, HISTORY. Below that, a header for the patient 'OLIVER NELSON' is visible. The main section is titled 'ADD NEW DOCUMENT' and includes a dropdown menu for 'Choose document type' with 'Discharge summary' selected. A sidebar on the left lists steps: 1. PATIENT INFO, 2. PATIENT HISTORY, 3. ADMISSION, 4. DISCHARGE, 5. FINALIZATION. The main form area is divided into sections: '1. PATIENT INFO' (with an up arrow), 'PERSONAL INFORMATION' (with fields for Name, Address, Contact information, Personal identification, Gender, Date of birth), and 'PERSONAL INFORMATION (OPTIONAL)' (with fields for Medical status, Race, Allergy, and Foreign Affiliations). At the top right of the form area, there are buttons for 'PREVIEW DOCUMENT', 'CANCEL', and 'SAVE DOCUMENT'.

Figure 17: Creating new document

### 5.2 Second opinion

Module Second opinion provides functionalities to manage second opinion workflow. This can be either creating a second opinion form, than needs to be addressed to another doctor, communication between doctors exchanging opinion on specific case or creating a report – conclusion and final second opinion (that becomes a part of the patient’s documents).

When selecting Second opinion module via Main navigation bar, a list of all second opinion displays – either cases that were assigned to me and those that were assigned by me.

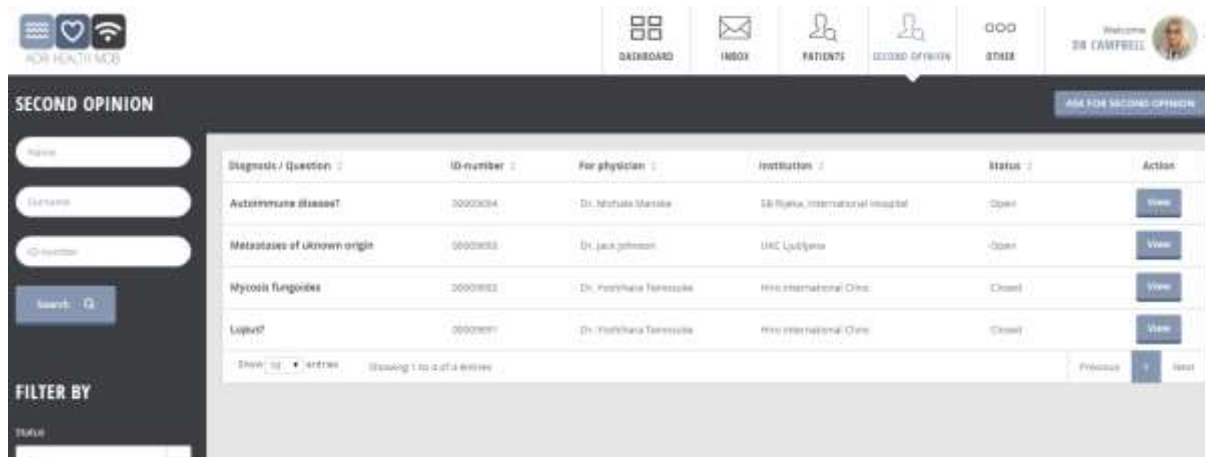


Figure 18: Second opinion flow

### Wherein:

- In the list the doctor can see whether the cases are still open or have been closed and the document finalized;
- By selecting VIEW to preview the case, second opinion opens (together with communication thread);
- If doctor wants to get a new second opinion about a patient he can start a flow by clicking the button »Ask for second opinion«;

Ask for second opinion form opens.

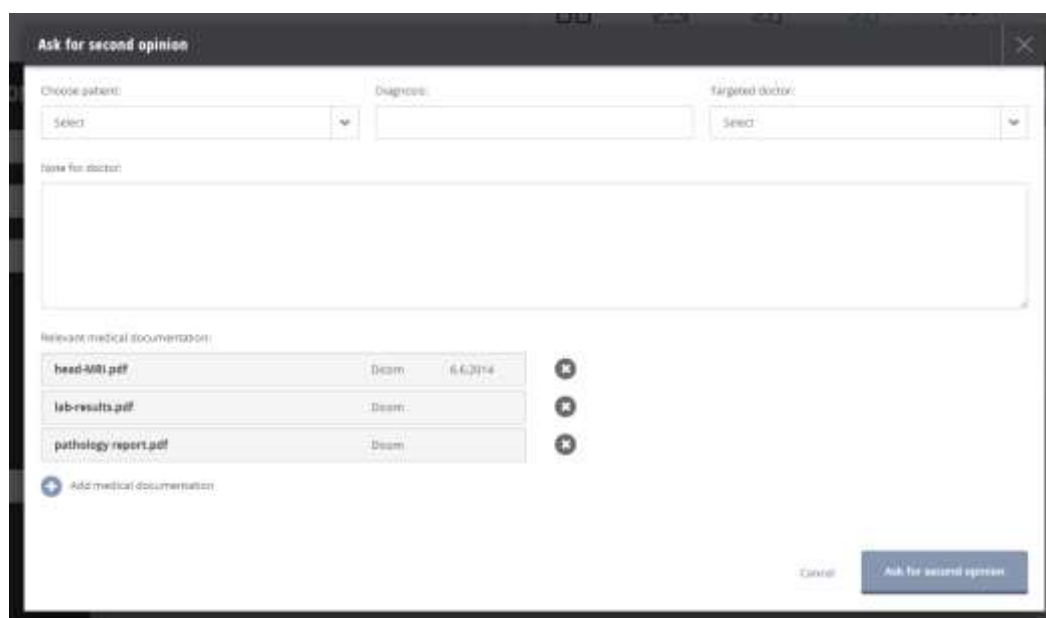


Figure 19: Second opinion flow – creating second opinion

- The presenter doctor selects the specific doctor that he wants to ask for the second opinion (he finds him by name or specialty, has filtering options by specialty or location);

- The second doctor (doctor that was asked to give second opinion) can also see a list of all cases - either he asked for a second opinion or he was asked to give.

### 5.3 Inbox

Messaging is a secure and safe communication engine that is used by the Doctor to communicate with other medical workers, registered at the portal.

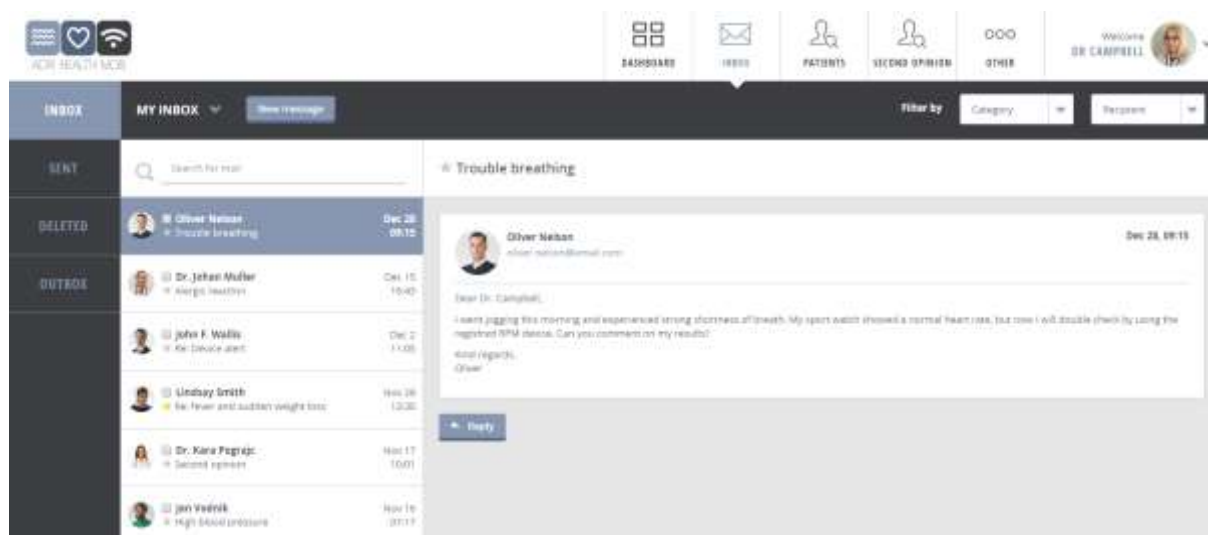


Figure 20: Inbox

#### Wherein:

- A Doctor can send an email to other medical workers;
- A Doctor can attach an attachment (max 5MB);
- Messaging module supports:
  - inbox with pagination and cascade message reading,
  - drafts,
  - sent messages,
  - archive
  - trash.
- Messages are automatically archived after 1 month;
- Messages in trash are automatically deleted after 3 months;
- Messages in draft are automatically deleted after 12 months;
- User can get 300 Mb of space.