Smart health Application
# Patient Operation steps V1.3

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Patient App Usage Step by Step:

1) Login to the app using username: akelmalla77@gmail.com and password: Xyz12345!!

   The app user is called Naglaa Zaki in this case and she is a patient in this case.

2) Accept all access permissions requested by the app in order for the app to operate properly. After giving the permission (it is used for accessing health files more details can be found in "Setting up smarthealth App" pdf file), now click on the back arrow 2 times to return back to the app.
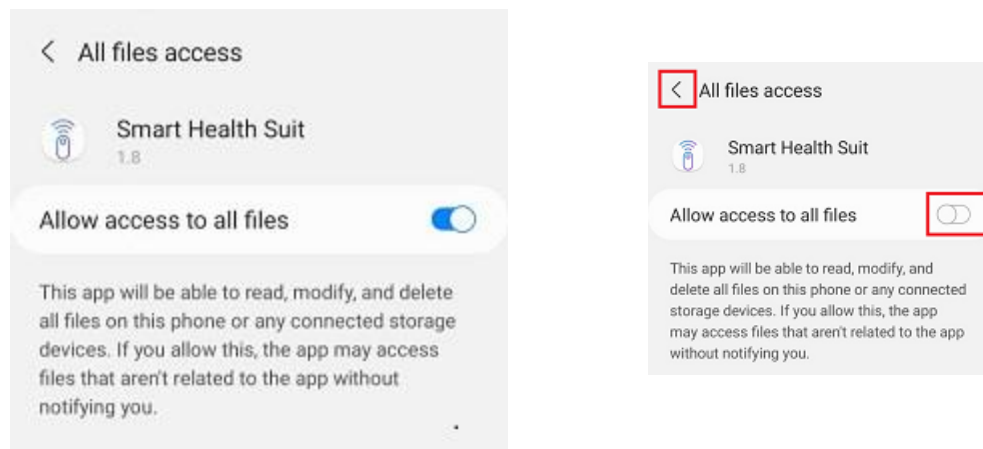

3) The patient app needs access to the health data for the monitoring process to work so we have copied all the necessary files (if you have the checkme device, the files are downloaded automatically through Bluetooth) in the following link: [Note] The phone language must be set to English for these steps to work.

   https://drive.google.com/drive/folders/1SH8L7BodCOrEleY3bVejTyH8qA5ctyBY?usp=share_link

   Download the files to the Downloads folder and the app will copy those files after the login process. This will only work if you granted the requested access permissions to the app.

See the image below
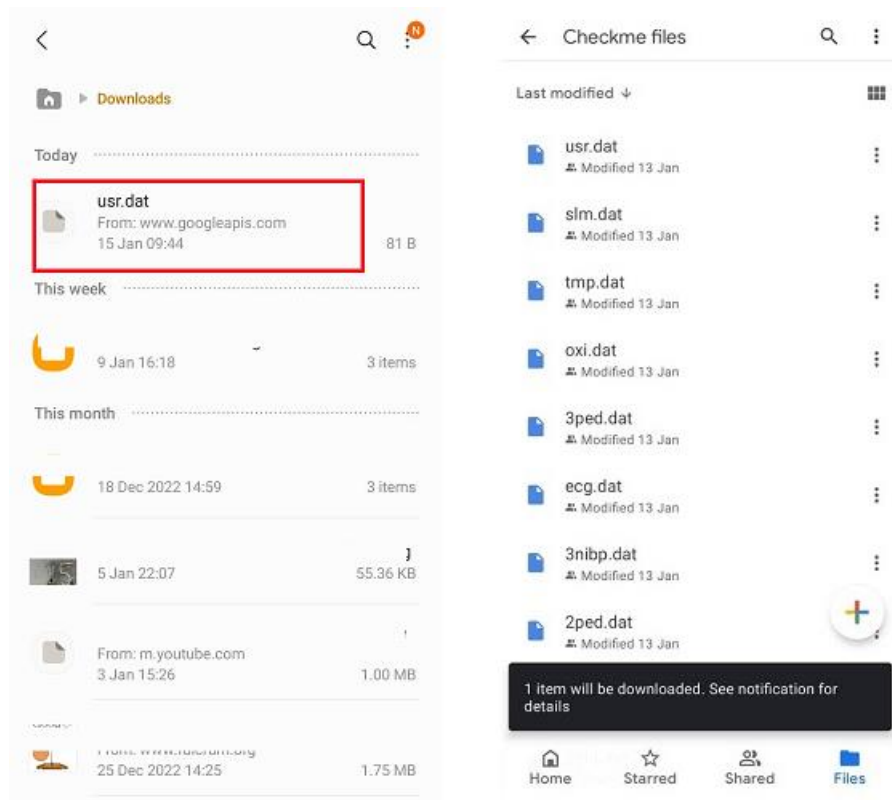
4) The image below shows the first screen you will see after login as a patient. Patients will connect to their medical device and accept connections from guardians (ex. Family members) and clinicians.

5) Click on the 3 dots on the top right corner to see the drop down menu & select connect to Checkme

6) If there is a medical device in hand then enable the GPS and the Bluetooth then click continue. But for the demo purpose in our case PRESS the skip button after enabling the GPS if you want to send patient location to the clinician.

7) Now click on the "Offline mode" to continue using the app without a device.
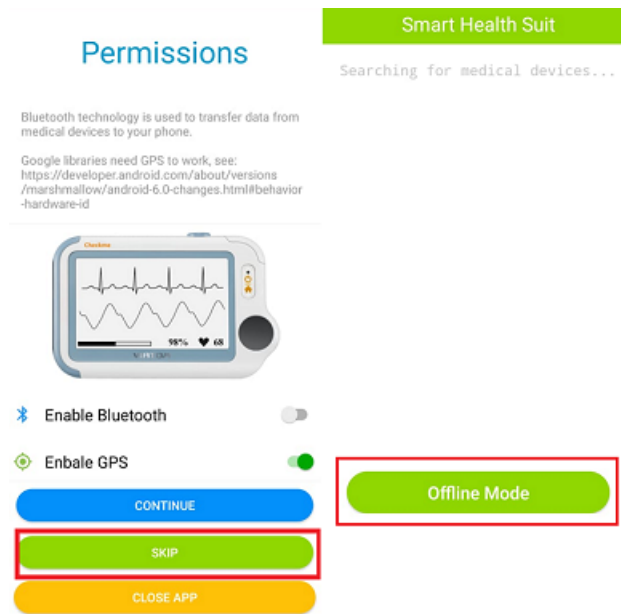
8) The patient monitoring system now will be started automatically and patient vital health signs will be sent to all clinicians and guardians connected to the patient.

9) The app uses background service to do the task of sending patient details and if it is enabled you can see the notification sign as shown in the image below.


10) To close the background monitoring you have to select shutdown app from the right menu as shown in the image below
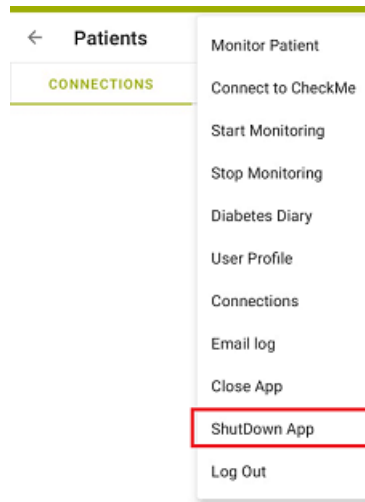
11) Patient have to accept clinician connection request in case of new users but it isn't needed in this case because the username provided have connections in place.

12) Both versions of the App can use the AI prediction form for cardiovascular diseases which you can reach from the menu item shown below. Internet connection is needed.
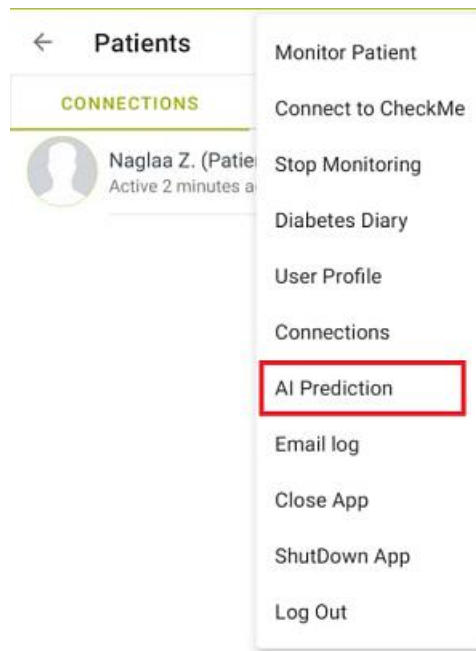
You need to key-in the following information before pressing predict:
1) Age in years
2) Height in cm
3) Weight in kg
4) Systolic pressure (range from 120 mm Hg to 200 mm Hg)
5) Diastolic pressure (range from 60 mm Hg to 100 mm Hg)
6) Cholesterol level (Normal: Less than 200 mg/dL; Above normal : 200 to 239 mg/dL ; High: 240 mg/dL)
7) Fast glucose level (Normal : 99 mg/dL or lower; Above normal: 100 to 125 mg/dL; High: 126 mg/dL)

The image below shows a case where the patient is at risk of getting a cardiovascular disease. The prediction is shown in red color on bottom right of the image.

13) The diabetes dairy can be accessed from the menu on the right side like shown below. Glucose levels are classified with daily & weekly averages along with the estimated HbA1c which can be seen in the image on the right side.
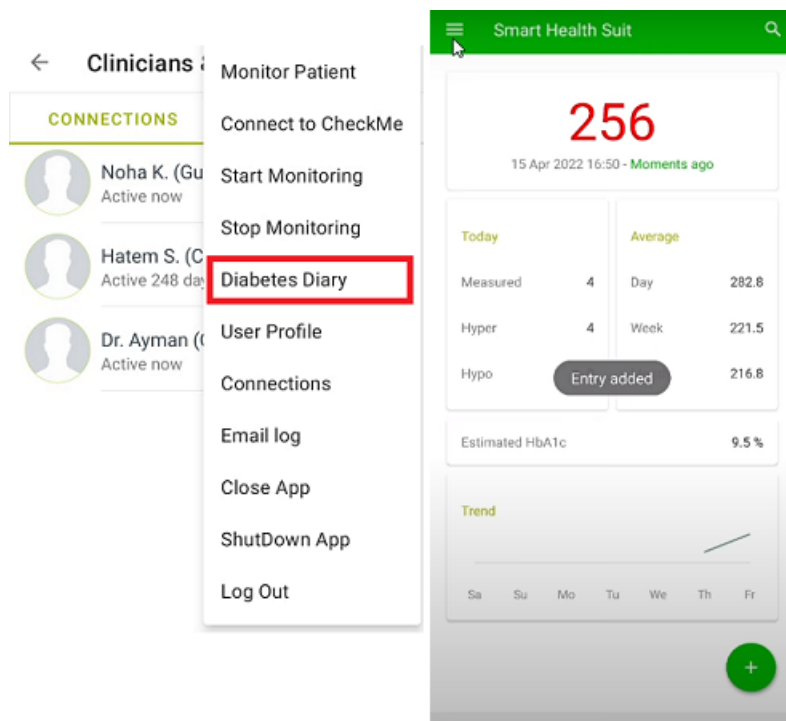
14) The diabetes dairy enables recording of glucose levels and associates it with tags like shown in the image below. More details can be seen here: https://youtu.be/ztlcYvRVByE
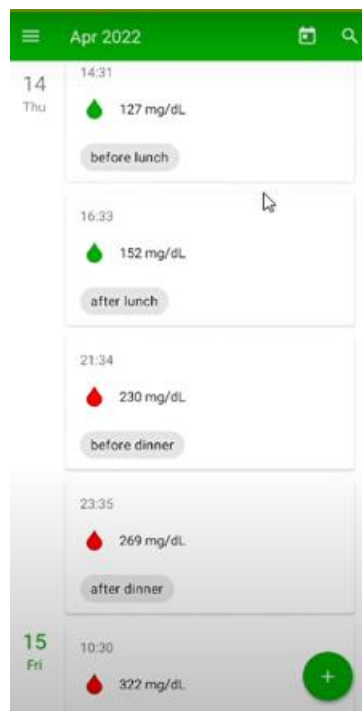
Explainer Videos:

1) How can a clinician find patients to monitor ? https://youtu.be/EY8o6Rn5pF0

2) How to send health data to a clinician?
   https://www.youtube.com/watch?v=js1otpbhqyE&t=4s

3) How a clinician can chat with patients? https://youtu.be/oEE6SbC0ib0

4) How guardians / Clinicians can monitor patients
   https://youtu.be/CxRpQkLE9uA

5) Smart Health Checkme Package : https://youtu.be/wxWK_hs2IrY

6) How to Accept App necessary Permissions?
   https://www.youtube.com/shorts/jcHHghMXs3U

7) How to register a user on the App? https://youtu.be/dZoWLekyL10

8) Live Monitoring for patients https://youtu.be/uz3wkkcGdHA

9) Patient Offline showcase (without connecting to Checkme) :
   https://youtu.be/wmGJE1QNHo8

10)   Diabetes Diary - Smart Health https://youtu.be/ztlcYvRVByE

11)   [High Risk] Cardiovascular diseases Prediction using
        AI **https://youtu.be/0797Foqn4lI**

12)   [Low Risk]   Cardiovascular diseases Prediction using
        AI https://youtu.be/s9SgSawY7pw

Glossary:

Cardiovascular disease : A type of disease that affects the heart or blood vessels.

Prediabetes stage: It is start of the road having diabetes disease and can be recognized by fasting glucose level of 100 to 125 mg/dL (5.6 to 6.9 mmol/L)

Vital signs : are a group of the four to six most crucial medical signs that indicate the status of the body's vital functions. These measurements are taken to help assess the general physical health of a person, give clues to possible diseases

Artificial intelligence (AI) : uses mathematical and statistical methods to predict the value or status of something of interest. Artificially intelligent computer systems are used extensively in medical sciences. Common applications include diagnosing patients, end-to-end drug discovery and development, improving communication between physician and patient, transcribing medical documents, such as prescriptions, and remotely treating patients.

ECG: An electrocardiogram (ECG) is a simple test that can be used to check your heart's rhythm and electrical activity. Sensors attached to the skin are used to detect the electrical signals produced by your heart each time it beats.

Diabetes: With diabetes, your body either doesn't make enough insulin or can't use it as well as it should. Diabetes is a chronic (long-lasting) health condition that affects how your body turns food into energy

Remote patient monitoring (or remote health monitoring): allow providers to monitor, report, and analyze their patient's acute or chronic conditions from outside the hospital or clinic setting. They enable real-time understanding of a patient's disease state, enabling the provider to make proactive clinical decisions.

Clinical Care: used to help people to know what care to expect for a particular clinical condition and to help them to make informed decisions about treatment in collaboration with their health professional.

<u>NEWS (national early warning score):</u> assessment to obtain the score for the evaluation of the patient. It is based on the aggregation of the six physiological parameters, four of them are respiration rate, temperature, systolic blood pressure, pulse rate and the other two which are also known as fifth vital sign and are level of consciousness or new confusion and oxygen saturation.

<u>Checkme:</u> All-in-one vital signs monitor for doctors, caregivers, and patients. Integrates ECG/EKG, ECG Holter, SpO2 (oxygen saturation), PI (perfusion index), NIBP (Non-Invasive Blood Pressure), body temperature, and pedometer in one device with a palm-sized design.