DES202
Interaction Design and User Experience

GROUP 6

MediVault -- Brief

To digitalize the medical history of ~30% of the population of Gujarat in a collaborative manner with patients, doctors and different diagnostic laboratories,
In the span of 2 years.

SMART

Specific

Digitalize the medical history of patients

Measurable

Private: Collaborate with 5 major chains by the end of 2024

Achievable

Increase the digitization of documents

Relevant

Private: Collaborate with 5 major chains by the end of 2024

Timely

Private: Collaborate with 5 major chains by the end of 2024

Executive intent

Minimize the use of physical medical documents

Provide secure and easy access to doctor issued documents

A platform for doctors to track a patient's medical history and status

Market segments

Doctors

Diagnostic Labs

Patients

General tasks

Patient:
Open app to access or add/remove medical records

Doctors/labs:
Access or add medical records, but not delete records added by other organizations / user

Technological and other constraints

Creating a standard format for medical information exchange

Ability to sync information between present hospitals and labs

Getting all the past records on the system

Marketing and branding goals

One stop app for all your medical records

Reduce the cumbersome process involved in procuring medical records

Usability criteria

Percentage of hospitals/laboratories adopting this medium in favor of physical records

Population (patients) of India

VIMM Model

V

-Having a carefully designed grid

-Not using too many colors

-Keeping the fonts very crisp and minimal- sans serif fonts

-Having clear buttons

-Adequate spacing between lines

-Hierarchy of content.

I

-Not having confusing navigational titles

-Having a simple work flow process

-Eliminating unnecessary jargon and using simple words

--Having an easy to navigate system

-Not overloading with information.

M

-Having a very simple and obvious work flow

-Increasing the visibility of the relevant information

-Easy to navigate content

-Proper hierarchy of information

-Not hiding important information behind different tabs making it difficult to navigate.

M

-Allowing the use of shortcuts

-Not having a very small buttons to navigate through

-Focusing on design recognition rather than recall

-Designing things with common sense in mind

-Using natural response to design content

Market segments

Doctors

Patients

Labs

User Personas

USER PERSONA 1

LAB PERSONNEL



NAME	Deepak Mishra
AGE	28
LOCATION	New Delhi
OCCUPATION	Lab Assistant
MARITAL STATUS	Unmarried
KIDS	0
ANNUAL INCOME	300000-350000

INTERESTS	Research, planning, Cell biology
CHALLENGES	Has trouble with managing a lot of reports at once, goes from place to place to collect blood samples, sometimes patients lose documents with blood test details.
STEPS TAKES TO FIX THAT	Digitization of all documents which can be forwarded to the doctors at the same time.
GOALS	Helping patients from all stratus of the society, making a record of all kinds of vaccines, reminders for health check-ups, etc.

MOTIVATION	To be more organised, having a platform to sort things out.
FRUSTRATION	Very difficult to locate files, too many documents, too many details to fill in.
SOURCES OF INFO	Social media, newspapers, online news platforms, word of mouth.
ADDITIONAL.	Wants to have plan for data management of patients

USER PERSONA 2

DOCTOR



NAME	Dr. Deepti Saha
AGE	45
LOCATION	New Delhi
OCCUPATION	Doctor
MARITAL STATUS	Married
KIDS	2
ANNUAL INCOME	300000-500000

INTERESTS	Travelling, cooking, sports, reading books, psychology.
CHALLENGES	Issues with managing data about patients, patients losing records/ medical history, no constant vaccination records available.
STEPS TAKES TO FIX THAT	She currently has a Google sheet which tracks records for her patients.
GOALS	Helping patients from all stratus of the society, making a record of all kinds of vaccines, reminders for health check-ups, etc.

MOTIVATION	To be more organised, having a platform to sort things out.
FRUSTRATION	Very difficult to locate files, too many documents, too many details to fill in.
SOURCES OF INFO	Social media, newspapers, online news platforms, word of mouth.
ADDITIONAL.	Wants to have plan for data management of patients

USER PERSONA 3

PATIENT



NAME	Amrita
AGE	40
LOCATION	New Delhi
OCCUPATION	Writer (the patient)
MARITAL STATUS	Unmarried
KIDS	0
ANNUAL INCOME	400000-600000

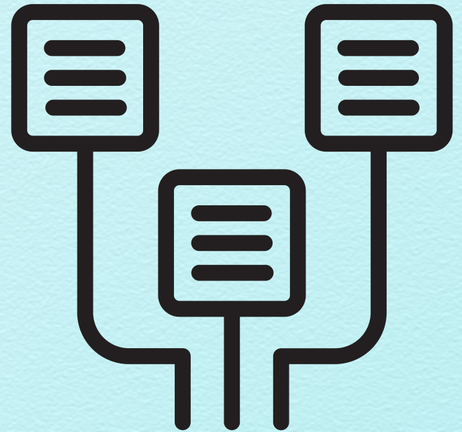
INTERESTS	Travelling, cooking, sports, reading books, psychology.
CHALLENGES	Issues with managing huge files with all medical documents, especially x-rays and film based documents
STEPS TAKES TO FIX THAT	Having a platform where they could be uploaded directly.
GOALS	Having an easy to manage place for all documents and not carrying all papers everywhere

MOTIVATION	To have all medical documents organized properly, with proper updating
FRUSTRATION	Very difficult to locate files, too many documents, too many files to carry, and if she changes the doctor, then all medical history needs to be re-explained.
SOURCES OF INFO	Social media, newspapers, online news platforms, word of mouth.
ADDITIONAL.	Wants a platform for documents for her entire family as well.

Environment Profile

CHARACTERISTIC	VARIABLE	DESIGN IMPLICATION
TYPE	Doctors, Patients, Lab Personnel	Can be accessed by all of them.
GEOGRAPHY	Country - State- City	India- Gujarat- Ahmedabad
SOFTWARE	Connection Speed/ Technology Constraints	Normal Bandwidth is enough
DEVICE	Tablet/ Mobile Handset/ PC	Responsive website, so can be adjusted for all screen sizes
LIGHTING	2 Profiles Light Mode, Dark Mode	Changing the application's themes based on time of the day
LANGUAGES	Regional languages	Available in regional languages too.

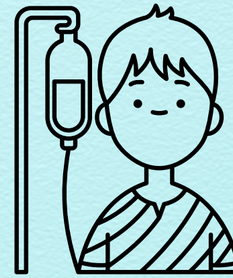
Scenarios



Scenario-1

Patient

A college going student named Mansi who holds a medical history of epileptic seizures for over a course of 7 years. One fine day, while hanging out with her friends & realising something was terribly wrong with him had to be rushed to the hospital alerting the family on the way. There was a back and forth happening related to all the medical documents needed for diagnosis leading to nothing but further damage. This day made her & her parents crave for a platform that could have stored all their documents at one place making it accessible during emergencies.



Scenario-1

Doctor

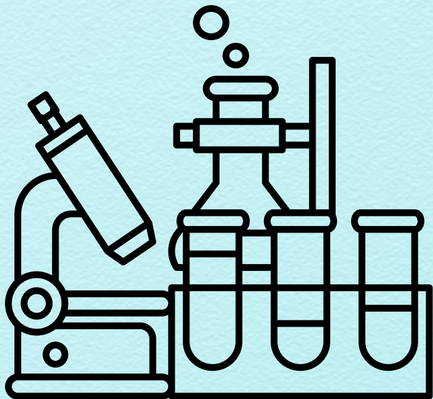
Working with 1000+ patients, Dr.Priya has trouble keeping track of all her patients' data at one place keeping both the confidentiality and accessibility intact. She has been looking for a platform that can store all her patient data at one place that makes storing data for her easier as well as maintain her patients' integrity & data confidentiality.



Scenario-1

Laboratory

Lab assistants face difficulties storing all the documents, report and important medical information of their patients. As the data is huge and needs to be updated and stored on an everyday basis, an app/website/platform that makes the data storage, updating and confidentiality intact will prove to be a lifesaver for them and they are in desperate need of one such.



Research and Analysis

Questions

Demographic Details

COMMON FOR ALL

Name || Age || Location

Doctors

- Do you store medical records of your past and current patients? If Yes Please describe why?
- How does the past records of the patient help you?
- What is the current process of registering patient`s medical records?
- Describe the challenges that you face with the current method. If any.
- How does referring to past records help in diagnosing the patients?
- Have you tried referring to previous records while diagnosing a patient? If yes, how was the experience?
- Do you keep records of old prescriptions?
- Do you think digitization of medical records will help? If yes please describe how.

Patients

- Number of family members
- Select the medical documents that you have kept with you.
- How long have you been collecting your medical records for?
- Have you been able to maintain all of your past medical records?
- Have you faced any difficulties in consulting a new doctor? If yes, Describe.
- Do you use any application/ website currently to store your medical records virtually? If yes, which?
- How frequently do you review or update your medical records ?
- Would you be willing to share your medical records on an application/website?

Labs

- Do you track the medical history of patients?
- Do you store the data of patients? If yes how?
- Do you backup the generated data?
- Do you share digital copies of X-rays (and other diagnostics) with patients? If yes, please describe how do you share it.
- Do you think digitalization of medical history would help?
- Is there any regulatory requirement for keeping patient data?

We collected data from Ahmedabad & Jamnagar and got a total 60 responses on our questionnaire.

We received 30 responses from Patients, 28 from Doctors and 2 from Laboratories.

Quantitative Analysis

- Only 55% of patients have been able to maintain all their medical records and 15% of patients have not been able to maintain any of their medical records.
- 50% of patients have not been able to collect their medical records for more than a year.
- Only 40% of patients are willing to share their medical records on an application/ website.
- The importance of medical records are in this order:
  1) Identification Information (96.4%)
  2) Past Diagnosis Records (89.3%)
  3) Past Prescriptions & Details of Allergies (82.1%)

Qualitative Analysis

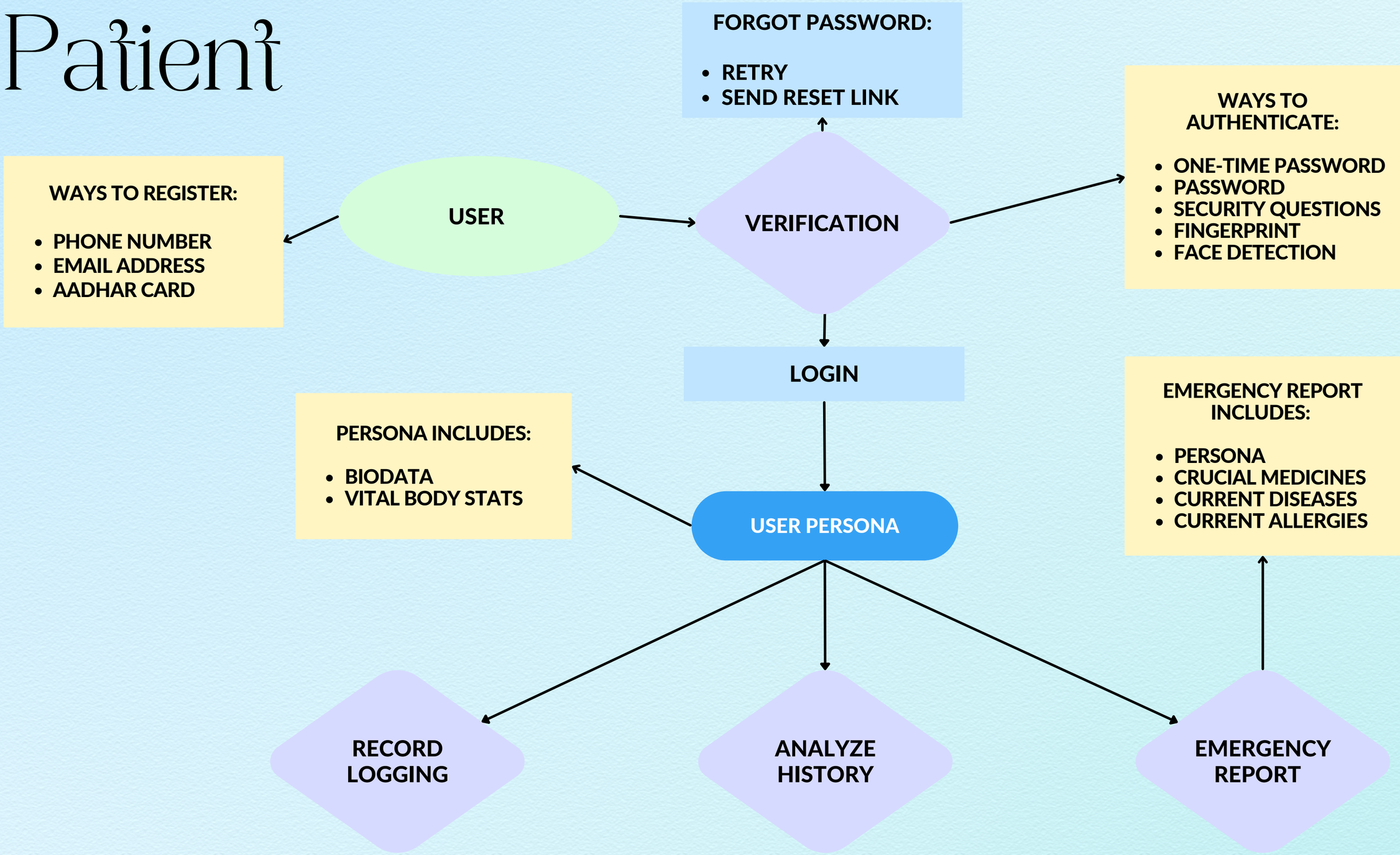
- Currently, patient information are primarily stored in hardcopy by the patients
- Patients are aware of the importance of medical history :
- Prescriptions are paper-based storing them becomes a challenge.
- Patients are not able to maintain medical records for more than 1-2 years.
- Currently, patient information are primarily stored in soft copy by the doctor
- It is difficult for doctors and hospital management to fill and maintain the register and records of patients.
- Laboratories already have a digital server system in place to store and access all of their records digitally. They don`t have a system to share all the records with patients and doctors though.

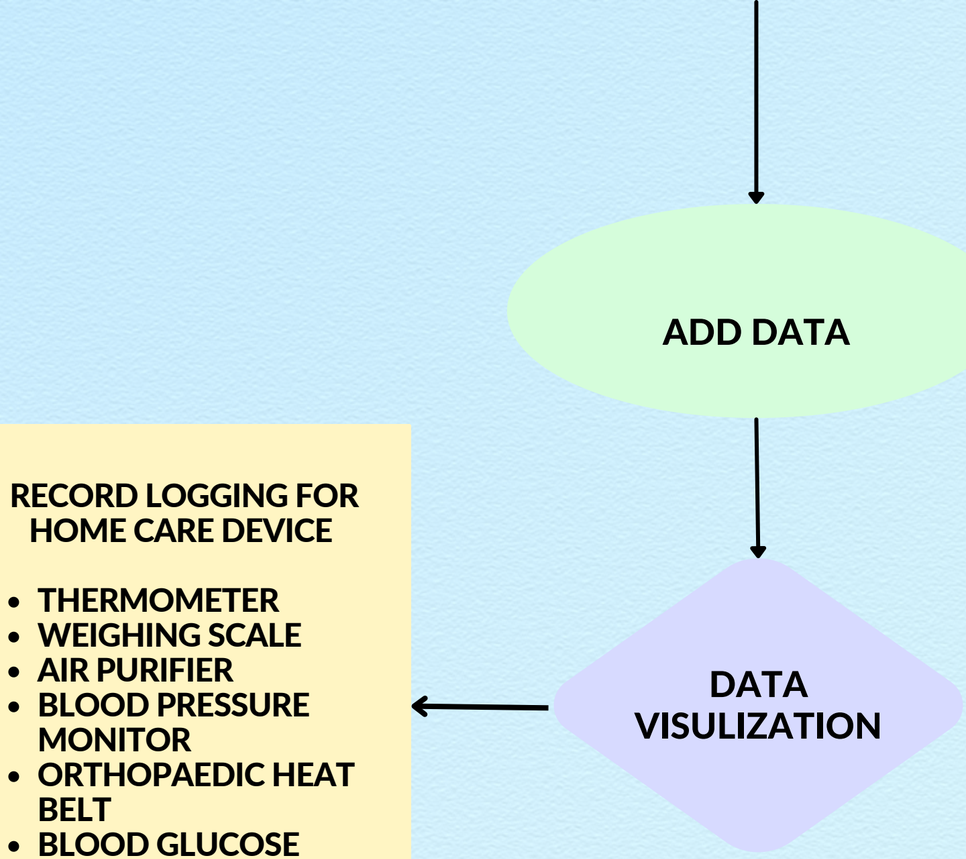
Inferences

- Lab's have existing system in place to store and access the record storage but lacks connectivity with patients.
- While doctors are positively engaged to get a system for digitizing health records with protocols to support communication while providing security.
- Patients are primarily not able to manage their medical records in hard copy. Also they have privacy concerns for sharing their medical records on an online platform.

Task Flow

Patient


FORGOT PASSWORD:
RETRY
SEND RESET LINK
WAYS TO REGISTER:
PHONE NUMBER
EMAIL ADDRESS
AADHAR CARD
USER
VERIFICATION
WAYS TO AUTHENTICATE:
ONE-TIME PASSWORD
PASSWORD
SECURITY QUESTIONS
FINGERPRINT
FACE DETECTION
LOGIN
PERSONA INCLUDES:
BIODATA
VITAL BODY STATS
USER PERSONA
EMERGENCY REPORT INCLUDES:
PERSONA
CRUCIAL MEDICINES
CURRENT DISEASES
CURRENT ALLERGIES
RECORD LOGGING
ANALYZE HISTORY
EMERGENCY REPORT


ADD DATA
DATA VISULIZATION
RECORD LOGGING FOR HOME CARE DEVICE
THERMOMETER
WEIGHING SCALE
AIR PURIFIER
BLOOD PRESSURE MONITOR
ORTHOPAEDIC HEAT BELT
BLOOD GLUCOSE METER

Doctor

FORGOT PASSWORD:

- RETRY
- SEND RESET LINK

WAYS TO REGISTER:

- HOSPITAL EMAIL
- IMR LICENSE

USER

VERIFICATION

WAYS TO AUTHENTICATE:

- ONE-TIME PASSWORD
- PASSWORD
- SECURITY QUESTIONS
- FINGERPRINT
- FACE DETECTION

LOGIN

PERSONA INCLUDES:

- RECENT PATIENTS

USER PERSONA

EMERGENCY REPORT INCLUDES:

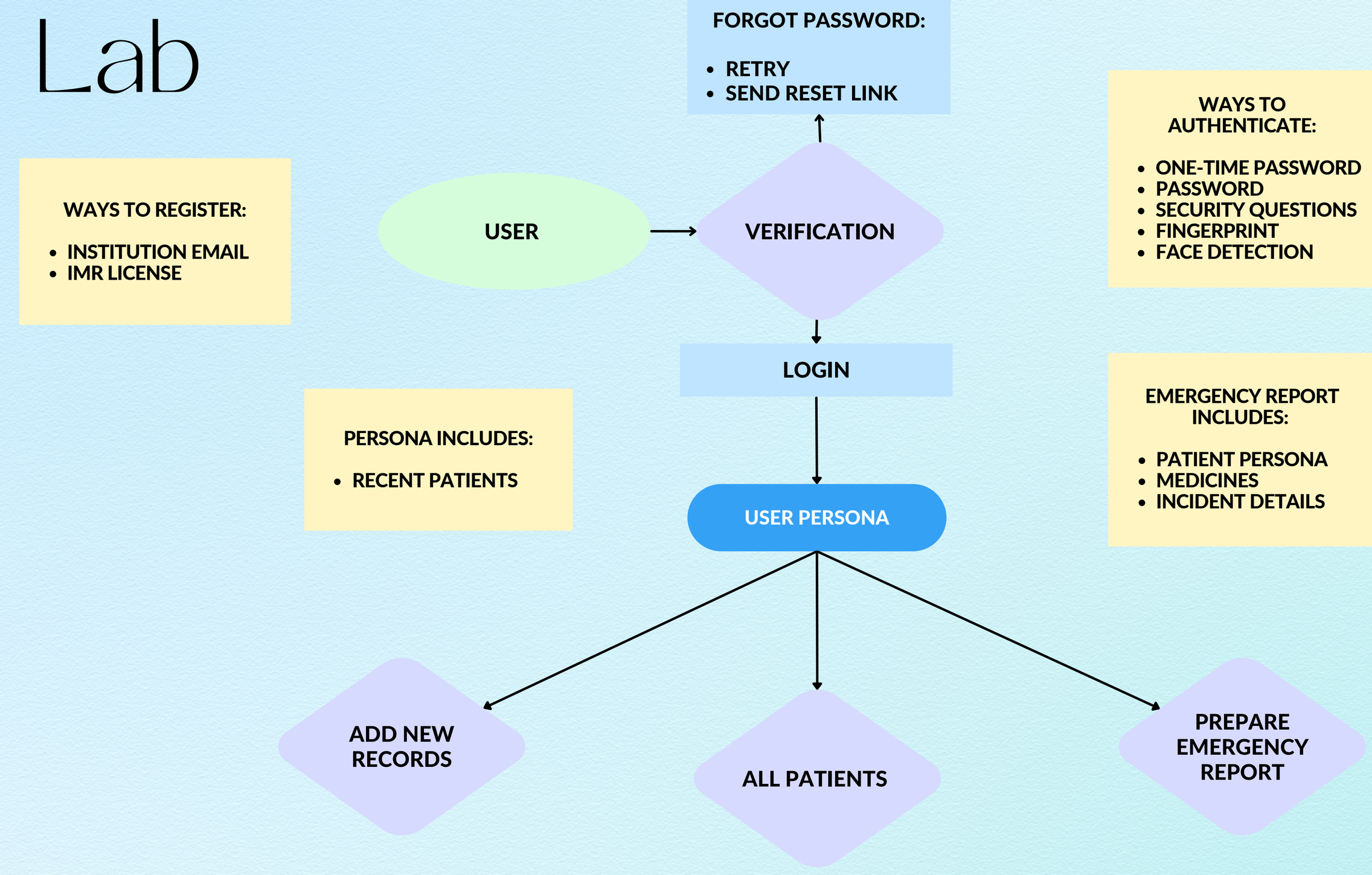
- PATIENT PERSONA
- MEDICINES
- INCIDENT DETAILS

ADD NEW RECORDS

ALL PATIENTS

PREPARE EMERGENCY REPORT

Lab


FORGOT PASSWORD:
RETRY
SEND RESET LINK
WAYS TO AUTHENTICATE:
ONE-TIME PASSWORD
PASSWORD
SECURITY QUESTIONS
FINGERPRINT
FACE DETECTION
WAYS TO REGISTER:
INSTITUTION EMAIL
IMR LICENSE
USER
VERIFICATION
LOGIN
PERSONA INCLUDES:
RECENT PATIENTS
EMERGENCY REPORT INCLUDES:
PATIENT PERSONA
MEDICINES
INCIDENT DETAILS
USER PERSONA
ADD NEW RECORDS
ALL PATIENTS
PREPARE EMERGENCY REPORT

Task

Patients

- Can store their data manually by scanning or uploading their medical records. They can also retrieve the medical records uploaded by Doctors or Labs.
- The medical records are linked to the patient`s Mobile Number & Aadhar Card.
- Medical records can only be accessed or added after password verification.
- Convenient for a patient to maintain their medical records and Helpful to retrieve his/her records whilst consulting any medical professional.

Doctors

- Can refer to past medical records of patients who are users of the app.
- Medical Records can be accessed by the doctor after verification from the patient by adding the OTP received on the patient`s linked number.
- Convenient for doctors in referring to patient`s medical history which would further help in diagnosis and treatment

Laboratories

- Can add the medical records of patient`s who are users of the app.
- Medical Records can be added and past records can be shared by the laboratories after verification from the patient by adding the OTP received on patient`s linked number.
- labs can't access the prescriptions and other past records besides the one executed in their lab.

https://miro.com/app/board/o9J_ll-_fao=/?share_link_id=206705655444

Connections Between Task Flow

LAB  PATIENTS

Acess restricted only to sharing the latest and past reports if needed

DOCTOR → PATIENTS

- viewing past prescriptions and diagnosis
- creating new prescriptions and diagnoses, sharing additional guidelines (diet ...)
- Updating recommended tests
- Viewing Lab reports (latest and past)

TASK PROFILES

Doctor

- Log In/Sign Up
- Basic verification
- profile selection
- Profile verification
- Dashboard
- View Summary
- review recent
- select a patient profile to start the engagement

Lab

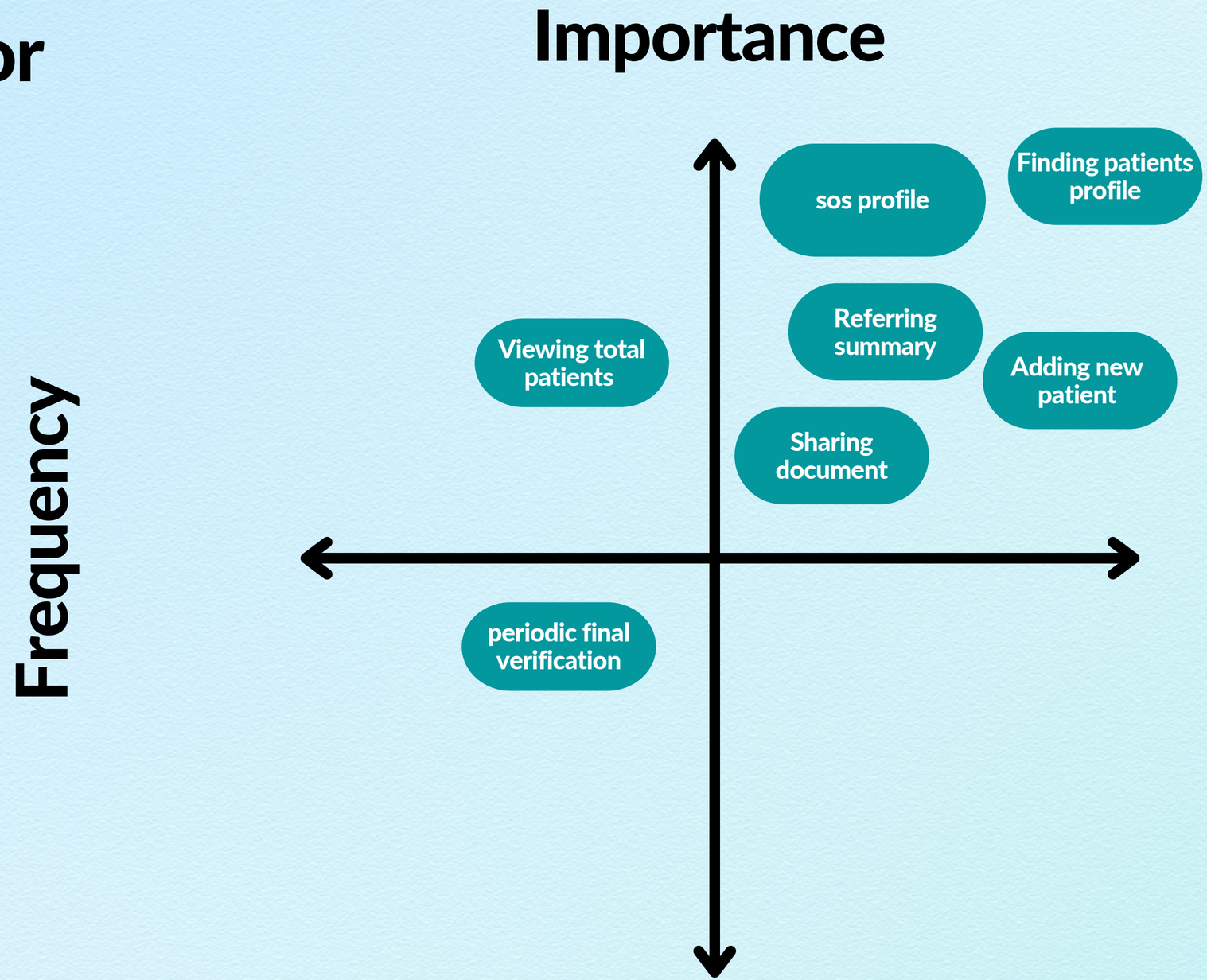
- Log In/Sign Up
- Basic verification
- profile selection
- Profile verification
- Dashboard
- Find the patient / if not add
- Upload reports

Patient

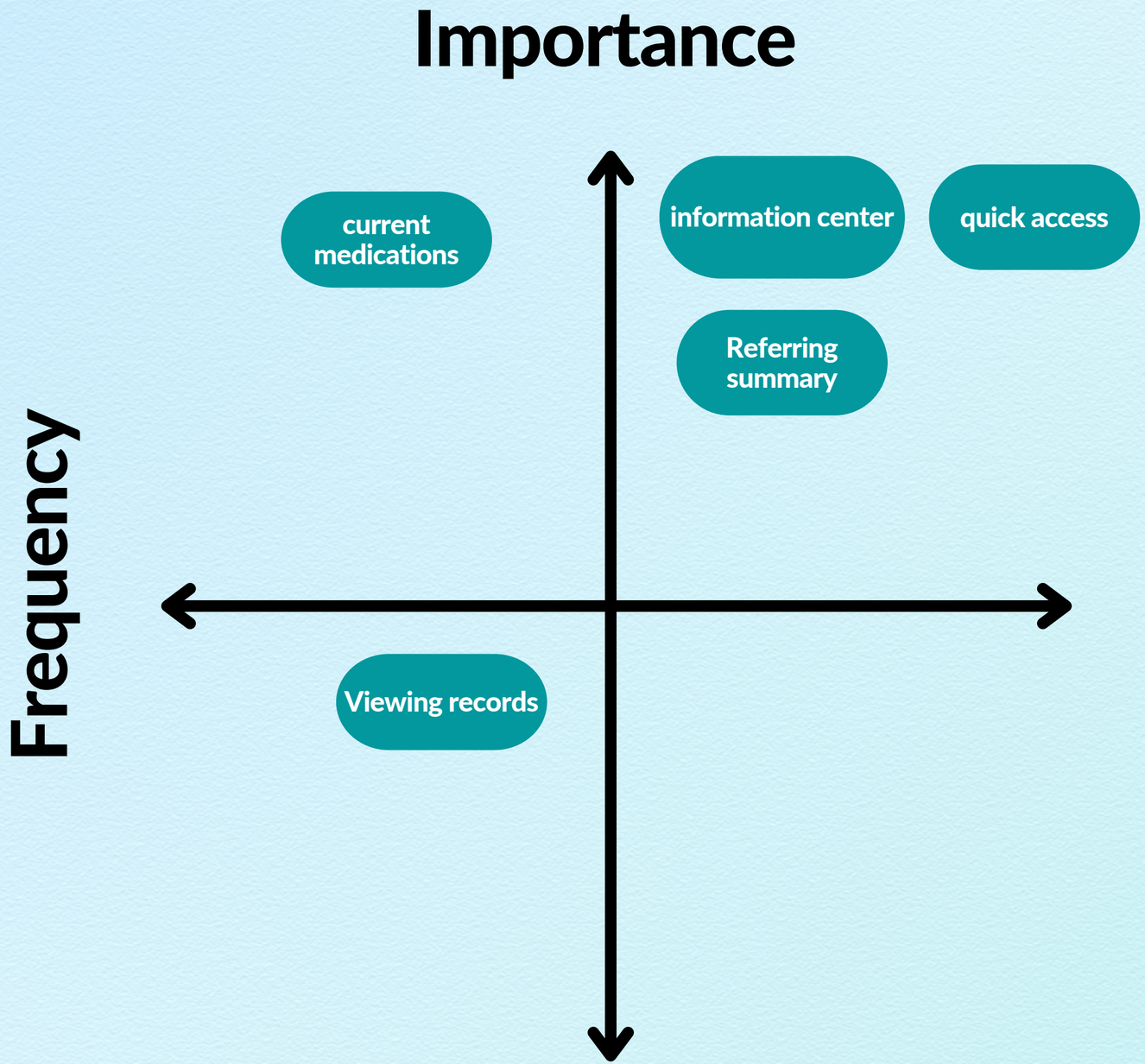
- Log In/Sign Up
- Basic verification
- profile selection
- Profile verification
- Dashboard
- Interact with the information centre
- View and take future/recommended tests
- Check quick access for the latest reports and prescriptions

TASK ANALYSIS

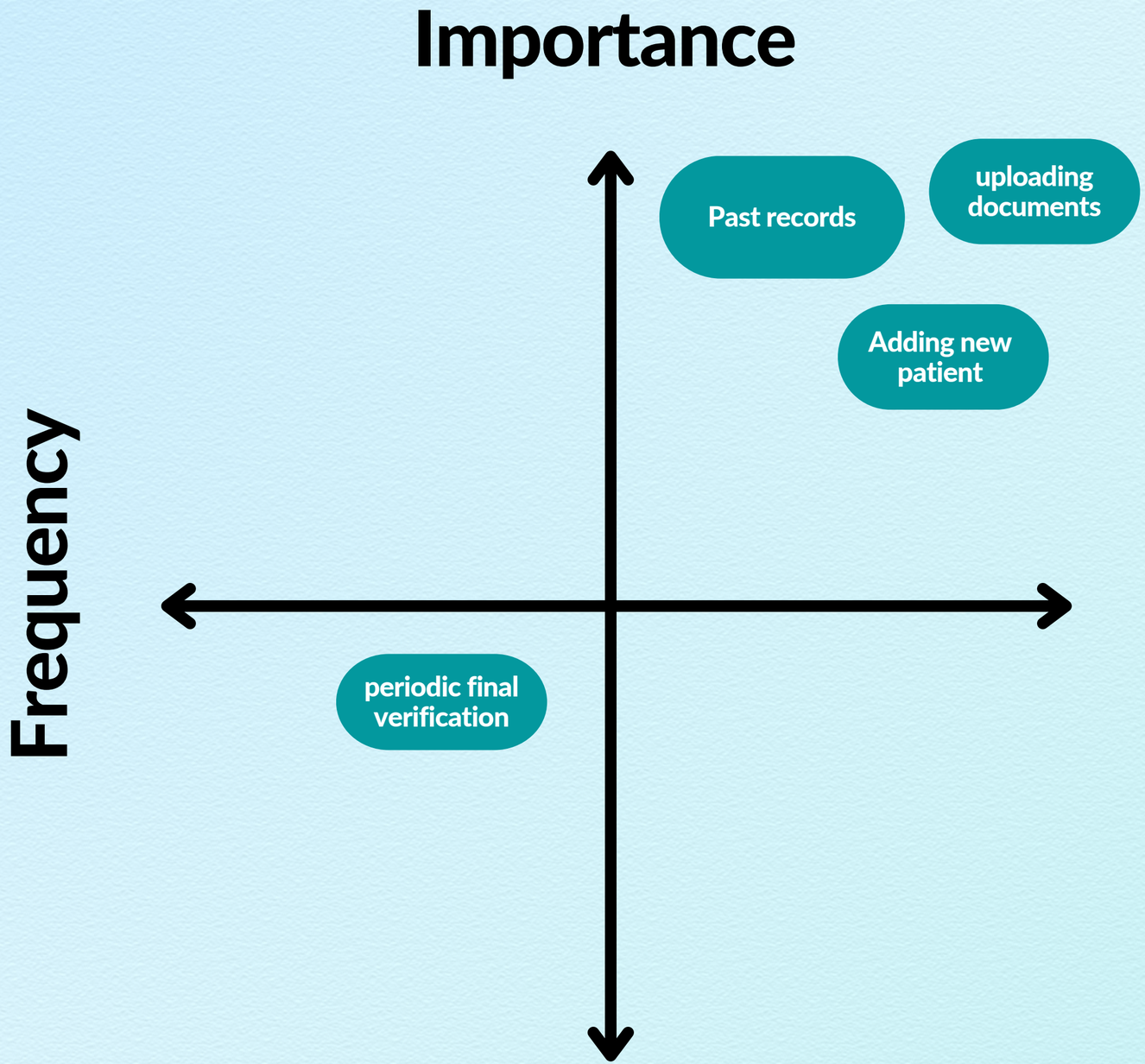
Doctor


Importance
Frequency
sos profile
Finding patients profile
Referring summary
Viewing total patients
Adding new patient
Sharing document
periodic final verification

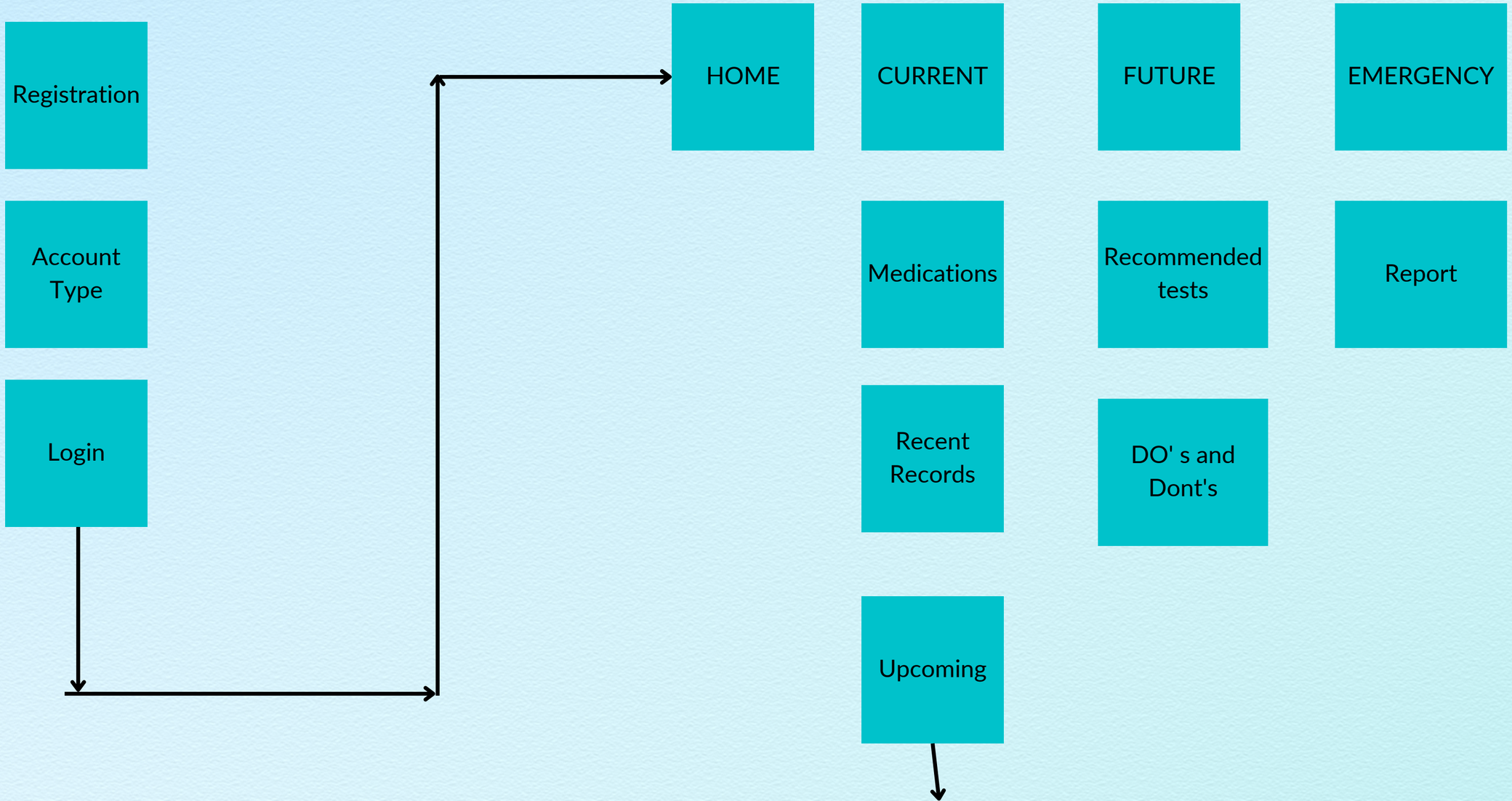
Patients

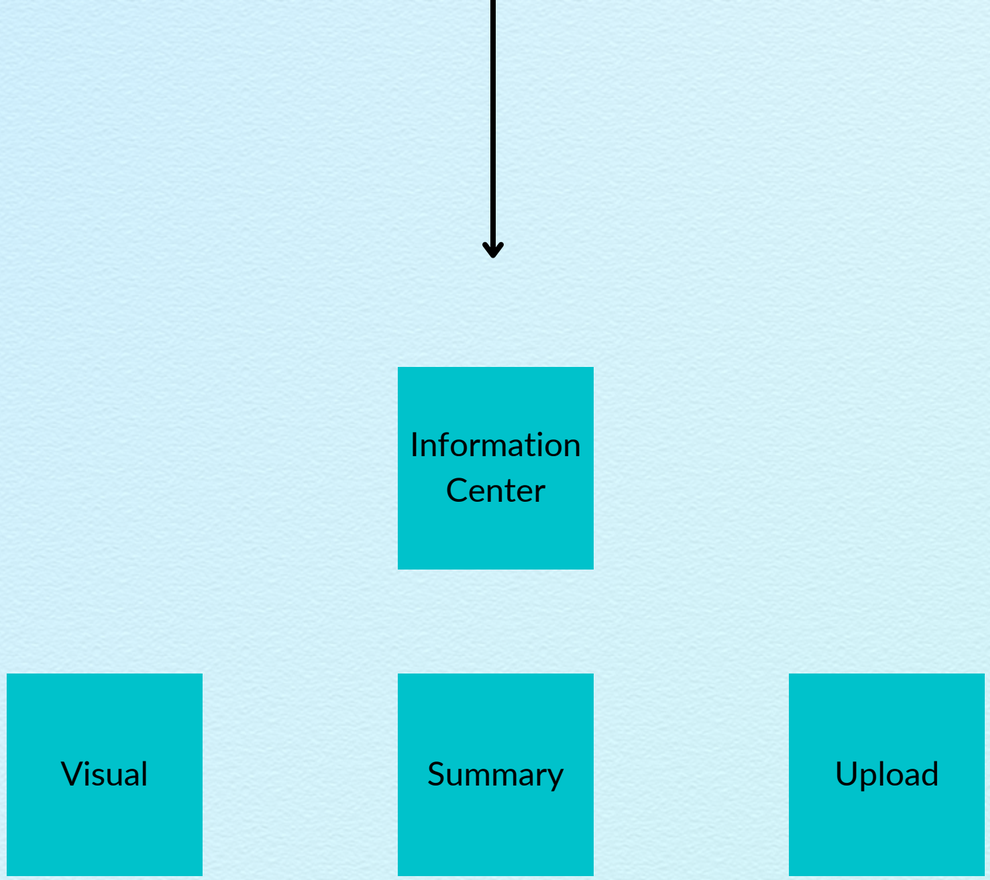

Importance
Frequency
current medications
information center
quick access
Referring summary
Viewing records

Labs


Importance
Frequency
Past records
uploading documents
Adding new patient
periodic final verification

Information Architecture

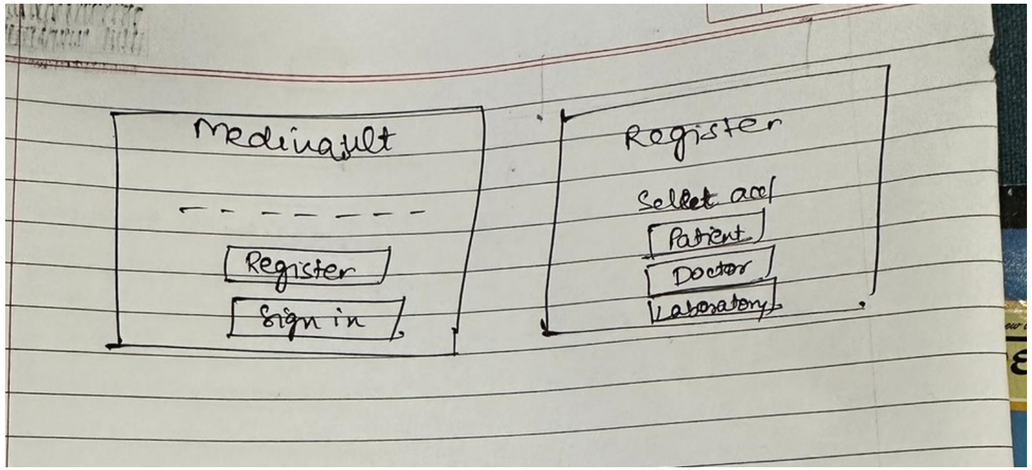


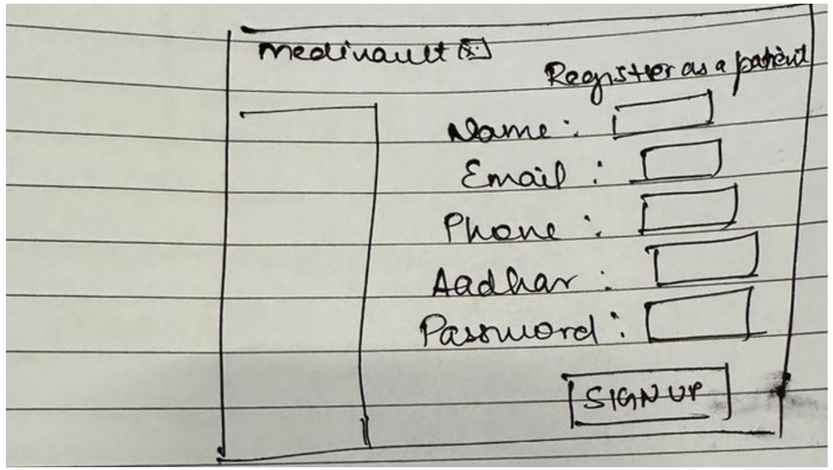

Information Center
Visual
Summary
Upload

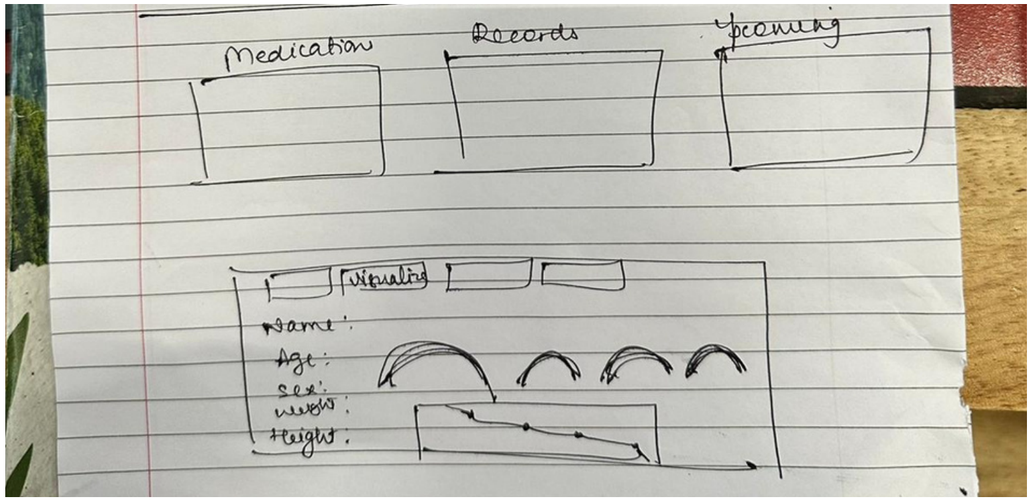
User profiles

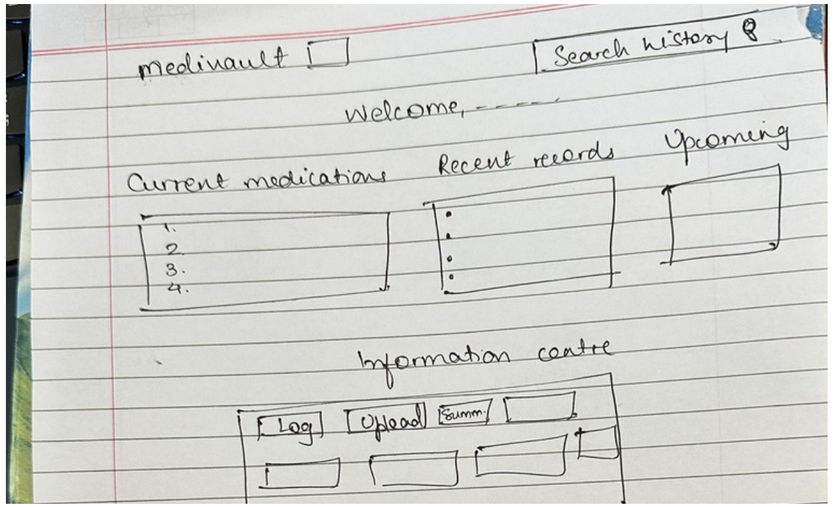
Low Fidelity Prototype

Sketches


Medivault
Register
Sign in
Register
Select acc
Patient
Doctor
Laboratory


Medivault
Register as a patient
Name :
Email :
Phone :
Aadhar :
Password :
SIGN UP


Medication
Records
Upcoming
Visualize
Name :
Age :
Sex :
Weight :
Height :


Medivault
Search history
Welcome,
Current medications
Recent records
Upcoming
1.
2.
3.
4.
Information centre
Log
Upload

Medium Fidelity Prototype

MediVault

Search medical history

Welcome back, John!

Medications

- Medicine 1
- Medicine 2
- Medicine 3
- Medicine 4
- Medicine 5

Recent records

- Green Cross / Haemogram ~ 15/11/22
- Green Cross / Blood Profile ~ 8/11/22
- Apollo Diagnostics / Lipid Profile ~ 8/11/22
- Green Cross / Liver Function Test ~ 14/08/22
- Charak Diagnostics / COVID-19 RTPCR ~ 13/07/21

Upcoming

- Blood Profile ~ 22/11/22
- Lipif Profile ~ 22/11/22
- Blood Profile ~ 29/11/22
- Liver Test ~ 14/02/23
- Haemogram ~ 15/02/23

Information center

Log records | Visualize | Summarize | Upload

Select instrument type	Select reading type	Select reading type	Select reading type
Pulse oximeter	Pulse rate	SpO2 level	Respiratory rate
Date	**Reading value**	**Reading value**	**Reading value**
17-11-22	100 Bpm	99.78 %	17 brt/min

MediVault

Search medical history

Welcome back, John!

Medications

- Medicine 1
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Recent records

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Information center

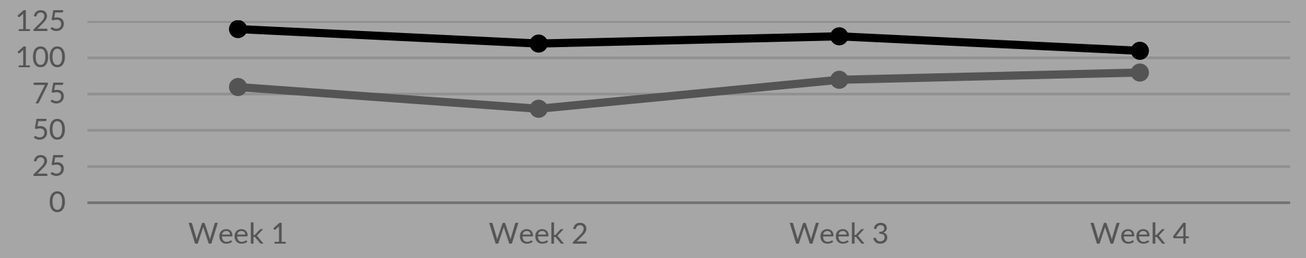
Log records | Visualize | Summarize | Upload

Select record type

Blood pressure

Date range

17-10-22 to 17-11-22



MediVault

Search medical history

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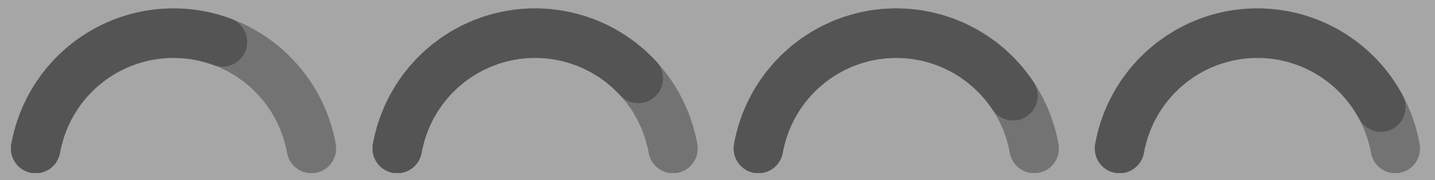
Upcoming

- Blood Profile ~ 22/11/22
- Lipif Profile ~ 22/11/22
- Blood Profile ~ 29/11/22
- Liver Test ~ 14/02/23
- Haemogram ~ 15/02/23

Information center

Log records | Visualize | **Summarize** | Upload

Name	John Doe
Age	35y 6m
Sex	Male
Weight	62 Kg
Height	165cm



MediVault

Search medical history

Welcome back, John!

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- Haemogram ~ 15/02/23

Information center

Log records | Visualize | Summarize | Upload

Enter document type

Haemogram

Date

17-11-22



John_Doe_Haemogram_Report.pdf
Green Cross Laboratories
PDF File, 168000 bytes

High Fidelity Prototype



MediVault

A single place to store your medical history, right from the birth certificate.

Register

Sign in



Register

Select account type

Patient

Doctor

Laboratory



Register as Patient

Already Registered? Login

NAME

John Doe

EMAIL

john.doe@gmail.com

PHONE NUMBER

(+01) 1234567890

AADHAR NUMBER

4545-6870-9944-6359

PASSWORD

••••••••

Sign up



Login

Sign in to continue

EMAIL

john.doe@gmail.com

PASSWORD

••••••••

Continue



Forgot Password?

Send reset link

EMAIL

john.doe@gmail.com

Send

MediVault

Search medical history

Welcome back, John!

Current | Future | Emergency

Medications

- Medicine 1
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Log records | Visualize | Summarize | Upload

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MediVault

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Information center

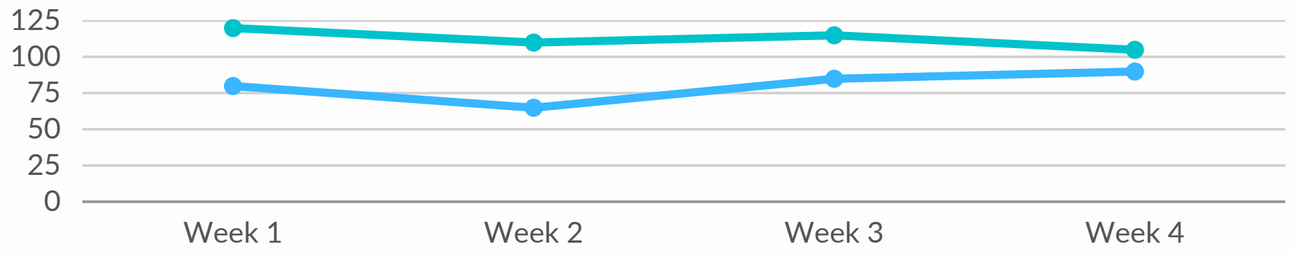
Log records | Visualize | Summarize | Upload

Select record type

Blood pressure

Date range

17-10-22 to 17-11-22



MediVault

Search medical history

Welcome back, John!

Current | Future | Emergency

Medications

- Medicine 1
- Medicine 2
- Medicine 3
- Medicine 4
- Medicine 5

Recent records

- Green Cross / Haemogram ~ 15/11/22
- Green Cross / Blood Profile ~ 8/11/22
- Apollo Diagnostics / Lipid Profile ~ 8/11/22
- Green Cross / Liver Function Test ~ 14/08/22
- Charak Diagnostics / COVID-19 RTPCR ~ 13/07/21

Upcoming

- Blood Profile ~ 22/11/22
- Lipif Profile ~ 22/11/22
- Blood Profile ~ 29/11/22
- Liver Test ~ 14/02/23
- Haemogram ~ 15/02/23

Information center

Log records | Visualize | Summarize | Upload

Name	John Doe
Age	35y 6m
Sex	Male
Weight	62 Kg
Height	165cm



MediVault

Search medical history

Welcome back, John!

Current | Future | Emergency

Medications

- Medicine 1
- Medicine 2
- Medicine 3
- Medicine 4
- Medicine 5

Recent records

- Green Cross / Haemogram ~ 15/11/22
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Upcoming

- Blood Profile ~ 22/11/22
- Lipif Profile ~ 22/11/22
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- Liver Test ~ 14/02/23
- Haemogram ~ 15/02/23

Information center

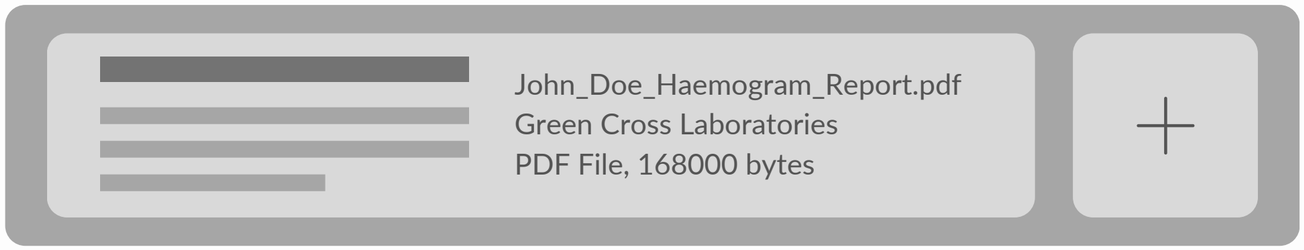
Log records | Visualize | Summarize | Upload

Enter document type

Haemogram

Date

17-11-22



MediVault

Search medical history

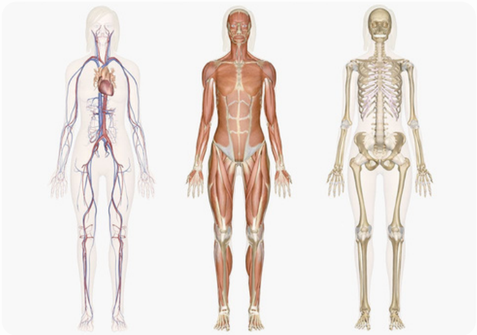
Welcome back, John!

Current | Future | Emergency

Diet restrictions to follow

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Quisque congue ante lacus, sed fermentum neque finibus eget. Morbi malesuada tincidunt metus vel rutrum. Nulla blandit elit nulla, eget iaculis eros placerat suscipit. Proin sit amet tincidunt dui.

3 DAYS AGO | 5 MIN READ





What to do after a Body Composition Analysis test?

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Quisque congue ante lacus, sed fermentum neque finibus eget. Morbi malesuada tincidunt metus vel rutrum. Nulla blandit elit nulla, eget iaculis eros placerat suscipit.

Get these tests done

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Quisque congue ante lacus, sed fermentum neque finibus eget. Morbi malesuada tincidunt metus vel rutrum. Nulla blandit elit nulla, eget iaculis eros placerat suscipit. Proin sit amet tincidunt dui. Cras nisi dui, ullamcorper vitae dictum eu, iaculis at justo. Etiam lacinia ipsum ut eros mattis condimentum. Nullam efficitur rhoncus quam. Vestibulum fringilla est ut varius rhoncus. Fusce et pellentesque felis.



MediVault

Search medical history

Create emergency alert

Current | Future | Emergency



John Doe (UID: 4545-6870-9944-6359)

Age	35y 6m
Sex	Male
Weight	62 Kg
Height	165cm
BP	130/70 mmHg
Sp02	99.56%
Sugar	140 mg/dL

Medications and Supplements

Medicines 1, 2, 3

Supplements 1, 2, 3

Diseases and Allergies

Diseases B, C, D, E

Allergies A, B, C, D, E

Alert

Thank you!