

Enhancing Healthcare Access and Efficiency:

An Innovative Website Portal for
Teleconsultation and Resource
Management

Submitted By-

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Summary

Our report details the development of a web portal that revolutionizes healthcare delivery by enabling teleconsultation and resource allocation for hospitals. We outline the main outcomes of our project, which include the establishment of an efficient and secure teleconsultation system and a platform for managing critical medical resources, such as hospital beds, ventilators, pharmaceuticals and medical supplies, diagnostic and imaging equipment and much more along with additional features such as ordering medicines, lab tests, and tracking the patient's location. The website enables patients to look for hospitals/doctors based on proximity and rating. Hospitals can provide their details, available resources, and doctor's profiles. They can lend and borrow resources in times of crisis and order medicines from registered companies. Medicine and equipment suppliers can receive orders through the portal and track them until delivery. We provide recommendations for future development of the portal, including the integration of electronic health records, resource tracking and allocation (essentially for government hospitals), and the implementation of a patient portal to enhance patient engagement.

Definition of the Problem

Problem Statement

A significant issue in the healthcare sector is the lack of “ONE” effective and comprehensive digital platform which can cater to the needs of both healthcare providers as well as patients. Due to the lack of a centralized system and availability of multiple small websites for individual hospitals, people frequently have trouble receiving suitable medical treatments and are, at times, switching between the websites of different hospitals or calling them. Additionally, it is sometimes difficult for hospitals and healthcare providers(especially in rural areas) to work together and exchange resources and other crucial medical

information, which causes delays in both diagnosis and treatment. Some of these facilities are provided by applications but they are very scattered(one portal for a specific hospital, one portal to book appointments, one for the doctors to connect, one for medicine delivery, another for resource exchange and so on) and juggling between portals or applications becomes tiresome for everyone.

Identification of the problem:

We collected information from various news articles and renowned websites like WHO, UNICEF, etc.

News articles indicating the need of centralized healthcare system:

- <https://economictimes.indiatimes.com/industry/healthcare/biotech/healthcare/healthcare-in-india-miles-to-go-ahead-to-realise-the-dream/articleshow/88643531.cms> (Jan 02, 2022) - This article argues that the COVID-19 pandemic has exposed the weaknesses in India's healthcare system, leading to disparities in healthcare delivery across the country and the need of technological intervention in the area.
- <https://www.uclahealth.org/news/centralized-health-care-more-cost-effective-offers-better-access-to-preventive-services> -benefits of having a centralized system for healthcare

The following articles highlight the need to teleconsultation in our country:

- In India, 70% of the population lives in rural areas, and only 30% of the total doctors are available there, leading to a significant gap in access to healthcare services.
<https://ballardbrief.byu.edu/issue-briefs/healthcare-access-in-rural-communities-in-india>
- As per the Ministry of Health and Family Welfare, Government of India, the country faces a shortage of over 600,000 doctors and 2 million nurses.
<https://economictimes.indiatimes.com/industry/healthcare/biotech/healthcare/indi>

[a-facing-shortage-of-600000-doctors-2-million-nurses-study/articleshow/68875822.cms?from=mdr](https://www.indianexpress.com/article/lifestyle/health/500-increase-in-healthcare-teleconsultation-in-india-80-are-first-time-users-report-6483212/)

- In the wake of the COVID-19 pandemic, the demand for telemedicine services in India has increased significantly, with a 500% increase in teleconsultations reported in March 2020. <https://indianexpress.com/article/lifestyle/health/500-increase-in-healthcare-teleconsultation-in-india-80-are-first-time-users-report-6483212/>
- As per a report by the National Sample Survey (NSS) in 2019, around 85% of rural households and 82% of urban households do not have access to healthcare services within a 5-kilometer radius.

The following news snippets highlight the need of connecting/ pooling hospital resources:

- 85-year-old senior doctor JK Mishra at Swarup Rani Nehru (SRN) hospital in Prayagraj lost his life after he was unable to find a ventilator bed at the hospital. <https://www.news18.com/news/buzz/up-doctor-dies-of-covid-in-hospital-he-worked-at-for-50-years-due-to-shortage-of-ventilators-3680063.html>.
- An investigation by Gaon Connection reveals how several district hospitals, where rural India seeks medicare, have inadequate, faulty or no ventilators at their disposal. <https://en.gaonconnection.com/covid-pandemic-rural-india-ventilators-district-hospitals-uttar-pradesh-madhya-pradesh-healthcare-oxygen-supply/>
- Doctor in India has revealed 135 infants have died in his hospital in the last three months because of a lack of ventilators. He works in the state-run Nashik Civil Hospital and says the problem affects the entire Indian state of Maharashtra. <https://www.youtube.com/watch?v=9LiGUlaczWE>
- Unutilised ventilators, dysfunctional X-ray and CT scan machines and non-existent waste management are among observations made by a three-member central team assessing the Covid-19 situation in Tripura after a visit to the lone designated Covid hospital in the state.

<https://indianexpress.com/article/india/tripuras-covid-fight-from-unused-ventilators-to-lack-of-death-audit-central-team-flags-issues-6623321/>

Detailed description of the identified Problem:

One of the major challenges our country is facing is lack of efficient healthcare facilities. By the news data presented above, it is clear that resources in some hospitals were kept idle while at the same time, some hospitals faced lack of resources. This uneven distribution of resources especially in the field of healthcare has led to several deaths in our country, majority of them being middle and below middle class people who can't afford expensive treatment. Apart from this, in some cases, patients face difficulty in accessing medical services due to the absence of a centralized system to manage their medical records and communicate with healthcare providers. Moreover, hospitals and healthcare providers struggle to coordinate with each other and share vital medical information, leading to delays in diagnosis and treatment. Even when some platforms are available, they are very scattered- (one portal for a specific hospital, one portal to book appointments, one for the doctors to connect, one for medicine delivery, another for resource exchange and so on). We lack "THE ONE CENTRALIZED HEALTHCARE PLATFORM" which can cater to the majority of the requirements of both patients as well as healthcare providers.

Current Developments in the Domain

There have been many developments in India in this domain over the last few years. Some of them are listed below:

- Practo: Practo is a telemedicine platform that enables patients to consult with doctors online. The platform provides video consultation services, as well as the ability to book appointments, order medicines, and access health records.
- National Health Stack: The government has launched the National Health Stack, a digital infrastructure for healthcare, which includes the development of a national electronic health record system. Several states in India have also launched their own EHR systems to improve the quality and accessibility of healthcare.
- Health Insurance Platforms: Several health insurance platforms have emerged in India, providing consumers with easy access to affordable health insurance plans. These platforms use AI and data analytics to personalize insurance plans based on a person's health history and other factors.
- ConnectedH: ConnectedH is an Indian startup that has developed a platform for remote monitoring of patients with chronic conditions, such as diabetes and hypertension. The platform uses IoT-enabled devices to transmit patient data to healthcare providers in real-time, enabling early intervention and improved patient outcomes.
- E- Sanjeevani App: It was launched in the wake of the COVID-19 pandemic. It is a web-based platform that enables doctors to provide teleconsultations to patients through video and audio modes.
- Portea Medical: Portea Medical is a home healthcare service provider that offers a range of services, including doctor consultations, nursing care, and physiotherapy.
- CallHealth: CallHealth is a healthcare services platform that offers a range of services, including doctor consultations, diagnostic tests, and medicine delivery. The platform also provides home healthcare services, including nursing care and physiotherapy.

Need and Significance of our Website

Although there are many such healthcare technological services available in India, each has its own unique features and limitations. The existing technologies aim towards providing reliefs to a specific need. Our project contributes to the existing ecosystem by offering a more comprehensive and user-friendly platform that addresses a wider range of needs of hospitals and patients. Along with telecommunication services, it also incorporates features such as resource management, allowing hospitals to quickly and efficiently share critical resources such as hospital beds, ventilators, and medicines with nearby facilities.

Objectives pertaining to minimizing the gap

The primary objective of our web portal is to address the critical issue of the lack of integration within the medical industry in India. The healthcare industry in India is largely fragmented, with individual hospitals and medical facilities operating independently. This has resulted in the lack of coordination and communication between healthcare providers, leading to inefficiencies, wastage of resources, and gaps in patient care.

The main aim of our web portal is to connect various hospitals and medical facilities across the country, enabling them to share resources, information, and expertise. Also, the separate accounts for patients and doctors will enable the people to continue with their ongoing medical treatment even in cases of pandemic. By creating a centralized platform, we aim to facilitate better communication and collaboration between healthcare providers, leading to more coordinated and efficient healthcare delivery.

Tools and Techniques


The main tools for developing our portal and implementation of our idea is the ones used for Web Development. The frontend portion involves the designing of the website. It involves the UI i.e. user interface. For the frontend portion we are using React. Backend involves the management of all the data, such as user credentials, vitals, doctor's info, the resources, all personal details, feedback, raising queries, generating requests for resources etc. The management of all data and connecting various pages and setting their navigation paths is under Backend for which we are using Firebase and Cloud Firestore.

Detailed work plan/technological interventions

Once someone enters our portal, they will have four options to log in- As a "patient," "doctor," "hospital," and "medicine and equipment supplier." In this section, This section will explain the facilities provided to each sector. A few key points to note are that our website will be available in multiple regional languages because we believe that efficient health care must be accessible to all. We will also add Ayurvedic specialists, fitness trainers, yoga gurus, and psychologists to the app. Also, login will be through an Aadhar number, and we plan on linking Digilocker accounts to keep it centralized.

1. As a patient:

A patient's ID will store all their documents, prescriptions from previous visits, and other health parameters like Blood Pressure, Blood Sugar, etc. Apart from this, a patient will get two options for booking an appointment.



PERSONAL DETAILS

APPOINTMENTS

MEDICAL HISTORY

LAB REPORTS

PRESCRIPTIONS

SUPPORT

HEALTH ID - 328736927794834131

Full Name

Email Id

Language

Sex

Date of Birth

Contact No

Address

EMERGENCY CONTACT INFORMATION

Full Name

Relationship to Patient

Email Id

Contact No

Address


Full Name

Relationship to Patient

Email Id

Contact No

Address



PERSONAL DETAILS

APPOINTMENTS

MEDICAL HISTORY

LAB REPORTS


PRESCRIPTIONS

SUPPORT

HEALTH ID - 328736927794834131

LAB REPORTS AND VITALS

03-06-2022	kng4839479IBSIS84Q085UQ.pdf	VIEW	DOWNLOAD	
23-06-2022	henj89732928BIA497HAFRI34.pdf	VIEW	DOWNLOAD	
03-07-2022	kng4839479IBSIS84Q085UQ.pdf	VIEW	DOWNLOAD	
04-08-2022	4a29r37529ihsiuhiBY4729742.pdf	VIEW	DOWNLOAD	
23-08-2022	eahia37769qBHSAY4797939.pdf	VIEW	DOWNLOAD	




SpO2 : 98

Blood Sugar : 99mg/dl

Bp : 100/60mm Hg

Temp : 98.6°F

Pulse Rate : 80 beats per minute



PERSONAL DETAILS

APPOINTMENTS

MEDICAL HISTORY

LAB REPORTS

PRESCRIPTIONS

SUPPORT

HEALTH ID - 328736927794834131


MEDICAL HISTORY

SURGICAL HISTORY	IMMUNIZATIONS	ALLERGIES
<ul style="list-style-type: none"> Tonsillectomy in childhood Appendectomy in 2010 	<ul style="list-style-type: none"> Influenza vaccine (received annually) Tdap (tetanus, diphtheria, pertussis) vaccine (last received in 2020) 	<ul style="list-style-type: none"> Penicillin Dust mites Cats
MEDICAL CONDITIONS	SOCIAL HISTORY	MEDICATIONS
<ul style="list-style-type: none"> Hypothyroidism Gastroesophageal reflux disease (GERD) Migraine headaches Anxiety and panic disorder 	<ul style="list-style-type: none"> Non-smoker No history of alcohol or drug abuse Exercises regularly and maintains a healthy diet 	<ul style="list-style-type: none"> Levothyroxine Lisinopril Omeprazole Sumatriptan Sertraline

First, they will be asked if they have any particular doctor/ hospital they want to consult. If yes, that particular doctor's available slots will be visible to the patient, allowing them to select the slot comfortable for them. Otherwise, the patient will be asked about the symptoms/ type of doctor they seek. Furthermore, the algorithm will automatically show them the profiles of top doctors from that domain, and further, the selection process will be the same. Once booked, the new appointment will be visible on the patient's profile, and they will get a confirmation through sms.

DO YOU HAVE ANY PARTICULAR DOCTOR IN MIND ?

☒ Yes ☐ No




- PERSONAL DETAILS
- APPOINTMENTS
- MEDICAL HISTORY
- LAB REPORTS
- PRESCRIPTIONS
- SUPPORT

Search

Dr. G (Cardiologist, ABC Hospital)	BOOK APPOINTMENT
Dr. G(Neurologist, DEF Hospital)	BOOK APPOINTMENT
Dr. G (Physiologist , GHI Hospital)	BOOK APPOINTMENT
Dr. G (---- , --- Hospital)	BOOK APPOINTMENT
Dr. G (---- , ---- Hospital)	BOOK APPOINTMENT
Dr. G (---- , ---- Hospital)	BOOK APPOINTMENT
Dr. G (---- , ---- Hospital)	BOOK APPOINTMENT
Dr. G (---- , ---- Hospital)	BOOK APPOINTMENT
Dr.G (---- , ----- Hospital)	BOOK APPOINTMENT

DO YOU HAVE ANY PARTICULAR DOCTOR IN MIND ?

☐ Yes ☒ No



- PERSONAL DETAILS
- APPOINTMENTS
- MEDICAL HISTORY
- LAB REPORTS
- PRESCRIPTIONS
- SUPPORT

Search

Dr. A (Cardiologist, ABC Hospital)	BOOK APPOINTMENT
Dr. B(Cardiologist, DEF Hospital)	BOOK APPOINTMENT
Dr. C (Cardiologist , GHI Hospital)	BOOK APPOINTMENT
Dr. D (Cardiologist , --- Hospital)	BOOK APPOINTMENT
Dr. E (Cardiologist , ---- Hospital)	BOOK APPOINTMENT
Dr. H (Cardiologist , ---- Hospital)	BOOK APPOINTMENT
Dr. I (Cardiologist , ---- Hospital)	BOOK APPOINTMENT
Dr. G (Cardiologist , ---- Hospital)	BOOK APPOINTMENT
Dr.G (---- , ----- Hospital)	BOOK APPOINTMENT

PERSONAL DETAILS

APPOINTMENTS

MEDICAL HISTORY

LAB REPORTS

PRESCRIPTIONS

SUPPORT

HEALTH ID - 328736927794834131

APPOINTMENTS

27-05-2023 12:00 AM	DOCTOR : MR. A ID-xyz12234abc383	VIEW DONE
03-06-2023 12:00 AM	DOCTOR : MR. A ID-xyz12234abc383	VIEW PENDING
27-06-2023 12:00 AM	DOCTOR : MR. A ID-xyz12234abc383	VIEW PENDING
08-07-2023 12:00 AM	DOCTOR : MR. A ID-xyz12234abc383	VIEW PENDING

[VIEW ALL](#)

Once consulted, the patient can also book a follow-up session with the same doctor. They can also order medicines, book lab tests that will collect samples from their doorstep, call an ambulance, track their locations, have a speed dial contact for immediate first aid, get notifications about the nearest blood donation camps, and have access to filling organ donation forms.

PERSONAL DETAILS

APPOINTMENTS

MEDICAL HISTORY

LAB REPORTS

PRESCRIPTIONS

SUPPORT

HEALTH ID - 328736927794834131

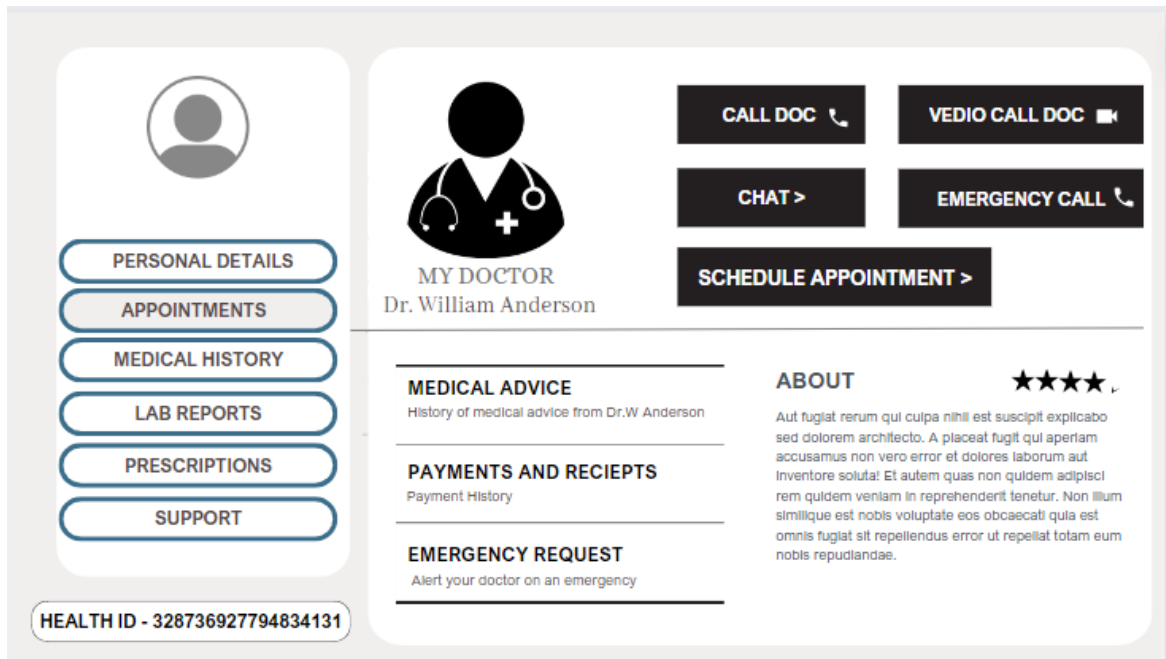
Prescriptions

DRUG :
from :
to :

Send Refill Request

Past Prescriptions

PROGRESS	DRUG	SCHEDULE	QTY	DAY S	PROVIDER
34%	Aldactone 25mg Tablet	1 every morning 1 every evening (after meals)	90	180	/Provider 1/
63%	Fosamax 70mg Tablet	1 every morning (before breakfast)	4	28	/Provider 2/
84%	Augmentin 500-125mg Tablet	Take 1 twice daily -- Follow warnings	/	/	/Provider 3/



One more major assistance provided is for patients who are admitted. At the time of profile creation, the patient will be asked to put in 2 emergency contacts. Usually, when a patient is admitted or is in a severe condition, the nurse checks their parameters every few hours and informs the doctor. Using our website, they have to enter it into the patient's profile, and the doctor and the other two contacts will get the information via the patient profile and sms, respectively. This will result in better transparency, help maintain the mental status of the family and prepare them for both the best and worst.

BLOOD BANK		
Hospital name Address Phone Number	Hospital name Address Phone Number	Hospital name Address Phone Number
Hospital name Address Phone Number	Hospital name Address Phone Number	Hospital name Address Phone Number
Hospital name Address Phone Number	Hospital name Address Phone Number	Hospital name Address Phone Number
Hospital name Address Phone Number	Hospital name Address Phone Number	Hospital name Address Phone Number

2. As a doctor:

A doctor's id will have his details(qualification, reg.no., contact details, etc.) in addition to his appointments for the next month. The appointments will be visible in a calendar format. Once the doctor clicks on a patient, they will be redirected to their profile. Along with all the information there, he will also get an option to call the patient in case of teleconsultation and to type prescriptions for in-person visitors. He will also have his digital signature(provided during the formation of his id) and registration number mentioned on every prescription.

APPOINTMENTS



Dr Anurag Singh

Cardiologist

MBBS ____ MD ____ DM ____

ABC Hospital, Ropar Punjab, 140001

Contact - 12486 47896

APPOINTMENTS

MY PATIENTS

CALENDAR

CHATS

CALLS

SETTINGS

You have following appointments today



MY PATIENTS



Dr Anurag Singh

Cardiologist

MBBS ____ MD ____ DM ____

ABC Hospital, Ropar Punjab, 140001

Contact - 12486 47896

APPOINTMENTS

MY PATIENTS

CALENDAR

CHATS

CALLS

SETTINGS

Search



Gab



Gcd



Gdd



Gdr



Ger



Gem



Gui



Gwi



Gxy



CALENDAR



Dr Anurag Singh

Cardiologist

MBBS ____ MD ____ DM ____

ABC Hospital, Ropar Punjab, 140001
Contact - 12486 47896

APPOINTMENTS

MY PATIENTS

CALENDAR

CHATS

CALLS

SETTINGS

You have the following events planned for this week

	SUN 29	MON 30	TUE 31	WED 1	THU 2	FRI 3	SAT 4
10 AM	PATIENT A, 10am		PATIENT D, 10am		PATIENT R, 10:30am		PATIENT Y, 10am
11 AM	PATIENT B, 10:30am		PATIENT H, 11am			PATIENT FD, 11:30am	
12 PM		PATIENT G, 11:30am - 12:30pm		PATIENT J, 11:30am - 12:30pm			
1 PM	LUNCH 1 - 2pm	LUNCH 1 - 2pm	LUNCH 1 - 2pm	LUNCH 1 - 2pm	LUNCH 1 - 2pm	PATIENT L, 12:30pm	PATIENT KL, 12:30pm
2 PM			PATIENT C, 2pm				
3 PM	PATIENT I, 2:30pm				PATIENT M, 2:30pm		
4 PM		PATIENT E, 3:30pm	PATIENT DG, 3:30pm	PATIENT F, 3:30pm		PATIENT K, 3 - 4pm	
5 PM	PATIENT O, 5 - 6pm	PATIENT G, 4:30 - 5:30pm		PATIENT GG, 4:30pm	PATIENT DD, 4:30pm		PATIENT Q, 4pm
6 PM			PATIENT OM, 5:30pm				
7 PM					PATIENT LO, 6:30 - 7:30pm		
8 PM							

CHATS



Dr Anurag Singh

Cardiologist

MBBS ____ MD ____ DM ____

ABC Hospital, Ropar Punjab, 140001
Contact - 12486 47896

APPOINTMENTS

MY PATIENTS

CALENDAR

CHATS

CALLS

SETTINGS

Search

Hik kol

Video call

call

Refer files

Abc Def

Ghi Jkl

Mno Pqr

Hik kol

Hks

Hhio

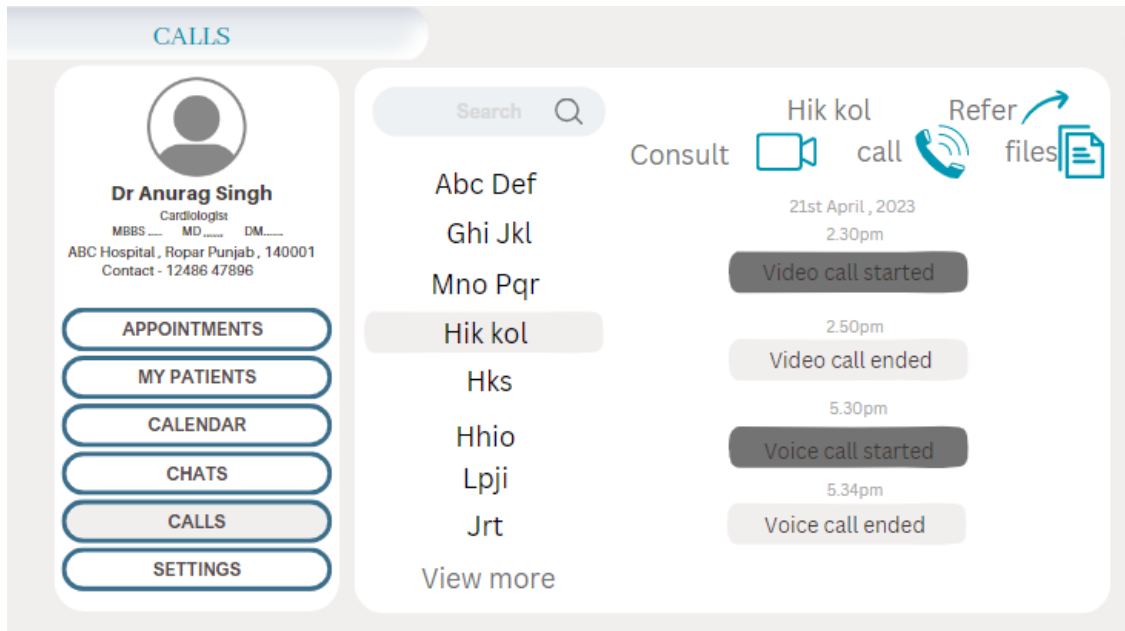
Lpji

Jrt

View more

21st April, 2023
2.30 pm

5.30pm




In case the vitals of a patient are alarmingly abnormal(very low spO2 or very high/low blood pressure), the doctor will get a notification, followed by continuous beeping till he turns it off.

One important feature the doctor will have is to refer the patient to another doctor. This might be required if the algorithm allows the wrong doctor or if the patient requires more assistance than the doctor can provide. In such cases, the doctor has to click the transfer patient button, choose a doctor or field of specialization and leave the rest to the application.

3. As a hospital:

On this page, hospitals will provide their details along with a google maps extension to access directions to reach them. Also, the number of available and accessible resources(ventilator beds, oxygen cylinders, blood groups, etc.) will be mentioned and regularly updated to make it easier for the patient to select the hospital they want to visit.

HOME



Kalyan shai meena homes
Talawara , Sindoli
Rajasthan , 303325

HOME

DIRECTIONS

EMERGENCY SERVICES

AVAILABILITY OF RESOURCES

MEDICINES

SAMPLE COLLECTION

DOCTORS

LEND BORROW

5169

PATIENTS

964

DISCHARGED

1598

OPERATIONS

CENTERS OF EXCELLENCE

CARDIOLOGY(heart related)

PULMONOLOGY(lungs related)

NEUROSCIENCES

CANCER CARE

TRANSPLANT

ROBOTICS


ORTHOPAEDICS

RAISE A QUERY

ABOUT US

Search by patient name , email , phone number

DIRECTIONS



Kalyan shai meena homes
Talawara , Sindoli
Rajasthan , 303325

DIRECTIONS

EMERGENCY SERVICES


AVAILABILITY OF RESOURCES

MEDICINES

SAMPLE COLLECTION

DOCTORS

LEND BORROW



← Kalyan shai meena/indra/satis...

name

Kalyan shai meena/indra/satis homes

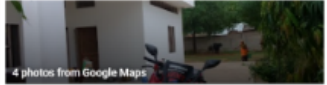
Details from Google Maps


talawara, Sindoli, Rajasthan 303325

5.0 ★★★★★

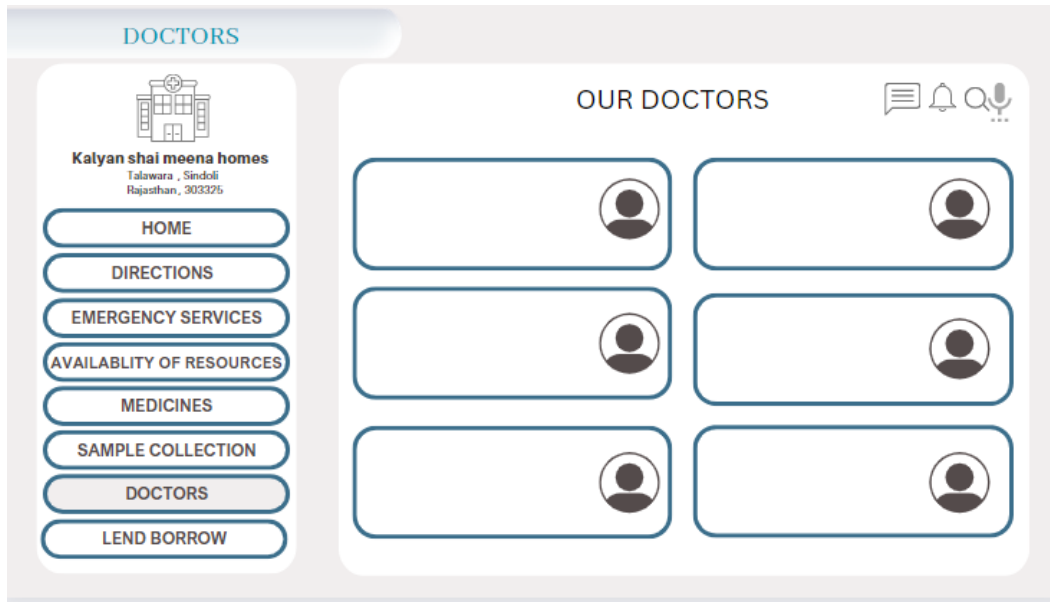
View In Google Maps

4 photos from Google Maps

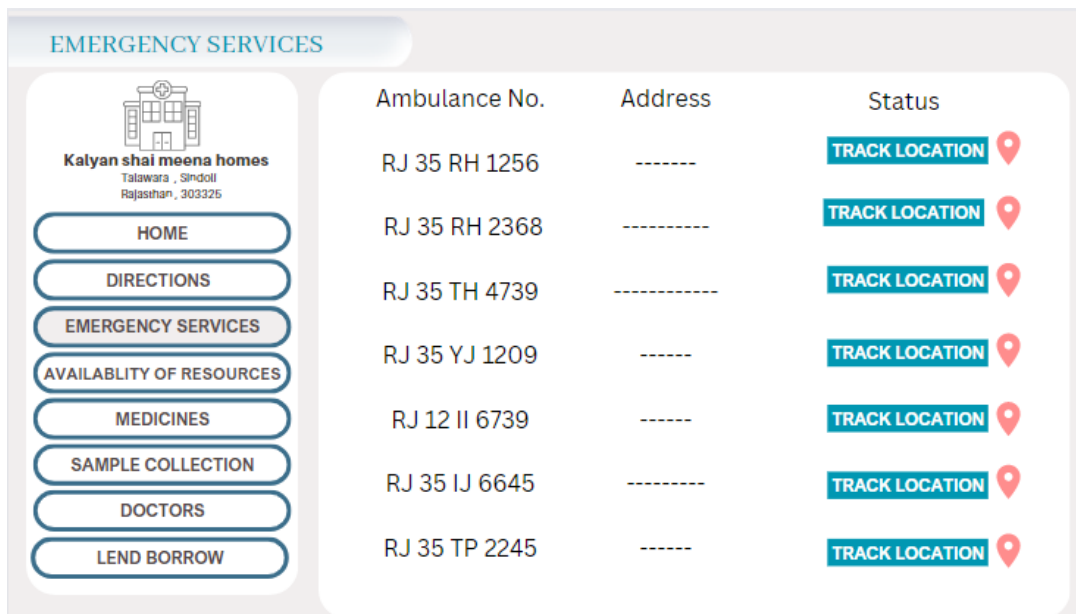




Search by patient name , email , phone number



All the doctors available in the hospitals will be present on this page for the patients to book. Further, we plan that a tablet be installed in all ambulances, and this id be delegated to them all.



EMERGENCY SERVICES

PERSONAL DETAILS

APPOINTMENTS

MEDICAL HISTORY

LAB REPORTS

PRESCRIPTIONS

SUPPORT

AMBULANCE NUMBER RJ 35 YH 1123

SPO2

BLOOD PRESSURE

SUGAR LEVEL

PULSE

TEMPERATURE

STRESS LEVEL

write remarks and any requirement of equipment from hospital

This is done so that the patient's parameters are updated before reaching the hospitals so doctors can provide some first aid instructions and keep everything prepared till the patient reaches the hospital.

We are also providing them the facility to order medicines from the registered companies, hence keeping a record and avoiding medicine forging issues. They will also be able to track their packages(like Flipkart or Amazon)

MEDICINES

Kalyan shai meena homes

Talawara , Sindoli

Rajasthan , 303325

HOME

DIRECTIONS

EMERGENCY SERVICES

AVAILABILITY OF RESOURCES

MEDICINES

SAMPLE COLLECTION

DOCTORS


LEND BORROW

Order medicines

Deliver Medicines

Name and id	Company	No. of Units	Status
Medicine 1 hhr-bbd-uue-009	MICRO LABS	15	ORDERED <div>VIEW RECEIPT</div>
Medicine 2 hhi-ujl-iig-087	CIPLA		ORDER NOW
Medicine 3 hhud- ooi-oyy -998	CIPLA	58	ORDERED <div>VIEW RECEIPT</div>
Medicine 4 llo-99-uuy-kki	MICRO LABS	76	ORDERED <div>VIEW RECEIPT</div>
Medicine 5 jju-hh-0iih-667	CADILA		ORDER NOW
Medicine 6 jjg-jjo-uut-998	CIPLA		ORDER NOW

MEDICINES



Kalyan shai meena homes
Talaawara , Sindoli
Rajasthan , 303325

HOME

DIRECTIONS

EMERGENCY SERVICES

AVAILABILITY OF RESOURCES

MEDICINES


SAMPLE COLLECTION

DOCTORS

LEND BORROW


Order medicines

Deliver Medicines

 SEARCH MEDICINES

DATE AND TIME	ADDRESS	NAME AND ID	RECEIPT	STATUS
27-05-2023 12:00 AM	abc nagar , Patiala Punjab	MR. ACF ID-xyz12234abc383	<div>VIEW RECEIPT</div>	DELIVERED
03-06-2023 12:00 AM	gyh j colony Mohali	MS. AKIJ ID-xyz12234abc383	<div>VIEW RECEIPT</div>	PENDING
27-06-2023 12:00 AM	-----	MR. A ID-xyz12234abc383	<div>VIEW RECEIPT</div>	DELIVERED
08-07-2023 12:00 AM	-----	MR. XYZ ID-xyz12234abc383	<div>VIEW RECEIPT</div>	PENDING

SAMPLE COLLECTION / REPORTS



Kalyan shai meena homes
Talaawara , Sindoli
Rajasthan , 303325

HOME

DIRECTIONS

EMERGENCY SERVICES

AVAILABILITY OF RESOURCES

MEDICINES

SAMPLE COLLECTION

DOCTORS

LEND BORROW

Patient Details , id and address	Sample Collection Status	Sample Testing Status
Mr. Mohit Sihag Male xyr - 123 -r - thr Tarang Vihar , Sindoli , Rajasthan	PENDING	PENDING
Ms. Neha Verma Female abd - 675 - o -fjfb High files Soiety , Bhiwadi, Rajasthan	COLLECTED	TESTED <div>VIEW REPORT</div>
Mr. Abhimanyu Rathore Male uer - 987 - u -fyt Kunj Villa , Jaipur , Rajasthan	COLLECTED	PENDING

BLOOD BANK



**Kalyan shai meena
hospital**
Talawara , Sindoli
Rajasthan
303325

S No.	Blood Group	No. of Units
1	A+	1900
2	B+	2500
3	AB+	2500
4	O+	1500
5	A-	3000
6	B-	2500
7	AB-	2000
8	O-	1000

Another feature we provide here is a platform for hospitals to lend and borrow resources in times of crisis. In this part, the hospital can raise a query in the network mentioning the resource they need, the number of days they need it, and the urgency level. To motivate hospitals for this, we can give them scores that increase as they lend more resources. Further, when they need to borrow some resource, we can prioritize them in the list based on their distance from the lending hospital, level of urgency and score. One more check we will be keeping is that no hospital lends more than 50% of some available resources except in cases of high urgency.

AVAILABILITY OF RESOURCES



Kalyan shai meena homes
Talawara , Sindoli
Rajasthan , 303325

HOME

DIRECTIONS

EMERGENCY SERVICES

AVAILABILITY OF RESOURCES

MEDICINES

SAMPLE COLLECTION

DOCTORS

LEND BORROW

Equipments currently present in the hospital

S.No.	Equipment	No. of Units
1	Beds	560
2	Oxygen Cylinders	150
3	Syringes	10,000
4	Masks	25,000
5	Sanitisers	1,000
6	Blood	15,000
7	Ventilators	200

LEND / BORROW RESOURCES

SCORE: 1145



Kalyan shai meena homes
Talawara , Sindoli
Rajasthan , 303325

HOME

DIRECTIONS

EMERGENCY SERVICES

AVAILABILITY OF RESOURCES

MEDICINES

SAMPLE COLLECTION

DOCTORS

LEND/BORROW RESOURCES

RESOURCES LENT


Name	Address	Requirement	Quantity	Date of lent
Hospital a	abc yte	beds	5	15/02/23
Hospital b	hti jyd	masks	500	17/02/23
Hospital c	ghi dhi	ventilators	2	17/02/23
Hospital d	kkhd hi	sanitisers	50	23/02/23

RESOURCES BORROWED

Name	Address	Requirement	Quantity	Date of borrow
Hospital j	auh yoje	syringes	50	13/12/22
Hospital k	hjihgll	mri machine	2	23/01/23
Hospital l	ghyih	ct scan	1	17/02/23
Hospital m	iuu	anesthesia	1	20/03/23

LEND / BORROW RESOURCES

SCORE: 1145



Kalyan shai meena homes
Tatawara , Sindoli
Rajasthan , 303325

HOME

DIRECTIONS

EMERGENCY SERVICES

AVAILABILITY OF RESOURCES

MEDICINES

SAMPLE COLLECTION

DOCTORS

LEND/BORROW RESOURCES

ALL ACTIVE QUERIES

Select	Name of Hospital	Address	Requirement	Quantity	Urgency
<input type="radio"/>	Hospital F	34 Street, London	masks	55	Low
<input type="radio"/>	Hospital E	223 Washington Street	beds	22	medium
<input type="radio"/>	Hospital C	888 Hell's Road	anesthesia	25	Low
<input type="radio"/>	Hospital D	120 Sterling Road	beds	200	High
<input type="radio"/>	Hospital B	142 China Town	Masks	500	High
<input type="radio"/>	Hospital A	1330 NY Street	syringes	77	Low
<input type="radio"/>	Hospital ABC	122 Highland Street	Ventilators	3	High

Reply to Query
(in case of lending)

Raise a Query
(in case of borrowing)

4. As a medicine and equipment supplier:

Our portal gives them a digitized way to receive orders and get paid. A minimum number of people would be involved between the dispatch time till the order is received, and the order could be tracked at all times, reducing medicine forging. Also, once delivered, the entire order pathway can be tracked by both hospital and the supplier, including the number and amount of time the package stopped in between.

MEDICINE SUPPLIER				Status		
S No.	Medicine	Hospital	No. of Units	Status		
1	benadryl	Hospital A ----, 14001	1900	VIEW HISTORY	TRACK LOCATION	VIEW RECEIPT
2	azze 500	Hospital B ----, 12446	2500	VIEW HISTORY	TRACK LOCATION	VIEW RECEIPT
3	ossopan	Hospital C ----, 1266	2500	VIEW HISTORY	TRACK LOCATION	VIEW RECEIPT
4	fesorb	Hospital D ----, 88456	1500	VIEW HISTORY	TRACK LOCATION	VIEW RECEIPT
5	calcium	Hospital E ---, 4475	3000	VIEW HISTORY	TRACK LOCATION	VIEW RECEIPT
6	meftal	Hospital F ---9445	2500	VIEW HISTORY	TRACK LOCATION	VIEW RECEIPT
7	crocin	Hospital G ---9908	2000	VIEW HISTORY	TRACK LOCATION	VIEW RECEIPT
8	dolo 650	Hospital ---, 2234	1000	VIEW HISTORY	TRACK LOCATION	VIEW RECEIPT

Novelty/ Innovation of the proposed intervention

1. Our major novelty is compiling all the applications performing tasks specific to patient's or doctor's use to "THE ONE CENTRALIZED HEALTHCARE PLATFORM" after adding more facilities to make our healthcare industry thrive.
2. We plan to add the patient's profile to a tablet attached in ambulances so that the vitals are updated, and doctors get a grim diagnosis and prepare the required resources(ventilator bed, surgery room) before the patient arrives. Also, the patient and hospital could track and keep records of the ambulance at any time. In the future, we can connect our application directly to the equipment attached to the ambulance or hospital beds so the update happens automatically at short intervals.
3. We are also adding medicine and equipment suppliers to the application to resolve the issue of medicine forging, since now, both the hospitals and the suppliers can track the location of delivery packages at any instance of time and also get the history of where the package stopped and for what amount of time.
4. Our web portal is user-friendly for all four sections. For a patient, two options are present to book an appointment- either he can choose a specific doctor, or he can give his symptoms, and the algorithm (based on the previous successful cases the doctors handled) will allot him a specialized doctor(based on distance and rating of the doctor). Also, he can book a follow-up appointment or alert the doctor of an emergency after an appointment. The patient can see the visual progress of a medicine(the number of days they have taken it). This might motivate them to complete a medicine course.
5. Usually, when a patient is admitted, the family asks the nurse or doctor treating the patient for continuous updates, which becomes frustrating for both the doctor and the family. In our portal, we have asked the patient for two emergency contacts, and whenever the patient is admitted, the nurse checking his vitals directly updates the patient's profile, and an sms is sent to the two contacts. The

doctor can also check the patient's profile by clicking on his name in his patient list. This will promote more transparency in the healthcare system.

6. A patient can check the resources available in a particular hospital before calling for an ambulance or getting admitted. Moreover, we aim to promote lending and borrowing of resources among hospitals to implement a give-and-take relationship and bring hospitals together as one unit since a country's healthcare should not be compromised due to some people's greedy or competitive nature.
7. To make our application accessible to all, we plan on giving an option for the user to choose their desired language as they enter our website. In the future, we have also added a voice command function(again, in multiple languages) for people who can't type. Our main motive for this is to promote inclusivity since we are aiming at a greater part of the population.

Approaches to implement intervention Plans

To successfully implement our plan and to build the desired web portal that connects various hospitals and allows for the sharing of resources and patient information, several approaches will be taken to ensure its effective use and adoption. The following are some key approaches that can be taken:

- For a web portal to be used by such a large audience, it needs to be user-friendly, and accessible to all relevant stakeholders, including hospital staff and patients. All the issues would be kept in mind and everything would be achieved through effective planning, design, and testing. A well-designed portal that is intuitive and easy to use will encourage its uptake by hospital staff, doctors and patients. Security measures such as encryption and user authentication will also ensure that patient information is kept confidential and secure. Accessibility

can be enhanced through features such as multi-language support and compatibility with various devices such as smartphones, tablets, and laptops.

- To ensure the successful implementation of our idea, we certainly require strong support from government authorities and effective implementation of certain schemes. We need government policy and support to promote the adoption of our application. Since it connects various resources, we need a surety that all the hospitals are filling in the right details.
- Also, since it is an application based on extremely dynamic data, we even need strict rules and regulations that the respective users, be it patient, doctor or hospital, keeps updating the data visible. Especially, the hospitals need to be very regular to update the resources, either auto-updating or manually updating data.
- The policy can include incentives or regulations that encourage hospitals to remain active in updating data. The main goal of government policies should be that after the completion of registration and integration of the hospital with our portal, the data should always be in sync with reality, since in the worst case, it could cost someone's life as well.
- It is essential that the government ensures frequent checking of data to ensure that it matches with the reality and the present situation. This is particularly important when it comes to the sharing of resources and patient information between hospitals. The accuracy and reliability of the data are critical for effective decision-making and resource allocation.

- Frequent checking of data can help identify any discrepancies or errors and ensure that they are corrected in a timely manner. This can prevent potential harm to patients and promote better outcomes. Therefore, the government should strictly enforce policies and procedures to ensure that the data is regularly checked and validated to ensure that it reflects the current situation accurately.
- Whenever a patient is registered with the hospital or personally, it is mandatory for the user to upload the recent medical tests he/she has undergone. And to ensure that future success of any check-up which the patient undergoes, a certain time period will be set that the reports must not be more than that old.
- Overall, the main and the foremost approach would be to ensure user security and protection of user credentials. Maintaining the privacy of the user's profile and the security of their credentials is a key approach for the successful implementation of our web portal. The portal will hold sensitive information about patients, and it is vital that this data is kept confidential and secure. To ensure this, the portal will have robust security measures in place, such as encryption, multi-factor authentication, and secure storage.
- Furthermore, it is essential to ensure that the portal does not allow fake accounts or impersonations, which can lead to data breaches or misuse. Ensuring that the user profile is only accessible to authorized personnel and that the authentication process is rigorous can help prevent unauthorized access and misuse of sensitive data. Therefore, maintaining user privacy, ensuring security of credentials, and preventing fake accounts are essential approaches that must be adopted to ensure the success of the web portal.

Constraints and Barriers

During the implementation, there are several constraints and barriers that need to be considered. These constraints and barriers can hinder the successful implementation of the portal and prevent patients, doctors and hospitals across the region from benefiting from its features.

- One of the primary barriers that could hinder the implementation of the web portal for hospitals is the **lack of resources across many regions**, which are often located far away. Many hospitals in remote regions may not have access to adequate resources such as medical equipment, skilled medical professionals, and infrastructure required for the efficient functioning of the portal.
- The shortage of resources can be a significant obstacle that can hinder the successful implementation of the portal, particularly in underdeveloped or remote regions. The availability of resources often far away could pose a significant challenge for hospitals that require quick access to resources. If certain organizations come together and ensure that the **transport facilities** are enough to manage the emergencies then we can surely overcome this barrier to some extent.
- **Illiteracy** is one of the significant constraints that could impede the implementation of the web portal for hospitals. It is one of the foremost barriers we would face while implementing our portal. India's literacy rate is just **67.77%** in rural regions and **84.11%** in urban regions.
- Not everyone has the necessary knowledge and intellect to access the web portal and utilize its functionalities, particularly in underdeveloped or remote regions where literacy rates are low. This constraint could prevent some hospitals from benefiting from the portal, which could limit its impact on healthcare delivery. The use of user-friendly interfaces and visuals could also help overcome this constraint, making it easy for users to access and utilize the portal's features.

Therefore, addressing **the issue of illiteracy** is critical to ensuring the successful implementation of the web portal for hospitals.

- **Internet connectivity** is another constraint that could hinder the successful implementation of the web portal for hospitals. Even if we succeed in implementing the portal with all the necessary features, internet connectivity issues could prevent hospitals from accessing the portal's utilities. This constraint could be particularly significant in remote regions where the internet infrastructure is not well-developed, and connectivity is often poor. To overcome this constraint, it is necessary to explore different solutions such as **establishing high-speed internet infrastructure**, exploring alternative connectivity solutions such as satellite internet, and improving the existing infrastructure's reliability. Additionally, the development of **mobile applications** that can function **without internet connectivity** could also be explored

Expertise available with each student

Vanshika Dhamija - Front Web Development, User Experience Design-The healthcare portal would have to be user-friendly and accessible to patients, doctors, and hospital staff.

Sakshi Bansal - Database management: The healthcare portal would store and manage large amounts of patient data, doctor information, and other healthcare-related information. Therefore, expertise in database management and optimization would be required.

Ashima Goyal - Expertise in system integration and API development. Integration with third-party systems: The healthcare portal would likely need to integrate with third-party systems such as electronic health records (EHRs), laboratory information management systems (LIMS), and payment gateways.

Simran Kaur - Expertise in system integration and API development. Integration with third-party systems: The healthcare portal would likely need to integrate with third-party systems such as electronic health records (EHRs), laboratory information management systems (LIMS), and payment gateways. Specialization in backend connection

Expected Outcomes

The successful implementation of the web portal could result in several positive outcomes.

- Foremost, the portal would enable hospitals to share their resources effectively, which could lead to better healthcare delivery and improved patient outcomes. If successfully implemented, our application has the potential too eliminate the most significant problem of the medical field in our country, i.e. lack of resources during emergencies.
- Additionally, the portal's patient profile page would provide hospitals with access to critical patient information, which could help healthcare professionals make better-informed decisions. Since our portal will use strong personal verification before signing up, even a patient can decide which doctor to select and doesn't fall in traps of any fake account.
- The availability of real-time data on hospital resources would enable hospitals to plan better and allocate their resources effectively, leading to improved resource utilization.
- Furthermore, the portal's ability to connect hospitals could help improve knowledge sharing, collaboration, and partnerships, leading to better healthcare delivery outcomes.
- Overall, if the approaches to implement the plan are successful and the constraints and barriers can be overcome, the implementation of the web portal for hospitals could have a significant positive impact on healthcare delivery, benefiting both hospitals and patients.

Suggested plan of action

To enhance the impact of our web portal, several suggested plans of action can be implemented. These plans aim to expand the portal's coverage, improve its performance, and ensure its long-term sustainability. The implementation will be a **multi-layered approach**:

- For the patient profiles, we need government support since in a country like India where there is vast diversity, the main goal is to make sure that each and every individual who is getting registered uploads the data correctly and up-to-date. For this we need **development of health registries**. They are needed to capture key health-related data at the individual level, such as demographic details, medical history, and treatment records.
- **Defining the parameters for resource sharing** is extremely important. Establishing clear guidelines for how hospitals can share resources through the portal, including how requests for resources are made, how resources are allocated, and how costs are shared. These all will be done through the forms present on a portal. Whenever a user will click on a specific button, it will be navigated to a particular page which will have the form to take in the data for a respective action.
- **Integration with the existing systems** is the next step. To ensure that the portal is seamlessly integrated with existing hospital systems, work with hospital IT departments to ensure compatibility with other systems and to minimize disruptions during implementation.
- The advancement of technology such that we can display the data of the vital signs monitor on our portal and it shows up-to-date result. For example during the covid pandemic, whenever a patient was admitted, his/her family didn't have the access to his/her condition, like spO2 levels, heartrate, glucose levels etc. and remained aware of the condition for many days or even weeks. Using **IoT** we can integrate the data of the equipments and our portal so that without hassle, the family is totally aware of the conditions and his/her vitals.

However, the successful implementation of such ideas will require the support and cooperation of both the government and citizens. The government needs to provide the necessary resources, infrastructure, and policies to ensure the efficient functioning of the healthcare system.

Individual contributions

As a team effort, no strict separation was followed. A loose outline of the work is as follows:

- Sakshi Bansal- Title, Summary, Current developments, Need and Significance, Prototype
- Simran Kaur- Problem statement, Detailed description, Detailed work plan, novelty, conclusion, prototype
- Ashima Goyal- Aim/goals, Tools and techniques, approaches to implement, expected outcome, suggested plan, prototype
- Vanshika Dhamija- Motivation, individual contributions, constraints, expertise of each student, prototype

Conclusions:

The healthcare system in India has come under intense scrutiny in recent times due to the second wave of the COVID-19 pandemic. As the country now stands in second place after the United States in terms of the largest outbreak of the virus, it has become clear that the healthcare system needs significant attention and improvement. With hospitals running out of beds, oxygen supplies, and life-saving drugs, it has become increasingly evident that the healthcare industry needs to be integrated and equipped with modern technology and resources to better respond to the current crisis. The

current crisis has highlighted the crucial importance of the healthcare industry in India. However, it has also exposed the inadequacies and vulnerabilities of the system. There is a pressing need for better planning, coordination, and communication between the different sectors of the healthcare industry to address the challenges posed by the pandemic. This is where the implementation of innovative ideas and technologies, such as the web portal for hospitals, can play a vital role.

Hence, we are trying to make our portal as flexible and user-friendly as possible, so that issues faced by any user is to a much lower extent. Practical implementation of our plan is feasible if we get the required support from government agencies and other related healthcare sectors. If our idea is once implemented successfully, it has the potential to revolutionize the entire healthcare sector of our country by integrating the whole system and providing a sense of inclusivity, transparency and upliftment. This will also, to a great extent, help in removing the monopoly of private hospitals and provide better health facilities to the poor and middle class.