

## **Basic Details of the Team and Problem Statement**

Team Member Details

**MANAS RANJAN PRADHAN – 22CSE066 (SEC A)**

**DEBABRATA MISHRA - 22CSE140 (Sec C)**

**DIPTESH NARENDRA - 22cse224 (Sec C)**

**KANHA BISWAL - 22CSE289 (Sec I)**

**Alpha B. Limma - 22CSE179 (Sec C)**

Ministry/Organization Name/Student Innovation: **Government of NCT of Delhi**

PS Code: **SIH 1620**

Problem Statement Title: **Queuing models in OPDs/ availability of beds/ admission of patients.**

**A hospital based solution is ideal which can be integrated with city wide module .**

Team Name: **SmartCare Ninjas**

Team Leader Name: **Abhisek Panda 22CSE072 (Sec C)**

Theme Name: **Health Tech**

## **Idea/Approach Details**

### **Objective:** -

The statement's goal is to create and execute a complete technology solution for controlling hospital operations, with a particular emphasis on patient admissions, bed availability, and queuing models in Outpatient Departments (OPDs). Improving integration and efficiency in a citywide healthcare system is the aim.

**Advanced Queuing Models in Outpatient Departments:** We Establish a method to maximize patient flow and minimize wait times in these settings.

**Bed Availability:** We Created a system to track and control bed availability in real-time, guaranteeing efficient use of admissions through online.

**Patient Admission:** We have developed software to increase hospital operational efficiency, simplify the patient admissions procedure.

**Inventory Management:** We have Set up systems to oversee the hospital's inventory distribution of medications, supplies items management to guarantee appropriate stock levels and minimize shortages, implement modules to manage the hospital's dispensing of medications, consumables, and other items.

**Integration:** We have ensure smooth operation and data sharing, confirm that the hospital-based solution can be linked with city-wide healthcare modules.

**Implementation of Current Modules:** We care of Delhi's current NIC-developed modules, to make sure that these solutions are applied as efficiently as possible.

### **Briefly explain newness/uniqueness of the innovation**

Our innovation's novelty and distinctiveness come from the incorporation of Artificial Intelligence (AI) into several facets of healthcare, augmenting predictive capabilities, tailored treatment plans,

and diagnostic precision. The main inventions are broken down as follows:

**AI-Powered Diagnostics - Heart Attack Prediction** AI algorithms examine patient data to diagnose heart attacks before they happen, allowing for preventative care and perhaps life-saving actions.

**Lung Disease Detection**- By evaluating patient data and medical imaging, AI models identify lung illnesses in their early stages, enhancing early diagnosis and treatment results.

**Optimized Management of Chronic Conditions - Diabetes Management** AI forecasts blood sugar levels and customizes treatment plans, resulting in more accurate diabetes control and better patient outcomes.

**Tailored Care Programs**- AI improves the efficacy of therapies and patient satisfaction by customizing treatment regimens based on thorough data analysis for each patient.

**Analytics that predicts:** Predictive models powered by AI evaluate patient outcomes and possible health hazards, enabling prompt preventative actions and more informed decision-making.

**Combining with Current Systems:** Using information on blood banks from the Delhi government, this project demonstrates real-world uses of artificial intelligence for managing and improving blood bank operations. This invention is unusual in that it uses AI broadly to better identify and treat illnesses, as well as to connect this technology with current healthcare data systems to enhance overall patient care and system performance.

#### **Specify the potential areas of application in industry / market in brief**

**Queue Management Systems** - Implemented AI-powered queuing models in Outpatient Departments (OPDs) to optimize patient flow, reduce wait times, and improve overall efficiency.

**Bed Availability and Patient Admission** - Use AI to monitor and manage bed availability in real-time, ensuring optimal utilization and streamlined patient admissions. **Inventory and Supply Chain Management**

**Medicine and Consumables Dispensation** - Develop AI-driven inventory management systems to track and manage the dispensation of medicines and consumables, preventing shortages

**Hospital-Level Inventory Management** - Implement AI solutions for efficient stock management and procurement processes at the hospital level. Integrated

**City-Wide Integration** - Design a hospital-based solution that integrates with city-wide healthcare modules for better coordination, data sharing, and resource optimization across multiple healthcare facilities.

### **Predictive Healthcare Analytics** -

Heart Attack Prediction - Apply AI algorithms to predict heart attacks by analyzing patient data, leading to early interventions and improved emergency response.

Diabetes Management - Use AI to forecast blood glucose levels and tailor diabetes management plans, enhancing patient outcomes and personalized care.

Lung Disease Detection - Integrate AI models to detect early signs of lung diseases through medical imaging and patient data analysis.

### **Personalized Treatment and Outcomes**

Personalized Treatment Plans - Leverage AI to develop customized treatment plans based on individual patient profiles, improving treatment efficacy and patient satisfaction.

Predictive Analytics for Outcomes - Utilize AI-driven predictive analytics to anticipate patient outcomes and inform treatment strategies, contributing to more effective healthcare delivery.

### **Blood Bank Management**

Optimized Blood Bank Operations - Use AI to enhance blood bank management by predicting demand, managing inventory, and ensuring efficient distribution of blood products.

These applications can transform healthcare delivery by improving operational efficiencies, enhancing patient care, and integrating advanced technologies into everyday practices.

**Briefly provide the market potential of idea/innovation**

**Increased Efficiency in Healthcare Operations**

Market Potential - Significant demand exists for solutions that streamline hospital operations, such as queuing models and bed management systems. These innovations can reduce wait times and optimize resource use, which is highly valued in both public and private healthcare sectors.

**Enhanced Diagnostic and Predictive Capabilities**

Market Potential - AI applications in heart attack prediction, diabetes management, and lung disease detection offer immense value by improving early diagnosis and treatment. The growing emphasis on preventative care and personalized medicine enhances the attractiveness of these technologies.

**Optimized Inventory Management**

Market Potential - Hospitals and healthcare facilities are increasingly seeking advanced solutions for managing medicines and consumables. AI-driven inventory systems can address issues like stock shortages and inefficiencies, representing a key growth area.

**Integrated Healthcare Systems**

Market Potential - The integration of hospital-based solutions with city-wide modules is critical for coordinated healthcare delivery. This integration can enhance patient data management and resource allocation, appealing to large-scale healthcare networks and municipal health systems.

**Personalized Patient Care-**

Market Potential - AI's ability to create personalized treatment plans and predict patient outcomes aligns with the shift towards personalized medicine. This trend is driving demand for

technologies that tailor healthcare services to individual needs.

### Blood Bank Optimization

Market Potential - AI solutions that improve blood bank management and operational efficiency address critical needs in blood supply and distribution. This can lead to better resource management and is crucial for both emergency and routine healthcare services.

Overall, the market potential is significant as these innovations address critical needs in healthcare efficiency, patient care, and resource management, positioning them as valuable investments for healthcare providers and technology developers alike.

### Technology

**Front-End** - HTML ,CSS ,JavaScript

**Back-End** – Python , Flask

**Database** - MongoDB Atlas

### Methodology

Clearly articulate goals for optimizing OPD queuing, bed management, patient admissions, and inventory control, and gather detailed requirements from stakeholders.

Design and build AI-driven models for queuing, bed availability, patient admissions, and inventory management, ensuring compatibility with existing systems and city-wide modules.

Implement the solutions in a select number of hospitals for testing, collect feedback, and refine based on user experience and performance.

Roll out the refined solutions across all targeted hospitals, providing necessary training for staff.

Continuously monitor system performance, evaluate impact, and make ongoing improvements based on feedback and evolving needs.

### Solution

#### AI-Enhanced Queuing System:

- Description: Implement AI to manage patient queues in OPDs, predicting wait times and optimizing appointment schedules.
- Key Features: Real-time queue management, dynamic scheduling, and wait time prediction.

#### Real-Time Bed Management:

- Description: Develop a system to track bed availability across the hospital in real-time.
- Key Features: Live bed tracking, automated updates, and predictive analytics for bed utilization.

#### Efficient Patient Admission Process:

- Description: Create a streamlined admission system that integrates with existing hospital systems to expedite patient intake.
- Key Features: Automated workflows, EHR integration, and real-time admission status updates.

#### Advanced Inventory Management:

- Description: Implement an AI-driven inventory system to manage medicines and consumables, preventing shortages and overstocking.
- Key Features: Real-time inventory tracking, predictive stock replenishment, and integration with procurement systems.

#### City-Wide Integration:

- Description: Ensure the new systems integrate seamlessly with city-wide healthcare modules for coordinated operations.

- Key Features: API integration, standardized data exchange protocols, and centralized data management.

#### System Design and Development:

- Description: Design and develop the AI models and software components according to the gathered requirements.
- Key Features: Robust architecture, scalable design, and secure data handling.

#### Pilot Implementation:

- Description: Deploy the solutions in a select number of hospitals to test functionality and gather feedback.
- Key Features: Controlled rollout, feedback collection, and performance evaluation.

#### Full-Scale Deployment:

- Description: Roll out the refined systems across all targeted hospitals.
- Key Features: Comprehensive deployment plan, training sessions for staff, and system integration.

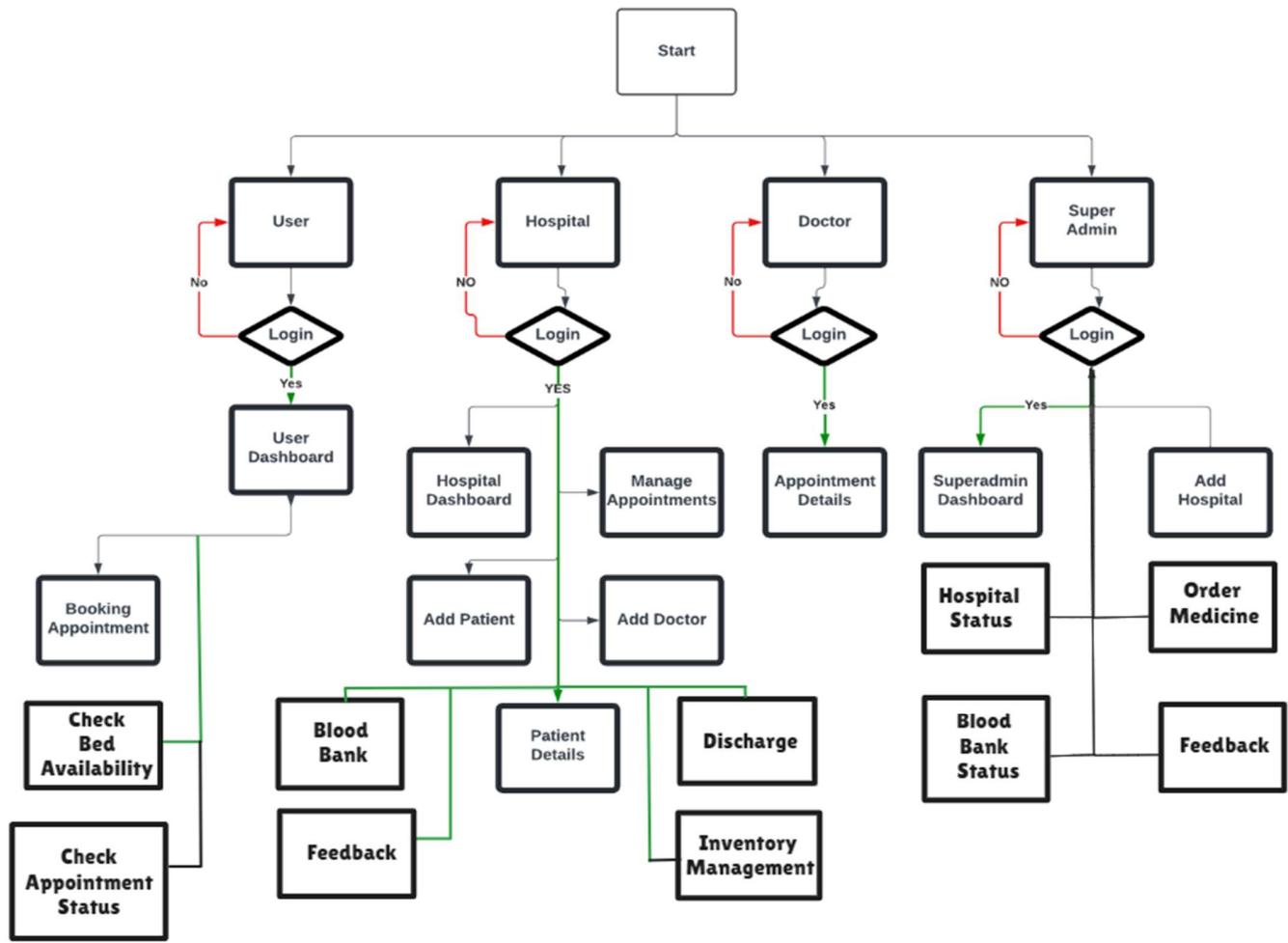
#### Performance Monitoring:

- Description: Continuously monitor the performance of the systems to ensure they meet operational goals.
- Key Features: Real-time performance tracking, issue resolution, and user feedback analysis.

#### Ongoing Improvement and Support:

- Description: Provide ongoing support and make continuous improvements based on feedback and evolving needs.
- Key Features: Regular system updates, technical support, and iterative enhancements.

## **Flow Chart**



Screen Shot

## Home Page

The screenshot shows the official website of the Government of NCT of Delhi. At the top left is the Indian National Emblem. To its right is the text "Government of NCT of Delhi" and "राष्ट्रीय राजधानी क्षेत्र दिल्ली सरकार". On the far right are the Indian national flag and the text "दिल्ली सरकार" and "आप की सलाह". The main navigation menu includes links for Home, About Us, Doctors, Departments, Contact Us, Hospital, and Login. Below the menu, there's a banner for "Ayushman Arogya Mandir" featuring a collage of images related to healthcare and the "Azadi Ka Amrit Mahotsav" celebration. The central text on the banner reads: "Ayushman Arogya Mandir providing primary health services up to the last mile" and "We should love own health". A blue button labeled "Create Appointment" is visible. The overall design is clean with a blue header and a yellow-to-white gradient background.

### OUR DEPARTMENTS



#### CARDIOLOGY:

Specializing in heart issues.



#### ORTHOPEDICS:

Bone and joint problems.



#### PEDIATRICS

Focusing on child healthcare.



#### NEUROSURGERY:

Brain and nervous system



#### INTERNAL MEDICINE:

Providing general medical care.



#### PHARMACY

Dispensing medications.



#### NEUROSURGERY:

Brain and nervous system surgeries.



#### INTERNAL MEDICINE:

Providing general medical care.



#### PHARMACY

Dispensing medications.



#### INFECTIOUS DISEASES

Diseases caused by Pathogens.



#### ENT (OTOLARYNGOLOGY)

Specializes in ear, nose, and throat issues



#### PLASTIC SURGERY

Reconstructive surgeries.



#### INFECTIOUS DISEASES

Diseases caused by Pathogens.



#### ENT (OTOLARYNGOLOGY)

Specializes in ear, nose, and throat issues



#### PLASTIC SURGERY

Reconstructive surgeries.



#### RADIOLOGY

X-rays, CT scans, and MRIs.



#### PULMONOLOGY

Specializes in respiratory issues.



#### GASTROENTEROLOGY

Digestive system disorders.

# Our Doctors

Our mission is to develop and deliver a comprehensive, user-friendly, and secure hospital management system that integrates seamlessly with the daily operations of healthcare institutions.

<b>Dr. Renu Manchanda - Pediatrician</b>  Specializes in children's health.	<b>Dr. Arun Banerjee - Cardiologist</b>  Specializes focuses on heart health.	<b>Dr. Vatsala Aggarwal - Orthopedic Surgeon</b>  Specializes in bone and joint issues.
<b>Prof. (Dr.) Neeraj Gupta - Homeopathic</b> 	<b>Dr. Ashish Goyal - Family Medicine Practitioner</b>	<b>Dr. Mohammed Hassan</b> 

## AI in Healthcare

The integration of Artificial Intelligence (AI) in the healthcare sector is driving a transformative shift in how medical professionals diagnose and treat patients. AI-powered algorithms analyze vast amounts of medical data to predict and prevent critical conditions, ensuring timely and accurate interventions. These models are particularly effective in identifying early signs of heart attacks, optimizing diabetes management by predicting blood glucose levels, and detecting lung diseases at their nascent stages. As AI continues to evolve, its applications in healthcare are expected to expand, paving the way for more personalized and efficient patient care.

- Heart Attack Prediction
- Diabetes Management
- Lung Disease Detection
- Personalized Treatment Plans
- Predictive Analytics for Patient Outcomes

[Explore More](#)

## Photo Gallery



India launches nationwide initiative for AI-powered disease diagnosis.



New vaccine for dengue receives regulatory approval.



Government plans to expand Ayushman Bharat coverage.



Health Ministry addresses rising diabetes cases in urban areas.



Telemedicine services see exponential growth post-pandemic.



Major investment in indigenous pharmaceutical manufacturing.

[Learn More](#)

[Learn More](#)

## Contact Us

We are here to help and answer any questions you might have. We look forward to hearing from you.

Enter the text shown below:

**HTYFDY**



## Frequently Asked Questions (FAQ)

### **1. What is the main goal of the IT Department's healthcare initiatives?**

Our main goal is to leverage technology to improve patient care and hospital management, addressing critical challenges in the healthcare sector through innovative solutions.

### **2. What specific technological solutions are being implemented in hospitals?**

We are focusing on implementing queuing models in OPDs to reduce patient wait times, optimizing hospital bed management, and streamlining patient admission processes to improve healthcare efficiency.

### **3. How does the IT Department plan to handle inventory management in hospitals?**

Our efforts include developing and integrating inventory management modules for medicines and consumables at the hospital level, ensuring essential supplies are available, reducing wastage, and lowering costs.

### **4. What role does the National Informatics Centre (NIC) play in these initiatives?**

The NIC has developed some of the modules we plan to implement. Our department is focusing on ensuring these modules are successfully integrated into Dabholi's healthcare system.

**6. How will these initiatives benefit patients directly?**

By reducing wait times, improving bed availability, and streamlining admission processes, patients will receive more timely and effective care, enhancing overall healthcare experiences.

**7. What is the significance of queuing models in outpatient departments (OPDs)?**

Queuing models help manage patient flow more efficiently in OPDs, minimizing wait times and ensuring that patients are seen in an orderly and timely manner.

**8. Are there any plans to expand these initiatives beyond Delhi?**

Currently, our focus is on implementing these solutions within Delhi. However, successful implementation could serve as a model for other regions to follow in the future.

**9. How will these technological solutions improve hospital resource management?**

These solutions will enhance hospital resource management by optimizing bed allocation, improving inventory tracking, and streamlining patient admissions, leading to better utilization of resources.

**10. What is the ultimate mission of the IT Department's healthcare initiatives?**

**10. What is the ultimate mission of the IT Department's healthcare initiatives?**  
Our mission is to ensure that every citizen has access to the best possible healthcare services, supported by innovative and efficient technological solutions that set new standards in hospital management.

**Contact Us**

Contact Us SmartCare Ninjas Delhi, 110001  
Number: +91-9876543210  
Fax: +91-112345680

E-mail - [nicdelhi2024@gmail.com](mailto:nicdelhi2024@gmail.com)

**Important Links**

[Citizen Charter](#)  
[Govt Online Donation](#)  
[Govt Offline Donation](#)  
[Right To Information Act 2005](#)  
[Proactive Disclosure](#)  
[MoHFW](#)  
[NGOs Associated with Govt](#)  
[Mission Delhi](#)  
[Mera Aspatal](#)  
[M Government](#)

**Team Member**

[Abhisek Panda](#)  
[Manas Ranjan Paradhan](#)  
[Debarata Mishra](#)  
[Dipetesh Narendra](#)  
[Khana Biswal](#)  
[Alpha](#)

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Webmaster & Webinformation Manager: Abhisek Panda, Dy. Director, Team SmartCare Ninjas,

## Ai Prediction

**Main Menu**

- Home**
- Diabetes Prediction
- Heart Disease Prediction
- Lung Cancer Prediction
- Feedback & Contact
- About Us

**MULTIPLE DISEASE PREDICTION SYSTEM**

This Web Application is designed to help users predict the likelihood of developing certain diseases based on their input features. With the use of trained and tested machine learning models, we provide predictions for **Diabetes, Heart Disease and Lung Cancer**.



Diabetes Prediction      Heart Disease Prediction      Lung Cancer Prediction

**How to Use:**

- Navigate to the Main Menu(>) located in the top-left corner of the screen.
- Click on the desired tab among 'Diabetes Prediction', 'Heart Disease', and 'Lung Cancer' to access

**Main Menu**

- Diabetes Prediction**
- Heart Disease Prediction
- Lung Cancer Prediction
- Feedback & Contact
- About Us

**Diabetes Diagnosis**    **About Diabetes**

## Diabetes Prediction

Enter Your Name  
Abhishek panda

Enter Your Email  
nicdelhi@gmail.com

Gender  
Male

Blood Pressure Value

Number of Pregnancies

Glucose Level

Skin Thickness Value

Insulin Level

BMI value

Diabetes Pedigree Function Value

Enter Your Age

**Diabetes Test Result**

**Main Menu**

- Home
- Diabetes Prediction
- Heart Disease Prediction**
- Lung Cancer Prediction
- Feedback & Contact
- About Us

**Heart Diagnosis**   **About Heart Disease**

# Heart Disease Prediction

Enter Your Name  
Abhishek panda

Enter Your Email  
nicdelhi@gmail.com

Enter your Age  
Select your Gender  
Male

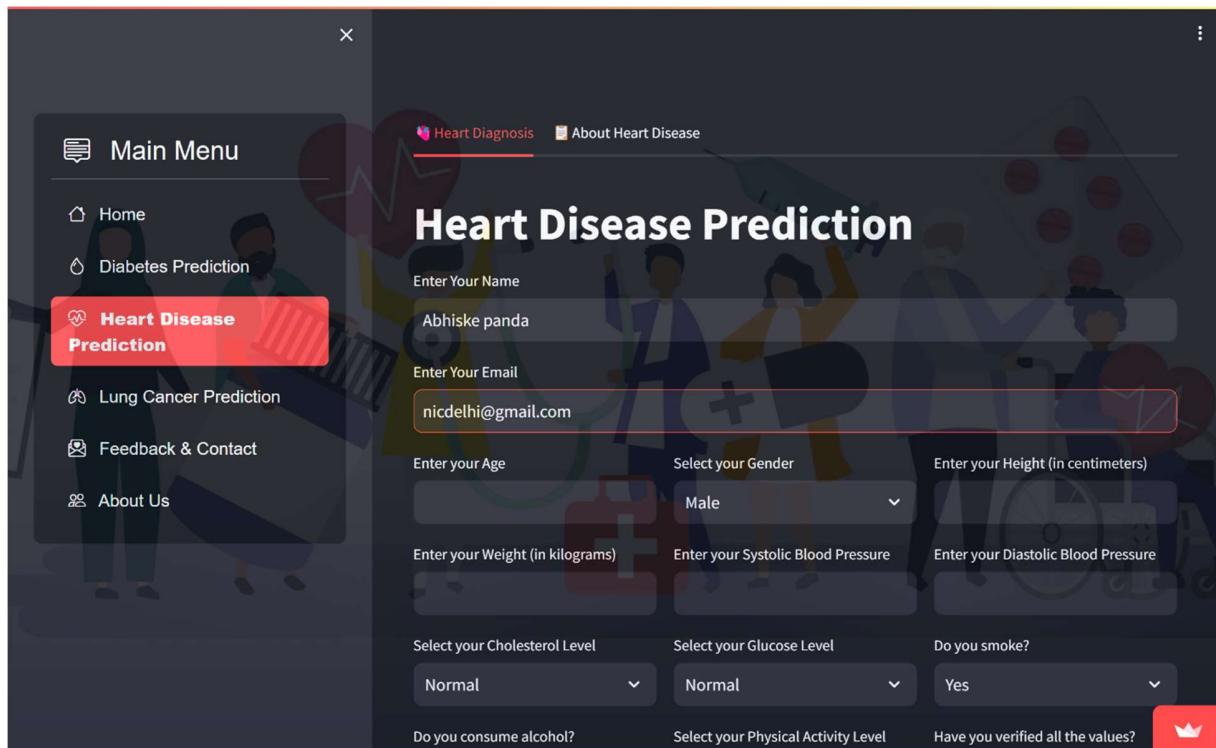
Enter your Height (in centimeters)  
Enter your Weight (in kilograms)  
Enter your Systolic Blood Pressure  
Enter your Diastolic Blood Pressure

Select your Cholesterol Level  
Normal

Select your Glucose Level  
Normal

Do you smoke?  
Yes

Do you consume alcohol?  
Select your Physical Activity Level  
Have you verified all the values?



**Main Menu**

- Home
- Diabetes Prediction
- Heart Disease Prediction
- Lung Cancer Prediction
- Feedback & Contact**
- About Us

**Feedback**   **Contact**

## Your Feedback is Valuable!

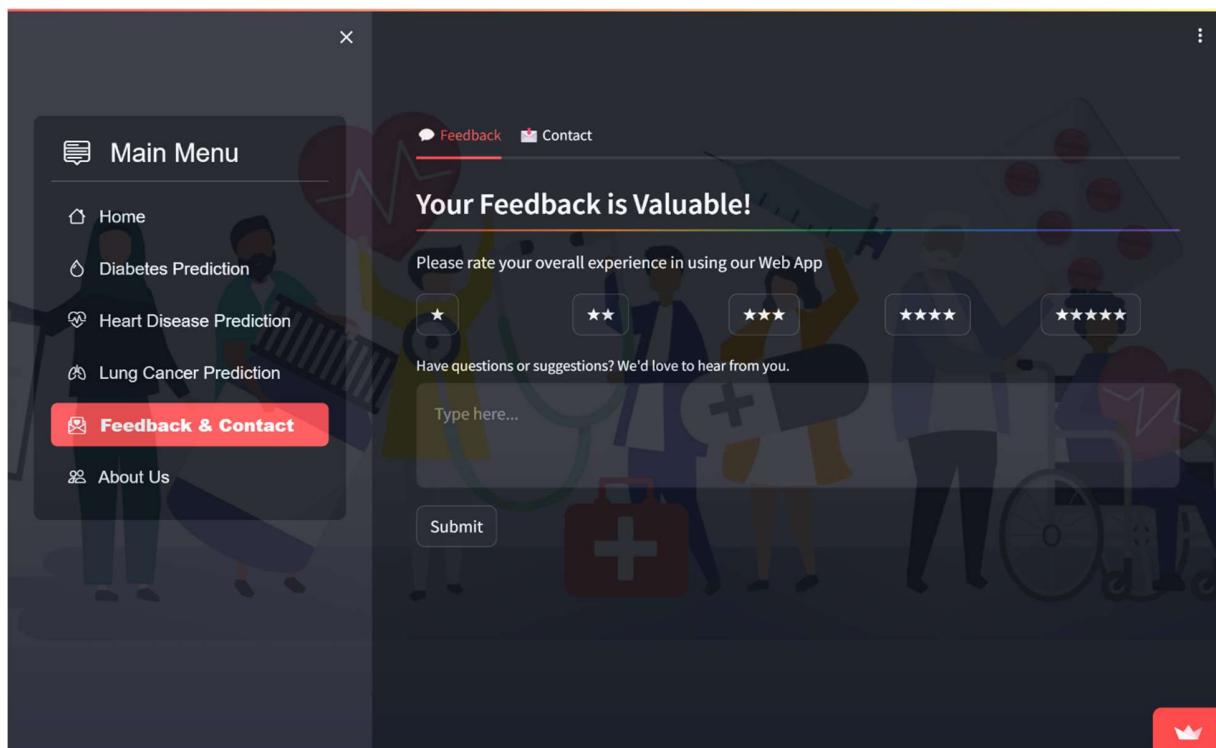
Please rate your overall experience in using our Web App

★ ★ ★ ★ ★

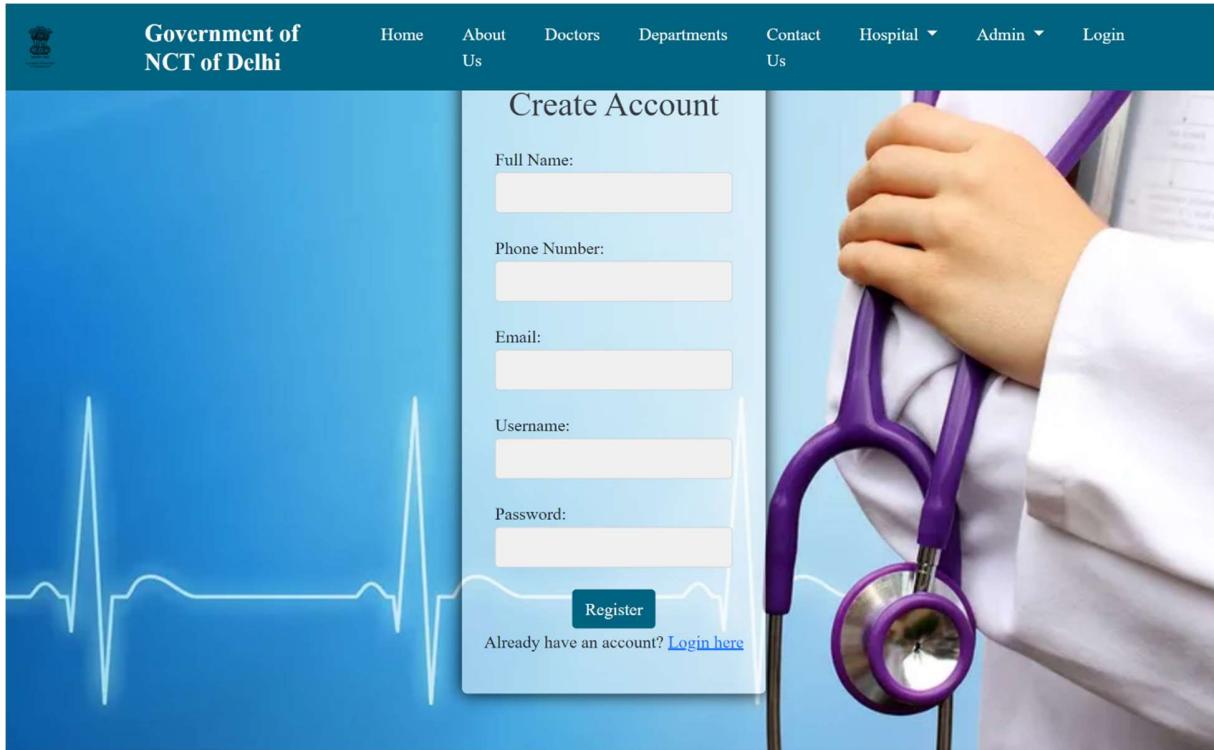
Have questions or suggestions? We'd love to hear from you.

Type here...

Submit



## User Login & Register





## Welcome, Abhisek Panda

### My Appointments

View your upcoming and past appointments.

Name	Email	Number	Appointment Date	Time-slot	Department	Description
Abhisek Panda	abhisekpanda@gmail.com	9876543210	2024-09-18	15:00 - 16:00	dermatology	Health
Debabrata	abhisekpanda@gmail.com	9876578910	2024-09-19	12:00 - 13:00	orthopedic	leg
Debabrata Mishra	abhisekpanda@gmail.com	9876578910	2024-09-27	16:00 - 17:00	plastic_surgery	Face
Debashish Kumar	abhisekpanda2004@gmail.com	9852178910	2024-09-08	11:00 - 12:00	infectious_diseases	Rashes on body
Diptesh	pandaabhisek@gmail.com	9741178910	2024-09-11	11:00 - 12:00	covid-19	Cold , Fever

### User Book Appointment



## Book Appointment

Full Name

Mobile Number

Email Address

Address

Appointment Date



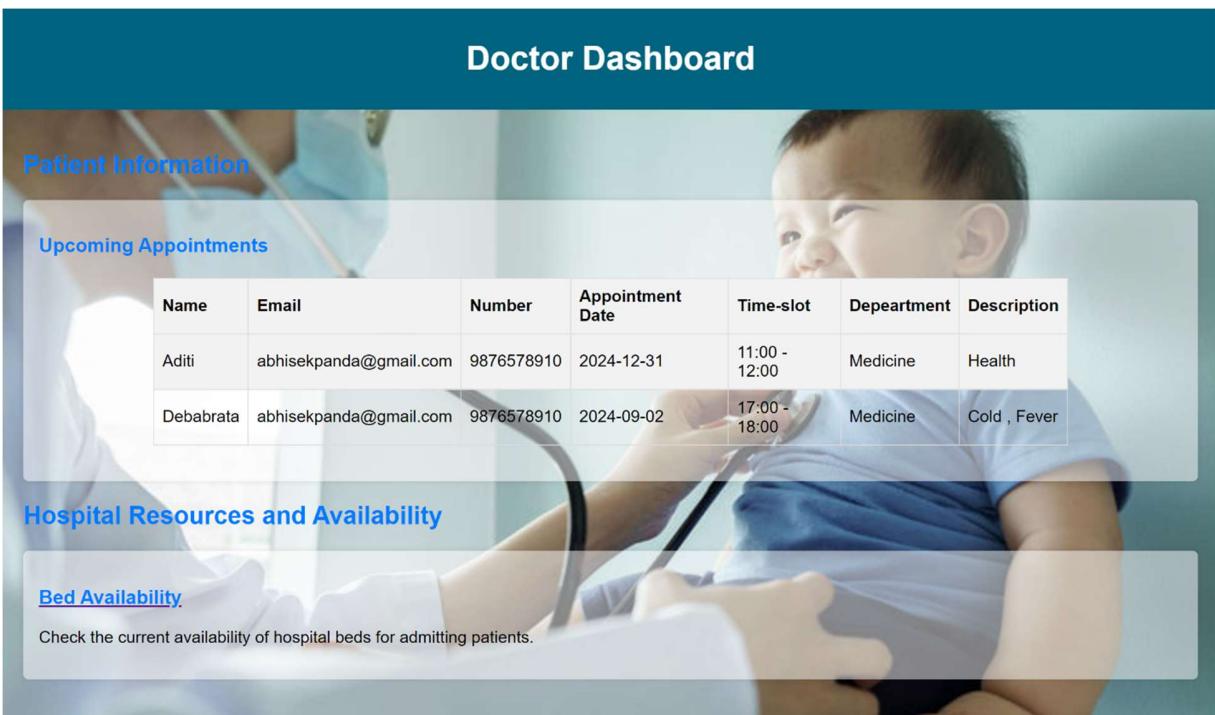
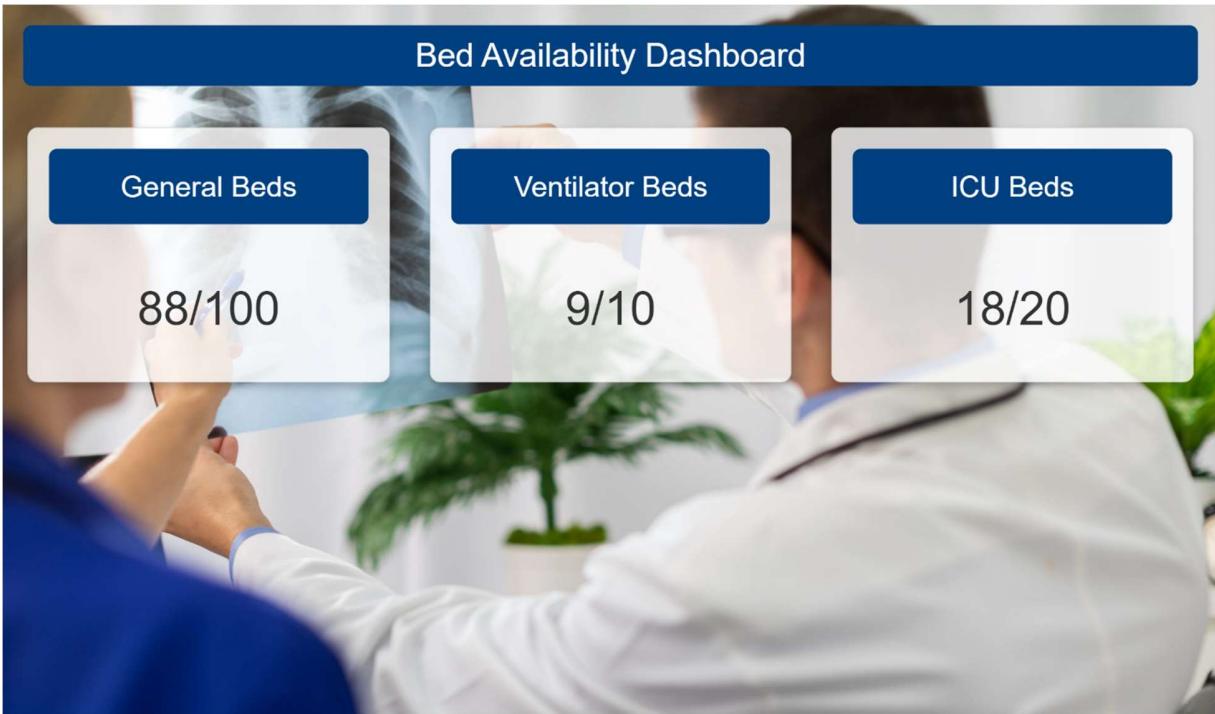
Select Time Slot:

Select Speciality:

Select Hospital

Description Disease:

**Book Appointment**





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## Admin Dashboard for Khetrapal Hospital

Dashboard

Add Patient

Add Doctor

Manage Appointments

Inventory Management

Blood Bank

Feed Back

Discharge

Logout

Total  
appointments

1

Doctors

3

Total patient

0

General bed

120/200

ICU Bed

100/150

Ventilator

35/40

### Add Patient

Patient Name:

Name

Date of Birth:

dd - mm - yyyy



Gender:

Select Gender

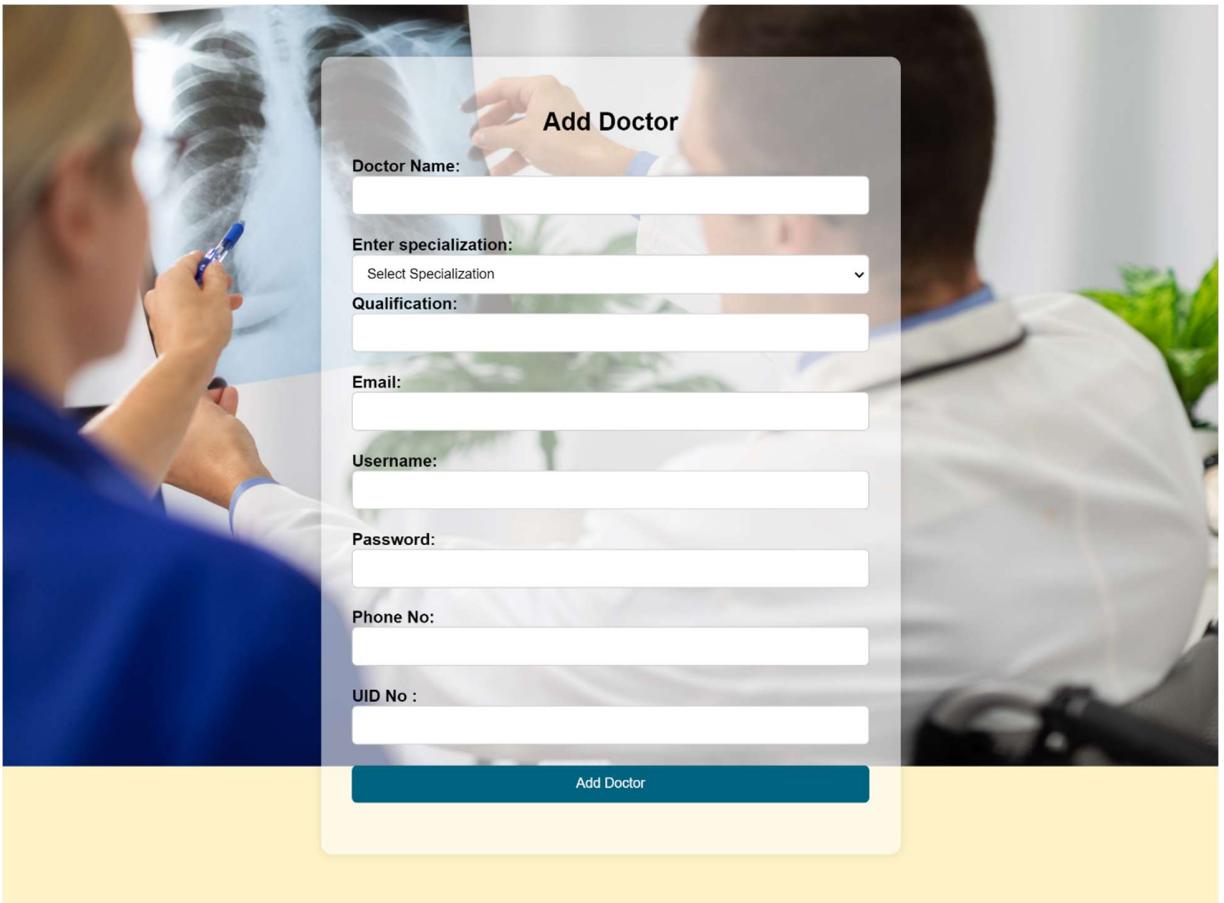
Address:

Street, City, State, Postal Code

Phone Number:

Email (optional):

National ID (Aadhar):



### Add Doctor

Doctor Name:

Enter specialization:  Select Specialization

Qualification:

Email:

Username:

Password:

Phone No:

UID No :

**Add Doctor**

**Add Patient**

**Patient Name:**  
Name

**Date of Birth:**  
dd - mm - yyyy

**Gender:**  
Select Gender

**Address:**  
Street, City, State, Postal Code

**Phone Number:**

**Email (optional):**

**National ID (Aadhar):**

**Select type of bed:**  
Select Type of Bed

**Bed number:**

**Add Patient**

## Admin Appointment Data

f

Name	Email	Number	Appointment Date	Time-slot	Department	Description
Abhisek Panda	abhisekpanda@gmail.com	9876543210	2024-09-18	15:00 - 16:00	dermatology	Health
Debabrata	abhisekpanda@gmail.com	9876578910	2024-09-19	12:00 - 13:00	orthopedic	leg
Debabrata Mishra	abhisekpanda@gmail.com	9876578910	2024-09-27	16:00 - 17:00	plastic_surgery	Face
Debabrata Mishra	deba@gmail.com	9348179664	2024-09-02	13:00 - 14:00	ent	Nothing that important

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The dashboard features a sidebar with links: Dashboard, Stock Details, Order Medicine, Order Status, and Logout. The main area has four cards:

- Current Stock:** Display details about current medicine stock levels.
- Reorder Levels:** Show medicines that need to be reordered.
- Emergency Stock:** Details about emergency stock of critical medicines.
- Emergency Alerts:** Alerts for low stock or critical supply issues.

A background image of a medical professional's hands holding a stethoscope is visible.



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Dashboard

Logout

### Stock Product Available

Product Name	Product Quantity	Rack Location	Adjust Quantity	Actions
Corex	500	A1	- + 500	Submit Delete

### Add New Product

Product Name	Quantity	Rack Location	<b>Add Product</b>
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### Order Medicine

Medicine Name:

Medicine Composition:

Medicine Quantity:

Order Comment:

**Submit Order**



Dashboard

Logout

## Order Status

Product Name	Quantity Ordered	Order Status	Comments
Corex	100mg	500	Delever Soon

### Hospital Discharge Details Form

Patient ID:

Patient Name:

Gender:

Select Gender

Address:

Date of Admission:

 dd-mm-yyyy 

Date of Discharge:

 dd-mm-yyyy 

Diagnosis:

Treatment Provided:

Select type of bed:

Select Type of Bed

Doctor's Name:

Discharge Summary:

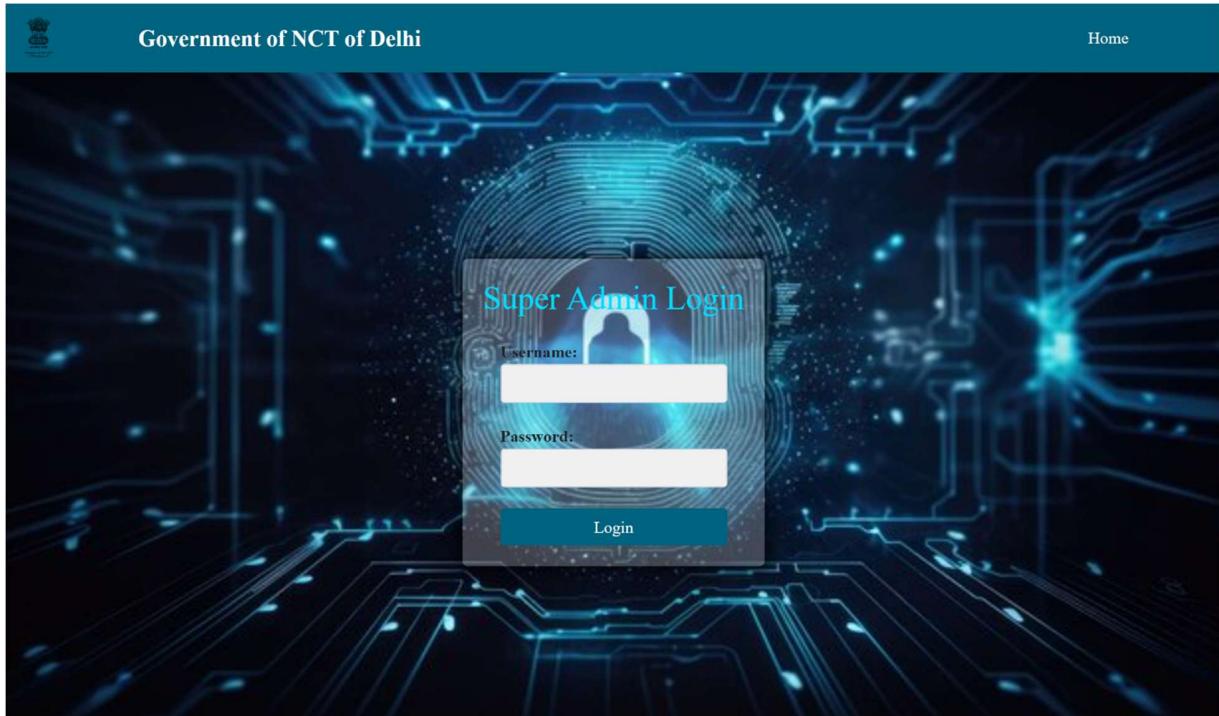
Follow-up Instructions:

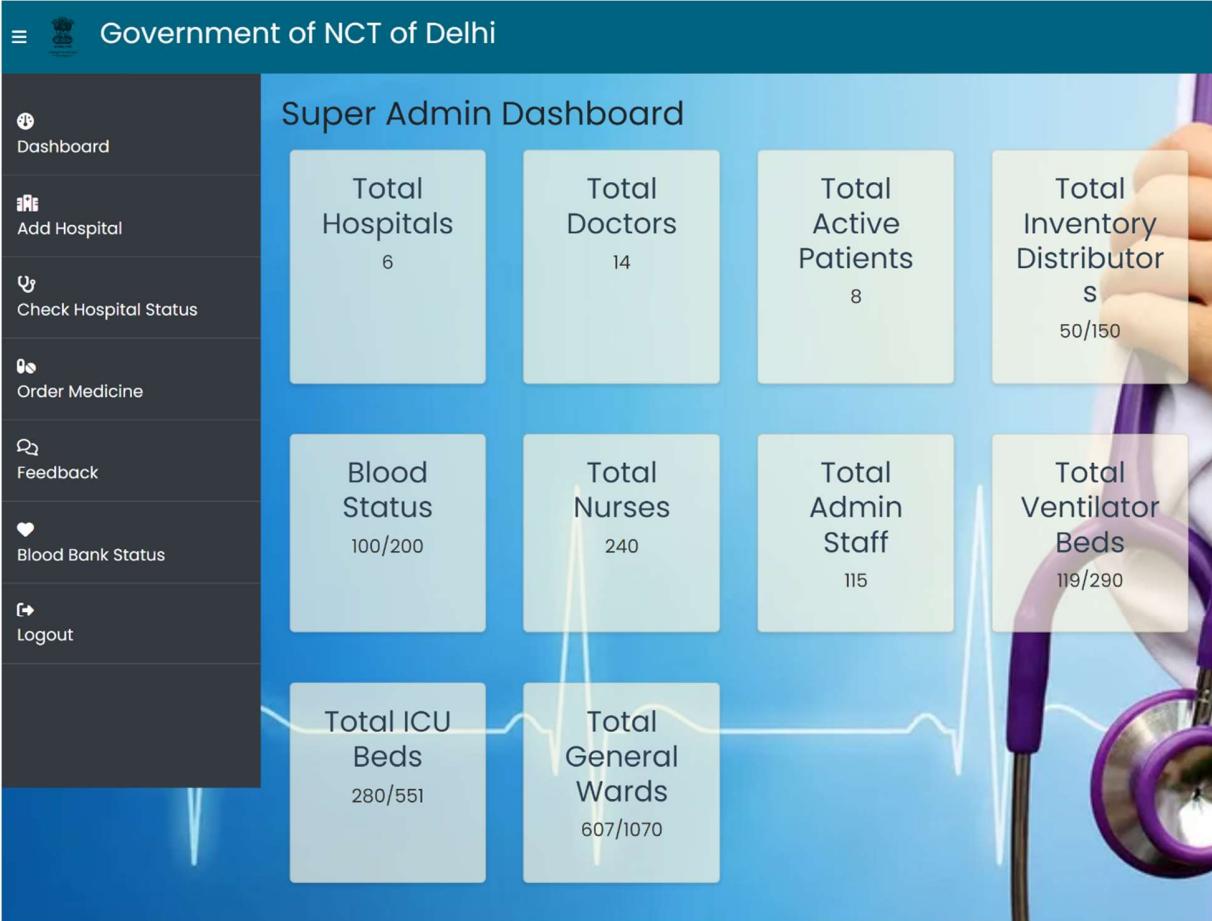
Medications Prescribed:

Contact Information:

**Submit**

## Super Admin For City All hospital View







### Add New Hospital

Hospital Name:

Khetrapal Hospital

Hospital Email ID:

abhishek1

Password:

.....

[Add Hospital](#)

[Return to Dashboard](#)

**Jeevan Anmol**

---

**ID:** HMSDL002

**Address:** New delhi, Sector 3 Ugh, Delhi - 110144

**Contact Number:** 9852678540

**Emergency Contact:** 9852678540

**Email:** jeevananmol@gmial.com

**Website:** <http://www.jeevananmolhospital.in/>

**Number of Beds:**

**ICU Beds:** 55

**Ventilators:** 20

**Specialization:** internal medicine, obstetrics and gynecology, pediatrics, pathology, anesthesiology, ophthalmology, surgery, orthopedic surgery, plastic surgery, psychiatry and neurology, radiology, and urology.

**Operating Hours:** 24

**Visiting Hours:** 12

**Pharmacy On-site:** Yes

**Total Doctors:**

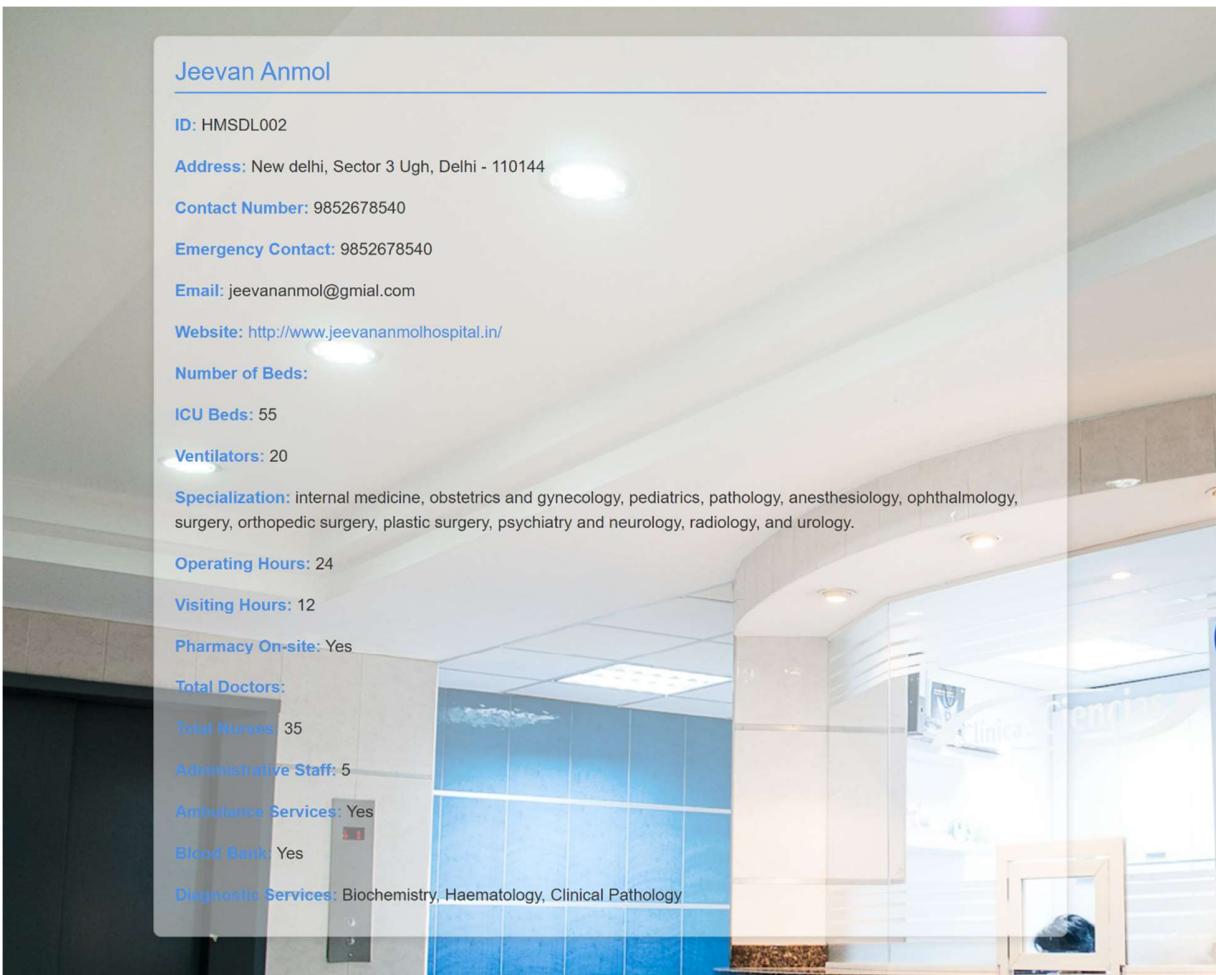
**Total Nurses:** 35

**Administrative Staff:** 5

**Ambulance Services:** Yes

**Blood Bank:** Yes

**Diagnostic Services:** Biochemistry, Haematology, Clinical Pathology



End