

NOVELTY

1. Tracking of movements of MDR patients across wards and the usage of equipments by them through **QR Code based approach** recording timestamp details as well.

← Add New Patient

Patient Details

Patient ID
Enter Patient ID

Name
Enter full name

Age
Enter age

Ward / Location
ICU / Ward B / etc.

MDR Information

Is this a known MDR case?

Save Patient

2. The Data and the ML model for predicting the level of MDR Risk are validated based on **ICMR Guidelines**.

mdr_screening_app Patient Overview

← Patient ID
P001

Load Overview

MDR Risk Summary

M MEDIUM + 44.0%

Movements (7)

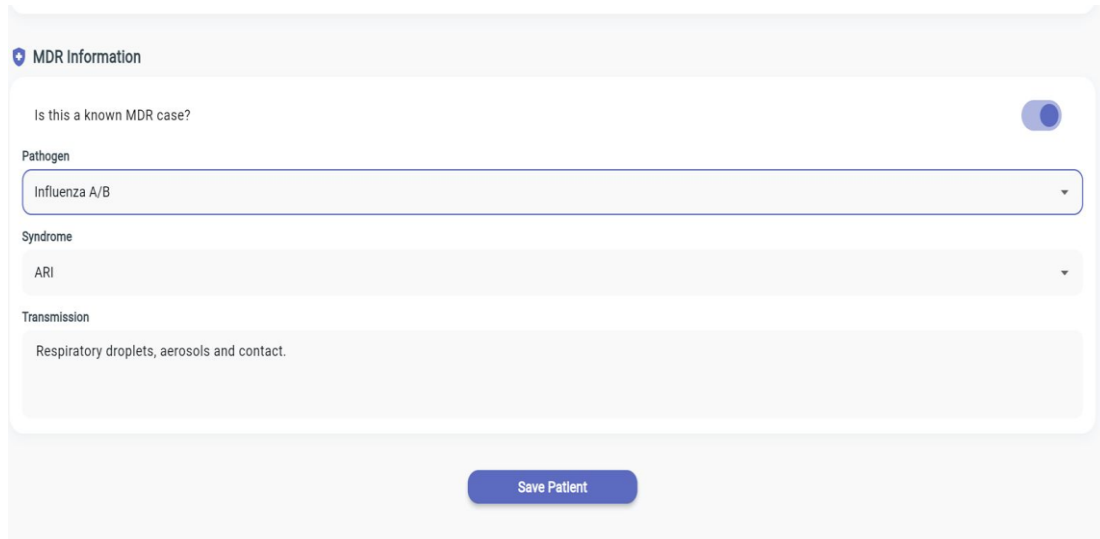
ICU
From: 2025-12-09 15:30:33.496831
To: 2025-12-09 16:30:33.496831

Ward B
From: 2025-12-09 16:30:33.496831
To: 2025-12-09 17:00:33.496831

ICU
From: 2025-12-09 15:32:08.100727
To: 2025-12-09 16:32:08.100727

Ward B
From: 2025-12-09 16:32:08.100727
To: 2025-12-09 17:02:08.100727

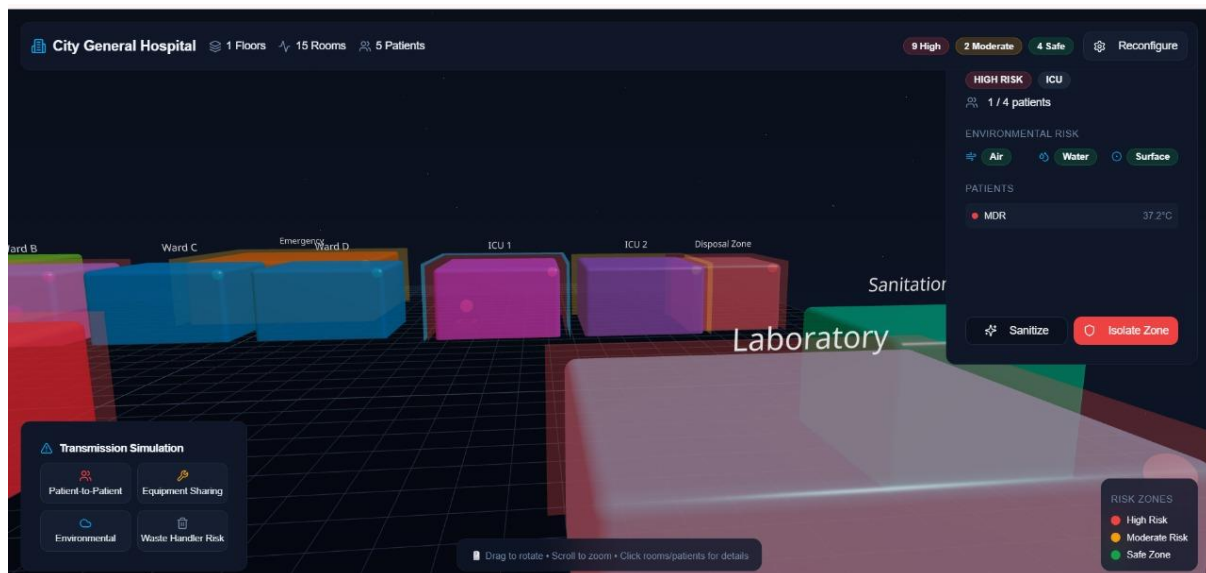
3. If the person is MDR positive, identifying the ***type of the disease associated and the possible pathogen*** that is causing the risk. Also, identifying the transmission medium of the pathogen that helps for the better level of isolation and prevent outbreak.



The image shows a digital form titled "MDR Information". It contains the following fields:

- A toggle switch for "Is this a known MDR case?" which is currently turned on.
- A "Pathogen" dropdown menu with "Influenza A/B" selected.
- A "Syndrome" dropdown menu with "ARI" selected.
- A "Transmission" text field containing the text "Respiratory droplets, aerosols and contact."
- A "Save Patient" button at the bottom.

4. Brings awareness among people about the level of MDR risk in the hospital using ***Digital Twin*** of hospital(dashboard-display) on large screens and allows them to take precautionary measures accordingly.



5. Real-Time video surveillance *using Open CV to trace contact* of MDR patients with other patients in hospital that are missed by QR code scanning.



EXPECTED OUTCOMES

Expected Solution:

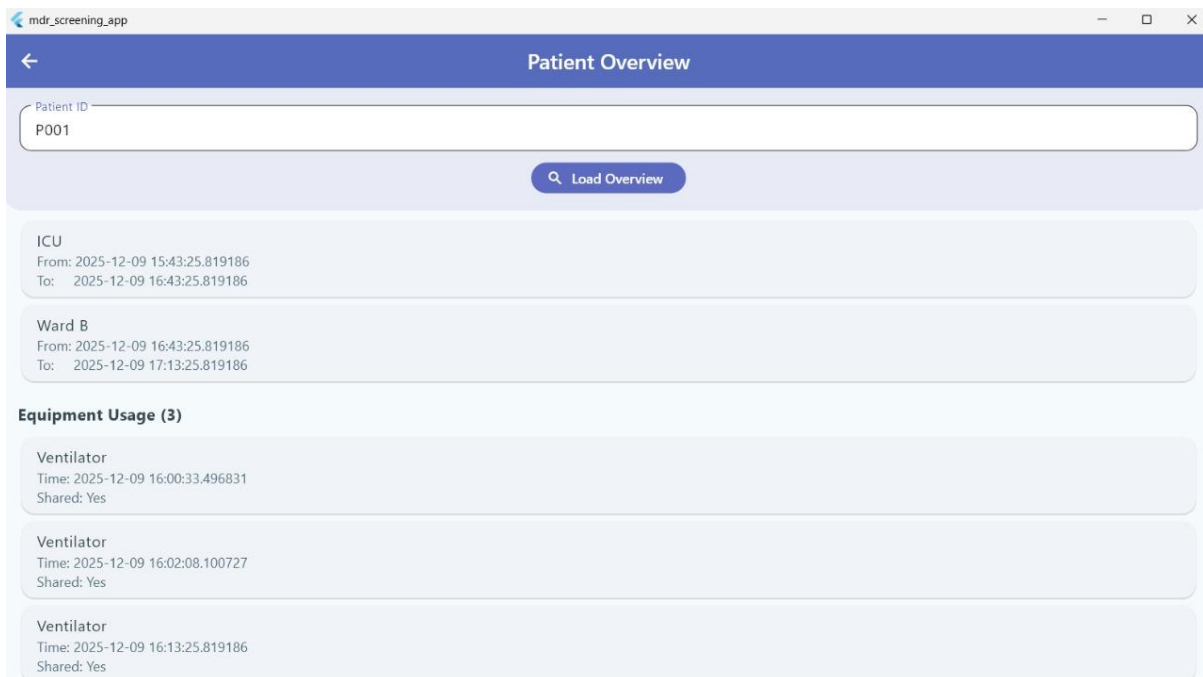
Students may propose a hospital IT system add-on, dashboard, or mobile/web application that integrates with existing hospital data and enables real-time alerts.

A hospital infection-control system that:

1. Tracks patient movement/contacts inside hospitals.
2. Flags MDR exposure chains in real-time.
3. Integrates with hospital EHR and lab systems.
4. Generates automated alerts for infection control teams.

Our Solution:

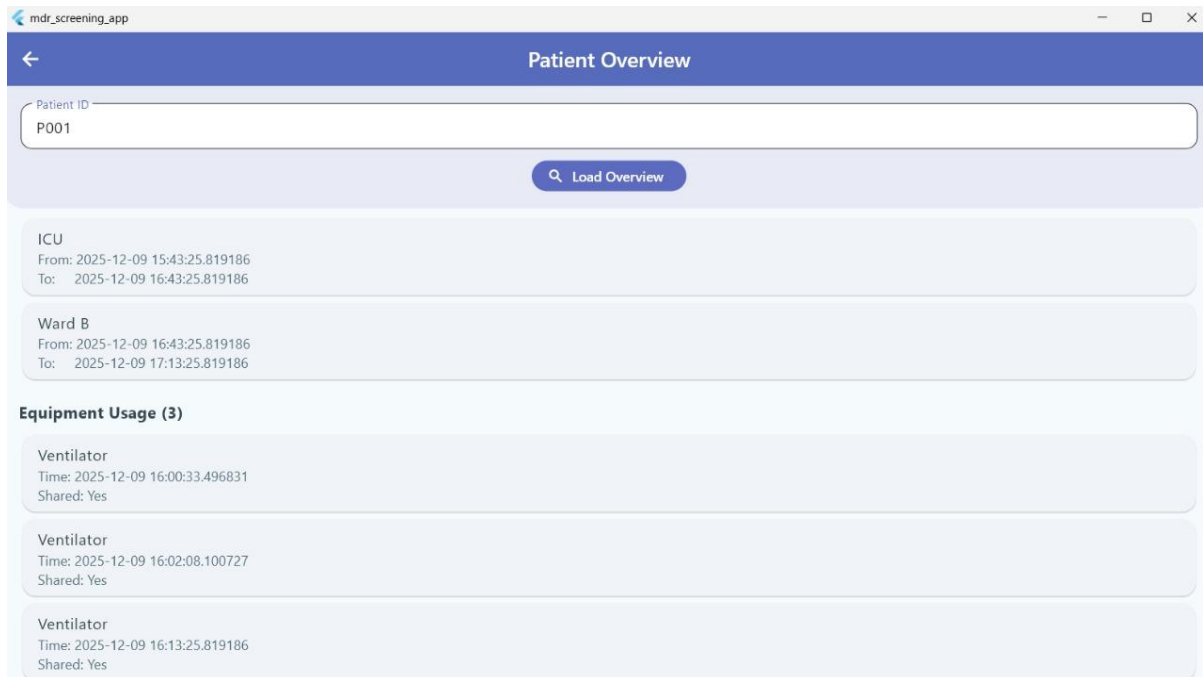
1. Movement/Contact:



The screenshot displays a web application interface for 'mdr_screening_app'. The main heading is 'Patient Overview'. Below this, there is a search bar labeled 'Patient ID' with the value 'P001' entered. A 'Load Overview' button is positioned below the search bar. The interface shows a list of patient locations and equipment usage:

- ICU**
From: 2025-12-09 15:43:25.819186
To: 2025-12-09 16:43:25.819186
- Ward B**
From: 2025-12-09 16:43:25.819186
To: 2025-12-09 17:13:25.819186
- Equipment Usage (3)**
 - Ventilator**
Time: 2025-12-09 16:00:33.496831
Shared: Yes
 - Ventilator**
Time: 2025-12-09 16:02:08.100727
Shared: Yes
 - Ventilator**
Time: 2025-12-09 16:13:25.819186
Shared: Yes

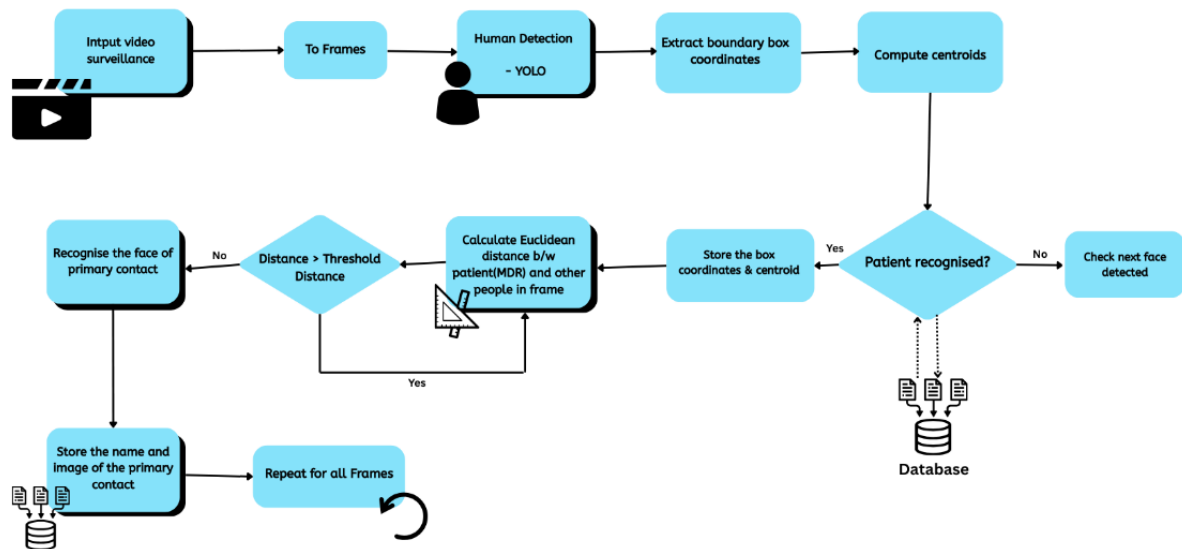
- Movement : Through GUI – QR Code based movement tracking across different wards, usage of different equipments with timestamps.



- Contact: Contact based tracing is done using real time video Surveillance using Computer Vision

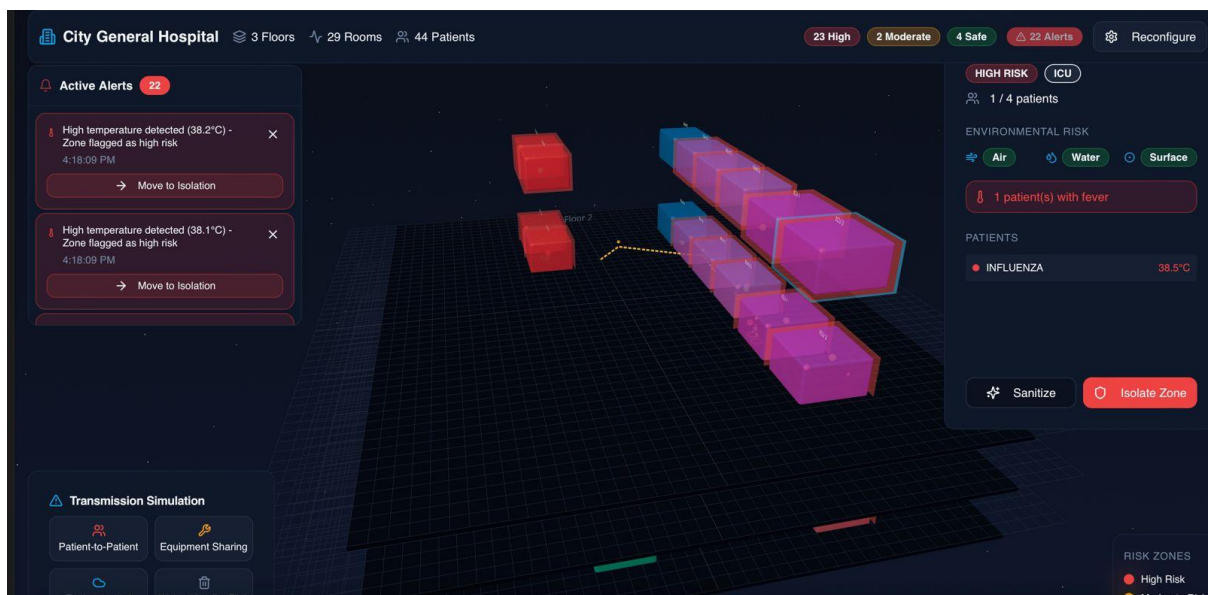


CONTACT TRACING OF MDR PATIENTS IN HOSPITALS



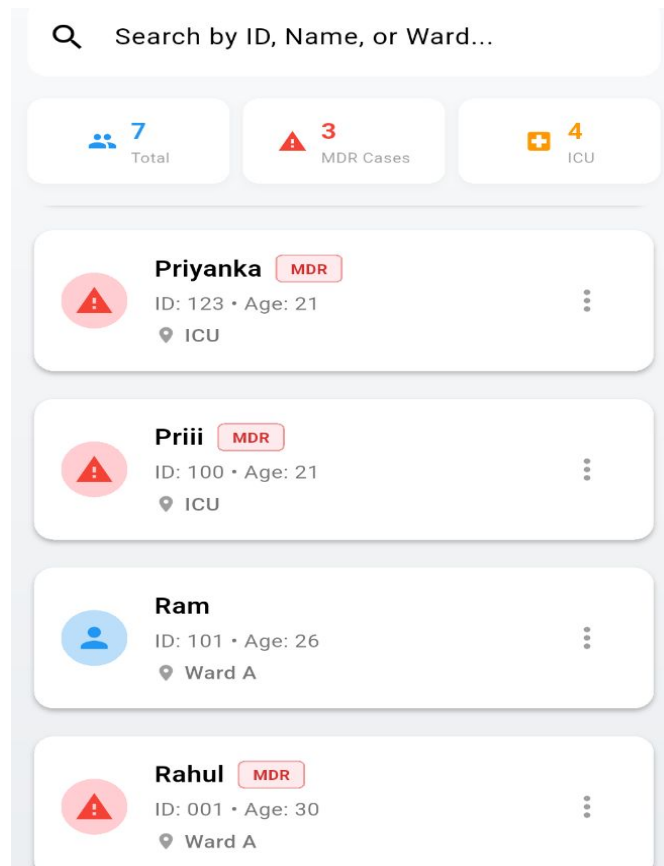
2. Flags MDR exposure:

- Individual MDR risk : diagnostic report as inputs to ML model that predicts the Risk basically categorised into level of exposure (high, medium, low risks) based on ICMR guidelines.



- Level of MDR exposure inside a hospital is done through Digital Twin using different colour codes.

3. Integrates with Hospital EHR and Lab Systems :
- Frontend GUI to accept the input of diagnostic reports and storing it in the database that has aligned with the hospital EHR system further analysis and actions.



4. Generates Automated Alerts for Infection:

- Initial Thermal Screening Alert on patient entry with sanitizing for **isolated consultation** (Pre-Disgnosis/**helps to prevent outbreaks**).

The screenshot shows a web application interface titled "Add Clinical Data". At the top, there is a "Patient ID" field with the value "78" and a "Scan" button. Below this is a "Vital Observations" section with a "Temperature (°C)" field showing "39". Underneath is a "Comorbidities" section with checkboxes for "Diabetes", "Hypertension", and "Other Comorbidity". A pink alert box is overlaid on the form, titled "High Temperature Alert" with a warning icon. The alert text reads: "Patient has a high temperature (>38°C). Consider sanitation and isolated consultation". There is an "OK" button at the bottom of the alert. Below the alert is an "MDR Details" section with a "Previous MDR infection" field and a toggle switch. At the bottom, there is a "Lab MDR Result: Pending" field with a dropdown arrow.

- Patient Level of Risk through AI Model – High level, Medium, Low Level risks

The screenshot shows a web application interface titled "Outbreak Alerts". At the top, there is a "Run Outbreak Detection" section with a "Scan Environment" button. Below this is a patient card for "Test Patient (P001)" in "Ward: ICU". The card displays a "MEDIUM Risk - 44.0%" status. The card also features a yellow circle with the letter "M" inside. The background of the dashboard is light blue.

- Alert the Infection Control Team at hospital through digital twin dashboard display across corridors of hospital, and also alerts everyone present in the hospital so that they can take precautions and prevent further spread of infection.

