

Using Arduino Uno R4 WiFi and Simulated Vitals Dashboard

01. Introduction

02. Why This System is Needed

- ## 03. System Architecture



Mr. John Doe Logout

Vitals (Real-time)



Doctor Notes

Leave notes here...

70-80%

of hospital delays in patient care are linked to inefficient monitoring and communication systems.

04. WHY ZIGBEE Mesh network

Zigbee is a low-power wireless communication protocol ideal for IoT devices.

- Mesh topology means each node (patient device) can relay data to the next, improving range and reliability.
- In contrast to WiFi, Zigbee can connect more devices, with lower power usage.

How Zigbee Mesh Works:

1. Each Arduino (or Zigbee module like XBee) acts as a node.
2. Nodes communicate with nearby ones until data reaches the gateway (router or coordinator).
3. If one node fails, data finds another route — making it fault-tolerant

5. Implementation

 **Simulated Data:**

Temperature (36.5–38°C)
Heart Rate (60–100 BPM) SpO₂
(94–100%)
ECG (0.5–1.5 mV)
Glucose (80–140 mg/dL)

Dashboard Features:

- 25 Patient Slots
- Login System
- Monitoring Panel
- Notes & History Logs
- Device Sync + Calibration Options

06. Results

- Successfully simulated real-time vitals
- Web dashboard updated every 2 seconds
- History log with timestamps
- Fully modular UI (scalable to 100+ patients)

07. Conclusion

This project demonstrates how affordable microcontrollers and simple web technologies can build a powerful, scalable, and realistic hospita monitoring system. It has the potential to improve patient safety, reduce staff burden, and modernize healthcare infrastructure — especially in underserved areas.