

Phase 1: Ideation Phase

Challenges and Solutions

Field	Details
Date	9 November 2025
Team ID	NM2025TMID02588
Project Name	Medical Inventory Management System
Maximum Marks	5 Marks

1. Inventory Tracking & Visibility

Challenge	Ideation Prompts / Potential Solutions
Manual Tracking/Human Error	<i>How might we eliminate manual data entry?</i>
	Solution Ideas: Real-time RFID/IoT tracking for high-value assets. Barcode/QR code scanning for consumables. Automated weight/volume sensors in storage bins for stock levels.
Difficulty Locating Items	<i>How might we guide staff to the exact location of a supply item?</i>
	Solution Ideas: 3D/Floorplan mapping interface with item location pinpointing. "Smart" shelving with LED indicators that light up for the item being pulled.
Discrepancies Between Records and Reality	<i>How might we make cycle counting and auditing a continuous, near-effortless process?</i>

Challenge	Ideation Prompts / Potential Solutions
	Solution Ideas: Mobile app with image capture for quick audit verification. Daily/weekly micro-audits on specific, high-risk categories (e.g., narcotics).

2. Stock Optimization & Replenishment

Challenge	Ideation Prompts / Potential Solutions
Stockouts/Overstocking	<i>How might we predict future demand with high accuracy?</i>
	Solution Ideas: AI-driven demand forecasting based on historical usage, patient trends (e.g., flu season, surgery schedules), and seasonality. Dynamic reorder points that adjust automatically.
Waste from Expiration	<i>How might we ensure a "First-In, First-Out" (FIFO) system is strictly followed?</i>
	Solution Ideas: Automated "Expiry Date Alerts" with tiered urgency (3-month warning, 1-month warning, etc.). Digital-first-expired-first-out (FEFO) picking suggestions via mobile device.
Inefficient Ordering Process	<i>How might we automate the procurement workflow?</i>
	Solution Ideas: Automated purchase order generation sent directly to preferred suppliers when stock hits the reorder point. Vendor integration for real-time lead time tracking.

3. Compliance, Security & Integration

Challenge	Ideation Prompts / Potential Solutions
Regulatory Compliance & Audits	<i>How might we create an irrefutable audit trail for controlled substances?</i>
	Solution Ideas: Blockchain technology for secure, immutable record-keeping. Role-based access control (RBAC) requiring two-factor authentication for high-value or restricted items.
Lack of System Integration	<i>How might we make the system a seamless part of the clinical workflow?</i>
	Solution Ideas: Integration with Electronic Health Records (EHR) to automatically deduct supplies used during a procedure/patient encounter. API to link with finance/ERP systems for cost analysis.
Training & Adoption	<i>How might we make the system incredibly intuitive for busy clinical staff?</i>
	Solution Ideas: Gamified training modules and minimal-click user interfaces with large, clear icons. Multi-language support.