

# Phase 1: Ideation Phase

## Challenges and Solutions

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

### 1. Inventory Tracking & Visibility

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

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

## 2. Stock Optimization & Replenishment

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

### 3. Compliance, Security & Integration

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