Phase 1: Ideation Phase

Understanding System Needs

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

1. Compliance and Patient Safety Needs

These are the most critical, as failure to meet them can compromise patient care and lead to legal penalties.

- **Lot and Serial Number Tracking (End-to-End Traceability):**

  - **Need:** The system must capture and track the specific **Lot/Batch Number** and **Serial Number** of every regulated product (especially medical devices and pharmaceuticals) from the point of receipt through consumption by a patient.

  - **Salesforce Solution:** Utilizing the standard **Serialized Product** or custom objects to maintain this record, ensuring the ability to perform a rapid, targeted **product recall** (known as tracing *downstream* to the patient or *upstream* to the supplier).

- **Expiration Date Management (FEFO):**

  - **Need:** The system must record the **Expiration Date** for every product unit and enforce a **First Expired, First Out (FEFO)** picking logic to minimize waste.

  - **Salesforce Solution:** Automation via **Flows** or custom Apex that generates alerts for items nearing expiration (e.g., 60 or 90 days out) and ensures expired stock is automatically blocked from being issued.

- **Audit Trail and Regulatory Reporting:**

  - **Need:** Full, unalterable historical logging of every inventory transaction (receipt, transfer, consumption, disposal) to satisfy **FDA (e.g., 21 CFR Part 11)** and other health authority auditing requirements.

- **Salesforce Solution:** Leveraging the platform's robust native **Field History Tracking** and setting up custom reports/dashboards for compliance checks.

- **Security and Access Control (HIPAA):**

    - **Need:** Strict access controls to ensure only authorized personnel can manage or view sensitive inventory data, particularly when linked to patient care records (via **Health Cloud**).

2. Operational Efficiency and Visibility Needs

These needs focus on improving day-to-day operations and reducing manual effort.

- **Real-Time, Multi-Location Visibility:**

    - **Need:** A single, centralized view of the **exact quantity** and **physical location** (main warehouse, hospital wing, surgical cart, field rep trunk) of every item at any given time.

    - **Salesforce Solution:** Using the **Field Service Inventory** data model (Product Item, Location) or a custom model to aggregate stock levels across the entire organizational landscape.

- **Mobile-First Data Capture:**

    - **Need:** The ability for clinicians, nurses, and field service reps to **rapidly and accurately record consumption** or transfers at the point-of-use (e.g., operating room, patient bedside).

    - **Salesforce Solution:** Utilizing the **Salesforce Mobile App** or **Field Service Mobile App** coupled with integrated **barcode or RFID scanning** functionality to eliminate manual data entry.

- **Automated Replenishment:**

    - **Need:** Automated calculation and triggering of purchase requisitions or internal transfer requests when stock levels fall to pre-defined **Safety Stock** or **Reorder Point (ROP)** thresholds.

    - **Salesforce Solution:** Using **Flows** to automate the creation of the Purchase Request/Transfer record when the Quantity On Hand meets the ROP criteria.

- **Demand Forecasting and Analytics:**

- **Need:** Tools to analyze historical usage trends, seasonality, and upcoming surgical schedules to accurately **predict future demand** and optimize stocking levels.

- **Salesforce Solution:** Leveraging **CRM Analytics (Tableau)** or custom reporting to visualize inventory turnover, burn rates, and forecast needs.

3. Integration Needs

Medical inventory does not exist in a vacuum; it must connect to core business systems.

- **ERP/Finance System Integration:**

  - **Need:** Seamless data synchronization with the Enterprise Resource Planning (ERP) system (e.g., SAP, Oracle, NetSuite) for core financial processes.

  - **Key Data Syncs:** Passing approved Purchase Orders (POs) to the ERP, receiving cost and vendor master data from the ERP, and pushing inventory valuation/write-off data back for General Ledger (GL) posting.

  - **Salesforce Solution:** Using **MuleSoft** or robust API-based integration to ensure real-time data flow between the systems.

- **EHR/EMR System Integration (Contextual Usage):**

  - **Need:** The ability to link consumed inventory items (especially implants or specialty drugs) directly to a patient's **Electronic Health Record (EHR) or Electronic Medical Record (EMR)** for billing and clinical documentation.

  - **Salesforce Solution:** Integration with Health Cloud to associate the consumed product item (Lot/Serial) with the related Encounter, Case, or Patient record.