Optimizing hospital inventory of pharmaceutical products through ABC-VED analysis- A study on inventory management at Fortis Hospital.

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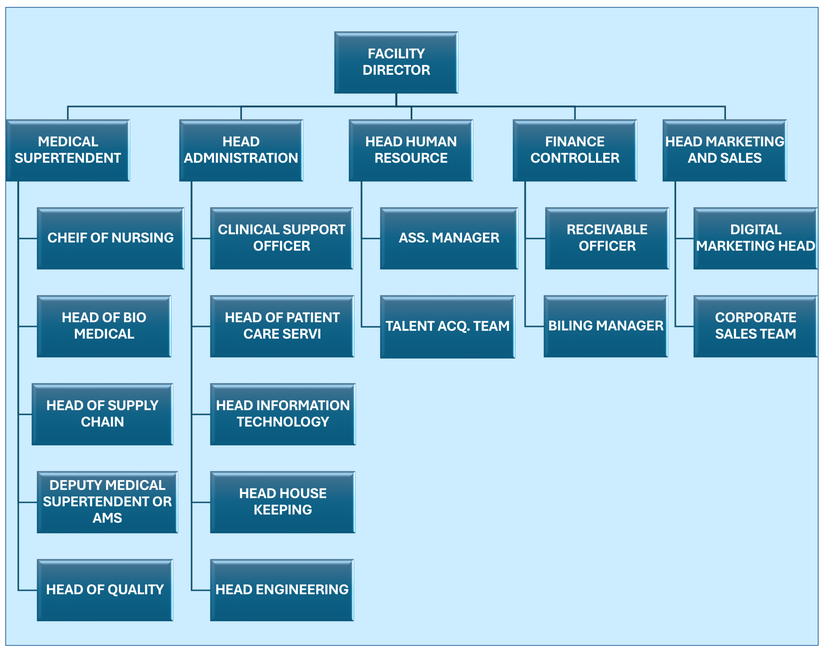
ABOUT ORGANIZATION

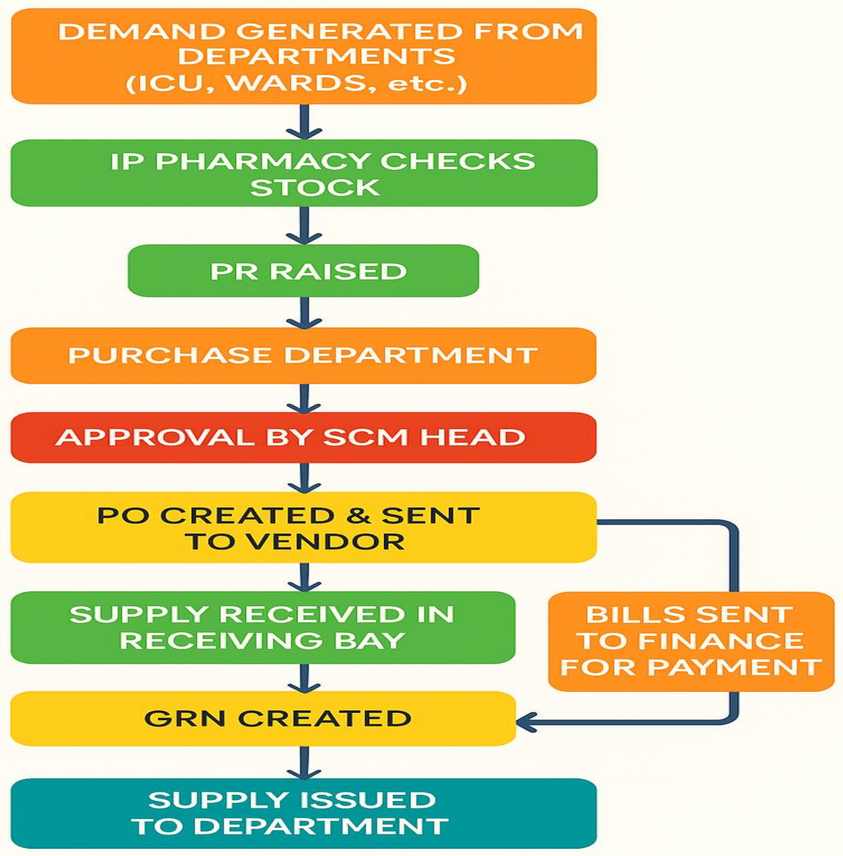
Established in 2024, **Fortis Hospital, Manesar** is a modern multi-super specialty healthcare facility committed to delivering quality care with precision, empathy, and innovation. The hospital is quipped with 350 operational beds, including 95 advanced ICU beds, 9 OT, 2 cath labs, and dedicated units NICU, ICU, Dialysis centre. Additional patient-friendly amenities such as spacious lounges, private counselling rooms, in-house pharmacy, valet parking, and cafeteria.

Vision: To create a world-class integrated healthcare delivery system in India, combining medical excellence with compassionate care.
Mission: To be a globally respected healthcare organization, known for clinical excellence and distinctive patient experience.

ORGANIZATIONS STRUCTURE



SUPPLY CHAIN WORKFLOW IN HOSPITAL



THEORETICAL UNDERSTANDING & PRACTICAL EXPOSURE

- SCM seemed systematic and ideal on paper.
- Assumed hospital formulary is strictly followed.
- Inventory models like ABC, VED were studied independently.
- Dispensing process looked straightforward.
- Expected SOPs to be fully implemented.

- Faced challenges like delays, SOP non-adherence, and coordination issues.
- Doctors often prescribe outside the formulary, leading to stock mismatches.
- Real-world use is selective and data-dependent.
- Required double verification, stamping, and tracking of high-risk medicines.
- Many were partially followed due to staff shortage and low motivation.

LEARNING FROM INTERNSHIP

✓ Understood real-world pharmacy workflows.
✓ Hands-on with ABC-VED inventory control.
✓ Gained exposure to GRN, TAT monitoring, and compliance audits.

CHALLENGES FACED AS AN INTERN

❑ Adapting to real-time pace and systems.
❑Difficulty accessing decision-making processes.
❑Gaps in SOP adherence and interdepartmental coordination.

SWOT ANALYSIS

✅ Strengths
•Well-structured procurement workflow integrating demand generation, PR, PO, GRN, and finance coordination.
•Use of hospital information systems (HIS) for inventory visibility and GRN processing.
•Coordination between IP Pharmacy and Purchase Department ensures patient-centric supply prioritization.
•Strong vendor relationships and approval mechanisms support reliable sourcing.

❗ Weaknesses
•Doctors often prescribe brands not listed in the hospital formulary, creating procurement delays.
•Challenges in physical compliance with FIFO/LIFO despite system entries.
•Gaps in routine audits of Class B and C items.
•Low adherence to SOPs due to staff resistance and limited motivation.

🌱 Opportunities
•Strengthening implementation of ABC–VED–FSN analysis for better inventory decisions.
•Enforcing formulary usage through awareness and policy reinforcement.
•Staff training to enhance SOP adherence and TAT recording accuracy.
•Developing a centralized digital dashboard for real-time inventory visibility and interdepartmental coordination.

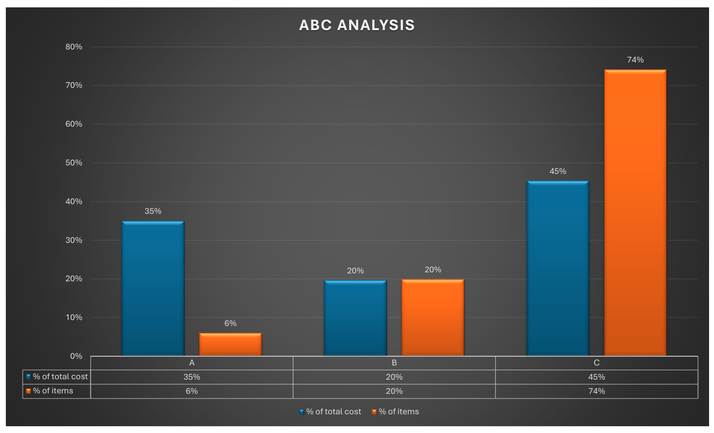
⚠️ Threats
•Emergency demand spikes or delayed deliveries can disrupt the supply cycle.
•Overdependence on limited vendors may affect pricing and availability.
•Manual handling in some SCM stages increases the risk of errors.
•Budget constraints or delayed payments impact vendor relationships.

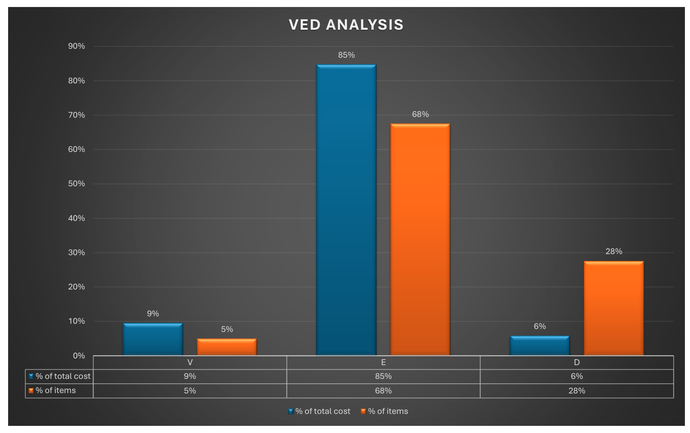
Inventory Optimization through ABC-VED Matrix

This project focused on analyzing the inventory of IP Pharmacy at Fortis Hospital, Manesar using ABC, VED, and combined ABC-VED matrix to enhance inventory control, optimize stock levels, and ensure availability of critical items.

ABC/VED	VITAL (V)	ESSENTIAL (E)	DESIRABLE (D)	TOTAL
A	7	73	0	80
B	14	210	41	265
C	45	617	326	988
TOTAL	66	900	367	1333

category	item count	% of total items
I HIGH	94	7%
II MEDIUM	868	65%
III LOW	371	28%





🧠 Key Insights from ABC-VED Matrix Analysis

🟥 Inventory Control Prioritization
•**A–V (7 items)** and **A–E (73 items)**:
High-cost & high-criticality items. Require **real-time tracking**, strict control, and buffer stock policies.

🟧 Optimization Opportunities
•**C–E (617)** and **C–D (326)** items form the majority.
Ideal for **bulk procurement**, cost-cutting strategies, and **rationalization** without clinical compromise.

🟩 Category-Based Stock Management
•**A–V, A–E**: Real-time inventory & buffer stock essential.
•**B–V, B–E**: Monitor monthly/biweekly.
•**C–V, C–E, C–D**: Basic buffer levels suffice.

🟦 Procurement Strategy
•Focus on **strategic sourcing** for Class A items.
•For Class C items: Consider **vendor consolidation** to cut overhead and improve logistics.

🟪 Policy Recommendation
•Implement **tiered stock review** policies using ABC–VED matrix to ensure **cost-effectiveness** & **clinical safety**.

💡 SUGGESTIONS

•**Classify Inventory Based on ABC-VED Matrix** in the hospital ERP for smarter procurement and review cycles.
•**Vendor Performance Review Mechanism** should be initiated for timely deliveries and better negotiation leverage.
•**Train Department Staff** on raising accurate and timely PRs to streamline the demand–supply chain.

•**Implement a Digital Hospital Formulary** to standardize prescriptions and reduce procurement delays due to non-listed brands.
•**Introduce Barcode-Based Inventory System** to improve stock visibility and minimize manual errors.