Summer Training at
Fortis Escorts Hospital, Jaipur
(April 3 to June 2, 2017)

Inventory Management by Doing the ABC-VED Analysis

By
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INSTITUTE OF HEALTH MANAGEMENT RESEARCH
(WHO Collaborating Centre for District Health System Based on Primary Health Care)

IIHMR UNIVERSITY

CERTIFICATE

This is to certify that **Ms. Monika** has undergone summer training in **Fortis Escorts Hospital, Jaipur from 3rd April 2017 to 2nd June 2017.**

The candidate herself completed the project assign to her during summer training. Her approach to the project was sincere and proactive. This summer training is in partial fulfillment of the course requirement recommended for the award of MBA in Hospital and Health Management.

I wish her success in all her future endeavors.

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3rd June , 2017

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Monika** worked as a **Trainee** with us in the **Dept. of Supply Chain Management** from 3rd April '2017 to 2nd June '2017 .

Her performance during the period in the department was good. She comes across as a willing, sincere and intelligent person who has a strong drive and zeal for learning.

We wish her the best for all her future endeavors.

Fortis Hospitals Limited

Authorized Signatory

ACKNOWLEDGEMENT

Summer internship was the phase of the activity during my study in which I was expected to expand my creative thinking ability and to get the training of how to work in the hospital and how all works were undertaken in the hospital. It was a matter of great satisfaction and pleasure to present this report on inventory management of pharma items in Fortis Escorts Hospital, Jaipur. I took this opportunity to owe my thanks to all those involved in my training.

I am thankful to **Lt col Manan Mukul**, Head- Admin, my organization guide, who have shared his expertise and knowledge with me without which the completion of project would not have been possible.

I am extremely grateful to my mentor **Dr. Ashok Kaushik,** Dean (Academic & Student affairs) and **Dr. Susmit Jain,** Assistant professor in THE IIHMR University, Jaipur for the encouragement, discussions and critical assessment of the project.

I express my gratitude towards all **Staff of Fortis (pharmacy & stores, purchase)** those who have helped me directly or indirectly in completing the training.

Monika

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TABLE OF CONTENTS

ABBREVIATIONS

- ABC- Always Better Control
- CBU-Central Buying Unit
- CSR- Corporate social responsibilities.
- DG- Diesel Generator
- FEFO- First Expiry First Out
- FIFO- First in First Out
- FOS- Fortis Operating System
- FSN- Fast, Slow, Non Moving
- GRN- Goods Received Note
- HIS- Hospital Information System
- IP- In-Patient
- IT- Information Technology
- KVA- Kilo Volt Ampere
- LASA- Look Alike Sound Alike
- NRGP- Non-Returnable Gate Pass
- OPD- Out Patient Department
- PO- Purchase Order
- PR- Purchase Return
- PTC- Pharmacy Therapeutic Committee
- RGP- Returnable Gate Pass
- ROL- Re-Order Level
- ROQ- Re-Order Quantity
- RTV- Return to Vendor
- SCM- Supply Chain Management
- SOP- Standard Operating Procedure

- TAT- Turn Around Time
- VED- Vital, Essential, Desirable

i. OBSERVATIONAL LEARNING

Section-1: Introduction

Brand Fortis was established in 1996, by Founder Chairman Late Dr. Parvinder Singh, who instituted it with the vision

'to create a world class integrated healthcare delivery system in India, entailing the finest medical skills combined with compassionate patient care.'

Vision:

"Saving & Enriching Lives"

Mission:

"To be a globally respected healthcare organization known for Clinical Excellence and Distinctive Patient Care"

Section-2: Mode of Data collection

I have collected the information from the organization by visiting each department and took an overview from respective department heads and staff and learned the working that how the different departments are run by the organization.

Section-3: General findings or learning

- Fortis Hospital is one of the renowned hospitals in Jaipur. The organization has provided me a good learning experience during my internship period; it has provided me a practical exposure and information for various departments and topics which we are needed for my internship project.
- In the organization I was placed to work in Administration and to observe the working of organization.

FUNCTIONAL DEPARTMENTS

• ORGANIZATIONAL STRUCTURE
• GENERAL FLOW CHART FOR HOSPITAL ADMINISTRATION: ROLE OF HOSPITAL ADMINISTRATOR
• SUPPLY CHAIN MANAGEMENT: PROCESS
• FLOW CHART FOR OUT-PATIENTS
• FLOW CHAT FOR IN-PATIENTS
• PHARMACY & STORES, PURCHASE
• HUMAN RESOURCE
• HOUSEKEEPING
• ENGINEERING
• MARKETING
• FINANCE
• INFORMATION TECHNOLOGY
• SECURITY

3.4 ORGANIZATIONAL STRUCTURE

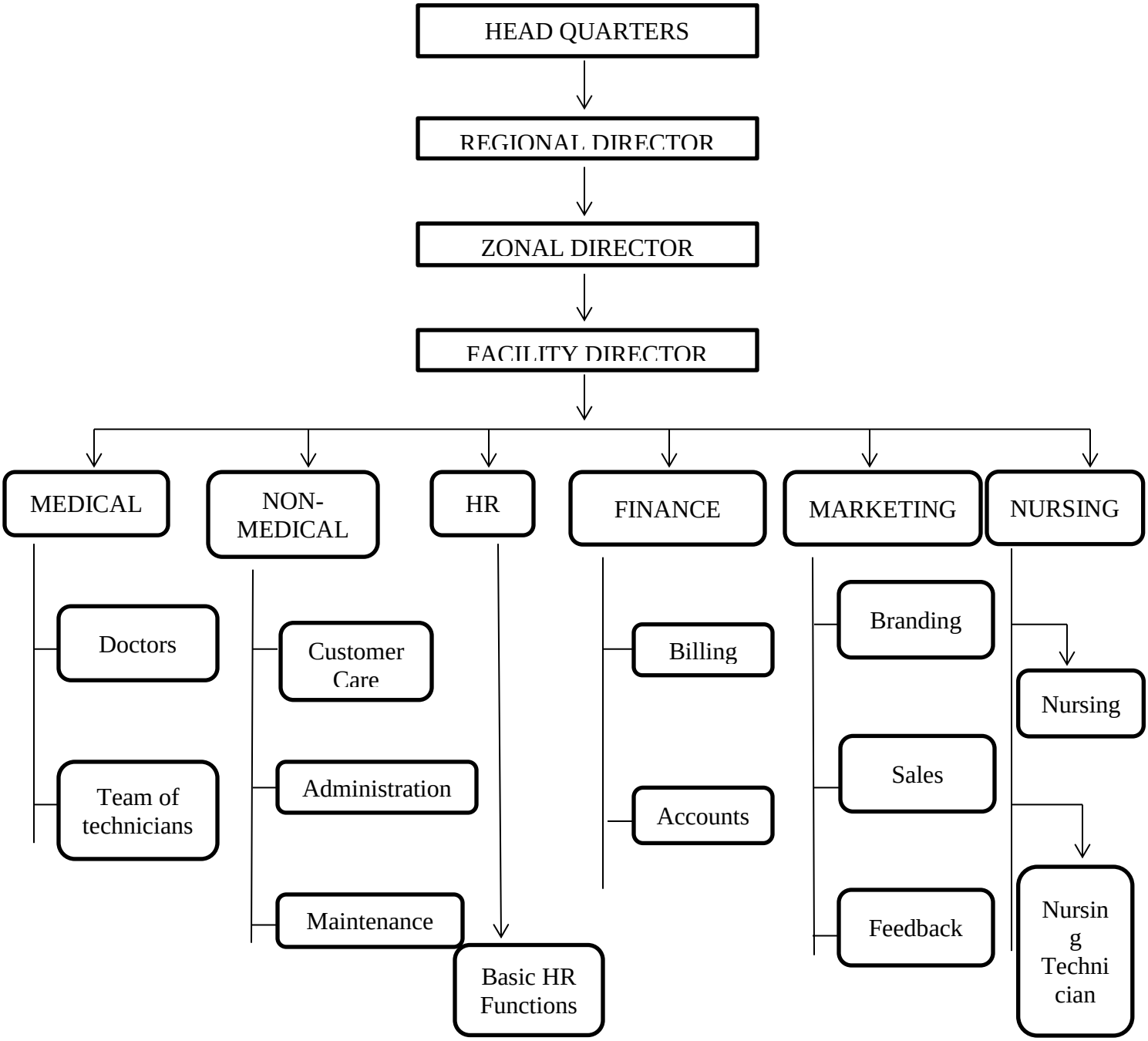


Fig. 1: Organizational structure

ROLE OF HOSPITAL ADMINISTRATOR

- Role towards patients
- Role towards organization
- Role towards community

Table 1

ROLE TOWARDS PATIENTS	ROLE TOWARDS ORGANIZATION
• Clinical needs • Physical needs • Staff attitude • Safety needs • Emotional needs • Educational needs • Patient satisfaction	• Patient care services • Public relations • Marketing management • Hospital information system • Maintenance services • Supply management • Hospital safety • Planning & decision making

Table 2

PERSONAL MANAGEMENT	HOSPITAL INFORMATION SYSTEM
• Manpower planning • Rewards & promotion • Wedges & salary • Disciplinary procedure • Training • Staff selection • Performance appraisal • Grievance	• Medical records • Control functions • Inventory management • Billing & payment • Operational planning & budgeting • Patient feedback system • Two-way communication

3.5 SUPPLY CHAIN MANAGEMENT: PROCESS

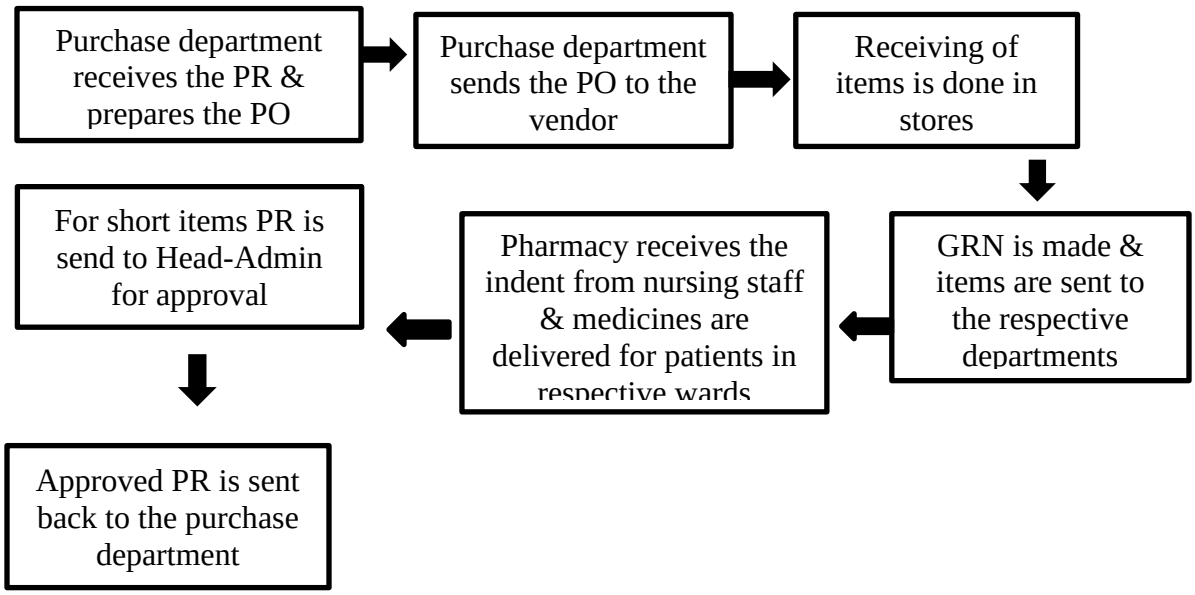
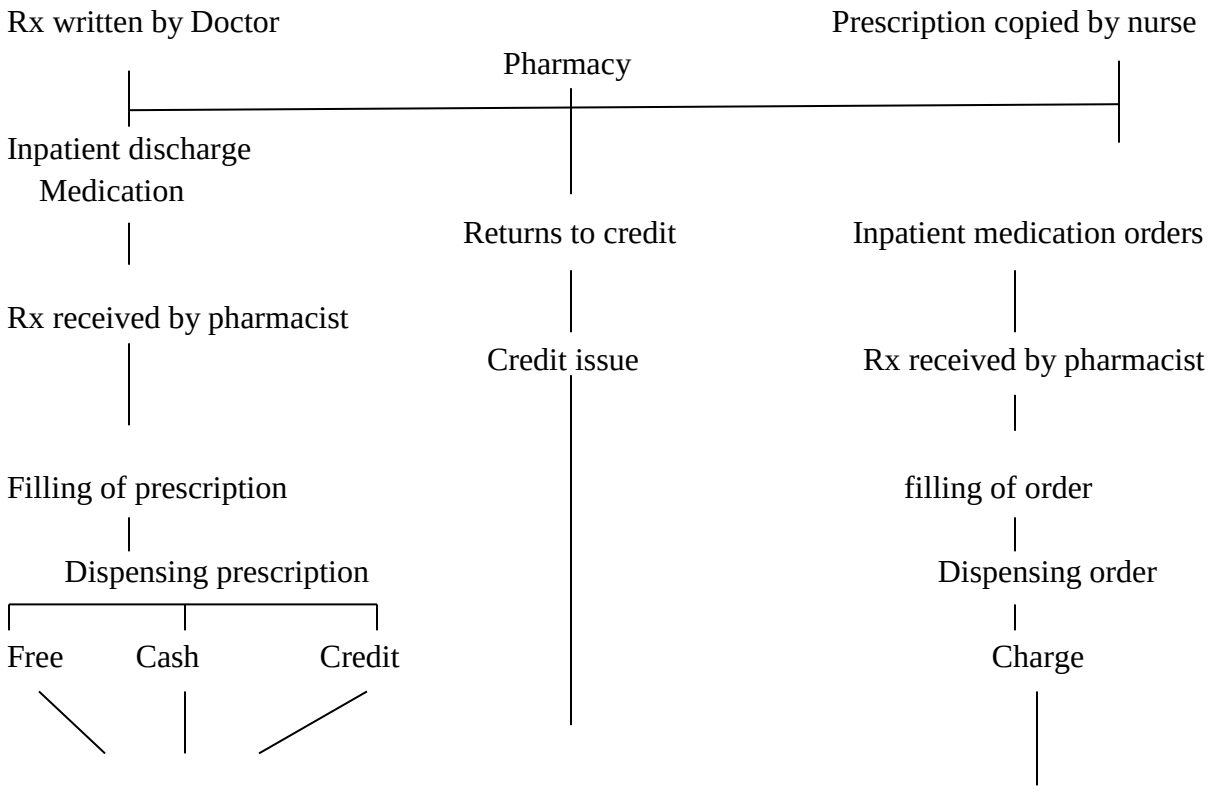


Fig 2: process of supply chain

3.5 FLOW CHART FOR IN-PATIENTS



Statistics & control

Fig 3: flow chart of in patients

3.6 PHARMACY& STORES

Checklist:

- Indents: patient indent; Dispensing of medicine
- Narcotics Protocol
- Arrangement groups in pharmacy
- Inventory Management; FSN Analysis, ABC-VED analysis
- Consignment Process
- Expiry Management
- Classification of drugs; list of high risk; schedule H, H1 drugs, schedule X drugs
- RGP, NRGP, ROL
- Recall of faulty medicines
- Receiving and GRN process in stores

INDENTS:

- Nursing staff send the indent to pharmacy through HIS, and pharmacy dispense the medicines according to the urgency, emergency, new admission timings to the GDA and he or she delivers the medicines to the respective wards.

NARCOTICS PROTOCOL

For the storage of narcotic drugs, 2 forms of registers are maintained:

i. 3H Register (on daily basis/ changed at every 24 hrs.)
ii. Normal stock register

3E FORM (patient narcotic sheet): There are 4 categories in this form, which is send by nursing staff to the pharmacy. 1 copy of this sheet is kept in pharmacy and another one is taken back to the nursing staff.

Categories:

I. Patient details:

Name	UHID	Address	Date	Type	Quantity	Tender sign

II. Daily prescription:

Dosage form	Name	Dose	Frequency	Route	Dr. Name	Prescribing Dr.	Registration No.	Duration

III. Indent cum administration:

Dosage form	Name	Dose	frequency	Route

Drug strength issues	Issued by	Received by	Administered by	Date

Time	Quantity wasted	Witnessed by	Received by	Empty ampule returned by	Empty ampule received by

IV. Return slip:

Dosage form	Drug name	Drug strength	Quantity

Reason for return	Returned by	Received by	Entered quantity received in 3H & stock

- Narcotics report is send to:
  - Monthly: District excise officer department (Jaipur local)
  - Quarterly: Narcotic control bureau; Jodhpur.
- Purchase bill is maintained.
- Stock register's copy is attached with the report.
- 3 copies of report are maintained:

1…….nursing staff

1…….pharmacy

1……...MRD (Medical Record Room)

- Opening and closing stock is maintained in the register.
- Narcotics are stored under double lock almirah and both the keys are kept with different person.
- Pharmacists to handle the narcotics are authorized by the Medical director. Only authorized pharmacist can take the charge of narcotics in pharmacy.

ARRANGEMENT GROUPS IN PHARMACY

All the items are arranged in a proper manner.

- Separate almirah for **narcotics.**

- **Near expiry items** are arranged in a separate almirah.
- **Breakage items** are stored in different cardboards at one place.
- Drugs which are to be kept at cold temperature, ex. Polio vaccines, some high-risk medicines and the drugs which are required to be kept at low temperature are stored in the **Fridges.**
- **High risk medicines** are stored in a separate almirah.
- There is separate locked storage for **Schedule X** drugs.
- Forms like local purchase forms, return slips and patient narcotic sheets are kept in different drawers.
- All the tablets and capsules are stored in an alphabetical order in different shelves.
- **LASA drugs (Look** alike sound alike) are kept at the separate place, so that they can be identified easily.
- **Compactors** are for the different Bulk items.
- All the different documents are maintained carefully for the high risk, local purchase, schedule H & H1, narcotics, schedule X drugs, near expiry etc.

INVENTORY MANAGEMENT:

i. ROL (Re-order Level)
ii. ROQ (Re-order Quantity)
iii. Purchase Request
iv. ABC-VED Analysis
v. FSN Analysis

1) **ROL(Re-Order Level):** Safety stock + lead time consumption
   - Safety stock: % of lead time consumption + % demand fluctuation
   - Lead time consumption: per day consumption * lead time
   - NON- ORACLE:
   - ROL is always dynamic & is based on consumption.
   - ROL cannot be set for a particular period.
   - Manual ROL should be reviewed every week to check the output
     As per change in consumption return.
   - Lead time: Time taken from creating a PO and receiving materials in the store.
   - Demand fluctuation: predefined % of monthly consumption of an item.
   - Per day consumption: avg. daily consumption based on last 56 days of total consumption.
   - Catalogue items; items available for requisitioning through I-procurement.
   - Non-catalogue items: items not having item code/new items.

1) **ROQ**(Re-order quantity):
   - Safety stock + lead time consumption + stock on hand – stock on order
   - Stock on order: pending PR quantity + pending PO quantity

2) **Purchase request:**
   - PR for ROL defined item: PR would be generated automatically in the system for quantities as defined in the system. If GBPA exists than automatically PR is converted to PO. If not, then manually done.
   - PR for Non-ROL items: Ordered according to the consumption pattern to arrive at correct ROL level.
   - PRs to be sent for approval to the stores in charge before sending the same to the purchase department for creating the PO.
   - Open PRs are reviewed on monthly basis.
   - VED analysis should be carried out once a year.

3) **ABC-VED Analysis:**

ABC ANALYSIS: This is the system of analysis of store items mainly drugs based on their cost.

- Items are categorized into 3 groups based on their annual expenditure incurred on these items.
- After analysis, about 10% of items are seen to consume 70% of budget, & these are called Group A items.
- Group B items form about 20% of the total items and account for 20% of the budget.
- Group C consists of the remaining 70% of the items consume only 10% of the budget.
- It can be easily judged that the category A should get higher priority and managerial attention because though consisting only small fraction of the total list it amounts for the bulk of expenditure.
- Their stock, consumption, purchase should be critically watched and controlled.

VED ANALYSIS:

VED analysis is based on criticality and shortage cost of items. Based on their criticality, the items could be classified into three categories: vital, essential & desirable. There could be serious functional dislocation of patient care services in hospital when vital drugs are not available even for a short period. If essential items are not available beyond a few days or a week, the functioning of the hospital can be adversely affected. The shortage of desirable items would not adversely affect patient care or hospital functioning even if shortage is prolonged.

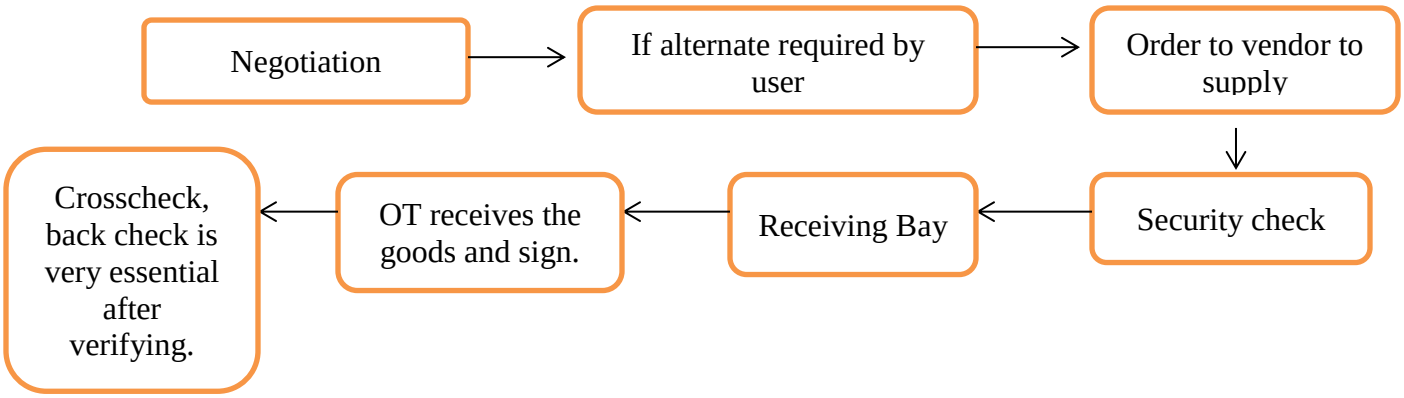
FSN ANALYSIS:

By doing FSN analysis materials materials can be classified based on their movement from inventory for a specified period. Items are classified based on consumption and average stay in the inventory. Higher the stay of items in the inventory, the slower would be the movement of material.

F-Fast Moving: items which are regularly transacted

S- Slow Moving: there is not any transaction of items since 3 months
N- Nonmoving: No transaction of items since 6 months.

4) CONSIGNMENT PROCESS:



- CBU already do the negotiation of goods & implants.
- If the user wants to use the alternate, dr. makes a demand note to the company person.

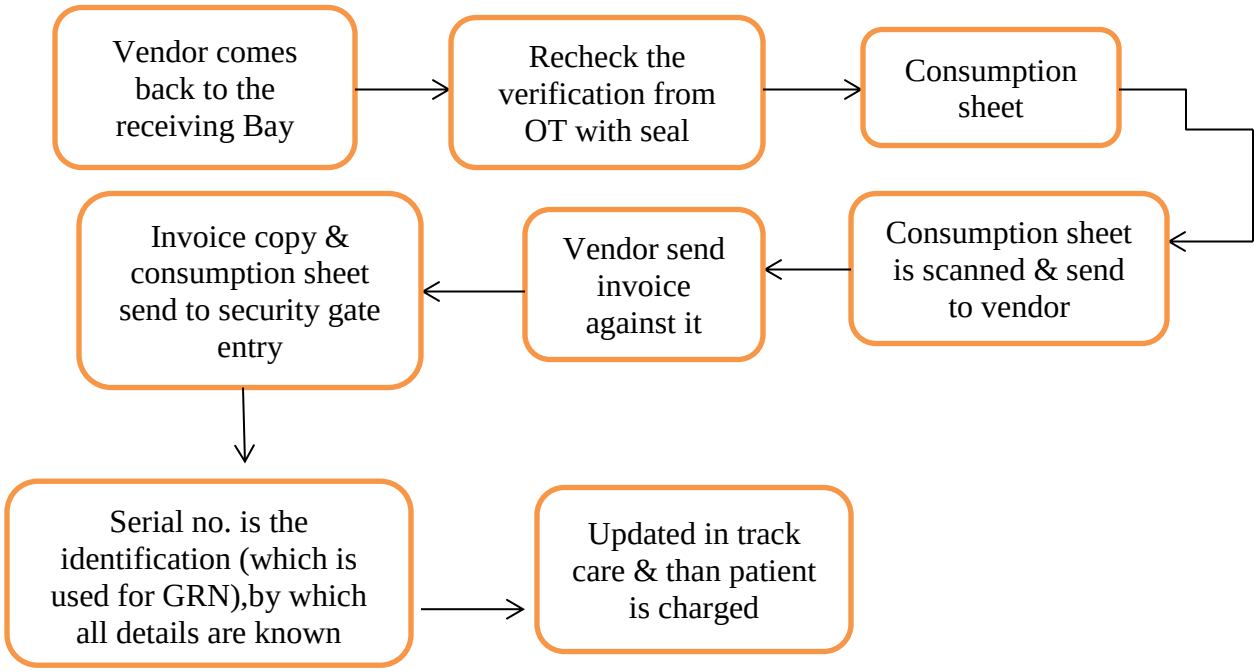


Fig 4: consignment process

5) CLASSIFICATION OF DRUGS:

Schedule X: All the regulations of schedule H apply in case of schedule X drugs.
Prescription must be kept for 2 years.
The drugs must be kept under lock & key.

Schedule H1 drugs: schedule X drugs have now come into focus from March1, 2014.

- Listed medicines which are somewhat midway between schedule H & schedule X (that stipulates prescription in duplicate, separate license requirement & meticulous storage & dispensing records).
- Primarily intended to control the rampant use(that probably includes a large component of misuse through OTC dispensing) of antibiotics in India.
- The packing of these drugs will have mandatory schedule H1 warning printed on the label in a box with Red border & Rx symbol in red.

High risk medicines: High risk medicines are the drugs that have a heightened risk of causing significant patient harm when they are used in error.
High risk medicines include:

- With a low therapeutic index
- That present a high risk when administered by the wrong route or when other system errors occur.

EXPIRY MANAGEMENT:

Every month an expiry report is generated through the system. The main store to segregate all items which are expired or going to expire in next 4 months. Based on this report the products are checked physically, called back to the main store & quantified if expired.

RGP, NRGP (WITH RTV & WITHOUT RTV):

RGP is used for sending the materials of the category, where exact replacement is possible

i. Materials rejected after preparation of GRN due to quality problems, where replacement would be of the same batch.
ii. Items which have to be sent for repair purpose

NRGP WITH RTV:

i. Materials rejected after the preparation of GRN, due to quality problems.
ii. Non-moving/slow-moving/expired/near expiry materials.
iii. Breakage, drug recall, damaged goods etc., which are required to be returned.

NRGP WITHOUT RTV:

i. Materials rejected before the preparation of GRN.
ii. Return of unused consignment items.

DRUG RECALL:

- The faulty medicine is returned to the pharmacy through HIS by user dept. & the same is acknowledged by the pharmacist.
- The purchase in charge takes up the matter with the manufacturer about the faulty medicine & its batch no. seeking for valid explanation on urgent basis.
- The purchase head returns the whole batch of faulty medicines to the vendor, seeking ether for replacement of quality goods or a credit note is required.
- State FDA periodically circulates the list of banned medicines.

GRN PROCESS:

- Materials are received at security gate. Security man verifies the items & put its stamp.
- Materials received at main stores with the documents such as challan, invoice duly stamped by the security.
- If the material is found to be as per PO, receipt of goods is acknowledged by putting stamp & signing the challan or invoice.
- GRN is prepared by verifying the MRP, quantity, batch no. , expiry date etc.

3.7 PURCHASING PROCESS

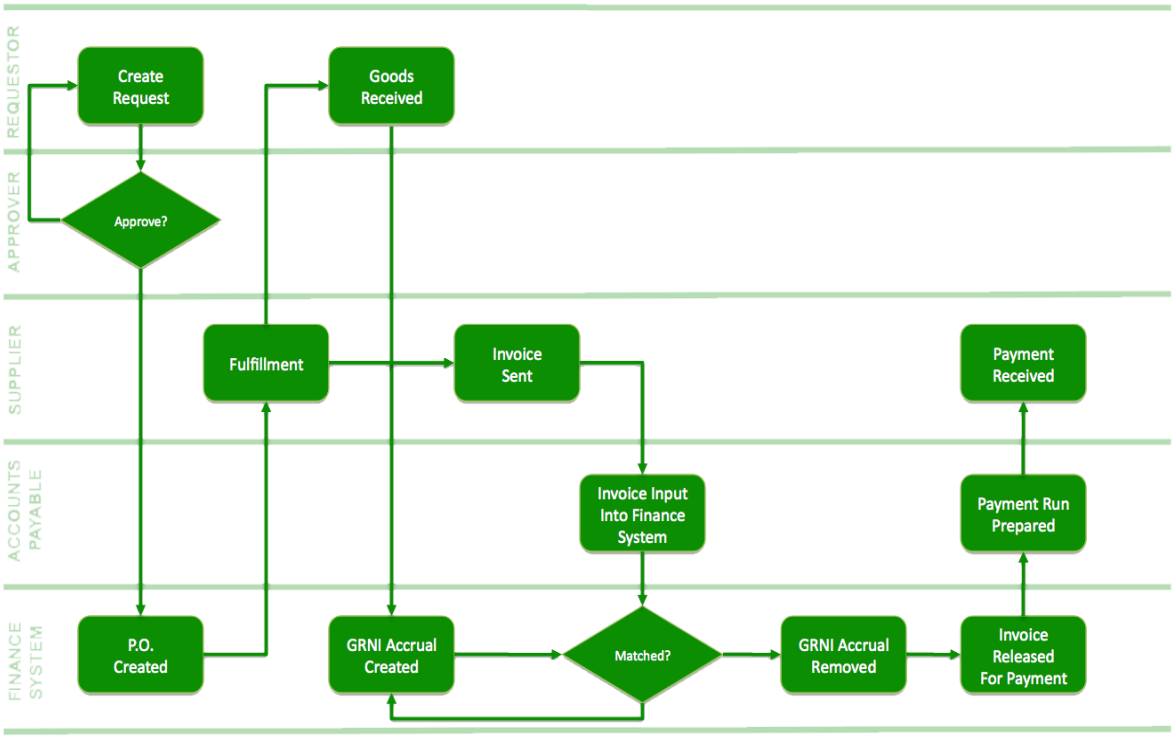


Fig: 5: purchase process

3.8 HUMAN RESOURCE

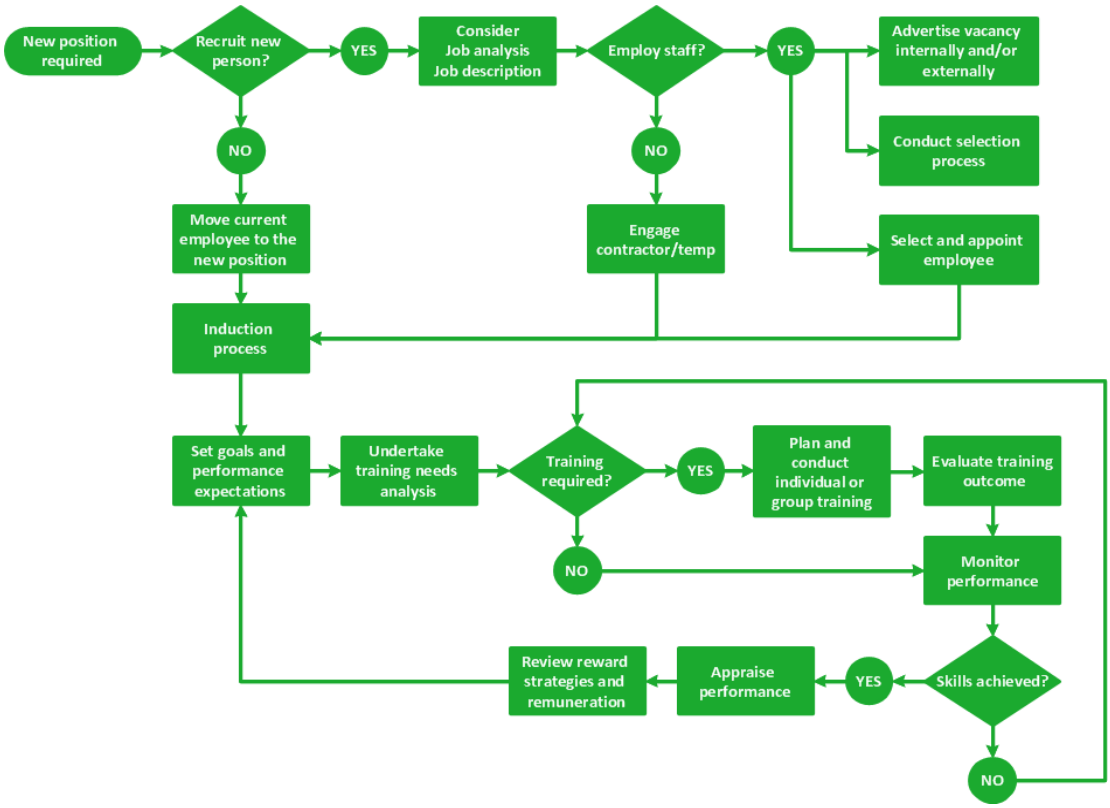


Fig 6: Human resource process

3.8 HOUSEKEEPING

To maintain the aesthetic appearance.

PROTOCOLS:

- Cleanliness
- BMW(Bio Medical Waste)
- Different color bags are used: red, yellow, card board boxes in place of blue.
- Red: plastic goes in red dustbins.
- Yellow: human anatomical waste/organs.
- Card board boxes: glass things, injection bottles are thrown in the card boards.
- Black: general waste is thrown in black dustbin.
- Closed white box: syringes

- All needles and waste vials are kept in punctured proof box.
- There is a central garbage room in the hospital.
- Within 4-8 hrs. BMW should be removed.
- There is infection control department to prevent the infection.
- INSTROMEDICS is the only authorized vendor in all over Rajasthan, in kanota.
- BMW can be randomly inspected in between (by police people).
- There are different sections in BMW room.
- The room is closed whole day.
- The vehicle is with bar coding sticker on every beg.
- There is a plant for BMW in Rajasthan.
- A checklist is prepared every day.
- Weight should be matched with what is written in the slip, it can be checked by police any time.
- According to SOP, plant should be visited every 6 months. There are all the machines, the way material is disposed.

➢ <u>Chemicals used:</u>

Johnson diversy provides all the chemicals:

- ❖ R2: Earlier it was for floor cleaning; now R82 is used for hard surface.
- ❖ R3: It is used for glass cleaning.
- ❖ R4: Furniture polish (wooden polish)
- ❖ R5: Air freshener
- ❖ R6: Harpic etc.
- ❖ R9: It is for fixtures cleaner (in bathroom)
- ❖ TR101/TR103
- ❖ R82: R2 is replaced by R82, because it was not having the disinfectant property. But in R82, it has the property of disinfection & hard surface cleaning both

<u>Linen procurement:</u>

- ❖ Bed sheets
- ❖ Pillows → All should come under the limited budget.
- ❖ Blankets

- Budget is fixed by Head.
- Everything is supervised on each floor.
- Everything is recorder & crosschecked.
- Valuables go to the finance dept.
- Different checklists are prepared for different departments.

- Chemicals are maintained in different departments.
- In High risk areas, proper cleaning is must.
- Ambulance must be cleaned on daily basis.

3.9 ENGINEERING

There are 7 Considerations in Fortis Hospital:

1. AC Plant:
    - Centralized AC Plant with cooling tower.
    - Condensers/chillers.
    - Compressors.
    - Strainers (for filling).
    - Temperature is known from the connection point.
    - Motors
2. Boiler Room:
    - Hydrometric pump.
    - Soft water tank capacity- 165 KL
    - Fire system.
    - Sprinklers and smoke sensors are situated in the sealing, at 67°C the red glass breaks & water automatically sprinkle.
3. Fire check door:
    - Low tension room
4. Transformer:
    - 33kg line
    - 440 volts supply
    - Capacity to take: 2000KVA
5. Generators:
    - If power supply cut, than there are 2 D.G generators(1000KVA)(gensets)
6. MEDICAL GAS PLANT:
    - Oxygen Bank
    - Nitrous oxide Bank
    - Vacuum receiver
7. FIRE POINT:
    - There are two tanks filled with oxygen.
    - As per requirement oxygen is supplied through the vehicle, to fill the tanks.

- ROLE OF ENGINEERING IN HOSPITAL:
    - Land should be fulfilled by government compliances.
    - Fortis building area is 3, 43,000 square ft. area.
    - Plot Area is 6.678 acres.
    - Fortis is 10 floor building:
        I. Basement
        II. Ground floor
        III. 1-7 floors
        IV. Service floor
        V. Total height is 36m from ground floor
    - Fortis has taken an approval from government, in the ratio 1:1=100%, but plot area is not fully covered.
    - 35% area must be the greenery area, according to parking, ambulance and fire vehicle movements.
    - These things are must:
        I. 33 KV power supply is used.
        II. JVNL GT is the main power supply.
        III. Normal power
        IV. D.G. for back up
        V. U.P.S for emergency light
        VI. Uninterrupted power supply for life saving support-
        Example:
            a. OT Equipment
            b. Ventilators
            c. ICU
- Otherwise hospital would not be permitted by government.
- There are 2 UPS (720 BETTRY) are available:
- ✓ 230 V – single phase
- ✓ 440 V- three phase
- There are 3 phases: Red, yellow & black. Black is neutral.
- WATER SUPPLY: Government connection (MCD Connection) or Ground water(Bore well)
- In Fortis, there are 5 bore well, around 2 lakh lit. Per day. Waste water is recycled. There's a harvesting pit in the hospital.
- STP (Sevage treatment plant): In the Areas like garden, AC etc. There is not any direct contact of mouth and hands.
- ETP (Effective treatment plant): Filtration is little more.

Raw Water: It is for general use. Not for direct contact. First general filtration is done.

Soft Water: It is taken in use in the areas like laundry, kitchen, CSSD etc. Little more filtration is done.

R.O Water: It is for drinking and some critical purpose.

- STEAM BOILER: In CSSD, Laundry and very less in kitchen.
- HOT WATER BOILER: whole building's heating system works through this.
- HVAC: (Heating ventilation & Air conditioning)

I. Air changes: 15-20% air is mixed with every air.
No split AC, No window AC, because risks may be high.

II. Chiller: Air cooled, gas cooled and water cooled.

III. AHU: Air handling unit- It covers all areas.

IV. FCU: Fan coiled unit- it is used in rooms, same water circulates.

- Standard temperature is kept at 23±1°C in general areas.
- In critical areas (ex: cath lab, OT & ICU) it is kept at 20±1°C.
- In Ortho area- the temperature is kept at 16-20°C.
- MEDICAL GASES:
  N2O: used for the anesthesia in OT.
  In wards- vacuum or O2. (As per the requirement)
  Compressed air: four bar, seven bar, which is used for cutter machine, hydraulics & in ventilators.

3.9 MARKETING

- There are some categories in this department:
  1. Sales:
     - Tertiary care
     - The way we approach to doctors: through direct contact, continuous medical communication(CME), Material Role
     - The way we approach to patients.
     - Sales executives are geographically assigned.
     - Camps are conducted in a geographical area.
  2. Marketing:
     - Numerical data- performance appraisal
     - STRETEGIES- how to approach to customers, maintaining the brand.
     - Community approach- through marketing activities, camps, social groups and association activities.
     - Different health camps are conducted.
  3. Branding:
     - Big & small events.
     - Participated in marathons & different activities.

- Endorsements.
- Maintain the brand protocol.
- Expenditures & activities are seen.

4. CSR (Corporate Social Responsibilities):
    - Communities connect activity.
    - Camps are conducted in morning in parks, rural areas to aware the people.
    - Association with police department
    - School health activities.
    - CSR has been mandatory from 2013 by ministry of corporate.
    - Since 2007,the programs are conducted in the community.
    - To compensate the hazardous/harmful waste.
    - There are 10 programs run by Fortis:
        - ❖ Nannhi chaon: To promote girl child.
        - ❖ Ummed: HIV+ children, associated with different NGOs, counseling sessions.
        - ❖ Little hearts programme: for children suffering from congenital disease since birth. There surgery is free of cost. There is an agreement with Salman khan (on cost), crossed 120 surgeries.
        - ❖ Suprabhat: morning camps are organized in parks, churches, in society free of cost, free services. The activities are conducted out of Jaipur also. Fortis focus only on prevention.
        - ❖ Community outreach programme for students: associated with top 30 schools of Jaipur, to spread awareness in the society, annual health checkups in school.
        - ❖ Chetna: awareness among the adolescence through the programs organized by NGOs.muslim community is the majority. They get a different kind of exposure.
        - ❖ Shaksham: for police departments, regularly policemen get training & treatment.
        - ❖ Samarth: designed for the doctors & the parents, they are trained so that they can reduce the mortality rate. For teachers, to make them understand and medical support.
        - ❖ Ummeed smile: same as little hearts, free of cost surgery is provided.

5. PR & communication:
    a. Paid media:
    - The way we communicate.
    - Inter department communication in the organization.
    - Media
    - Government operations
    - Other agencies
    - The way we organize the events
    - Silent communication: All way of working itself communicates.

    b. Print media:
    - Decide a goal
    - Plan the strategy
    - Target customers
    - Budgeting
    - Competitor activity
    - Business revenue is studied
    - Allocation of budget
        - In PR: 90% consideration is- articles, press release, news release, blogs, online PR, media management.
        - 10% is the crisis management (damage mitigation is the most important thing).

Section-4: suggestions for the improvement

- As per my observation manpower can be increased in few departments.
- They have already a proper team management & co-ordination among the staff members but it is also required to maintain this further, for a good future perspective of the organization.
- In stores chances of manual error are there in making the GRN, so the timings should be defined for receiving the material.

PROJECT REPORT

Inventory management by doing the ABC-VED Analysis.

Section-1: Introduction

INVENTORY MANAGEMENT: A set of policies and controls that monitors levels of inventory and determines what levels should be maintained, when stock should be replenished, and how large orders should be placed.

Table 3

ABC ANALYSIS	VED ANALYSIS
The ABC approach states that, when reviewing inventory, an organization should rate items from A to C, basing its ratings on the following rules: A-items are goods which annual consumption value is the highest. The top 70-80% of the annual consumption value of the company typically accounts for only 10-20% of total inventory items. B-items are the interclass items, with a medium consumption value. Those 15-25% of annual consumption value typically accounts for 30% of total inventory items. C-items are the items with the lowest consumption value. The lower 5-10% of te annual consumption value typically accounts for 70% of total inventory items The annual consumption value is calculated with the formula: (Annual Demand) x (Item Cost per unit).	VED analysis represents classification of items based on their criticality. The analysis classifies the items into three groups called Vital, Essential and Desirable. "Vital" category encompasses those items for want of which production would come to halt. "Essential" group includes items whose stock-outs cost is very high. And "Desirable" group comprises of items which do not cause any immediate loss of production or their stock-out entail nominal expenditure and cause minor disruptions for a short duration. VED (Vital – Essential – Desirable) analysis is carried out to identify critical items. An item, which usage-wise belongs to C-category, may be critical from production point of view if its stock-out cause heavy production loss.

Section-2: Mode of data collection:

- A sample of 100 drugs has been taken from 9522(approx..) items in hospital inventory through purposive sampling.

Section-3: Data compilation:

ABC ANALYSIS:

ABC analysis was used to categorize the drugs according to their relative importance. Three categories are formed in which category A contained high value drugs whereas category B contained intermediate and category C contained lower value drugs.

VED ANALYSIS:

VED analysis was performed to categorize the drugs by their critical value. Drugs that are more critical and act as lifesaving comes under category V whereas essential drugs whose importance is lower than V comes under category E and drugs which are used for minor or limited illness comes under category D.

ABC-VED MATRIX:

A (3×3) matrix was formed by the coupling of ABC and VED analysis. Nine categories were attained from the matrix as shown in Table

section-4: Analysis & Interpretation:

On ABC Analysis, 11%, 25%, 64% drug items have been found to be category A, B and C respectively, amounting for 71.41%, 20.13% and 8.47% of annual drug expenditure (ADE) of the pharmacy.

ABC ANALYSIS:

Table 4

S.R No.	Category	Item no.	Drug's item %	ADE %
1	A	11	11%	71.41%
2	B	25	25%	20.13%
3	C	64	64%	8.47%

On VED analysis,39%,12%, 49% drug items have been found to be category V, E and D respectively, amounting for 77.23%,17.17% and 5% of the ADE of the pharmacy.

VED ANALYSIS:

Table 5

S.R No.	Category	Item no.	Drug's item %	ADE%
1	V	39	39%	56.23%
2	E	12	12%	26.44%
3	D	49	49%	17.33%

COMBINED ABC-VED ANALYSIS

Nine different categories (AV, BV,CV,AE,BE,CE,AD,BD,CD) have been attained by using combined ABC-VED analysis. By this analysis 8.33%, 3.83%, 10.00%,10.67%, 6.17%,12.33 %,17.17 %,12.67%,18.83 % drugs have been found to be (AV,BV,CV,AE,BE,CE,AD,BD,CD) categories respectively, amounting for 46.26%,6.82%,16.60%,4.67%,2.16%,4.58%,3.26%,0.23%,15.42% of ADE of the pharmacy.

Combined ABC-VED matrix:

Table 6

SR No.	Category	Item no.	Item %	ADE%
1	AV	50	8.33%	46.26%
2	AE	23	3.83%	6.82%
3	AD	60	10.00%	16.60%
4	BV	64	10.67%	4.67%
5	BE	37	6.17%	2.16%
6	BD	74	12.33%	4.58%
7	CV	103	17.17%	3.26%
8	CE	76	12.67%	0.23%
9	CD	113	18.83	15.42%

Three main categories I, II and III are obtained by the grouping of nine above categories.

Category I consist of vital or essential drugs having high cost. These drugs should always be available in stock since they are very important. Low safety stock should

be maintained to prevent locking up of capital by these drugs. A strict control is necessary for category I drugs.

Category II contained essential and desirable drugs having lower cost than category I. so, these drugs required moderate control. Large order can be made for these drugs. Category III have desirable drugs which are cheap. These drugs can be ordered once or twice in a year to save ordering cost at a reasonable cost.

4.1 RECOMMENDATIONS:

- Adequate member of manpower to be employed for smooth functioning.

4.2 LIMITATIONS:

- Sub-stores are not there, so they cannot access the system generated ROL.
- ROL is calculated manually.

4.3 CONCLUSION:

- Inventory management tools are required for optimal management of drugs with efficient priorities, appropriate purchase and close supervision of drugs belonging to important categories. So combined ABC-VED analysis is useful for drugs need highest attention and strict control for effective and optimal use of funds and prevent stock-out situations of drugs in pharmacy store.

3. REFERENCES

- http://www.irdindia.in/journal_ijmer.
- https://www.ncbi.nlm.nih.gov.
- www.who.ent/journels.

4. ANNEXURE

Time Schedule

S.No.	Name of the department	Date(s) of visit	Time spent	Interacted with
1	Human Resource	03 April,2017	9:00 am-1:00 pm	Ms. Daljeet kaur (Assistant manager)
2	Admin	04 April, 2017	1 Day	Lt col Manan Mukul (Head-Admin)
3	OPDs	05 April, 2017	1 Day	Ms. Poorva (Head OPD)
4	Marketing	06 April, 2017	1 Day	Mr. Roopesh Mathur (Head- Marketing)
5	Housekeeping	07 April , 2017	1 Day	Mr. Abhisek (Head-Housekeeing)
6	Engineering	08 April , 2017	1 Day	Mr. B K Sharma (Head-Engineering)
7	Food & Beverages	10 April, 2017	1 Day	Mr. Navrang Puzari (Head-F&B)
8	Information Technology	11 April , 2017	1 Day	Mr. Navneet (Head-IT)
9	Pharmacy & Stores	12 April, 2017	45 Days	Mr. Sanjay Srivastava (Head-Pharmacy)
10	Purchase	23 May, 2017	Days	Mr. Yogesh Mathur