Summer Training at
Shri Mata Vaishno Devi Narayana Super specialty Hospital, Jammu

Inventory Management in Startup Organization in SMVD Narayana Multispecialty Hospital, Jammu

By
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Under the guidance of
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MBA Hospital and Health Management
2015-2017

The IIHMR University, Jaipur
2016

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

IIHMR UNIVERSITY

CERTIFICATE

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Dr. Gaurav Loona** student of **MBA Hospital and Health Management** from the IIHMR University; Jaipur has undergone summer training at **SMVD Narayana Super speciality Hospital, Jammu** from 1st April to 31st May, 2016.

The Candidate has successfully carried out the study designated to him during summer training and his approach to the study has been sincere, scientific & analytical.

The Internship is in fulfilment of the course requirements.

I wish him all success in all his future endeavours.

Col. (Dr.) Ashok Kaushik
Dean (Academics & Student Affairs)
The IIHMR University, Jaipur

Dr. Neetu Purohit
Associate Professor
The IIHMR University, Jaipur

Shri Mata Vaishno Devi Narayana Superspeciality Hospital

Managed by Narayana Health

SMVD/Trainee/ 002

Dt.31st May' 2016

INTERNSHIP CERTIFICATE

This is to certify that **Dr. Gaurav Loona S/O Simarjit Singh Loona** bearing **Enrollment No: U/01/2015-17/0280** from **Indian Institute Of Health Management Research from Jaipur, Rajasthan,** has successfully completed his Project on **"Inventory Management"** from **01st April'2016 to 31st May'2016** at **Narayana Vaishno Devi Specialty Hospitals Pvt. Ltd,** Kakryal (Village & Post), Katra Tehsil, Reasi, District, Jammu & Kashmir- 182320

During his internship period, he has shown keen interest to observe and learn with good conduct.

We wish him all the best for his future endeavours.

for ***Narayana*** **Vaishno Devi Speciality Hospitals Pvt.Ltd**

Raman Kumar
Senior Manager - Human Resources

ACKNOWLEDGEMENTS: -

The internship opportunity I had with **Narayana Multispecialty Hospital, Jammu** was a great chance for learning and professional development. Therefore, I consider myself as a very lucky individual as I was provided with an opportunity to be a part of it. I am also grateful for having a chance to meet so many wonderful people and professionals who led me though this internship period.

I express my deepest thanks to my mentor Dr Harman Loona, General Manager Operations, NH, Jammu for taking part in useful decision and giving necessary advices and guidance and arranging all facilities to make internship easier.

I feel deeply privileged in expressing my deepest sense of gratitude to Dr.Devi Shetty (CMD Narayana Group),Dr. S.P. Singh(CEO), Dr Sriman (Medical superintendent) and Mr. Raman(Human Resource Manager) for their careful and precious guidance which were extremely valuable for my study both theoretically and practically.

The involvement and sharing of knowledge by the NH staff were of great help to my study as well as in better understanding of the Quality department. I am also grateful to all the department heads and staff for giving time in spite of their hectic schedule. Without their active co operation and participations it would not have been possible to accomplish our task.

I perceive as this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way, and I will continue to work on their improvement, in order to attain desired career objectives. Hope to continue cooperation with all of you in the future,

My sincere gratitude to my mentor **NEETU PUROHIT,** for his constant support and encouragement

Sincerely

GAURAV LOONA

MBAHM 20

The IIHMR University Jaipur

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ACRONYMS/ABBREVIATIONS: -

PNL-profit and loss statement

PNDT-pre natal diagnostic techniques

AMC-annual maintenance cost

CMC-comprehensive maintenance cost

PERT-program evaluation review technique

AERB-atomic energy regulatory board

ORGANISATIONAL PROFILE

ABOUT NARAYANA HRUDAYALAYA HOSPITAL GROUP

Narayana Hrudayalaya has now radically changed the scenario of accessibility, pricing and state of the art healthcare in India. Originally, Dr Devi Shetty's radical new concept, which started with the Spartan Narayana Hrudayalaya heart hospital Bangalore in the year 2001, was now a truly global healthcare provider .Today, it has 32 Hospitals, 6600 beds, 20 Cities, 15000 Employees, 1800 Doctors and their positively outlook of being able to equip and service of 30000 beds by 2018.

Dr. Devi Shetty has over the past three decades re- affirmed his commitment to 'An equitable distribution of world class healthcare for the masses at an affordable cost'. Our group's firm belief in its core values and mission statement helps reinforce our everlasting commitment to the people of Jammu & Kashmir. Narayana Hrudayalaya Jammu will bring this very same revolutionary concept to the state and its people with the promise of an affordable one-stop health-solution.

Narayana Health (formerly known as **Narayana Hrudyalya**) is a multi-specialty hospital chain in India, headquartered in Bengaluru.

The company won the "Good Company" award for its quality, affordability and scale.[The business model of Narayana Health became a Global Healthcare and Harvard Business School case study. The hospital chain is among the largest telemedicine networks in the world

The chain has 1500 full-time Doctors and 15,000 employees. On an average of 150 surgeries are performed every day and on an average of around 80,000 outpatients are seen every month.

NH ranked36th among 'World's 50 most Innovative Companies 'by Fast Companies2012

A leader in the field of Cardiac sciences, it performs complex congenital surgeries, Coronary bypass grafting with advanced techniques like Beating heart surgeries, Minimally Invasive Cardiac surgery and other valvular surgeries on adults and children. It is equipped with cardiac OTs, state-of-the-art Cath labs, 3D mapping of Electrophysiology, Cardiac Intensive Unit and Coronary care unit.

ABOUT NARAYANA MULTISPECIALITY HOSPITAL, JAMMU

Narayana Multispecialty Hospital, Jammu, a perfect blend of technological excellence, complete infrastructure, competent care and heartfelt hospitality - this is how the people, whom the hospital has been fortunate to serve, define the hospital.

It is a 250 bedded multispecialty tertiary care hospital, located at Kakryal, Katra within a sprawling campus of 30 acres offering high quality affordable medical care to the people within Jammu and Kashmir and bordering states as well.

Shri Mata Vaishno Devi Narayana Multispeciality Hospital is a unit of Narayana Hrudayalaya Ltd. in partnership with Shri Mata Vaishno Devi Shrine Board and is poised to cater to patients for over 20 different specialities with special focus on Cardiac Sciences and Oncology .Hospital commissioned OPD services on March 15, 2016 and IPD services on April 8,2016. Till now hospital has provided OPD services to more than 5000 patients and IPD services to 100 plus patients.

Narayana Health is a leading Health organization which is headquartered at Bangalore, India. The group was founded in the year 2000 under the guidance and stellar leadership of Dr. Devi Shetty, along with the "Asian Heart Foundation". Narayana Health has also setup the first Health City in the outskirts of Bengaluru, spread over 25 acres. The Health City consists of more than a 1000 bed cardiac hospital and a 1400 bed multi specialty hospital, becoming one of Asia's most advanced Cancer Care facility. It also has India's largest Bone Marrow Transplant unit.

"Narayana Health has an aim of achieving 100% Patient satisfaction."

1.1Vision: "Our vision is affordable quality healthcare to the masses worldwide."
1.2Mission: "Our dream of making quality healthcare available to the masses worldwide"
1.3Values: Core values are represented by the simple acronyms **'iCARE'**

- Innovation & efficiency
  To continuously reduce the cost of delivery of high quality of healthcare and Improve our reach
- C- Compassionate care
  In providing accessible service that makes a difference to our patients.
- A- Accountability
  To honour commitments to our patients, employees and investors with integrity and transparency.
- R- Respect for all
  Recognize the contribution of every employee and respect the rights as well as the dignity of every patient and employees.
- E- Excellence as a culture
  Where we individually excel to collectively ensure the highest quality of and reliable services to our patients and sustainable values to all our stakeholders.

1.4Quality Policy:

- Deliver world class patient care through medical excellence.
- Create a patient-centric environment:
- Ensure high standards and safety of treatment during the patient's stay
- Continuous Quality Improvement through implementation of robust clinical and non-clinical process and protocols
- Having world-class infrastructure and cutting edge technology utilized by highly skilled employees.
- Complying with statutory regulations

1.5Service Standards:

- Courteous

- Attentive
- Compassionate service
- Teamwork
- Safe

Mode of data collection:

Every department of the hospital was observed carefully for its working, staff, hierarchy, physical set up and major challenges faced by it, if any.

Source of information: a) Primary:

- Interaction with doctors
- Interaction with CMO'S and MO'S
- Direct observation

b) Secondary:

- Interaction with supply chain department

1.7 Scope of Services:

1.4 Scope of Services:

- Anaesthesia & Critical Care
- Department of Cardiac Science
  - Cardiac Anaesthesia
  - Cardiac Electrophysiology
  - Cardiothoracic & Vascular Surgery
    Paediatric & Adult
  - Interventional Cardiology
    Paediatric & Adult
  - Non Invasive Cardiology
    ECG, ECHO, HOLTER, TMT
- Department of ENT
- Department of Dentistry
- Dermatology
- Diabetology -Endocrinology
- Department of Gastro Science
  - Gastroenterology & Haematology
  - G.I & Laparoscopic Surgery
- Department of Neuro Sciences
  - Neurology

- Neurosurgery
- Department of Paediatric
  - Neonatology
  - Paediatric
  - Paediatric Surgery
- Department of Plastic Surgery
- Department of Renal Sciences
  - Dialysis
  - Nephrology
  - Urology
  - Transplant Services (Liver)
- General & Laparoscopic Surgery
- Institute of Bone, Joint & Spine
  - Hand & Upper Limb Surgery
  - Joint Replacement
  - Spine surgery
- Internal Medicine
- Obstetric& Gynaecology
- Psychiatric
- Department of Nuclear Medicine
- Oncology Haematology
- Oncology Medical
- Oncology Surgical
- Radiation Oncology
- Psychiatry
- Psychology
- Pulmonology
- Pulmonology-Interventional
- Emergency / Casualty

DIAGNOSTIC SERVICES

1. Non Invasive Cardiology Services
   - Echocardiography - Adult
   - Echocardiography - Paediatric
   - Foetal Echocardiography

- Trans-oesophageal Echocardiography
- Treadmill Test
- ECG and Holter
- EEG/ ENMG
- PFT

2. Radiology Services
    - X-ray
    - MRI Scan
    - CT scan (128 slice)
    - Ultrasound

3. Nuclear Medicine- Gamma Imaging
4. LINAC
5. Laboratory Medicine
    - Biochemistry
    - Clinical Pathology
    - Haematology
    - Histo-Pathology
    - Microbiology
6. Blood Bank
7. Endoscopy / Bronchoscopy Services

SUPPORT SERVICES

1. Cardiac Rehabilitation
2. Counselling
3. Ambulance services
4. Telemedicine

5. CSSD
6. MRD
7. Human Resource
8. Purchase and inventory
9. Pharmacy
10. Morgue
11. Strategic Initiative- Includes Marketing , Branding , corporate communication cell, claims recoveries , corporate relations and relationship with other partners
12. Library
13. OP Pharmacy & IP Pharmacy
14. Waste management.

OUT SOURCE SERVICES FOR THE HOSPITAL

1. Housekeeping
2. Security
3. F &B services

1.5 DEPARTMENTAL SERVICES:

1.Outpatient Department:

There are 5 decentralised OPD:

1. East OPD (1-16)
2. West OPD (1-5,Gynae and Paediatrics)
3. Cardiac OPD
4. Gastro OPD
5. Oncology OPD

OPD Timings: 9am to 5pm.

Average no. of OPD patients 240-250 per day (Including old and new patients)

2.In Patient Department:

- General Ward 1:
  Location: Ground Floor
  Bed Capacity: 6 Beds

- General Ward 2,3,4:

  Location: First floor

  Bed Capacity: 18 Beds
- General Ward 5,6,7

  Location : Second Floor

  Bed Capacity:18 beds

- CCU

  Location: First floor

  Bed Capacity: 14 Beds
- SICU

  Location: First floor

  Bed Capacity: 10 Bedsincluding 3 beds for isolation
- ANC Ward

  Location: Second Floor

  Bed Capacity: 5 Beds with 2 Beds in Labour room
- Paediatric Ward

  Location: 1st Floor

  Bed Capacity: 6 Beds
- PICU

  Location: 1st Floor

  Bed Capacity: 5 Beds
- NICU

  Location: 1st Floor

  Bed Capacity: 5 Cribs
- Post Operative Ward

  Location: Second Floor

  Bed Capacity: 14 beds
- Semi Private :

  Location: (Ground Floor, First Floor, Second Floor)

  Bed Capacity: 24 beds
- Private Ward

  Location: (Ground Floor, First Floor, Second Floor)

  Bed Capacity: 18 Beds

3.Emergency Services:

Location: Ground floor

Entrance: Separate entry from the main road

The Emergency Department is a well-equipped 10 bedded department. 4 beds for each triage category Red, Yellow, Green and 1 bed for isolation

Staff: 1 Emergency In- charge, 3 MO, 1 Nursing In- charge, 10 Staff nurse.

Ambulance service is provided with collaboration of Shrine Board,2 A.C.L.S (Advanced Cardiac Life Support Ambulances) have been created which cater to serve patients

Priority 1(serious)-RED	PRIORITY II(Delayed)-Yellow	Priority III(Minimal)-Green)
• Chronic self-limiting disorders • Patients have life threatening injuries or conditions which are critical • Survival with immediate treatment e.g.-respitory arrest	• Requirement of definite treatment but no immediate threat to life exists. • E.g.-acute abdominal pain, acute renal failure	• Patients having minimal injury or minor conditions and are ambulatory. • E.g.-abrasions and superficial lacerations.

4.Operation Theatre:

There are total of 7 OTs

Location: Second Floor

Easy access to CCU, Blood Bank, Emergency and CSSD

Post-Operativeward is attached to the OTs

Manpower: Head of the Department, 3 Anaesthetist, 2 OT in-charges, and 5 OT Technicians, 10 Staff Nurse, 3 House Keeping Staff.

5. Cardiac OPD:

Location: First floor

Separate OPD for cardiology cases

Facilities available:

- TMT
- Electrocardiography
- Echocardiography
- Electromyography

6.Catheterisation Lab:

Location: First Floor

All Invasive Procedures are done in Cath lab such as Angiography, Angioplasty, Cath Study, and Electro Physiological Study.

- Anaesthesia & Critical Care
- Department of Cardiac Science
  - Cardiac Anaesthesia
  - Cardiac Electrophysiology
  - Cardiothoracic & Vascular Surgery
    Paediatric & Adult
  - Interventional Cardiology
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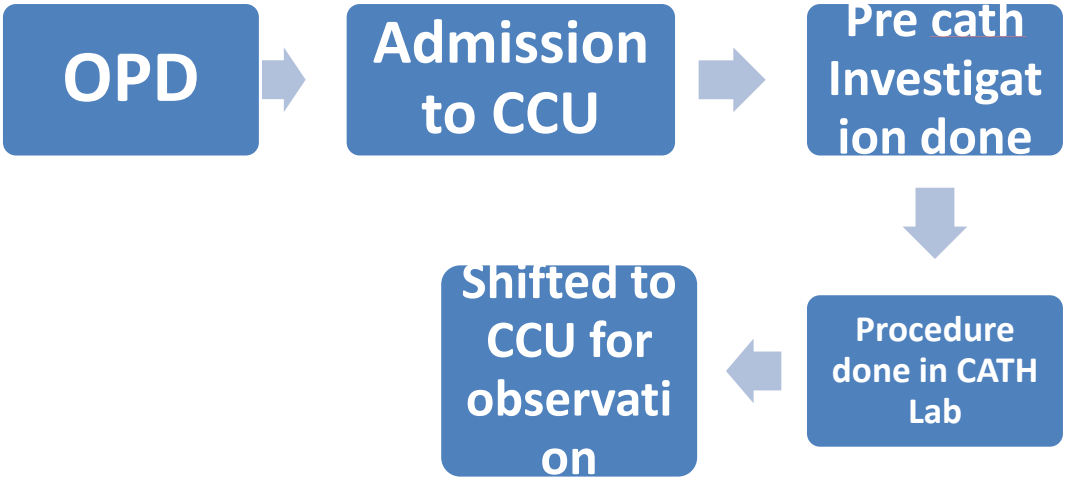
  - G.I & Laparoscopic Surgery
- Department of Neuro Sciences
  - Neurology
  - Neurosurgery
- Department of Paediatric
  - Neonatology
  - Paediatric
  - Paediatric Surgery
- Department of Plastic Surgery
- Department of Renal Sciences
  - Dialysis
  - Nephrology
  - Urology
  - Transplant Services
- General & Laparoscopic Surgery
- Institute of Bone, Joint & Spine
  - Hand & Upper Limb Surgery
  - Joint Replacement
  - Spine surgery
  - Sports Medicine & Arthroscopy
- Internal Medicine
- Obstetrics & Gynaecology
- Psychiatric
- Respiratory Medicine

ALLIED SERVICES

- Dietetics
- Emergency & Trauma
- Lab Medicine

Process Flow



6. CSSD

Location: Lower Ground Floor

Total Area is divided into 4 Zones:

- Zone I. (Dirty Utility) Reception , Inspection and Documentation
- Zone II. (Clean Area) Assembly and Packing
- Zone III (Sterile Area) Sterilisation
- Zone IV (Issue Area) Storage and distribution

Check for proper sterilisation

- Bowie dick test
- Leak test
- Sterilisation test
- Batch monitoring test

Functions-

- Cleaning
- Processing
- Sterilization of all instruments, kidney trays etc.
- It helps in infection control process.
- It is responsible for optimum utilization of equipment resources of the hospital.

7. Radiology Department:

Location: Lower Ground Floor

Area:

- Reception Area
- Console Room
- Imaging service room
- Changing room-2

Different rooms for X-Ray, Mammography, MRI-1.5 Tesla, CT Scan 64 Slice, potable x-ray machine

Sonography:

Location: Ground floor

Area:

- Reception Area
- Procedure room: 2

- Reporting room

8. Laboratory:

Location: Ground floor

All laboratory services related to Biochemistry, Microbiology, Histopathology and Haematology.

Blood Bank is attached with the laboratory.

9. Physiotherapy and Rehabilitation Centre:

Location: Lower ground floor

Well trained team of 6 physiotherapists managing the department and providing rehabilitation therapy for joint disease, stokes, trauma etc.

Other facilities:

- Wax Therapy
- Hydro collator- hot pack
- Interferential Therapy
- IFT- Pain Relief
- Ultrasound therapy- piezoelectric effect
- TENZ
- Muscle Stimulator
- SWD etc

10. Medical Record Department:

Scope of Services:

- Maintenance of all medical record
- Storage of records : 1) OPD: 3 years
  2) IPD: 5 years
  3) Death/MLCs: lifetime
- Maintaining the integrity and confidentiality of all medical record
- Maintenance of MLC cases
- Numbering and filing of patient record.
- Completion of all incomplete records.

11. Food and Beverages:

Location: Lower ground floor

The F&B department is outsourced and the quality of food is regularly monitored by the F&B executives and the dietician.

Scope of services:

- To provide well balance nutritious food to all in patients as well as patients for dialysis as per their needs.
- To serve staff and patients attendants
- To helps in improving the patient's condition by providing hygienic, proper and nutritious food as prescribed by the dieticians.

Provide 5 servings for the general ward patients and 8 servings to the semi private and private ward patients.

Types of diet:

- Normal full diet
- Liquid diet
- Soft diet

- Diet for diabetic patients
- Diet for renal patients
- Diet post cardiac surgery patients.

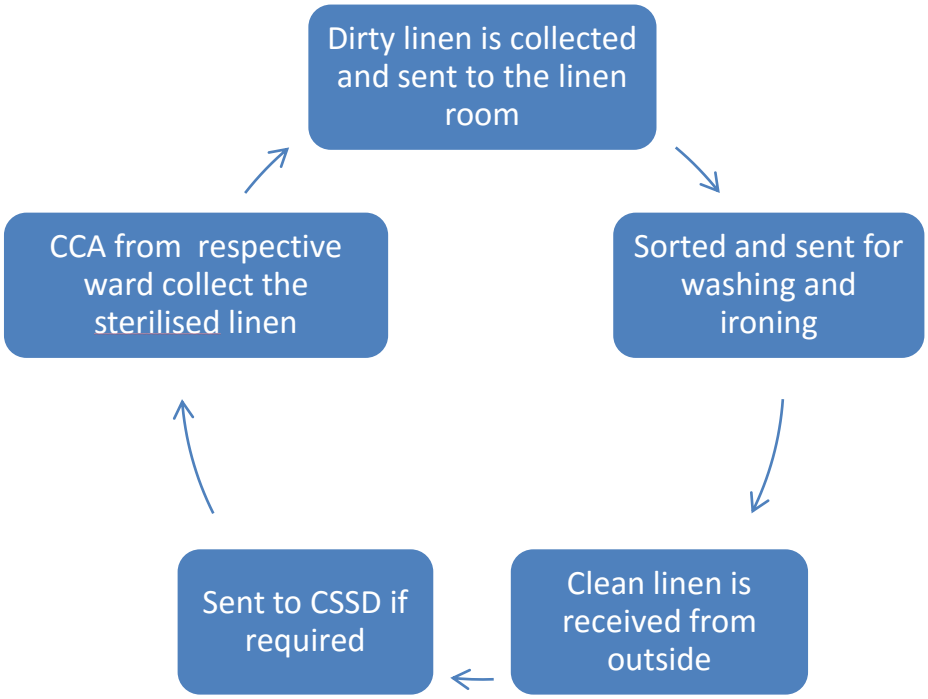
12. Housekeeping:

Housekeeping department is outsourced

Services provide:

- Maintain hygiene of the patients and the hospital
- Helping in patients preparation
- Infection control
- Waste disposal

13. Linen and Laundry:



Availability of coloured coded bags in each department. Orange colour is for serology positive patients and green bags for serology negative patients.

14. Pharmacy:

The hospital 3 different types of pharmacy:

- OPD Pharmacy
- IPD Pharmacy
- OT Pharmacy

Functions:

Dispense of drugs to all the admitted patients.

Dispense of drugs for the OPD patients.

Demand estimation according to the formulary, in the absence of formulary, establishment of specification for drug procurement

Furnishing of new drug information to consultants and other professional staff
Quality control of drugs purchased

Main Store-

- Location- lower ground floor
- Store receives all medicines, medical equipment's, instruments, consumables and other essential goods, printing and stationary material of hospital as ordered, and issues' as per the requirements to the departments.

15. Diagnostic Services:

Location: Ground Floor
Scope of services:

- Ultrasonography
- TMT
- Electrocardiography
- Echocardiography
- Electroencephalography
- Uroflowmetry
- Electromyography
- Pulmonary function test

Operational timings: 9 am to 5 pm.

16. Dialysis Department:

Location: Lower ground floor
Bed Capacity: 30 beds including 4 beds for serology positive patients
No of procedures done per day: 45-50 dialyses per day
Shift of dialysis: 7 am to 12 noon, 12 noon to 5 pm and 5pm to 8 pm.
Every patient is provided with a meal, included in tariff and the meal is prescribed by the dietician.

17. Mortuary:

Location: Lower ground floor
Temperature: 5-6 degree Celsius
Capacity: At a time four dead bodies can be kept together
Function:

- To keep the dead bodies in the hospital until the relatives claim them.
- To keep the dead bodies for post mortem (MLC Cases).

18. Security Services:

Security service department of the hospital is outsourced.
Functions:

- To provide security services to all the staff, patients, relatives and visitors
- To protect the hospital property within the premises
- To analyse threats and vulnerability in conjugation with the managements , police and others
- To control the movement of vehicular traffic inside the premises.

19. Billing and Finance Department:

Location: Ground floor

Operational timings: 9am to 5 pm for the finance department
24 hr IP bill service.

Functions:

- To provide salary to all the staff in a timely manner
- To provide payment to all the vendors and contractors
- Tracking the expenses of in patients on daily basis
- Timely discharge of patients related to financial clearance
- To provide accurate and timely financial information for decision making.

20. Maintenance Department:

Location: Lower ground floor

Functions:

- To maintain continuous electric supply to the hospital.
- To maintain the chilling plant room of the hospital
- To maintain the supply of medical gases
- To maintain the proper functioning of STP

Operational timings: 24hr.

Infrastructure:

Low tension room
Generator panel: 2 generator of 750 ampere each
Diesel tank- 24 kilolitres capacity
Sewerage treatment plan
Desk panel- control air handling unit
Chilling plant room
Gas manifold room

21. Human Resource Department:

Location: Mezzanine floor

Functions:

- Recruitment based on requisition form from respective department duly signed by In charge of the department, HR and facility director
- Induction and training programs- 3 days induction program for all new employees
- Performance appraisal ones in a year in the month of March
- Employee engagement activities such as birthday celebration, open house, and also on the job trainings such as fire safety. BLS training
- Grievance Handling
- Conduct employee exist interview

22. Fire safety Department:

Location: Lower ground floor

The hospital has 7 fires exist door in each floor. A total 26 functional fire exist doors

Sprinklers are located in the entire hospital with a distance of 6 mts between two sprinklers and burst at 68 degree Celsius

Smokes detectors are also located in the entire hospital.

Fire Safety Equipment's:

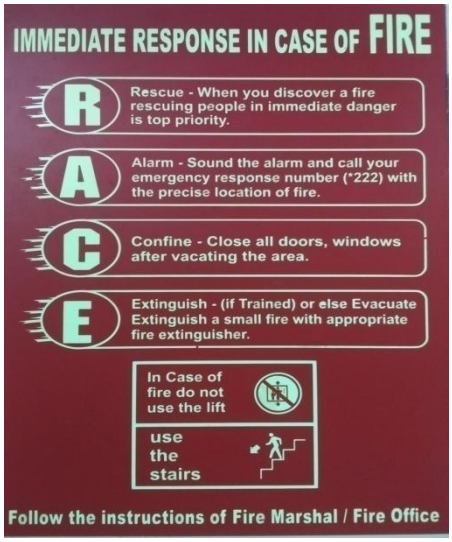
- Horse Reel Drums 21

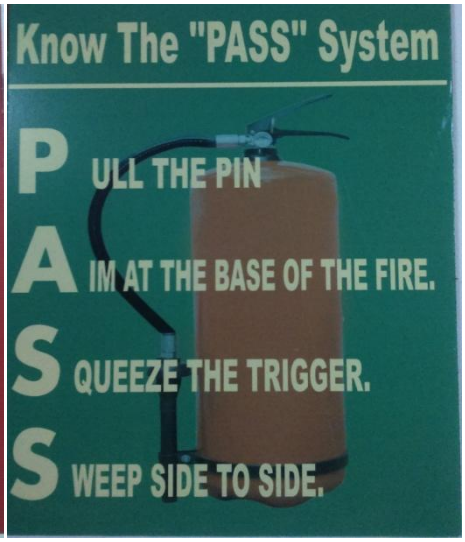
- Jockey Pump 01
- Alarm Valve 05
- Double Hydrant Valve 28

Hospital follows “PASS” and “RACE” protocols.

PASS: Pull Aim Squeeze Sweep for operating a fire extinguisher

RACE: Rescue Alarm Contain Extinguish, Evacuate.





Narayana Health

Health for all. All for health.

2. PROJECT REPORT

INVENTORY MANAGEMENT IN STARTUP ORGANIZATION

In SMVD Narayana multispecialty hospital, Jammu

Project Guide-

Dr. Harman loona (General manager Operations)

OPERATIONS DEPARTMENT

2.1 BACKGRO

Shri MataVaishnoDevi Narayana hospital is 45 kms from Jammu main city and is located in remote areas.

Supply chain management is a challenging issue here. Since it is multispecialty hospital, performing various surgeries across all specialities. On availability of any medicines and consumables or equipment can lead to life threatening issues and is aone of the major factor for deciding the fate of organisation.so inventory management becomes a challenging task.Moreover business terms and transactions in J&K are altogether different from other states as law and legal entities are unique to this state. This difference has a lot of impact on the supply chain issues as multitude of factors affect the availability and the cost for example say entry tax of 13% can increase overall cost drastically if material is ordered from outside the state to combat the availability issue. This cost impact grossly shadows in the PNL statement and thus increasing breakeven eventually so,in depth analysis of various components of capital expenditure and operational expenditureinvolved in Supply Chain starting from planning,purchase,receipt,payment,terms & conditions,installation &subsequent inventory management becomes very essential.

This report includes the analysis of a start- up hospitalin terms of its supply chain and has been grossly divided into two broad categories

Category 1- The equipment that forms the capital expenditure

Category 2: The equipment that forms the Operational expenditure.

Salient features for Category 1:

1) This category consists of the equipment that constitutes one time cost.
2) The maintenance cost after warranty period if any is incurred as the recurring cost.
3) The cost is reflected in the balance sheet and not the PNL statement.
4) There is a depreciation cost associated with it that is recorded as expenditure in financial books.

Salient features for Category 2:

1) This category consists of the equipment that are consumables and drugs that is a recurrent cost on daily basis.
2) No maintenance cost involved
3) The cost is reflected in the PNL statement and cash flow statement.
4) Short life so no depreciation recorded.

2.2 LITERATURE REVIEW:-Approx. 35% of annual budget is spent on buying materials and supplies, including medicines [1].this require effective and efficient management of the medical stores. Efficient priority setting, decision making in purchase and distribution of specific drugs, close supervision on drugs belonging to important categories, and prevention of pilferage depend on the drug and inventory management.

Quality of care in tertiary care hospitals is also sensitive to the timely availability of facilities including drugs. Huge budget and key element in the provision of care make drugs as an important component of hospital care. The medical store is one of the most extensively used facilities of the hospital and one of the few areas where a large amount of money is spent on purchases on a recurring basis. This emphasizes the need for planning, de-signing and organizing the medical stores in a manner that results in efficient clinical and administrativeservices[2].the goal of the hospital supply system is to ensure that there is adequate stock of the required items so that an uninterrupted supply of all essential items is maintained. A study conducted by the department of personnel and administrative reforms in India has revealed that not only does the quantity of medicines received fall short of the requirement but also the supply is often erratic. Even common medicines are out of stock and remain so far a considerable period[3].of the various explanations for non-availability of even simple medicines in the third world countries, alargenumber are related to materials management. A study from a 1500 bedded state funded hospital has claimed that review and control measures for expensive drugs brought about 20% savings.[4]

Drug inventory management aims at cost containment and improved efficiency[5].inventory control is very essential in a developing country lie India[6].India is a country of scarce resources and it is primary responsivity of each hospital to ensure optimum utilization of available resources to provide good services or quality patient care.usually,the hospital management is faced with choosing the alternative of either lowering the quality of care or adopting ways and means to reduce the cost of inventories.therefore,the need of the hour is that we follow the principles of rational drug use and inventory management techniques so that in the existing g budget we can cater to more number of patients.

It is essential that health managers use scientific methods to maximise their returns from investment at a minimal cost [6-9].inventory analysis seeks to achieve maximal output with minimal investment input, based on economic principle of stretching the limited means to meet unlimited ends. Each item may be considered critical and there is a perceived need to supply very high levels of service.[10]

There is no denying that stocking hospital pharmaceuticals and supplies can be expensive and tie up a lot of capital, and bringing efficiencies to such important cost drivers-often 30%-40%of a hospitals budget-can present meaningful savings [11].thus, a hospital materials manager must establish efficient inventory system policies for normal operating conditions that also ensure the hospitals ability to meet emergency demand conditions.

2.3 Rationale- This study will help to closely understand the satisfaction of each and every department on opex model towards the supply chain. It is a good platform to analyse whether supply chain department is working according to the expected standards and protocols.

Objectives-

1) To know the satisfaction level of doctors regarding opex model.
2) To know the awareness level of opex model among supply chain department.

Operational Definition :

1. Inventory management is the overseeing and controlling of the ordering, storage and use of components that a company will use in the production of the items it will sell as well as the overseeing and controlling of quantities of finished products for sale.

2.Capital expenditure, or Capex, are funds used by a company to acquire or upgrade physical assets such as property, industrial buildings or equipment. It is often used to undertake new projects or investments by the firm. This type of outlay is also made by companies to maintain or increase the scope of their operations. These expenditures can include everything from repairing a roof to building, to purchasing a piece of equipment, or building a brand new factory.

3. An operational expenditure (Opex) is the money a company spends on an ongoing, day-to-day basis in order to run a business or system. Depending upon the industry, these expenses can range from the ink used to print documents to the wages paid to employees

2.4**Methodology for conduct of this study**

The method used for conducting the study on opex is prospective as most of the items were in planning and ordering stage.

The study was more of analytic in nature wherein the inputs were taken from various departments and was compared with the inventory stock of Supply chain.

On the other hand,since this hospital has more than 20 specialities the supply end was compared with demand end only for few departments and not all keeping time frame of this project in mind . Furthermore the method that was used for matching was physical stocking verification.

The deviation and mismatch b/w demand and supply has been thoroughly studied and the reason for the same has been mentioned in the report with the recommendations for the rectification & improvement of the root causes.

Type of study:-Descriptive

Study population-medical officers of various departments and secondly, supply chain department.

Study area-supply chain department and medical officers of various departments.

Duration of study- over the period of 2 months.

Type of data-quantitative

Technique- Questionnaire was made for various departments of the hospital and for inventory store.

Tool-Questionnaire

Data collection-quantitative

Method of data collection-Respondents were chosen based on simple random sampling.one medical officer was chosen randomly from each department.

Sampling-convenient sampling.

Data analysis-there were two questionnaires, one for inventory store and the other for various departments of the hospital. Questionnaire for inventory store consists of 15 questions and for departments consist of 10 questions.

Questionnaire for inventory store was graded as

Yes-1

No-2

Don't know-3

Questionnaire for departments was graded as

Excellent-4

Good-3

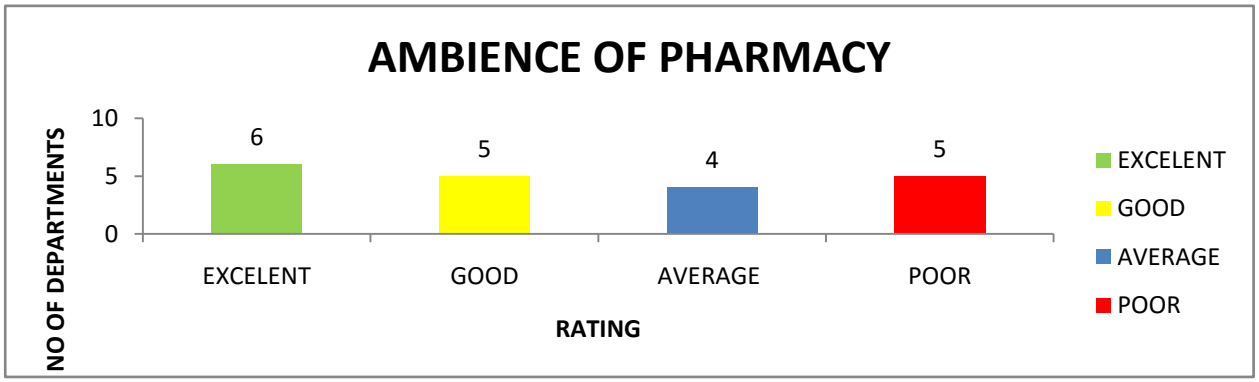
Average-2

Poor-1

Section 3- findings

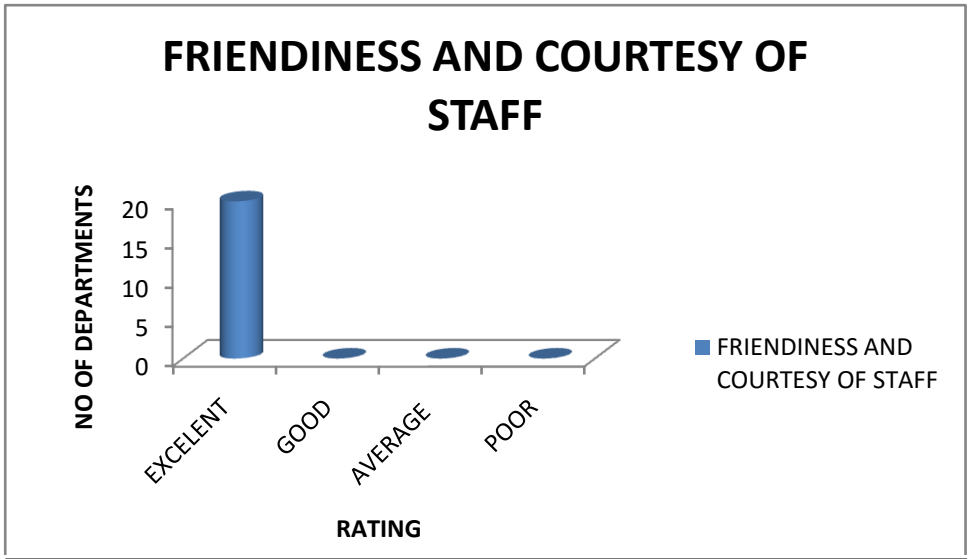
2.5)Data analysis:-

Figure 1



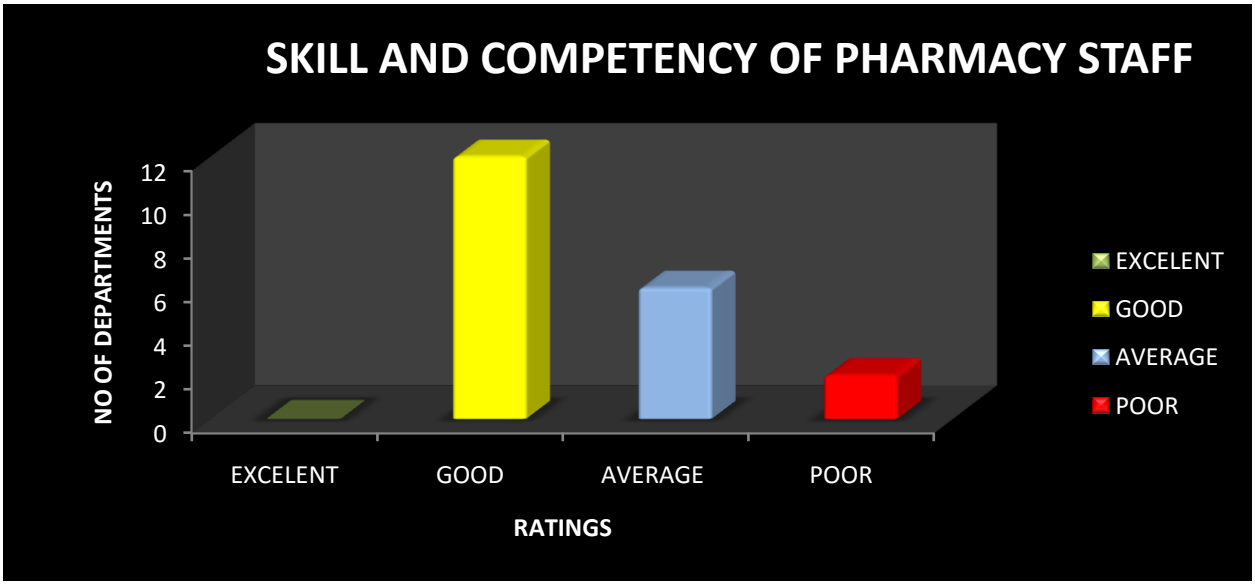
Interpretation-out of 20 departments ,6 departments rated the ambience of the pharmacy as excellent.

Figure-2



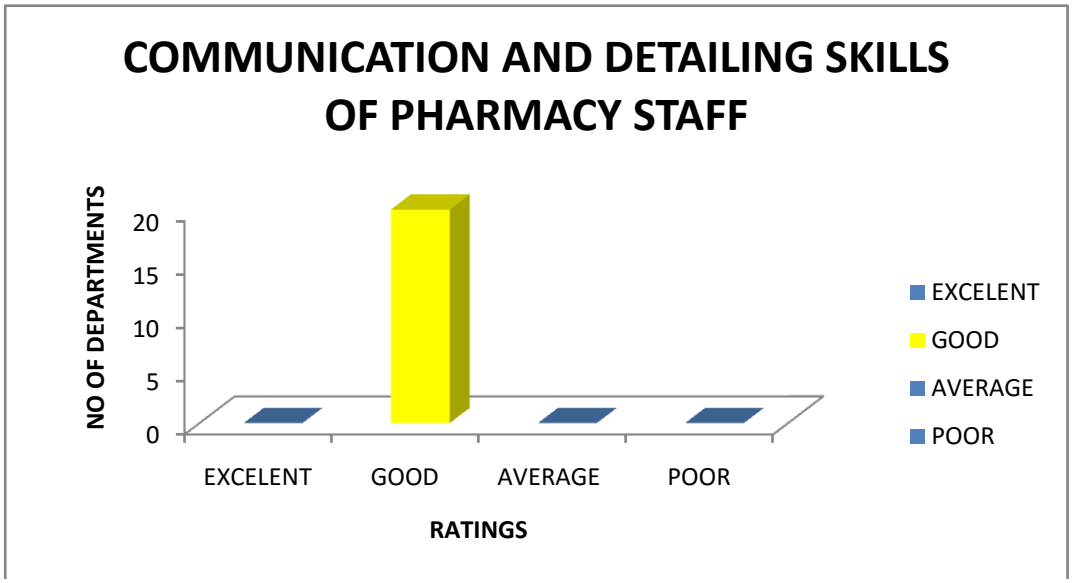
Interpretation-all the 20 departments graded excellent for the friendliness and courtesy of the staff.

Figure 3



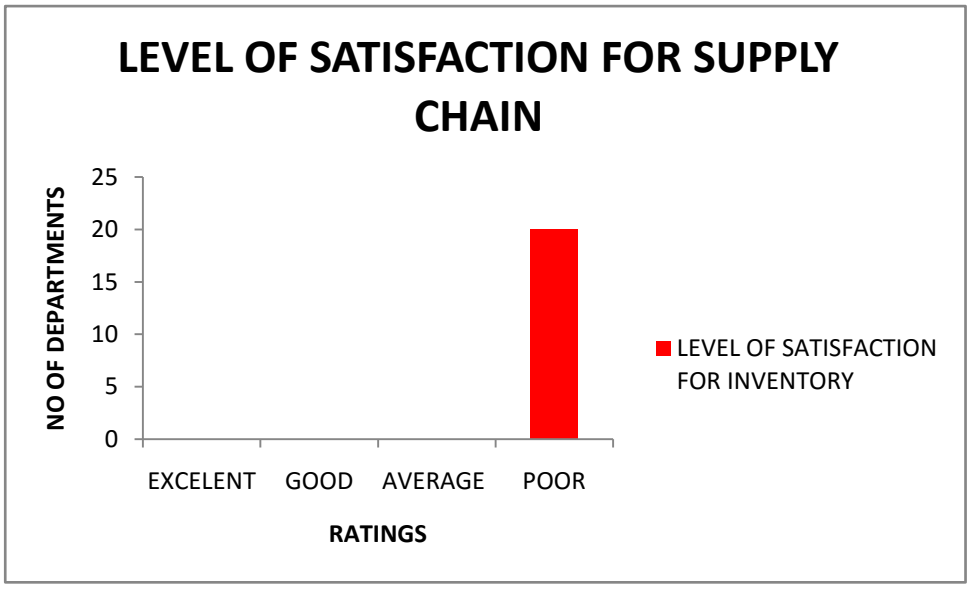
Interpretation-12 of the 20 departments rated skill and competency of pharmacy staff as good.

Figure 4



Interpretation-all 20 departments graded communication and detailing skills of pharmacy staff as good.

Figure 5

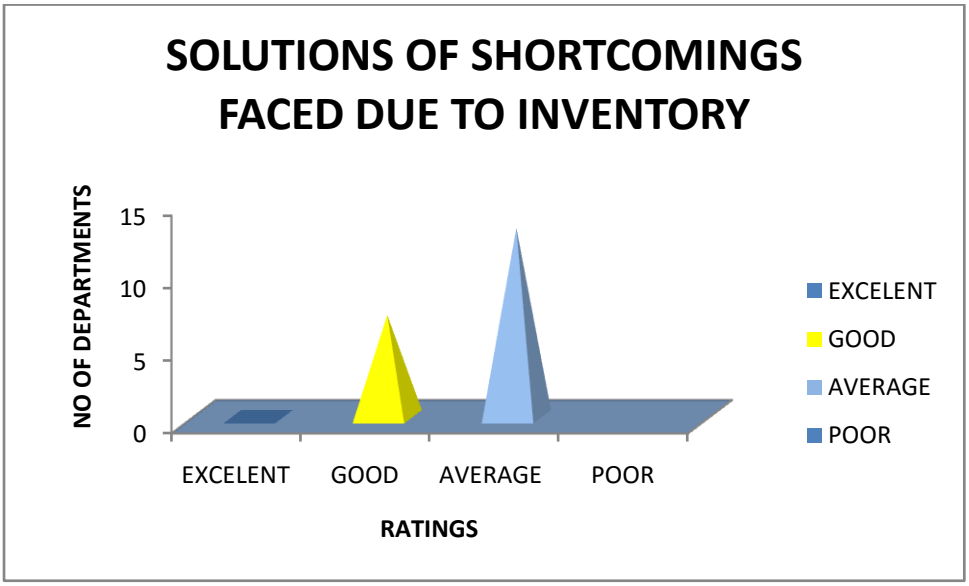


Interpretation-all 20 departments were not at all satisfied with the inventory when this data was collected and rated it as poor.

Figure 6

Interpretation-13 of the 20 departments rated distribution process of inventory as good.

Figure 7

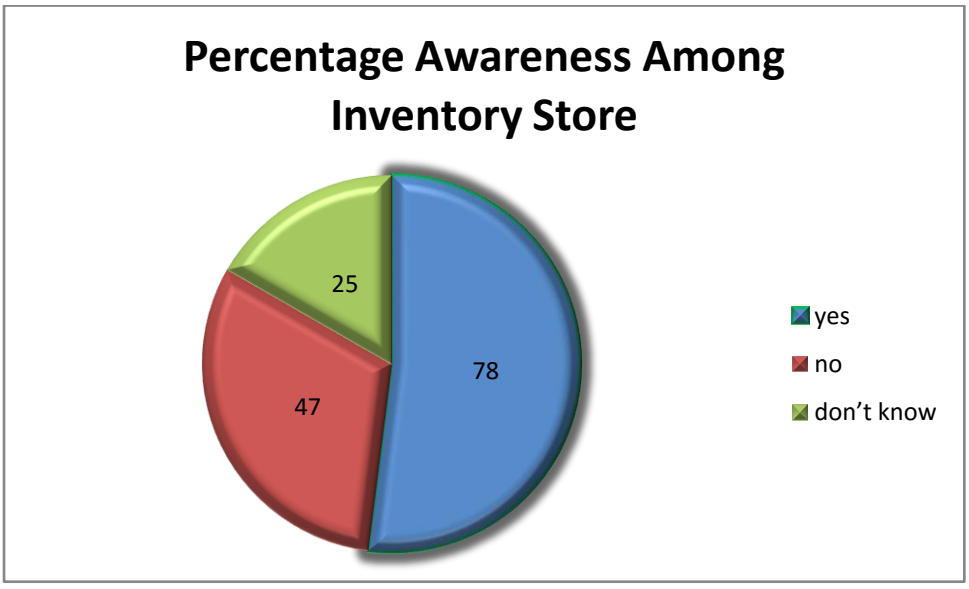


Interpretation-13 of 20 departments graded solutions to shortcomings due to inventory as average.

Figure 8

Interpretation –all 20 departments rated time taken for the solution of shortcomings faced due to inventory as good.

FIGURE 1(For awareness among inventory store)



2.6 **RESULTS**-

1)30%of all the departments graded ambience of the pharmacy as excellent.

2)60% departments graded good for skill and competency of pharmacy staff.

3)65% departments rated supply chain department as average for the shortcomings faced due to inventory.

4) The level of satisfaction regarding the process of distribution of goods from the inventory was 65% among various departments.

5) When this data was collected the level of satisfaction regarding inventory was graded 100% poor by various departments.

6)52% was the level of awareness among inventory store.

2.7 CONCLUSION-Possessing a high amount of inventory for long periods of time is not usually good for a business because of inventory storage,obscelence and spoilage costs.however,possessing too little inventory isn't good either b/c the business runs the risk of losing out on potential sales and potential market share as well.

This study revealed that52% was the level of awareness among inventory store.

The level of satisfaction regarding the process of distribution of goods from the inventory was 65% among various departments.

1)30%of all the departments graded ambience of the pharmacy as excellent.

2)60% departments graded good for skill and competency of pharmacy staff.

3)65% departments rated supply chain department as average for the shortcomings faced due to inventory.

1.6Organization learning

This report includes the analysis of a start- up hospital in terms of its supply chain and has been grossly divided into two broad categories

Category 1- The equipment that forms the capital expenditure

Category 2: The equipment that forms the Operational expenditure.

Salient features for Category 1:

1) This category consists of the equipment that constitutes one time cost.

2) The maintenance cost after warranty period if any is incurred as the recurring cost.

3) The cost is reflected in the balance sheet and not the PNL statement.

4) There is a depreciation cost associated with it that is recorded as expenditure in financial books

Category 1:

The method used for conducting the study on Category 1 is retrospective as most of the equipment had been already ordered and installed on the date this study was commissioned.

The study was more of introspective in nature wherein the inputs were taken from the administrative wing, supply chain department and the finance department.

The data was collected from the supply chain department which includes following components-:

1) Equipment plan*- consist of name of equipment, department for which ordered and drivers to finalize the quantity.

2) PERT analysis

3) Sample purchase order-lead time, payment, terms, maintenance & tax component is studied

4) Sample installation report

* The cost was not shared keeping in lieu the trade secret revelation

Salient features for Category 2:

1) This category consists of the equipment that are consumables and drugs that is a recurrent cost on daily basis.

2) No maintenance cost involved

3) The cost is reflected in the PNL statement and cash flow statement.

4) Short life so no depreciation recorded.

Observations for category 1

1) Cost of the equipment –

a) For each department there is an exhaustive list of equipment that can be ordered but this leads to the increase in the cost so there are certain drivers that help in deciding the set of equipment that needs to be finalised for each department. Some of the key drivers are mentioned here henceforth -

I. Type of patients anticipated for each department.

II. Number of patients for each department & hence revenue generated from them

III. Ease of availability of consumables for that equipment

IV. Rectification time and the uptime for the ordered equipment.

V. Nearest service centre for the equipment.

2) **Lead time for installation of the equipment and the legal permissions associated with them**

i) It was observed that the first equipment to be ordered was linear accelerator viz. dated feb,2015 and the surprising fact was that even at the time of preparation of this report i.e. May 2016,the complete installation has not happened. The machine was at site and the physical installation happened on Feb 2016 but due to pendency of AERB approval, radiation oncology department could not be started even though surgical and medicinal oncology department has started and due to non -availability of radiation the patient could not get the comprehensive department.

ii) USG, echo installation of the machines were done few months back but even after commissioning machines were not able to use b/c of pendency of certification of PNDT act which grossly affected the revenue of cardiac and surgical department. Furthermore decline in total patients was observed for the respective departments.

3) **Maintenance cost associated with PNL statement-** during the negotiation for the price of the equipment it was taken care that AMC and CMC equally affects the PNL cost of equipment is not calculated as one time cost.it is calculated over its life or the duration for which maintenance cost is being negotiated.it was observed that if the vendor decreases the one time cost they have tendency to increase the maintenance cost which overall increase the NPV.

i) one time cost that doesn't include maintenance cost also affects the PNL statement in successive years as this cost is shown as depreciation in financial books and is recorded as expenses thereby affecting p & l statement.

4) **consideration of taxes while ordering equipment-**it was observed that significant amount of equipment were ordered locally b/c J&K has entry tax of 13% & furthermore it was observed if equipment was not ordered locally, distributors were identified with in the state to supply the equipment b/c it would omit the entry tax component & there was just the sales tax component that was 5% sales tax eventually saving 8% for the company.

5) **Denomination in which the order of the equipment was placed**-it was observed for all those equipment which were ordered from outside the country had a component of custom duty. there was certain equipment which was ordered in INR with the conversion rate on the day of the release of purchase order. The recent increase in custom duty had no effect on such orders as it was INR & FOR site but for the equipment for which the order was placed in the foreign currency the change in custom duty and that was not FOR site had a drastic effect on overall cost to the company.

Observations for category 2

1) **Planned vs actual inventory**

It was observed that Narayana has a standard list for all molecules and the consumables with 2 broader component. The first component was central buying units. There were some 6000 total molecules out of which for approx.80% of molecules had a central rate contract for all 31 hospitals. The list for the same was not shared by the supply chain department as it contains the price component which they don't want to disclose. since there is no existing big hospitals in Jammu and Kashmir the stock availability for most of the molecules was a big challenge. so, the supply chain department as per availability of molecules in the state prepared a list and shared it with each department. The list for the same was also not shared by them. After sharing it with the doctors and practitioners they consented to start the department with the available stock but as j&k was medically deprived hospital in its very first month of the commissioning received all sorts of patients with various ailments & practitioners were unhappy with the non-availability of the stock as it was bringing the defame to the hospital as well as the practitioners.

2) **Current vs ordered stock**

Subsequently it was observed that when the practitioners admitted the patients there were shortcomings in the availability of medicines again and there was a risk involved with the recovery of the patients and again there was an element of reluctance and resistance from the practitioners end.so,in continuation of pilot that is mentioned above it was asked to verify the existing stock physically with the initial ordered stock and the current rate of usage study was done.

3) **Method of distribution and maintenance of inventory**-

Earlier the way of distribution of inventory to the various departments was haphazardly arranged. The departments were not updating the indents in the system rather they were providing the indent manually, hence it was becoming a bottleneck for maintaining stock and lead to failure.

Example-an incident which opens the eyes of the admin department was delay in the treatment of a patient which could have costed the life of that patient due to unequal distribution of inventory to various departments.

4) **ABC and VED analysis for inventory**

70% of the consumables were procured after the practitioner's told about the short comings they were facing, the rest were yet to be procured. I was told to check the updated GRN with the list given by various departments. Though it was a start-up still the practitioners were told to divide the consumables required into 3 categories

1.) Consumables on frequent basis

2.) Consumables on demand

3.) Consumables least required

ABC and VED analysis-dividing it into 3 categories-:

- 'A' items – 20% of the items accounts for 70% of the annual consumption value of the items.
- 'B' items - 30% of the items accounts for 25% of the annual consumption value of the items.
- 'C' items - 50% of the items accounts for 5% of the annual consumption value of the items.
- VED Analysis attempts to classify the items used into three broad categories, namely Vital, Essential, and Desirable. The analysis classifies items on the basis of their criticality for the industry or company.
- Vital: Vital category items are those items without which the production activities or any other activity of the company, would come to a halt, or at least be drastically affected.

Essential: Essential items are those items whose stock – out cost is very high for the company.

Desirable: Desirable items are those items whose stock-out or shortage causes only a minor disruption for a short duration in the production schedule. The cost incurred is very nominal.

Recommendations- for category 1&2

1) Installation for linear accelerator was done but due to AERB approval it could not start. So, as a rectification measure early AERB approval to aid in patient comfort.

2) Revenue leakage can be prevented by Quick approval for PNDT act.

3)In planned vs actual inventory- As a rectification measure the admin department was asked to conduct the pilot wherein I was asked to collect the requirement of each department after compiling that data it was shared with the supply chain department and the supply chain focussed on the list and procured all these and it was observed a significant increase in satisfaction of doctors and the department and could be easily verified with increase in number of IPD as they were confident to admit the patients.

4) For the current vs ordered stock- Continuation of pilot that is mentioned above for planned vs actual inventory I was asked to verify the existing stock physically with the initial ordered stock and the current rate of usage study was done.

5) Method of distribution and maintenance of inventory-it should be equally distributed on basis of requisitions which are approved by a responsible official of the department.

6) As it was observed there was no communication from dispatch section to store department about quantity wasted. So as a rectification measure proper feedback should be provided this will help the store department to forecast future requirements.

References

https://en.wikipedia.org/wiki/Operating_expense

http://whatis.techtarget.com/definition/OPEX-operational-expenditure

http://www.investopedia.com/terms/c/capitalexpenditure.asp?layout=infini&v=5E&orig=1&adtest=5E

ANNEXURES

Sl No	Equipment Name	Total Qty	Equipment Phasing Phase-1	Phase-2	Phase-3
	High end equipment				
1	**LINAC**	2	1	1	
2	PET Scan	1	1		
3	MRI Machine - 3.0 Tesla	0	0		
4	LINAC-Basic	0	0		
5	MRI Machine - 1.5 Tesla	1	1		
6	CT - New (128 slice)	1	1		
7	CT - New (64 slice)	0	0		
8	Cath Lab	2	1		1
9	EP System (2D+3D)	1	1		
10	Lasik Machine(Surgical Lazer)	0	0		
11	Brachytherapy	1	1		
12	Navigation System	1	1		
13	Gamma Camera	1	1		
14	Extracorporeal Lithotripsy (Dronier+ Indian C-arm)	0			
15	Ebus	1			1
16	Holmium Laser (100 W)	1			1
17	Holmium Laser (30 W)	1	1		
	Subtotal	**14**	**10**	**1**	**3**

	Major Equipment				
1	Endo Ultrasound	**0**			
2	DR System	**0**			
3	Microscope (Surgical)	**2**	1		1
4	Steam Sterilizer - 800 ltrs	**1**	1		
5	Clinical Lab Equipments	**1**	1		
6	Endoscopy equipments (lumpsum)	**1**	1		
7	Heartlung Machine with HCU	**1**	1		
8	X-Ray with flouroscopy (500mA)	**0**			
9	CUSA	**1**			1
10	Echo &Color Doppler with tissue tracking	**3**	1	1	1
11	ECHO with Adult&paed TEE	**1**	1		
12	Sterotactic With RF Ablator	**1**			1
13	Ultrasound-Intra Vascular	**1**	1		
14	C-Arm	**2**	1	1	
15	Bone Mineral Densitometry (BMD)	**1**			1
16	Flurocent Angiogram	**0**	0		
17	Steam Sterilizer - 550 ltrs	**1**	1		
18	Ultrasound Sonography	**4**	2	0	2
19	Video EEG	**1**	1		
20	Component Separation	**1**	1		
21	Mammography	**1**			1
22	Bodyplethysmography	**1**	1		
23	3D TEE Probe	**1**		1	
24	Diffusion Study	**1**			1
25	Neuro Endoscopy System	**1**	1		
26	Laproscopy Tower (HD)	**3**	2		1
27	OPG	**0**			
28	Rota ablator	**1**	1		
29	Anesthesia Machine (MRI Compatible)	**1**	1		
30	Arthroscopy Set	**1**	1		
31	Capsule Endoscopy System	**1**	1		
32	EEG	**1**	1		
33	Heater Cooler Unit (Hemotherm)	**1**	1		
34	Nerve Integrity Monitor	**1**	1		
35	Thoracoscope	**1**	1		
36	Uroflowmetry& Urodynamic meter	**1**	1		
37	Washer Disinfector	**1**	1		
38	IABP Machine	**3**	2	1	
39	Apheresis	**1**	1		

40	Echo Machine (Portable, Sonocyte) with Cardiac & abdominal	**1**	1		
41	ETO Sterilizer	**1**	1		
42	CRRT	**0**			
43	Echo Portable (Cardiac & Abdominal)	**1**	1		
44	Sleep Lab	**1**	1		
45	Ventillators (Neonatal, High Frequency)	**1**	1		
46	Harmonic Scalpel	**1**	1		
47	Neuro Drill	**1**	1		
48	CR System	**1**	1		
49	Dry Bath	**1**	1		
50	Bio Pump	**1**	1		
51	Audiometry	**1**	1		
52	Fibroscan	**0**			
53	CCO Monitor	**1**	1		
54	Operation Table-Neuro	**1**	1		
55	Ventillators (Neonatal)	**2**	2		
56	Anesthesia Machine	**12**	6	2	4
57	Orthopedic Drill System	**1**	1		
58	OT Light (3 Dome)	**0**	0		
59	X-Ray with flouroscopy (500mA)	**0**	1		
60	X-Ray without flouroscopy (300mA)	**1**	1		
61	Blood Bank Centrifuge	**1**	1		
62	Blood Bank Deep Freezer	**1**	1		
63	Body Box - 2 chamber	**2**	2		
64	Physiotherapy Equipments (Lumpsum)	**1**	1		
65	Sternum Saw With Motor	**2**	2		
66	Ventillators (Invasive)	**24**	12	6	6
67	Dental Chair with Screen & Camera	**1**	1		
68	Drying Machine	**1**	1		
69	Operation Table-Ortho	**1**	1		
70	OT Light (2 Dome)	**7**	4	3	
71	Dialysis Machines	**13**	6	3	4
72	Bronchoscope	**1**	1		
73	Holter	**1**	1		
74	Intubational Bronchoscope	**1**	1		
75	Neuro Head Frame	**1**	1		
76	Non-Contact Tonometer (NCT)	**1**	1		
77	Operation Table-Gynaec	**1**	1		
78	Reprocessing Machine	**2**	2		
79	TEG	**1**	1		
80	Operation Table-Cardiac	**1**	1		

81	OT Monitor (with AGM & ETCO2)	**3**	5		
82	Ambulatory BP Apparatus	**2**	1	1	
83	Bio Safety Cabinet	**2**	1	1	
84	Cautery / Diathermy Machine	**11**	6	2	3
85	Operation Table-General	**4**	2	2	
86	RVG(Radio-visio-Graph)	**1**	1		
87	Auto Refractometer (AR)	**1**	1		
88	Fiber Optic Light Source	**4**	4		
89	TMT Machine	**2**	2		
90	Bubble CPAP	**1**	1		
91	Camera head	**3**	3		
92	Electrical Suction - Cardiac	**2**	2		
93	ENMG	**1**	1		
94	Monitors (Invasive, with ETCO2)	**2**	2		
95	OT Monitor (with ETCO2)	**4**	4		
96	Pacemaker External (Dual)	**4**	4		
97	Photoslit Lamp	**0**	0		
98	Radiology accessories	**1**	1		
99	Transport Incubator	**2**	2		
100	Ventillators (Mobile)	**2**	2		
101	Film Processor	**0**	0		
102	NST Machine	**2**	2		
103	Defibrilator(internal paddle)	**2**	2		
104	Defibrilator	**21**	15	3	3
105	ENT Diagnostic Unit	**1**	1		
106	Miscellaneous	**1**	1		
107	Ventillators (Non-invasive)	**10**	5	3	2
108	X-Ray Portable (100mA)	**3**	3		
109	Incubator-Neonatal	**2**	2		
110	ACT Machine	**3**	1	1	1
111	Burr	**4**	4		
112	Monitors (Invasive)	**56**	20	20	16
113	Refrigerator (Blood Bank)	**2**	2		
114	Vaccum Extractor	**4**	4		
115	Applanation Tonometer	**1**	1		
116	BIPAP	**0**	0		
117	Blood Collection Monitor	**1**	1		
118	Holter Recorder	**5**	5		
119	Light Source	**1**	1		
120	Monitors (Non-invasive)	**42**	20	15	7
121	Motororized Chair Unit With Split Lamp	**1**	1		
122	OT Light (1 Dome)	**1**	1		
123	OT Light (2 Dome) (Minor OT)	**2**	2		
124	Other Dental units	**1**	1		
125	PFT Lab	**1**	1		

126	PlazmaExpressor	**1**	1		
127	Prosthetic Ceramic Lab	**0**	0		
128	Torniquet	**2**	2		
129	Transport Monitor	**6**	3	2	1
130	Tube Sealer	**1**	1		
131	Ultrasonic Cleaner	**1**	1		
132	Open Care System	**8**	4	2	2
133	Bed Warmer / Bair hugger	**7**	4	2	1
134	Pacemaker External(Single)	**5**	5		
135	Tilt Table	**1**	1		
136	ECG Machines	**10**	6	3	1
137	Surgical Motor With St. Hand Piece	**0**	0		
138	Over Head Warmer	**2**	2		
139	Phototherapy Unit	**4**	2	2	
140	Flash Autoclave	**2**	2		
141	Flash Autoclave(OT)	**2**	2		
142	Ligasure& Vessel Sealing Machine	**1**	1		
143	Nerve Locator	**1**	1		
144	Operation Table-Minor (Manual)	**2**	2		
145	Auto Lenso Meter	**0**	0		
146	Auto Tonometer	**0**	0		
147	Carotometer/ Karatometry	**0**	0		
148	Compressor	**1**	1		
149	Gonio Lens	**1**	1		
150	Incubator	**2**	2		
151	Intracorporial Lithotripsy	**1**	1		
152	Medical Air Compressor	**1**	1		
153	Muscle Stimulator	**1**	1		
154	Otoreteaction Meter	**0**	0		
155	Sealing Machine	**1**	1		
156	Video Processing Units	**7**	7		
157	Table Top Centrifuge	**1**	1		
158	Apex Locator	**1**	1		
159	Surgical Panel	**7**	7		
160	UV Light`1	**1**	1		
161	Fluid Warmer (saline)	**3**	3		
162	Handheld doppler	**1**	1		
163	Water Bath	**1**	1		
164	Fibrilator machine	**1**	1		
165	Glass Bead Sterilizer	**1**	1		
166	Micromotor hand piece	**1**	1		
167	Slave Monitor	**3**	3		
168	Ultrasound Therapy	**1**	1		
169	Electrical Suction - Regular	**24**	24		
170	Syringe pumps	**180**	100	40	40
171	Wax Therapy	**1**	1		

172	Autoscope	**1**	1
173	Direct Opthalmoscope	**1**	1
174	Donor Weighing Machine	**1**	1
175	Opthalmoscope (Indirect)	**1**	1
176	Otoscope	**2**	2
177	Retinoscope	**1**	1
178	Traction	**2**	2
179	Ultrasonic Nebulizer	**1**	1
180	Weighing Scale (Electronic)	**3**	3
181	Elevator Set	**3**	3
182	Trail case lenses	**1**	1
183	Trail Frame	**1**	1
184	Aeroter Hand piece	**1**	1
185	Composite (Adjustable)	**1**	1
186	Composite (Mouldable)	**1**	1
187	Cpm	**2**	2
188	Lens (78 D)	**1**	1
189	Lens (90 D)	**1**	1
190	Lens VOLK (20 D)	**1**	1
191	Scaler	**2**	2
192	Short Wave Diathermy	**1**	1
193	Waste receiver	**1**	1
194	Rotary Handpiece Kit	**1**	1
195	Rotary root canal kit	**1**	1
196	Root canal Files (size 6, 8 &10)	**3**	3
197	Vision drum/ Visual acuity chart	**1**	1
198	Gun Shot	**1**	1
199	Extraction Forceps (Lower Jaw)	**2**	2
200	Extraction Forceps (Upper Jaw)	**2**	2
201	Impression Tray (Lower Jaw Size 1,2,3,4)	**2**	2
202	Impression Tray (Upper Jaw Size 1,2,3,4)	**2**	2
203	Cross cylinder (2 Pcs)	**1**	1
204	Hand scalers	**4**	4
205	Occluder Transparent	**1**	1
206	Q-tips	**4**	4
207	Test Chart	**1**	1
208	Thick Retractor	**2**	2
209	Spatula (Large)	**2**	2
210	Spatula (Small)	**2**	2
211	Amalgum carrier	**2**	2
212	Chip Blower	**1**	1
213	Ishiara Colour vision Chart	**1**	1
214	Rubber Bowl	**4**	4

215	Excavator	**6**	6		
216	Explorer	**2**	2		
217	H-files (no.10 to no. 40)	**2**	2		
218	Mirrors	**10**	10		
219	Moon's probe	**2**	2		
220	R-files (no.10 to no. 40)	**2**	2		
221	Scissors	**4**	4		
222	Burnisher	**2**	2		
223	Composite Condensor	**4**	4		
224	Condensor	**2**	2		
225	Probes	**10**	10		
226	Tweazers	**10**	10		
227	Matrix Band No. 01	**1**	1		
228	Matrix Band No. 08	**1**	1		
229	ABG Machine	**4**	2	1	1
230	Cardio-Vascular Cartography	**0**	0		
231	Colonoscope	**0**	0		
232	Cotton receiver	**0**	0		
233	Cryo	**0**	0		
234	DBR (A-Scan biometry)	**0**	0		
235	Deuodinoscope	**0**	0		
236	FFA	**0**	0		
237	Gastroscope	**0**	0		
238	Glass Slab	**0**	0		
239	Green Laser	**0**	0		
240	Handpiece Care Unit	**0**	0		
241	HVF	**0**	0		
242	Implant Kit	**0**	0		
243	Iodine Therapy	**0**	0		
244	IOPA	**0**	0		
245	MRI Machine - 0.5 Tesla	**0**	0		
246	ND Yag Laser	**0**	0		
247	Physio Dispensor	**0**	0		
248	Piezo Surgery Unit	**0**	0		
249	Plasma Sterilizer	**0**	0		
250	PSP	**0**	0		
251	Pulpe Tester	**0**	0		
252	Ventillators	**0**	0		
253	Video Processor with light source	**0**	0		
	Subtotal	**787**	**570**	**118**	**102**
	Laboratory Equipment				
1	Automatic Immunoassay Analyser (Chemiluminiscence)	1	1	-	-
2	Bio-Safety Cabinet Class 2A	1	1	-	-

3	Bio-Safety Cabinet Class 2B	1	-	-	1
4	Blood culture (Bactec Effect)	1	1	-	-
5	BN Prospec (Nephelometry)	1	-	-	1
6	Body shower	2	2	-	-
7	Cardiac Marcus & BNP	1	-	1	-
8	Cell Counter (Manual DC)	2	2	-	-
9	Centrifuge	4	3	-	1
10	CO2 Incubator	-	-	-	-
11	Coagulation Analyser (PT Analyser)	1	1	-	-
12	Cryostat (Frozen Machine)	1	-	-	1
13	Cyto Spin	1	1	-	-
14	ELISA	1	-	-	1
15	Enzyme-Linked Fluoroscense Assay (ELFA) Vidas	1	1	-	-
16	ESR Auto Analyser	1	1	-	-
17	Eye shower	2	2	-	-
18	Fully Automated Analyser (Chemistry Analyser)	1	1	-	-
19	Grossing Table	1	1	-	-
20	Haematology Cell Counter Analyser	1	1	-	-
21	HBA1C (D10)	1	1	-	-
22	HPLC	-	-	-	-
23	Hyabrator	-	-	-	-
24	IHC Automated Stainer	1	-	-	1
25	Immunoassay Analyser (Hormone Analyser)	1	1	-	-
26	Incubator	2	2	-	-
27	Microscope	3	3	-	-
28	Microscope (Brightfield)	-	-	-	-
29	Microscope (Fluoroscent)	-	-	-	-
30	Microscope (Inverted)	-	-	-	-
31	Microscope (Phase Contrast)	-	-	-	-
32	Microscope (Spectral Imaging System)	-	-	-	-
33	Microtome			-	-

		1	1		
34	Microwave Oven	1	1	-	-
35	Millipore Water Purifier	1	1	-	-
36	Minicab Capillary Electrophoresis	-	-	-	-
37	Pneumatic Shoot	1	1	-	-
38	Refrigerator	7	6	1	-
39	Refrigerator Centrifuge	-	-	-	-
40	Sample Rotating Machine	1	1	-	-
41	Tissue Embedder	1	1	-	-
42	Tissue Floater Waterbath	1	1	-	-
43	Tissue Processor	1	1	-	-
44	Urine analysis	1	1	-	-
45	VDRL Rotator	1	1	-	-
46	Vertical LAF Unit	-	-	-	-
47	Vitec	1	1	-	-
48	Vortex Machine	-	-	-	-
49	Waterbath	1	1	-	-
	Subtotal	**52**	**44**	**2**	**6**
	Medical Furniture				
1	Alpha Beds	74	41	20	13
2	Anesthesia Trolley-Instruments	10	7		3
3	Anesthesia Trolley-Medicine	9	5		4
4	Bed side table	-	-		
5	Bedside locker	162	75	50	37
6	Blood Bank Couch	4	4		
7	Bronchoscope cupboard	1	1		
8	Bronchoscopy table	1	1		
9	Clean linen trolley	10	6	4	
10	Crash Cart	26	21	2	3
11	Defibrillator / Cautery trolley	12	8	2	2

12	Defibrillator trolley	1	1		
13	Delivery table	-	-		
14	Dressing Trolley	57	35	15	7
15	Endoscope cupboard	2	2		
16	Endoscopy Radio	2	2		
17	Endoscopy Table	2	2		
18	Examination couch	28	28		
19	Folding wheel chairs	20	10	5	5
20	Food trolley	10	10		
21	Foot Stools - Single	77	57		20
22	Gauze basin trolley	7	4		3
23	Gauze rack	7	4		3
24	High-low cot with mattress	136	84	26	26
25	high-low stretcher	2	2		
26	High-low stretcher with mattress	8	2	3	3
27	Inter Costal Drainage (ICD) Stand	22	13	5	4
28	IV Stand	277	144	75	58
29	Lead Apron Stand	9	7	2	
30	Loading Basket & Trolleys	4	4		
31	Mayo Trolley - big	7	4	3	
32	Mayo Trolley - small	10	7	3	
33	Medicine trolley	2	2		
34	Medicine trolley - Closed	-	-		
35	Medicine trolley (ICU charts / medicine)	86	50	20	16
36	Mortuary trolley	2	2		
37	Overbed table	251	128	70	53
38	Oxygen Cylinder trolley	25	19	3	3
39	Packing table	1	1		
40	Phlebotomy chair	4	4		
41	Plastic bins - large	100	54	23	23

42	Plastic bins - small	100	54	23	23
43	Portable 3 fold screen	10	5	5	
44	Racks with bins	18	18		
45	Revolving stools	126	96		30
46	Semi-Fowler Beds	120	56	32	32
47	Soiled linen trolley	8	8		
48	Sterile basin trolley	10	7	3	
49	Sterile Trolley	12	8	4	
50	Sterile Trolley (for gowns)	12	8	4	
51	Stretcher	4	4		
52	Stretcher on trolley with side rails	10	10		
53	Translucent Table	2	2		
54	Trolley	4	4		
	Subtotal	**1904**	**1131**	**402**	**371**
	Surgical Instrument Set				
1	Cardiac surgery instrument set	2	2		
2	Cathlab surgery instrument set	4	2		2
3	Cranio-maxillary surgery instrument set	2	1	1	
4	ENT surgery instrument set	2	1		1
5	General surgery instrument set	8	4	2	2
6	Head & neck surgery instrument set	2	2		
7	ITU surgery instrument set	2	1	1	
8	Kidney transplant surgery set	2	0		2
9	Lap surgery instrument set	2	1	1	
10	Liver Transplant surgery set	2	0		2
11	Neurosurgery instrument set	2	2		0
12	Orthopaedic surgery instrument set	2	2		
13	Plastic surgery instrument set	2	1	1	
14	Thoracic surgery instrument set	2	1	1	
15	Vascular surgery instrument set	2	1	1	
16	Ward surgery instrument set (Tray)	20	10	5	5

	Subtotal	58	31	13	14
	Minor Equipment				
1	Air cushions for neuro	10	10		
2	Ambu bag adult with mask	40	30	0	10
3	Ambu bag infant with 3 mask (0, 1, 2)	5	5		
4	Ambu bag paed with 3 mask(1, 2, 3,)	15	10		5
5	BP apparatus (adult) mercuryless with Velcro cuff	61	40	11	10
6	BP apparatus (neonatal) mercuryless with Velcro cuff	2	2		
7	BP apparatus (Paed) mercuryless with Velcro cuff	2	2		
8	Enema Can With Tubing	10	6	2	2
9	Glucometer	9	5	2	2
10	Heightometer-Adult 2mt.	40	20	10	10
11	Humidifier	24	12	6	6
12	Humidifier chamber	24	12	6	6
13	Infusion Pumps	40	20	10	10
14	Knee hammer	40	20	10	10
15	Laryingo scope blade -0	0			
16	Laryingo scope blade -1	0			
17	Laryingo scope blade -2	0			
18	Laryingo scope blade -3	0			
19	Laryingo scope blade -4	0			
20	Laryngo scope handle (adult)	50	25	10	15
21	Laryngo scope handle (paed)	15	7	4	4
22	Laryngoscope	0			
23	Measuring tape	30	20	5	5
24	Nebulizer	10	5	5	
25	NICU scales	2	2		
26	O2 Hood	2	2		
27	Ophthalmoscope	6	4	0	2
28	Ophthalmoscope/otoscope (Combo)	0			
29	Orthopaedic Board (Body splint / trolley board)	10	5	5	
30	Otoscope	5	5		
31	Peak Flowmeter-Adult	0			
32	Pill cutters	15	10		5
33	Pressure Bags	5	5		
34	Pulse Oximeter	12	7	3	2
35	Refrigerator	29	29		
36	Rubber tourniquets	20	10	10	
37	Spirometer	2	2		

38	Stethoscope	80	80		
39	Stethoscope Excell Infant	2	2		
40	Stethoscope ExcellPaed	2	2		
41	Suction bottles	50	30	10	10
42	Suction regulator	50	30	10	10
43	Theatre suction unit	7	7		
44	Thermometer (Mercuryless)	50	50		
45	Torch 3 Cell Ever Ready	56	56		
46	Weighing Machine	5	5		
47	Weighing Scale (Electronic)	0	0		
48	Weighing Scale (Adult)	30	30		
49	Weighing Scale (Paed)	5	5		
50	X-Ray View Box	40	40		
	Subtotal	**912**	**669**	**119**	**124**
	IT Equipment				
1	Barcode Printer	28			
2	Biometric Devices	8			
3	Data Cards	20			
4	Desktops	200			
5	EPBAX	1			
6	Firewall	2			
7	Internet connection	1			
8	Laptops	20			
9	MOXA Device	10			
10	MPLS	2			
12	Printer (Desktops)	70			
14	Printers (MFP)	29			
15	Projectors	5			
16	Routers	2			
17	Scanners	10			
18	Servers	5			
19	Switches	20			
20	VC	1			
21	WiFi Controller	1			
22	WiFi Device	1			

PERT ANALYSIS

	May			June				July				August				September				October			
	2nd week	3rd week	4th week	1st week	2nd week	3rd week	4th week	1st week	2nd week	3rd week	4th week	1st week	2nd week	3rd week	4th week	1st week	2nd week	3rd week	4th week	1st week	2nd week	3rd week	4th week
LINAC						Purchase order given		Lead time from purchase to delivery															installation time
Brachytherapy						Purchase order given		Lead time from purchase to delivery															installation time
PET			Specs to Shrine board +Vendors		Changes in specs		Purchase order	Lead time from purchase to delivery															installation time
MRI			Specs to Shrine board +Vendors		Changes in specs		Purchase order	Lead time from purchase to delivery															installation time
Body Box Chamber			Specs to Shrine board +Vendors		Changes in specs		Purchase order	Lead time from purchase to delivery															installation time
Steam Sterlizer			Specs to Shrine board +Vendors		Changes in specs		Purchase order	Lead time from Purchase to delivery															Installation

Audiometry	Specs to Shrine board +Vendors	Changes in specs	Purchase order	Lead time from Purchase to delivery	Installation

Xray	**Specs to Shrine board +Vendors**	Changes in specs	Purchase order	Lead time from Purchase to delivery	installation
Bone mineral densitometer	**Specs to Shrine board +Vendors**	Changes in specs	Purchase order	Lead time from Purchase to delivery	installation

CT	Specs to Shrine board +Vendors	Changes in specs	Purchase order	Lead time from Purchase to delivery	Installation
CATH lab	Specs to Shrine board +Vendors	Changes in specs	Purchase order	Lead time from Purchase to delivery	Installation
GAMMA	Specs to Shrine board +Vendors	Changes in specs	Purchase order	Lead time from Purchase to delivery	Installation

OT Light	Specs to Shrine board +Vendors	Changes in specs	Purchase order	Lead time from Purchase to delivery	Installation

EP	**Specs to Shrine**	Change	Pu	Lead time from Purchase to	Installat

System	**board +Vendors**	s in specs	rch as e or de r	delivery	ion
Lasik Machine					
Navigation System					
Extracorporeal Lithotripsy					
Clinical Lab Equipments					

DR SYSTEM **Mammography Plethysmography**	**Specs to Shrine board +Vendors**	Changes in specs	Purchase order	Lead time from Purchase to delivery	Installation

Others	**Specs to Shrine board +Vendors**	Changes in specs	Purchase order	Lead time from Purchase to delivery	Installation

An Organization should establish policies to ensure proper accounting, reporting & safeguarding over inventory. Inventory records need to be maintained to record purchases & issues from stock. Perpetual inventory records are updated immediately & represent the quantity on hand, unit cost & total cost.

Periodic inventory systems record the beginning balance & are updated at end of each fiscal year as determined by a physical inventory.

QUESTIONNAIRE FOR INVENTORY STORE

QUESTION	YES	NO	DON'T KNOW
• Are the policies & procedures current in writing & properly approved?			
• Are these policies & procedures clearly stated & systematically communicated?			
• Are receiving, issuing, accounting & storing responsibilities properly segregated?			
• Do department compare quantities received against receiving reports, etc?			
• Is material released from inventory only on basis of requisitions which are approved by a responsible official of the department?			
• Is adequate provision made for obsolete & inactive items in inventory?			
• Is medication storage area orderly & clean?			
• Are the internal use/injectable medicines separated from disinfectants & toxic medications?			
• Are there any unlabeled or mislabeled medicines present?			
• Is there any unauthorized floor stock present in inventory?			
• Are there any expired products in stock?			
• Has the license been taken for narcotic drugs?			
• Are the approved emergency medicines adequate in stock?			
• Is the medication formulary updated regularly & is the list available?			
• Is the inventory organized into three major categories according to VED analysis?			

QUESTIONNAIRE FOR DEPARTMENTS

(Ideally sample should be (n) =60, but the sample taken is small because departments were only 20.)

- What type of organization is Shri Mata Vaishno Devi Narayana super speciality Hospital Katra (Jammu)?
    a) Public
    b) Private
    c) Public Private partnership

- Does your organization have inventory management /Supply chain management?
    a) Yes
    b) No
    c) Don't know

QUESTION	EXCELLEENT	GOOD	Average	POOR
• Ambience of pharmacy?				
• Friendliness & courtesy of staff?				
• Skill & competency of pharmacy staff?				
• Communication & detailing skill of pharmacy staff?				

QUESTION	Excellent	Good	Average	Poor
• When this data was collected what was your level of satisfaction regarding inventory?				
• Did the supply chain department solve the shortcomings faced by you due to inventory?				
• Time taken by supply chain department to solve the shortcomings?				
• What is the level of satisfaction regarding the process of distribution of goods from the inventory?				