Summer Training at
Fortis Escorts Heart Institute, New Delhi
(April 1 -May 31, 2014)

OT Utilization and Step down Process of OT

By
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CERTIFICATE

This is to certify that **Ms. Ankita Sharma** has undergone her summer training at Fortis Escorts Heart Institute, Okhla, New Delhi from 1st April, 2014 to 31st May, 2014. The candidate herself carried out all the studies related to her summer training. Her approach to the study has been scientific and analytical. This summer training is in the partial fulfilment of the course requirement recommended for the award of Post Graduate Diploma in Hospital Management.

I wish her success in all her future endeavours.

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DR. V.R. GUPTA
MEDICAL DIRECTOR

30th May 2014

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms. Ankita Sharma** a student of Institute of Health Management Research (IIHMR), Jaipur has completed her project under my guidance from Fortis Escorts Heart Institute & Research Centre, New Delhi from 1st April, 2014 to 30th May, 2014.

She undertook elaborative project on –

- **OT UTILIZATION & STEP DOWN PROCESS**

She was sincere, hardworking and cooperating with hospital staff.

I wish her all the success in her career.

(DR V R GUPTA)
MEDICAL DIRECTOR

Dr. V.R. GUPTA
Medical Director
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ACKNOWLEDGEMENT

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I would like to thank **Dr. V.R Gupta**, Medical Director for giving me opportunity to do my project at **FEHI**.

Foremost, I would like to thank **Mr. Tuhin Mitra**, OT coordinator, FEHI, New Delhi, who was kind enough to spare his valuable time and provided several important suggestions at every stage of my study. His impeccable suggestions have added loads of value to my knowledge base.

Sincere thanks to all the staff at all levels for helping me at each and every step of my work. Heartiest gratitude to them for making my stay and work at this place a memorable one. Last, but not the least, I am thankful to **Dr. Sunil Kapoor**, director FEHI for involving me in some of new initiatives and designing of future plans for the hospital.

Thanks to one and all

Ankita Sharma

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ABSTRACT

STEP DOWN is the crucial link in the hospital value chain. So the proper process flow of step down is required. Step down process is a hospital nursing unit providing care intermediate between that of an intensive care unit and a normally-staffed in-patient division. It means that patient after surgery is kept under observation as per their condition. Different levels of step down after surgery are:

Level 1: ICU (completely unstable)

Level2: Recover 1 or 2

Level3: Recovery 3

Level 4: Wards

And from the wards patients are discharged.

OBJECTIVES:-

- To study the process of step down
- To study the proper utilization of recovery room
- To find out the delays in shifting the patient from recovery to wards
- To find out the loopholes in functioning of the existing process.

METHOD:-

The research methodology used was prospective studies for the Step Down Process and to find the reasons for the delays in the process. Study was done with sample size of 126 cases of particularly CABG surgery. The tools used for collection are FOS Data prepared by the OT staff. The analysis was done with the help of Microsoft Excel.

RESULT AND CONCLUSION:-

After the analysis reasons for the delays was found to be medical and non medical. There are 90.4% delays due to non medical reason that is non availability of beds in wards.

INVESTIGATOR'S SUGGESTIONS:-

1) The doctor should mention the priority of admission to the patient as HIGH or LOW, and the admissions are done on the basis not this priority. This will create smooth functioning of process from admission till discharge.
2) The patient should be made aware prior admission that he or she might not get their chosen bed when they have to shift in wards, they must adjust for time being and must shift to the available bed till their chosen room is not available. The moment their chosen bed is available they will be shifted to it. This will decrease the prolong stay of patients in recovery rooms.

1.1 **INTRODUCTION TO FEHI**

Fortis Escorts Heart Institute, formerly known as Escorts Heart Institute and research center, a pioneer in the field of fully dedicated cardiac care facility in India is a Fortis (Fortis Healthcare (India) Ltd.) network hospital. Fortis Healthcare is the fastest growing hospital network in India.

Fortis Healthcare led by the vision of late Dr. Parvinder Singh of creating an integrated healthcare delivery system in India acquired Escorts Heart Institute and Research Centre Ltd. in 2005. Established in 1988, Escorts celebrated 22 years of Cardiac excellence last year.

Fortis Escorts Heart Institute has set benchmarks in cardiac care with its path breaking work over the past 22 years. Today, it is recognized world over as a centre of excellence providing the latest technology in Cardiac Bypass Surgery, Minimally Invasive Surgery (Robotics), and Interventional Cardiology, Non-invasive Cardiology, Pediatric Cardiology and Pediatric Cardiac surgery.

The hospital is backed by the most advanced laboratories performing complete range of investigative tests in the field of Nuclear Medicine, Radiology, Biochemistry, Hematology, Transfusion Medicine and Microbiology.

Fortis Escorts Heart Institute has a vast pool of talented and experienced team of doctors, who are further supported by a team of highly qualified, experienced and dedicated support staff and cutting edge technology like the recently installed Dual CT Scan.

Currently, more than 200 cardiac doctors and 1600 employees work together to manage over 14,500 admissions and 7,200 emergency cases in a year.

The hospital today has an infrastructure comprising of around 310 beds (it currently enjoys 100% occupancy rate), 5 Cath Labs besides a host of other world-class facilities.

FEHI has a capacity of 310 beds, 9 Operation Theatres, 2 Heart Command Centers, and 1 Heart Station besides an array of other world-class facilities. EHIRC provides top end services in areas of acute care, invasive and non-invasive cardiology and state-of-the-art surgical procedures, besides playing a leading role in prevention and the reversal of heart disease.

ACCREDITATIONS

- **Joint Commission International, USA**
- **National Accreditation Board Hospitals and Healthcare Providers (NABH)**
- NABH (Blood Bank) Accreditation
- International Organization For Standardization (ISO) 9001:2000 Certification
- **SUPERBRAND 2008 Award**
- **NABL**

Departments:

- Cardiothoracic and Vascular Surgery
- Cardiology
- Preventive and Rehabilitative Cardiology
- Pediatric and Congenital Cardiology and Surgery
- Pediatric Cardiac Care
- Anesthesiology and Critical Care
- Critical Care Medicine
- Radio Imaging
- Hematology
- Biochemistry
- Microbiology
- Internal Medicine and Diabetology
- Orthopedics
- Pulmonology
- Nephrology
- Neurology
- Dental Surgery
- General Surgery, Adult and Pediatric
- ENT
- Ophthalmology
- Physiotherapy
- Gastroenterology
- Thoracic Surgery and Thoracic Surgical Oncology

1.2 CABG (Coronary Artery Bypass Surgery)

The coronary arteries carry blood and oxygen to the heart muscle. In people with the coronary artery disease a fatty substance builds up in the walls of the arteries, making the space inside narrower. This makes it harder for the blood to pass through.

If the arteries become narrowed then the amount of oxygen delivered to the heart muscle may be reduced. This can cause chest pain, or other symptoms called angina, or lead to a heart attack.

The purpose of Coronary Artery Bypass Grafting (CABG) is to improve the flow of blood to the heart muscle. The surgeon uses sections of healthy vein or artery from the patient's own arm, leg wall to go beyond (bypass) the narrowed segments of coronary artery and restore blood flow to the heart.

The Operation involves:

There are two stages to bypass surgery:

Stage1: It is where a healthy blood vessel (the graft) is removing from leg, arm or chest, wall.

Stage2: Your surgeon connects the healthy vessel to your coronary artery, 'bypassing' the diseased segment, and improving the blood supply to the heart.

To operate on your heart, the surgeon will use one of the two techniques.

1) A heart-lung machine is used to circulate blood around the body, allowing the surgeon to operate on the heart.
2) The beating heart technique, where the surgery is performed while the heart is still beating and working. This is called 'off pump' surgery.

The operation usually takes between three and six hours.

Recovery after the operation:

After the operation the patient will be taken to the Cardio Thoracic Critical Care Unit (CTCC) where they will be given intensive cardiothoracic and nursing care. Then the patient will normally be transferred to the ward after 1-2 days. Most people stay in hospital for about 6-8 days in total.

Benefits of Coronary Artery Bypass Surgery:

- Reduce your angina
- Reduce the amount of medication you are taking
- Generally make you feel better
- Increase your chance of living longer

Risks of Coronary Artery Bypass Grafting:

Risk of death and Assessing your individual and complication:

CABG surgery, like any other surgery, has complications. The risk of complications varies from person to person and will depend on several factors including:

- Your age and sex
- Whether you are having additional surgery at the same time
- The urgency of the operation
- Your weight

Complications:

- Death
- Stroke- Which may be temporary or permanent
- Bleeding- You may need to be taken back to the theatre to treat excessive bleeding.
- An irregular heartbeat- This occurs in one third of patients and usually resolves in hospital with medication.
- A heart attack- On rare during surgery the heart can suffer a heart attack.
- Infections- This may involve the chest and leg or arm wounds, or the lungs, and will be treated with antibiotics.
- Pain- Regular pain killers will be given to the patient while they are in the hospital and they may need painkillers for some weeks after their operation. They should tell their nurse straight away if they are in pain.
- Kidney problems- Bypass surgery can affect your kidney functions. They usually recover within a few days.

1.3OPERATION THEATRE

Operation Theatre is defined as that specialized facility of the hospital where life saving or life improving procedures are carried out on the human body by invasive methods under strict aseptic conditions in a controlled environment by specially trained personnel to promote healing and cure with maximum safety, comfort and economy.

The term is sometimes used synonymously with operating room (OR) or operating suite, the room within a hospital where surgical operations are carried out.

Location of the Operating Theatre Suites

Operating theatres may be located in either purpose-built units or in converted hospital accommodation. They are busy units and therefore they require considerable planning and discussion before they are built in order to prevent expensive mistakes. They should be:

- Separated from the main flow of hospital traffic and from the main corridors; however, it should be easily accessible from surgical wards emergency rooms.
- Ideally, the floor should be covered with antistatic material, and the walls should be painted with impervious, antistatic paint. This reduces the dust levels and allows for frequent cleaning. The surfaces must withstand frequent cleaning and decontamination with disinfectant.

Layout of the Operating Theatre

The operating theatre should be zoned and access to these zones should be under control of OT personnel. Aseptic and clean areas should be separated from the outer areas. This is easier to achieve in purpose-built units. Physical barriers may be needed in order to restrict access and to maintain unidirectional movement of air in converted theatre units.

Zones in OT

OT has got various zoning in it. Zones are area of varying degrees of cleanliness in which the bacteriological count progressively diminishes from the outer to the inner zones (operating area) and is maintained by a differential decreasing positive pressure ventilation gradient from the inner zone to the outer zone. They are of following types.

Protective Zone: Areas included in this zone are:

- Reception
- Waiting area
- Trolley bay
- Changing room

Clean Zone: Areas included in this zone are:

- Pre-op room
- Recovery room
- Plaster room
- Staff room
- Store

Sterile Zone: Areas included in this zone are:

- Operating Suite
- Scrub Room
- Anesthesia Induction Room
- Set up Room

Disposal Zone: Areas included in this zone are:

- Dirty Utility
- Disposal corridor

Temperature and Humidity

In FEHI, the temperature of operating room is maintained between 18-25°C, humidity is maintained at 50-55%.

Ideal Air Ventilation System: Air Supply and Exhaust

Positive pressure ventilation with respect to the corridors and adjacent areas in the operating theatre where surgical procedures are performed should be maintained. The number of operating theatres supplied by air units (AHUs) should be consistent with the number specified by the AHU manufacturer.

Design features

Parameters to have in place if possible based on available resources are:

- **Air changes**

Maintenance of 15-20 air changes per hour, of which at least 3 should be fresh air from outside.

- **Filtration**

Filter all air with appropriate pre filters (e.g. filtration efficiency of 30%) followed by final filter (e.g. 90%)

- **Air supply**

Air should enter at the ceiling and be exhausted near the floor (important: furniture or other portable items placed against a wall exhaust at floor level will inhibit the air changeover in a theatre and therefore should be monitored and abated).

- **Ultraviolet Germicidal Irradiation (UVGI)**

Do not use UVGI in the operating theatre to prevent SSI.

- **Doors**

Keep OT doors closed except as needed for passage of equipment, personnel and the patient.

- **Traffic**

Limit the number of personnel entering the OT to only those necessary for the surgical procedure. The microbial level in the OT is directly proportional to the number of people moving about in the theatre.

- **Laminar flow & ultraclean air**

Laminar airflow is designed to move particle free air over the aseptic operating field in one direction. It can be designed to flow vertically or horizontally and is usually combined with high efficiency particulate air (HEPA) filters. HEPA filters remove particles >0.3 micron in diameter with an efficiency of 99.97%. Ultraclean air can reduce the incidence of SSIs especially for orthopedic implant operations; however, some studies suggest that other interventions such as appropriate timing of preoperative antibiotics and good OT practices such as limiting.

Nonessential traffic can also lower incidence. Therefore, if resources are limited, laminar flow with HEPA filtration is not required for high quality surgical care.

Maintenance in the OT

- Equipment should be checked every week (or at least every fortnight)
- Ventilation (e.g. pressure relationship, air changes/hour) should be checked periodically (e.g. each quarter) and the filters should be changed as required (usually annually).
- The IC-Team should be notified whenever the air delivery system for the OT has been shut down for maintenance or malfunction. The IC team in conjunction with facility engineers will assist with determination of need for any environmental monitoring needed once the ventilation per hour should be verified prior to use of the affected OT after interruption. The theatre should be used only after clearance from the IC team.
- It is advisable to have back-up theatre facilities so that theatre sessions are not interrupted by maintenance.

In FEHI, the maintenance of operating rooms is checked twice a year

Infection Prevention in the Operating Theatre

Infection prevention in the operating room is achieved through prudent use of aseptic techniques in order to:

- Prevent contamination of the open wound
- Isolate the operative site from the surrounding unsterile physical environment.
- Create and maintain a sterile field in which surgery can be performed safely.

Although all infection prevention practices contribute to this effort, aseptic technique refers to those practices performed just before or during clinical procedure including:

- Properly preparing a client for clinical procedures
- Hand washing
- Surgical hand scrub
- Using barriers such as gloves and surgical attire
- Maintaining a sterile field
- Using good surgical technique
- Maintaining a safe environment in the surgical/procedure area

Streamlining of the process flow of the OT time has always been a priority area for Hospital Administrator's. Maintaining of accurate records, weekly analysis of recorded data, establishment of operating room rules and regulations and strict adherence to and enforcement of approved policies and procedures are essential ingredients for an efficient operating of an operating room. Thus it is clear that study of operating room records can provide means of assessment of the degree of utilization of operating theatres.

LITERATURE REVIEW

Tom Lee describes the story of Gary Kaplan applying lean methodologies he learned from Boeing executives to improve performance at Seattle's Virginia Mason Health Center. As much as health care can learn from other industries, these comparisons should not be undertaken lightly. Like medicine, most industries have their own language and semiotics that can be challenging for outsiders to master. S To avoid alienating physicians, careful attention must be paid to how lessons from other industries are introduced into healthcare settings.

We learned this lesson at ThedaCare a four-hospital system in Appleton, Wisconsin. Since 2000, ThedaCare's management had looked to lean process engineering, which originated at Toyota, to improve efficiency and quality of care delivery. With the help of consultants, ThedaCare taught select physicians the fundamentals of lean process engineering and assigned them to take the lead in mapping its value stream. But this initiative had mixed results. The initiative decisively improved clinical and business performance. For example, improvements in management of post-operative extubation and bleeding resulted in a decline in cardiac surgery mortality from 4% in 2002 to 0.8% in 2009 with unchanged volume and case mix. Over a 30-month period, a redesigned inpatient care unit reduced medication reconciliation errors to zero, ensuring all medications a patient was taking upon admission were accounted for upon discharge. With no significant changes in its prayer contracts, ThedaCare's operating margin grew from 2.5% in 2003 to 6% in 2009.

In the UK, the National Health Services (NHS) has started lean thinking to reduce waiting time from Accident and Emergency (A&E) (Management Today, 2006).

Therefore, the solution is to improve the efficiency in A&E and its connected units by:

1) Identifying the value and no-value tasks, which cause higher cycle times, and
2) Improving operational settings

Lean Approach to Integrated Healthcare System

Therefore, the parameters for non-value added tasks which cause a higher processing/cycle time, setup time, and longer lead time of the patient journey must be identified.

Setup means, collecting all equipments and placing it in the proper place, as in the 5S lean technique (Maleki and Kram, 2003; Westwood et al., 2007).

5S and kanban techniques can reduce cycle time or setup time and in the end the overall lead time of the patient journey can be abridged into the system.

This is the right time to think like Toyota and implement the lean thinking at every single unit of NHS trusts. Lean philosophy mainly consists of kanban, 5S, and scheduling techniques. In TPS, proper scheduling yields continue consumption of each part and here kanban system and 5S philosophy support the scheduling to produce the finished goods at right time.

A triangular cycle of 5S, scheduling and kanban is shown in figure 2, which can dramatically shorten the delay from OT operations or smooth

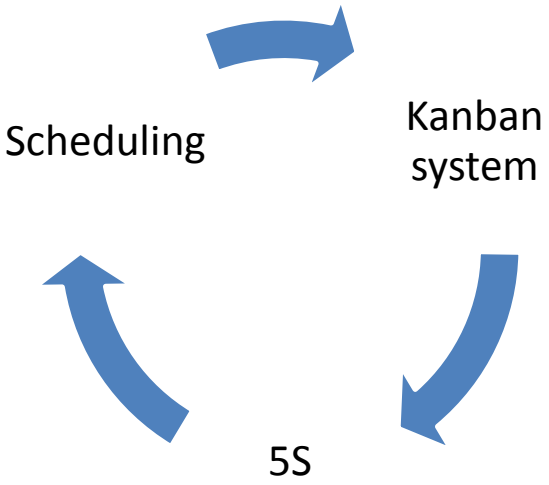

Figure 2: Lean Approach to OT

Kanban is also known as the subsystem of the Toyota (Gross and Mcinnis, 2003). When demand fluctuates then kanban acts as in just in time (JIT) basis, to produce the necessary items at necessary time and at necessary quantities (Monden, 1993). The kanban can inform the staff where patients came from how many patients are in waiting and the bed status as well (Ben-Tovim, 2003). The healthcare Industry is very large, complex, and inefficient industry. The major challenge is to implement the value adding activity across the A&E and resolve the operational issues to improve patient flow (Mango and Shapiro, 2001).

RESEARCH METHODOLOGY

AIM: To study the **Step Down Analysis**

OBJECTIVE:

- To study the process of step down
- To study the proper utilization of recovery rooms
- To find out the delays in shifting the patient from recovery to wards
- To find out loopholes in functioning of the existing process.

3.1 STUDY DESIGN

Prospective study

3.2 STUDY SETTING

Fortis Escorts Hospital, Okhla, New Delhi

3.3 SAMPLE SIZE

Total sample size: 126

3.4 SAMPLING METHOD

Convenient sampling

3.5 METHOD OF DATA COLLECTION

Prospective study

Direct data collection from hospital from in patients

Observe the existing process followed for step down.

3.6 TOOLS USED

Data collection tools:

The data was collected by researcher herself for data from FOS Data that is prepared by the OT staff.

Since already existing process flow was to be developed so secondary data was taken as it was based on previous procedure.

For the purpose of OT utilization and number of step downs primary data was collected from the period of 1st April, 2014 to 1st May, 2014.

By help of FOS data and also observational study was done for finding various reasons for delayed step downs.

3.7 STUDY PERIOD

Data collection: April 1, 2014 to May 30, 2014

Data entry and Analysis: April 1, 2014 to May 1, 2014

Submission: May 29th 2014

FINDINGS

Various reasons for delayed step down:

- Non availability of beds in wards or ICU's.
- Medical reasons like a patient isn't medically fit for step down
  - Fever
  - Hospital acquired infections

Number of OT	**9**
Number of Standby OT	**2**
Number of surgeries carried out in each OT per day	**2**
Average time taken per surgery	**4hrs**
Time taken between 2 surgeries	**30 mins**
No. of recovery rooms	**3**

TABLE A

Process Flow of OT:

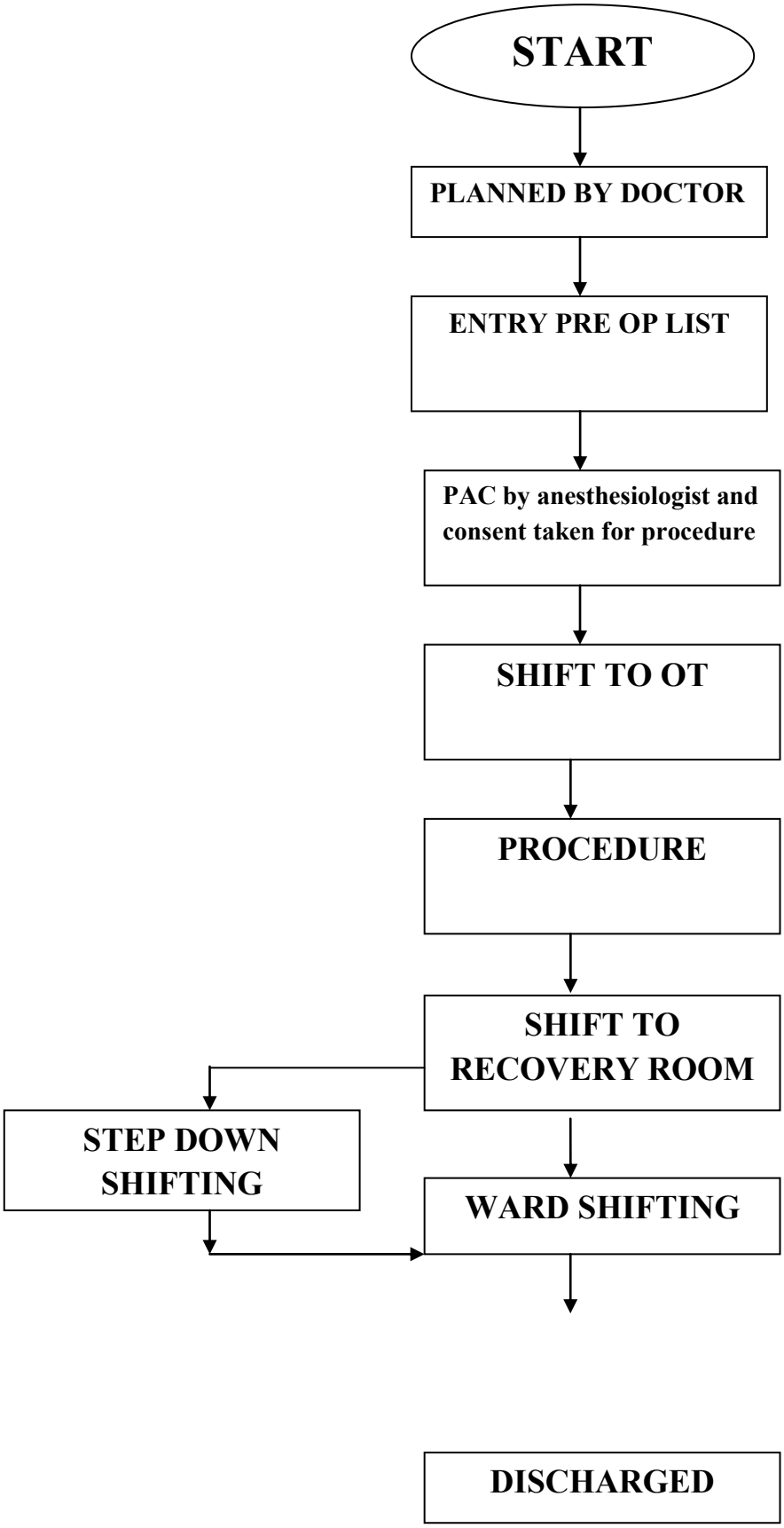

FIGURE A: Describes the process of flow of patient and their step down shifting

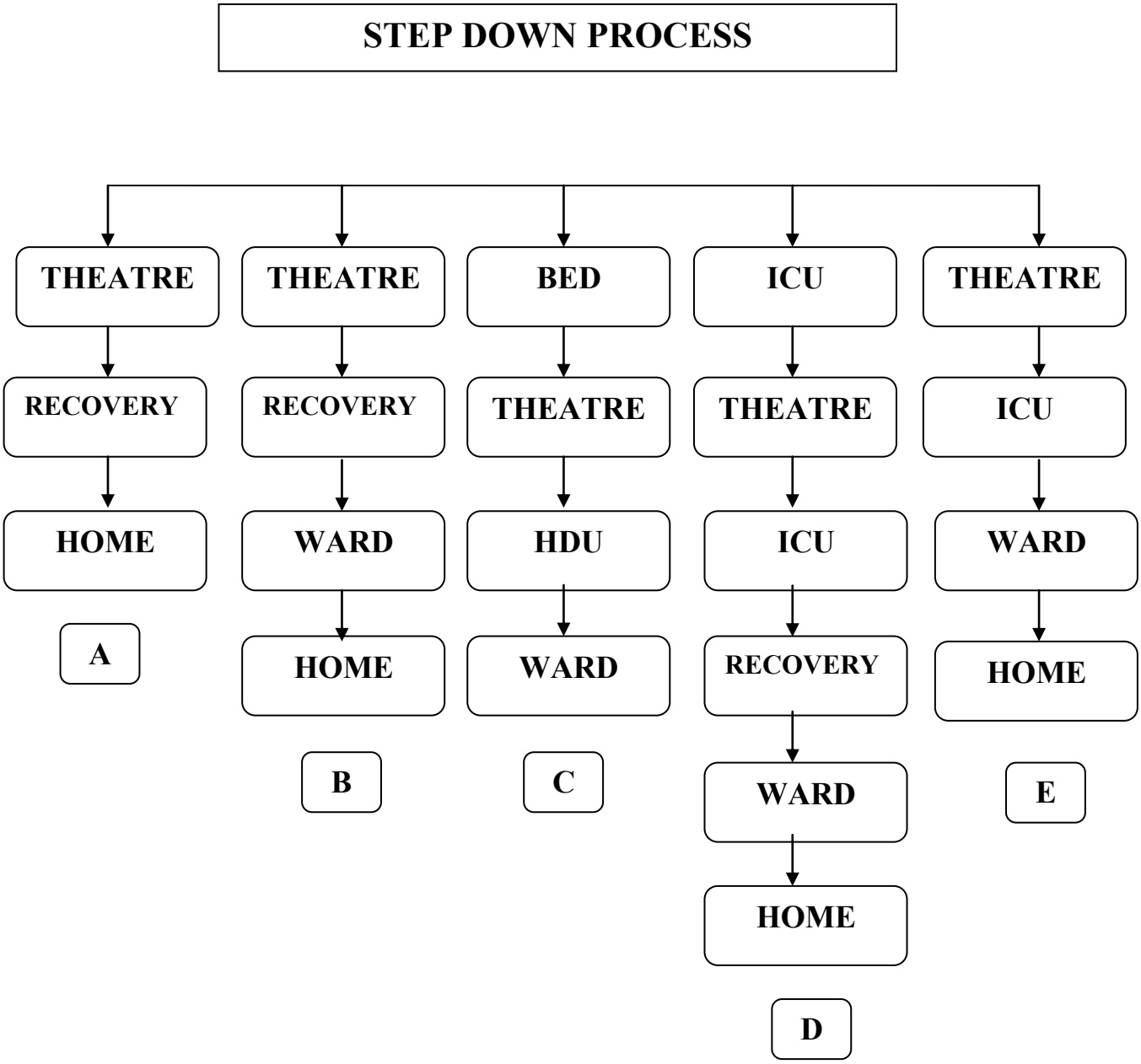

FIGURE B: Describes the process flow of step down of patients after the surgeries

Subject	No. of cases
Total no. of cases	126
Total no. of delays	21

Table 1: No. of delays against the total sample size

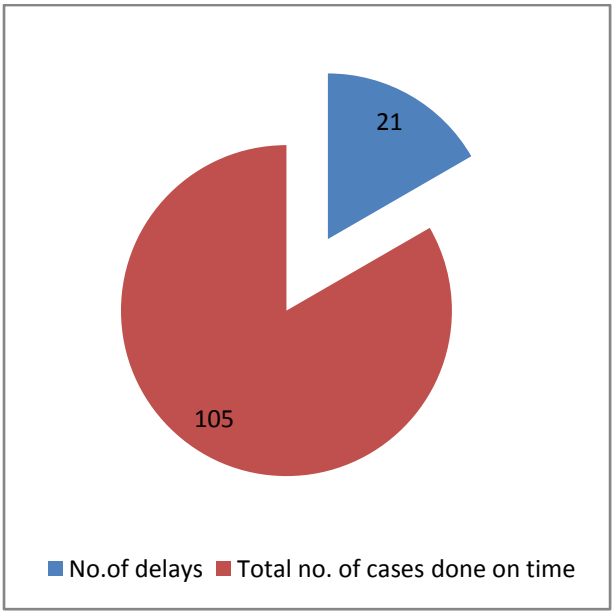

FIGURE 1: Pie chart depicting percentage of case delays against the percentage of cases on time.

INTERPRETATION: The **FIGURE 1** shows that there are 21 delayed cases against the 126 cases. The reasons found out for these 21 delays are medical and non medical reasons.

Subject	No. of cases
No. of delays due to Non-Medical reasons	19
No. of delays due to medical reasons	2

Table 2: No. of delays due to medical reasons against the total sample size

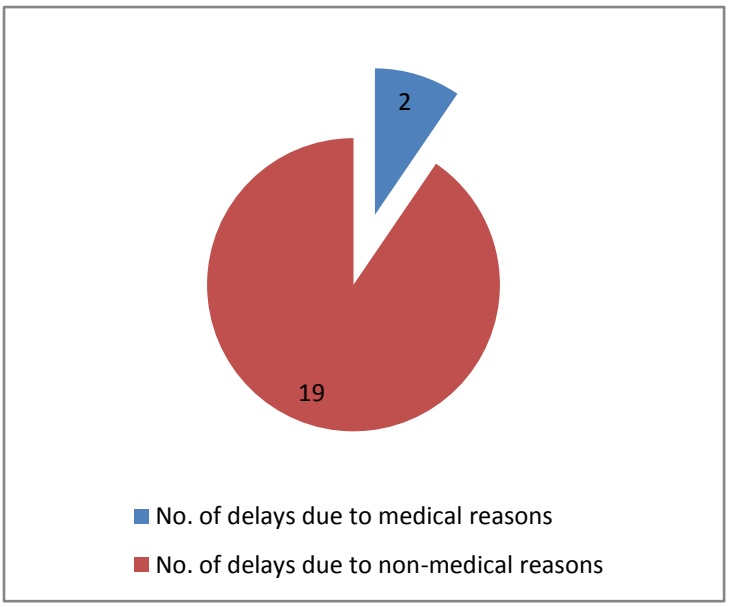

Figure 2: Pie chart depicting no. of delays due to medical reasons against the total no. of sample size

INTERPRETATION: The **FIGURE 2** depicts the total no. of delays due to medical reasons and non medical reasons. 2 cases are delayed due to medical reasons and 19 cases are delayed due to non-medical reasons in a sample of 126 cases.

Subject	No. of cases
Total no. of cases	126
Total no. of delays	21
No. of delays due to medical reasons	2
No. of delays due to non medical reason that is non availability of beds in wards	19

Table 3: No. of delays due to medical, non-medical reasons and no. of delays against the total sample size

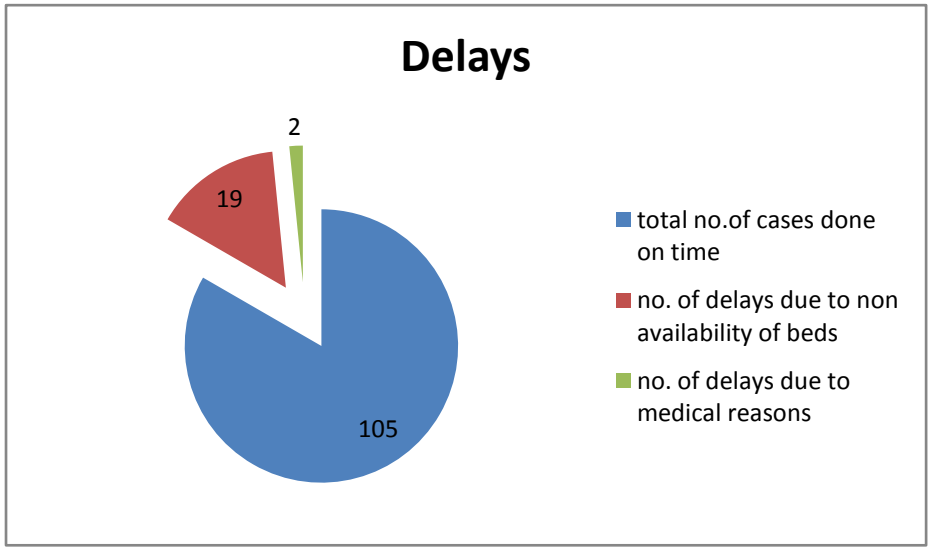

Figure 3: Pie chart depicting delays due to medical, non-medical reasons and no. of delays against the total sample size

INTERPRETATION: The **FIGURE 3** depicts delays due to medical, non medical reasons and no. of delays against the total sample size. It shows the total no. of delayed cases is 21 in a sample size of 126 cases. It also depicts that out of 21 delayed cases, 2 cases are delayed due to medical reasons and 19 cases are delayed due to non medical reasons.

Percentage delays and Utilization of recovery rooms:

Total no. of Cases	126	%age (100%)
Total no. of Cases done on time	105	83%%
Total no. of Delays due to Medical Reasons	2	2%
Total no. of Delays due to Non-Medical Reasons	19	15%

Table 4: The %age delays due to medical, non-medical reasons and no. of delays against the total sample size and the %age utilization of recovery rooms.

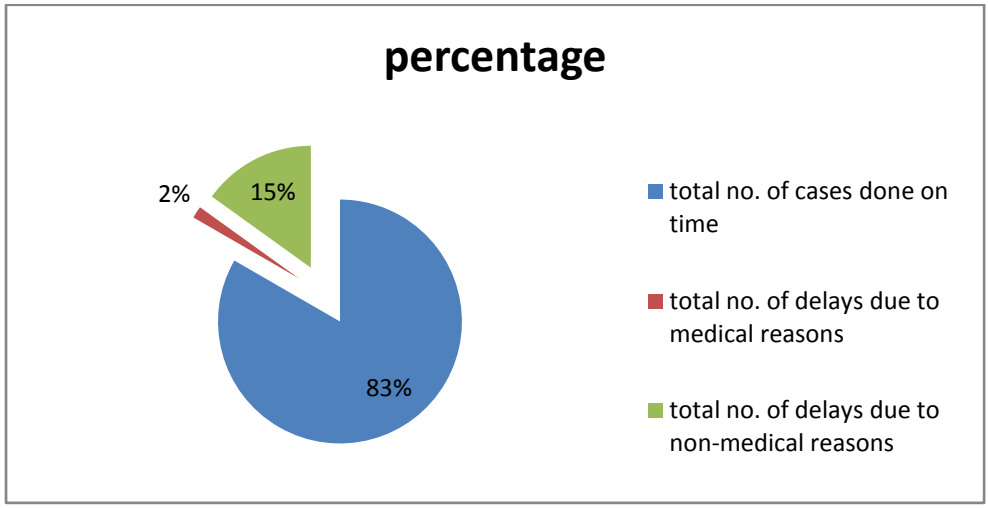

Figure 4: Pie chart depicting the %age delays due to medical, non-medical reasons and no. of delays against the total sample size and the column depicting the %age utilization of recovery rooms.

INTERPRETATION: The **FIGURE 4** shows the percentage of delayed cases due to medical and non medical reasons. And due to delayed cases the recovery rooms beds are occupied as the availability of beds in wards are less.

DISCUSSION

These findings are in conformity with the data collected by the researcher. The process of inflow of patients to OT is studied. The step down of patients from recovery to wards has also been studied by the researcher and various findings and percentages are calculated by her.

The **Table A** gives the information about the no. of OTs, no. of Recovery rooms. The approximate time for each surgery is 4 hours and the time between two surgeries done is 30 minutes that is cleaning of used OT and to prepare it for the next surgery to be done in same OT. The no. of surgeries carried out in 1 day is approx. 2. There are total 9 OTs, 7 main OTs and 2 standbys OTs. Standby OTs are generally kept for Emergency cases.

The **Figure A shows** the patient inflow in OT. There are 2 ways by which the patient comes in OT, that is either by the planned by the Doctor or by the Emergency. Mostly patients come in OTs as their surgeries are planned by their Doctors. After that, PAC (pre anesthetic check up) is done by the Anesthesiologist and he gives his approval for surgery. If there are any complications then the surgery will not take place until the patient is completely fit for surgery.

When the approval is done the patient shifted to OT. Then the surgery will take place. After that the patient is shifted to recovery room as per his condition and availability of bed. As the patients are shifted to recovery 1 and 2 that is first post operative place where the patient is kept under complete observation, but if there is no availability of beds then the patient is directly shifted to Recovery Room 3 which is the step down after Recovery 1 and 2. When the patient is stable then it is shifted to wards and from there they get discharged. The shifting of patient from Recovery 1 or 2 to Recovery 3 then to Wards is called STEP DOWN Shifting.

The **FIGURE B** shows various process flows for the step down. The **A** process shows that the patients after the surgery directly goes to recovery. The patient becomes stable there and gets discharged from there only.

The process **B** shows that the patients after surgery goes to Recovery and after that shifted to Ward and then discharged. This is the normal and mostly used process flow for patients.

The process **C** shows that after the patients is not stable to shift to recovery but it is not much unstable that it needs intensive care and observation. So the patient is shifted to HDU that is High Dependency Unit. When the patient is stable then it is shifted to ward and then discharged.

The process **D** shows that the patient is in Emergency and is directly shifted to ICU and after surgery needs the intensive care and 24 hour complete observations, so it is again shifted to ICU. When patient is stable then it can be shifted to recovery and then to Ward and then discharged.

The process **E** shows that the patient comes in OT and then after surgery it goes to the ICU and then directly goes to the Ward and then discharged.

Therefore, due to this step down shifting is delayed therefore there is less utilization of recovery. And due to already occupied beds in recovery the planned surgeries can also be get cancelled. Therefore the non availability of beds is the mail problem with which we have to deal. As we cannot do with the medical reasons, it is very true that the patient cannot be shifted to Ward id its not stable and needs more care.

SUGGESTIONS

After having analyzed the sample size chosen and the factors affecting Step-down process the following suggestions could be a window to the problems as follows:

- **Anesthesiologist OPD**: There should be a proper counseling of the patient, anesthesiologist with the cardiologist and the counselor.
  The doctor should mention the priority level of admission by indicating 'H' or 'L'.
  H stands for high priority and L stands low priority of admission.
  After the doctor mentions the priority level the patient should go to counselor to check the availability of beds for the admission of patient.
  For example: if there is only 1 vacant bed and two patients have to be admitted. 1 is of high priority as mentioned by doctor and 1 is low priority, the patient with high priority should be admitted first.
  By this there will be less problem of non availability of bed. The patient will be admitted when the bed is vacant. This will increase the functioning of step down. And will cause lesser delays.

- **Proper Planning:** There should be proper planning of the patient's movement.
  The planning of patient's movement allows the step down process to work smoothly. As each movement of a patient shifting is planned, then the next planned shifting must be prepared in advance and the requirement for that should be fulfilled earlier.

- **Bed Manager:** the bed manager plays an important role in step down, as the step down delays are due to late discharges, therefore the bed manager should coordinate properly with discharges. As the discharges will be on time then the vacant bed is available on time and the shifting of patient from recovery to Wards will be on time.
- Many a times the patient is promised the bed that he/she asks for initially during counseling.
  For Example: If a patient walks into the hospital and when arrives at the counseling booth and asks for a Private room to be given once done with the surgery or the procedure the patient was supposed to undergo, and is not given later; the patient gets furious and often ends up complaining about the same.

CONCLUSION

STEP DOWN is the crucial link in the hospital value chain. So the proper process flow of step down is required.

Step down process is a hospital nursing unit providing care intermediate between that of an intensive care unit and a normally-staffed in-patient division.

It means that patient after surgery is kept in under observation as per their condition. Different levels of step down after surgery are:

Level 1: ICU (completely unstable)

Level 2: Recovery 1 or 2

Level 3: Recovery 3

Level 4: Wards

And from wards the patients are discharged.

As the patient has to stay in recovery after the surgery done, the prolong stay of patient in recovery can cause loss to the hospital.

It can cause delays or even cancellation of further more surgeries.

The reasons for prolong stay can be:

According to data analysis, we found that there are total 21 cases that were delayed from shifting from recovery to wards. Out of which 19 cases are delayed due to non-medical reason that is non availability of beds or vacant beds in wards. The other reason was found to be medical that the patient is not stable and fit for shifting.

The **FIGURE 4** shows the percentage of delayed cases due to medical and non medical reasons. And due to delayed cases the recovery rooms beds are occupied as the availability of beds in wards are less. Therefore, due to this step down, shifting is delayed therefore there is less utilization of recovery.

The percentage of delays in shifting the patient from recovery to Ward due to non availability of vacant bed in wards is 90%.

The 90% delay is alarming and something must be done to decrease it. If the delays percentage keeps on increasing then there can be chances of cancellation of further surgeries. This can automatically decrease the revenue of the hospital.

The suggestions suggested by the researcher are economic and can be implemented to deal with this 90% of delays.

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