

Billing of Consumables in Wards and ICU

By

Neha Sardana

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2014-2016



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**Internship Training
At
Wockhardt Hospitals Pvt. Ltd., Rajkot**

**“Billing of consumables in wards & ICUs at N M Virani Wockhardt Hospitals,
Rajkot”**

**By
Name Dr. Neha Sardana**

**Under the guidance of
Dr. A. K. Mathur**

**MBA Hospital and Health Management
Year 2014-2016**



TO WHOMSOEVER MAY CONCERN

This is to certify that **Dr. Neha Sardana** student of MBA Hospital and Health Management (PGDHM) from The IIHMR University, Jaipur has undergone internship training at **Wockhardt Hospitals Pvt. Ltd., Rajkot** from **8th February, 2016** to **8th May, 2016**.

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

The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.



Col. (Dr.) Ashok Kaushik
Dean, Academics and Student Affairs
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Dr. Alok Mathur 18/5/2016
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June 13, 2016

TO WHOMSOEVER IT MAY CONCERN

Ms. Neha Sardana, has successfully completed her Dissertation project with Wockhardt Hospitals Limited through Rajkot Unit under the guidance of Dr. Ravi Maggo & Ms. Priyanka Pawar.

Her period of internship lasted for a period starting from February 08, 2016 to May 06, 2016.

The following two projects were undertaken by her:-

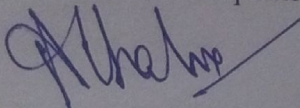
“Internal & External gap analysis in quality parameters at Rajkot”

“Billing of consumption in wards - Rajkot”

Her performance and discipline during the term of the project has been good.

We wish her all the very best in her future endeavors.

Yours sincerely,
For Wockhardt Hospitals Ltd.



Amiya Kumar Sahoo
Jt. General Manager – Human Resources



THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled ...["]BILLING of CONSUMABLES...
...IN WARDS of ICUs"
... and submitted by (Name) DR. NEHA SARDANA
... Enrollment No. 0179 ... under
the supervision of DR. ALOK MATHUR ... for award
of Postgraduate Diploma in Hospital and Health/ Pharmaceutical / Rural Management of
the University carried out during the period from ...^{8th}FEBRUARY.. to
...^{8th}MAY - 2016... embodies my original work and has not formed the basis for the
award of any degree, diploma associate ship, fellowship, titles in this or any other Institute
or other similar institution of higher learning.


Signature

The IIHMR University, Jaipur

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The internship was started with a vision to be able to learn about the practical aspects of healthcare delivery system in a detailed manner. I hereby take this opportunity to express my deep sense of gratitude to all those who have been instrumental in the successful completion of my internship. Any accomplishments requires efforts o various individuals and this work is no exception.

Firstly, I would like to thank Dr. S D Gupta, Director- Institute of Health Management and Research, Jaipur, and all the facilities, for the education imparted which has made me the person I am today, and Wockhardt Hospital for believing in my abilities.

The project would not have been completed without the tremendous contribution of my guide, Professor A K Mathur right from the onset lending a helping hand at every step.

My guide and mentor have taken me through every obstacle throughout the two years of my course.

Ms. Priyanka Pawar (Asst. Manager, Quality Department) and Ravi Maggo (Deputy Manager, Non- medical Admin.) my guides, for the projects have been supportive all along my tenure in the organization and allowed me the freedom to express myself.

Staff has been extremely welcoming and supportive during my tenure.

I would also like to specially thank all the staff nurses for being cooperative and helping me with the information I needed for my study.

Finally, and most importantly I would like to thank god for allowing me to complete my project, my beloved parents for their blessings and my friends for their help and wishes for the successful completion of this internship.

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LIST OF ABBREVIATIONS

OPD- Outpatient Department
CSSD-Central Sterile Supply Department
ICUs- Intensive Care Units
MICU-Medical Intensive Care Unit
SICU-Surgical Intensive Care Unit
CCU-Critical Care Unit
PICU-Pediatric Care Unit
NICU-Neonatal Care Unit
MRI-Magnetic Resonance Imaging
USG-Ultrasonography
CT-Computed Tomography
NS -Nursing Station
CAG-Cardiac and Gynecology
1FMB-1st Floor Multibed
PEADS-Pediatrics
CHG-Chlorhexidine
IP-Inpatient
HIS- Hospital Information System

DISSERATATION REPORT

Dissertation on “Billing of consumables in Wards & ICUs at N M Virani Wockhardt Hospitals, Rajkot”

1.0 INTRODUCTION:-

What are consumables?

A medical consumable is a medical product, or product used for a therapeutic purpose that:

- is not a pharmaceutical
- is not re-usable
- a client is assessed as needing
- is required as a result of a client's covered personal injury, to assist in restoring the client's health, independence, and participation to the maximum extent practicable
- is cost effective, and
- has evidence to justify its use.¹

Various types of medical consumables used in wards are:-

- Gloves: Non-sterile, surgical, sterile plastic
- Syringes
- Needles
- Facemask
- Chlorhexidine hand rub's
- Diapers
- Towel disposable
- Under pads etc.

Billing plays an important role for both hospital and patients. It generates revenue for the hospital. From patient's perspective, it is important as it leads to patient satisfaction, firm belief in the organization & loyalty towards it. Gross billing mistakes can breach trust in a hospital by its customers.

Thus there occurs a symbiotic relationship between the two. Billing errors occur because of mistakes done in manually entering a service or not recording the information correctly. Various types of billing errors are:-

Medical Billing Errors:-

1. **Under billing :** This occurs when a medical consumable is used but not charged to the patient due to the negligence of the ward staff.
2. **Over billing :** It is a practice of charging more than is legally or ethically acceptable on an Invoice or bill.
3. **Duplicate billing:** To ensure that they have not been charged twice for the same service or medical consumables.²

2.0 REVIEW OF LITERATURE:-

1. The object of the study is the management of medical-hospital supplies. This is an area that requires the nurse to have specific knowledge and which has currently sparked discussions among experts on the subject. To characterize the production of knowledge on the management of medical-hospital material conducted by nurses. A retrospective, descriptive method that followed the steps of an integrative review. Results found that out of 104 studies, of which ten were selected, the analysis of the study showed that the management of material is very important in the context of control of costs and materials, as a working tool, and from the perspective of the nurse in material management. It is necessary to incorporate the practice of systematic material management in the working process of nurses, Conclusion came that the greater interest of nurses in this area are essential.³
2. Managing cost has been an important concern in the health care industry. The paper displays a foundation for the better understanding of the actual inventory management within the health care supply chain. Actual Inventory Management consist advanced inventory control practices lead by actual usage data. To determine the usage of Actual Inventory Management, a case study was performed on pharmaceutical products in a large healthcare system including 26 hospitals in the mid-west. The case study used the (r, Q) inventory policy to represent the current inventory system and to design a more cost-effective inventory control system at each hospital unit. A multi hospital unit inventory control system was also proposed and the cost benefits were measured. The results indicate that there is great potential for significant cost savings within the healthcare provider network of the 26 hospitals. It is likely that if other healthcare providers adopt such practices that they will be able to better control material supply costs.⁴
3. This is a case study of a hospital nursing unit that has assessed and approved a 2bin “e-kanban” replenishment system based on passive HF RFID technology. The case study is based on both qualitative and quantitative data that was collected using (i) semi-structured interviews, on-site observations and experience from previous implementations. The results indicate that implementing the e-kanban RFID solution simultaneous with the redesign of the ward floors and of the roles & functions of staff can substantially improve operational performance and revenue generation. The most important benefits for the hospital is derived from the time saved from non value-added activities that can be transferred to patient care activities and the significant reduction of on-hand inventory at distributed storage locations. The solution is considered as an alternative that requires less initial investment than RFID enabled cabinets used in the replenishment of high value supplies in wards and cardiac catheterization laboratories. The data analysis present in the paper is validated by key respondents thereby increasing their reliability.⁵

3.0 AIM:-

To study the accountability of consumables used in wards & ICUs

4.0 OBJECTIVES:-

1. To map the process of billing of consumables in wards & ICUs and to identify any deviations in the process.
2. To study the proportion of consumables used wards specialty wise in the hospital.
3. Recommend strategies- methods or ways to streamline the process.

5.0 RATIONALE OF THE STUDY:-

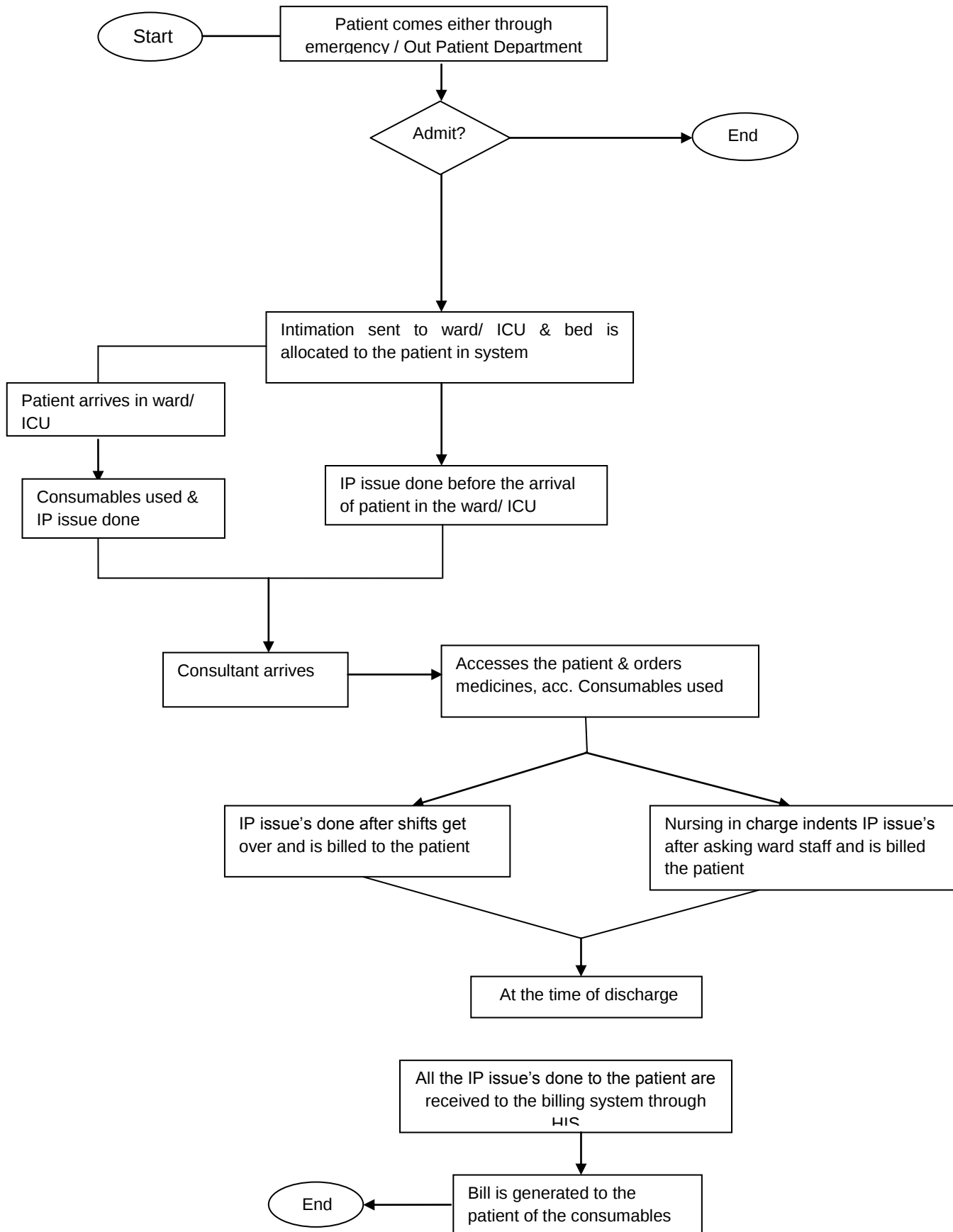
Medical consumables play a very important role in the bill of the patient. If the consumables are undercharged it can lead to a revenue loss for the hospital. If the consumables are overcharged it can lead to patient dissatisfaction and can even hamper the loyalty of the patient to the hospital.

The study is being conducted to see whether there is rational use of medical consumables on the patients. That whether the patients are charged for what has actually being used on them for their treatment and are not over charged. If not then one should stream line the process so that the patients are charged or billed correctly for what has been used on them during their treatment.

6.0 RESEARCH METHODOLOGY:-

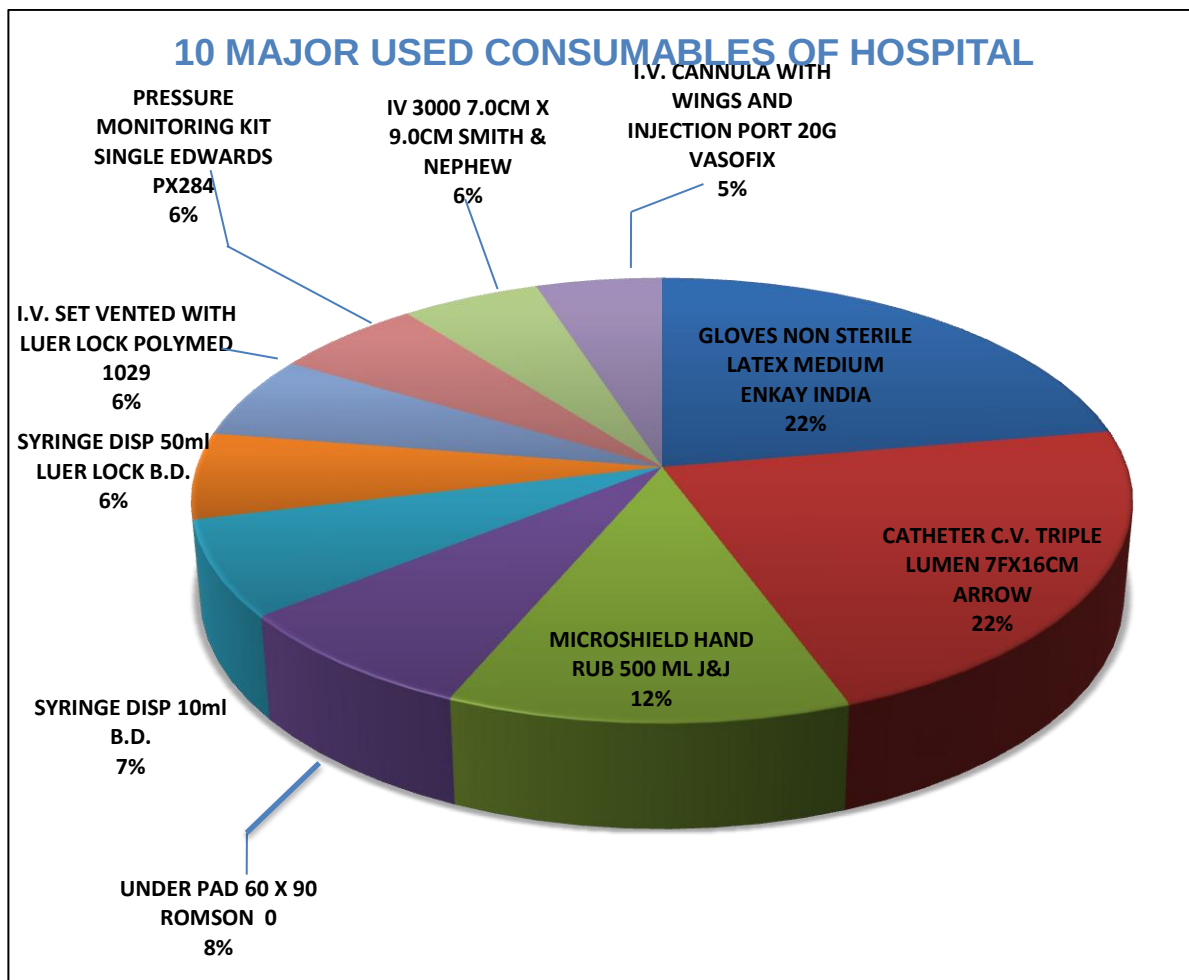
- **Study design:**
Study design was descriptive in nature. It involved prospective data collection of consumables used on patients admitted in wards & ICUs.
- **Study area:**
Nursing station's (ns1, ns2), multibeds (cardiac & 1st floor multibed) and ICUs (SICU, MICU, CCU)
- **Sample size:**
A sample size of 384 was derived from $n = z^2pq/d^2$, but due to time and resource constraints the sample size of the present study will be 132.
- **Data Collection:**
 - Primary-** Direct Observation, IP issues through HIS
 - Secondary** – Retrospective data of past 4 months was taken to identify the most used consumables of the hospital (wards & ICUs) and the proportion of consumables used specialty wise.
- **Sampling method:**
Non-probability, convenient sampling
- **Study location:**
N M Virani Wockhardt Hospital, Rajkot
- **Study duration:**
3 months (February-April, 2016)
- **Inclusion Criteria :**
Patients admitted in wards for more than 24 hours.
- **Exclusion Criteria:**
All day care i.e. chemotherapy, dialysis, emergency, Cathlab patients and OPD patients.
- **Statistical Treatment:**
Data collected was analyzed using Microsoft excel. Collected data was then edited, coded, tabulated and organized into various frequency distributions.

7.0 PROCESS FLOW:



8.0 DATA ANALYSIS:

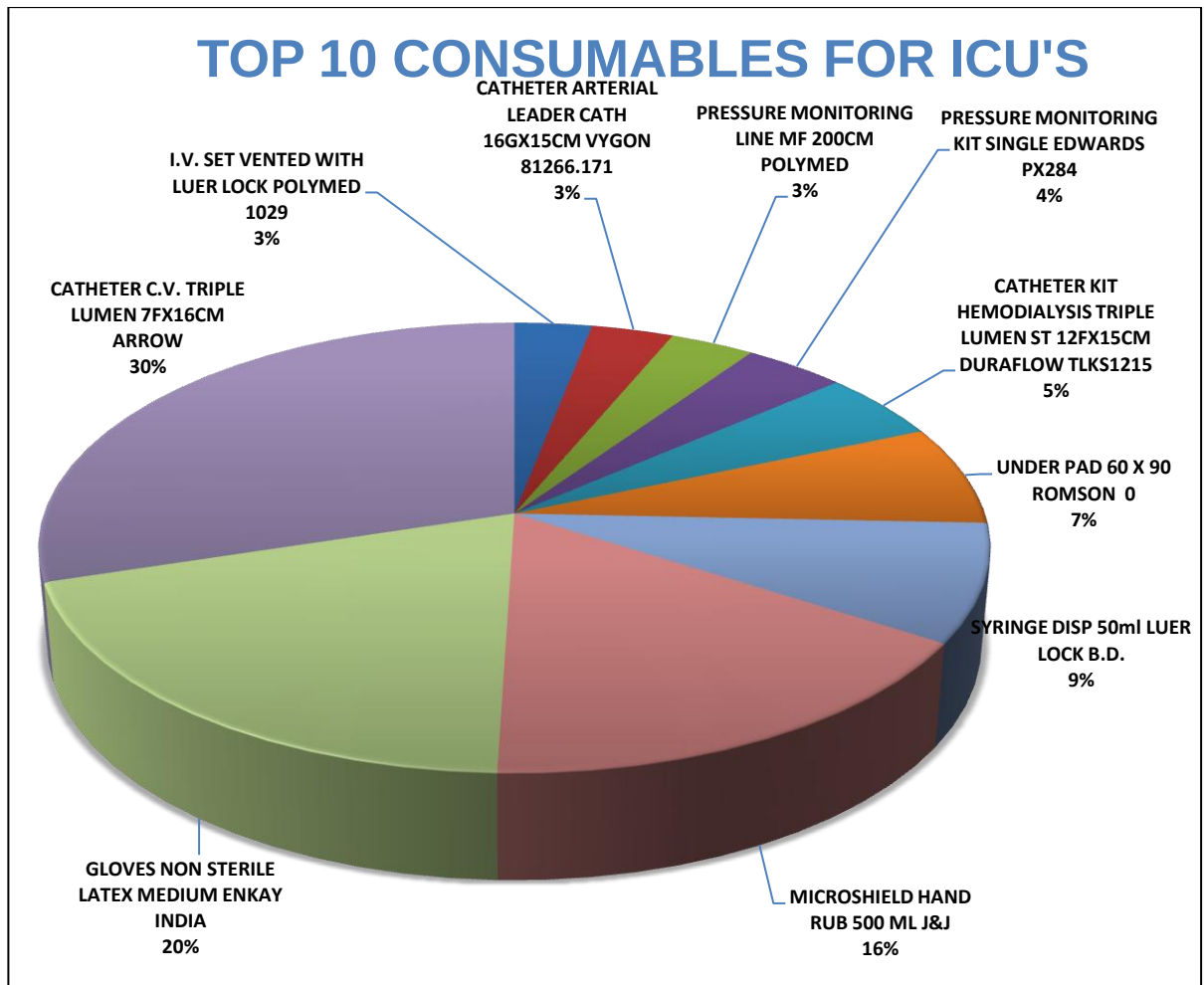
Figure 8.1. Majorly used consumables of hospital



Inference:-

- ✓ If we look at the pie chart, it comes out that the Gloves non-sterile latex medium enkay India and Catheter c v triple lumen 7F*16CM arrow is consumed majorly i.e. 22%, out of the total medical consumables used on patients.
- ✓ Approx 12% of Microsheild hand rub 500ml J&J is consumed out of the total items.
- ✓ Followed by under pad 60*90 Romson 0 i.e. 8% and syringe disposable 10ml B.D. 7%.

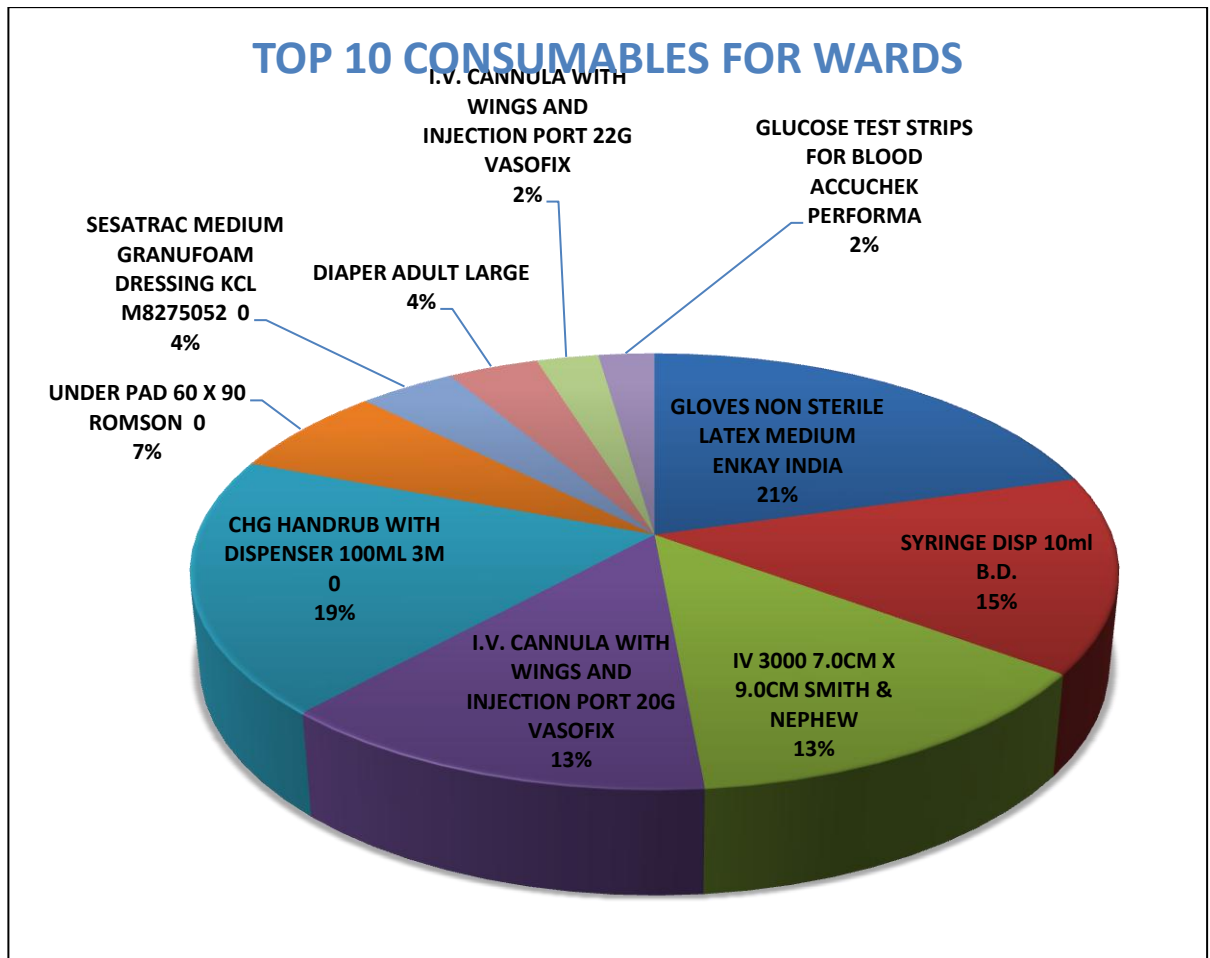
Figure 8.2. Majorly used consumables for ICUs



Inference:-

- ✓ For the ICUs, if we look at the pie chart, it comes out that the Catheter c v triple lumen 7F*16CM arrow is consumed majorly i.e. 30% and Gloves non-sterile latex medium enkay India is consumed 20%, out of the total medical consumables used on patients.
- ✓ Approx 16% of Microsheild hand rub 500ml J&J is consumed out of the total items.
- ✓ Followed by syringe disposable 50ml Luer lock B.D. 9% and under pad 60*90 Romson 7%.

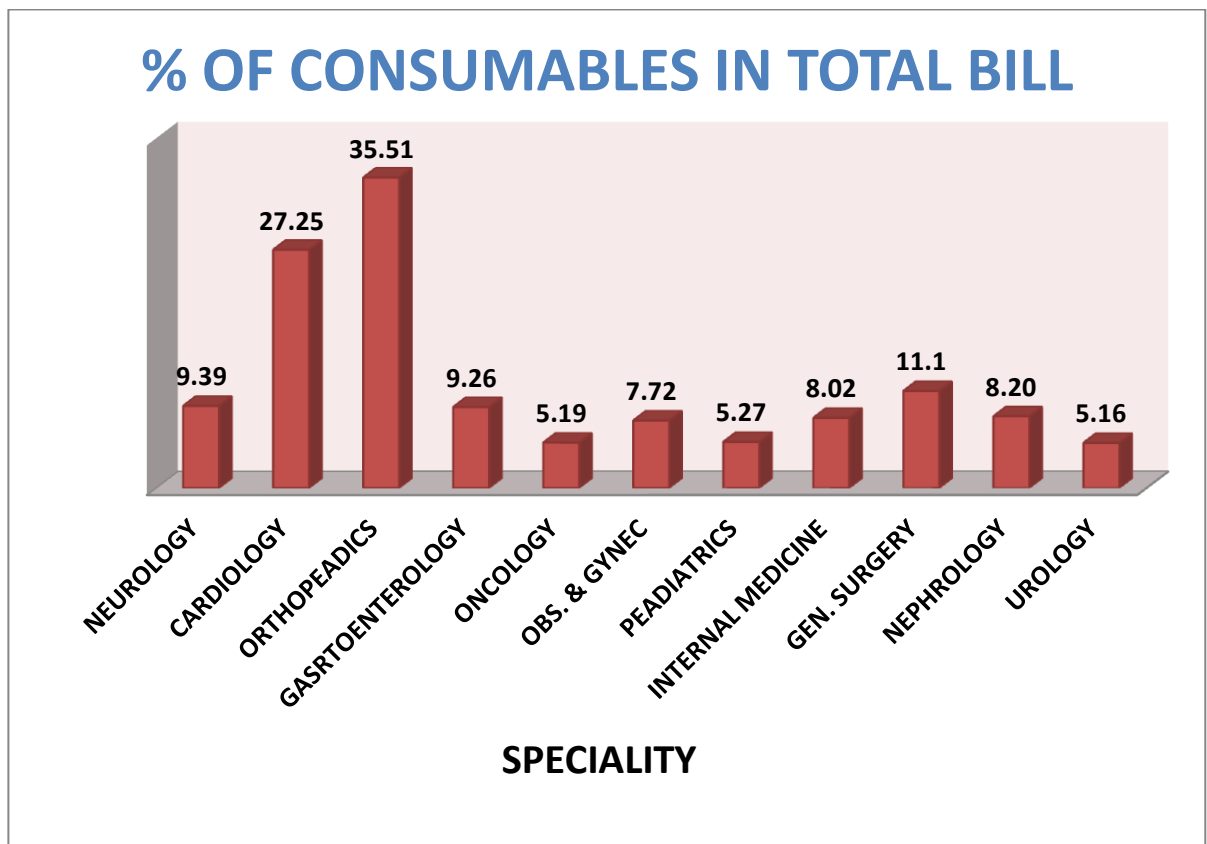
Figure 8.3. Majorly used consumables for wards



Inference:-

- ✓ For the wards, if we look at the pie chart, it comes out that the Gloves non-sterile latex medium enkay India is consumed 21%, out of the total medical consumables used on patients.
- ✓ Approx 15% of syringe disposable 10ml B.D. is consumed out of the total items.
- ✓ Followed by IV Cannula with wings and injection port 20G Vasofix and IV 3000 7.0* 9.0cm smith & nephew 13%.

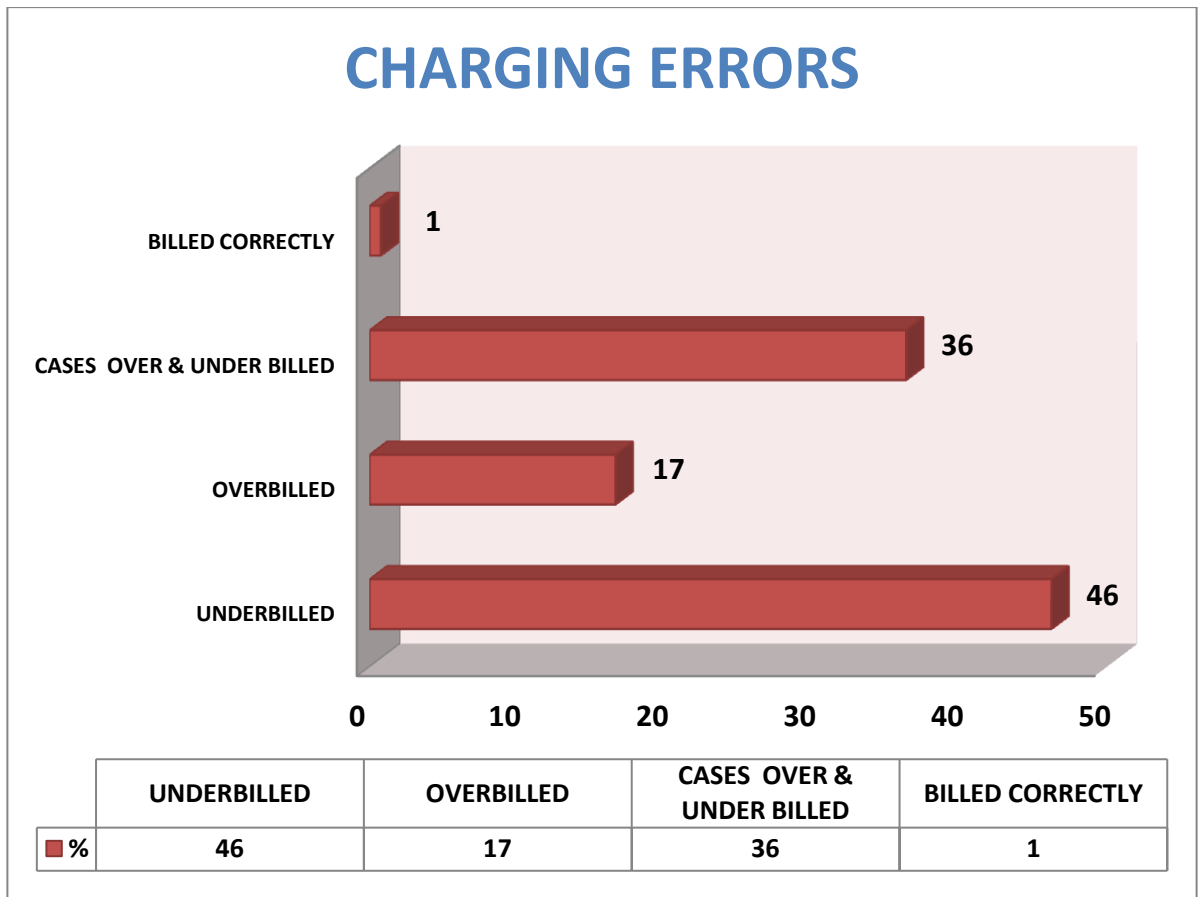
Figure 8.4. Proportion of consumables in total bill



Inference:-

- ✓ Out of the total 11 specialties observed, it was found that the Orthopedics 35.51% has a major proportion in the usage of medical consumables.
- ✓ Followed by Cardiology i.e. 27.25% and General Surgery i.e. 11.1%.
- ✓ Others included Gastroenterology, Oncology, Obstetrics & gynecology etc.

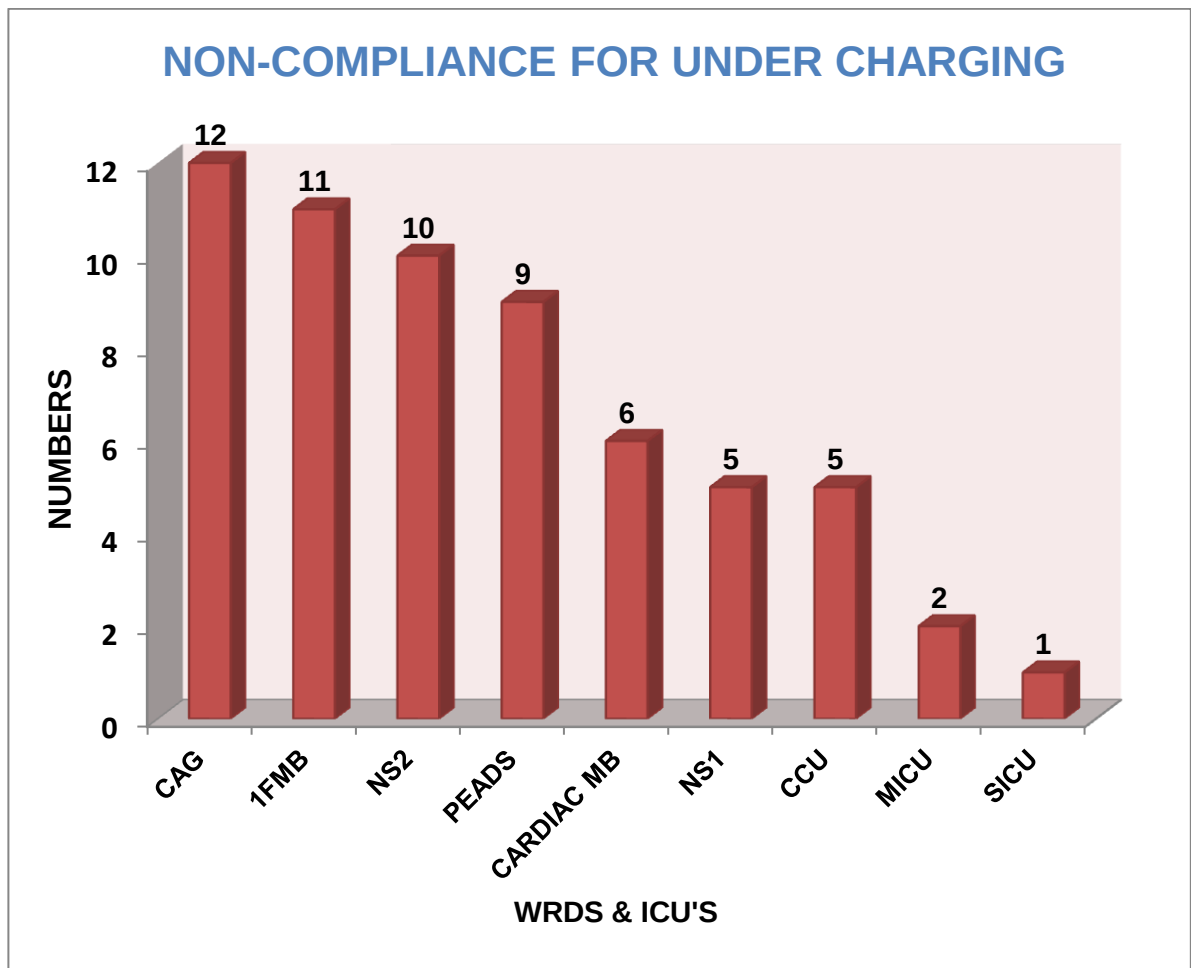
Figure 8.5. Various types of charging errors occurred



Inference:-

- ✓ Out of the total 132 cases, it was found that the 46% of the cases were uncharged whereas 36% of the cases were both over & under charged.
- ✓ 17% of the cases were overcharged
- ✓ Out of the total observed cases only 1 case was found to be correctly charged.

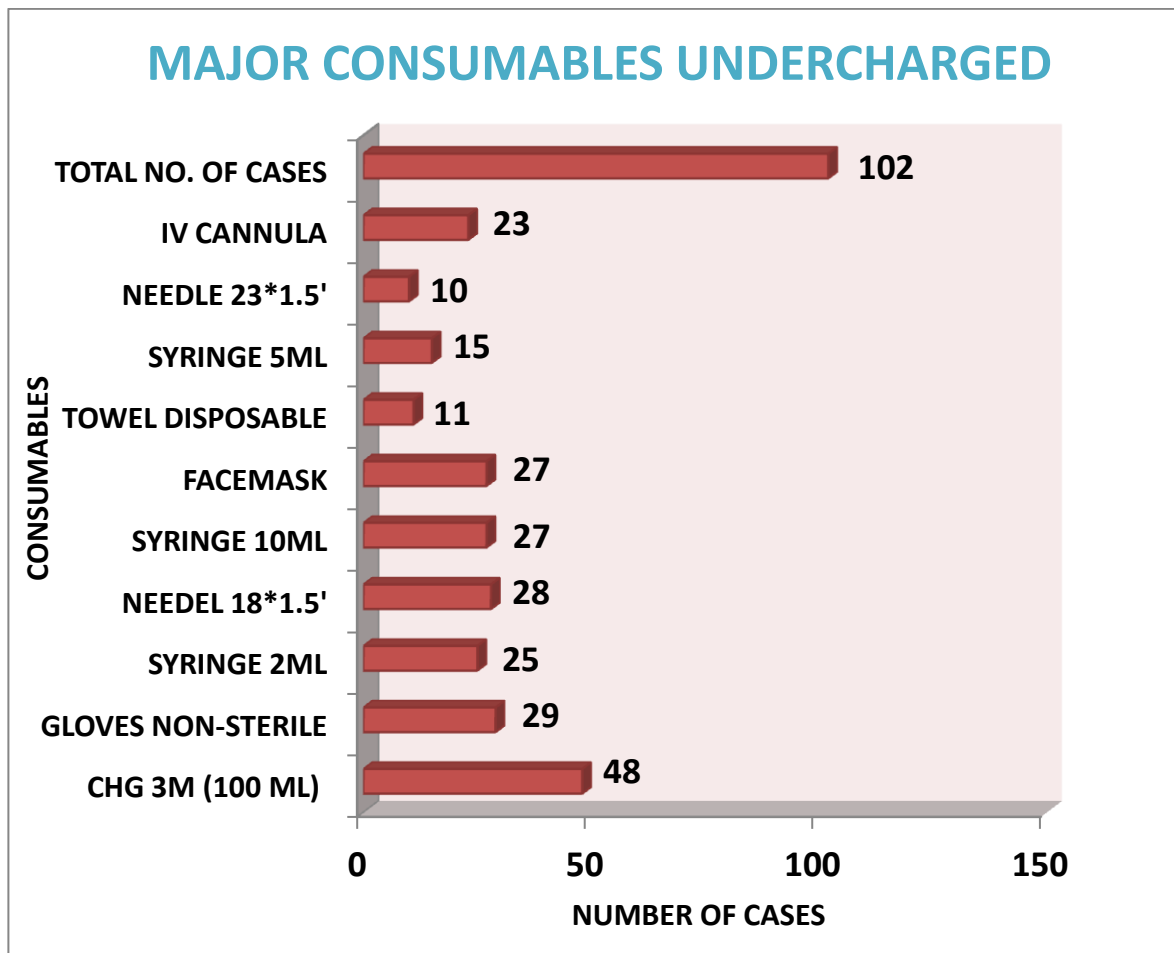
Figure 8.6. Wards & ICUs where maximum undercharging occurred



Inference:-

- ✓ Out of the total 61 cases where undercharging occurred, maximum non-compliance was seen in Cardiac & Gynecology with 12 of cases being undercharged.
- ✓ Followed by 1st floor multibed with 11 cases and nursing station 2 with 10 cases.

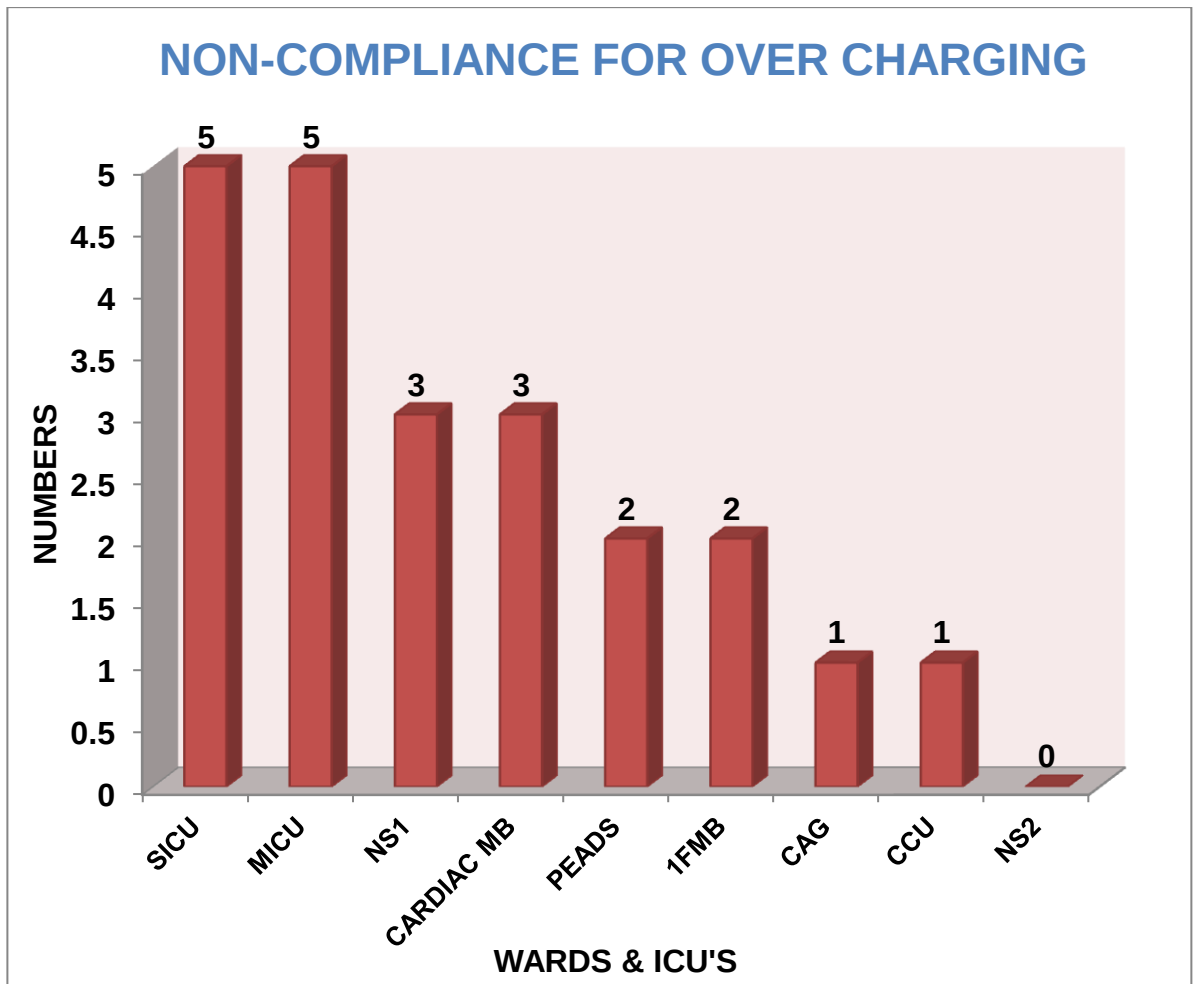
Figure 8.7. Major consumables those were undercharged



Inference:-

- ✓ out of the total 102 cases where undercharging occurred, major items that were being undercharged are:- IV Cannula, needle 23*1.5, syringe 5ml, towel disposable, facemask, syringe 10ml etc.
- ✓ 43 cases were there in which microshield hand rub 100ml was undercharged, out of the total 102 observed cases.
- ✓ Followed by gloves non-sterile which were undercharged in 29 cases, 28 cases were there in which needle 18*1.5 was undercharged.

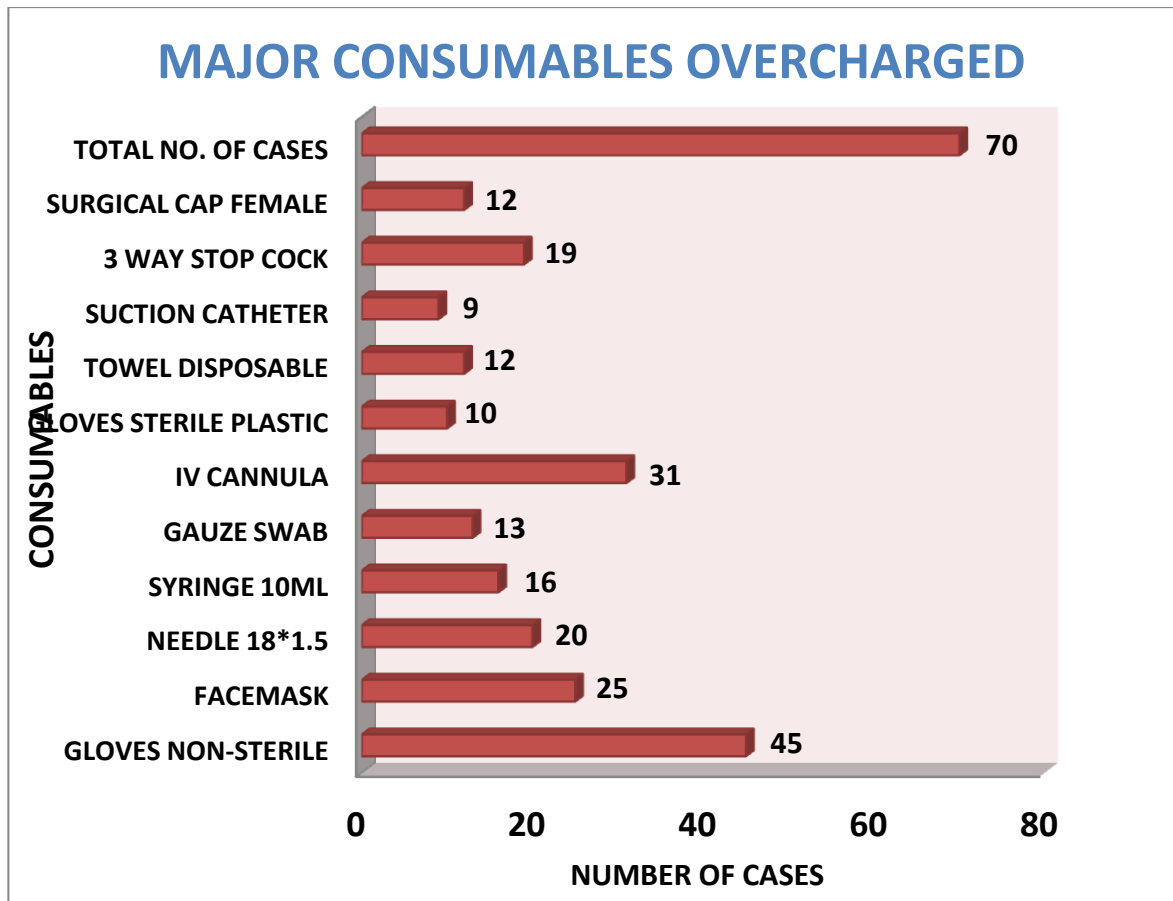
Figure 8.8: Wards & ICUs where maximum overcharging occurred



Inference:-

- ✓ Out of the total 22 cases where overcharging occurred, maximum non-compliance was seen in SICU & MICU with 5 in each of cases being undercharged.
- ✓ Followed by nursing station 1 & cardiac multibed with 3 cases each.

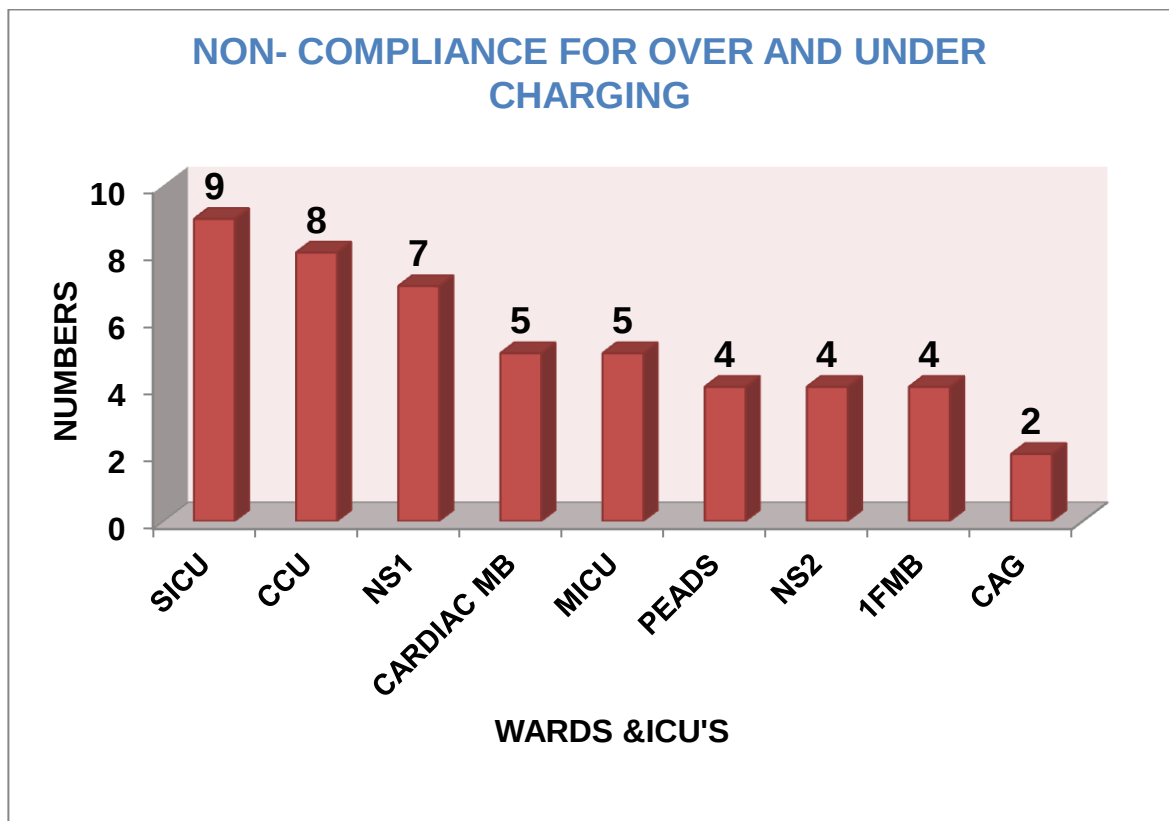
Figure 8.9. Major consumables those were overcharged



Inference:-

- ✓ Out of the total 70 cases where overcharging occurred, major items that were being overcharged are: - gloves non-sterile latex, facemask, needle 18*1.5, syringe 10ml, gauze swab.
- ✓ 45 cases were there in which gloves non-sterile latex was overcharged, out of the total 102 observed cases.
- ✓ Followed by gloves non-sterile which were undercharged in 29 cases, 28 cases were there in which needle 18*1.5 was undercharged.

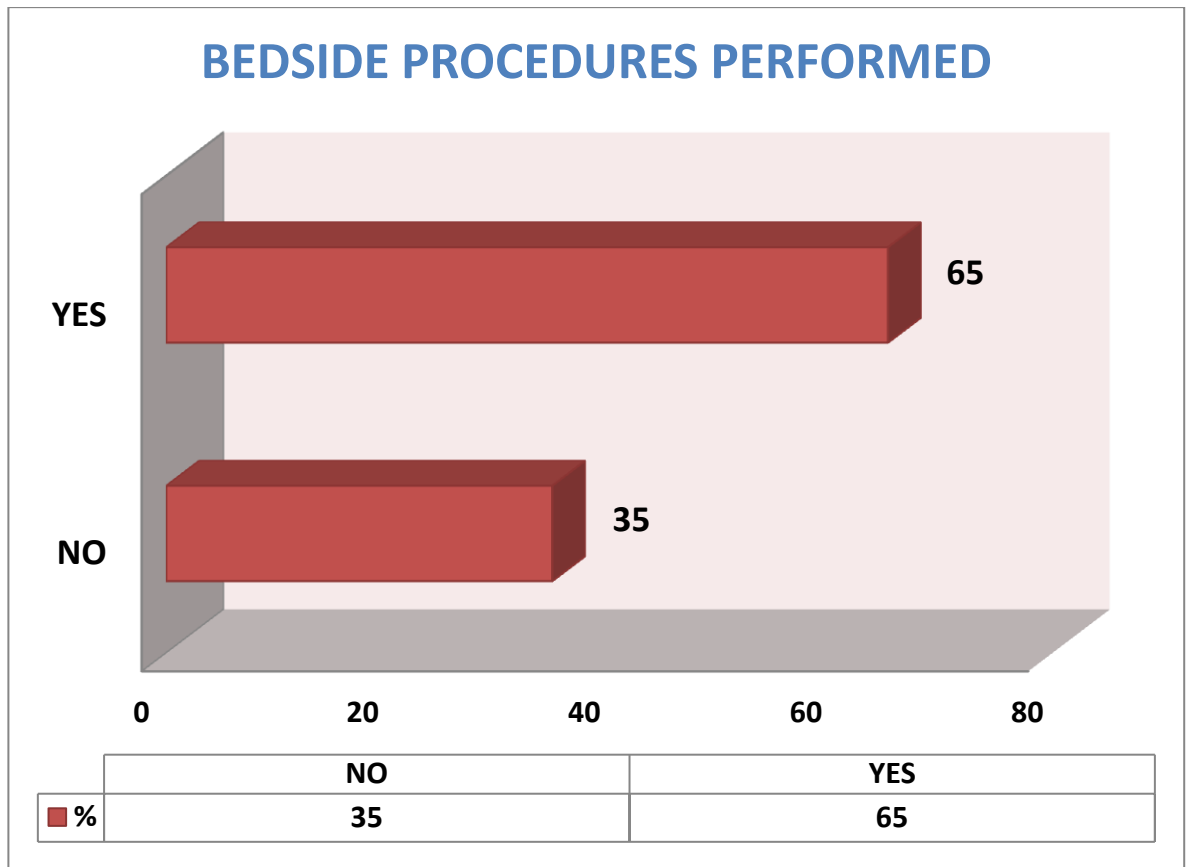
Figure 8.10. Wards & ICUs where both maximum over & under charging occurred



Inference:-

- ✓ Out of the total 48 cases where over & under charging occurred, maximum non-compliance was seen in SICU with 9 cases & CCU with 8 cases being over & under charged.
- ✓ Followed by nursing station 1 & cardiac multibed with 5 cases each.

Figure 8.11. No. of Bedside Procedures performed

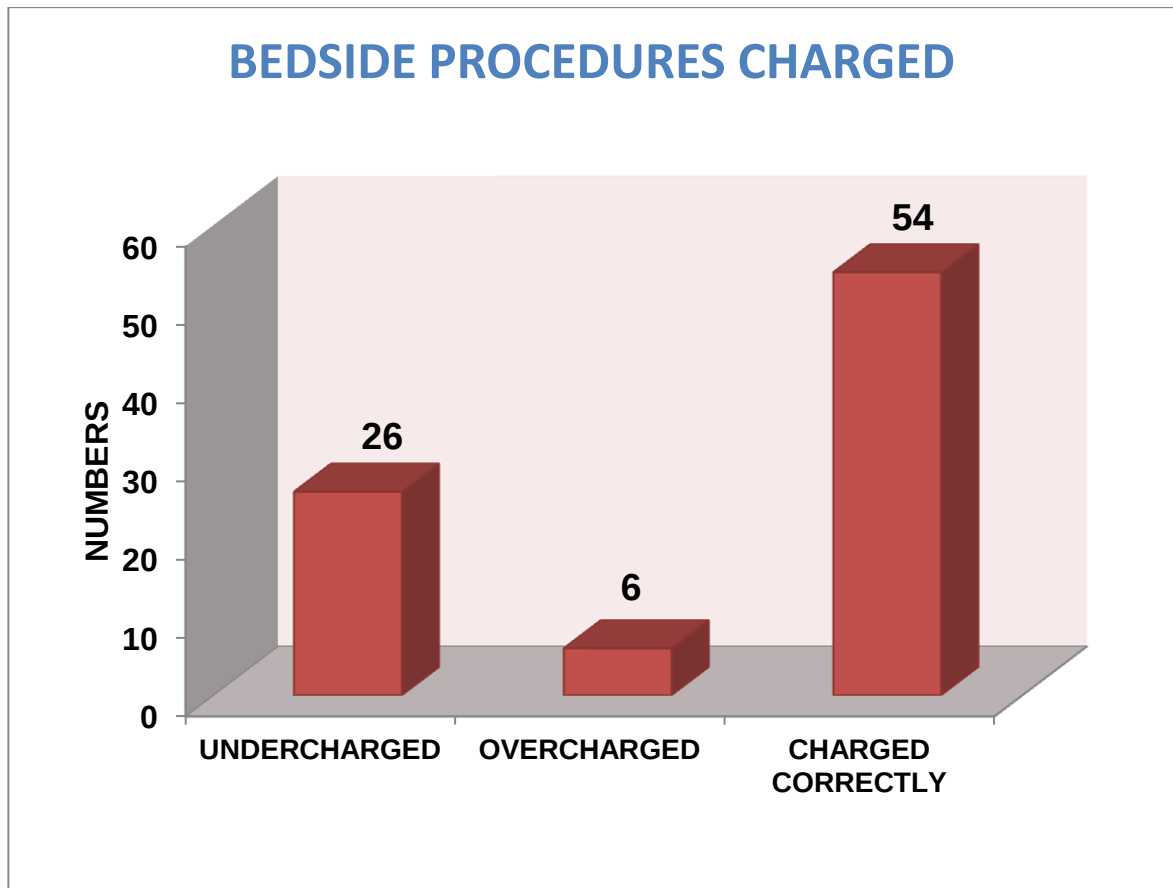


Inference:-

- ✓ Out of the 132 cases observed, it was found that 65% of the cases were performed with bedside procedures.

Bedside procedures included: - Random Blood Sugar (RBS), Electrocardiogram (ECG)*

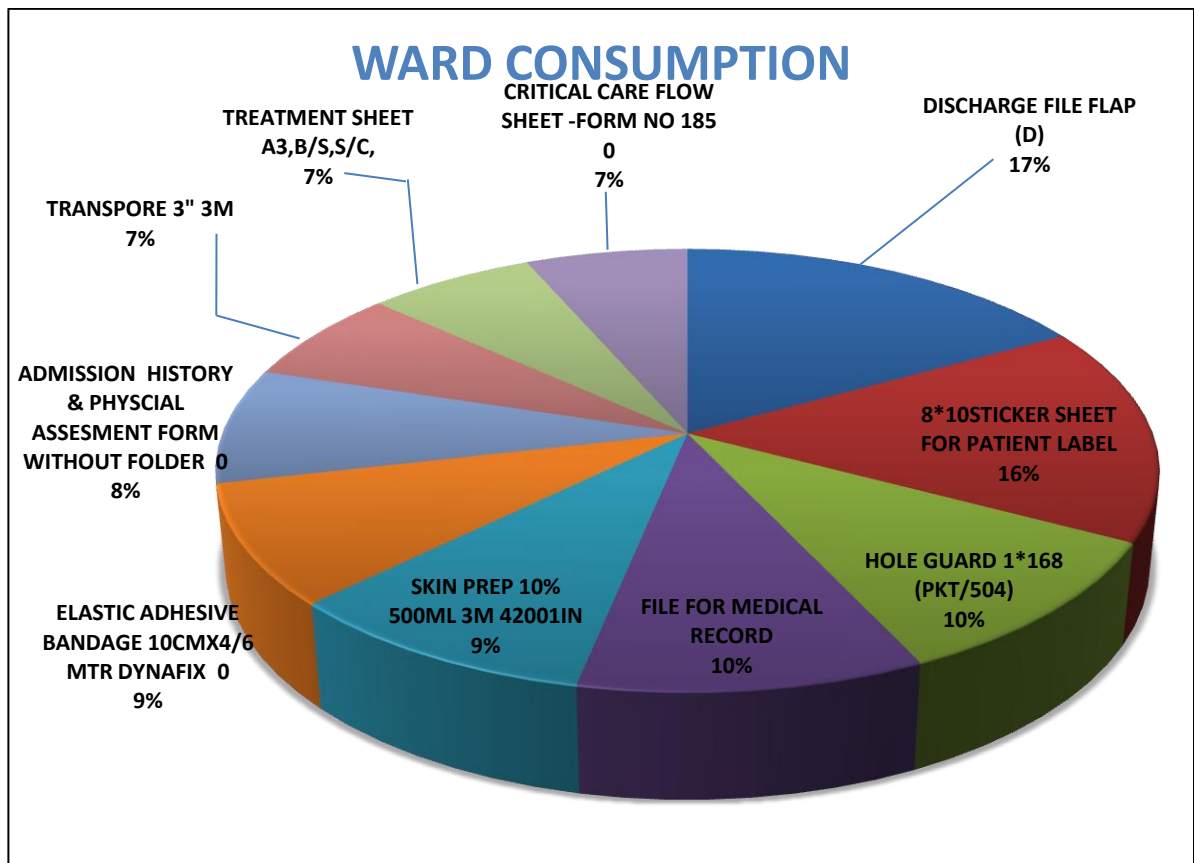
Figure 8.12. No. of bedside procedures charged



Inference:-

- ✓ Out of the total 86 cases performed, it was found that 54 cases were charged correctly, 26 cases were undercharged.
- ✓ 6 cases were found to be overcharged out of the total observed cases.

Figure 8.13. Ward & ICUs consumption consumables



Inference:-

- ✓ Ward consumption are the items that are used for the patient care but are not charged by the patient i.e. services not charged to the patient
- ✓ Major medical items that were found to be not charged by the patient are elastic adhesive bandage 9% and skin prep 10% 500ml (3%).
- ✓ Major non-medical items that were found to be not charged by the patient are the documents that are used for routine patient care.

9.0 FINDINGS:-

- From the study it was found that there was no proper process for the issuing of the consumables to the patients.
- In some cases it was found that the consumables are used but not charged to the patient, where as in some cases it was found that the patients are being overcharged by the negligence of the nurses.
- The study gives us the majorly used consumables of the hospital both for the wards & the ICUs i.e. gloves non-sterile latex medium and catheter c v triple lumen approx 22%, followed by microsheid hand rub 500ml 12% and others.
- Out of all the specialties observed for wards & ICUs, orthopedics consumes approximately 35.35%, followed by cardiology (27.25%) and others.
- **For billing errors :** 46% of cases were found to be under charged, out of the total 132 observed cases, of these 46% of the cases about 74% were cash payments & 26% were third party payments.
- From the study it was found that these 46% cases which under charged were from wards, with major non-compliance from cardiac and gynecology (20%), followed by 1st floor multibed (18%) and others.
- **Bedside errors:** bedside errors accounted for 26 cases of total 65% of bedside procedures performed.
- Revenue loss incurred for the 46% of cases which were undercharged which was found to be 36,775.62 (**Revenue loss incurred sheet ,annexure1**)

10.0 SUGGESTIONS:-

- A central IP consumable store for all the consumables of the hospital can help in stream lining the process where the consumables will be directly indented into the patients account instead of issuing it to the patient.
- A consumables track sheet can be introduced ward wise which can keep an account of the quantity of consumables used on patient, (**consumables track sheet, annexure 2**).
- Standard documentation charges can be applied for all the non-medical items, documents e.g. 8*10 sticker sheet for patient label, treatment sheet etc. used on patients, that is not charged currently.
- Certain medical consumables i.e. elastic adhesive bandage and skin prep which are used for routine patient care and are not charged by the patient can be charged to the patient according to the usage of the consumable.

11.0 ETHICAL CONSIDERATIONS:-

- Confidentiality of the patients who were selected for the study was maintained during the entire study. Any kind of information about the cases observed was not disclosed during the entire study duration.

12.0 LIMITATIONS OF THE STUDY:-

- This is a study with convenience sampling; hence it will be difficult to generalize the percentages on entire IP patients which were admitted in the wards & ICUs.
- The study was done between 9:30 am – 8pm everyday for 3 months; but consumables are used 24 hours, so the consumables used in night by the ward staff was excluded from the study.

13.0 REFERENCES:-

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13.0 ANNEXURES :-

ANNEX- A: REVENUE LOSS INCURRED SHEET

S.NO.	CONSUMABLES	QUANTITY	UNIT PRICE (MRP)	TOTAL (rs)
1	3WAY STOP COCK	14	165	2310
2	CATHETER CV TRIPLE LUMEN	2	2450	4900
3	CHG 3M (100 ML)	4800	0.96	4608
4	DIAPER ADULT	1	106	106
5	DIAPER BABY	11	12.48	137.28
6	FACEMASK	46	7	322
7	FOLEY'S CATHETER	11	108	1188
8	GAUZE SWAB 10cm*10cm**10cm (PCKT)	7	2.28	15.96
9	GLOVES NON-STERILE	106	8	848
10	GLOVES STERILE PLASTIC	8	10	80
11	GLOVES SURGICAL 6.5	1	49	49
12	GLOVES SURGICAL 7.5	4	49	196
13	HME FILTER	1	362	362
14	IV 3000 7*9	19	70	1330
15	IV CANNULA	25	150	3750
16	IV SET	19	141	2679
17	NEEDEL 18*1.5'	99	2.1	207.9
18	NEEDLE 23*1.5'	27	2.10	56.7
19	NEEDLE 24 *1.0'	16	2.10	33.6
20	PRESSURE MONITORING LINE	6	180	1080
21	RYLE'S TUBE	2	45	90
22	SKIN BLADE GALLANT	18	45	810
23	SUCTION CATHETER	1	45	45
24	SURGICAL BLADE 11	2	4	8
25	SURGICAL BLADE 15	2	3.5	7
26	SURGICAL CAP	21	7.60	159.6
27	SYRINGE 10 ML WITH 21*1.0'	16	27.50	440
28	SYRINGE 10ML	94	16	1504
29	SYRINGE 20ML	10	22.50	225
30	SYRINGE 2ML	103	7	721
31	SYRINGE 2ML WITH 24*1.0'	1	8.50	8.5
32	SYRINGE 50ML DISPOVAN	2	27	54
33	SYRINGE 5ML	37	9.50	351.5
34	SYRINGE 5ML WITH 24*1.0'	2	9.04	18.08
35	SYRINGE DISP. 3ML WITH LUER LOCK	4	15	60
36	SYRINGE DISP. 50ML WITH	5	65	325

	LUER LOCK			
37	SYRINGE DISP. 5ML WITH LUER LOCK	3	16.50	49.5
38	SYRINGE DISP. 5ML WITH LUER LOCK	1	16.50	16.5
39	SYRINGE INSULIN 1CC	5	6	30
40	TISSUE PAPER (PCKT)	7	75	525
41	TOWEL DISPOSABLE	39	21.50	838.5
42	UNDERPAD	24	108	2592
43	URINE BAG	8	171	1368
44	UROMETER POLYMED%	7	260	1820
45	VASOFIX	3	150	450
	FOR 102 CASES			36775.62

ANNEX-B CONSUMABLES TRACK SHEET

CONSUMABLES TRACK SHEET											
PATIENT NAME:											
IPID:											
BED No.:											
S.NO	ITEMS		DATE:			DATE:			DATE:		
			MORNING	EVENING	NIGHT	MORNING	EVENING	NIGHT	MORNING	EVENING	NIGHT
1	GLOVES	1. STERILE									
		2. NON STERILE									
		3. STERILE PLASTIC									
2	SYRINGES	1. 2ML									
		5ML									
		10ML									
		20ML									
		50ML									
		INSULIN 1CC									
3	NEEDLES	18*1.5'									
		22*1.0'									
		23*1.5'									
		24*1.5'									
4	IV SET										
5	IV CANNULA										
6	IV 3000 7*9										
7	3 WAY STOP COCK										
8	HANDRUB										
9	FACE MASK										
10	UNDERPAD										
11	DIAPER										
12	DISPOSABLE GOWN										
13	TOWEL DISPOSABLE										
14	GLUCOSE TEST STRIP										
15	BLOOD LANCET										
16	SKIN BLADE GALLANT										
17	GAUZE SWAB										
		SIGN									