

Gap Analysis and Implementation of Best Practices in Intensive Care Unit

By

Sonali Gupta

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

Academic year, 2015-2017



The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport
Jaipur 302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: www.iihmr.edu.in

Gap Analysis and Implementation of Best Practices in Intensive Care Unit

By

Sonali Gupta

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

Academic year, 2015-2017

Asia Heart Institute, Mumbai



The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport
Jaipur 302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: www.iihmr.edu.in

TO WHOMSOEVER MAY CONCERN

This is to certify that **Dr. Sonali Gupta** student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training at **Asian Heart Institute, Mumbai** from 15th February 2017 to 15th May 2017.

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

The Internship is in fulfilment of the course requirements.

I wish her all success in all her future endeavours.



(Col.) Dr. Ashok Kaushik

Dean, Academics and Student Affairs

The IIHMR University, Jaipur



Dr. D.K. Mangal

Dean Research

The IIHMR University, Jaipur

CERTIFICATE

The certificate is awarded to

Dr. Sonali Gupta

Enrollment No. IIHMR-U/01/2015-17/0353

In recognition of having successfully completed her
Internship in the department of

Medical Administration

and has successfully completed her Project on

Gap Analysis and Implementation of Best Practices in ICU

from **15 February 2017 to 15 May 2017** at

Asian Heart Institute, Mumbai

She comes across as a committed, sincere & diligent person who has a strong drive and
zeal for learning

We wish her all the best for future endeavors.


HOD, Human Resource
Mr. Dhiraj Advani

THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **Gap Analysis and Implementation of Best Practices in ICU** and submitted by Dr. Sonali Gupta Enrollment No. IIHMR-U/01/2015-17/0353 under the supervision of Dr. D.K. Mangal (Dean Research), for award of MBA in Hospital and Health Management of the University carried out during the period from 15 February 2017 to 15 May 2017 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

CERTIFICATE BY SCHOLAR

This is to certify that all ethical issues have been considered while collecting data for my dissertation titled **“Gap Analysis and Implementation of Best Practices in ICU”** at Asian Heart Institute, Mumbai.

A handwritten signature in blue ink, appearing to read 'Sonali', with a stylized flourish underneath.

Signature of student

ABSTRACT

Background: Gap analysis is the initial step in the review of the available service delivery system. It is an efficient base to implement a modern management system. It can be measured against pre set standards (Standard Operating Procedures). It reveals the areas of improvement in the existing service system. It focuses on the components of the management services and how effective they are. Care of the critically ill patients is resource-intensive, and 15-20% of hospital budgets are spent in the ICUs. The focus on quality and safety of medical care is increasing because of the high cost of health care and potential for harm. Poor quality care is not only costly but also causes human suffering because poor quality care results in increase in morbidity and mortality. Quality Improvement (QI) initiatives in the ICU to decrease nosocomial infections have been shown to improve outcomes as well as decrease costs. The study will help to identify the gaps between the SOP's and the current existing practices and to increase the overall efficiency and quality of care in ICU by bridging gaps of operational and clinical process in ICU.

Objectives:

1. To review the standard operating procedures in ICU of AHI in terms of inventories, laundry and linen, training and HR, housekeeping and quality control.
2. To design a checklist for checking compliance of ICU with standard operating procedures.
3. To identify gaps between standard operating procedures (SOPs) and current existing practices in ICU.
4. To give corrective actions and implement best practices in ICU to increase its efficiency.

Material and Methods:

Study Design – Descriptive and observational study

Setting –ICU-1 (3rd Floor) & ICU-2 (2nd Floor) of Asian Heart Institute and Research Centre, BKC, Mumbai.

Duration of Study – 2.5 months

Study Population – Doctors, nursing and housekeeping staff of ICU-1 (3rd Floor) & ICU-2 (2nd Floor).

Result:

- Data was calculated for a period of 60 Days where the Observations were categorized into 3 specialized parts as: Infection control, operational and clinical
- Maximum non compliance was seen in operational (56%), followed by clinical (30%) and infection control (14%)

Conclusion: After these observational findings the gaps between ideal (Standard Operating Procedures) and current practices were identified and according to the non compliances observed, best practices around the world were identified for Asian Heart Institute, Mumbai and implementation plans were given for the same.

ACKNOWLEDGEMENT

I owe a great debt to all professionals at **ASIAN HEART INSTITUTE, BKC, MUMBAI** for generously sharing their knowledge and time, which inspired me to do my best in my dissertation period.

My heartfelt gratitude to **Dr. Ramakant Panda** (Vice Chairman and Managing Director) **Asian Heart Institute**, **Mr. Girinath Menon** (C.O.O) **Mr. Aditya Bahadur** for showing their keen interest in the study and for sharing their views in spite of their very busy schedule. It has been a privilege to work under their dynamic supervision at the Hospital.

I am extremely grateful to **Mr. Dhiraj** (Head of HR Department), **Mrs. Arti Agarwal** (Quality Department) for the constant support and encouragement. This study would not have been possible without their support.

My sincere gratitude to **Dr. Ashok Kaushik (Professor Dean, IIHMR, Jaipur)** for his support and guidance. My regards to my guide at institute **Dr. D.K. Mangal (Dean Research)** for his help and valuable suggestions.

I would like to express my heartfelt thanks to my parents for their moral support, which always inspires me to perform best. And finally credit goes to all my colleagues who helped me in this study.

Sincerely

Dr. Sonali Gupta

MBA- HM 20. (2015-2017)

IIHMR, Jaipur

Table of content:

Sr.No.	CONTENT	Page No.
1.	Background of study	8
2.	Problem Statement	10
3.	Research questions	10
4.	Objectives	10
5.	Operational Definition	11
6.	Review of Literature	11
7.	Methodology	13
8.	Results	14
9.	Conclusion	18
10.	Recommendations	19
11.	Ethical Consideration	21
12.	Plan Dissemination	21
13.	References	22
14.	Annexure 1	23
15.	Annexure 2	31

List of Table & Figures

Table 8.1.....	<i>Error! Bookmark not defined.</i>	4
Figure 8.1		14
Table 8.2.....		15
Figure 8.2		15
Table 8.3.....		16
Figure 8.3.....		16
Table 8.4.....		17
Figure 8.4.....		18

A STUDY ON GAP ANALYSIS AND IMPLEMENTATION OF BEST PRACTICES IN INTENSIVE CARE UNIT

1. BACKGROUND OF STUDY

Asian Heart Institute (AHI), is India's No.1 cardiac care hospital, established in year 2002 and located in Bandra, at the Bandra-Kurla Complex (BKC), in Mumbai, Maharashtra, India. In just 14 years, the hospital has treated 300,000 patients, and completed over 37000 angiographies & angioplasties and more than 21000 bypaas surgeries. Over 3,000 of these surgeries were on high risk patients many of whom were considered inoperable elsewhere. AHI has a staggering success rate of 99.83% in bypass surgeries and an overall 99.7% in cardiac surgeries. These success rates are among the highest in the world. It has pioneered the treatment of complex heart surgeries , arterial graft & beating heart surgery in India. ^[1] AHI Cardiac Surgery Team is the one of the best in the world and for this reason, the team at AHI was selected for the Redo Bypass surgery of the then Prime Minister of India, Dr. Manmohan Singh.

Asian Heart Institute is India's highest accredited hospital with accreditations by JCI (Joint Commission International), NIAHO (National Integrated Accreditation for Healthcare Organizations), and ISO (International Organization for Standardization). It is in process of getting NABH as well. Asian heart surgery results were ranked no. 1 in JCI's global survey among its participating hospitals.

Medgate Today has honoured Dr. Ramakanta Panda, the Chief Consultant Cardiovascular Thoracic Surgery and the Vice Chairman and Managing Director of Asian Heart Institute, as the No1 cardiac surgeon and one of the 25 living legends in the Healthcare of India. Asian Heart Institute Intensive care team is headed by Dr Vijay D'Silva, one of the best intensivists in India. He has the distinction of achieving the least complications in ICU patients. The specialities offered are:

- Cardiac Surgery
- Cardiology
- Preventive Cardiology and Rehabilitation
- Physiotherapy
- Laboratory Medicine

- Radiology
- Chest Pain Clinic
- Hypertension Clinic
- Children's Heart Centre.

Gap analysis is the initial step in the review of the available service delivery system. It is an efficient base to implement a modern management system. It can be measured against pre set Standard Operating Procedures. It reveals the areas of improvement in the existing service delivery system. It focuses on the components of the management services and how effective they are.

Care of the critically ill patients is resource-intensive, and 15-20% of hospital budgets are spent in the ICUs. The focus on quality and safety of medical care is increasing because of the high cost of health care and potential for harm.^[2-5] Poor quality care is costly and causes human suffering because poor quality care results in increase in morbidity and mortality. Quality Improvement (QI) initiatives in the ICU to decrease nosocomial infections have been shown to improve outcomes as well as decrease costs.^[6-7] Clemmer reported in his study that improvement in quality of patient care in the ICUs at a tertiary care center resulted in an estimated savings of \$2.6 million per year.^[8]

Intensive Care Units (ICUs) consume maximum proportion of hospital resources and they are focused places in the hospital with well-defined boundaries. Medical resources such as drugs, supplies and equipment constitute a high proportion of costs in intensive care unit. The management of these resources is an important factor in increasing efficiency of ICU.^[9]

Nurses are the main users of supplies and equipment applied in the Intensive Care Units (ICUs) which are high-priced and costly. Therefore, understanding ICU nurses' experiences about resource management contributes to the better control of the inventory in ICU. To manage the resources effectively, improvement of supply chain management in hospital seems essential. It is also necessary to hold training sessions in order to enhance the nurses' awareness on effective supply chain and storage of the items in the unit stock.^[10]

Quality improvement (QI) is the sum of all activities that create desired changes in the quality. An effective QI system results in a stepwise increase in quality of care. The efficiency of any health-care unit is judged by its quality indicators. So checking the compliance of quality control measures as laid down in protocol becomes important in a Intensive Care Unit (ICU). Thus, any gaps in quality control process and indicators needs to be continuously monitored. ^[11]

The study will help to identify the gaps between the SOP's and the current existing practices and to increase the overall efficiency and quality of care in ICU by bridging gaps of operational and clinical process in ICU.

2. PROBLEM STATEMENT

The ICU of AHI has inefficiency in terms of processes like inventory management, laundry and linen, housekeeping, infection control practices, patient care and quality control measures.

3. RESEARCH QUESTIONS:

- i. What are the standard operating procedures (SOPs) in ICU of AHI?
- ii. What is the compliance of ICU with standard operating procedures (SOPs)?
- iii. What are the gaps between SOPs and current existing practices in ICU?
- iv. What can be the corrective actions and best practices to increase the efficiency of ICU?

4. OBJECTIVES:

- i. To review the standard operating procedures in ICU of AHI in terms of inventories, laundry and linen, training and HR, housekeeping and quality control.
- ii. To design a checklist for checking compliance of ICU with standard operating procedures.
- iii. To identify gaps between standard operating procedures (SOPs) and current existing practices in ICU.
- iv. To give corrective actions and implement best practices in ICU to increase its efficiency.

5. OPERATIONAL DEFINITION :

According to management literature, gap analysis involves the comparison of actual performance with potential or desired performance. If an organization does not make the best use of current resources and practices, or forgoes investment in capital or technology, it may produce or perform below its potential. The elements focused will be:

- Infection control in ICU
- Inventory Management
- Quality Control
- Laundry and linen management
- Housekeeping practices
- Quality control measures
- Patient care (clinical)

6. REVIEW OF LITERATURE

Intensive care unit quality improvement: a "how-to" guide for the interdisciplinary team.

Curtis JR, Cook DJ, Wall RJ, Angus DC, Bion J, Kacmarek R, et al.

Quality improvement is a standout amongst the most essential movement though individuals from the interdisciplinary basic couldn't care less. In spite of the fact that an expanding number of assets are accessible to guide clinicians, quality change exercises can overpower on occasions. Subsequently, the Society of Critical Care Medicine charged this Outcomes Task Force with making a "how-to" guide that spotlights on basic care, abridges scratch ideas, and diagrams a viable way to deal with the advancement, usage, assessment, and upkeep of value change program in the emergency unit.

Improving the ICU: Parts 1 and 2. Chest. 2005;127:2151–79.

Garland A.

ICUs are a fundamental segment of modern health care. Enhancing ICU execution requires that we move from a worldview that focuses on individual execution to an alternate worldview that accentuates the need to evaluate and enhance ICU frameworks and procedures. It examines existing issues in ICU care delivery, and the strategies for characterizing and measuring ICU execution against set benchmarks.

ICU and non ICU cost-day. Can J Anesth. 1995;42:192–6.

Norris C, Jacobs P, Rapoport J, Hamilton S

The motivation behind this review was to analyze the cost of a day spent in an emergency unit and a day spent on a general nursing unit. A spellbinding review configuration was utilized, in light of patient level information, to look at and compare unit costs every day for each of the ICU and non-ICU bits of a patient's healing period in hospital.

Resource Management Among Intensive Care Nurses: An Ethnographic Study

Abbas Heydari, Ali Vafae Najar, and Mahmoud Bakhshi

Nurses are the main users of supplies and equipments used in the Intensive Care Units (ICUs) of any hospital which are high-priced and expensive. Therefore, understanding ICU nurses' experiences about resource management contributes to the better control of the costs incurred. To manage the resources effectively in the ICUs, holding educational sessions would increase nurses' awareness on how to supply and store the critical items. The improvement of supply chain management in the hospital is also another necessity in order to make the resources available to the nurses in the required conditions.

Economics of central line--associated bloodstream infections.

Shannon RP, Patel B, Cummins D, Shannon AH, Ganguli G, Lu Y.

Hospital-acquired infections add considerable morbidity and mortality rates to patient care. A detailed economic analysis of these infections on an individual case basis has been lacking. The authors examined both the hospital revenues and expenses in 54 cases of patients with central line-associated bloodstream infections (CLABIs) over 3 years in 2 intensive care units and compared their financial data with patients who were matched for age, severity of illness on admission, and principal diagnosis. The costs of CLABIs and the associated complications averaged 43% of the total cost of care. The elimination

of these preventable infections constitutes not only an opportunity to improve patient care but also a significant financial opportunity.

7. METHODOLOGY:

Study Design – Descriptive and observational study

Setting –ICU-1 (3rd Floor) & ICU-2 (2nd Floor) of Asian Heart Institute and Research Centre, BKC, Mumbai.

Duration of Study – 2.5 months

Study Population – Doctors, nursing and housekeeping staff of ICU-1 (3rd Floor) & ICU-2 (2nd Floor).

Data Collection Procedure –

This is an observational study.

- Onsite Data Collection
 - ✓ Interview key stakeholders like nurses, ward boys, patients admitted in ICU and RMO'S.
 - ✓ Observe and review existing processes and policies. (Refer Annexure 1)
 - ✓ Prepared a checklist based on their SOP's and literature review and identified monitored activities based on checklist. (Refer Annexure 2)
- Process Analysis
 - ✓ Identify key trends, triggers, potential and known gaps.
 - ✓ Action plans developed for identified gaps.
- Gap Analysis Presentation
 - ✓ Executive Summary prepared
 - ✓ Gap process scope defined — pre-and post-implementation
 - ✓ Overview of each stakeholder's responsibilities, strengths, gaps and action/mitigation steps. ^[12,13]

Data Analysis Procedure –

- Excel data sheet: a data sheet will be prepared everyday for checking compliance to the SOP's.
- Trend analysis weekly monitored and CAPA done for the same.
- Data analysis method: MS Excel.

8. RESULTS :

As per the observation made by following the checklist for a period of 2 months –

Data was calculated for a period of 60 Days where the Observations were categorized into 3 specialized parts as:

1. Infection control
2. Operational
3. Clinical

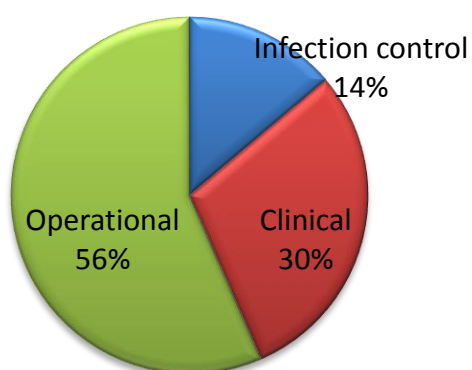
Table 8.1 Cases (non- compliance) observed as per the checklist

Checklist compliance	No of Observed Cases	Total days
Infection control	62	60
Clinical	133	60
Operational	254	60

From table 8.1 it is clear that maximum number of cases were observed in the operational processes.

Figure 8.1

Observation

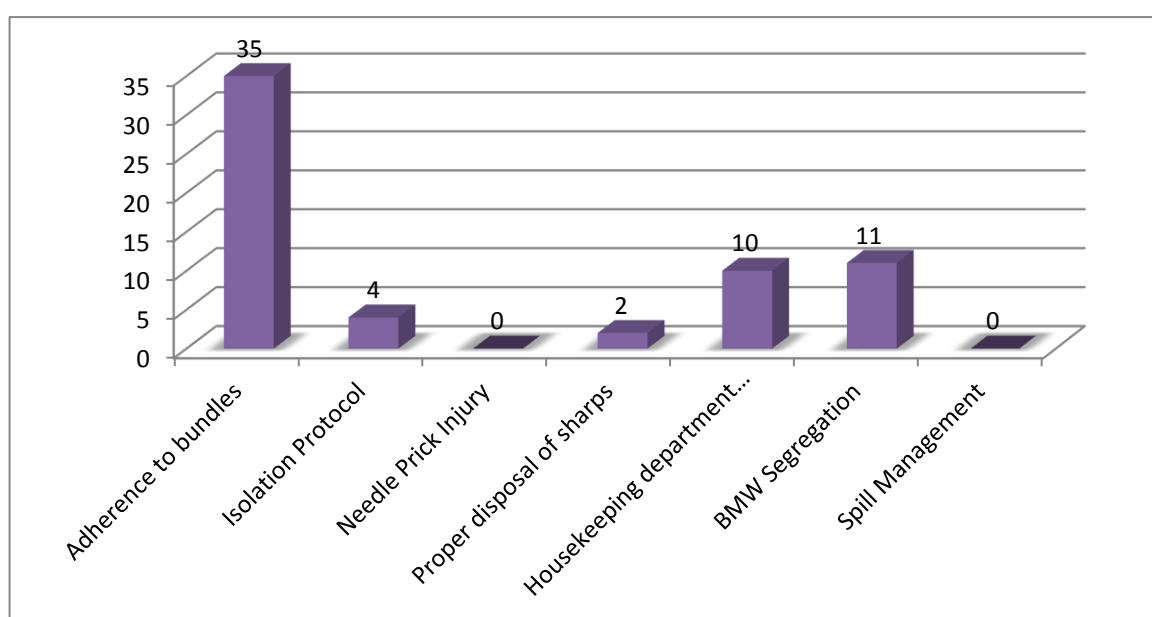


From fig 8.1 it is very much evident that the maximum percentage of non compliance was seen in operational areas and thus operational gaps were maximum with respect to the ICU which was further followed by clinical gaps and infection control practices non compliance.

Table 8.2 Number of cases (non- compliance) observed in infection control practices

Infection control	
Adherence to bundles (not there)	35
Isolation Protocol	4
Needle Prick Injury	0
Proper disposal of sharps	2
Housekeeping department disinfection and cleaning not proper	10
BMW Segregation inadequate	11
Spill Management	0

Figure 8.2

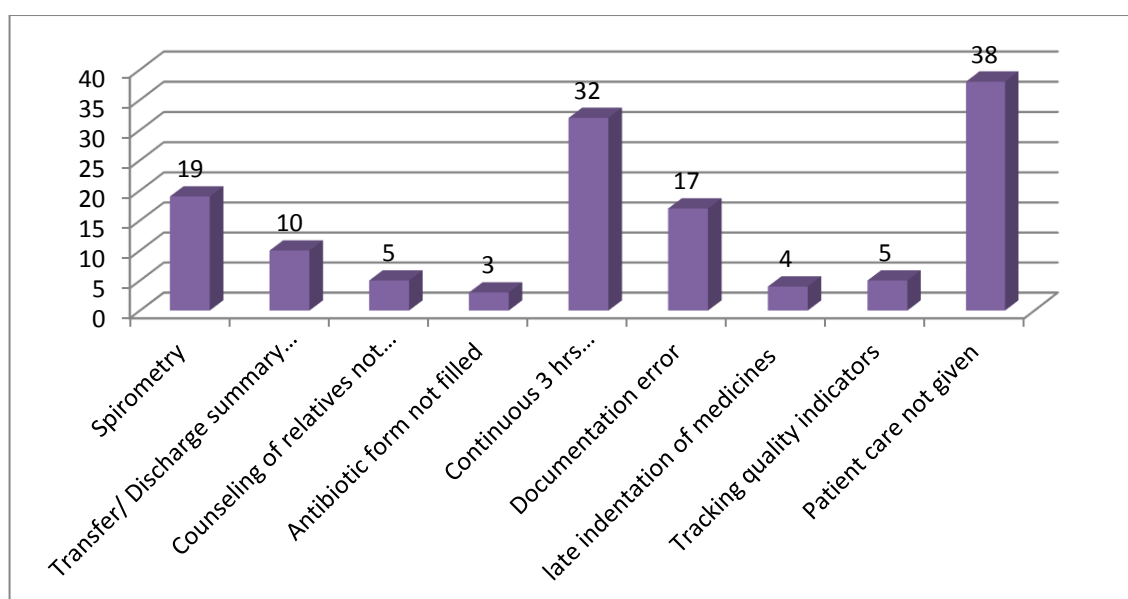


From table 8.2 and figure 8.2 it is evident that adherence to bundle care was not up to mark in the ICU. BMW Segregation and housekeeping management practices were also lacking behind.

Table 8.3 Number of cases (non- compliance) observed in clinical processes

Clinical	
Spirometry not done	19
Transfer/ Discharge summary not prepared	10
Counseling of relatives not done	5
Antibiotic form not filled	3
Continuous 3 hrs hemodynamic monitoring not done	32
Documentation error	17
late indentation of medicines	4
No tracking quality indicators	5
Patient care not given	38

Figure 8.3

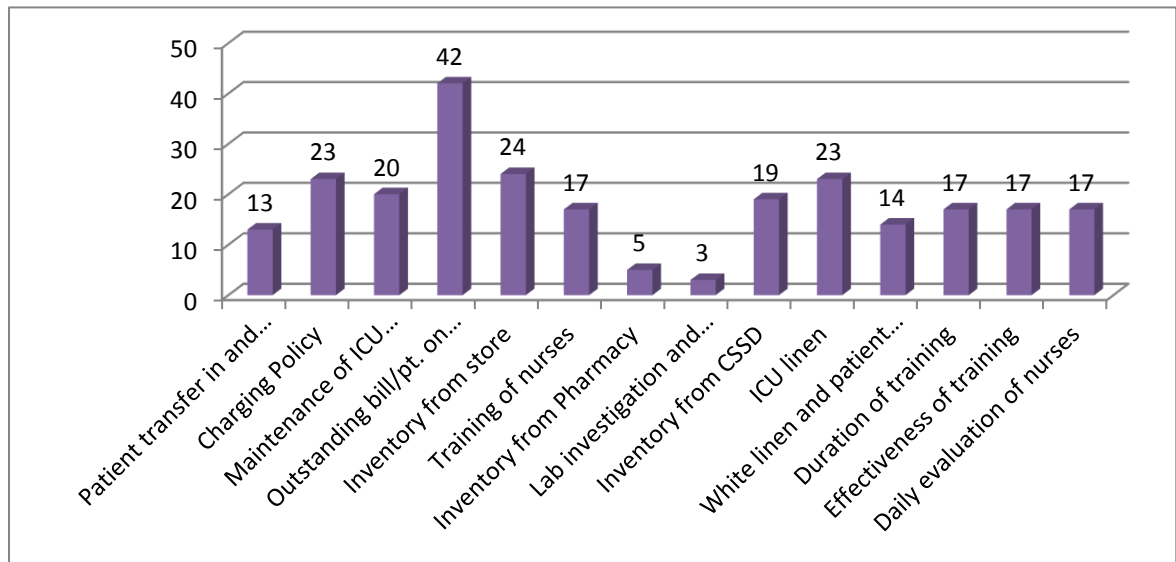


From table 8.3 and figure 8.3 it is evident that patient care management was not proper and continuous hemodynamic monitoring was not taking place which is again a part of patient critical care regime.

Table 8.4 Number of cases (non- compliance) observed in operational processes

Operational	
Patient transfer in and transfer out issues	13
Charging Policy not followed	23
Maintenance of ICU critical instruments not proper	20
Outstanding bill/pt. on prescription policy	42
Inventory from store issues	24
Training of nurses not done	17
Inventory from Pharmacy issues	5
Lab investigation and reporting wrong	3
Inventory from CSSD issues	19
ICU linen issues	23
White linen and patient dress not available	14
Duration of training not proper	17
Effectiveness of training not there	17
Daily evaluation of nurses not done	17

Figure 8.4



From table and figure 8.4 it is evident that the issue of outstanding bill was of major concern followed by non charging of ICU consumables and training and evaluation of nurses.

9. CONCLUSION:

After these observational findings the gaps between ideal (Standard Operating Procedures) and current practices were identified and according to the non compliances observed, best practices around the world were identified for Asian Heart Institute, Mumbai and implementation plans were given for the same.

10. RECOMMENDATIONS:

Best practices for training and development programs

Implementation plan

1. ICU staff training programs would include material relevant to the critical care unit.
2. Impart training based on the identified needs. (Prioritize).
3. In the absence of any certification, nurses working in the ICU would have daily and weekly assessment of competency by the nursing director with provision for feedback and continuous evaluation.
4. ICU staff training programs will cover issues such as compliance and clinical competency and would also focus on infection control practices, customer service and patient-centered care.
5. Staff at ICU has multiple responsibilities, and training would be designed so that it can be completed without shifting their focus from their responsibilities.
6. Assess the effectiveness of the training modules and programs through surveys and testing of skills.
7. Intradepartmental training as well as interdepartmental training would form the base of the training and development program.

Best practices for housekeeping

Implementation plan

1. A daily checklist for housekeeping processes in ICU would be maintained judiciously.
2. Cubicle wise summary would be maintained.
3. A controlled check would be put on the usage of the right disinfectant, using the correct color coded mop etc as said in the protocols.
4. Constant reminders and focus would be on high-touch surfaces and their frequent cleaning as per the check list.
5. Housekeeping supervisor as well as the ICU nurse TL would be assessing housekeeping staff on various parameters and protocols for spill management, fogging, cleaning of cubicles, disposal of segregated waste, hand hygiene and hand washing practices, etc.

Best practices for CSSD

Implementation plan

1. Mandatory certification for sterile processing staff to ensure everyone is educated on correct practices. On-the-job training would be supplemented with a formal certification course.
2. CSSD employees would follow standards set by professional organizations such as the Association for the Advancement of Medical Instrumentation and The Joint Commission.
3. Strict monitoring over instruments sterilization as per the manufacturer's recommendation.
4. CSSD staff and intensive care unit staff would work together to ensure proper communication and indenting of ICU linen, SMS paper, ICD bottles, instruments, etc to avoid any under stocking or overstocking situation.

Implementation plan for Clinical Gaps

- A general orientation to the ICU should be there for a week for new doctors so they understand and have a thorough knowledge of the SOP's of the ICU as well as the quality procedures. Mandatory monitoring of the same should be done.
- Constant reminders and warnings should be given to the nurses to fill the hands on competency checklist on time so that documentation is proper and medical records of the patient are well maintained in time.
- At the time of admission to ICU only the relatives should be told about the fact that any information regarding the patient or any queries or updates will be solved by the doctor in counseling room only.
- Indentations for medicines should be put on the same time to avoid any delay in the dispatch of medicines.

- Spirometry should be performed hourly which could be achieved by having additional staff in the ICU and continuous monitoring of the nurses by the nurse team leaders.
- Hemodynamics of the patient should be monitored every hourly and should be monitored by the team leaders.

- A full time dedicated helper nurse should be there to assist the assigned staff only for oral care and back care of the patient.
- Strict actions should be taken by the doctors, nursing director and team leaders if the patients change in position is not being done every 4 hourly.
- Transfer summary of the patient should be prepared by the concerned doctor a night before the morning shift out of patient thus helping in smooth discharge of the patient from the ward.

11. ETHICAL CONSIDERATION :

Ethical approval will be obtained from the IRB (Institutional Review Board) of Asian Heart Institute Mumbai as well as the IRB of The IIHMR University. An informed consent will be obtained from all the patients and control taking part in this study.

12. PLAN DISSEMINATION :

After the successful completion of the study the results will be first displayed in the hospital so that they can understand the gaps, implement recommendations and can work cohesively on gaps to improve quality of patient care and efficiency of ICU. After successful presentation in the hospital the study results will be presented at The IIHMR University and we will try to publish the research for the betterment of community and improvement of the healthcare system.

13. REFERENCES

1. <http://www.asianheartinstitute.org/panel-of-doctors/critical-care/>
2. Curtis JR, Cook DJ, Wall RJ, Angus DC, Bion J, Kacmarek R, et al. Intensive care unit quality improvement: A “how-to” guide for the interdisciplinary team. *Crit Care Med*. 2006;34:2111–8.
3. Garland A. Improving the ICU: Parts 1 and 2. *Chest*. 2005;127:2151–79.
4. Luce JM, Rubenfeld GD. Can Health care costs be reduced by limiting intensive care at the end of life? *Am J Respir Crit care Med*. 2002;165:750–4.
5. Norris C, Jacobs P, Rapoport J, Hamilton S. ICU and non ICU cost-day. *Can J Anesth*. 1995;42:192–6.
6. Shannon RP, Patel B, Cummins D, Shannon AH, Ganguli G, Lu Y. Economics of central line associated bloodstream infections. *Am J Med Qual*. 2006;21:7S–16S.
7. Krinsley JS, Jones RL. Cost analysis of Intensive Glycemic control in critically ill adult patients. *Chest*. 2006;129:644–50.
8. Clemmer TP, Spuhler VJ, Oniki TA, Horn SD. Results of a collaborative quality improvement program on outcomes and costs in a tertiary critical care unit. *Crit Care Med*. 1999;27:1768–74.
9. Kaur M, Hall S. Medical supplies and equipment for primary health care. A practical resource for procurement and management. United Kingdom: ECHO International Health Services Ltd; 2001.
10. Heydari A, Najari AV, Bakhshi M. Resource Management among Intensive Care Nurses: An Ethnographic Study. *Materia socio-medica*. 2015 Dec;27(6):390.
11. Kumar L, Dominic M, Rajan S, Singh S. Impact of modified quality control checklist on protocol adherence and outcomes in a post-surgical Intensive Care Unit. *Indian J Anaesth* 2017;61:29-35.
12. <http://www.icumed.com/implementation-services/clinical-services/gap-analysis.aspx>.
13. Agency for healthcare research and quality. Available from: <http://www.ahrq.gov>.

ANNEXURE 1 (SOP'S OF ICU AND GAPS IDENTIFIED)

Sr. No	Process	SOP'S (Ideal)	C	NC	Gap
1)	Inventories				
a)	Instrument inventory management	HOD places a request in mail or a written request. Request confirmed, department raises a purchase requisition . Indent in system. Instrument issue record is maintained. Physical stock verification.	C		
b)	SRIT issues	After general induction, new joiner comes to department; SRIT id creation form is generated. On form HOD marks the rights which that individual is privileged with. The SRIT has to be user friendly. Nurse TL would indent for the required items against reorder level from store/CSSD/consumables.		NC	Discrepancies are there and proper understanding of the real stock is not possible
c)	Calibration and preventive maintenance of equipments (Ventilator, IABP machine, bedside monitor, defibrillator, syringe pump, ECG - 6 months / lead aprons, thyroid - 1 yr)	PPM and Calibration calendar maintained by the biomedical engineering department equipment wise and contains last dates of PPM as well as calibration and the next due dates. A continuous check should be put on the instruments by the nursing staff as well for the due dates.		NC	Protocol is not being followed

d)	Daily inventory check	There should be a defined reorder level (ROL) for every item being ordered and a buffer stock has to be maintained.		NC	Miscalculation and miscommunication between ICU and CSSD/pharmacy/stores department.
e)	Charging policy	Staff at ICU can use items from the buffer stock and the same they should put on a stamped consumable sheet on a daily basis.		C	
2)	Laundry and Linen				
a)	Requisition of ICU linen indent	Nursing TL should indent ICU linen as per the requirement of a case. Daily/monthly MIS should be maintained.		NC	Overstocking of ICU linen is evident
b)	Daily inventory check	Continuous monitoring of linen usage should be there		NC	Miscalculation of ICU linen and miscommunication between ICU and CSSD department

c)	Indentation procedure of white linen	There should be a online system for indenting white linen as well which is not defined in the protocol.		NC	Shortage of white linen and no online documentation of the white linen
----	--------------------------------------	---	--	-----------	--

3)	Training and HR				
a)	Training content	General induction training calendar, intradepartmental training calendar and a refresher training calendar is maintained. Preceptor-preceptee model in nursing education.	C		

b)	Duration	General induction (25 days) i.e. 200 hours-(114 for practical and 86 for theory). For existing staff a refresher training 8 hours per month (100 in a year) should be carried out.		N C	Proper time frame is not being followed for intradepartmental and refresher training because of absence of staff for training sessions.
c)	Adequacy of training	Training need analysis (TNA) should be done based on performance appraisal, feedback from HOD's and observation.		N C	TNA is not being done and nurses don't get time for the intradepartmental training which is on the job training due to shortage of staff.
d)	Evaluation	Continuous daily evaluation and monthly evaluation should be done. Employee evaluation format should be maintained	C		
e)	Effectiveness	During induction program a daily tracker is maintained. Training team to audit the departmental training and take feedback from HOD on a continuous basis	C		
4)	Housekeeping				
a)	Standards	Daily checklist for housekeeping is there as per the standards laid for ICU housekeeping which is signed by the nurse TL. Housekeeping	C		

		supervisor comes per shift.			
b)	Type of material	Bacillocid special for floor cleaning, fogging, gluteraldehyde for sharp containers and laryngoscope, bacillol for equipments and cables, hypochlorite for cleaning tubings.	C		
c)	Evaluation of staff	Infection control department doctor and nurse along with the housekeeping supervisor do continuous daily evaluation of staff.	C		
d)	BMW Segregation	Color coded bins as per the BMW standards. Black for general waste, yellow for human tissue, organ, dressings, cotton. Red for gloves, masks, caps, catheters, tubing. Sharp container for needles, syringes.	N C		Lack of awareness in housekeeping regarding BMW Segregation guidelines.
e)	Spill Management	As per the spill management protocol.	N C		Lack of training to the housekeeping staff for spill management.

5)	Billing				
a)	Outstanding bill	Interim bills should be conveyed on a daily basis.		NC	System does not take any further billing and patient is charged manually on daily basis.
6)	Quality Control				
a)	Documentation error	Proper documentation of all the processes as and when happening should be maintained without any time lapse.		NC	Protocol not being followed.
b)	Infection Control (hand washing and hand hygiene practice)	7 steps of hand washing technique and 5 moments of hand hygiene should be practiced as per the IC protocol		NC	WHO seven steps of hand washing not followed.

c)	Tracking quality indicators				
1	Accidental removal of lines and tubes	Proper documentation should be there but it is not defined in the protocol.		NC	Proper form/documentation is not there for the same.
2	LOS (length of stay)	Monitoring and tracking of LOS should be done but it is not defined in		NC	It is also a critical quality indicator for ICU.

		the protocol			
3	Mortality/morbidity	Tracking of medical quality indicator should be done.	C		
4	Thrombophlebitis	Tracking of quality indicators should be done by nursing	C		
5	Skin peels/ bed sores	Tracking of skin peels/ bed sores should be done by nursing.	C		
6	Accidental falls	Tracking of quality indicators should be done by nursing.	C		
7	ICU shifting within 24 hours	Transfer in from ward to ICU, should be tracked by nursing.	C		
8	Needle prick injury	Tracking should be done by nursing	C		
9	Medication errors	Tracking of medication errors should be done by nursing under best nursing practices.	C		
10	Blood transfusion adverse reaction	Tracking of quality indicators should be done by nursing	C		

11	Readmission within 72 hours	After discharge of patient if any readmission occurring in the ICU, tracking of the same should be done.	C		
12	Reintubation within 24 hours	After extubation in patient if reintubation done RCA (root cause analysis) is done & preventive measures take	C		

ANNEXURE 2

Daily checklist for ICU					
S.NO	PROCESS	LEVELS	DATE 1	DATE 2	DATE 3
	Infection control				
1)	Adherence to bundles	Priority 1			
2)	BMW Segregation	Priority 2			
3)	No needle prick injury	Priority 2			
4)	Proper disposal of sharp	Priority 2			
5)	Isolation protocol	Priority 1			
6)	HK dept disinfection and cleaning	Priority 2			
7)	Spill Management	Priority 2			
	Clinical				
1)	Patient care (one to one interaction)	Priority 1			
2)	No Documentation error -(isolation checklist, hands on competency checklist, ILAD,	Priority 1			
3)	Transfer/Discharge summary preparation	Priority 1			
4)	Counselling of relatives	Priority 2			
5)	Continuous 3 hrs hemodynamics monitoring documenting	Priority 1			
6)	Spirometry	Priority 1			
7)	Timely indentation of medicines by RMO'S	Priority 2			
8)	Tracking quality indicators	Priority 2			
9)	Antibiotic forms filling before any request is processed from pharmacy	Priority 2			
	Operational				
1)	Patient transfer in and transfer out	Priority 1			
2)	Charging policy	Priority 1			
3)	Lab investigation & reporting	Priority 2			

4)	Maintenance of ICU critical equipments	Priority 1			
5)	Inventory from CSSD	Priority 2			
6)	Inventory from store	Priority 1			
7)	Inventory from pharmacy	Priority 2			
8)	ICU linen	Priority 2			
9)	White linen	Priority 2			
10)	Training of nurses	Priority 1			
11)	Duration of training	Priority 2			
12)	Effectiveness of training	Priority 2			
13)	Evaluation of nurses	Priority 2			
14)	Outstanding bill/Pt. on prescription policy	Priority 1			