Summer Training at
Sterling Hospital,
Vadodara, Gujrat

Device Utilization Ratio in ICU's

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

The IIHMR University, Jaipur
2016

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

IIHMR UNIVERSITY

CERTIFICATE

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Dr. Manpreet Kaur** student of **MBA Hospital and Health Management** from the IIHMR University; Jaipur has undergone summer training at **Sterling Hospital, Vadodara** from 1st April to 31 st May, 2016.

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

The internship is in fulfilment of the course requirements.

I wish her all success in all her future endeavours.

Col. (Dr.) Ashok Kaushik
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sterling Hospitals
Because life matters

2nd June 2016

TO WHOMSOEVER IT MAY CONCERN

Sterling Hospital Vadodara, a unit of Sterling Add Life India Private Ltd a premier Company in the healthcare sector is a 192-beded multi-specialty tertiary care hospital.

This is to certify that **Dr. Manpreet Brar** student of Post Graduate Program in Hospital & Health Management from Institute of Health Management Research, Jaipur has completed her two months summer internship as observership with various Departments at Sterling Hospital, Vadodara from **01st April 2016 to 31st May 2016.**

She was found to be regular, sincere and showed enthusiasm for work.

We wish her all success in all her future endeavours.

For Sterling AddLife India Pvt. Ltd.
Unit: Sterling Hospital, Vadodara

Jagrati

Jagrati Raizada
Sr. Manager HR

CC: Mr. Hemant Bhatnagar - Centre Head
For favour of information, please.

Acknowledgement

Nothing really can be accomplished alone. It's the direction, guidance, involvement and support of more than few that results into realization.

My institute –Institute of Health and Hospital Management Research (IHMR), Jaipur, all the faculties at IIHMR and its education deserves the foremost appreciation for providing me the opportunities to understand my individual capabilities. I acknowledge the contribution of Dr. S.D. Gupta, Dean and my college mentor Mr. Barun Kanjilal in the completion of my project and constantly encouraging me.

I am indebted to Mr. Hemant Bhatnagar (Centre Head of Sterling Hospital ,Vadodara) and Dr. Vishal Zinzuvadiya (Medical Superintendent) for their valuable guidance and help despite of their busy schedule.

I extend my sincere thanks to Mrs. Jyoti Patankar (Microbiologist) and Mr. .Razil Christie (Infection Control Nurse) for their cooperation and guidance during the two months as this study is an accomplishment due to their timely help and constant support.

I am also grateful to the employees of the Human Resourses,Department Heads and staff for cooperating with me inspite of their hectic schedule and to accomplish my task.

Regards

Dr. Manpreet kaur

Table of Contents

List of abbreviations

BMW-Biomedical waste

CABSI-Catheter associated blood stream infections

CAUTI-Catheter associated urinary tract infections

CCU-Critical care unit

CVC-Central venous catheter

CSSD-Central sterile storage department

DA-HAI-Device associated hospital acquired infections

DUR-Device utilization ratio

HK-House keeping

INICC-International nosocomial infection control consortium

IPD-In patient department

ICCU-Intensive critical care unit

LOS-Length of stay

MV-Mechanical ventilator

MICU-Medical intensive care unit

MRD-Medical record department

NHSN-National healthcare safety network

NICU-Neonatal intensive care unit

OPD-Outpatient department

OT-Operation theatre

PICU-Pediatric intensive care unit

SICU-Surgical intensive care unit

VAP-Ventilator associated pneumonia

UC-Urinary catheter

Abstract

Background

Device utilization ratio (DUR) is the proportion of patient days for which a certain device is used. It is a powerful tool for measuring infection risk among patients in ICUs.

Objective

To determine the DUR in intensive care units in sterling hospital, Vadodara.

To compare the DUR of Sterling hospital with Asiatic and Global hospitals.

Method

From 20th April -20th May 2016, a prospective surveillance study for calculating device utilization ratio was conducted by participating in the intensive care units in the sterling hospital, vadodara.The data was collected from 105 patients hospitalized in ICUs for an aggregate of 847 bed days during 1 month of study.

Results

The study showed that DUR for ventilator was 0. 18, for central venous catheters 0.32, for urinary catheter was 0 .65 in ICUs.

DUR of Sterling hospital was more comparable with Asiatic hospitals than Global hospitals.

Conclusion

It was found that urinary catheter utilization is high and ventilator utilization is low in ICUs.

Keywords

Device utilization ratio, ICUs, Ventilator, Central venous catheter, Urinary catheter, Sterling hospital, Asiatic hospital, Global hospital

SUMMER TRAINING

STERLING HOSPITAL

VADODARA

Introduction

The sterling group of hospitals are owned and managed by sterling "Add life India Ltd.'' The company is promoted by Paras Pharmaceuticals Limited. With sustained hard work and dedication of its staff, the venture has grown into the leading hospital chain in GUJARAT.

Currently, the chain is catering to health needs of the population in Ahmedabad, Vadodara, Rajkot, Gandhidham, Mundra SEZ, Himmatnagar, and Kalol & will soon make its presence felt in other centres like Surat and Bhavnagar.

Sterling hospital, Vadodara founded in Nov-2007, is a multi-super specialty hospital with 192 beds, 8 major operation theatres and 61 ICU beds. Sterling's high quality services attract patients from GUJARAT, RAJSTHAN, M.P and MAHARASHTRA and from some foreign countries.

Sterling hospital, Vadodara is also the first NABH accredited corporate hospital in South Gujarat.

ADDRESS:

STERLING HOSPITAL,

Opp Inox, Near Race course circle (West),

Vadodara - 390007.

Phone no: 0265235455 / 66 / 88.

info@sterlinghospital.com

www.sterlinghospitals.com

Sterling hospital provides super speciality care treatment in many areas like:

- ARTHROSCOPY
- CARDIOLOGY
- CARDIAC SURGERY
- ENDOCRINOLOGY & DIALYSIS
- ENT
- GASTROENTEROLOGY
- GI SURGERY
- HAEMATOLOGY
- INFECTIOUS DISEASES
- INTERNAL MEDICINE
- NEPHROLOGY
- NEUROLOGY
- ONCOLOGY
- NCOSURGERY
- OPTHALMOLOGY
- OPTHALMOLOGY
- ORTHOPEDIC
- OBSTETRICS & GYNAECOLOGY
- PAEDIATRIC
- PLASTIC SURGERY
- PSYCHIATRY
- PULMONARY & CRITICAL CARE
- RHEUMATOLOGY
- UROLOGY
- VASCULAR SURGERY

Services Offered:

- 24x7 emergency services.

- Special services also provide for corporate patients like medical holiday, health check-up and corporate health talks.

- Basic services like health check-up and its packages that suit your requirements.

Vision:

To be the ‘Preferred choice to provide for ethical, superior, holistic healthcare solution.

To be human viable and patient centric.

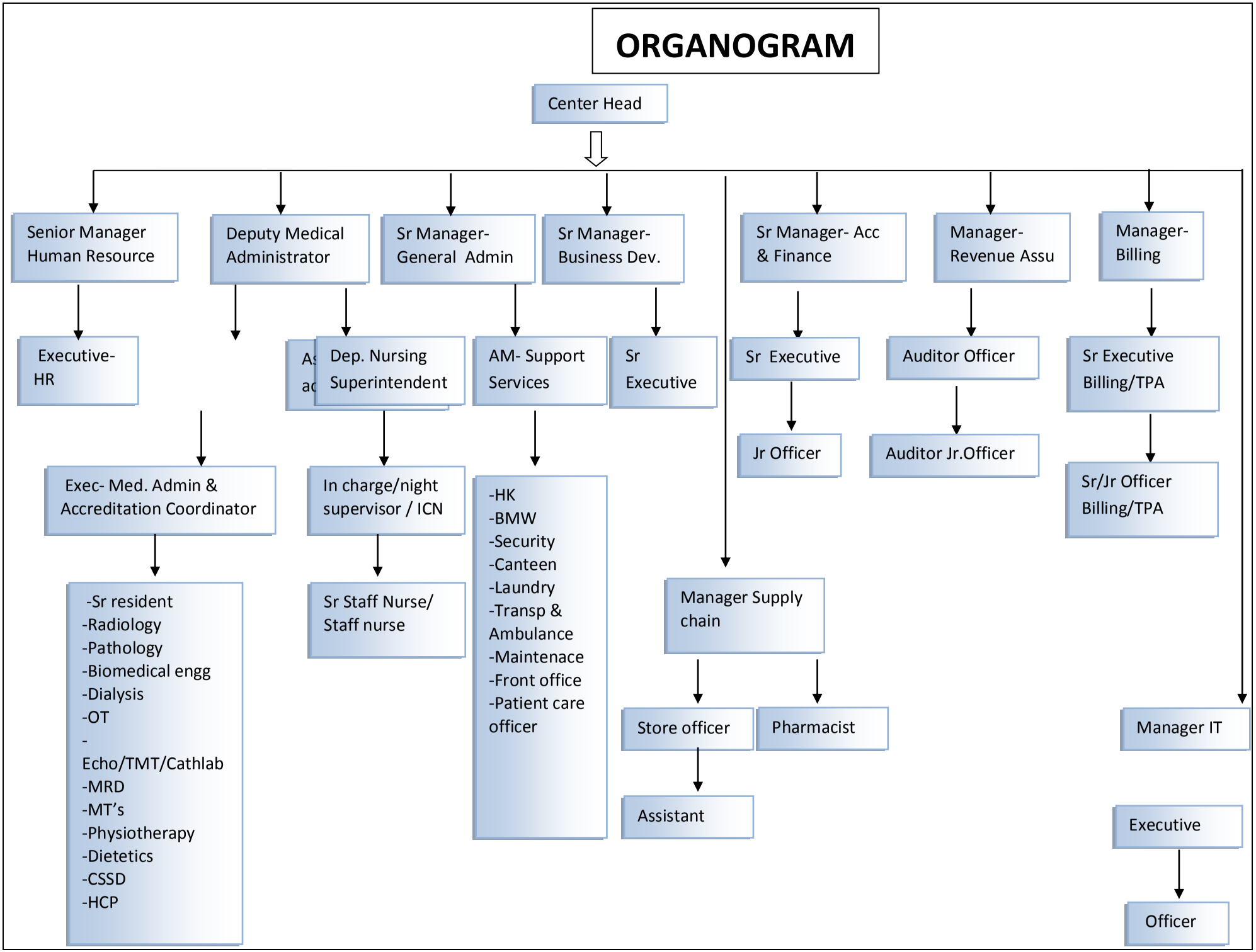
Mission:

Excel and above all ‘’be ethical and honest’’-never violate conscious.

-Do everything on or before time.

- To deliver quality do more then what the clients expect.

ORGANOGRAM


Center Head
Senior Manager Human Resource
Deputy Medical Administrator
Sr Manager- General Admin
Sr Manager- Business Dev.
Sr Manager- Acc & Finance
Manager- Revenue Assu
Manager- Billing
Executive- HR
Dep. Nursing Superintendent
AM- Support Services
Sr Executive
Sr Executive
Auditor Officer
Sr Executive Billing/TPA
Jr Officer
Auditor Jr.Officer
Sr/Jr Officer Billing/TPA
Exec- Med. Admin & Accreditation Coordinator
In charge/night supervisor / ICN
-HK
-BMW
-Security
-Canteen
-Laundry
-Transp & Ambulance
-Maintenace
-Front office
-Patient care officer
Manager Supply chain
-Sr resident
-Radiology
-Pathology
-Biomedical engg
-Dialysis
-OT
-
Echo/TMT/Cathlab
-MRD
-MT's
-Physiotherapy
-Dietetics
-CSSD
-HCP
Sr Staff Nurse/ Staff nurse
Store officer
Pharmacist
Manager IT
Assistant
Executive
Officer

Hospital Layout

There are two constructional building, which are denoted by Phase 1 & Phase 2. The different facilities & units are located in both the phases as stated below.

PHASE I

Ground Floor
- Physiotherapy
- Helpdesk
- IPD Desk
- OPD
- Billing Department
- IT Department
- Revenue Assurance
- Pharmacy OPD

1st Floor
- General Ward (AC)
- ICCU
- General Ward
- Burns Ward
- Echo
-TMT Lab

2nd Floor
- OT Complex
- Cath lab
- TCU

3rd Floor
- Dialysis Unit
- MICU & SICU
- Blood Storage Centre
- Pathology & Microbiology

4Th Floor
- Special AC Room
- Admin Wing
- General AC Ward

5th Floor
- Special AC Room
- NICU & PICU
- Accounts Department

6th Floor
- Auditorium
- MRD

Basement
- Housekeeping
- Storage
- Maintenance
- Bio-medical Maintenance
- CSSD
- Pharmacy

PHASE II

Ground Floor
- Emergency
- Health Checkup
- Radiology
- Blood Collection Centre

1st Floor
- Canteen
- Diet Department
- Micro
-Lab
- Blood Storage

2nd Floor
- OT Complex
- Renal Transplant Unit
- CCU

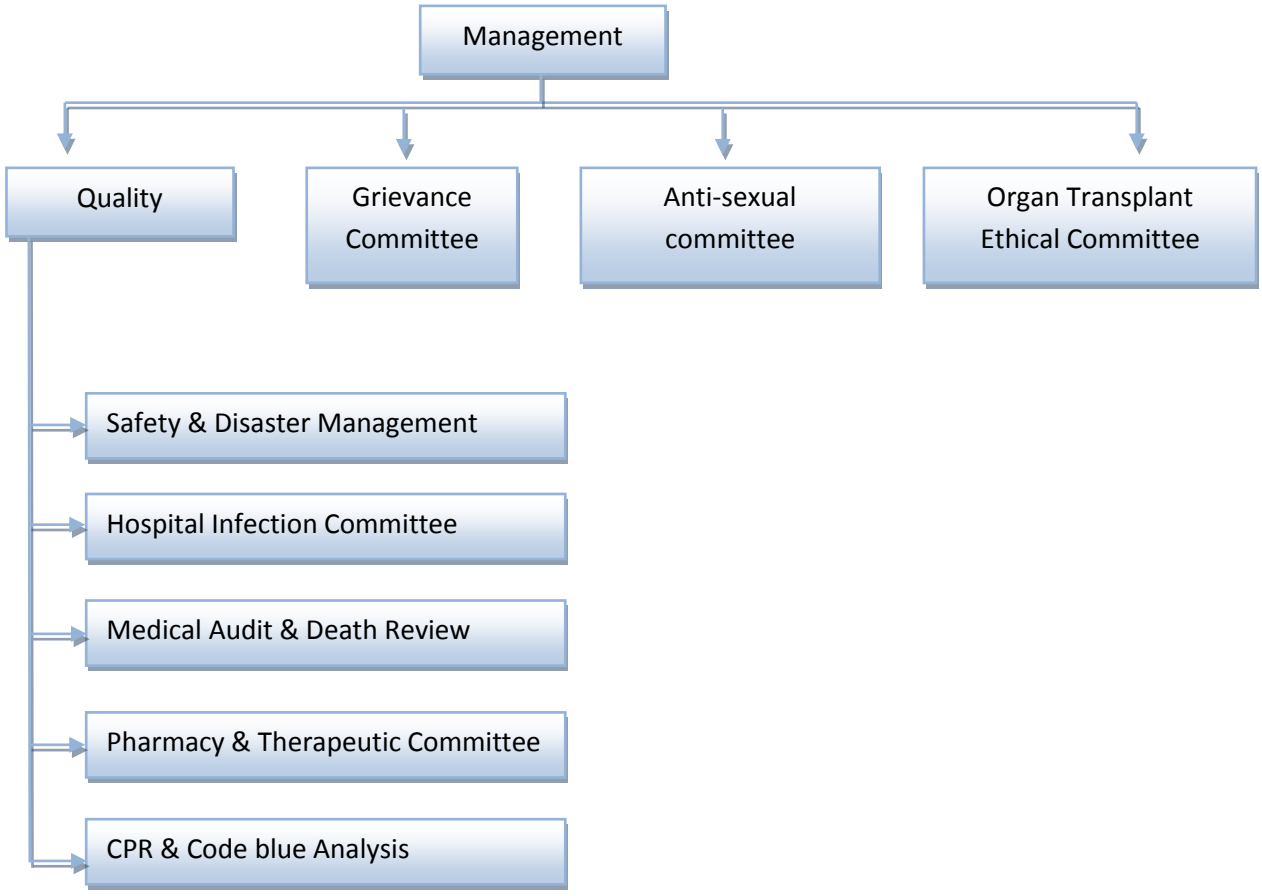
3rd Floor
- Semi Special AC Room

4th Floor
- Semi Special AC
- R.T. Wing

5th Floor - IT Department
- IVF Centre
- Snite Room

Basement
- Parking

Committees in hospital



PROJECT ON

DEVICE UTILIZATION RATIO IN ICUs

Introduction

In intensive care unit (ICU), various invasive devices are used indiscriminately for long durations. Hospital acquired infection, unfortunately, is an important and critical issue related to high morbidity and mortality in admitted patients particularly in high-risk groups in ICU. Nowadays, devices are the most important causes of Hospital-acquired infections due to their prolonged use and lack of regular care or timely change when required, particularly in ICUs. Various factors contribute to this malady particularly prolonged length of hospital stay, excessive use of invasive devices for prolonged periods (device utilization [DU]), indiscriminate use of antibiotics, and increased bacterial resistance. This study was conducted in order to investigate the epidemiological characteristics of device-associated infections (DAIs) in reference to DU ratio as DU ratio comprises a marker for severity of illness in patients as well as patient susceptibility to DA-HAI.

DU ratio is calculated by the following formula

DU RATIO = NUMBER OF DEVICE DAYS/NUMBER OF PATIENT DAYS

DU ratios are specific to certain device: ventilator, central venous catheter, urinary catheter

Objective

- To determine device utilization ratio in intensive care units in sterling hospital
- To assess the risks associated with device utilization
- To improve the safety and quality of health care
- To reduce rates of HAI as well as HAI associated mortality
- To reduce the excessive length of patient hospital stay
- To reduce the excess costs
- To reduce the antibiotic use as well as bacterial resistance

Review of literature

Increasingly in scientific literature, DA-HAIs are considered to be among the principal threat to patient safety in the ICU and are among the main causes of patient morbidity and mortality. Surveillance of device utilization ratio (DU Ratio) in the intensive care unit represents a prominent tool in hospital infection control and quality assurance. Surveillance has proved effective in preventing HAI, as documented in the U.S. Centers for Disease Control and Prevention (CDC) Study of the Efficacy of Nosocomial Infections Control (SENIC) . As a result of this evidence, standards for HAI surveillance and infection control have been developed and adopted in several industrialized countries.

Device-associated infections (DAIs), particularly ventilator-associated pneumonia (VAP), central venous catheter-related bloodstream infection (CVC-BSI), and catheter-associated urinary tract infection (CAUTI) pose the greatest threat to ICU patients.

Calculating DU ratios and implementing targeted surveillance allows for effective comparative assessment of health care facilities, and provides a comprehensive overview of problems to be solved at specific institutions.

Most studies addressing ICU-acquired infection have been published about health care in industrialized countries, but there is a lack of scientific data showing DU ratios in developing countries. Uniform definitions are needed to close this gap and to improve health care standred.

The effectiveness of implementing an integrated infection control program focused on device-associated healthcare-acquired infection (DA-HAI) surveillance was demonstrated in the many studies conducted in the U.S., whose results reported not only that the incidence of DA-HAI can be reduced by as much as 30%, but that a related reduction in healthcare costs was also feasible . In the same way, it is fundamental to address the burden of antimicrobial-resistant infections that the pathogens and the susceptibility to antimicrobials of DA-HAI-associated pathogens be reported.

For more than 30 years, the U.S. the Centers for Disease Control and Prevention (CDC)'s National Healthcare Safety Network (NHSN) has provided benchmarking U.S. ICU data on DA-HAIs, which have proven invaluable for researchers and served as an inspiration to the INICC. The INICC is an international non-profit, open, multi-centre, collaborative healthcare-associated infection control program with a surveillance system based on that of the CDC's NHSN. Founded in Argentina in 1998, INICC is the first multinational research network established to measure, control and reduce DA-HAI in ICUs and surgical site infections (SSIs) hospital wide through the analysis of data collected on a voluntary basis by a pool of hospitals worldwide . The INICC has the following goals: To create a dynamic global network of hospitals worldwide and conduct surveillance of DA-HAIs and SSIs using standardized definitions and established methodologies, to promote the implementation of evidence-based infection control practices, and to carry out applied infection control research; to provide training and surveillance tools to individual hospitals which can allow them to conduct outcome and process surveillance of DA-HAIs and SSIs, to measure their consequences, and assess the impact of infection control practices; to improve the safety and quality of healthcare world-wide through the implementation of systematized programs to reduce rates of DA-HAIs and SSIs, their associated mortality, excess lengths of stay (LOS), excess costs, antibiotic usage, and bacterial resistance .

Impact of device utilization ratio

A low device utilization ratio leads to

- Reduction in DA-HAI
- Reduction in length of hospital stay
- Reduction in microbial resistance leads to reduction in antibiotic usage which further results in reduction in medication cost and diagnostic test
- Reduction in hospital room stay cost
- Reduction in number of devices used leads to reduction in treatment cost as well as reduction in the discomfort associated with insertion of devices.
- Saves time and energy of doctors and hospital staff which can be utilized for another patients admitted in hospital. Finally improve the quality of health care.

Device associated risks in ICUs

The following DAI definitions are adapted from those established by the CDC National Nosocomial Infections Surveillance System (NNIS) as

Ventilator-associated pneumonia

Ventilator-associated pneumonia is indicated in a mechanically ventilated patient with a chest radiograph that shows new or progressive infiltrates, consolidation, cavitations, or pleural effusion. The patient must also have at least 1 of the following criteria: New onset of purulent sputum or change in character of sputum; organism cultured from blood; or isolation of an etiologic agent from a specimen obtained by tracheal aspirate, bronchial brushing or bronchial velour lavage, or biopsy.

Catheter related bloodstream infection

Catheter-related bloodstream infection is laboratory-confirmed infection where a patient with an intravenous catheter has a recognized pathogen that is isolated from 1 or more percutaneous blood cultures after 48 h of vascular catheterization and is not related to an infection at another site. The patient also has at least 1 of the following signs or symptoms: Fever (temperature >38°C), chills, or hypotension. In the case of skin commensals (for example, diphtheria's, *Bacillus* spp., coagulates-negative staphylococci, or micrococcus), the organism is cultured from 2 or more blood cultures.

Catheter-associated urinary tract infection

For the diagnosis of CAUTI (the patient must meet 1 of the 2 criteria. The first criterion is when a patient with a UC has 1 or more of the following symptoms with no other recognized cause: Fever (temperature >38°C), urgency, or suprapubic tenderness when the urine culture

is positive for 105 colony-forming unit sperm lormore, with no more than 2 microorganisms isolated. The second criterion is when a patient with a UC has at least 2 of the following criteria with no other recognized cause: Positive dipstick analysis for leukocyte esterase or nitrate, pyuria (≥10 leukocyte sperm of urine), organisms see non-Gram stain, clinical diagnosis of urinary tract infection (UTI), or physician initiates appropriate therapy for a UTI.

Ethics

This study was approved by the hospital ethics committee.

Methodology

Study setting and design

A prospective study was conducted from 20th April -20th May 2016 in intensive care units in sterling hospital, vadodara. The data was collected from 105 patients hospitalized in ICUs for 847 bed days. All the patients admitted to ICUs during study period were included. The data was collected and analysed under the guidance of an infection control team in the hospital

.Surveillance

On daily basis, data relating to patient demographic, age, gender, clinical history , diagnosis and hospital location was collected from all patients admitted to the ICUs by means of a specifically designed Performa.

Device utilization Ratio calculations

- Step1: Decide on the time period for analysis :month,quarter,6 month, year
- Step2: Select patient population for analysis i.e. ,type of ICU or a birth weight category
- Step3:Determine the number of device days used as a numerator
  Device days= Total number of days of exposure to the device (central line, ventilator or urinary catheter) used by all the patients in the selected population during the Selected time period.
- Step 4: Determine the number of patient days which is used as denominator of DU ratio
  Patient days= Total number of days that patients are in the ICUs during selected Time period.
- Step 5:Calculate the DU Ratio with the following formula

  DU Ratio= Number of device days/ Number of patient days

Data analysis & Results

Data analysis was done by using Microsoft Excel 2007.

Table 1 : shows patient hospital stay days ,ventilator days ,central venous catheter (CVC) days and urinary catheter (UC)days in ICUS at Sterling Hospital, Vadodara

S.No	Type of ICU	Hospital stay days	Ventilator Days	CVC Days	UC Days
1	CCU	314	62	74	185
2	SICU	187	43	38	125
3	MICU	163	21	97	113
4	ICCU	183	30	62	125
	POOLED	847	156	271	548

Table 2: shows ventilator, central venous catheter (CVC) and urinary catheter (UC) utilization ratio in ICUs at Sterling Hospital, Vadodara

	Type of ICU	Hospital stay days	Ventilator DU Ratio	CVC DU Ratio	UC DU Ratio
1	CCU	314	0.197	0.236	0.589
2	SICU	187	0.230	0.203	0.668
4	MICU	163	0.129	0.595	0.693
3	ICCU	183	0.164	0.339	0.683
	POOLED	847	0.184	0.319	0.646

Total number of patients hospital stay days=847

Number of ventilator days=156

Number of CVC days=271

Number of UC days=548

DUR for ventilator use= Number of ventilator days/ Number of patient days

=156/847=0.184

DUR for CVC use =Number of CVC days/ Number of patient days

=271/847=0.319

DUR for UC use= Number of UC days/ Number of patient days

=548/847=0.646

From data analysis, it was found that urinary catheter utilization is highest and ventilator utilization is lowest in ICUS in sterling hospital, Vadoadra.

Figure : 1 shows device utilization ratio for ventilator , central venous catheter(CVC) and urinary catheter (UC) in ICUs at Sterling Hospital , Vadodara

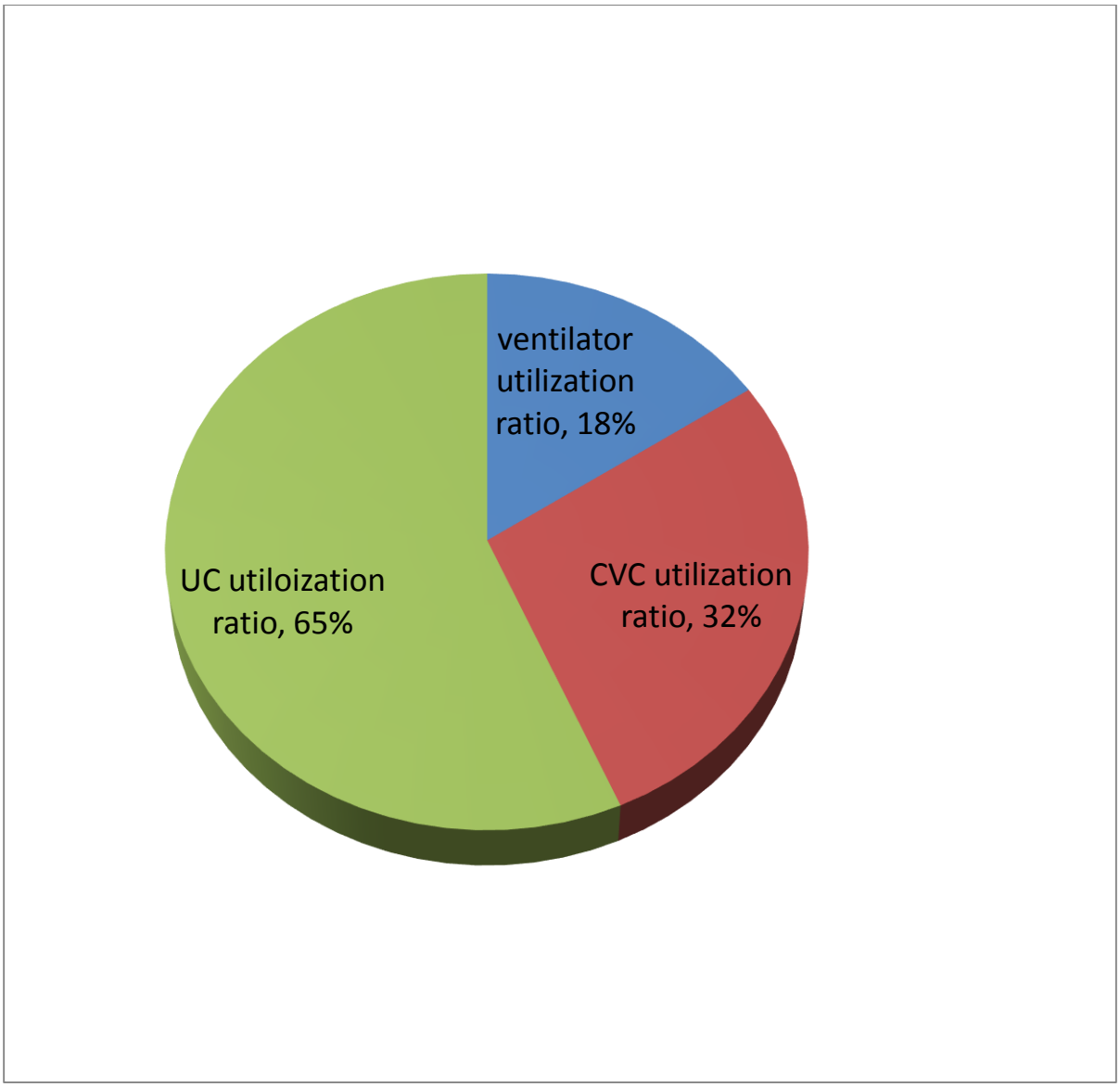
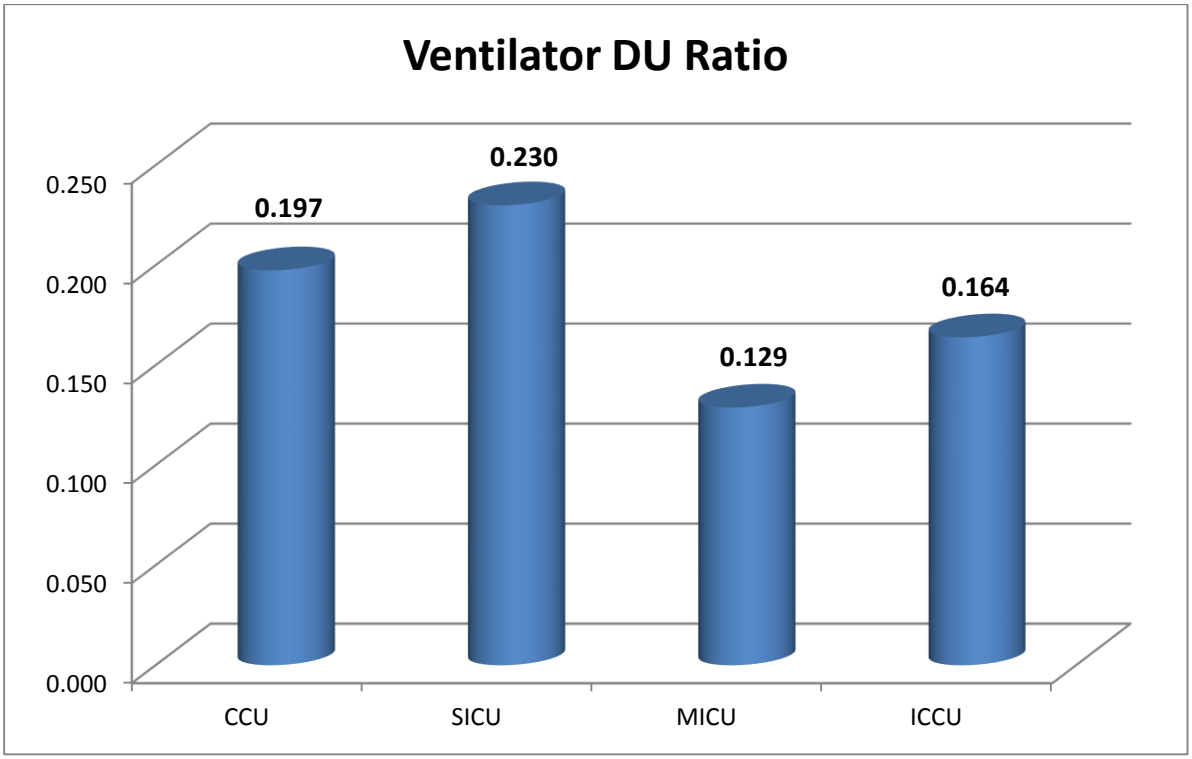


Figure : 1 shows that device utilization ratio for urinary catheter is highest and ventilator is lowest in ICUs at Sterling Hospital,Vadodara

UC > CVC > VENTILATOR

Comparison of Ventilator, CVC and UC Device utilization ratio in ICU's in sterling hospital.

Figure: 2a shows comparision between ICUs for ventilator utilization at Sterling Hospital , Vadodara



CCU=Critical care unit SICU=Surgical intensive care unit

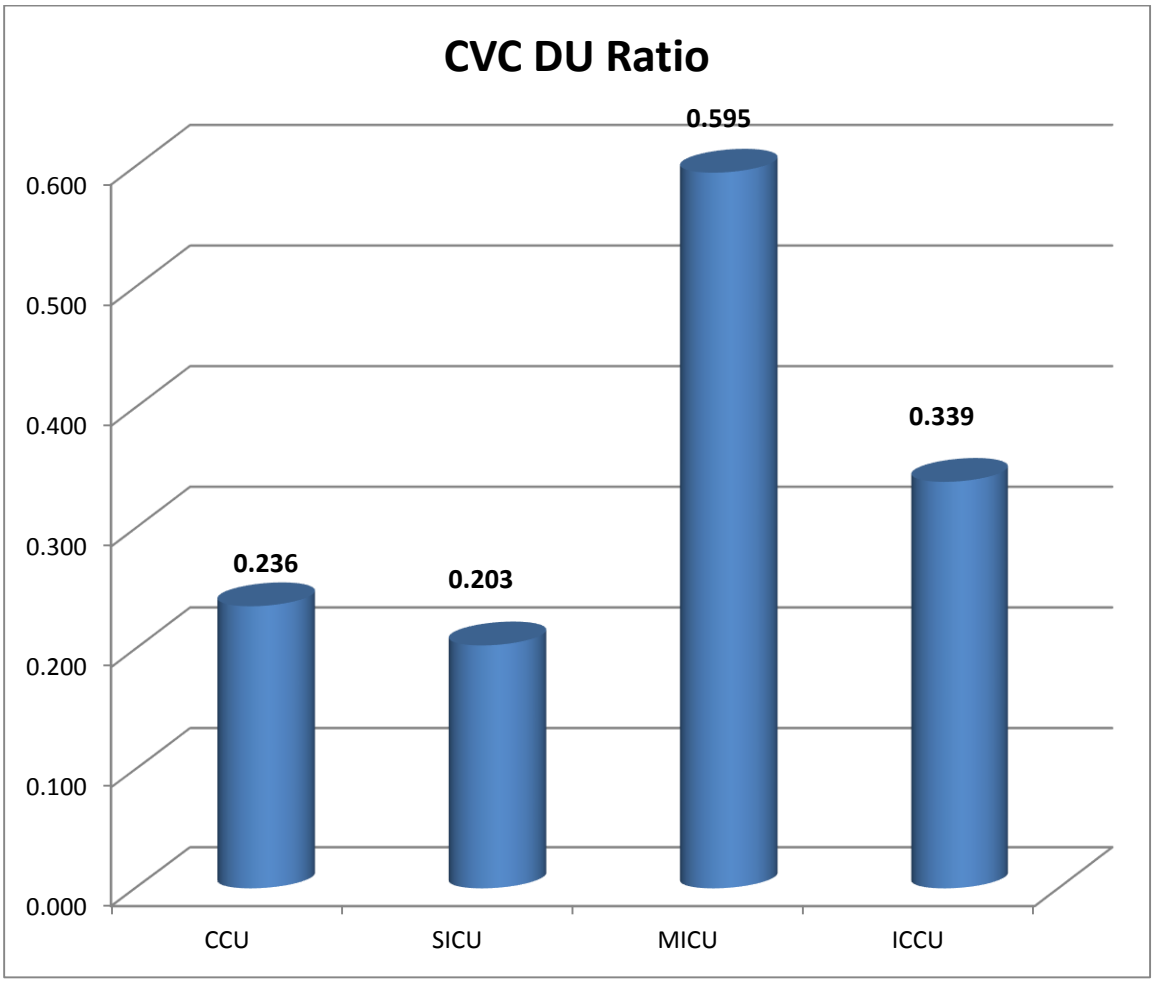
ICCU= Intensive critical care unit MICU=Medical intensive care unit

Figure: 2a shows ventilator utilization is highest in SICU and lowest in MICU

INTERPRETATION= VENTILATOR DUR

SICU > CCU > ICCU > MICU

Figure: 2b shows comparision between ICUs for central venous catheter utilization at Sterling Hospital , Vadodara



CCU=Critical care unit SICU=Surgical intensive care unit

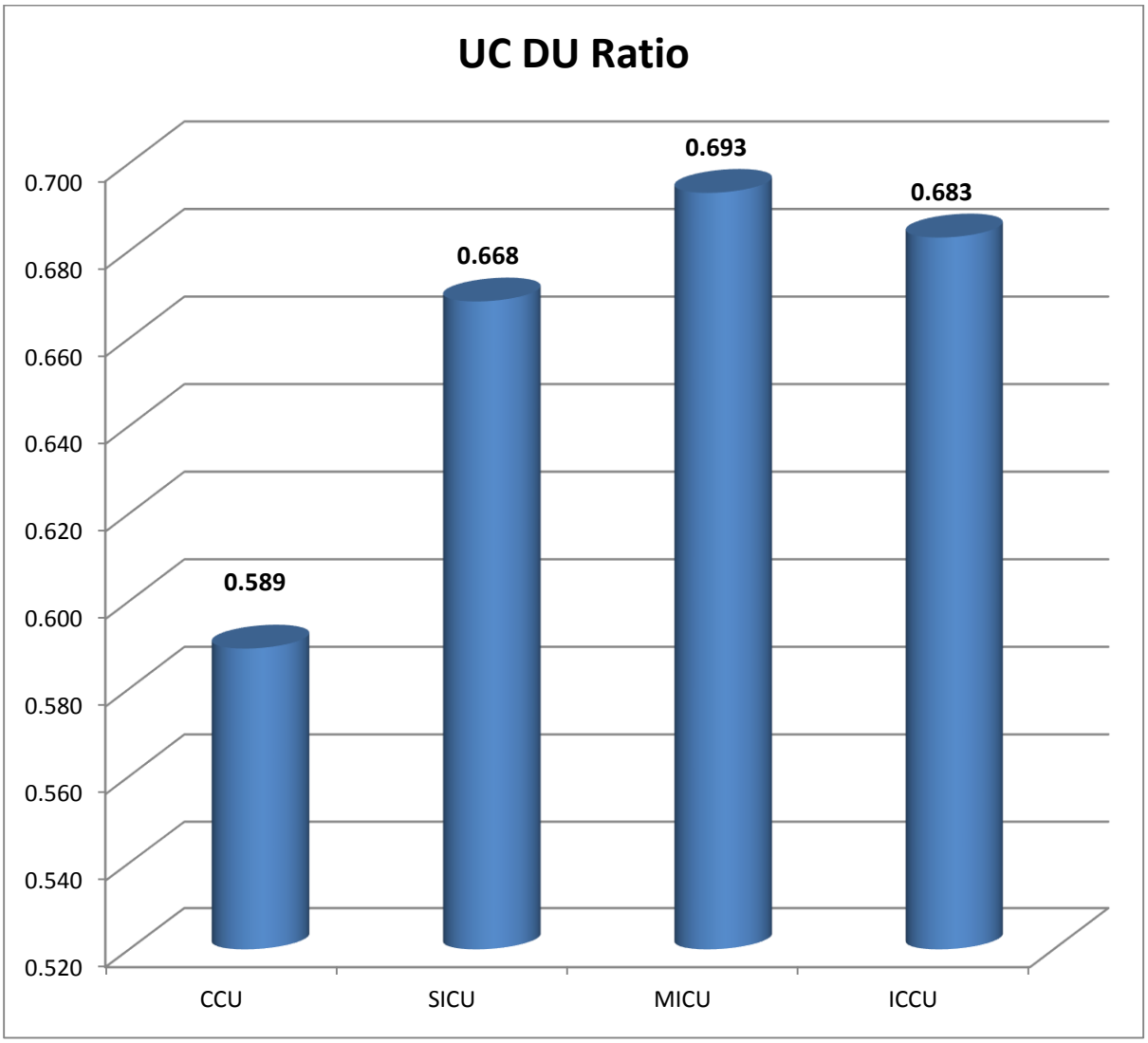
ICCU= Intensive critical care unit MICU=Medical intensive care unit

Figure: 2b shows central venous catheter utilization is highest in MICU and is lowest in SICU

INTERPRETATION= CVC DUR

MICU > ICCU > CCU > SICU

Figure: 2c shows comparision between ICUs for urinary catheter utilization at Sterling Hospital , Vadodara



CCU=Critical care unit SICU=Surgical intensive care unit

ICCU= Intensive critical care unit MICU=Medical intensive care unit

Figure: 2c shows urinary catheter utilization is highest in MICU and is lowest in CCU

INTERPRETATION= UC DUR

MICU > ICCU > SICU > CCU

Comparison: Sterling Hospital device utilization ratio data

Vs

Global device utilization ratio data

Vs

Asiatic device utilization data

Global DU Ratio data: International Nosocomial Infection c consortium (INICC) report, data summary of 43 countries for 2007-2012.

Asiatic DU Ratio data- International Nosocomial Infection c consortium (INICC) report, data summary of shanghai, china

Table 3: shows device utilization ratio for ventilator, central venous catheter (CVC) and urinary catheter (UC) in ICUs for Sterling , Asiatic and Global Hospitals

S.No	Place	Ventilator DU Ratio	CVC DU Ratio	UC DU Ratio
1	Sterling	0.18	0.32	0.65
2	Global	0.38	0.53	0.62
3	Asiatic	0.17	0.26	0.34

Figure: 3 shows comparision between the device utilization ratio of Sterling , Asiatic and Global Hospitals

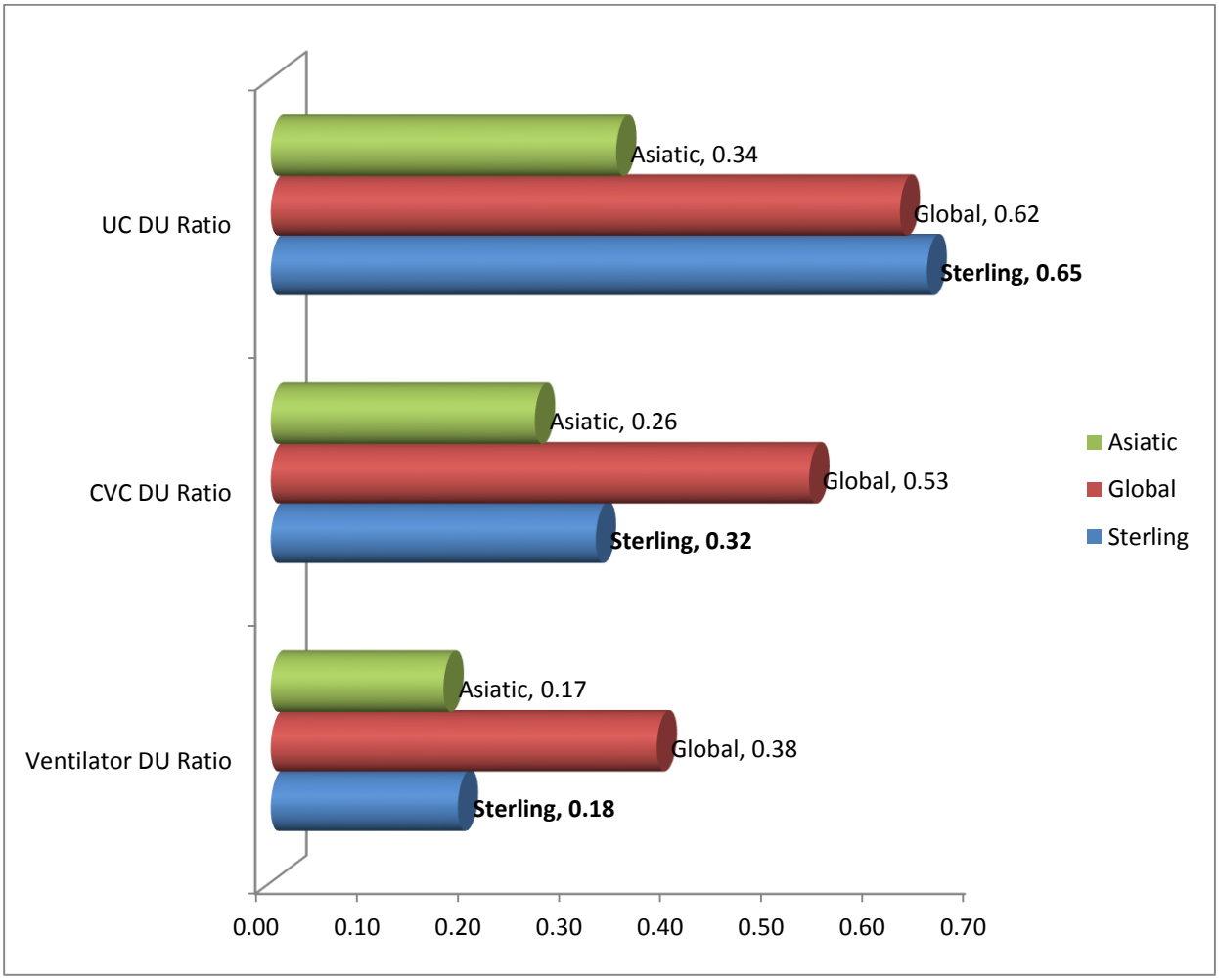


Figure : 3 shows device utilization ratio in Sterling Hospital ICUs is more comparable to the device utilization ratio in Asiatic Hospitals and less than Global hospitals except device utilization ratio for urinary catheter

INTERPRETATION

VENTILATOR DUR= GLOBAL > ASIATIC=STERLI

CVC DUR = GLOBAL > STERLING > ASIATIC

UC DUR = STERLING = GLOBAL > ASIATIC

Discussion

From study, it was found that DUR for ventilator in sterling hospital ICUs is comparable to the Asiatic hospitals but less than global hospitals.

DUR for CVC in sterling hospital ICUs is comparable to the Asiatic hospitals but less than global hospitals.

DUR for UC CVC in sterling hospital ICUs is more than Asiatic hospitals but comparable to Global hospital.

Conclusion

From study, it was concluded that DUR in Sterling Hospital ICUs is comparable to DUR in Asiatic Hospitals and less than Global hospitals except DUR for UC.

Summary

DUR reflects the amount of devices used and risk of DA-HAI which are associated with longer length of ICU stay. One of the main strategies to prevent DA-HAI, in ICUs is early change of invasive devices and to avoid its unnecessary prolonged use.

So, a reduction in the DUR leads to reduced discomfort to the patient, length of hospital stay, DA-HAI, microbial resistance, antibiotic usage, excess of cost .Thus overall leads to improved safety and quality of health care.

Recommendations

- Utilisation of a particular device as per infection control protocols and guidelines.
- Every device must be assessed everyday by treating consultant for requirement of that perticular device.
- Avoid unnecessary usage of devices.

Learning points

The two month summer training was very valuable .It provided me with an incompatible experience. The main aim of the training that is to get exposure to the functioning of the organization by visiting all permissible departments and do intensive study on the task was all fulfilled. The summer training equipped me with proficient techniques, exposure to professional world and loads of knowledge and wisdom.

The visit to all clinical and non-clinical departments was very good experience of learning functioning of hospital. It helped me to get familiar, adapted and habituated to hospital environment and working.

Due to the support and guidelines of my mentor and hospital staff I could acquire skills and exposure. Few of the learning's were as follows:

Hospital scenario:

- Hospital policies, standards and protocols
- working of hospital
- Functioning of patient care system
- Department working knowledge
- Patient safety, rights and responsibility
- Clinical and non-clinical terms to be used on work

Professional skills

- Knowledge about NABH standards
- How to collect and analyze data
- To maintain documents

Soft skills

- To interact professionally
- To make presentation and interpret data
- How to manage time
- Commitment towards task
- How to make quick and good decision

References

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http://www.ncbi.nlm.nih.gov

http://www.inicc.org

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new.dhh.louisiana.gov

Annexure

DEVICE UTILIZATION – STERLING HOSPITALS.

- NAME OF THE PATIENT:
- _____
- SH NO : _____ ADMISSION NO: _____LOCATION : _____
- DATE OF ADMISSION:_____
- DATE OF DISCHARGE:_____
- TOTAL DAYS OF PATIENT HOSPITAL STAY:_____
- CLINICAL DIGNOSIS:_____
- CLINICAL HISTORY : _____

_____

- X – RAY FINDINGS : _____
- **Anything Special:**

Past History -

_____
_____
_____

PATIENT EXPOSURE:

MECHANICAL VENTILATION:

- DATE OF VENTILATION STARTED : _____
- DATE OF VENTILATION STOPPED : _____
- TYPE OF VENTILATION / CIRCUIT USED : _____
- DATE OF HME FILTER:_____
- DATE OF CATHETER MOUNT : _____
- DATE OF RYLES TUBE INSERTION : _____

- **Patient Parameter**

DATE	TEMP	COUNT	X – RAY REPORT

- **Micro Lab Parameter**

DATE	SPECIMEN	GROWTH	SENSITIVITY

- TOTAL VENTILATOR DAYS OF PATIENT HOSPITAL STAY : _____

PATIENT EXPOSURE:CENTRAL VENOUS CATHETER LINE(CVC LINE)

- DATE OF CVC INSERTION : _____
- TYPE OF DRESSING : _____
- DATE OF CVC REMOVAL : _____

- **Patient Parameter**

DATE	TEMP	COUNT	Daily Observation – Redness/ Indurations / Pus

- **Micro Lab Parameter**

DATE	SPECIMEN	GROWTH	SENSITIVITY

- TOTAL CVC DAYS OF PATIENT HOSPITAL STAY : _____

PATIENT EXPOSURE: URINARY CATHETER

- DATE OF CATHETERIZATION: _____
- TYPE OF CATHETER : _____
- DATE OF CATHETER REMOVAL : _____

- **Patient Parameter**

DATE	TEMP	COUNT	Daily Observation

- **Micro Lab Parameter**

DATE	SPECIMEN	GROWTH	SENSITIVITY

- TOTAL UC DAYS OF PATIENT HOSPITAL STAY : _____