NARAYANA MEDICAL COLLEGE

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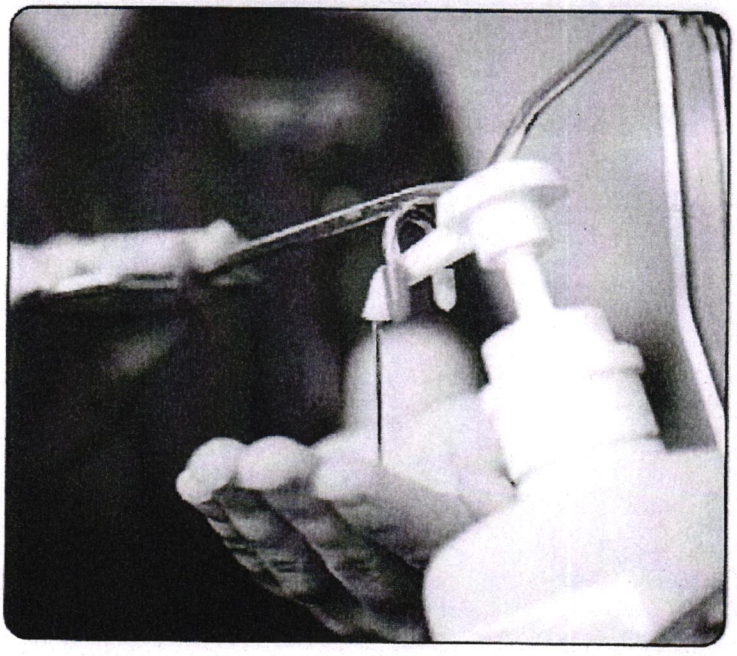
Infection Control Manual

Infection Control Manual



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INDEX

PREFACE

Prof. Dr.P.Sreenivasulu Reddy
Convenor- Infection Control Committee,
Member Secretary,HICC
HOD,Dept. of Microbiology, Narayana Medical College

Narayana Medical College and Superspeciality Hospital is one of the pioneer medical institutions in Andhra Pradesh, India established in the year 2000 under the chairmanship of **Dr.P.Narayana , Hon'ble Minister. Govt of A.P** who is well reputed with his excellent inventions in the field of education and in administration too. Medical college has acclaimed to great extent with 250 admissions every year with attached General and Superspeciality Hospital under '**his**' leadership. Our beloved Chairman's vision and passion is to provide quality health care for the people. Even today, prevention and control of Hospital Acquired Infections are paramount responsibilities facing all health care facilities. Moral, legal and financial factors mandate high standards and safety measures for patient and Health Care Personnel (HCP). To meet the above demands, there should be a comprehensive and cost effective infection control measures for every hospital.

We at Narayana Medical College established an effective infection control measures with the help of an efficient infection control committee. Since 2010 infection control committee is working effectively to prevent spread of infections in the hospital environment. The Narayana Medical College, General & Superspeciality Hospital organized its first infection Control week in October 2011. The programme running over five days comprised lectures, demonstrations videos, posters, catchy slogans dealing with various aspects of infection control and prevention practices. The program involved extensive interactive training sessions for all categories of HCP. Recently, in the month of December 2014 a CME program was conducted on infection control practices as an one day program by involving the departments of Emergency medicine, Gastroenterology, Community medicine and Microbiology. Regularly all HCPs are being educated on bio-medical waste management. Their feedback and

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creative ideas and suggestions are being utilized in making this a successful event every year.

As Florence Nightingale has rightly said "***The very first requirement in the hospital is that should do sick no harm***". Rational disinfection, waste disposal policy and antibiotic policy are very much needed for infection control activities with the help of clinical microbiologists and clinicians. Even though it sounds easy and simple implementation of these policies is a difficult process as restriction undermines clinical freedom. We have very good antibiotic policy for pre and peri-operative prophylaxis and antibiotic policy to treat patients. Administrative support is much needed to implement all the above said activities which we have enough. Team work is equally important and we applaud our housekeeping and CSSD departments who are always positive about the suggestions given by the infections control committee.

I would like to express my heartfelt thanks to the Administrative team of Narayana Medical College to provide invaluable support to all infection control activities and who constantly encouraged and inspired me to get involved in to the Infection Control activities.

I strongly believe that this book will be useful for the clinicians, nursing staff, laboratory staff, housekeeping staff and other health care personnel.

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INTRODUCTION TO HOSPITAL INFECTION CONTROL

Even though science has unveiled the genomic structure of micro organisms and the exact genes responsible for resistance mechanisms, still we are far away from applying the acquired knowledge for ultimate treatment of infections. With the sophistication of patient care and growing complexity along with increasing age related and immuno compromised population, hospitals are being equipped to become highly specialized and sophisticated centers, providing aggressive and life saving patient care. Due to increased number of intensive care beds worldwide to meet the above need, most of the severely ill patients are on invasive life support systems and receiving intensive treatments in the form of highly complicated surgical procedures and also immuno modulating medications. All these are responsible to prone for hospital associated infections which is a global problem now for all the health care set ups.

Invasive life support devices such as mechanical ventilators, vascular access catheters may provide good support to microbial proliferation by forming the biofilm. So, health care facilities are increasingly providing an ecological niche for microbes such as staphylococcus aureus. Pseudomonas species, Enterococcus species, Klebsiella species and Candida. Development of any HAI, particularly those caused by resistant microbes such as MRSA, medico legal consequences because they are usually transmitted by the hospital staff from one patient to another due to noncompliance to the standard practices. Recently, several litigations are being reported against hospitals for clearly visible negligence, which have resulted in patients acquiring HAIs. Exact HAIs burden studies in comprehensive manner are not available in India. According to the SENIC study in mid 1970s there are nearly 4.5 HAIs for every 100 hospital admissions. The annual direct cost on the healthcare system was estimated to 4.5 billion dollars in 1992. In one study, the estimated cost of HAIs in the United States in 2004 was 6.4 million dollars.

Many private health insurance companies are not reimbursing the costs of Hospital Associated Infections (HAI). Now we are moving from the myth "infections are inevitable" to "all most all infections are preventable". SENIC (Study on efficacy of Nosocomial Infections Control) proved that nearly one-third of all HAIs are preventable through the strict implementation of infection control measures. Other studies proved that proper adherence to hospital infection control and prevention protocols can prevent upto 70% of all HAIs

Throughout the world, now there is an increasing concern about the patient safety in health care facilities. According the present estimations, there are nearly 1.4 million health care associated infections worldwide at any given time. WHO launched the world Alliance for Patient Safety in October 2015 its

first Global patient safety challenge is 'Clean care is safe care'. A key objective of this program is to implement a feasible, practical approach to improve hand hygiene in health care globally. The best way to prevent hospital associated infections is maintenance of hand hygiene. Thus prevention is the best option in today's scenario to prevent the HAIs.

To tackle these problematic microbes, we should have to follow simple and basic protocols of infection prevention which are mentioned under the infection control practices, because experiences has shown that even broad spectrum and costly antimicrobial agents may fail to treat these conditions.

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CHAPTER 1

INFECTION CONTROL COMMITTEE – STUCTURE AND IT'S FUNCTIONS IN THE HEALTH CARE SYSTEM

FUCTIONS

- Develop a system of identifying , reporting, investigating and controlling the hospital acquired infection.
- Continued surveillance of hospital acquired infections
- Development and formulation of preventive and corrective programmes in view of infectious hazards.
- Develop an hospital antibiotic policy
- Formulate and update patient care policies ..
- Regularly educating the healthcare personnel of the institution on infection control policies and protocols.
- Regular meetings on first Tuesday of every month between 4.00-5.00 PM to discuss any issues and developments..
- Monitoring the existing policies and formulation of new and protocols on the methods of sterilization and disinfection.
- Review on segregation and disposal of hospital waste.

MEMBERS

- Infection control committee chairman: Medical Superintendent
- Infection control convener : Clinical Microbiologist.
- Infection control Nurse(ICN): Nursing faculty(Qualification B.Sc (N) with experience)

- **Other Members**

1.HOD,Hospital Administration
2.Emergency HOD
3.Consultant intensivist
4.Head of Medicine
5. Head of Surgery
6.Paediatrician
7.Epidemiologist
8. Nursing superintendent
9.Head nurse- ICU
10.Head nurse – O.T(General)
11.Head nurse – O.T (SS)
12.House-keeping manager
13.Statistician
14 . C.S.S.D Manager

- **Co-opted members**

1. Head of engineering department
2. Head of laundry department

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3. Head of Food Supply Department
4. Representative of purchase department
5. Staff development officer

Invitees

- These are additional members from the institution who are invited for a particular meeting only when there would be a discussion pertaining to their field of expertise or any issue that is to be discussed and policy to be derived.

FUNCTIONS OF INDIVIDUAL MEMBERS

Chairperson

- Takes hospital visits periodically to ensure all the infection control practices are being practiced.
- Will report any shortcomings in the infection control practices and bring to the notice of infection control coordinator in planning and implementation infection control programmes and measures.
- Keep a track of any developing outbreaks.
- Participate and guide in research activities.
- Extend the administrative support in implementing the infection control practices.
- Provision of indent (funding).
- Chair the monthly meeting of infection control committee.

Infection control convener(coordinator)

- Acts as a liaison between the infection control committee members and the members associated with patient health care.
- Is an expert in the field of infection control hence always available to advise on all the aspects of infection- control.
- Receives all the surveillance reports and information pertaining to advise on all the aspects of infection- control.
- Initiate surveillance programme in the institution.
- Keep oneself abreast with the recent developments in the field.
- Education and feedback to the clinicians using surveillance data and antibiogram data.
- Development of standards for management of proper insertion of and maintenance of medical devices.

Infection control nurse (ICN)

- Works as a clinical supervisor by ensuring all the established policies and protocols e.g. hand washing procedures, use of hand rub, isolation policies,

care of vascular devices and urinary catheters, use of PPE, cleaning and disinfection and follow up of needle – stick injuries.

- Works as an investigator along with the infection control committee to track down outbreaks, evaluate the equipments to detect risks leading to infection hazards.
- Works an educator by participating in formal and in-formal teaching programs for nurses and other healthcare workers.
- Attend appropriate courses and workshops related to infection control.
- Reports on MRSA, ESBL strains, Surgical site infection,VAP,CAUTI,Catheter related blood stream infection surveillance.
- Spot surveillance once in a month to assess the peripheral lines, urinary catheters, CVC, waste disposal.
- In open cases of TB and other contagious diseases , instruct the ward sister immediately to discharge or transfer the patient to isolation room (negative pressure).

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CHAPTER 2

ENVIRONMENTAL CLEANING AND DISINFECTION OF OPERATION THEATRE TO PREVENT HOSPITAL ASSOCIATED INFECTIONS

Physical Design of OT

- Temperature : Between 20° C to 22° C
- Humidity : Between 40 % to 60%
- Air Handling Unit: 15 air changes per hour.
- Air flow should be unidirectional, positive airflow.

Method of Disinfection

- Surface cleaning
- Fogging

Disinfectants used

- Formaldehyde and Gluteraldehyde
- Hydrogen peroxide (11%) and Silver nitrate (0.1%)
- 1% Sodium Hypochlorite.

Preparation and concentration of Disinfectants

Formaldehyde and Gluteraldehyde

- For surface cleaning: 200ml in 10 liters (2%)
- For fogging : 2% solution

Hydrogen peroxide and Silver nitrate

- For surface cleaning make 5% of the solution (250 ml in 5 liters of water)
- For Fogging : Make 20% concentration of solution (200 ml in 1000ml)
- Sodium Hypochlorite: 1% solution (75 ml in 12 liters of water)

Amount of disinfectant for fogging

For Hydrogen peroxide and silver nitrate

Space duration		Dilution	Fogging
C.ft	M^3		
1000	28	200ml in 1000ml	20 min
2000	58	400ml in 2000ml	40min
3000	84	600ml in 3000ml	60 min

Schedule for cleaning

Before Surgery

- All horizontal surfaces with in the OT are damp dusted before the first scheduled surgical procedure of the day with a clean lint free cloth moistened in the disinfectant solution approved.

During Surgical Procedure

- Accidental spillage in the area outside the surgical field should be promptly cleaned by placing tissue papers over it, then pouring 1% sodium hypochlorite over it.
- Leave it for 10 minutes then collect it in the scoop, then mop with a disinfectant.
- Discard the contaminated disposable items in red bag.

In between Surgical procedure

- Inspect the cleanliness of the operation theatre
- Reusable suction bottles are emptied and cleaned under the running water and tubing's are replaced.
- Respiratory tubing's are cleaned under running water and sent for autoclaving
- Floor cleaning is done in area around the sterile field with sodium hypochlorite.

End of the Day

- Terminal cleaning to be done with ***2% Gluteraldehyde and formaldehyde Or 5% hydrogen peroxide and silver nitrate.***
  - All furnitures, wall surfaces, fixed and ceiling mounted equipments, anaesthetic equipments and accessories, soap dispensers, handles of cabinet are to be disinfected with either formaldehyde and Gluteraldehyde or hydrogen peroxide.
  - Scrub sinks are cleaned with detergent and tap water.
  - Floor Cleaning is done with ***1% Sodium Hypochlorite.***
  - Bathrooms and toilets are cleaned with ***detergent powder.***
  - Suction bottles are to be emptied, cleaned and disinfected by immersing into 1% sodium hypochlorites solution for 30 minutes.
  - Transport vehicles,trolly, including straps and attachments are cleaned with ***2% formaldehyde and Gluteraldehyde or 5% hydrogen peroxide and silver nitrate.***

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Weekly Cleaning (Performed on Sunday)

- Remove all movable equipments and furniture from the O.T.
- Clean with wet mopping with disinfectant solution
- A.H.U. to be cleaned with dry vacuum cleaner.
- Ducts and filters are cleaned weekly and change required.
- Floor cleaning to be done with scrub and vacuum by using detergent and water and final cleaning with 1% sodium hypochlorite.
- Ceiling and walls are cleaned with dry vacuum cleaner
- Fumigation is done at night (Saturday/Sunday)
- Pesticide(smell free) has to be sprayed in the corners, scrub areas and dress change rooms on Monday.

Periodical Cleaning (Done every 6 months, reopened old OTs)

- It is a two-day programme.
- The ceiling area is opened and cleaned with dry vacuum and sprayed with Disinfectant Solution.
- Ducts have to be cleaned.
- Fumigation is done in the night.
- Ceiling has to be reestablished
- Fumigation with disinfectants is repeated in the night.
- Floor cleaning is done with scrub and vacuum cleaning.
- Walls and ceiling are sprayed with disinfectant solution.

Air Sampling

- Done on weekly basis, every Monday early morning.

Fogging

- Keep Air Conditioning switched off.
- Keep room closed for 1-2 hours.
- Switch on exhaust for 15 minutes prior starting air conditioning.
- Air conditioning to be started after 1 hour of the procedure.

Laminar Air Flow

- Air Flow should be unidirectional
- Total air changes must be 40-50/hour(minimum 15).
- Positive Air pressure with velocity 110 ft/min at filter point and 50-70 ft/min at the operating table level.
- Filters used are pre filter of 10 micron, micro filter of 5 micron and HE filters of 0.3 microns.

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Care of Mops

- Mops used should be cleaned with detergent regularly.
- After use ,keep them for drying.

ISOLATION ROOMS

- Change curtains every week and after discharge of one patient.
- Air Ducts to be cleaned periodically.
- Fogging to be carried out with ***20% hydrogen peroxide and silver nitrate disinfectant*** after discharge of each patient.
- Terminal cleaning with 5% hydrogen peroxide and silver nitrate to be done each shift.
- Admit a patient only after 1-2 hours after fogging.

DISINFECTION OF OUT PATIENT DEPARTMENT (OPD)

- Use ***1% sodium hypochlorite*** for floor mopping
- Tabletops, examination table, dressing trolleys with ***5% hydrogen peroxide and silver nitrate*** solution.
- Dental Chair and other accessories with 20% hydrogen peroxide and silver nitrate.
- Change all curtains once in a week.
- Change linen on examination table every day or as and when required.

EMERGENCY ROOMS AND THE INTENSIVE CARE UNITS

- Environmental cleaning to be done **twice in each shift**
- For terminal cleaning spray the entire area with ***20% hydrogen peroxide and silver nitrate or 5% formaldehyde or Gluteraldehyde*** and admit new patient after it dries
- Change the curtains once in 7 days or as and when required.
- If a patient is discharged / transferred then change the bed sheets,pillow covers, disinfect the cot prior to admitting a new patient.

DRESSING ROOM

- Spray the entire room with 20% hydrogen peroxide and silver nitrate daily in the evening.
- Clean all the tabletops with 5% hydrogen peroxide and silver nitrate twice in each shift.
- Trolley to be kept clean at all times and disinfect with 5% hydrogen peroxide and silver nitrate.

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CARE OF WARDS

SPRAYING

- On discharge of patient clear all the furniture used for patient
- Remove the bed linen early in the morning.
- Clean all the tabletops, window ledges, all fixtures, phones, chairs and other furniture in the room with clean duster and 5% disinfectant solution.
- Floors to be mopped with 1% sodium hypochlorite.
- Dry sweeping is not recommended unless visible waste or dirt is present.
- Once all the surfaces in the room are dry replace all the furniture back.

Important Aspects:

- Change curtains once every week.
- Avoid using the patient's linen for dusting.
- Avoid cleaning the mops and duster in the patient's sink.
- Terminal cleaning of the wards to be done once each shift.

DISINFECTION OF PATIENT CARE UTILITIES

Items	Cleaning/disinfection	Remarks
Nebulizer set	Soap and water	Individual preferred
Stethoscope	Alcohol swab (70%)	After each use
Thermometer	Isopropyl alcohol swab 70% Alcohol	Individual for each patient clean after each use.
Laryngoscope	Blade- with soap and water, handle & bulb – is opropyi alcohol	
Nasal prongs	Tap water then 70% Alcohol	Individual
Oxygen masks	Isopropyl alcohol swab or Ethyl alcohol	Individual
Ambo bag	If uninfected patient: isopropyl swab. if infected patient – Cidex dipped for one hour.	
Sputum mugs	Soap and water. Then immerse in 1% sodium hypochlorite for 20-60 minutes	Keep minimal amount of water in the mugs prior giving to patient.
Ventilator tubing	Non- infectious plain water rinse and autoclaving infectious – plain water rinse	

	and immersion in Cidex solution for 60 minutes	
Transducer	Alcohol swab Autoclave	
Ventilator	Sterilium and Isopropyl alcohol	Externally and internally
Urinal bag/ Container	Soap and water or immerse in 1% sodium hypochlorite for 20-60 minutes	
Emesis Basin	Soap and water	
Measuring cup	Soap and water	
Medicine container	Soap and water then 70% alcohol	Should be dry
Bed pan	Soap and water	Keep in clean dry place
Eye protector/goggles/face mask	70% alcohol or 1% Sodium hypochlorite	
Apron,Gown Caps, Shoes,	Launder in hot water(70^{0}C-80^{0}C) with detergent OR soak in clean water with bleaching powder 0.5% for 30 minutes	Discard in the appropriate waste bag if it is reusable.

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CHAPTER 3

STERILIZATION PROCEDURES AND POLICIES FOR INFECTION CONTROL

Sterilization

It is defined as the process by which all the microorganisms(vegetative forms) are killed from a surface, object or medium inclusive of spores.

Spaulding classification for risk of transmission by instruments and Methods of sterilization

Classification	Description	Goal	Appropriate Process
Critical items	Items entering sterile tissue, or body cavity , the vascular systems and non intact mucous membranes ,e.g .surgical instruments	Objects should be sterile (free from bacteria and spores)	Single use sterile product is preferable. **If reusable:** Steam sterilization at low temperature methods (ethylene oxide, peracetic acid, hydrogen peroxide plasma) Items should be packed and wrap must be intact
Semi - critical items	Items that make contact directly or indirectly, with intact mucous membranes or non intact skin.Eg. endoscopes, anaesthetic tubes, respiratory therapy items	Objects will be free of all microorganisms with the exception of high numbers of bacterial spores	High level chemical disinfectants. (Glutaraldehyde, OPA) Thermal disinfection. Autoclave – if possible
Non – critical items	Objects that come into contact with intact skin but not mucous membranes. Ex. Crutches,BP cuffs, table tops, Bed pan, Emesis basin	Objects will be clean	• Detergent and water • 70% Alcohol

Choice of method

- **ETO:** All single use instruments which are meant for reuse will be sterilized by this method e.g. ventilator tubings .
- **Autoclave:** All metal articles used in surgery, prior use and post usage material of patient have to be autoclaved(if they withstand the higher temperatures)e.g. ventricular scope, PCNL.
- **Hydrogen Peroxide Gas Plasma Sterilization:** This is the latest technology and sterilizes most medical instruments within one hour.

Preparation for sterilization

Cleaning (Most critical step in the process of sterilization)

- After checking the instruments for count and proper cleaning, arrange them in a suitable basket in open position..
- Use a soft brush to clean hollow lumen and atraumatic instruments with water jet.
- Clean the instrument in ultrasonic cleaner for 10 minutes. (Preferably with 0.4% of enzymatic solution).
- Rinse the instruments in hot water to remove traces of enzyme / detergent.
- Repeat rinse by flushing the instruments with water gun..
- Then blow the instruments with air jet/ air gun to remove the excess of water..
- Place the basket of instruments in dryer for complete drying.

Steam sterilization (autoclaving)

- After drying all the surgical Instruments (Critical Items) are then checked thoroughly in the Assembly Area.
- They are assembled in the respective baskets as per their pre- decided list CSSD Technicians sign the lists.
- Once a instrument set is prepared as per the lists, the sets are packed doubly in an appropriate size and type of wrapping materials.
- These sets are labeled for their contents.
- An expiry date is put and a process indicators is affixed on this label.
- These are loaded on autoclave carriages and are subjected to steam sterilization. Autoclaving is done at 135° C for 7 minutes or 120° C for 20 minutes with a holding time of 1 hour or 1 hour 10 minutes respectively. Each load has a 'class 6' emulating indicator, that changes the colour only when all three critical parameters have been achieved. (These parameters are time, steam and temperature).

Monitoring of steam sterilization process

Chemical check

- Daily a **Bowie and Dick test** is carried out in an empty cycle to check for the proper air removal by the sterilizer and also air leaks.
- In every cycle, class 6 indicator is processed to check the correct exposure time, saturated steam and the accurate temperature. **Steraffirm Steam Class 6 Emulating Indicators** are strip chemical indicators that can be placed in each pack, pouch or device being sterilized. After exposure to

specific conditions the liquid goes through a permanent color change that indicates sterilization parameters have been met.

Biological check

- Weekly an ampoule containing **B. stearothermophilus** is processed in a challenge pack in the sterilizer and thereafter is incubated along with the positive control.

Physical check

- Each sterilization cycle should be accompanied with a print out regarding temperature and pressure under which the cycle was processed.

ETO sterilization

- ETO items are flushed immediately at user level with plain water..
- In CSSD these articles are flushed with 3% acetic solution with the help of a syringe,. Then these articles are immersed in a soaking chamber filled with disinfectant solution for a minimum period of half an hour.
- Articles are checked for complete drying.
- They are then packed in the peel pouches with in- built chemical indicator for changes color after the cycle of sterilization. Packs are labeled with the code of the user department from where it is received.
- They are then subjected for sterilization.

Monitoring of ETO sterilization process

Biological check

- In each cycle an ampoule containing Bacillus stearothermophilus is processed in a challenge pack in the sterilizer and thereafter is incubated along with the positive control, to check the sterilization process.

Physical check

- Each sterilization cycle gives the print out of the cycle process that consist of preconditioning, time of gas exposure, gas removal and thereafter completion of the cycle followed by aeration.

Chemical check

- A process indicator affixed on the peel pouches changes the color once the pouches are subjected to sterilization.
- Every cycle class 5 integrating indicator is process to check the correct exposure time, gas penetration and the accurate temperature.

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Preparation of Hypochlorite solution to the desired concentration

Product	Chlorine Available	How to dilute to 0.5%	How to dilute to 1%	How to dilute to 2%
Sodium hypochlorite – liquid bleach	3.5%	1 part bleach to 6 parts water	1 part bleach to 2.5 parts water	1 part bleach to 0.7 parts water
Sodium hypochlorite – liquid	5%	1 part bleach to 9 parts water	1 part bleach to 4 parts water	1 part bleach to 1.5 parts water
NaDCC (sodium dichlor – oisocyanurate) -- Powder	60%	8.5 grams to 1 litre water	17 grams to 1 litre water	34 grams to 1 litre water
NaDCC (1.5g / tablet) -- tablets	60%	6 tablets to 1 litre water	11 tablets to 1 litre water	23 tablets to 1 litre water
Chloramine -- Powder	25%	20 grams to 1 litre water	40 grams to 1 litre water	80 grams to 1 litre water

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CHAPTER 4

HOSPITAL ANTIBIOTIC POLICY

- Before prescribing any antimicrobial agent, please confirm your choice of antibiotic with the consultant microbiologist depending on your provisional/confirmed diagnosis before getting the antibiotic sensitivity report.

Rationale

Regulation of the antibiotic usage in the hospital is necessary for 3 reasons.

- To ensure an antibiotic is available to overcome infection caused by any pathogen. Higher antibiotic should therefore be kept in reserve.
- To curtail the emergence of resistant strains of microorganisms.
- To reduce the cost of treatment.

Antibiotic Policy of Narayana General &Super speciality Hospital

Procedure	Preferred drug
Community acquired meningitis	Cefotaxime/ Ampicillin+Chloramphenicol
Community acquired Pneumonia	Azithromycin/Doxycycline
Aspiration Pneumonia in ICU	Piperacillin+Tazobactum+ Ciprofloxacillin
Lung abscess	Pipercillin+Tazo/Amoxy Clav(if not severe)
Pyoderma Local Wide spread	 Mupirocin Amoxyclav/Azithromycin
Cellulitis (Non diabetic)	Cefazolin
Necrotising facitis	Cetriaxone&clindamycin Pipr Tazo+Imipenem (if severe)
Infective endocarditis Native valve Prosthetic valve	 Ampiclox+Gentamycin Vancomycin+gentamycin+Rifampin
Acute osteomyelitis	Cloxacillin Rifampicin+Clindamycin (If severe)
Septic arthritis	Ceftriaxone+Cloxacillin
Orthopaedic surgery	Cefazolin/ Cefuroxime
Cardiovascular/ vascular surgery	Cefazolin/ Cefuroxime
Neurosurgery/Trauma	Meropenem+vancomycin(till MRSA is excluded)

Shunt Infection	Vancomycin+Meropenem
Post surgical/trauma abscess	Cefotaxime+Cloxacillin
Acute/Chronic sinusitis	Amox clav
Malignant otitis externa	Ciprofloxacin/Ceftazidime
Streptococcal pharyngitis	Amoxycillin
Ophthalmic surgery	Topical quinolone, Immediate pre operative betadine, Systemic Cefazolin/ Cefuroxime
Head,Neck surgery	Vancomycin+meropenem
ENT surgery	Cefazolin /Amoxyclav
Gastroduodenal	Cefuroxime /Cefazolin
Appendicular / Colorectal surgery	Cefuroxmine /Cefazolin and Metronidazole
Acute appendicitis	Cefotaxime and Metronidazole
Bacillary dysentery	Ciprofloxacin
Acute cholangitis	Cefaperazone and Metronidazole
Liver abscess	Cefotaxime and Metronidazole
Abdominal/ vaginal hysterectomy/ Caesarian section	Ceftriaxone and Metronidazole
Post operative Peritonitis	Meropenem+metronidazole
Pyelonephritis	Ciprofloxacin/Amikacin
Cystitis	Ciprofloxacin/Cotrimaxazole
Urologic surgery	Cefuroxime (or as guided by urine culture)
Severe falciparum Malaria	Artesunate and Mefloquine

P.N: *This type of empirical treatment may varies from place to place and clinician to clinician. Infection may urge the clinician to initiate this kind of treatment before getting the culture and sensitivity report due to the existing ESBL and MRSA strain which may responsible for serious infections. Clinical samples should be collected from the patients prior to starting the empirical treatment*

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ANTIBIOTIC PROPHYLAXIS POLICY FOR NMC

DRUG	DOSAGE	SCHEDULE
Cefazolin	20-30 mg/kg < 80 kg : 1Gm > 80 kg : 2Gm	3 - 5 minutes infusion,30-60 minutes prior to surgery.
Cefuroxime	50 mg/kg 1.5 Gm	3 - 5 minutes infusion 30-60 minutes prior to surgery. Repeat the dose if surgery extended for > 3hours
Metronidazole	0.5- 1Gm	30-60 minutes prior to surgery.

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CHAPTER 5

OUT BREAK POLLICY FOR NARAYANA HOSPITALS

Definition

An increase in the isolation rate of a specific organism or occurring many number of clinical cases in the same time frame suggests an outbreak.

Factors suggesting an outbreak:

- A laboratory report of a bacteriology specimen grows an alerting organism from many samples received .
- Two or more patients are found to have an infection attributed to a microbe which was not previously documented, especially if it has occurred after a surgical procedure.
- The clinicians or the ward staff reports multiple infections of a similar nature.

Investigation of an outbreak

- An outbreak is an **infection control emergency**; measures should be taken as soon as an outbreak is suspected.
- Begin preliminary evaluation and determine a background rate of infection.
- Confirm the existence of an outbreak.
- Confirm the diagnosis using the microbiological methods.
- Create a case definition that can be redefined at a later date.
- Have to line up and list out the exposures. Describe the data in terms of time, place and person.
- Take immediate control measures. Identify the people at rik to become ill. Be vigilant on the changes which may affect the rate of infection. E.g. new staff, new procedures, new laboratory tests, and health care worker : patient ratio , etc.
- Communicate the information to the relevant authority..
- Environmental and personnel screening is indicated.
- Write a coherent report (preliminary and final)
- Summarize investigation and recommendations to the appropriate authorities.
- Implement long- term infection control measures for prevention of similar outbreaks.

CHAPTER 6

PREVENTION OF NOSOCOMIAL INFECTIONS

Prevention of catheter related blood stream infections (CBRSI) Peripheral catheters

- Veins of upper extremity are preferred over lower extremety
- Practice procedural hand washing technique with antimicrobial soap or alternatively use handrub.
- Disinfect the site selected by using " 3 swab method" with isopropyl alcohol and 10% betadine alternately and wait till dries.
- Do not touch the site ungloved after disinfection.
- Apply a transparent dressing once the site is visibly dry after access is established.
- Change every 72 hours or earlier if infected or any signs of infiltration(If difficulty in establishing a new vein, you may make an exception).
- In case of pediatric patients do not change if no sings of phlebitis.

Central venous catheters (CVC)

General

- Train the staff in catheter insertion, maintenance and infection control measures .
- Regularly assess the compliance and knowledge about infection control practices.
- Maintain good staff levels in ICU to prevent infection.

Insertion

- Teflon catheters preferred over PVC and polyethylene catheters.
- Subclavian preferred over jugular preferred over femoral.
- In children no such preference, use the comfortable route.
- Use minimum number of lumens.
- Antibiotic coated catheters superior than routine catheters if they intended for more than 5 days of insertion.
- Practice surgical hand washing prior to procedure.
- Use maximum barrier precautions (cap, mask, gown and sterile gloves)
- Clean the site ***70% isopropyl alcohol*** *and* ***2% aqueous chlorhexidine alternatively for 3 times***. If 2% aqueous chlorhexidine not available then 0.5% alcoholic chlorhexidine or ***10% betadine*** may be used. Clean in circular manner each time, for 1 minute: 30 seconds scrub time and 30 seconds dry time.

- If providone iodine is used allow at least 2 minutes of dry time.
- Leave site dry after insertion
- Use either plain sterile gauze with opaque dressing or sterile transparent dressing (do not use betadine, muplrocin or any other antibiotic ointment).

Dressing and maintenance

- Regular dressing every 2 days for gauze and 7 days for transparent dressings.
- Change dressing earlier if, loosened or soiled.
- Proper hand hygiene with sterile gloves before dressing.
- Inspect for any evidence of catheter site infection.
- If multilumen catheter is used designate one port exclusively for hyperalimentation.
- Clean all stopcocks with ***70% alcohol or 10% betadine*** prior to use.
- Cap all stopcocks when not in use. Don't let it open.

Removal

- Remove when no longer necessary.
- No need to sent routine surveillance cultures from the catheters.
- Do not routinely culture the catheter tips on removal.
- If catheterization was done in an emergency and aseptic technique was not followed, then replace before 48 hours and place new catheter.
- Replace catheters if there is any evidence of infection at exit site.
- Remove all catheters if person is hemodynamically unstable and CRBSI is suspected.
- If CRBSI is suspected do not replace catheters over a guide wire.

Arterial catheters

- The same principles for insertion, maintenance and removal as for CVC apply
- Use sterile reusable transducers in accordance with manufacturer's instructions if disposable transducers not available.
- Replace the transducer at 72 hours interval along with other components of the system including the tubing, the flush solution and the continuous flush device.
- Keep all components of the pressure monitoring system sterile.
- Minimize manipulations and keep a closed flush system.
- When the pressure monitoring system is accessed through a diaphragm rather than stop cock, wipe the diaphragm with 70% alcohol prior to access.

- Do not use any parenteral fluids or dextrose containing fluids through the system.

Umbilical catheters

- The same principles as for CVC apply.
- Do not apply tincture of iodine for skin disinfection.
- Umbilical artery catheters should ideally not be left for > 5 days.
- Remove earlier and do not replace if CRBSI, thrombosis, vascular insufficiency is suspected.
- Umbilical venous catheters can be kept up to 2 weeks if aseptic precautions followed. Remove earlier and do not replace if CRBSI/ thrombosis suspected.

Administration of sets, fluids and medication

- Replace administration sets with add on devices (tubings, stop cocks, needle less devices) every 72 hours.
- Replace the sets used to administer blood, blood products, lipid emulsions every 24 hours.
- Replace tubings used to administer propofol every 6-12 hours .
- Complete infusions of lipids within 12 hours of initiation (max 24 hours) and of blood products within 4 hours of initiation.
- Use collapsible bags for IV fluids whenever possible especially for patients at high risk for nosocomial infections (avoid using needles for air inlets).
- Prefer single dose vials .If multi dose vials are used, refrigerate after every use and wipe the access surface with ***70% alcohol*** before inserting the needle.
- In line filters are not routinely required.

Prevention of urinary tract infections

- Educate the HCP in the correct techniques of catheter insertion and its care.
- Catheterize only when necessary. Condom catheter drainage, suprapubic catheterization, and intermittent urethral catheterization can be useful alternatives to indwelling urethral catheterization.
- Use smallest suitable bore catheter consistent with good drainage and to minimize urethral trauma.
- Procedural hand washing with antimicrobial agent or hands rub.
- Insert catheter using aseptic technique and sterile equipment. Use sterile gloves, sterile drape, swabs, single packet of lubricant jelly, and antiseptic solution (***Savlon, Betadine***).

- Secure catheter properly to prevent movement and urethral traction.
- A sterile, continuously closed drainages system should be maintained.
- The catheter and collecting tube should be kept from kinking.
- The collecting bag should be emptied regularly using a separate collecting container for each patient (the draining spigot and non sterile collecting container should never come in contact).
- The collecting bags should always be kept below the level of the bladder.
- The catheter and drainage tube should not be disconnected unless the catheter must be irrigated.
- If breaks in aseptic technique, disconnection, or leakage occur, the collecting system should be replaced using aseptic technique after disinfecting the catheter- tubing junction.
- Routine irrigation and use of antimicrobials for irrigation should be avoided.
- To relieve obstruction due to clots, mucus, or other causes, an intermittent method of irrigation may be used.
- The catheter- tubing junction should be disinfected before disconnection. A large- volume sterile syringe and sterile irrigant should be used and then discarded. The person performing irrigation should use aseptic technique.
- If the catheter becomes obstructed and can be kept open only by frequent irrigation, the catheter should be changed if it is likely that the catheter itself is contributing to the obstruction.
- If small volumes of fresh urine are needed for examination, the distal end of the catheter, or preferably the sampling port if present, should be cleansed with a disinfectant, and urine then aspirated with a sterile needle and syringe.
- Large volumes of urine for special analyses should be obtained aseptically from the drainage bag.
- Daily meatal care with ***providone- iodine solution*** and daily cleansing with soap and water does not reduce the incidence of urinary tract infections and is not routinely recommended.
- Indwelling catheters should be changed at arbitrary fixed intervals but should be removed as soon as not needed.
- To minimize the chances of cross- infection, infected and uninfected patients with indwelling catheters should not share the same room or adjacent beds.
- Regular bacteriologic monitoring of cauterized patients is not recommended.

Prevention of health care associated pneumonia

Ventilator associated pneumonia

- Use non invasive ventilation to reduce the need or shorten the duration of endotracheal intubation.
- Oro-tracheal intubation is preferred than nasotracheal intubation if no contraindication..
- Do the entire procedure under complete aseptic precautions.
- Meticulously follow the steps of hand wash, use hand rub and sterile gloves.
- Prefer the endotracheal tube with a dorsal lumen above the endotracheal cuff to allow drainage of tracheal secretions accumulated in the patient's subglottic area.
- Before any manipulation of the tube/ suctioning hand hygiene is most important..
- At present there is no evidence of superiority of the multi use closed system of suctioning with the single use open system of suctioning.
- If the multi use closed catheter is used no routine change of catheter is recommended unless it is blocked or soiled.
- If the open- system suction is employed, use a sterile, single – use catheter. Use only sterile fluid to remove secretions from the suction catheter..
- Do not routinely sterilize or disinfect the internal machinery of mechanical ventilators.
- Do not change routinely the breathing circuit (i.e., ventilator tubing and exhalation valve and the attached humidifier) that is in use on an individual patient. Change the circuit when it is visibly soiled or mechanically malfunctioning.
- Periodically drain and discard any condensate that collects in the tubing of a mechanical ventilator, taking precautions not to allow condensate to drain toward the patient. Hand disinfection before and after the procedure
- Use sterile water to fill bubbling humidifiers.
- No evidence that heat moisture exchangers (HME) are superior to heated humidifiers to prevent pneumonia in patients receiving mechanically assisted ventilator.
- Do not routinely change an HME that is in use on a patient unless it is mechanically malfunctioned or soiled.
- If there is no medical contraindication, elevate at an angle of 30—45 degrees of the head of the bed of a mechanically ventilated patient to prevent aspiration.
- Regularly verify the appropriate placement of the feeding tube.
- Maintain good oral hygiene to prevent pharyngeal colonization and subsequent aspiration.

- No need to perform surveillance of tracheal cultures in intubated patients.

Prevention of postoperative pneumonia:

- Instruct preoperative patient, especially those at high risk for contracting pneumonia, about taking deep breaths and ambulating as soon as medically indicated in the postoperative period.

Care of patients with tracheostomy

- Perform tracheotomy under aseptic conditions.
- When changing tracheostomy tube , wear a gown, use aseptic technique , and replace the tube with one that has undergone sterilization or high-level disinfection.

Care of other respiratory equipment

- Change the oxygen humidifier – tubing (including any nasal prongs or masks) that is in use one patient when it malfunctions or becomes visibly contaminated.
- Small – volume medication nebulizers should be cleaned, disinfected and rinsed with sterile water in between use in the same patient. Use only sterile fluid for nebulization and dispense the fluid into the nebulizer aseptically. Whenever possible, use aerosolized medications in single-dose vials. If multidose medication vials are used , follow manufacturer's instructions for handling, storing, and dispensing the medications.
- Between their uses on different patients , sterilize or subject to high- level disinfection reusable hand – powered resuscitation bags.

Prevention of Surgical Site infections

Preoperative

- Whenever possible, identify and treat all infections remote to the surgical site before elective operation and postpone elective operations on patients with remote site infections until the infection has resolved.
- Do not remove hair preoperatively unless the hair or around the incision site will interfere with the operation.
- If hair is removed, remove immediately before the operation, preferably with trimmer.
- Adequately control serum blood glucose levels in diabetic patients.
- Require patients to shower or bath with ***4% chlorhexidine***, twice pre operatively or at least the night before the operative day.

- Instruct patients to abstain for at least 30 days before elective operation from smoking cigarettes, cigars, pipes or other form of tobacco consumption (e.g., chewing/ dipping).
- Keep preoperative hospital stay as short as possible.

Perioperative instructions for surgical team

- Keep nails short and not to wear hand or arm jewelry.
- Perform a preoperative surgical scrub for at least 2 minutes using an appropriate antiseptic. Clean underneath each fingernail prior to performing the first surgical scrub of the day. Scrub the hands and forearms up to the elbows. After performing the surgical scrub, keep hands away from the body (elbows in flexed position) so water runs from the tips of the fingers toward the elbows. Dry hands with a sterile towel . Put on gloves after donning a sterile gown.
- Wear a surgical mask that fully covers the mouth when entering the operating room, if an operation is to begin or already under way, or if sterile instruments are exposed. Wear the mask throughout the operation.
- Wear a cap or hood to fully cover hair on the head when entering the operating room,
- Use surgical gowns and drapes that are effective when wet (i.,e materials that resist liquid penetration).
- Change scrub suits that are visibly soiled, contaminated, and / or penetrated by blood or other potentially materials.
- Thoroughly wash and clean at and around the incision to remove gross contamination before performing antiseptic skin preparation.
- Use an appropriate antiseptic skin preparation (***70% alcohol, 10% povidone iodine, chlorhexidine gluconate***).
- Apply preoperative antiseptic skin preparation in concentric circles moving toward the periphery. The prepared area must be large enough to extend the incision or new incisions or drain sites, if necessary.
- Follow strict asepsis in the O.T. and use proper sterile instruments.
- Handle tissue gently, maintain effective hemostasis, minimize devitalized tissue and foreign bodies (i.e., sutures , charred tissues, necrotic debris) and eradicate dead space at the surgical site which may attract the microbes to establish.
- If drainage is necessary, use a closed suction drain. Place a drain through a separate incision distant from the operative incision. Remove the drain as soon as possible.

Post operative Care

- Protect with a sterile dressing for 24 to 48 hours postoperatively.

- Bed wetting or leakage from catheters, bed wetting must be attended immediately and should change the linen, bed sheets immediately.
- Wash hands before and after dressing changes and any contact with the surgical site.
- When an incision dressing must be changed, use sterile technique.
- Educate the patient and family regarding proper incision care, symptoms of SSI , and the need to report such symptoms.

Antibiotic Prophylaxis for surgery

Antibiotic timing

- The first antibiotic dose can be given any time 60 minutes preceding the surgical incision preferably just before inducing thef anesthesia. For surgery lasting for more than 4 hours consider the second dose of antibiotic.

Duration of prophylaxis

- Prophylactic antibiotics should be discontinued within 24 after the end of surgery.
- For Perioperative Antibiotic Prophylaxis Refer Antibiotic Policy

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CHAPTER 7

ISOLATION CATEGORIES AND POLICIES

- Universal precautions are to be followed for all patients admitted to the hospital irrespective of their diagnosis.
- Special transmission based precautions i.e. blood borne pathogen isolation (BBP), airborne isolation (AI) , droplet isolation (DI) and Contact isolation(CI) have to be followed for patients having specific diseases.
- When the patient is admitted the exact diagnosis may not be known and hence based on symptom complex the isolation modality has to be chosen. The list of symptom complexes with the isolation method is provided below.
- The list of diseases with the isolation method and duration of isolation is also listed.
- The components of each type of isolation have to be printed on color-coded cards. ***Airborne isolation is in blue, contact isolation in green, droplet isolation in orange and blood borne pathogen in red.*** Sister on each floor should indent for isolation cards. Once a category of isolation is decided for a patient the relevant card should be placed in the patient's file and instructions on the card to be adhered. These cards are reusable so at the time of patient discharge the card should be removed from the patient's file and reused for another patient.
- Alternative for this is, colour coded stickers for each type of isolation (AI,CI,DI,BBP). These stickers should be indented by sister for each floor and affixed on top of the patient's file along with universal precautions sticker (UP).
- Most housekeeping staff and other health care personnel is very familiar with HIV, HCV and HBV stickers but not with BBP sticker on the files. Hence for patients with HIV,HBs Ag and HCV both UP and BBP stickers should be placed on the file.

UNIVERSAL (STANDARD) PRECAUTIONS

Follow these precautions for the care of all patients as well as to you.

Hand washing

- Wash hands after touching blood, body fluids, secretions, excretions, and contaminated items, whether or not gloves are worn. Wash hands immediately after gloves are removed, between patient contact, and when otherwise indicated to avoid transfer of microorganisms to other patients or environments. It may be necessary to wash hands between

tasks and procedures on the same patient to prevent cross-contamination of different body sites.

- Use a plain (non antimicrobial) soap for routine hand washing.
- Can use rub instead of hand wash when hands not visibly contaminated.

Gloves

- Wear gloves (clean, non-sterile gloves are adequate) when touching blood, body fluids, secretions, excretions, and contaminated items. Put on clean gloves just before touching mucous membranes and non-intact skin. Change gloves between tasks and procedures on the same patient after contact with material that may contain a high concentration of microorganisms. Remove gloves promptly after use, and before going to another patient..

Mask, Eye protection , Face Shield

- Wear a mask and eye protection or face shield to protect mucous membranes of the eyes, nose, and mouth during procedures and patient – care activities that are likely to generate splashes or sprays of blood, body fluids, secretions , and excretions.

Gown

- Wear a gown (a clean , non- sterile gown is adequate) to protect skin and to prevent soiling of clothing during procedures and patient- care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions .
- Select a gown that is appropriate for the activity and amount of fluid likely to be encountered. Remove a soiled gown as promptly as possible, and wash hands to avoid transfer of microorganisms to other patients or environments.

Patient – Care Equipment

- Handle the used patient- care equipment which is soiled with blood, body fluids , secretions and excretions in a manner that prevents the transfer of microorganisms to other patients and environments. Ensure that reusable equipment is not used for the care of another patient until it has been cleaned and reprocessed appropriately.

Environmental Control

- Ensure that the hospital has adequate procedures for the routine care, cleaning , and disinfection of environmental surfaces, beds, bedrails,

bedside equipment, and other frequently touched surfaces, and ensure that these procedures are being followed.

Linen

- Handle, transport, and process used linen soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures and contamination of clothing , and that avoids transfer of microorganisms to other patients and environments.

Occupation Health and Blood Borne Pathogens (BBP)

- Take care to prevent injuries when using needles, scalpels, and other sharp instruments or devices; when handling sharp instruments after procedures; when cleaning used instruments: and when disposing of used needles.
- Never recap used needles, or otherwise manipulate them using both hands, or use any other technique that involves directing the point of a needle toward any part of the body; rather , use either a one-handed" scoop" technique or a mechanical device designed for holding the needle sheath.
- Do not remove used needles from disposable syringes by hand, and do not disposable syringes and needles, scalpel bladders, and other sharp items in appropriate puncture- resistant container for transport to the reprocessing area.
- Use mouthpieces, resuscitation bags, or other ventilation devices as an alternative to mouth- to mouth resuscitation methods in areas where the need for resuscitation is predictable.

AIR BORNE ISOLATION

- Negative – pressure room preferred.
- For patients with chicken – pox , measles only immunized staff to provide care.
- For patients with open tuberculosis, wear a mask before entering the room.
- Limit patient's movements, place a surgical mask if patient is to be transported outside.

CONTACT ISOLATION

- Private room preferred.
- Wear gloves prior any patient contact.
- Wear clean non- sterile gown if any contact with body fluids, infectious materials or spillage anticipated.

- Remove the gloves and gown before leaving the room/ patient care area.
- Do not touch environmental surfaces, fomites after removing the gloves/ gown.
- Limit patient transportation.

DROPLET ISOLATION

- Private room preferred/ else cohort patient's with same pure illness/ else ensure 4 feet spatial separation between patients.
- Wear a mask at all times when delivering care or when within the 3 feet space around the patient.
- Limit transportation/ if unavoidable ensure patient wears a mask during transportation.

BLOOD BORNE PATHOGEN ISOLATION

- Hand washing before and after patient contact/ wearing gloves.
- Wear gloves if contact with blood, body fluids , secretions, excretions and contaminated items anticipated.
- Wear mask, eye protection and gown before activities likely to generate splashes and sprays.
- Take utmost care to prevent needle stick injury; use safety cannulas.
- Handle all patient care items properly; dispose appropriately waste and sharps.

Empiric isolation precautions to be instituted till diagnosis established

Condition	Potential pathogens	Type of isolation
Diarrhea	Enteric pathogens	Contact
Meningitis	Meningococci	Droplet
Petechial rash	Meningococci	Droplet
Vesicular rash	Varicella zoster	Airborne& Contact
Maculopapular rash in child	Measles	Airborne
Cough, fever and upper lobe pulmonary infiltrate in an adult	Tuberculosis	Airborne
Paroxysmal/severe persistent cough	Pertussis (whooping cough)	Droplet
Respiratory infections in	RSV, Para influenza	Contact

infants and children		
History of infection or colonization with multidrug resistant organisms	Resistant bacteria	Contact
Skin , wound or urinary tract infection in a patient with recent stay at hospital or nursing home	Resistant bacteria	Contact
Abscess or draining wound that cannot be covered.	Staph aureus	Contact

ISOLATION PRECAUTIONS FOR SPECIFIC CONDITIONS (IN ALPHABETIC ORDER)

Disease	Isolation	Duration
Abscess	Contact	Entire illness
Cellulitis with drainage	Contact	Entire illness
Chicken pox	Airborne, contact	Till all lesions have crusted
Conjunctivitis (viral)	Contact	Entire illness
Diphtheria	Droplet	Until two cultures taken 24 hrs apart are negative
Diarrhea	Contact	Entire illness
Hepatitis A	Contact	In children 3 to 14 years of age, until 2 weeks after onset of symptoms: and in others, until 1 week after onset of symptoms.
Hepatitis B	BBP	Entire illness
Hepatitis C	BBP	Entire illness
HIV	BBP	Entire illness
Herpes simplex	Contact	Entire illness
Herpes Zoster In Immuno Compromised Or Disseminated	Airborne, contact	Till all lesions have crusted
Localized Herpes zoster in normal immune status	UP	
Influenza	Droplet	Entire illness
Avian influenza in humans	Airborne/ contact	7 days (21 days in less than 12 years)
Measles	Airborne	5 days after rash
Mumps	Droplet	Till Swelling Subsides (Usually 9 Days)

Meningococcal infections	Droplet	24 hours after starting antibiotics
MRSA	Contact	Till cultures negative
Pertussis	Droplet	5 days after starting antibiotics
Pneumonia in infants and young children	Droplet	Entire illness
Rabies	Contact	Entire illness
Rubella	Droplet	7 days after onset of rash
Sore throat/ Scarlet fever	Droplet	24 hours of antibiotics
Tuberculosis (Pulmonary)	Airborne	Till 3 sputum smears collected on different days are negative

For diseases not mentioned in this list but for which there is doubt please check with infection control Officer/nurse.

POLICY FOR PATIENTS WITH SMEAR POSITIVE PULMONARY TUBERCULOSIS

Ascertain whether hospitalization is required for the patient or not:

Hospitalization not required

- Inform the registrar of the concerned consultant for immediate discharge of the patient.
- Meanwhile give the patient surgical mask to wear.
- Ensure that there is no post- operative patient or immunocompromised patient in the near vicinity.

Hospitalization required

ICU care not required

- Shift the patient to the isolation rooms on 8th or 11th floor. These rooms are provided with en exhaust fan that should be kept running at all times. The AC air is not returned to the general system.
- Provide filter mask to the patient and visitors.
- Inform all the healthcare workers about the isolation of the patient.
- Keep the door of the isolation room closed all times.
- Fix paper bag with few masks on the door of the room.
- Do not permit the patient to move around in the corridor
- Once health is stable discharge immediately.

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Needs ICU Care

- Shift the patient immediately to the I.C.U. mean while give the patient a filter mask.
- If the patient is on a ventilator no need of mask, since it is a closed system.
- Once patient is extubated, shift him to the isolation room in the I.C.U. if the patient is to kept in the intensive care unit.
- Once patient is to be shifted to the floors transfer in the isolation rooms.
- Discharge the patient at the earliest.
- Institute all air borne precautions in addition.

VARICELLA ZOSTER (CHICKEN POX) POLICIES AND PRECAUTIONS

- Shift the patient immediately to the isolation rooms.
- Only immunized staff has to serve (previous history of chicken pox or those that received two doses of the vaccine).
- Immunize the exposed nurse if not immune.
- Keep the door of the room closed at all times.
- Institute all air borne precautions till the scabs get dry.

M.R.S.A (Methicillin Resistant Staphylococcus Aureus) PROTOCOL

Screening

- Screen all patients with any of the following risk factors for MRSA
- Inter – hospital transfer
- Admission with outside central vascular cannula or catheter.
- Admission with outside Foley's catheter.
- Antibiotic exposure in past 6 months.
- Previous hospitalization or surgery during past 12 months.
- Place the patient under contact isolation till reports of MRSA status received.

Isolation Precautions

- Standard contact precautions
- Assign designated staffs
- Room surfaces to be disinfected thoroughly with **Ecoshield 5%/ Vircon**
- Utensils or patient care items to be separated and disinfected prior reuse for other patients.
- Soiled linen (due to secretions, oozing, exfoliative skin conditions) to be discarded in the bag.

MRSA clearance

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- Infected / colonized patients to be screened weekly and three negative screening indicates clearance.
- Health care personnel to be screened in cases of epidemic, Nasal carriers may be allowed after 24 hours of starting ointment mupirocin (intranasal).

Treatment of carriers

- ***Nasal carriage:*** 1% Chlorhexidine paste (**hexgel ipca**) thrice daily 15 days or mupirocin (**Bactroban**) in a paraffin base thrice daily for 5 days.
- ***Skin carriage :*** 4% chlorhexidine (**Microshield- 4**) solution for daily bath for one week.

In case of SARS:

- Limit the movement and transport of patients from the isolation room/area for essential purposes only. If transportation is required out of the isolation room/area the patient should wear a surgical mask and a gown where possible. All staff involved in the transportation should wear personal protective equipment.
- Clearly mark the accompanying request form as "suspected or probable SARS".
- Notify the laboratory by telephone that the specimen is "on its way."

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CHAPTER 8

HAND HYGIENE: IT'S ROLE IN INFECTION CONTROL PRACTICES

Indications for routine hand washing and hand antisepsis

- Before having direct contact with patients.
- Before donning sterile gloves when inserting central intravascular catheter.
- Before inserting indwelling urinary catheters, peripheral vascular catheters, or other invasive devices that do not require a surgical procedure.
- After contact with a patient's intact skin (e.g., when taking a pulse or blood pressure, and lifting a patient).
- After contact with a patient's intact skin (e.g., when taking a pulse or blood pressure, and lifting a patient).
- After contact with body fluids or excretions , mucous membranes, non intact skin, and wound dressings if hands are not visibly soiled.
- If moving from a contaminated – body site to a clean- body site during patient care procedures.
- After contact with medical equipment in the immediate vicinity of the patient.
- After removing gloves.

What to use

- When hands are visibly dirty or contaminated with proteinaceous material or are visibly soiled with blood or other body fluids, wash hands with antimicrobial soap and water.
- If hands are not visibly soiled, you may use an alcohol- based chlorhexidine hand rub.
- Before eating and after using a restroom, wash hands with a non-antimicrobial soap and water.

Method of hand hygiene

- With an **alcohol- based hand rub *(Sterillium/Bactorub)***: Apply the product to palm of one hand and rub hands together, covering all surfaces of hands and fingers, until hands become dry. Follow the manufacturer's recommendations regarding the volume of the product to be used.
- When washing hands with soap and water, wet hands first with water, apply an amount of product recommended by the manufacturer to hands, and rub hands together vigorously for at least 15 seconds, covering all surfaces of the hands and fingers. Rinse hands with water and dry

thoroughly with a disposable towel. ***Avoid using hot water, because repeated exposure to hot water may increase the risk of dermatitis.***

- **Liquid, bar, leaflet or powdered forms of plain soap** are acceptable when washing hands with a non antimicrobial soap and water. Small bars of soap should be used.
- **Multiple - use cloth towels, or roll type are not recommended** for use in health- care settings.

Surgical hand wash

- Remove rings, watches, and bracelets before beginning the surgical hand scrub.
- Remove debris from underneath fingernails using a nail cleaner under running water.
- When using an antimicrobial soap, scrub hands and forearms for the length of time recommended by the manufacturer, usually 6 minutes. Long scrub times (e.g., 10 minutes) are not necessary.
- When using an alcohol- based surgical hand- scrub with persistent acitivity, follow the manufacturer's instructions. Before applying the alcohol solution, prewash hands and forearms with non-antimicrobial soap and dry hands and forearms completely. After application of the alcohol-based product as recommended , allow hands and forearms to dry thoroughly before donning sterile gloves.

How to Promote the hand hygiene?

- Keep the hand rub solution at the patient bedside and replace as soon as empty.
- Educate health care workers about need and method of hand hygiene.
- Reinforce this message regularly.
- Monitor adherence to hand hygiene on periodic basis and give feedback to health care workers.
- Educate patient and their families to remind health care workers to decontaminate their hands.

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CHAPTER 9

SURVEILLANCE OF NOSOCOMIAL INFECTIONS IN THE HEALTH CARE SYSTEM

Definition

- Surveillance is defined as the continuing scrutiny of all aspects of the occurrence and the spread of a disease that are pertinent to effective control.
- Surveillance is defined as the ongoing systematic collection, analysis and interpretation of health data essential to planning, implementation and evaluation of the public health practice closely integrated with timely dissemination of this data to those who need to know.
- Nosocomial infection surveillance is a program designed to investigate , control and prevent hospital acquired infections.

Objectives of surveillance

- To recognize any unusual level of incidence or outbreak.
- To judge the desirability of introducing special control measures.
- To assess the efficiency of regular preventive measures.
- To provide feedback.
- To reduce the level of avoidable infection.
- To establish endemic baseline data.
- To identify high- risk patients.

Methods of Surveillance

Lab record scrutiny

- Infections control nurse examiners lab reports daily and discusses it with the infection control doctor or microbiology lab technician.
- She/He then visits the relevant patients and gathers necessary information .She determines whether it is hospital- acquired infection and community acquired infection. She encourages the ward staff to report to her or send samples for all patients with suspected infection.
- Helps in identifying cross infections and outbreaks.

Daily visit to all wards and units

- Infection control nurse has to visit all the wards daily or several times a week and **examine all records of all clinical infections.**

Nosocomial infection rates analysis

- These include
- Surgical site infection (SSI) rates in clean as well as clean contaminated wounds.
- Intravascular catheter infection rates per thousand catheter days.
- Ventilator associated pneumonia rates per thousand ventilator days.
- Urinary tract infection rates per thousand catheter days.
- Appropriate case definitions of each nosocomial infection as described by the CDC are used.
- Since continuous surveillance of nosocomial infections is often difficult, time consuming and costly these rates can be determined periodically to define time trends.

Periodical tests to be done by infection control committee in the hospital

Test to be done	Tests to be performed	Frequency
Potability of water	Biochemistry: Level of chlorine in water Microbiology: Coliform bacilli.	Fort night
Air Sampling O.T Oncology Units Acute Care Dept. Transplant unit ICU	MRSA,VRE,ESBL producers, Pseudomonas, E.coli and Klebsiella and Fungi	Weekly
Food handlers	Stool for Salmonella and Parasitic infections	Biannually

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CHAPTER 10

BIO MEDICAL WASTE MANAGEMENT TO PREVENT HEALTH HAZARDS

The hospital follows four colour codes for segregating waste and disposal as per guidelines:

Black Bag

This is to collect general waste, to sent to the Bio Medical center(B.M.C.) for final disposal. It includes:

- Office papers
- Paper cups
- Tissue papers
- Kitchen waste
- Incinerated Ash.
- Wastage from cafeteria (Food waste and vegetable waste)

Yellow Bag: This is to collect infectious waste, which is has to be sent to the **B.M.C** for final disposal. It includes

- Human Tissues
- Organs and body Parts
- Cytotoxic drug ampoules and vials
- Expired or discarded drugs.

Red Bag:

This is for the infectious waste, which is autoclaved and then converted into fine pieces by shredder then sent to B.M.C. for final disposal. It includes:

- Disposable items like infected I.V.tubings
- Rubber- catheters
- Infected intravenous sets
- Cannulas
- Ryle's tubes
- Cut gloves

All the infectious waste like vacutainer, glass test tubes etc from the labs are collected in the red bag and sent to the washing room. Here they are disinfected with sodium hypochlorite and to be autoclaved. They are then

has to be transferred in to the black bags and finally to the B.M.C for disposal

Green bag:

All the ***recyclable plastic waste*** is collected in the green bag and then handed to assigned contractors as scraps for recycling . It includes:

- Non – infected intravenous sets
- Non infected tubings
- Packing Material
- Non- infected plastic bottles
- Oil Tins
- Cardboard boxes

Sharps (Puncture Proof Container):

This should contain ***5% Sodium hypochlorite*** solution. All needles are cut using needle cutters and put in the sharps container. These are then handed over to the B.M.C for disposal. It includes.

- Needles
- Syringes
- Scalpels
- Blades

Glass waste (Cardboard Box):

Glass waste is collected in the cardboard box and then handed over to the B.M.C for disposal. It includes.

- Broken glasses
- Glass I.V.bottles
- Glass petri dishes
- Non- infected glass bottles
- Ampoules.
- Glass slides

Radioactive waste:

These are the syringes and the needles used to administer the radio active dye and the radioactive isotopes usually in the radiology department.

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- The syringes and needles are collected in radio opaque cans, which are stored in the dark room till they are free of the radioactivity. Each can is dated with date of usage and date to be discarded (free of radioactivity).
- The isotopes are stored in the lead containers till they are free of radioactivity, then the lead containers are sold as scrap.

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CHAPTER 11

POLICY FOR REPORTING COMMUNICABLE DISEASES TO THE BIO MEDICAL CENTRE (B.M.C)

- Eight diseases as enumerated below would be reported to the BMC
- At the time of discharge the head nurse would fill the form given below for those patients with any of these eight diseases.
- These filled forms would be sent to Casualty
- The Casualty Manager would then send these forms to BMC on a monthly basis after retaining on Xerox copy.

BMC REPORTING FORM

NAME:

AGE:

SEX:

HH NO:

DATE OF DISCHARGE:

RESIDENTIAL ADDRESS:

CONTACT NUMBER:

DIAGNOSIS (Check one): 1)Leptospira

2)Dengue

3)Malaria

4) Enteric Fever

5)Tuberculosis

6)Hepatitis A

7)Hepatitis E

8) Measles

CHAPTER 12

OCCUPATIONAL EXPOSURE TO BLOOD/ BODY FLUIDS IN PATIENT CARE

Management protocol

- Wash the area with plenty of soap and water immediately.
- Do not squeeze or suck the area.
- Report to the casualty and give all details of exposure to CMO about exposure/ source and about your own immunization status.
- If the source person's HBV/HCV and HBs Ag status is unknown then send source blood samples for detection of HIV/HCV/HBV status.
- Exposed Health Care personnel (HCP) also has to submit the blood for HBV,HCV and HIV, which need not be processed immediately .
- If source blood is negative for HIV/HBV/HCV then the exposed person's samples should only be tested for HIV.
- **If source blood is positive for HIV.....**

- Pregnancy status of the HCP to be ascertained (if female).
- Start post exposure prophylaxis with starter pack (ZDV 300mg, LMV 150 mg) 1 tablet twice a day.
- Collect the details regarding the CD4/CD8 count, viral load and anti retroviral therapy of the source.
- Consult Dr P.Sreenivasulu Reddy,Professor&HOD, Department of Microbiology immediately or definitely within the 24 hours after exposure for counseling/need for expanded or alternative regime.
- Test HIV status of exposed by ELISA at 6 weeks, 3 and 6 months. If exposed person is affordable, suggest for HIV –PCR test

- **If source is HBV positive.....**

- Test exposed for HBs Ag and anti HBs Ag levels and decide prophylaxis.

STATUS	PROPHYLAXIS
Exposed is not vaccinated	Give HBIG 0.06 ml/kg. Vaccinate with HBV vaccine on 0,1month,6 months
Exposed has received one/two doses of vaccination	Check the anti HBs Ag level . Continue the vaccination schedule. Give HBIG if the anti HBsAg level is <10 mIU/ml.
Exposed has received 3 or 4 doses of vaccine, but no anti HBs level were done the in past OR level < 10 mIU/ml	Check anti HBs level If level > 10 ml no intervention If level <10 give booster dose.
Exposed has completed vaccinated Anti HBs Ag levels >10 mIU/ml	No intervention

-Do the Repeat test for HBsAg status at the end of 3 and also 6 months.

- **If source is HCV positive:**
  - Test the exposed for Anti- HCV and baseline Liver Function tests
  - Then consult the Medical Gastroenterologist for further maintenance.
  - Again test for anti HCV and SGPT of exposed person to be done at 4-6 months.
- **If source is unknown:**
  - Check exposed person for HIV/Hbs Ag/HCV/Anti Hbs Ag level.
  - If exposed is partially immunized or unimmunized for HBV then start HBV vaccination.
  - If chances of needle causing injury belonging to HIV patient is high, start on treatment with ***starter pack*** for HIV
  - Repeat HIV/Hbs Ag and HCV testing at 6 months.
- **Contact persons:**
  - Dr.P.Sreenivasulu Reddy .Extn No: 2572
  - Infection Control Nurse

Proforma for occupational exposure to blood borne pathogens

Date /Time _____ Filled by _____

1.Demographics

Name..... Age..... Sex.....

Employment number ..... Department .....

Hepatitis B vaccination (Complete/ Incomplete /Unvaccinated) .....

Anti HBs Ag level in past (Done /Not done/ If done value) .....

2 .Details of injury

Date/Time..... Time since injury .....

Source (Unknown/Known) .....

Source location (details) .....

Source HIV/HbS Ag/HCV status at the time of exposure.....
(Known/Unknown)

Body fluid (Blood/ other body fluid) .....

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Type of injury (Mucosal/superficial percutaneous /deep percutaneous).....

Procedure (IM inj/SC inj/IV access/garbage bag) .....

Wound care after injury .....

3. Checklist for CMO

Blood sample from Source person has been sent (Yes/No) .....

Blood sample from exposed person has been sent(Yes/No) .....

HBV vaccine: Not indicated / Indicated & given/Indicated & not given

ARV starter pack: Not indicated / Indicated & given/Indicated & not given

Time of starter pack since injury(time in hours).....

Referral & counseling (to be explained to the exposed):

4. Follow up

HIV/HBV/HCV status of source person at 3 & 6 months.....

HIV/HBV/HCV status of exposed person at 3 & 6 months.....

HBV vaccination (completion /details of discontinuity).....

ARV details (regime, duration, side effects).....,

Adherence to treatment regime .....

CARE TO PREVENT OCCUPATIONL EXPOSURE WITH BLOOD AND BODY FLUIDS *AT A GLANCE*

POSSIBLE SOURCES FOR OCCUPATIONAL HAZARDS IN HOPITAL:

Blood, Urine, Oral secretions, Faeces, Semen, Mucous secretions, Pus, Wound or other drainage fluids.

ACTIVITY and RECOMMENDATION

HAND WASH : Before and after Patient Contact

GLOVES:	Before touching Blood and body substance
GOWN:	When soiling is likely to occur
MASK and GOGGLES:	When it is likely that eyes or mucous membranes will be splashed with blood or body fluids.
SHARPS:	Place needles in sharps container." **Do not recap"**
WASTE :	Use Red plastic bag for disposal of infections waste
LINEN :	If linen is heavily soiled with body substances. Double wrap it before placing it into red laundry bag.

CHAPTER 13

IMMUNIZATION FOR HEALTH CARE WORKERS

Hepatitis B Immunization

- All health care personnel including temporary workers should receive Hepatitis B immunization.
- The dose and schedule is 1 ml (20 mg) IM on deltoid at 0,1 and 6 months.
- If the schedule has been interrupted there is no need to restart the dosing.
- Ideally all health workers should be checked for anti HBs Ag levels, one month after completion of the vaccination schedule.
- If anti HBs Ag levels are > 10 mIU/ml, then they will be considered as responders with complete immunity against the HBV infection. Booster doses will be given after 3 years blindly or after doing the Anti HBs Ag levels.
- If anti HBs level is < 10 IU/ml then they are non responders and should be checked for HBs Ag seropositivity.
- If HBs Ag is negative then they should receive one more course of the vaccine (3 doses). 50% of original non responders respond to the second course.
- Those who do not respond to the second course are considered permanently susceptible and may need HBIG, following exposure.

Varicella immunization

- All health care workers (particularly nurses) should be asked for history of varicella.
- If there is no history of varicella they should receive two doses of the varicella vaccine 0.5ml, Subcutaneously at 4 weeks interval.

CHAPTER 14

HOSPITAL VISITORS POLICY TO PREVENT HOSPITAL ASSOCIATED INFECTIONS

- The best visiting hours to be permitted in our hospital for better patient safety is from 6 – 8 PM the evening daily and 1-2 PM in the afternoon which may not interfere with the consultant's rounds and hospital cleaning and disinfectant activities.
- Above timings for ALL days in a week.
- Visitors should be allowed with Visitor's pass obtained from the admission desk in the front lobby/ward in-charge which must be returned on discharge.
- Patient attendant (staying round the clock with patient) must display the visitor's pass all times.
- Visitors who are suffering with coryza, fever, cough, sore throat, vomiting should be discouraged from visiting the hospital.
- Visitors should maintain the ***'No smoking, no tobacco chewing policy'***
- Visitors must not visit the patient by wearing flowers and full of gold ornaments.
- Visitors must follow the hospital infection control guidelines strictly
- Children under 12 years of age are not allowed to visit patients at any time,
- Visitors should make plans to visit during posted visiting hours and limit the number of visitors in patient's room at a given time.
- Visitors must maintain a quiet environment and avoid unnecessary noise.
- Flowers, fruits, snacks, outside meals are strictly not allowed in the hospital.

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REFERENCES

1. Infection Control Book. P.D Hinduja National Hospital & Medical Research Centre. **2012**

2. Practical guidelines for Infection Control in Health Care facilities. SEARO regional Publication No.41 WPRO regional Publication. **WHO 2004**

3. A guide to selection and use of disinfectants. BCCDC Laboratory Services **2003**

4. Centers for Disease Control and Prevention. Guidelines for environmental infection control in health- care facilities: recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC).MMWR **2003**:52 (No RR-10): 148.

5. Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee Guidelines for Preventing Health – Care- - Associated Pneumonia, **2003 March 26, 2004**/53 (RR03): 1-36.

6. Recommendations of the Healthcare INFECTION Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force **2002.**

7. Guideline for Hand Hygiene in Health- Care Settings. MMWR **2002**; 51 (RR 16); 1-44.

8. Centers for Disease Control. Guideline for the Prevention of Intravascular Catheter- Related Infections.MM WR **2002**: 51 (No RR-10): 1-29.

9. Centers for Disease Control and Prevention. Updates U.S.Public Health Service Guidelines for the Management of Occupation Exposures to HBV, HCV, and HIV and Recommendations for Post exposure Prophylaxis. MMWR **2001**: 50 (No. RR-11). 1-52.

10. Mangram AJ,Horan TC, Pearson ML, Silver LC, Jarvis WR, the Hospital Infection Control Practices Advisory Advisory Committee. Guideline for the prevention of surgical site infection , 199. Infect Control Hosp Epidemiol **1999:** 20: 247-280.

11.Garner JS,Hospital Infection Control Practices Advisory Committee.Guideline for isolation precautions in hospitals. Infect Control Hosp Epidemiol 1996: 17: 53 -80, and Am J Infect Control **1996**; 24:24-52.

12.Centers for Disease Control. Guideline for Prevention of Catheter- associated Urinary Tract Infections.
Available at
http://www.cdc.gov/ncidod/dhqp/gl_catheter_assoc.html.Accessed on **August 22, 2006.**

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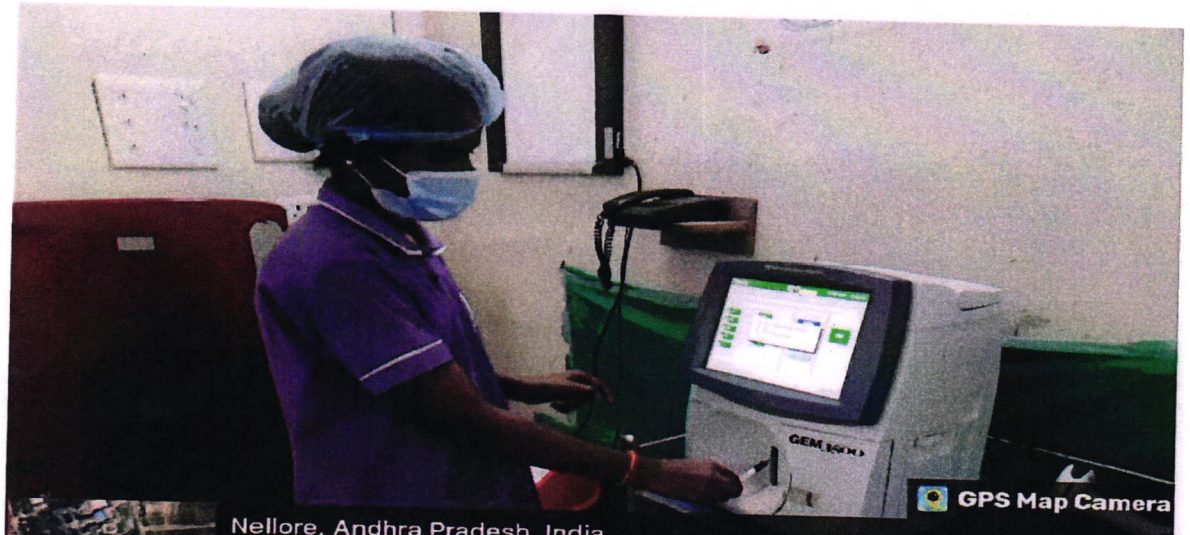

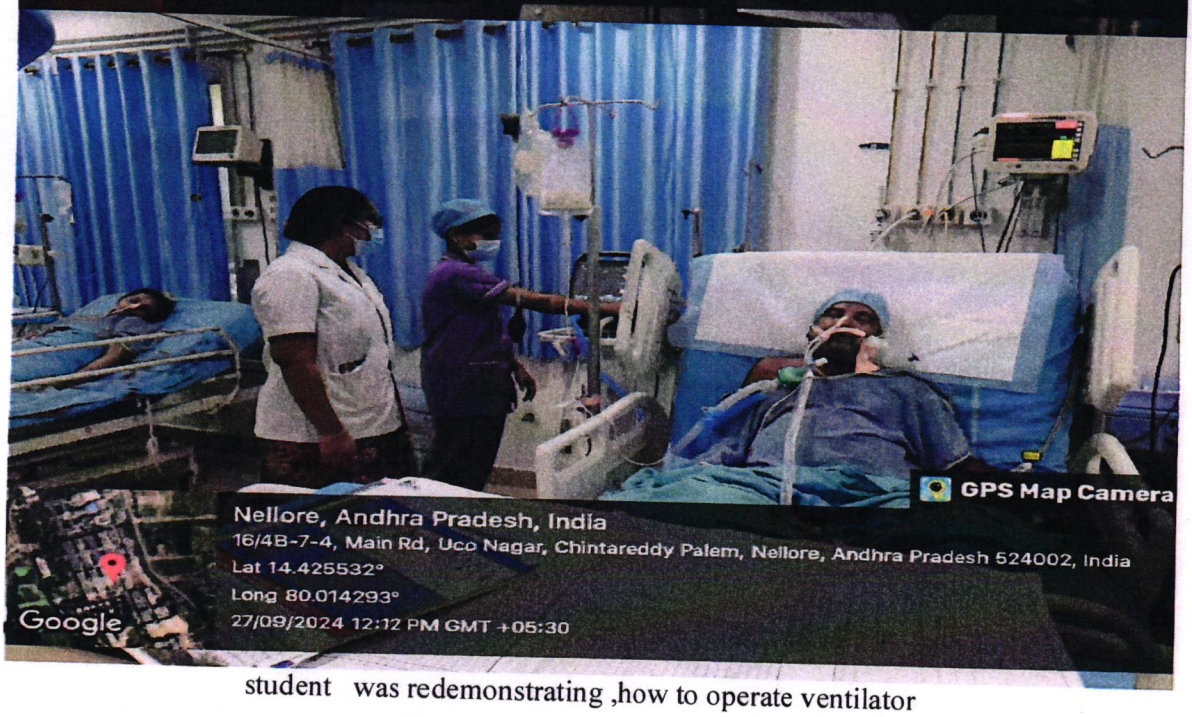

student was redemonstrating ,how to operate ventilator

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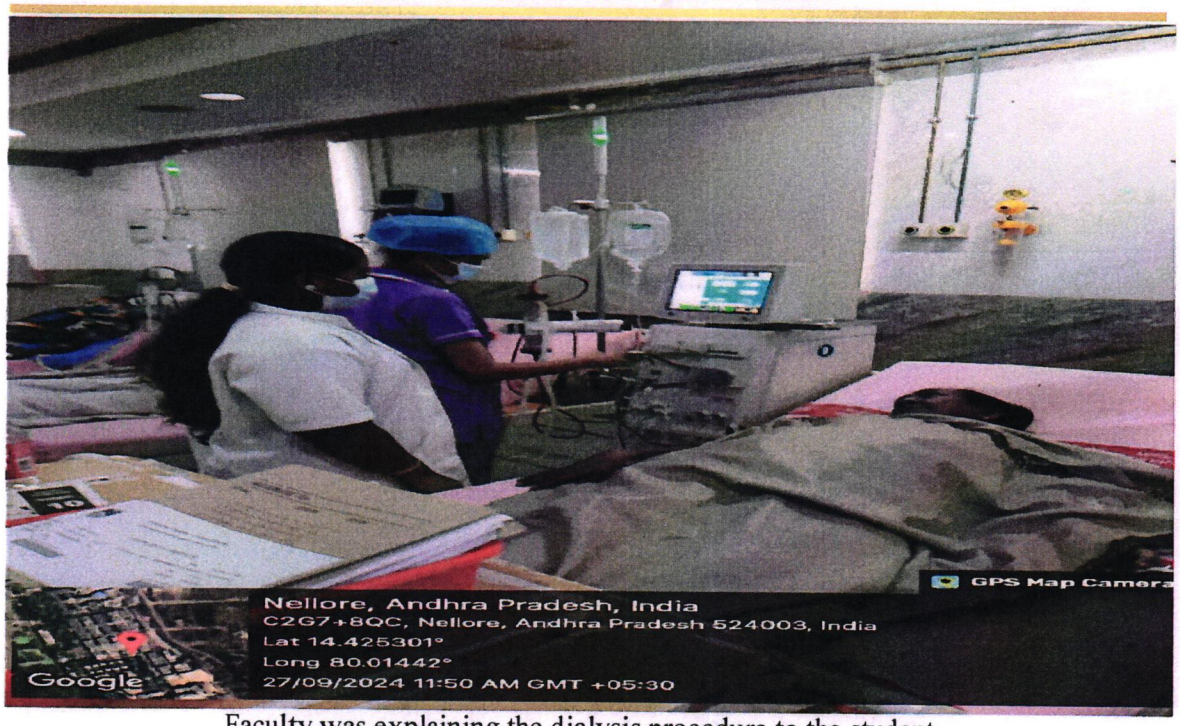

Faculty was explaining the dialysis procedure to the student

Students was re-demonstrating the vital signs procedure

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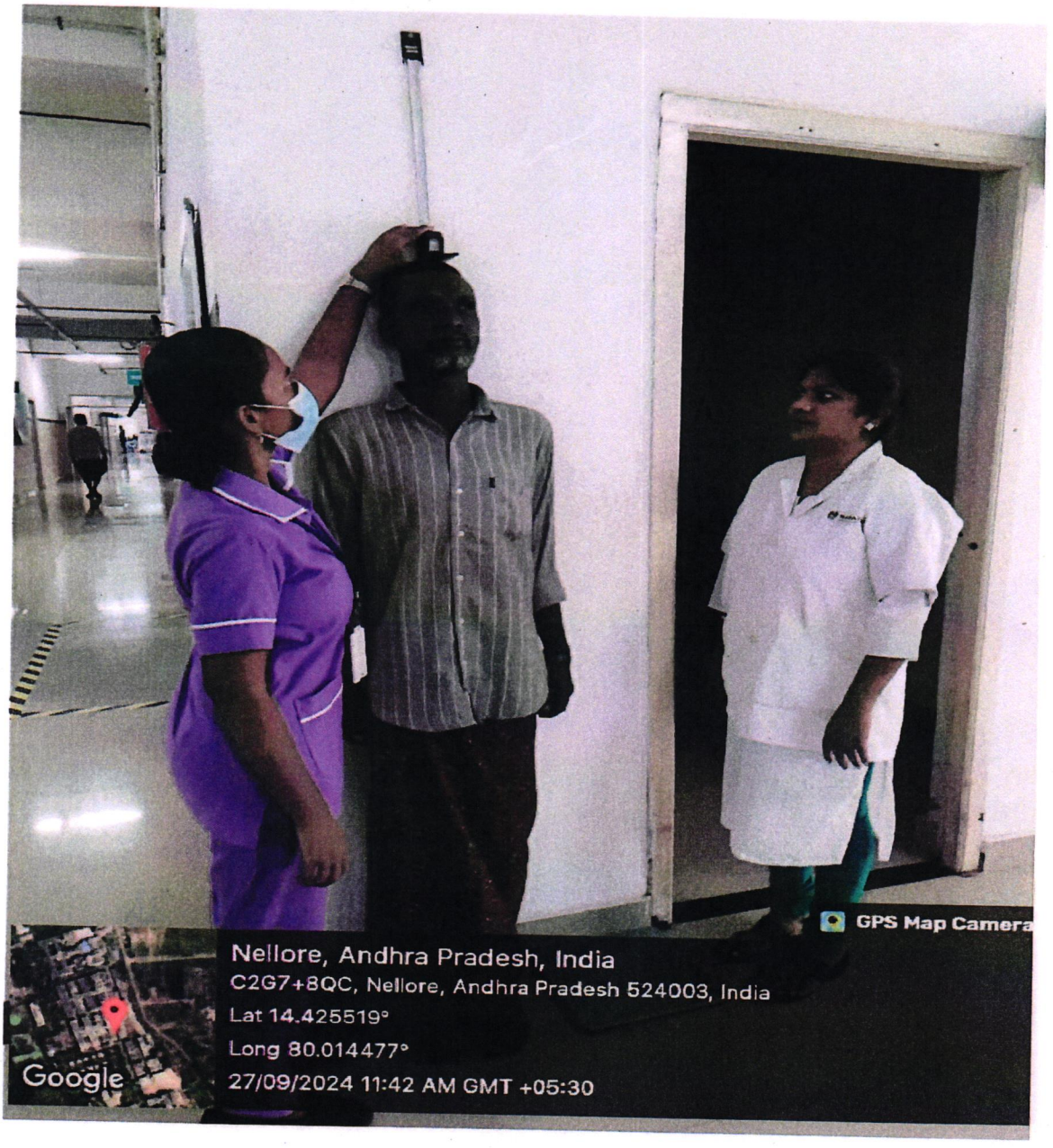

Students were Practicing the physical assessment

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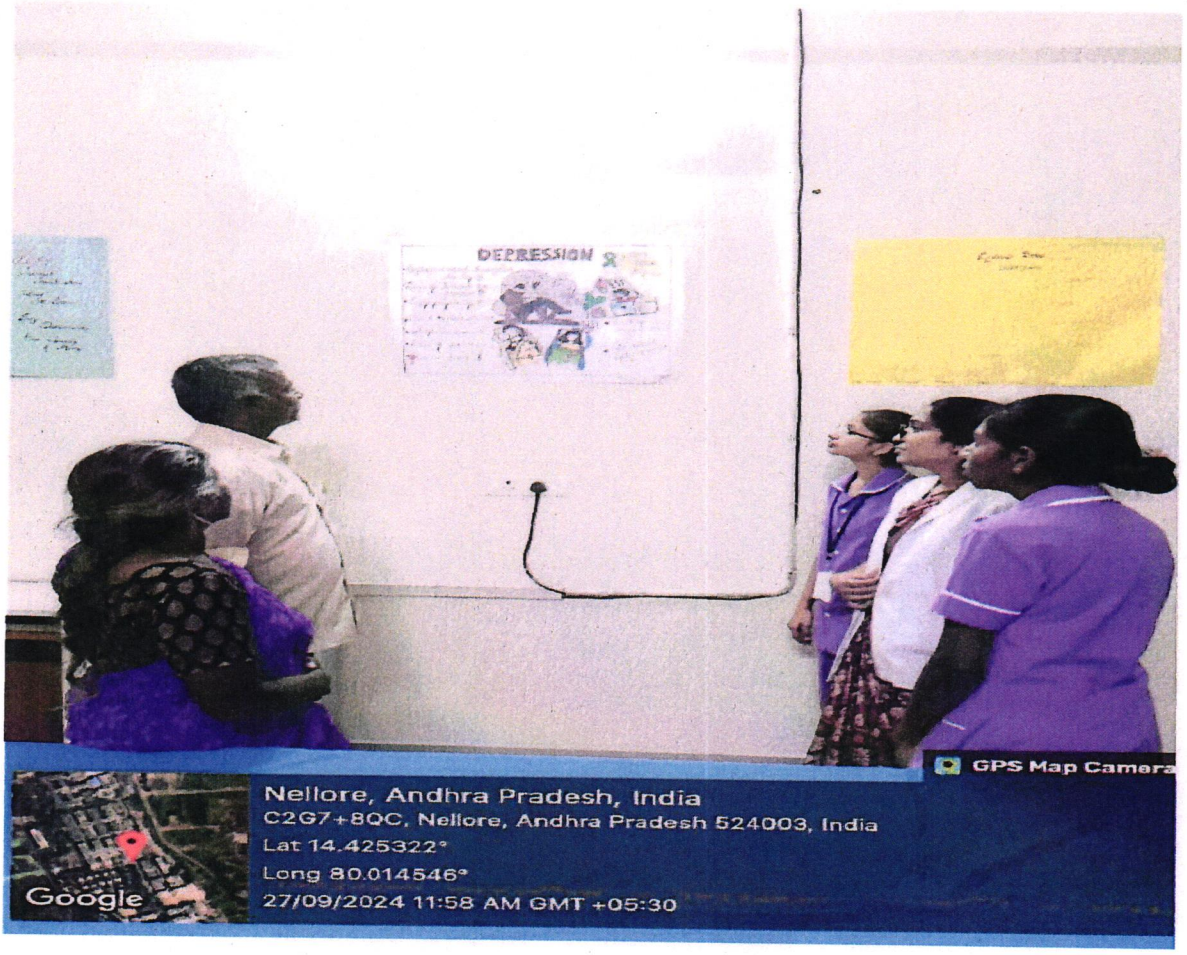

Students were giving Health education to the patient attenders

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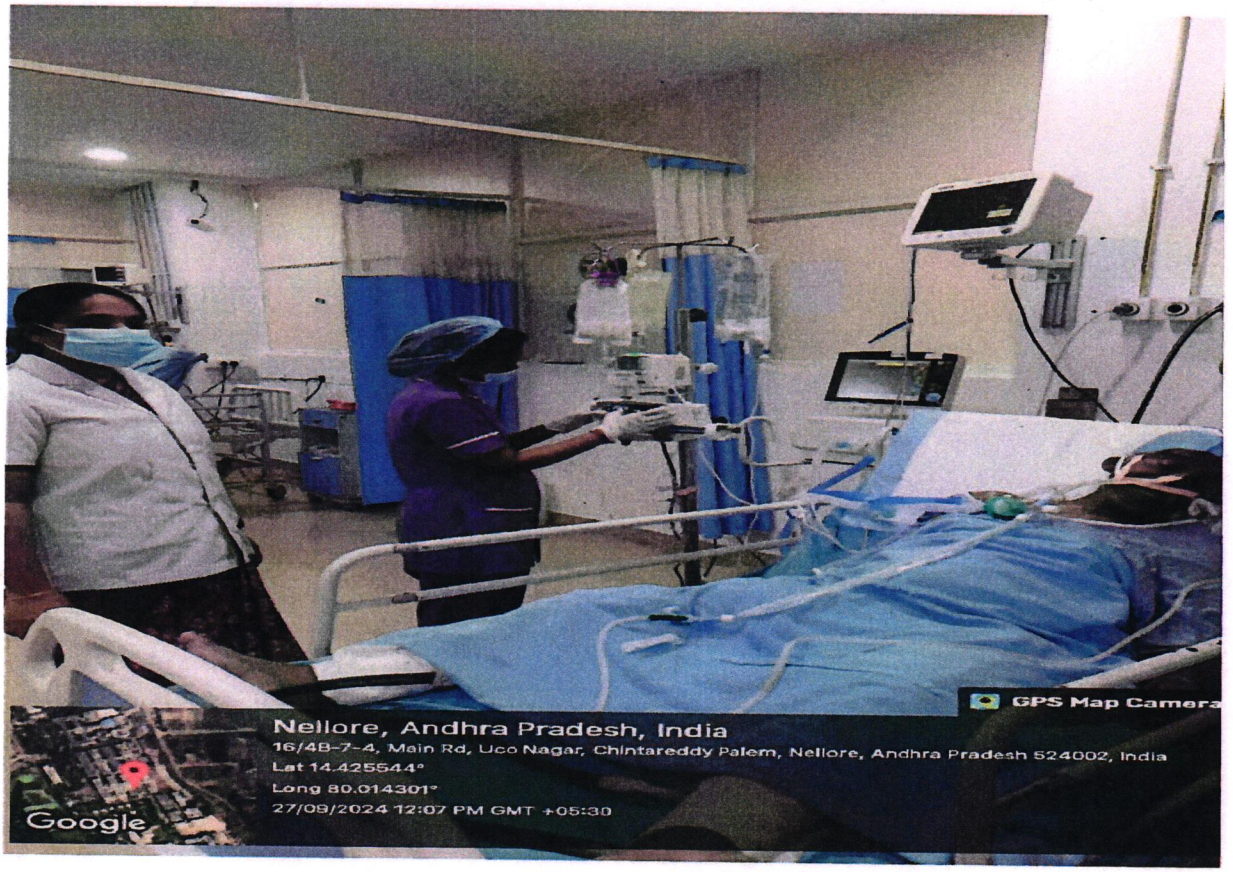

Students were learning Fluid calculation

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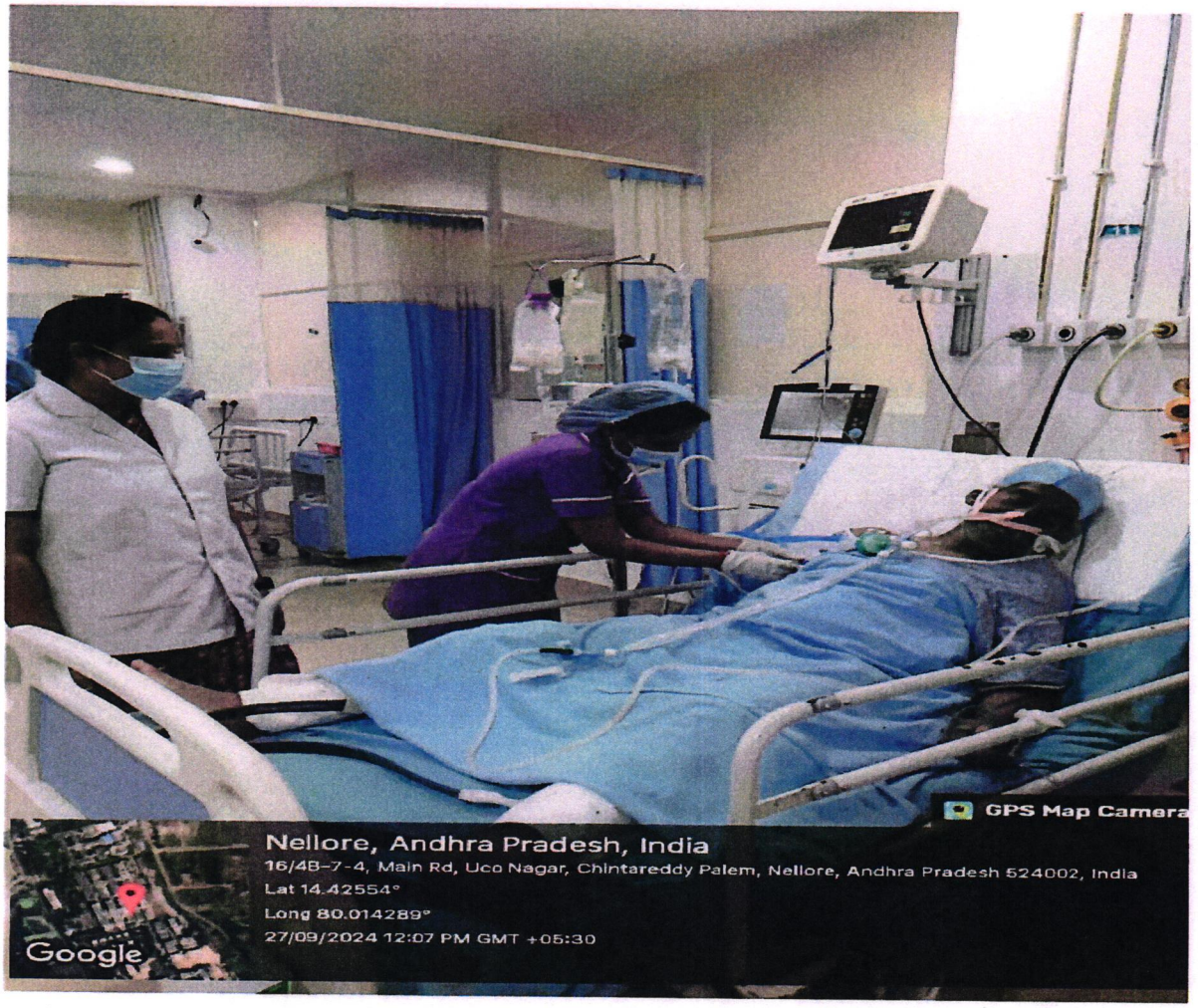

Student was learning how to maintain central line

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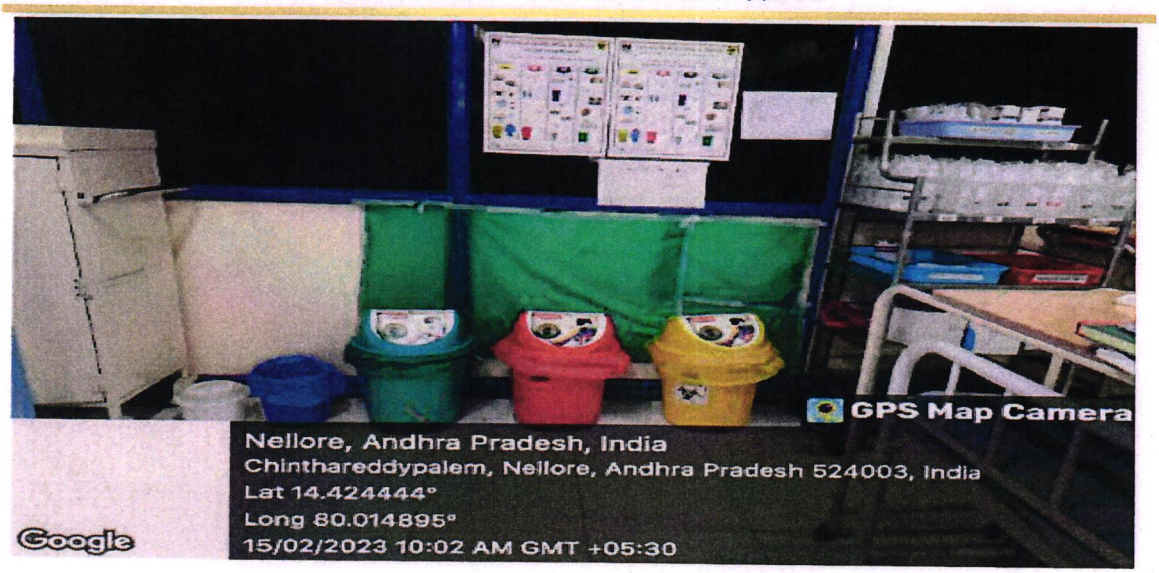

Bio medical waste management

stretcher and wheelchairs in providing critical support for patient transfer and care

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COVID-19 REPORT

Introduction:

As our country is facing an unprecedented public health emergency with the COVID-19 pandemic affecting several parts of the nation. The cases of COVID - 19 are increasing the need for more manpower is essential to handle the pandemic situation. If the need arises, students can be roped in to handle the crisis, as per their level of skills and training.

To the general public, the Covid-19 period is a very pandemic period. Many people have been affected by the Covid-19, and there is a shortage of staff in the hospital, hence the Sree Narayana Nursing College Students are encouraged to perform service for the covid-19 patients, and they are stationed in the Covid ward.

In total, 164 students are assigned to three shifts in the hospital. The students will be given PPE kits by the hospital before going to the wards. Before Covid-19 postings, faculty are given instructions on Covid-19 and how to provide counseling to patients, as well as quality of care.

Guidelines for the Students before going to the Covid Wards:

1. COVID-19 test report to be submitted on the first day while reporting to the duty.
2. Wear of face mask is mandatory
3. Physical distancing of at least 6 feet to be followed as far as feasible.
4. Frequent hand washing with soap (for at least 40-60 Seconds) or Use of alcohol-based hand sanitizers (for atleast 20 seconds) can be done where ever feasible.
5. Each student should carry own sanitizer while going to the duty.
6. Thermal scanning at the entrance is mandatory.
7. Maintain strict discipline.

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8. After taking the PPE Kit only the student should report to the ward

9. Be in time to duty according to their shift time.

9. Respiratory etiquettes to be strictly followed. This involves strict practice of covering ones mouth and nose while coughing and sneezing with a tissue/hand kerchief/flexed elbow and disposing of used tissues properly. Spitting shall be strictly prohibited.

10. Be in allotted Ward only.

11. All the jewelry should remove before going to the ward.

12. After giving the attendance to the faculty only the student should enter in the ward.

Instructions for Patients Regarding Covid-19 are given by the students:

- Wash your hands often with soap and water for at least 20 seconds. If soap and water are not available, use an alcohol-based hand sanitizer with 60-90% alcohol
    - Avoid touching your eyes, nose, and mouth with unwashed hands • Stay at least 6 feet from other people
    - Everyone should wear a cloth face cover in public settings and when around people who don't live with you, especially when other social distancing measures are difficult to maintain
    - Avoid close contact with people who are sick
    - Cover your cough or sneeze with a tissue, then throw the tissue in the trash
    - Clean and disinfect frequently touched objects and surfaces
    - Monitor yourself for symptoms daily and have a digital thermometer on hand.

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Kasha yam and Mask Distribution:

The kashayam were distributed twice a day to faculty, students, and non-teaching staff. For the prevention of Covid-19, masks were distributed to the entire college.

Counselling to the Patients and attenders:

The staff counsels the covid patients and attendees in order to improve the quality of care. Patients' relatives will also participate in this counselling to understand about the patient's condition. Patients' and attendees' issues will be discussed during the counselling session.

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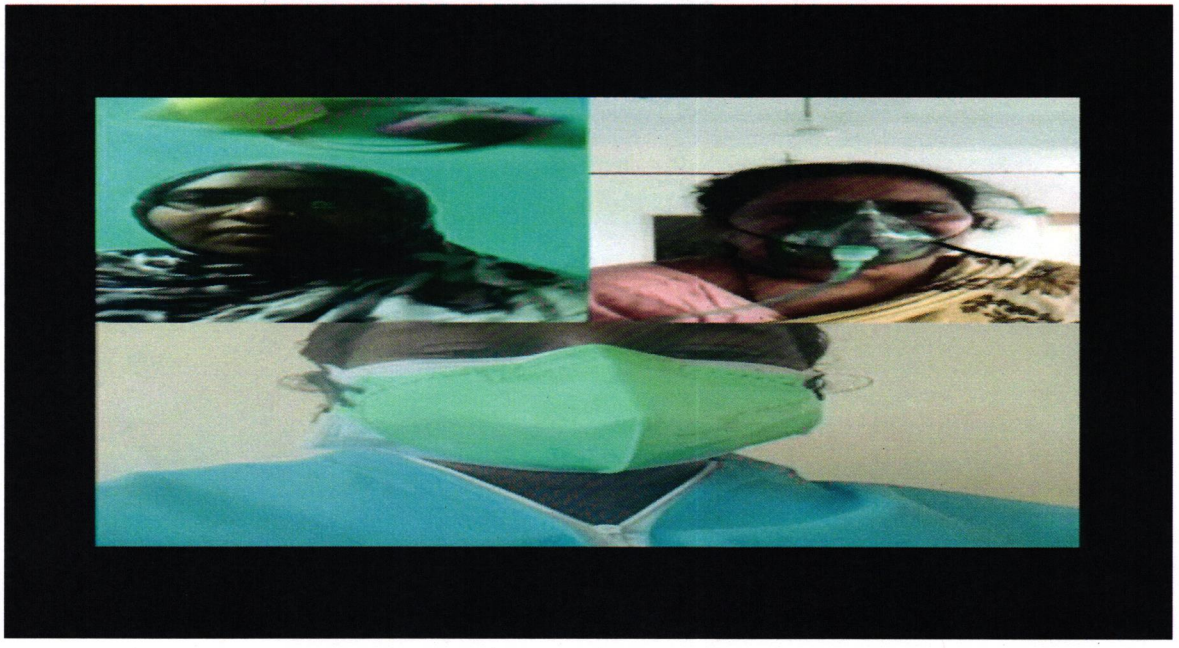

STUDENTS POSTING PHOTOS IN THE WARD

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The Students are giving the care to the Covid patient

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Students were using PPE

Students are posted in the ward

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Students are giving the care to Covid-19 patient

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A STUDY TO ASSESS THE KNOWLEDGE REGARDING DRUG DOSAGE CALCULATION IN CHILDREN AMONG STAFF NURSES AND STUDENT NURSES IN NARAYANA MEDICAL COLLEGE HOSPITAL ,NELLORE.

Abstract:

Background:.Administration of medication in proper amount is the important nurses responsibility.The ability to perform drug calculation is imperative to patient safety.Drug doses for infant and young children are usually smaller than those given to adult.However there is universally accepted method for calculating a pediatric dose as a fraction of an adult dose.**Objective:** To assess the level of knowledge on paediatric drug calculationamong staff nurses and student nurses in Narayana medical college and hospital. **Materials and Methods:** Descriptive cross sectional design and convenient sampling technique was followed which included 30 samples were used. Data was collected using structured questionnaire. Data analysis was done with SPSS. **Results:**Shows that with regard to level of knowledge of drug dosage calculation in children among staff nurses 7(46.7%) had inadequate knowledge, 8(53.3%) had moderately adequate knowledge. Among nursing students 8(53.3%) had inadequate knowledge, 6(40%J) had moderately adequate knowledge and 1(6.7%) had adequate knowledge. **Conclusions:**In the present study concluded that comparing the level of knowledge between staff nurses and nursing students, Nursing students having adequate level of knowledge than staff nurses regarding drug dosage calculation.

Key words: drug calculation, paediatric, body surface area.

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INTRODUCTION:

Drug therapy forms one of the important component of care of sick child. Administration of medication in proper amount is the important nurses responsibility.The ability to perform drug calculation is imperative to patient safety.Drug doses for infant and young children are usually smaller than those given to adult.However there is universally accepted method for calculating a pediatric dose as a fraction of an adult dose.Pediatric dose therefore as commonly on weight of child.BSA correlates closely with physiological function such as cardiac output oxygen consumption and caloric requirement overa wide range of age and weight for both sex[1].There are many methods for calculating the pediatric drug dosages.

Medications are classified in many ways example: according to their clinical composition, clinical actions or their therapeutic effects on the body system[2].

Sublingual administration:Some medications are placed under the tongue to dissolve for the easy and early absorption The medication given by sublingual route should not be swallowed .Because the therapeutic effect will not be achieved.

Buccal admistration : It involves placing the solid medication in the mouth against the mucus membrane of the cheek until the medication dissolves .Patients are instructed not to chew or swallow the medication not to drink any liquid with it.

Parentralroute :Injecting a medication in body tissues and blood vessels.

Subcutaneous: injection into tissue just below dermis of skin. Intramuscular: Injection into muscle .Intravenous: Injection into vein.

Intradermal : Injection to a dermis just under the epidermis .

Oral preparation: -Capsule : powdered drugs or liquids with in a gelatin container. Elixir :solution containing alcohol sugar and water. Emulsion :suspension with oilbase. Power: finally ground drug or drugs frequently mixed with liquid before administration. Cream: non greasy, semisolid preparation for topical application[3] .**Oral route** : it is the easiest and most commonly used method of administering medication.Medication are given by mouth and swallowed with fluids .Some medication areadministerd into body cavities.

Epidural:Medication in the epidural space via a catheter.Intrathecal: administerd through a catheter that is placed into subarachinoid space or into one of ventricles of brain.Intraarterial:administration of medication directly into arteries.Topical administration :the medication when applied mucous membrane generally have local effects.Systemic effects occurs only when the clients skin is thin and the medication concentration is high as well as is contact with the skin is prolonged[4].

Inhalation route:medication can be administered through nasal passage oral passage or tubes that are placed into the mouth of the patient to the trachea .

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Intraocular route: administering of medication to the contact lens into the patients eyes ,pilocarpinemedication used for glaucoma .

Most drugs in children are dosed according to body weight or body surface area.Caremost be taken to properly convert to body weight from pounds to kilograms before calculating dose based on body weight.[5]Dose are often expressed as mg per kg per day or mg per kg per dose[5] .

Young rule: young rule supplies to children over to years of age and is only an approximation due to consideration variation in body weight and childen of same age .[6]

Child dose=age in years *adult dose /age + 12

Freudsrule :freuds rule is mainly applicable for children under one year age .

Child dose = age [month] * adult dose /150

Clarks rule : Applies to young children and uses weight of children in pound rather than child age

Child dose =Weight in pound *adult dose /150

Body surface area : This method depends on first determining the child body surface in squaremeter

Child surface =surface area of child meter square+normal adult dose 1.7 meter square

Intravenous medication calculation :

Drops/minute =ml of solution *drops /ml [driprate factor] / hours to administer*60

Example :

Calculate the dose of cefriaxone in MLS for meningitis for 5 year old iven iv once daily and the drug comes predicted in a concentration of 40 mg /dl.

Calculating percentage and volume

Desired strength/Available strength *Total amount of desired solution =X[Amount of un diluted drug needed tomake solution]

Example :

You need too make 100 ml of a 20% solution usingan 80 % solution must you adda to the sterile water to yield a final volume of 100 ml of a 20% solution.

Calculating parentral drug dose

Prescribe dose/dose available*quantity [Unit of unknown quantity to be given measures]

Fluid calculating for burns:

Parkland formula

9% for each arm.
14 % for each leg.
18 % for front .
18 % for back .

Fluid requirement=Body surface area burnt(%)*Weight in kg *4 ml

Give half of total requirement in first 8 hours .Then give second half over next 16 hours .

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For calculating fluid resuscitation requirement is based on body surface area burn.

Total requirement for first 24 hours :

2000 ml /m2 body surface area

Nurses must administer 90-95 % drugs daily in a safe and efficient manner.The nurses should administer drugs in with nursing standards of practice and organizational policy[7]. The safe storage and maintenance of an adequate supply of drugs are other responsibilities of nurses . Even though nurses are skilled personnel medication errors, especially in emergency setting.[8]

So after searching and analyzing many studies I found that there is a great need to assess the nurses knowledge regarding drugs and calculation of doses in pediatric setting

OBJECTIVES OF THE STUDY:

- To assess the level of knowledge regarding drug dosage calculation among staff nurses.
- To assess the level of knowledge regarding drug dosage calculation among nursing students.
- To compare the level of knowledge regarding drug dosage calculation in children with their selected socio demographic variables.
- To find out the association between the level of knowledge regarding drug dosage calculation in children among staff nurses with their selected socio demographic variables.
- To find out the association between the level of knowledge regarding drug dosage calculation in children among nursing students with their selected socio demographic variables.

MATERIALS AND METHODS:

Sampling and data collection:Descriptive cross sectional design, used to assess the level of knowledge regarding pediatric drug dosage calculation among staff nurses and student nurses in Narayana medical college hospital. Non-probability convenient sampling was used. Staff nurses and student nurses who were eligible, can understand regional language, who were available during data collection and voluntarily willing to participate in the study. Who are sick, who are on leave were excluded. Prior Permission was obtained from ethical clearance committee Participants signed an informed consent and were told they could withdraw from the study at any time for any reason.

DESCRIPTION OF TOOL

PART I:

Deals with demographic variables include age, gender, educational qualification, source of information, attended any CNE programme.

PART II:

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It deals with structured questionnaire to convey the knowledge regarding pediatric drug dosage calculation among staff nurses and student nurses. It consists of 30 multiple choice question. Each question gives success answer as 1 score. If not answering gives 0 score.

Score Interpretation: The score was interpreted as follows:

Inadequate knowledge:0-10
Moderately adequate: 11-20
Adequate knowledge:21-30

Data analysis: Data was analysed by using descriptive and inferential statistics. Frequency, percentage, Item analysis, mean, standard deviation and chi-square testwere done.

Results: The results showsthat frequency and percentage distribution with regard to age 13(86.67%) staff nurses are 22-25 years and 2(13.33%) are 26-28 years,genderof4(26.67%) staff nurses are males and 11(73.33%) are females, educational qualification 2(13.33%)studied GNM and 13(86.67%) studied BSc (N), duration of experience 5(33.33%) have<1 year experience, 7(46.66%) have 1-3 years experience, 2(13.33%) have 4-6 years experience and 1(6.67%) have 6 yearsexperiance, source of information 5 (33.33%)gained from text books, 1(6.67%) from journals 3(20%) from mass media and 6(40%) from All the above and attended CNE 4 (26.67%)are attended and 11 (73.33%) are not attended.

Results Shows that frequency and percentage distributionwith regard to age 3(20%) nursing students are 20 years, 9 (60%) are 21 years and 3(20%) are 22 years, educational qualification all 15(100%) BSc (N), year of course3(20%) students are studying 1st year and 12(80%) are studying 3rd year, source of information 1(6.66%) gained from Text books, 4(26.66%) from journals and 2(13.33%) from curriculum, 4(26.67%) from mass media and 4(26.66%) from all the above and attending any CNE programme2(13.33%) are attended and 13(86.67%) are not attended .

percentage distribution of level of knowledge between staff nurses and nursing students

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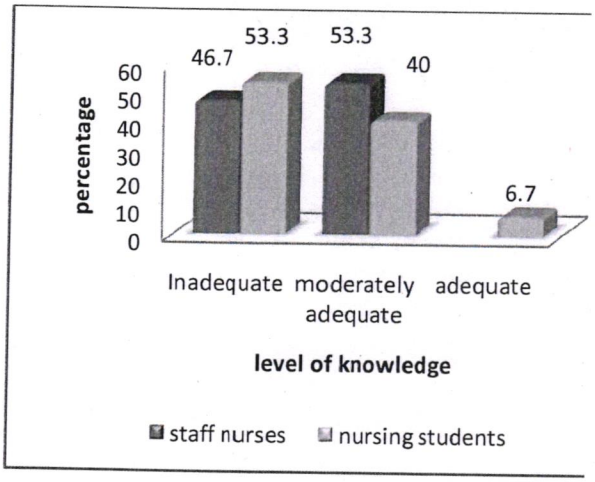

Table-1: comparison of mean and standard deviation of knowledge scores between staff nurses and nursing students.

(N=30)

CATEGORY	MEAN	STANDARD DEVIATION
Staff nurses	14.933	3.406
Nursing student	13.933	3.773

For staff nurses there was no significant association between age, educational qualification and attending CNE programm, gender, working experience and source of information and for nursing studentsthere was no significant association between age, educational qualification year of course, source of information and attending CNE programme.

DISCUSSION:

The discussion of the present study was based on the findings obtained from the descriptive and inferential statistical analysis of collected data. It is presented in the view of the objectives of the study. The study related to level of knowledge regarding drug dosage calculation in children among staff nurses had 7(46.7%) inadequate knowledge, 8(53.3%) had moderate knowledgeand for nursing students 8(53.3%) had inadequate knowledge, 6(40%) had moderately adequate knowledge and 1(6.7%) had adequate knowledge.

For staff nurses results Shows that with regard to association of level of knowledge regarding drug dosage calculation in children among staff nurses and selected demographic variables .the calculated value is less than the table value at P=0.05.so stastically there is no significant association between level of knowledge among staff nurses and selected demographic variables. And for student nurses association of level of knowledge regarding drug dosage calculation in children among nursing students with their selected socio demographic variables. The calculated value is less than the table value.so statistically there is no significant association between the level of knowledge among nursing students with their selected sociodemographic variables

CONCLUSION:

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In the present study concluded that comparing the level of knowledge between staff nurses and nursing students, Nursing students having adequate level of knowledge than staff nurses regarding drug dosage calculation.

RECOMMENDATIONS:

- A similar study can be replicated on a large sample to generalize the findings.
- An experimental study can be conducted to assess the effectiveness of teaching programme drug dosage calculation in children.
- Similar study can be done on different hospital settings.
- A comparative study can be undertaken to compare the knowledge of staff nurses and nursing students about drug dosage calculation in children.

ACKNOWLEDGEMENT:

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REFERENCES

1."Dorothy and Marlow a reddings"(2008) **Textbook of pediatric nursing**, Sixth edition, Elsevier publication.

2."India Vanguris" (2009) **Nursing Research and statistics**, Second edition, Frontline publication.

3."KasthuriSundarRao"(2008)**Introduction to child health nursing**, Fourth edition, Jaypee publication.

4."K Park" (2008) **Textbook of Essentials of child health nursing**, Third edition, Lippincott publication.

5."Nick L Polis and Barbara"(2011) **Textbook of pediatrics- nursing careof children and family**, Fourth edition, Belma publication.

6."Robert M Klinyman"(2008) **Essentials of pediatrics**, Fifth edition, Elsevier publication.

7."Suraj Gupta"(2009)**The short of pediatrics**, Tenth edition, Jaypee private limited publication.

8."Wong's"(2008) **Essentials of pediatric nursing**, Seventh edition, Wilson publication.

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