



MALLA REDDY VISHWAVIDYAPEETH

SCHOOL OF ALLIED AND PUBLIC HEALTH SCIENCES AND TECHNOLOGY

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Program

Master of Science (M.Sc.)

Emergency Medicine & Critical Care Technology

2025

MALLA REDDY VISHWAVIDYAPEETH**SCHOOL OF ALLIED AND PUBLIC HEALTH SCIENCES AND TECHNOLOGY****MASTER OF EMERGENCY MEDICINE & CRITICAL CARE
TECHNOLOGY****COURSE STRUCTURE****I year I semester**

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks		
							INT	EXT	TOTAL
1	EMC23810101	Principle of critical care	4	-	-	4	40	60	100
2	EMC23810102	Pharmacology in Emergency Care	2	-	-	2	40	60	100
3	EMC23810103	Basics of Emergency Medicine	4	-	-	4	40	60	100
4	EMC23810104	Physiology related to critical care	2	-	-	2	40	60	100
5	EMC23810105P	Practical: Basic Life Support (BLS) and ALS Techniques	-	-	2	1	40	60	100
6	EMC23810106P	Practical : Emergency Medicine & Critical care - I	-	-	4	2	40	60	100
7	EMC23810107	Research Methodology and Biostatistics	4	-	-	4	40	60	100
8	EMC23810108	Clinical Posting 1	-	-	16	8	40	60	100
TOTAL			16	-	22	27	320	480	800

I year II semester

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks		
							INT	EXT	TOTAL
1	EMC23810201	Trauma Care and Management	4	-	-	4	40	60	100
2	EMC23810202	Airway and Ventilation Management,	2	-	-	2	40	60	100
3	EMC23810203	Critical Care Procedures	4	-	-	4	40	60	100
4	EMC23810204	Infection Control in Critical Care	2	-	-	2	40	60	100
5	EMC23810205P	Practical: Trauma and Airway Management	-	-	4	2	40	60	100
6	EMC23810206	Clinical Postings II	-	-	16	8	40	60	100
TOTAL			12	-	20	22	240	360	600

II year III semester

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks		
							INT	EXT	TOTAL
1	EMC23810301	Acid – base and electrolyte disturbances	3	-	-	3	40	60	100
2	EMC23810302	Pediatric and Geriatric Emergency Care	4	-	-	4	40	60	100
3	EMC23810303	Critical Care Monitoring	4	-	-	4	40	60	100
4	EMC23810303P	Practical: Critical Care Monitoring	-	-	4	2	40	60	100
5	EMC23810304	Clinical Postings III	-	-	20	10	40	60	100
TOTAL			11	-	24	23	200	300	500

II year IV semester

S.NO	SUBJECT CODE	SUBJECT	L	T	P	C	Max. Marks		
							INT	EXT	TOTAL
1	EMC23810401	Emergency and Critical Care Unit Management	2	-	-	2	40	60	100
2	EMC23810402	Advanced Therapeutics in Critical Care	2	-	-	2	40	60	100
3	EMC23810403	Thesis/Research Project	-	-	12	6	40	60	100
4	EMC23810401P	Practical: Emergency and Critical Care Unit Management	-	-	4	2	40	60	100
5	EMC23810404	Clinical Postings IV	-	-	16	8	40	60	100
TOTAL			4	-	32	20	200	300	500

1.1 Post Graduate Programme

Sl. No.	Course	Duration	Eligibility for admission
1	M.Sc. Emergency medicine & critical care technology	2 years	He/she has passed the BSc in Emergency medicine & critical care technology or equivalent examination of a recognized Indian University or a duly constituted Board with pass marks (50%).

1.2. Medium of Instruction:

English shall be the medium of instruction for all subjects of study and for examinations.

1.3. Duration of the Course

Duration details are mentioned under clause no. 1.1 of this booklet.

1.4 Examination Regulations

1.4.1 Attendance: 75% of attendance (physical presence) is mandatory.

Medical leave or other types of sanctioned leaves will not be counted as physical presence. Attendance will be counted from the date of commencement of the session to the last day of the closing of attendance before the final examination.

1.4.2 Internal Assessments:

a) Regular periodic assessment shall be conducted throughout the course. In each semester there will be **two one-hour internal assessments (15 marks each)** and a continuous assessment (10 marks). Thus, a total of 40 marks for the internal exam. (i.e. weightage for internal assessment shall be 40% of the total marks in each subject).

b) **Exam pattern for internal assessment** in each semester will be

(a) Short questions 3 nos. each carrying 5 marks (i.e. $3 \times 5 = 15$ marks). Two such internal examinations will be conducted.

(b) Continuous assessment of the student will be done. Students' overall attendance, performance in class, behaviour of the student, presentations, extra-curricular activities etc will be assessed. Continuous assessment carries 10 marks.

(d) Thus, a total of 40 marks for the internal examination. ($15 + 15 + 10 = 40$ marks). A candidate should secure a minimum of 40% marks in the internal assessment in each subject to be eligible to appear for the University examination

(e) For value added courses, only internal examination will be conducted. The assessment comprised of five assignments/presentations/case presentations each carrying 10 (i.e. $5 \times 10 = 50$ marks). Final examination will be for 50 marks with 5 questions each carrying 10 marks ($5 \times 10 = 50$ marks). The minimum pass is 40% marks.

1.4.3 University Examinations (External):

a) University Examination shall be conducted at the end of every semester.

b) A candidate who satisfies the requirement of attendance and internal assessment marks, as stipulated by the University shall be eligible to appear for the University Examination.

c) Examination will be of 3 hours duration (for theory). The question pattern for those subjects without practical examination (60 marks) will be (a) Three essay questions out of which the student should answer 2 questions each carrying 10 marks (i.e. $2 \times 10 = 20$ marks) (b) Eight short note questions out of which the student should attempt six questions, each carrying 5 marks ($6 \times 5 = 30$ marks). (c) Ten very short questions each carrying 1 mark (i.e. $10 \times 1 = 10$ marks). Thus, a total of 60 marks.

d) The question pattern for practical examination (a) Spotters/major practical/minor practical/case presenting/Viva/practical/log record.

The minimum pass for internal assessment is 40% and for the University Examination is 50%. i.e. a student should score a total of 50% (adding the internal and external examination) to pass in each subject.

SEMESTER – 1**1. PHYSIOLOGY RELATED TO CRITICAL CARE****L/T/P/C****UNIT I RESPIRATORY PHYSIOLOGY****2/-/-/2**

1. Evaluate the effects of anaesthesia on respiratory function, including changes in lung compliance and airway resistance.
2. Apply principles of oxygen therapy and mechanical ventilation in anaesthesia practice
3. Analyse the factors affecting gas exchange in the lungs, such as alveolar ventilation and diffusion capacity
4. Interpret arterial blood gas (ABG) values to assess oxygenation and acid-base status.
5. Analyse pulmonary function tests (PFTs) to evaluate respiratory function and identify potential abnormalities.
6. Evaluate the appropriateness of different ventilation strategies in patients with specific respiratory conditions or comorbidities.
7. Assess the impact of anaesthesia on the control of breathing and respiratory reflexes
8. Evaluate the efficacy of respiratory monitoring techniques during anaesthesia, such as capnography and pulse oximetry
9. Propose innovative strategies for optimizing oxygenation and ventilation during anaesthesia, considering patient-specific factors.
10. Clinical assessment of lung function (bedside PFT)
11. Causes of hypoxemia, mechanism of hypoxemia in different lung disorders
12. Explain about dead space ventilation

UNIT II CARDIOVASCULAR PHYSIOLOGY

1. Identify and interpret hemodynamic parameters, such as heart rate, blood pressure, and central venous pressure, during anaesthesia procedures.
2. Assess the impact of anaesthesia on cardiac output and vascular resistance.
3. Analyze the factors influencing cardiac performance, including preload, afterload, and contractility.
4. Evaluate the impact of various anesthetic agents on cardiovascular parameters
5. Interpret electrocardiograms (ECGs) to identify arrhythmias and their implications for anaesthesia management.
6. Assess the appropriateness of fluid and vasopressor administration based on the patient's cardiovascular status
7. Critically analyze the physiological responses to cardiovascular complications during anaesthesia and propose appropriate interventions
8. Describe the pathophysiology of valvular diseases like Aortic stenosis and aortic regurgitation

9. Describe the pathophysiology of myocardial infarction
10. Understand the mechanism of coronary blood flow and its regulation

UNIT III GI & HEPATIC PHYSIOLOGY

1. Analyse the impact of anaesthesia and related medications on GI and hepatic physiology
2. Evaluate the appropriateness of fasting guidelines and preoperative bowel preparation protocols in anaesthesia practice
3. Assess the impact of anaesthesia on gut microbia and the gut-brain axis
4. Evaluate the efficacy of GI and hepatic monitoring techniques during anaesthesia, such as gastric residual volume measurement or assessment of liver function.
5. Design a comprehensive plan for perioperative GI and hepatic management in patients with specific conditions or comorbidities.
6. Develop educational materials or presentations on GI and hepatic physiology and its relevance to anaesthesia technology
7. Propose innovative strategies for optimizing GI function and hepatic support during anaesthesia, considering patient-specific factors
8. Discuss management of GI emergencies

UNIT IV RENAL PHYSIOLOGY

1. Interpret laboratory tests, such as blood urea nitrogen (BUN) and creatinine levels, to assess renal function.
2. Analyse the impact of anaesthesia and related medications on renal physiology, including the potential for renal toxicity
3. Evaluate the appropriateness of perioperative fluid management strategies in maintaining renal function.
4. Assess the impact of anaesthesia on renal hemodynamic and renal tubular function
5. Evaluate the efficacy of renal monitoring techniques during anaesthesia, such as urine output measurement or assessment of electrolyte balance.
6. Design a comprehensive plan for perioperative renal protection and management in patients with specific renal conditions or comorbidities.
7. Develop educational materials or presentations on renal physiology and its relevance to anaesthesia technology
8. Propose innovative strategies for optimizing renal function during anaesthesia, considering patient-specific factors.
9. Describe the methods of assessment of renal function

UNIT V CNS PHYSIOLOGY

1. Describe the physiology of the neuromuscular junction and the process of muscle contraction
2. Interpret electroencephalograms (EEGs) to assess brain activity and depth of anaesthesia
3. Analyse the impact of anaesthesia on CNS-related functions, such as sleep-wake cycles, memory, and cognitive performance
4. Evaluate the appropriateness of anaesthetic agents and techniques in achieving the desired level of anaesthesia and minimizing CNS-related adverse effects
5. Assess the impact of anaesthesia on the autonomic nervous system and its effects on cardiovascular and respiratory regulation.
6. Evaluate the efficacy of CNS monitoring techniques during anaesthesia, such as EEG monitoring or bispectral index (BIS) monitoring
7. Define key terms related to ANS and neuromuscular physiology, such as sympathetic and parasympathetic divisions, acetylcholine, and neuromuscular junction.
8. Recall the anatomical structures and components of the ANS, including ganglia and neurotransmitters
9. Explain what is Autonomic Dysreflexia
10. Discuss the management of Autonomic dysreflexia Brainstem, cerebellum, cerebral cortex anatomy

RECOMMENDED BOOKS

K. Sembulingam – essential of physiology

Tara V Shanbhag – Pharmacology

The Little ICU paul marino

Text book of critical care – jean – louis Vincent, Edward Abraham, Frederick. A. Moore

Patrick M. kochanek. Etc

EGAN'S fundamentals of respiratory care

2. PHARMACOLOGY IN EMERGENCY CARE**L/T/P/C****2/-/-2****UNIT I BASICS OF PHARMACOLOGY**

1. Explain an overview on drug pharmacokinetics and pharmacodynamics
2. Describe the steps of pharmacokinetics i. (Absorption, diffusion, solubility, metabolism, excretion)
3. Define agonist, antagonist, dose response curve of drug and learn about various drug interactions
4. Learn about the different routes of drug administration
5. Study the distribution of drugs and factors influencing them
6. Illustrate and explain about the compartment models in detail
7. Explain the metabolism of drugs, factors affecting metabolism and phases of metabolism
8. Describe the organs involved in elimination of drugs, factors affecting them
9. Individual viva session on how a drug is absorbed, metabolized and eliminated from body
10. Discuss about the factors affecting drug infusion
11. Study about the drug dilution techniques and equipment used to set infusions
12. Explain about the Michaelis-Menten kinetics and its applications
13. Learn about the medical gases, their storage and supply
14. Apply the principles of gas flow in equipment used to deliver gases
15. Know about Gender and genetic profiling of patients
16. Draw a diagram and explain how medical gases are delivered from the manifold to the patients

UNIT II EMERGENCY RESUSCITATION & AIRWAY DRUGS

1. Epinephrine: dosing for anaphylaxis and cardiac arrest
2. Atropine in bradycardia, organophosphate poisoning
3. Amiodarone, lidocaine in ventricular arrhythmias
4. Adenosine for SVT emergencies
5. Naloxone for opioid overdose protocols
6. Flumazenil in benzodiazepine reversal
7. Ketamine for induction—airway reflex preservation, hemodynamic profile
8. Propofol for rapid sedation: hypotension risk
9. Etomidate and adrenal suppression considerations
10. Thiopental/barbiturates for induction and intracranial hypertension
11. Neuromuscular blockers: succinylcholine, rocuronium onset/reversal

12. Sugammadex vs neostigmine reversal strategies
13. Local anaesthetics for field blocks (lidocaine, bupivacaine)—dose, toxicity
14. Intranasal lidocaine or sedation in pediatric airway emergencies
15. Push-dose vasopressors: phenylephrine, epinephrine bolus indications

UNIT III PEDIATRIC, ELDERLY & EMERGING THERAPIES

1. Pediatric dose calculations: weight-based formulas, Broselow tape
2. Considerations in neonatal and infant pharmacokinetics
3. Geriatric pharmacodynamics: polypharmacy, clearance reduction
4. Pregnancy-related alterations in drug distribution
5. Teratogenic risk categories and emergency drug selection
6. Sepsis protocols: early antibiotics, vasopressors, corticosteroids
7. ARDS pharmacology: neuromuscular blockade, sedation, steroids
8. Antimicrobial stewardship in emergency settings
9. ECMO-related drug dosing adjustments
10. Novel resuscitation drugs (e.g., vasopressin analogs)
11. Biologic agents and monoclonal antibodies in critical care
12. Gene therapy potentials in acute injury repair
13. Crisis resource management—protocolized drug usage
14. Evidence-based algorithms and pathway integration
15. Case simulations in drug choice and outcome evaluation

UNIT IV ADRENERGIC SYSTEM AND DRUGS

1. Classify adrenergic receptors and explain their mechanism of action
2. Distinguish catecholamines based on their availability and receptor action
3. Apply your knowledge of various action of catecholamine on different types of shocks
4. Discuss the dosage of infusion noradrenaline, adrenaline, dopamine and dobutamine for a 40 kg patient
5. Classify vasodilators. Explain the mechanism of action and their uses in different situations
6. Describe dosage of vasodilators as infusion and their adverse effects
7. Write about the uses and dosage of SNP, NTG for normal adult patient
8. Classify antihypertensive. Explain the mechanism of action, uses and adverse effects
9. Describe dosage of vasodilators as infusion and their adverse effects
10. Write about the uses and dosage of SNP, NTG for normal adult patient
11. Classify antihypertensive. Explain the mechanism of action, uses and adverse effects

12. Draw an algorithm for treating hypertension and hypertensive crisis
13. Classify bronchodilators. Describe the pharmacological properties, routes of administration, dosage and side effects
14. Describe about anticholinergic bronchodilators, mechanism of action, dosage and adverse effects
15. Explain about DVT prophylaxis

UNIT V ANTIMICROBIAL DRUGS

1. Know about the principles of communicable infections and antibiotics use in ICU
2. Study about the different organisms causing infections and antimicrobial resistance
3. Classify penicillin and mention about its coverage
4. Classify cephalosporins and mention about its coverage
5. Tabulate 10 antibiotics with its uses and organism treated
6. Define and discuss about beta lactamase inhibitors and its coverage
7. Tabulate the organism treated, clinical uses, dosage of linezolid, vancomycin, colistin, polymyxin B and nitrofurantoin
8. Discussion about the uses, adverse effects and dose of amphotericin B, ciprofloxacin, amoxicillin + clavulanate in adults
9. Discuss about drugs used to treat tuberculosis, course of treatment and their adverse effects
10. Discuss about drugs used to treat HIV, course of treatment and their adverse effects
11. Write about the role of prophylactic antibiotics in infection control and IE prophylaxis. Discuss about usage of antimicrobials in pregnancy
12. Classify chemotherapeutic drugs, mode of action and administration, uses and adverse effects

RECOMMENDED BOOK

Tara V Shanbhag – Pharmacology

The Little ICU paul marino

Text book of critical care – jean – louis Vincent, Edward Abraham, Frederick. A. Moore

Patrick M. Kochanek. Etc

EGAN'S fundamentals of respiratory care

3. PRINCIPLE OF CRITICAL CARE**L/T/P/C****UNIT I INTRODUCTION TO CRITICAL CARE****4/-/-4**

1. Define & Describe about Intensive care unit, Concepts of ICU
2. Explain about Coronary ICU, pediatric ICU and Neuro ICU.
3. Describe about Different zones of ICU Describe about differences of Negative pressure and positive pressure ICU
4. Explain about skin hygiene
5. Explain in Detail about Cleaning & Decontamination using different agents, Fumigation, carbolization
6. Describe about hand washing in ICU and explain its importance
7. Describe in detail about ETO (Ethylene oxide sterilization) and Sterilization of ICU equipment's, Et tubes, dressing trays.
8. Describe about Sterilization techniques and care for Urinary catheters, IV lines, Central line catheters, Explain in detail about CAUTI
9. Enumerate the Protective barriers recommended in ICU and list out its importance
10. Describe in detail about Protection from blood borne pathogens, explain about POST EXPOSURE PROPHYLAXIS.
11. Describe in details about importance of Lightening and Ventilation and airflow pattern in ICU
12. protocol and write in logbook about central line associated infections
13. Write about Isolation ICU and explain its importance and differences from other ICU
14. Enumerate steps of ACLS /BLS /PALS AND write in logbook

UNIT II PATIENT ASSESSMENT & CARE

1. Describe about various assessments and charts done in ICU on daily basis
2. Enumerate about the details entered I n ventilator chart and its components
3. Enumerate about 7 C' s In ICU (care, compassion, competence, communication, consideration, comfort, carefulness
4. Describe in Detail about Apache scoring system and Types
5. Describe in detail about various scoring systems for Deep Vein Thrombosis prophylaxis
6. Explain in detail about SOFA & Q SOFA SCORING system.
7. Describe about PRISM score
8. Identify difference between infants and children in PRISM SCORE III
9. Enumerate different scoring system in Paediatric patients
10. who is coma, explain about steps involved in END-OF-LIFE CARE

11. Identify Latest methods of regular charting to monitor an ICU patient in various ICU setups
12. Describe in detail about SPIKES protocol and explain about breaking of BAD NEWS.
13. Enumerate various Scoring systems for evaluation of Bed sores.
14. Describe in detail about FASTHUG

UNIT III AIRWAY ASSESSMENT & VENTILATION

1. Explain in detail about Airway assessment, History and examination
2. Define LEMON SCORE, MALLAMPATTI SCORE, CORMACH-LECHANNE SCORE, SOAP SCORE.
3. Describe in detail about NON-INVASIVE VENTILATION & its uses and disadvantages
4. Define about various airway maneuvers, different types of airway equipment's
5. EXPLAIN IN DETAIL ABOUT SUPRAGLOTTIC AIRWAY DEVICES.
6. Describe in detail about different types of Endotracheal tubes. Explain about Size calculation, and other measurements
7. Explain in detail about Various Laryngoscopes, Describe about latest advances
8. Study in detail about Fibreoptic bronchoscope and fob intubation, explain about BURP maneuver.
9. Evaluate methods to Assess Difficult airway, list the requirements of Difficult airway cart.
10. FLOW NASAL OXYGEN and explain about its various uses.
11. Describe in detail about cricothyroidotomy & Percutaneous cricothyroidotomy
12. Explain about planning strategies for airway management...
13. Explain about Difficult airway algorithms
14. Differences between adult and paediatric airway,& ventilation

UNIT IV NUTRITION IN ICU

1. Describe About Carbohydrate –its roles and functions, elaborate about Daily dietary requirement.
2. Explain about FATS, its roles & functions, daily dietary requirement
3. Describe about Proteins –role & function, daily dietary requirement
4. Elaborate about diet requirements during constipation, Diarrhea, persistent vomiting
5. Describe about Diabetic diet
6. Explain about Glucose tolerance, and discuss about Lactose and gluten
7. Explain about Glucose tolerance, and discuss about Lactose and gluten
8. Describe Irritable bowel syndrome and its management.
9. Explain about estimation of energy balance
10. Explain about Enteral nutrition, write in detail about TPN
11. List out complications associated with Parenteral nutrition
12. Describe about Malnutrition – write about PEM

13. Explain about Methods to estimate energy expenditure (metabolic cart, indirect calorimetric)
14. Describe about post op nutritional management

UNIT V MEDICAL ETHICS IN ICU & ER

1. Discuss about principles of ethics in medical practice, explain about various activities involved.
2. Describe about obtaining INFORMED CONSENT.
3. Explain ABOUT INFORMED REFUSAL (DNR/DNI)
4. Explain about consent for ORGAN DONATION
5. Explain about consent for RESTRAINT, Various methods of restraints.
6. Explain in detail about consent for uncooperative patient.
7. EXPLAIN ABOUT Right to confidentiality
8. Explain in detail about consent for Medico legal cases and handling procedures
9. Explain about medical documentation and various steps involved as per NABH
10. Explain about death certificate, explain about process of certification
11. Explain in detail about consent for Blood transfusion
12. Explain in detail about JEHOVAHS WITNESS
13. Explain the ethics and communication strategies in pediatric resuscitation scenarios, EXPLAIN ABOUT RTI act 2005

RECOMMENDED BOOKS

Tara V Shanbhag – Pharmacology

The Little ICU paul marino

Text book of critical care – jean – louis Vincent, Edward Abraham, Frederick. A. Moore

Patrick M. kochanek. Etc

EGAN’S fundamentals of respiratory care

4. BASICS OF EMERGENCY MEDICINE**L/T/P/C****UNIT 1: INTRODUCTION TO EMERGENCY MEDICINE & TRIAGE****4/-/-/4**

1. Introduction to Emergency Medicine: History & Evolution
2. Scope and Role of Emergency Medicine in Healthcare
3. Emergency Department (ED) Setup and Organization
4. Legal and Ethical Issues in Emergency Care
5. Basic Life Support (BLS) – Adult and Pediatric
6. Advanced Cardiac Life Support (ACLS) Overview
7. Triage Principles: Types and Methods (START, ESI)
8. Primary and Secondary Survey (ABCDE Approach)
9. Documentation and Communication in Emergency Settings
10. Patient Safety and Infection Control in ED

UNIT 2: EMERGENCY ASSESSMENT & AIRWAY MANAGEMENT

1. Rapid Assessment of the Critically Ill Patient
2. Airway Anatomy and Assessment
3. Basic Airway Management Techniques
4. Advanced Airway Techniques: Intubation, Supraglottic Devices
5. Oxygen Therapy and Ventilation Support
6. Respiratory Distress and Failure – Emergency Interventions
7. Shock: Types, Recognition, and Initial Management
8. Fluid Resuscitation – Types of Fluids and Protocols
9. Crash Cart Setup and Emergency Equipment Use
10. Use of Monitoring Tools: ECG, Pulse Oximetry, BP

UNIT 3: MEDICAL AND SURGICAL EMERGENCIES

1. Cardiovascular Emergencies: ACS, Arrhythmias, Cardiac Arrest
2. Respiratory Emergencies: Asthma, COPD, Pulmonary Embolism
3. Neurological Emergencies: Stroke, Seizures, Meningitis
4. Gastrointestinal Emergencies: GI Bleed, Pancreatitis, Acute Abdomen
5. Endocrine Emergencies: DKA, HHS, Thyroid Storm
6. Renal and Electrolyte Emergencies
7. Poisoning and Overdose Management

8. Trauma Management: Blunt vs. Penetrating Trauma
9. Wound and Burn Management Basics
10. Surgical Emergencies: Appendicitis, Perforation, Hernia

UNIT 4: PAEDIATRIC, OBSTETRIC & ENVIRONMENTAL EMERGENCIES

1. Paediatric Assessment Triangle and Emergency Approach
2. Paediatric Respiratory and Febrile Emergencies
3. Paediatric Seizures and Shock Management
4. Obstetric Emergencies: Eclampsia, Haemorrhage, Preterm Labor
5. Neonatal Resuscitation and Care in ED
6. Environmental Emergencies: Hypothermia, Heat Stroke, Drowning
7. Bites, Stings, and Allergic Reactions
8. Toxicology and Envenomation Cases
9. Emergency Management of Infectious Diseases (Sepsis, Meningitis)
10. Emergency Preparedness for Disasters and Mass Casualty Incidents

UNIT 5: EMERGENCY PROCEDURES, DRUGS & PROFESSIONAL PRACTICE

1. Common Emergency Procedures: IV Insertion, Catheterization, NG Tube
2. Wound Closure and Dressing Techniques
3. Use of Defibrillators and Emergency Equipment
4. Emergency Drugs: Indications, Doses, Routes of Administration
5. Pain Management in Emergency Settings
6. Psychological First Aid in Trauma Victims
7. Transport of Critically Ill Patients (Intra- and Inter-hospital)
8. Simulation and Role Play in Emergency Scenarios
9. Communication with Patients and Families during Emergencies
10. Professionalism, Team Dynamics & Debriefing in Emergency Medicine

RECOMMENDED BOOKS

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The Little ICU paul marino

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EGAN’S fundamentals of respiratory care

5. PRACTICAL: BLS & ALS TECHNIQUES**L/T/P/C****-/-/2/1****UNIT I BLS SKILLS – HANDS-ON PROFICIENCY**

1. High-quality chest compressions (rate, depth, recoil, interruptions)
2. Compression-to-ventilation ratios for infants, children, adults
3. AED operation, pad placement, shock delivery safety
4. Choking relief for all age groups (Heimlich, back blows)
5. Safe application of gloves and hygiene during CPR
6. Team-based BLS coordination – switch-over drills
7. Monitoring physical fatigue and rotation among providers
8. Recognition of return of spontaneous circulation (ROSC) signs
9. Safe use of barrier devices (pocket mask, face shield)
10. Proper body mechanics during prolonged CPR
11. Documentation of BLS in simulated records
12. Use of feedback devices (compression meters, voice prompts)
13. BLS in confined spaces or special environments
14. Managing apnea/apneic seizures without AED usage
15. Bystander engagement and dispatcher instructions practice

UNIT II AIRWAY MANAGEMENT PRACTICE

1. Bag-valve-mask technique: seal and ventilation in various age groups
2. Airway positioning maneuvers: head tilt–chin lift, jaw thrust
3. Oropharyngeal and nasopharyngeal airway insertion
4. Supraglottic airway device fitting (e.g., LMA, i-gel)
5. Practice with endotracheal intubation on manikins
6. Use of laryngoscope blades: Macintosh and Miller
7. Bougie-assisted intubation techniques
8. Confirmation methods: capnography readouts, bilateral chest movement
9. Securing the airway: tube fixation and bite block placement
10. Managing difficult airway simulations (obese, trauma, cervical collar)
11. Emergency cricothyrotomy technique practice
12. Vocal cord visualization training with video laryngoscopes
13. Apneic oxygenation technique during intubation

14. Suction catheter usage and airway clearance in aspirative scenarios
15. Respiratory monitoring during airway management (pulse ox, ETCO₂)

UNIT III ALS PROCEDURAL & SIMULATION SKILLS

1. Intraosseous access placement (tibia, humerus sites)
2. IV cannulation simulation: various gauge catheters
3. Defibrillator operation: energy settings, sync mode, safety checks
4. Medication preparation and drawing up (aseptic technique)
5. Push-dose vasopressor preparation and administration
6. Chest compressions coordination with ventilation and defibrillation
7. Simulated code scenarios with multi-role participation
8. Real-time documentation of interventions and timings
9. Use of mechanical compression devices (if available)
10. Airway maintenance concurrent with chest compressions
11. Drug labelling and safety checks under pressure
12. Simulated family presence and communication practice
13. Equipment troubleshooting: battery failure, pad disconnects
14. Integration with hospital code team workflows
15. Quality indicator tracking during simulation (compression metrics, timing)

UNIT IV INTERPROFESSIONAL SIMULATION & DEBRIEFING

1. Role rotation drills: leader, compressor, airway, recorder, meds
2. Closed-loop communication during code execution
3. Real-time feedback using voice prompts or metronome apps
4. Video-assisted debriefing sessions
5. Debriefing frameworks: plus/delta, advocacy-inquiry
6. Identifying system gaps (e.g., missing equipment) during mock codes
7. Psychological safety discussions: emotional responses to codes
8. Error identification and corrective planning
9. Implementing changes based on simulation findings
10. Interprofessional collaboration and role clarity sessions
11. Use of checklists and cognitive aids in simulated scenarios
12. Stress inoculation training for high-pressure situations
13. Performance evaluation: objective scoring, peer feedback
14. Creating action plans post-simulation for skill improvement

15. Scheduling periodic refresher simulations and recertification benchmarks

UNIT V CERTIFICATION PREPARATION & QUALITY TRACKING

1. OSCE-style assessment of BLS/ALS techniques
2. Written MCQ and scenario-based exams
3. Objective performance scoring rubrics introduction
4. Peer-review and mentor feedback sessions
5. Developing personal improvement plans based on assessments
6. Alignment with ILCOR/ERC/AHA updated guidelines
7. Planning refresher cycles: frequency, modalities, recert timelines
8. Recordkeeping of certifications and skill tracking
9. Quality benchmarking: time to compression, defibrillation, drug delivery
10. Procedural error tracking and documentation
11. Simulated audits for code effectiveness and response times
12. Maintenance of equipment proficiency logs
13. Safety checks: manikin quality, ACLS kit inventory
14. Integration of guideline updates into training materials
15. Reflection essays or portfolios post-certification assessments

6. PRACTICAL: EMERGENCY MEDICINE & CRITICAL CARE - I**L/T/P/C****-/-/4/2**

1. Airway Management
2. Resuscitation Procedures
3. Vascular Access
4. Emergency Procedures
5. Patient Monitoring
6. Emergency Equipment & Devices
7. Emergency Imaging & Point-of-Care Ultrasound (POCUS)
8. Critical Care Nursing & Supportive Care
9. Pharmacology in Practice
10. Clinical Case Simulations

RECOMMENDED BOOKS

Tara V Shanbhag – Pharmacology

The Little ICU paul marino

Text book of critical care – jean – louis Vincent, Edward Abraham, Frederick. A. Moore

Patrick M. kochanek. Etc

EGAN'S fundamentals of respiratory care

7. CLINICAL POSTINGS – I**L/T/P/C**

Students should be posted in,

-/-/16/8

- IMCU - Intermediate care unit
- RICU - Respiratory Intensive care unit
- NICU - Neuro Intensive care unit
- PICU - Paediatric Intensive care unit
- PACU- Post Anaesthesia care unit
- SICU- Surgical Intensive care unit
- CICU- Cardiac Intensive care unit
- ER- Emergency room
- AMBULANCE
- TICU- Trauma care unit

8. RESEARCH METHODOLOGY AND BIOSTATISTICS**L/T/P/C****4/-/-4****UNIT I INTRODUCTION TO BIOSTATISTICS, SAMPLING METHODS AND DESCRIPTIVE STATISTICS**

1. To describe the types of variables and scales of measurements in biostatistics
2. To enlist the methods of data collection
3. To enumerate the various types of presentation of data
4. To perform the Qualitative presentation of data
5. To describe the measures of Central Tendency
6. To perform the Quantitative Presentation of Data
7. To describe the measures of Dispersion
8. To describe Rate, Ratio, proportion, incidence and prevalence
9. To describe the Skewness and kurtosis
10. To explain the concept of Probability Distribution and sampling distribution
11. To explain the Binomial and Poisson Distribution
12. To explain Normal Distribution

UNIT II CORRELATION AND REGRESSION, TEST OF HYPOTHESIS AND STATISTICAL TEST

1. To describe the Correlation coefficient and its types
2. To explain the concept of Regression Analysis
3. To apply various Tests of significance
4. To describe various Parametric Tests
5. To describe various Non-parametric Tests
6. Tutorial: Discussion on Regression and test of significance
7. To explain the basis of Statistical Inference: Type I and II Error
8. To be able to utilize Parametric Tests
9. To be able to utilize Non-parametric Tests
10. Discussion on Parametric and Non-Parametric Tests

UNIT III EPIDEMIOLOGY STUDY DESIGN, RESEARCH APPLICATIONS

1. To describe the Epidemiological study designs
2. To explain about the different types of observational studies including case series, and cross sectional study
3. To describe the Case control study
4. To describe the Cohort study
5. To describe the Experimental study
6. To calculate the Sample size based on mean and proportion
7. To explain about Logistic regression
8. To explain about Survival analysis
9. To explain about Multivariate analysis
10. To describe Reliability and validity evaluation

UNIT IV RESEARCH LITERATURE AND ETHICAL ISSUES

1. To differentiate between research Methods and scientific methods
2. To describe the ethics involved in the research process
3. To prepare a research proposal
4. To understand the concept of Research design
5. To explain about Qualitative research method
6. To explain about Quantitative research method
7. To describe about the Data management including data entry, data coding, storages
8. To substantiate the use of the research data base
9. To evaluate the potential of research for informing practice
10. To develop research questions and devise methods for their investigation

UNIT V RESEARCH ANALYSIS AND CLINICAL AUDIT

1. To analyse the Qualitative data
2. To analyse the Quantitative data
3. To explain about Clinical audit
4. To distinguish between research and audit process and their function
5. To explain the role of evidence based practice within health and welfare

RECOMMENDED BOOKS

Tara V Shanbhag – Pharmacology

The Little ICU paul marino

Text book of critical care – jean – louis Vincent, Edward Abraham, Frederick. A. Moore

Patrick M. Kochanek. Etc

EGAN'S fundamentals of respiratory care

SEMESTER - 2

L/T/P/C

4/-/-/4

1. TRAUMA CARE AND MANAGEMENT

UNIT I INTRODUCTION TO TRAUMA

1. Definition and classification of trauma
2. Mechanisms of injury (blunt, penetrating, blast)
3. Golden hour and its importance
4. Epidemiology of trauma
5. Types of trauma (major vs minor)
6. Pre-hospital trauma care systems
7. Trauma scoring systems (GCS, ISS, RTS)
8. Field triage and priorities
9. Transportation of trauma patients
10. Role of emergency medical services (EMS)

UNIT II INITIAL ASSESSMENT AND RESUSCITATION

1. Primary survey (ABCDE approach)
2. Secondary survey components
3. Initial stabilization techniques
4. Airway and cervical spine protection
5. Haemorrhage control methods
6. Fluid resuscitation strategies
7. Types of shock and management
8. Trauma team activation
9. Use of point-of-care ultrasound (eFAST)
10. ATLS protocols overview

UNIT III HEAD AND SPINE INJURIES

1. Types of traumatic brain injury (TBI)
2. Glasgow Coma Scale (GCS) usage
3. Indications for CT scan in head trauma
4. Signs of raised intracranial pressure (ICP)
5. Cushing's triad
6. Spinal cord injury types (complete/incomplete)
7. Cervical spine clearance protocols
8. Use of cervical collars
9. Neuroprotective strategies
10. Rehabilitation and long-term care

UNIT IV THORACIC AND ABDOMINAL TRAUMA

1. Blunt vs penetrating chest trauma
2. Rib fractures and flail chest
3. Pneumothorax and tension pneumothorax
4. Hemothorax and chest tube insertion
5. Cardiac tamponade (Beck's triad)
6. Abdominal trauma assessment (FAST)
7. Liver and spleen injuries
8. Retroperitoneal bleeding
9. Penetrating abdominal injuries
10. Diagnostic peritoneal lavage

UNIT V ORTHOPAEDIC AND SOFT TISSUE INJURIES

1. Open vs closed fractures
2. Compartment syndrome
3. Limb splinting and immobilization
4. Pelvic fracture management
5. Crush injuries
6. Soft tissue injuries and wound care
7. Burn injury classification and TBSA
8. Electrical and chemical burns
9. Pain management in trauma
10. Infection prevention in trauma

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11. EGAN’S fundamentals of respiratory care

L/T/P/C

2. AIRWAY VENTILATION MANAGEMENT

2/-/-2

UNIT I INDICATIONS AND INTRODUCTION TO BASIC TERMINOLOGIES IN VENTILATION

1. Define Respiratory failure and explain the types, causes and treatment of Respiratory failure
2. Describe the Indications for mechanical ventilation – overview
3. Enumerate the Types of ventilators & parts
4. Explain the Basic terms in MV – Tidal volume, Respiratory rate, Minute ventilation, I:E ratio, Inspiratory pause
5. Explain the Basic terms in MV – Inspiratory pressure, Pressure support, Trigger, FiO₂
6. Explain the Basic terms in MV – Peak inspiratory pressure, Plateau pressure, PEEP, Mean airway pressure
7. Describe the Basic Terms in MV - Resistance & Compliance
8. Describe the Basic Terms in MV – Scalars and Loops
9. Comprehend the Basic Terms in MV- Triggering, Cycling & Limiting variables
10. Effects of positive pressure ventilation on different organ systems

UNIT II COMMON MODES OF VENTILATION AND MONITORING/TROUBLE SHOOTING

1. Describe Continuous Mandatory Ventilation (CMV) – Indications and Settings. Explain the Advantages& Disadvantages of CMV
2. Interpret the Waveforms & Graphics in CMV
3. Describe Synchronized Intermittent Mandatory Ventilation (SIMV) - Indications and Settings. Explain the Advantages& Disadvantages of SIMV
4. Describe Continuous Positive Airway
5. Pressure (CPAP)/ Pressure Support Ventilation (PSV) – Indications and Settings. Explain the Advantages& Disadvantages of CPAP/PSV
6. Explain about the Bedside monitoring of ventilated patients
7. Describe the causes, recognition and management of Ventilator patient asynchrony
8. Explain the Setting of alarms in a ventilator and trouble shooting

UNIT III CARE OF VENTILATED PATIENTS, COMPLICATIONS OF MECHANICAL VENTILATION AND WEANING

1. Discuss the Management of airway secretions – suctioning, postural drainage, chest physiotherapy
2. Explain Aerosol therapy and humidification in ventilated patients
3. Describe the methods of Humidification in mechanically ventilated patients
4. Describe about Analgesia, Sedation and Paralysis in Ventilated patients
5. Describe the Complications in MV– Barotrauma, Volutrauma, Biotrauma, Oxygen toxicity
6. Explain about Ventilator Associated Pneumonia
7. Discuss about Intercostal drain – indications, technique, care and complications.
8. Discuss the role Radiological imaging in MV – Chest X ray, Lung ultrasound
9. Explain the Weaning techniques. Discuss the Weaning criteria
10. Enumerate the causes of Weaning failure Describe Post extubation care and complications

UNIT IV VENTILATION IN SPECIAL SITUATIONS AND NEWER MODES OF VENTILATION

1. Explain the Ventilator settings in Bronchial Asthma and COPD
2. Explain the Ventilator settings in ARDS
3. Explain ventilator settings in cardiogenic pulmonary edema
4. Discuss the evaluation and management of a Ventilator dependent patient
5. Describe the Classification of newer modes of ventilation
6. Describe the Dual modes in ventilation
7. Define Minimum Mandatory Ventilation and enumerate its uses, settings, monitoring and disadvantages
8. Define High Frequency Ventilation and enumerate its types, uses, settings, monitoring and disadvantages
9. Describe about Neurally Adjusted Ventilatory Assist (NAVA)
10. ECMO

UNIT V NON-INVASIVE VENTILATION AND HFNO THERAPY

1. Define NIV ,describe the types and its interface
2. Enumerate the Goals and Indications of NIV
3. Explain the Patient Selection in NIV
4. CPAP – Indications, Initial settings, monitoring and adjustments
5. BiPAP – Indications, Initial settings, monitoring and adjustments
6. Discuss the Complications of NIV
7. Explain Weaning and discontinuation of patients from NIV
8. Define HFNO therapy and describe the Equipment design and Settings. Indication and contraindication

RECOMMENDED BOOKS

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Text book of critical care – jean – louis Vincent, Edward Abraham, Frederick. A. Moore

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EGAN’S fundamentals of respiratory care

3. CRITICAL CARE PROCEDURES**L/T/P/C****UNIT I HYPOXEMIA AND HYPERCAPNIA****4/-/-2**

1. Enumerate the various causes of hypoxia and hypercapnia
2. Explain the effects of hyper ventilation and hypoventilation on hypoxemia
3. Management of hypoxemia
4. Explain the relation between Malignant hyperthermia and hypoxemia
5. Discuss the management of malignant hyperthermia
6. Discuss on hypercapnia- definition, classification based on range
7. Explain the effects of hypercapnia on central nervous system, cerebral blood flow
8. Explain the effects of hypercapnia on cerebral blood flow
9. Explain about anemic hypoxia, stagnant hypoxia and histotoxic hypoxia
10. Partial pressures of gases in alveoli

UNIT II OXYGEN THERAPY

1. Define oxygen therapy and conditions which require oxygen therapy
2. Explain the principles behind the working of pulse oximetry
3. What are all the cautions of oxygen therapy
4. Explain about nasal cannula. Its indication, contraindication, its fio₂
5. Explain about low flow o₂ delivery systems
6. Explain about high flow o₂ delivery systems
7. Explain about venturi mask, its working principle, indications
8. Explain about various sizes of venturi mask, fio₂ achieved with each size, its disadvantages
9. Discuss about the Side effects and complication of o₂ therapy, oxygen toxicity
10. Explain about Hyperbaric oxygen therapy. Discuss about high flow nasal oxygen

UNIT III RESPIRATORY FAILURE AND PULMONARY EMBOLISM

1. Explain in detail about shunt and dead space
2. Discuss about deep vein thrombosis, its risk factors, management and complications
3. Explain about pulmonary embolism. Definition, pathogenesis. And management (IVC filter)
4. Explain the use of anticoagulant as prophylaxis
5. Explain about IVC filter and its role in prevention of pulmonary embolism.
6. What is embolectomy, explain its types and complication
7. Explain in detail about thrombolytic therapy
8. Describe the recommended prophylaxis for deep vein thrombosis, pulmonary embolism
9. Explain respiratory failure. Definition and types
10. Explain about ventilation perfusion mismatch

UNIT IV ARDS AND MANAGEMENT OF ARDS

1. Explain acute respiratory distress syndrome. Definition and risk factors
2. Explain in detail about the pathophysiology of acute respiratory distress syndrome
3. Explain about various phases of acute respiratory distress syndrome. Exudative, proliferative and fibrolytic phase
4. Explain about berlins criteria
5. Explain about the management strategy in acute respiratory distress syndrome
6. Explain about the difference between negative pressure ventilation and positive pressure ventilation
7. Explain the findings commonly seen in chest x-ray in patients with moderate acute respiratory distress syndrome
8. Explain the complications seen in patients with severe acute respiratory syndrome
9. Role of tracheostomy in acute respiratory distress syndrome

UNIT V AIRWAY OBSTRUCTION

1. Discuss the various causes for airway obstruction and discuss about the importance of airway maintenance
2. Explain about the various artificial airways available and its importance
3. Discuss about the foreign body aspiration in an alcohol consumed patient and its management
4. Discuss about the foreign body aspiration in paediatrics, location and its management
5. Foreign body aspiration in paediatrics- physical examination, differential diagnosis and investigation
6. Explain the Causes of airway obstruction in obese patients- obstructive sleep apnea
7. Discuss about the Investigation and management of obstructive sleep apnea
8. Explain about the management of laryngospasm in a post-operative patient
9. Explain about the vocal cord nerve supply, airway block, vocal cord paralysis, both complete and incomplete and unilateral and bilateral.
10. Discuss about airway management in a case of hanging

RECOMMENDED BOOKS

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EGAN'S fundamentals of respiratory care

4. INFECTION CONTROL IN CRITICAL CARE**L/T/P/C****2/-/-/2****UNIT I INFECTION IN ICU**

1. Define fever in ICU. Enumerate methods of temperature measurement
2. Enumerate the reasons for Fever in ICU and Describe investigations and its implications in details
3. Describe the pathophysiology of febrile neutropenia and the potential complications associated with this condition.
4. Discuss the diagnostic criteria of tetanus and explain its clinical features
5. Describe the different classifications of dengue fever and the criteria used for assessing disease severity
6. Describe the etiology, pathophysiology, and clinical presentation of meningitis.
7. List out investigations for a patient with PUO and its interpretation
8. Enumerate signs and symptoms of acute otitis media and discuss its Management
9. list out complication of urosepsis and describe its management
10. Enumerate clinical signs and symptoms that aid in the diagnosis of leptospirosis and explain its management
11. Describe the etiology, pathophysiology, and clinical presentation of typhoid
12. Identify thyrotoxicosis based on criteria, differentiate from malignant hyperthermia, and enumerate management options
13. Describe briefly about community acquired pneumonia and its prevention

UNIT II VENTILATOR ASSOCIATED PNEUMONIA

1. Define and discuss Ventilator Associated Pneumonia
2. classify community acquired pneumonia and discuss its etiology
3. Define and classify community acquired pneumonia
4. Describe pathophysiology and management of MODS in detail
5. Enumerate various Oxygenation techniques in ICU in detail
6. Define NIV and differentiate between BIPAP and CPAP
7. Define Invasive Ventilation and discuss its role in pneumonia
8. explain the principles of Antibiotic use in ICU
9. Define Early antibiotic therapy and discuss about duration of therapy in ICU
10. Explain role of Physiotherapy in ICU in detail
11. Explain role of Lung vibrators in ICU in detail

12. classify various techniques of Pleurodesis in Empyema
13. list out indication of Needle thoracostomy and describe seldinger technique of ICD placement

UNIT III SEPSIS AND ABSCESS

1. Define Sepsis and enumerate causes of Sepsis
2. Define septic shock and explain management of septic shock
3. Define septic shock and explain management of septic shock
4. Describe the risk factor clinical presentation and management of Clostridium difficile infection in ICU
5. Enumerate various reasons for Abdominal Sepsis in detail
6. Define Urosepsis and describe clinical features, management of Urosepsis
7. Describe pathophysiology and management of Necrotizing enterocolitis in detail
8. Enumerate various etiology for liver abscess and discuss its management
9. Describe pathophysiology and management of Pancreatitis in detail
10. Explain various Necrotizing Soft tissue infections in ICU
11. Explain various Metabolic disorders in Oncology patient in ICU
12. Explain Tumor lysis syndrome and its management
13. Enumerate and discuss various Dermatological condition in ICU

UNIT IV INFLAMMATION

1. Enumerate various reasons for ketoacidosis
2. Define Ketoacidosis and differentiate between Alcoholic and starvation Ketoacidosis
3. Describe the pathophysiology and investigations in a patient with diabetic ketoacidosis
4. Describe various Insulin Regimens and Explain in detail
5. Describe role of Fluid Resuscitation in DKA management
6. Enumerate investigations that aid in the diagnosis of Hyperglycemic Hyperosmolar coma and explain its management
7. Describe pathophysiology and management of Hyperglycaemic Hyperosmolar coma in detail
8. Define Hypoglycemia and enumerate various reasons for Hypoglycemia
9. Describe pathophysiology and management of HIV in detail
10. List out the pulmonary complication and its management in HIV
11. Describe the pathophysiology, and management of heat stroke
12. Explain frost bite and its management
13. Identify thyroid storm and differentiate it from pheochromocytoma

UNIT V ANTIBIOTIC STEWARDSHIP

1. Define Antibiotic Stewardship and explain its goal guidelines
2. Describe antibiotic cycling in detail
3. Explain the importance of Antibiotic resistance
4. Explain role of Antibiotic prophylaxis in ICU
5. Describe role of stewardship team members and the strategies
6. Recognize role of De-Escalation in Antibiotic therapy
7. Describe Antibiotic time out in ICU
8. Explain role of combination therapy along with advantages
9. Explain Dose optimisation of Antibiotic therapy in Organ dysfunction
10. Describe the need of converting parental to oral therapy
11. Explain dangers of Antibiotic overuse in detail
12. Identify the reasons for inappropriate Antimicrobial use
13. Explain the elements of Antibiotic stewardship program

RECOMMENDED BOOKS

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EGAN'S fundamentals of respiratory care

5. PRACTICAL: TRAUMA AND AIRWAY MANAGEMENT**L/T/P/C****-/-/4/2****UNIT I: PREPARATORY SKILLS & FOUNDATIONAL KNOWLEDGE**

1. Overview of Emergency Medical Systems (EMS), paramedic roles, legal and ethical considerations in emergencies
2. Patient assessment: history taking, physical examination, critical decision-making, communication, documentation
3. Hands-on basics: handling airway and breathing instruments, ventilators, defibrillators, nebulizers

UNIT II: AIRWAY MANAGEMENT & VENTILATION TECHNIQUES

1. Basic airway adjuncts: oropharyngeal and nasopharyngeal airways, LMAs, bag–mask ventilation
2. Advanced airway procedures:
 - Endotracheal intubation (direct, indirect, rapid-sequence, bougie-assisted)
 - Supraglottic device use (LMA, i-gel, King LT, etc.)
 - Needle cricothyrotomy, surgical cricothyrotomy, tracheostomy for difficult airway scenarios
3. Ventilation modalities: basic vs. mechanical, invasive and non-invasive support
4. Contaminated airway management: SALAD (Suction-Assisted Laryngoscopy and Airway Decontamination) technique

UNIT III: TRAUMA CARE – HANDS-ON SKILLS

1. Assessment and triage: mechanism of injury, triage protocols, vital signs, trauma system structures
2. Clinical interventions:
 - Bleeding control and volume support (tourniquets, wound management)
 - Soft tissue injuries: wound closure, skin grafting, burn care techniques
 - Fracture/dislocation management, splinting, amputations, compartment syndrome
 - Cranial, facial, spine, thoracic, abdominal, genitourinary, musculoskeletal injury management
3. Pre-hospital trauma skills and critical care interventions in field settings
4. Polytrauma and multi-casualty incident handling: ATLS principles, systems approach, ABCDE(c) protocols

UNIT IV: INTEGRATED, SCENARIO-BASED PRACTICE & ASSESSMENT

1. Combined drills and simulations incorporating airway, breathing, and trauma procedures
2. Objective Structured Clinical Examinations (OSCEs) covering:
 - Intubation (multiple techniques including LMA, bougie)
 - Cricothyrotomy/tracheostomy
 - Bag-mask ventilation
 - Managing airway contamination
 - Circulation interventions (peripheral IV, central venous/intraosseous access, defibrillation)
3. Pre-hospital care simulation modules and hands-on demonstration exercises
4. Continuous equipment handling and maintenance proficiency, documentation, and ethical bedside conduct

REFERENCE BOOK FOR ALL SUBJECTS

K. Sembulingam – essential of physiology

Tara V Shanbhag – Pharmacology

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6. CLINICAL POSTINGS – II

L/T/P/C

Students should be posted in,

-/-/16/8

- IMCU - Intermediate care unit
- RICU - Respiratory Intensive care unit
- NICU - Neuro Intensive care unit
- PICU - Paediatric Intensive care unit
- PACU- Post Anaesthesia care unit
- SICU- Surgical Intensive care unit
- CICU- Cardiac Intensive care unit
- ER- Emergency room
- AMBULANCE
- TICU- Trauma care unit

SEMESTER - 3**L/T/P/C****3/-/-3****1. ACID – BASE AND ELECTROLYTE DISTURBANCES****UNIT I: INTRODUCTION OF ELECTROLYTES**

1. Significance of commonly measured electrolytes in clinical practice
2. Normal values of serum osmolarity of sodium, potassium, magnesium, calcium & phosphorus
3. Various Fluid compartments in detail
4. Exchange between fluid compartments
5. Role of ADH in maintaining fluid balance
6. Disorders of water balance
7. loads on extracellular and intracellular water contents.
8. Clinical implications of dyselectrolytemia Part 1
9. Clinical implications of dyselectrolytemia Part 2
10. General principles in treating electrolyte disorders
11. Overview of treating electrolyte disturbances

UNIT II: SODIUM

1. Physiological importance of sodium
2. Regulation and homeostasis of sodium
3. Hyponatremia in patients with low, normal and high total body sodium
4. Hyponatremia
5. Diagnosis and causes of hyponatremia
6. Hypernatremia in a patient with low total body sodium
7. Hypernatremia in a patient with normal total body sodium
8. Hypernatremia in a patient with high total body sodium
9. Clinical manifestations, diagnosis, causes of hypernatremia
10. Clinical significance of hypernatremia

UNIT III: POTASSIUM, MAGNESIUM

1. Physiological importance of Potassium
2. Regulation and homeostasis of potassium
3. Clinical manifestations of hypo and hyperkalemia
4. Diagnosis, causes of hypo and hyperkalemia
5. Physiological importance of Magnesium
6. Regulation and homeostasis of magnesium
7. Clinical manifestations of hypo and hypermagnesemia
8. Diagnosis, causes of hypo and hypermagnesemia
9. Management of hypo and hypermagnesemia
10. Elevated Serum magnesium levels and their adverse effects
11. Understand role of magnesium in various physiological processes
12. Management of hypo and hypermagnesemia

UNIT IV: CALCIUM, PHOSPHOROUS

1. Physiological importance of calcium
2. Regulation and homeostasis of calcium
3. Clinical manifestations of hypo and hypercalcemia
4. Diagnosis, causes of hypo and hypercalcemia
5. Calcium and phosphorus supplements and methods of administration
6. Management of hypo and hypercalcemia
7. Physiological importance of phosphorus
8. Regulation and homeostasis of phosphorus
9. Clinical manifestations of hypo and hyperphosphatemia
10. Diagnosis, causes of hypo and hyperphosphatemia
11. Management of hypophosphatemia
12. Management of hyperphosphatemia

UNIT V: DIAGNOSIS, CAUSES AND MANAGEMENT OF ACID BASE DISORDERS

1. Basics of acid base balance
2. Hydrogen ion concentration, pH, Acids and bases, Conjugate pairs
3. Body buffers
4. Respiratory and renal compensation
5. Causes, diagnosis and management of respiratory acidosis
6. Causes, diagnosis and management of Metabolic acidosis.
7. Calculate Anion gap and explain its significance
8. Causes, diagnosis and management of Metabolic and respiratory alkalosis
9. Clinical implications of acidosis
10. Clinical implications of alkalosis
11. Interpret arterial blood gas report

RECOMMENDED BOOKS

1. Tara V Shanbhag – Pharmacology
2. The Little ICU paul marino
3. Text book of critical care by jean louis Vincent, Edward Abraham, Frederick. A. Moore
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4. EGAN’S fundamentals of respiratory care

2. PEDIATRIC AND GERIATRIC EMERGENCY CARE**UNIT I: INTRODUCTION TO PAEDIATRIC EMERGENCY CARE**

1. Paediatric anatomy and physiology differences
2. Paediatric vital signs and normal ranges
3. Paediatric assessment triangle (PAT) and primary survey
4. Paediatric airway management and oxygen therapy
5. Paediatric fluid and electrolyte balance
6. Paediatric medication dosing and administration
7. Pain assessment in children
8. Paediatric trauma scoring systems (e.g., PTS)
9. Child abuse and neglect – recognition and reporting
10. Family-centered care and communication in paediatric emergency

UNIT II: COMMON PAEDIATRIC EMERGENCIES

1. Febrile seizures and epilepsy in children
2. Acute respiratory distress (bronchiolitis, asthma, croup)
3. Gastroenteritis and dehydration
4. Paediatric sepsis and meningitis
5. Foreign body aspiration and airway obstruction
6. Paediatric poisoning and envenomation
7. Paediatric cardiac arrest – PALS algorithm
8. Neonatal emergencies (birth asphyxia, neonatal sepsis)
9. Congenital heart diseases presenting in emergency
10. Paediatric trauma – head, chest, abdominal injuries

UNIT III: INTRODUCTION TO GERIATRIC EMERGENCY CARE

1. Physiology of aging – cardiovascular, respiratory, renal, neurological changes
2. Atypical presentations in elderly patients
3. Comprehensive Geriatric Assessment (CGA)
4. Polypharmacy and adverse drug reactions
5. Falls in the elderly – causes, evaluation, and prevention
6. Delirium vs. dementia: recognition and acute care
7. Frailty syndrome and sarcopenia
8. Elder abuse and neglect – recognition and legal aspects
9. Ethical issues in geriatric emergency care

10. End-of-life care and advanced directives

UNIT IV: COMMON GERIATRIC EMERGENCIES

1. Acute coronary syndrome in elderly
2. Stroke and transient ischemic attacks
3. Respiratory failure and pneumonia
4. Urinary tract infections and urosepsis
5. Hypoglycaemia, hyperglycaemia, and DKA in elderly
6. Orthopaedic emergencies: fractures, osteoporosis-related injuries
7. Gastrointestinal emergencies (bleeding, obstruction)
8. Acute confusional states and psychiatric emergencies
9. Pressure ulcers and skin breakdown
10. Pain management in elderly patients

UNIT V: EMERGENCY CARE PRACTICES FOR PAEDIATRIC & GERIATRIC PATIENTS

1. Triage protocols and prioritization for children and elderly
2. Paediatric and geriatric resuscitation techniques
3. Safe transport practices for paediatric and elderly patients
4. Infection control in immunocompromised age groups
5. Nutrition support in emergencies (e.g., NG/OG tube care)
6. Ventilator management in paediatric and geriatric populations
7. Use of emergency equipment: Broselow tape, paediatric crash cart
8. ICU care considerations for neonates and elderly
9. Communication with families and caregivers during emergencies
10. Simulation and case-based learning for paediatric & geriatric scenarios

REFERENCE BOOK FOR ALL SUBJECTS

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3. CRITICAL CARE MONITORING**L/T/P/C****4/-/-4****UNIT I DOCUMENTATION AND MONITORING**

1. Importance of monitoring in ICU and recognize the various monitors used
2. APACHE 2 SCORE
3. SOFA & Q-SOFA score
4. Parts of arterial line cannula and explain the procedure for introducing the A line
5. Define, enumerate the uses and illustrate the differences between NIBP and IBP
6. Difference between pulse oximeters using different technologies
7. Various methods to illustrate tissue perfusion and define perfusion index, pleth variability index and NIRS
8. Parts of Central line catheter and explain the procedure for introducing the CVP line
9. Monitor fluid status through CVP, advantages, disadvantages and fluid challenge using CVP monitoring
10. Fluid challenge. methods other than CVP to determine the fluid status
11. Recognize the importance of PA catheter and outline the uses and recall the various chamber pressures in the heart
12. Concept of mixed venous oxygen saturation
13. Autonomic function testing – conditions where testing is needed, various test used

UNIT II HEMODYNAMIC MONITORING: BASIC TO ADVANCED

1. Reading an ECG
2. Classify arrhythmias
3. Holter monitoring, uses, explain how Holter monitoring is done
4. CHAPS positive and CHPAS negative arrhythmias and guidelines on management
5. Importance of Cardiac output monitoring and methods available for monitoring
6. The parts of ECHO machine and various cardiac parameters measured
7. Various views of Trans thoracic ECHO and advantages of various views
8. Trans esophageal ECHO and enumerate the advantages and disadvantages over TTE
9. Continuous cardiac output monitoring; Identify the cases needing continuous monitoring, and discuss the various methods
10. Principles of Flotrac, PICCO and LIDCO (peripherally inserted cardiac output monitors)
11. Noninvasive methods of cardiac output monitoring
12. Principle behind intra-aortic balloon pump and discuss the conditions where IABP is indicated
13. Principle behind ECMO and discuss the conditions where ECMO is used

UNIT III RESPIRATORY MONITORING: BASIC TO ADVANCED

1. Oxygen intake, exchange, distribution and transport
2. Importance of measuring SPO₂. Describe the principle behind measuring SPO₂.
3. SPO₂ in various clinical conditions, errors in reading
4. SPO₂ in various haemoglobinopathies
5. Principle behind measuring ETCO₂. Discuss the importance in various conditions
6. Various advantages and disadvantages between main stream and side stream capnography
7. Pulmonary function test
8. Wrights flow meter and interpret the values of PEFR
9. BHT, six-minute walk test and stair climbing test
10. Various scalars seen in ventilators
11. Various loops seen in ventilators

UNIT IV TEMPERATURE, SLEEP, BIS, ENTROPY, NMJ, NEUROLOGICAL MONITORING

1. Physiological basis of thermoregulation, importance of temperature regulation and common complications associated with temperature imbalance
2. Special considerations regarding temperature regulation in pediatric and geriatric patients
3. Various heat transfer mechanisms (conduction, convection, radiation, evaporation)
4. Different techniques for maintain normothermia. Discuss the active and passive warming methods
5. Discuss the management of fever encountered in a patient in ICU
6. Hypothermia related and hyper thermia related complications
7. Definition, pathophysiology and risk factors for OSA. What are the signs and symptoms of patients presenting with OSA. Define the various diagnostic criteria
8. Diagnostic sleep studies and interpretation of results
9. Algorithm used to manage complication or adverse effects that may occur in a patient with OSA.
10. BIS and entropy and enumerate the uses and differences
11. Various neuromuscular function monitoring techniques, clinical application and interpretation
12. Know about nerve conduction studies

UNIT V X-RAY, USG, ECHO, ANGIO, CT, MRI

1. Basic principles of radiographic interpretation, and describe the systematic approach to assessing X-ray images
2. Radiation safety considerations and precautions (both for HCW and patients) while using portable and bedside X-ray. Describe the various techniques used for obtaining optimal images in critically ill patients.
3. Role of USG use in critical care

4. Basic physics of USG waves and image formation
5. Systematic approach to USG image analysis, documentation of findings and communication of USG findings with health care team
6. Safety considerations, infection control and transducer disinfection protocols used in USG practice
7. Basic USG techniques in critical care. Evaluation of abdomen, Thorax- lungs and pleura, ECHO for heart and vasculature, trans cranial doppler
8. Various USG guided practices in critical care. a. vascular access, b. thoracocentesis, c. nerve blocks, d. biopsy and aspiration
9. Steps of coronary angiography
10. Fundamentals of CT and MRI imaging. Discuss the common imaging protocols in critical care scenarios
11. Various interpretations of CT and MRI images in patients admitted in ICU for various conditions including emergency care
12. Precautions for transferring patients to various imaging suites

RECOMMENDED BOOKS

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The Little ICU paul marino

Text book of critical care – jean – louis Vincent, Edward Abraham, Frederick. A. Moore

Patrick M. kochanek. Etc

EGAN'S fundamentals of respiratory care

4. PRACTICAL: CRITICAL CARE MONITORING

L/T/P/C

-/-/4/2

- Documentation and monitoring
- Hemodynamic monitoring: basic to advanced
- Respiratory monitoring: basic to advanced
- Temperature, sleep, bis, entropy, nmj, neurological monitoring
- X- ray, USG, ECHO, angio, CT, MRI

5. CLINICAL POSTINGS**L/T/P/C**

- IMCU - Intermediate care unit
- RICU - Respiratory Intensive care unit
- NICU - Neuro Intensive care unit
- PICU - Paediatric Intensive care unit
- PACU- Post Anaesthesia care unit
- SICU- Surgical Intensive care unit
- CICU- Cardiac Intensive care unit
- ER- Emergency room
- AMBULANCE
- TICU- Trauma care unit

-/-/20/10

SEMESTER - 4**L/T/P/C****1. EMERGENCY AND CRITICAL CARE UNIT MANAGEMENT 2/-/-/2****UNIT – I ACUTE CORONARY SYNDROMES**

1. Cardiac Anatomy, coronary circulation, and cardiac conduction system
2. Cardiac cycle in sequence
3. Basics of Electrocardiogram and identify a normal and abnormal ECG
4. Concepts of Preload, Afterload, Myocardial contractility
5. Acute Coronary Syndrome (ACS) and understand pathophysiology of ACS
6. Understand the clinical presentation of ACS, differential diagnosis, and methods of assessment of patients presenting with symptoms which includes diagnostics tools- ECG, biomedical markers, imaging
7. Identify a patient with ACS showing changes of STEMI or NSTEMI on ECG; perform risk assessment and assess outcome
8. Pharmacologic treatment of ACS: STEMI and NSTEMI
9. Non-invasive treatment options for myocardial infarction such as Coronary Angiogram, angioplasty with or without stenting
10. Invasive treatment options for a patient with MI such CABG, revascularization surgeries
11. Management of a patient with heart failure and cardiogenic shock
12. Understand ACS in patients with co-existing diseases such as SHTB, DM, CKD, Elderly, frailty

UNIT – II TACHYARRHYTHMIAS

1. Define and classify tachyarrhythmias
2. Narrow-QRS-complex tachyarrhythmias
3. Wide-QRS-complex Tachyarrhythmias
4. Pathophysiology of tachyarrhythmias in detail
5. Cardiac causes of TA (post cardiac arrest, post MI, long QT syndrome, valvular heart diseases, cardiomyopathy) and non-Cardiac causes of TA (hypoxia, hypoglycaemia, hypo/hyper- thyroids, hypo/hyperthermia)
6. Drugs causing tachyarrhythmias
7. Atrial fibrillation, its etiology, adverse outcomes, pharmacological management and thromboprophylaxis
8. Multi-focal atrial tachycardia -etiology, acute pharmacologic management
9. Identification of Paroxysmal Supraventricular tachycardia: understand mechanism, clinical features and describe methods of management including vagal maneuvers and pharmacologic treatment
10. Identify Ventricular tachycardia based on criteria, differentiate between VT and SVT, and enumerate management options

11. Describe Torsade de pointes, pre-disposing factors, drugs that can induce Torsade's de pointes, measure QT interval and enumerate management options
12. Describe defibrillators and explain operative mechanism and situations where defibrillators are used
13. Describe briefly about cardio version and implantable cardiac devices

UNIT – III BRADY ARRHYTHMIAS

1. Define Brady arrhythmia's and enumerate types and causes of Brady arrhythmia's
2. Define sinus bradycardia, sinus node dysfunction, their etiology, risk factors, clinical presentation, diagnostic approach, and management strategies
3. Define First Degree Atrio-ventricular Block, list out ECG criteria, etiology, clinical significance, management, and follow-up considerations
4. Define Second Degree Atrio-ventricular Block type I (Wenckebach), list out ECG criteria, etiology, clinical significance, treatment options and indications for pacemaker
5. Define Second Degree Atrio-ventricular Block type II(Wenckebach), list out ECG criteria, etiology, clinical significance, treatment options including pacemaker therapy
6. Define Third degree AV Block (Complete Heart Block), ECG findings, etiology, risk factors, associated conditions, clinical presentation, symptoms and complications, treatment options including pacemaker.
7. Explain the definition of Bundle branch block. RBBB and LBBB, characteristics, ECG findings, clinical significance, diagnosis, differential and management considerations
8. Define Escape Rhythms, Junctional Rhythms and Idioventricular rhythms, their characteristics, causes clinical significance and associated conditions, diagnosis, ECG interpretation and management
9. Evaluate a patient with bradycardia, identify symptoms, describe work-up of patients and list out indications for further testing and treatment
10. Describe Pharmacologic management of Bradyarrhythmia, medications used, mechanism of action, indications, dosages, side effects and contraindications
11. Explain Temporary cardiac Pacing including indication, types, procedures, and complications associated.
12. Explain Permanent Cardiac Pacing, its indications, types (single chamber, dual chamber, biventricular), pre-operative evaluation, implantation procedure and post-operative management
13. Troubleshoot common pacemaker problems stepwise and enumerate appropriate interventions. Discuss Long term care of patients with Brady arrhythmias, follow-up and monitoring, complications, lifestyle considerations and patient education.

UNIT – IV MANAGEMENT OF SHOCK

1. Define and classify Shock, describe pathophysiology, common etiologies, risk factors, clinical presentation, and sign of shock
2. Explain Hypovolemic shock, causes, pathophysiology, hemodynamic changes, clinical presentation, signs, and symptoms. Diagnostic evaluation and laboratory findings. Explain initial management and resuscitation strategies.
3. Define Cardiogenic shock, etiology, pathophysiology, hemodynamic changes, clinical presentation, including signs and symptoms, diagnostic evaluation, cardiac imaging, and biomarkers. Describe management options, including inotropic support and revascularization
4. Define septic shock, pathophysiology, identification, and management of source of infection, early recognition and diagnosis, hemodynamic management, and resuscitation, and describe Antibiotic therapy and supportive care.
5. Define Anaphylactic Shock, etiology, pathophysiology and immune response, clinical presentation including signs and symptoms, diagnostic evaluation, and allergen identification. Enumerate treatment options, including epinephrine administration and supportive care
6. Define Neurogenic shock. Causes, pathophysiology, autonomic dysfunction, clinical presentation and signs of neurogenic shock, diagnostic evaluation, and imaging studies. Enumerate management and treatment strategies including spinal immobilization
7. Describe other causes of Distributive shock (adrenal insufficiency, toxic shock ...). their etiology, pathophysiology, and clinical features of each type. Explain the diagnostic evaluation and management strategies specific to each type.
8. Explain paediatric shock and its unique considerations, etiology, and risk factors specific to children, the clinical presentation, diagnosis, and management strategies.
9. Explain the unique considerations in geriatric shock, the etiology, risk factors specific to older adults, clinical presentation, diagnosis, and management strategies
10. List out the Resuscitation fluids and their indications. Explain hemodynamic monitoring techniques such as Invasive arterial pressure monitoring and central venous pressure monitoring and interpret hemodynamic parameters in shock management
11. List-out the commonly used vasopressors and inotropes, their mechanism of action and hemodynamic effects, indications and dosages and administration consideration. Monitoring during administration and management of complications.
12. Explain airway management in shock, ventilation strategies, role of intubation and mechanical ventilation. Explain the endocrine and metabolic considerations in shock including electrolyte imbalances, glucose control and hormone replacement therapy
13. Describe haemorrhagic shock and trauma resuscitation, pre-hospital and in-hospital, strategies to control bleeding and DCS. Explain MODS and management. List out ethical considerations and end-of-life care in shock.

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2. ADVANCED THERAPEUTICS IN CRITICAL CARE**L/T/P/C****UNIT – I RENAL DISEASES****2/-/-2**

1. Explain Renal blood flow - physiology, anatomy and measurement of renal blood flow
2. Define Glomerular filtration rate, creatinine clearance and Sr. creatinine and explain the mechanism of urine production and oliguria
3. Define Acute Kidney Injury and enumerate the causes of AKI -prerenal causes, postrenal causes, intrarenal causes
4. Describe the classification of AKI and enumerate the methods of diagnosis of AKI
5. Explain the biomarkers of AKI including – neutrophil gelatinase – associated lipocalin, kidney injury molecule -1, tubular enzymes, crystallin c, cytokines, liver fatty acid-binding protein, other novel biomarkers in AKI
6. Explain the Hemodynamic management and nutritional support in AKI
7. Describe the disorders of water metabolism – hypervolemic and hypovolemic disorders
8. Draw a diagnostic protocol for AKI
9. Enumerate the causes of Urinary tract Obstruction
10. Define Renal Tubular Acidosis and explain its pathophysiology

UNIT II PAEDIATRIC CRITICAL CARE

1. Explain methods of clinical assessment of a pediatric patient in ICU using ABCDE, AVPU neurologic assessment
2. Enumerate the methods of monitoring respiratory parameters in ICU including pulse oximetry, ABG, UBG, transcutaneous gas determinants and capnography
3. Enumerate the methods of monitoring the haemodynamics of a pediatric patient including ECG, NIBP, IBP, CVP, Left atrial pressure monitoring, cardiac output, intravascular volume, assessment of tissue oxygenation
4. Explain the concept and pathophysiology of shock in paediatrics and the clinical approach to management of shock
5. Describe the hypertensive emergencies in paediatrics
6. Explain the pathophysiology of heart failure in neonates and children
7. Explain the pathophysiology of acute respiratory failure in children and its management. Explain in brief about hyaline membrane diseases
8. Explain the fluid and acid base electrolyte disturbances in critically ill child and neonates. Describe the management of energy and micronutrient deficiency.
9. Enumerate the methods of parenteral and enteral nutrition in child and neonates

10. Describe the management in trauma and traumatic brain injury in pediatrics. Also explain the management of burns and subsequent acute renal injury in Children.

UNIT – III DELIRIUM AND SEDATION

1. Define agitation and delirium and spell out the risk factors for developing delirium
2. Describe the pathophysiology of delirium, clinical features and adverse effects of delirium
3. Discuss the methods of assessment of delirium including CAM-ICU, the NEECHAM scale, THEMU-DESC, the DDS, the KOSE instrument, Richmond scale
4. Explain the medical and non-medical management of delirium including – maintaining a safe environment, education communication, improving sleep quality, controlling the situation
5. Explain the principles of sedation in ICU and scoring systems
6. Enumerate the methods of monitoring sedation including EEG and BIS
7. Describe the pharmacological and non-pharmacological methods of sedation
8. Observe a case demonstration of EEG and BIS
9. Explain about the delivery of sedation, sedation pathway, sedation protocols and describe what is sedation holiday
10. Discuss the prevalence of pain in critically ill patient, explain the pain physiology and hypernociception
11. Observe methods of delivery of sedation in ICU
12. Describe patient controlled analgesia – its design, techniques, drugs used and dosing regimen
13. Observe and set up a TCI pump in the ICU
14. Explain propylene glycol toxicity, withdrawal syndrome in benzo diazepam, propofol infusion syndrome and extrapyramidal reaction to haloperidol. Discuss briefly about Neuroleptic Malignant Syndrome
15. Observe epidural analgesia being administered in ICU

UNIT IV STROKE AND RELATED DISORDERS

1. Define Raised ICP and Describe the pathophysiology, etiology and clinical feature of Raised ICP.
2. Explain the ICP monitoring, refractory intracranial hypertension and spell out the management of RAISED ICP
3. Define traumatic brain injury. Enumerate the causes, mechanism of injury, clinical assessment, imaging, intracranial injuries
4. Measure the Basic ICP and for the head injury

5. Enumerate the management of moderate to severe TBI
 1. prehospital care
 2. ICU management
6. Define Stroke and acute ischemic stroke, describe the pathophysiology, clinical assessment, diagnosis, reperfusion strategies in acute ischemic stroke spell out the management of stroke to its complication
7. Describe the Cerebral venous thrombosis, Intracerebral haemorrhage, Subarachnoid haemorrhages and CNS infection – acute meningitis
8. Describe CNS infection – acute encephalitis, Herpes simplex' encephalitis, Japanese encephalitis and rabies
9. Explain about the Cerebral malaria & dengue and enumerate the neurological infection in HIV, brain, abscess
10. Enumerate the Medical management of status epilepticus and rapidly progressive neuromuscular disorders with respiratory failure –GBS
11. Describe the Neuromuscular disorders – myasthenia crisis, critically illness neuropathy and myopathy OPC poisoning
12. Explain the Lambert Eaton syndrome, polymyositis, dermatomyositis and enumerate perioperative neurological case – pre op care of intracranial hypertension, air embolism
13. Enumerate the Post op care – effects of anaesthesia vs immediate neurological deterioration, hematomas

UNIT – V LIVER DYSFUNCTIONS

1. Define Portal hypertension and describe the pathophysiology, diagnosis and clinical features – GI bleeding and explain the anatomy and physiology of portal system
2. Explain about the Ascites, hydrothorax and enumerate the management of portal hypertension
3. Explain the Hepato renal syndrome and Hepatopulmonary syndrome
4. Explain about the Hepatic encephalopathy – Acute liver failure, chronic liver failure
5. Define Fulminant hepatic failure – enumerate, etiology, prognostic, scoring system, liver biopsy
6. Enumerate the pathophysiology, clinical features and management of Fulminant hepatic failure.
7. Explain about the calculus and acalculous cholecystitis
8. Explain about the Liver function test – enumerate their clinical application
9. Describe the Critical care in acute liver failure and enumerate the classification of acute liver failure - etiology
10. Draw the flowchart of criteria for liver transplantation
11. Enumerate the Critical care management & complication of chronic liver cell failure and describe the Acute pancreatitis
12. Define Peritonitis & enumerate the pathogenesis, etiology, and management of Peritonitis and explain the ileus toxic mega colon and Ogilvie syndrome.

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3. THESIS/RESEARCH PROJECT**L/T/P/C****-/-/12/6**

In project/thesis, the students should be able to:

- Independently conduct research
- Critically analyze findings with scientific methodology

4.PRACTICAL: EMERGENCY AND CRITICAL CARE UNIT MANAGEMENT**L/T/P/C****-/-/4/2**

- Case scenario viva
- Dissertation work viva

5. CLINICAL POSTINGS IV**L/T/P/C**

Students should be posted in,

-/-/16/8

- IMCU - Intermediate care unit
- RICU - Respiratory Intensive care unit
- NICU - Neuro Intensive care unit
- PICU - Paediatric Intensive care unit
- PACU- Post Anaesthesia care unit
- SICU- Surgical Intensive care unit
- CICU- Cardiac Intensive care unit
- ER- Emergency room
- AMBULANCE
- TICU- Trauma care unit