POST DOCTORAL CERTIFICATE COURSE

CRITICAL CARE MEDICINE

Department of Anaesthesiology and critical care

AIIMS. Nagpur.

OVERVIEW:

AIIMS Nagpur is situated in middle of the country is an institute of national importance holding it's mission for the "PASSION FOR EXCELLENCE . In the field of Post-Doctoral education, most important function of Institute is to provide opportunities to the post graduates for practical based advanced learning in country in an atmosphere of research and development. Post-Doctoral students are exposed to newer diagnostic and therapeutic modules.

Competency based postgraduate training programme for PDCC in Critical Care Medicine aims to produce a postgraduate student who after undergoing the required training should be able to deal effectively with the needs of the community in life threatening cases and should be competent to handle issues of critical care domain. The core components of clinical services of the specialty of Critical Care Medicine revolves around life-support therapeutics.

Goals:

Competency based postgraduate training programme for PDCC in Critical Care Medicine aims to produce a postgraduate student who after undergoing the required training should be able to deal promptly,deligently and effectively with the needs of the community and should be competent to handle vital issues of critical care domain.

The course intends to impart logical reasoning ,prompt precise application of knowledge and skills of critical medicine, appropriate decision making in challenging circumstances , medicolegal aspects ,professional ethics. teaching modules and research based vision.

The objectives of PDCC is to provide following knowledge and skills :

Post doctoral course Critical Care Medicine deals with the cognitive, psychomotor and affective domains covering following learning objectives:

The specific objectives of the course are: 1. Perform resuscitation and management of the acutely ill patients

2. Plan and organize therapeutic interventions/organ system support in single or multiple organ failure in conditions associated with trauma, burns, infections, metabolic derangements etc.

3. Plan palliative care/ end of life care,

4. Organize peri-operative care of surgical / trauma patients,

5. Plan and execute infection control procedures, system management and standard operative procedures in the Intensive (critical) Care Units,

6. Operate the monitoring gadgets and to detect and manage alterations in their functioning,

7. Communicate effectively and empathetically to patients and attendants, about the critical nature of illnesses, end of life care and breaking bad news in contingencies,

8. Lead and be a member of the team involved in critical care,

9. Analyze the quality and implications of medical literature and apply new knowledge in the delivery of health care,

10. Identify and participate in future areas of inquiry in medical research,

11. Express enthusiasm and positive attitude in the educational process and participate fully in educational and research activities.

ESSENTIAL EDUCATIONAL QUALIFICATION :

Candidates must possess a requisite qualification as

MD/DNB in ANAESTHESIOLOGY/EMERGENCY MEDICINEGENERAL MEDICINE / PULMONARY MEDICINE) RECOGNISED BY MEDICAL COUNCIL OF INDIA/NATIONAL MEDICAL COMMISSION /INI

DURATION OF PROGRAMME : 12 months

INTAKE CAPACITY : as per the institution policies

Application form as per format to be submitted before due date as advertised on website

3.ENTRANCE EXAM FOR THE SELECTION :

- **25 Marks MCQ Test based on subject of Critical care medicine**
- **25 MCQs of 1 mark each**
- **No Negative Marking**
- **Merit list will be displayed for eligibility**

METHODS OF RESOLVING TIES :According to the institutional policies

LEAVES : in accordance with the institutional policies

FEES: As per the institutional policies

HOSTEL ACCOMODATION : Candidates will be provided hostel subject to availability and as per institutionl policies

COURSE CURRICULUM :

[A]Cognitive Domain

At the end of the course, the student should be able to:

1. Use the aspects of applied Anatomy, Physiology, Biochemistry and Pharmacology for daily practice, 2. Plan and implement resuscitation and initial management of the acutely ill patients

3. Perform diagnosis, assessment, investigation, monitoring and data interpretation of the ill patients

4. Manage critical care in secondary and advanced care facilities

5. Implement therapeutic interventions/organ system support in single or multiple organ failure, 6. Organise peri-operative care

7. Supervise work of the supporting staff

8. Offer support for care in transfer of critically ill patients

9. Organise Clinical Measurement

10. Plan and execute Research in related fields,

11. Organise infection control in ICU

12. Discuss and ensure safety for patients & staff in ICU

13. Exhibit good understanding of critical incidents, adverse events and complications related to ICU care

14. Organise multi-disciplinary case conference and counseling sessions with family

15. Discuss and explain critical appraisal and application of guidelines, protocols and care bundles

16. Demonstrate understanding of scoring systems for assessment of severity of illness.

17. Demonstrate good understanding of the managerial & administrative responsibilities of the critical care specialist.

(B) Affective Domain

1. Comfort, Pain-Relief and Recovery 1.1 Understanding of the physical and psychosocial consequences of critical illness for patients and families and methods of prevention and management 1.2 Communication of the continuing care requirements of patients at ICU discharge to health care professionals, patients and relatives

2. End of Life Care 2.1. Management of the process of withholding or withdrawing treatment with the multidisciplinary team 2.2. Discussion of the end of life care with patients and their families/surrogates 3. Health Systems Management

3.1. Leadership in daily multidisciplinary ward round

4. Ethics, Attitudes and Professionalism Communication skills (ADCOM module)

4.1. Communication with patients and relatives 4.2. Communication with members of the health care team Professional relationships with patients and relatives 4.3. Involvement with patients (or their surrogates) in decision making 4.4. Understanding of cultural and religious beliefs and an awareness of their impact on decision making 4.5. Understanding of privacy, dignity, confidentiality and legal constraints on the use of patient data Professional relationships with members of the health care team 4.6. Collaboration, consultation, team work 4.7. Supervision and delegation of duties and responsibilities to others

(C) Psychomotor Domain

At the end of the course, the student should have acquired skills in the following:

1. Respiratory system 1.1. Oxygen therapy - Fundamental principles and ICU specific issues 1.2. Fibreoptic laryngoscopy 1.3. Emergency airway management 5 1.4. Difficult and failed airway management 1.5. Endotracheal suction 1.6. Fibreoptic bronchoscopy and BAL in the intubated patient 1.7. Percutaneous tracheostomy and mini-tracheostomy 1.8. Thoracocentesis via a chest drain

2. Cardiovascular system 2.1. Peripheral venous catheterization 2.2. Arterial catheterization 2.3. Surgical isolation of vein/artery 2.4. Ultrasound techniques for vascular localization 2.5. Central venous catheterization 2.6. Defibrillation and cardioversion 2.7. Cardiac pacing (transvenous or transthoracic) 2.8. Fundamentals of pericardiocentesis 2.9. Measurement of cardiac output and derived haemodynamic variable

3. Central Nervous System 3.1. Lumbar puncture 3.2. Basic understanding of neuraxial pain medication like epidural analgesia

4. Gastrointestinal System 4.1. Nasogastric tube placement 4.2. Abdominal paracentesis 4.3. Sengstaken tube (or equivalent) placement 4.4. Fundamentals of upper GI endoscopy 4.5. Measurement and interpretation of intra-abdominal pressure

5. Genitourinary System 5.1. Urinary catheterization etc

COURSE CONTENTS :

1. Resuscitation,stabelisation and Initial Management of the Acutely ill Patients 1.1 Timely approach to the recognition, assessment and stabilization of the acutely ill patients with disordered physiology 1.2 Cardiopulmonary resuscitation 1.3 Post-resuscitation management 1.4 Triage and prioritization of patients for ICU admission 1.5 Assessment and initial management of the trauma patient 1.6 Assessment and initial management of the patient with burns 1.7 Fundamentals of the management of mass casualties

2. **Diagnostic modules** : Assessment, Investigation, Monitoring and Data: Interpretation of the acutely ill patients 2.1 History taking and clinical examination 2.2 Timely and appropriate investigations 2.3 Understanding of echocardiography (trans-thoracic/trans-oesophageal), Indications and interpretation of results 2.4 Understanding of Electrocardiography (ECG/EKG), Indications and interpretation of the results 2.5 Appropriate microbiological sampling and interpretation of results 2.6 Interpretation of results from blood gas samples 2.7 Organization and interpretation of wide range of clinical imaging including bed-side chest x- rays, ultrasound, CT scan, MRI and nuclear imaging relevant for the diagnosis and management of critically ill and injured patients. 2.8 Understanding and interpretation of physiological variables 2.9 Integration of clinical findings with laboratory, radiology, microbiology and other investigations to form appropriate differential diagnosis and management strategy

3. Disease Management in acute conditions 3.1 Management of the care of the critically ill patient with following specific acute medical conditions • Acute Myocardial Infarction • Pulmonary Embolism • Cardiogenic Shock • Life Threatening Arrhythmias • Pericardial Tamponade • Acute Ischemic Stroke • Intracranial Hemorrhage • Status Epilepticus • Head & Spine Trauma • Acute neuromuscular failure (OPP/GBS/MG/Snakebite, etc) • Acute severe Asthma • Acute Exacerbation of COPD • Severe Community acquired pneumonia • Chest Trauma • Acute hypoxemia Respiratory Failure including ARDS • Acute GI Bleed • Acute Liver Failure • Acute Pancreatitis • Acute Abdomen • Acute coagulation disorders • Sepsis and Septicemic Shock • Meningitis 7 • Acute Hemorrhagic Fevers • Severe forms of tropical infections like Malaria, Typhoid etc. • Acute Renal Failure • Eclampsia • Bone marrow suppression • Critical care of mother and child including pre-eclampsia, eclampsia, acute fatty liver of pregnancy, HELLP syndrome, meconium aspiration syndrome, respiratory

distress syndrome, transient tachypnoea of the newborn etc. • Acute poisoning Chronic Disease 3.2 Identifications of the implications of chronic and co morbid disease in the acutely ill patients Organ System Failure 3.3 Management of patients with or at risk of circulatory failure 3.4 Management of patients with or at risk of acute renal failure 3.5 Management of patients with or at risk of acute liver failure 3.6 Management of patients with or at risk of neurological impairment 3.7 Management of patients with or at risk of acute gastrointestinal failure 3.8 Management of patients with or at risk of acute lung injury syndromes (ALI/ARDS) 3.9 Management of patients with or at risk of septic shock 3.10 Management of patients with or at risk of severe sepsis/septic shock with multi-organ dysfunction/failure 3.11 Management of patients following intoxication with drugs or environmental toxins 3.12 Early recognition and treatment of life-threatening complications, in mother and child, including but not limited to like eclampsia, preeclampsia, acute fatty liver of pregnancy, HELLP in mother and respiratory distress in child.

4. Therapeutic Interventions 4.1 Principles of safe prescription 4.2 Principles of safe delivery of life-support therapies 4.3 Antimicrobial drug therapy – Fundamental principles and ICU specific issues 4.4 Transfusion therapy - Fundamental principles and ICU specific issues 4.5 Circulatory therapies - Fundamental principles and ICU specific issues pertaining to Fluid therapy including dynamic variables of fluid responsiveness and vasoactive/inotropic drugs 4.6 Mechanical circulatory assist devices 4.7 Initiation, management and weaning of the patients from invasive and non-invasive ventilatory support 4.8 Initiation, management and weaning of the patients from renal replacement therapy 4.9 Management of electrolyte, glucose and acid-base disturbances 4.10 Nutritional assessment and support 8

5. Peri-operative Care 5.1 Management of the pre-& post-operative care of the high risk surgical patients 5.2 Fundamentals of the management of the care of patients following cardiac surgery 5.3 Fundamentals of the management of the patients following craniotomy 5.4 Fundamentals of the management of the patients following solid organ transplantation 5.5 Fundamentals of the management of the pre and post-operative trauma care of the trauma patients

6. Critical Care of Children 6.1 Understanding of the critical care of children including but not limited to early diagnosis, initial management and life support therapies related to paediatric and neonatal emergencies

7. Transportation 7.1 Transportation of the mechanically ventilated critically ill patient outside the ICU 7.2 Understanding of the special considerations required during patient transport by air

8. Physical& Clinical Measurement with Mathematical Concepts:

8.1 Relationships and graphs 8.2 Concepts of exponential functions and logarithms: wash-in and washout 8.3 Basic measurement concepts: linearity, drift, hysteresis, signal: noise ratio, static and dynamic response 8.4 SI units: fundamental and derived units 8.5 Other systems of units where relevant to ICM (e.g. mmHg, bar, atmospheres) 8.6 Simple mechanics: Mass, Force, Work and Power Gases &Vapours: 8.7 Absolute and relative pressure. 8.8 The gas laws; triple point; critical temperature and pressure 8.9 Density and viscosity of gases. 8.10 Laminar and turbulent flow; Poiseuille's equation, the Bernoulli principle 8.11 Vapour pressure: saturated vapour pressure 8.12 Measurement of volume and flow in gases and liquids. 8.13 The pneumotachograph and other respirometers. 8.14 Principles of surface tension Electricity & Magnetism: 8.15 Basic concepts of electricity, magnetism and Bridge circuits 8.16 Capacitance, inductance and impedance 8.17 Amplifiers: bandwidth, filters 8.18 Amplification of biological potentials: ECG, EMG, EEG. 8.19 Sources of electrical interference 9 8.20 Processing, storage and display of physiological measurements Electrical Safety: 8.21 Principles of cardiac pacemakers and defibrillators 8.22 Electrical hazards: causes and prevention. 8.23 Electrocution, fires and explosions. 8.24 Diathermy and its safe use 8.25 Basic principles and safety of lasers 8.26 Basic principles of ultrasound and the Doppler effect Pressure & Flow Monitoring: 8.27 Principles of pressure transducers 8.28 Resonance and damping, frequency response 8.29 Measurement and units of pressure. 8.30 Direct and indirect methods of blood pressure measurement; arterial curve analysis 8.31 Principles of pulmonary artery and wedge pressure measurement 8.32 Cardiac output: Fick principle, thermodilution Clinical Measurement: 8.33 Measurement of gas and vapour concentrations, (oxygen, carbon dioxide, nitrous oxide, and volatile anaesthetic agents) using infrared, paramagnetic, fuel cell, oxygen electrode and mass spectrometry methods 8.34 Measurement of H+, pH, pCO_2, pO_2 8.35 Measurement CO_2 production/ oxygen consumption/ respiratory quotient 8.36 Colligative properties: osmometry 8.37 Simple tests of pulmonary function e.g. peak flow measurement, spirometry. 8.38 Capnography 8.39 Pulse oximetry 8.40 Measurement of neuromuscular blockade 8.41 Measurement of pain

9. Applied Anatomy : 10.1 Mouth, nose, pharynx, larynx, trachea, main bronchi, segmental bronchi, structure of bronchial tree and differences in the children's airway 10.2 Airway and respiratory tract, blood supply, innervation and lymphatic drainage 10.3 Pleura, mediastinum and its contents 10.4 Lungs, lobes, microstructure of lungs 10.5 Diaphragm, other muscles of respiration, innervation 10.6 The thoracic inlet and 1st rib 10.7 Interpretation of a chest x-ray Cardiovascular System: 10.8 Heart, chambers, conducting system, blood and nerve supply 10.9 Congenital deviations from normal anatomy 10.10 Pericardium 10.11 Great vessels, main peripheral arteries and veins 10.12 Foetal and maternal-foetal circulation Nervous System: 10.13 Brain and its subdivisions 10.14 Spinal cord, structure of spinal cord, major ascending & descending pathways 10.15 Spinal meninges, subarachnoid & extradural space, extradural space-contents 10.16 Cerebral blood supply 10.17 CSF and its circulation 10.18 Spinal nerves, dermatomes 10.19 Brachial plexus, nerves of arm 10.20 Intercostal nerves 10.21 Nerves of abdominal wall 10.22 Nerves of leg and foot 11 10.23 Autonomic nervous system 10.24 Sympathetic innervation, sympathetic chain, ganglia and plexuses 10.25 Parasympathetic innervation. 10.26 Stellate ganglion 10.27 Cranial nerves: base of skull: trigeminal ganglion 10.28 Innervation of the larynx 10.29 Eye and orbit Vertebral Column: 10.30 Cervical, thoracic, and lumbar vertebrae 10.31 Interpretation of cervical spinal imaging in trauma 10.32 Sacrum, sacral hiatus 10.33 Ligaments of vertebral column 10.34 Surface anatomy of vertebral spaces, length of cord in child and adult Surface Anatomy: 10.35 Structures in antecubital fossa 10.36 Structures in axilla: identifying the brachial plexus 10.37 Large veins and anterior triangle of neck 10.38 Large veins of leg and femoral triangle 10.39 Arteries of arm and leg 10.40 Landmarks for tracheostomy, cricothyrotomy 10.41Abdominal wall (including the inguinal region): landmarks for suprapubic urinary and peritoneal lavage catheters 10.42 Landmarks for intrapleural drains and emergency pleurocentesis 10.43 Landmarks for pericardiocentesis Abdomen: 10.44 Gross anatomy of intra-abdominal organs 10.45 Blood supply to abdominal organs and lower body

10. Applied Physiology & Biochemistry : 11.1 Organisation of the human body and homeostasis 11.2 Variations with age 11.3 Function of cells; genes and their expression 11.4 Mechanisms of cellular and humoral defense 11.5 Cell membrane characteristics; receptors 11.6 Protective mechanisms of the body 12 11.7 Genetics & disease processes Biochemistry: 11.8 Acid base balance and

buffers, Ions e.g. Na, K, Ca, Cl, HCO3, Mg, PO4, 11.9 Enzymes and Cellular and intermediary metabolism Body Fluids: 11.10 Capillary dynamics and interstitial fluid 11.11 Oncotic pressure 11.12 Osmolarity: osmolality, partition of fluids across membranes 11.13 Lymphatic system 11.14 Special fluids: cerebrospinal, pleural, pericardial and peritoneal fluids Haematology & Immunology: 11.15 Red blood cells: haemoglobin and its variants 11.16 Blood groups 11.17 Haemostasis and coagulation; pathological variations 11.18 White blood cells 11.19 Inflammation and its disorders 11.20 Immunity and allergy Muscle: 11.21 Action potential generation and its transmission 11.22 Neuromuscular junction and transmission 11.23 Muscle types 11.24 Skeletal muscle contraction 11.25 Motor unit 11.26 Muscle wasting 11.27 Smooth muscle contraction: sphincters Heart & Circulation: 11.28 Cardiac muscle contraction 11.29 The cardiac cycle: pressure and volume relationships 11.30 Rhythmicity of the heart 11.31 Regulation of cardiac function; general and cellular 11.32 Control of cardiac output (including the Starling relationship) 11.33 Fluid challenge and heart failure 11.34 Electrocardiogram and arrhythmias 13 11.35 Neurological and humoral control of systemic blood pressures, blood volume and blood flow (at rest and during physiological disturbances e.g. exercise, haemorrhage and Valsalva manoeuvre) 11.36 Peripheral circulation: capillaries, vascular endothelium and arteriolar smooth muscle, autoregulation and the effects of sepsis and the inflammatory response on the peripheral vasculature 11.37 Characteristics of special circulations including: pulmonary, coronary, cerebral, renal, portal and foetal Renal Tract: 11.38 Blood flow, glomerular filtration and plasma clearance 11.39 Tubular function and urine formation 11.40 Endocrine functions of kidney 11.41 Assessment of renal function 11.42 Regulation of fluid and electrolyte balance 11.43 Regulation of acid-base balance 11.44 Micturition 11.45 Pathophysiology of acute renal failure Respiration: 11.46 Gaseous exchange: O2 and CO2 transport, hypoxia and hyper- and hypocapnia, hyperandhypobaric pressures 11.47 Functions of haemoglobin in oxygen carriage and acid-base equilibrium 11.48 Pulmonary ventilation: volumes, flows, dead space. 11.49 Effect of IPPV and PEEP on lungs and circulation 11.50 Mechanics of ventilation: ventilation/perfusion abnormalities 11.51 Control of breathing, acute and chronic ventilatory failure, effect of oxygen therapy 11.52 Non-respiratory functions of the lungs 11.53 Cardio-respiratory interactions in health & disease Nervous System: 11.54 Functions of nerve cells: action potentials, conduction, synaptic mechanisms and transmitters 11.55 The brain: functional divisions 11.56 Intracranial pressure: cerebrospinal fluid, blood flow

11.57 Maintenance of posture 11.58 Autonomic nervous system: functions 11.59 Neurological reflexes Motor function: spinal and peripheral 11.60 Senses: receptors, nociception, special senses 14 11.61 Pain: afferent nociceptive pathways, dorsal horn, peripheral and central mechanisms, neuromodulatory systems, supraspinal mechanisms, visceral pain, neuropathic pain, influence of therapy on nociceptive mechanisms 11.62 Spinal cord: anatomy and blood supply, effects of spinal cord section Liver: 11.63 Functional anatomy and blood supply 11.64 Metabolic functions 11.65 Tests of function Gastrointestinal: 11.66 Gastric function; secretions, nausea and vomiting 11.67 Gut motility, sphincters and reflex control 11.68 Digestive functions and enzymes 11.69 Nutrition: calories, nutritional fuels and sources, trace elements, growth factors Metabolism and Nutrition: 11.70 Nutrients: carbohydrates, fats, proteins, vitamins, minerals and trace elements 11.71 Metabolic pathways, energy production and enzymes; metabolic rate 11.72 Hormonal control of metabolism: regulation of plasma glucose, response to trauma 11.73 Physiological alterations in starvation, obesity, exercise and the stress response 11.74 Body temperature and its regulation Endocrinology: 11.75 Mechanisms of hormonal control: feedback mechanisms, effect on membrane and intracellular receptors 11.76 Central neuro-endocrine interactions 11.77 Adrenocortical hormones 11.78 Adrenal medulla: adrenaline (epinephrine) and noradrenaline (norepinephrine) 11.79 Pancreas: insulin, glucagon and exocrine function 11.80 Thyroid and parathyroid hormones and calcium homeostasis Physiology and Metabolism Unique to Pregnancy, Child Birth and Neonates: 11.81 Physiological changes associated with a normal pregnancy and delivery 11.82 Materno-foetal, foetal and neonatal circulation 11.83 Functions of the placenta: placental transfer 11.84 Foetus: changes at birth 11.85 Metabolism unique to pregnant mother and neonates 15

11. Principles & Therapeutics Pharmacology: 12.1 Dynamics of drug-receptor interaction 12.2 Agonists, antagonists, partial agonists, inverse agonists 12.3 Efficacy and potency 12.4 Tolerance 12.5 Receptor function and regulation 12.6 Metabolic pathways; enzymes; drug: enzyme interactions; Michaelis-Menten equation 12.7 Enzyme inducers and inhibitors. 12.8 Mechanisms of drug action Ion channels: types: relation to receptors. 12.9 Gating mechanisms. 12.10 Signal transduction: cell membrane/receptors/ion channels to

intracellular molecular targets, second messengers 12.11 Action of gases and vapours 12.12 Osmotic effects 12.13pH effects 12.14 Adsorption and chelation 12.15 Mechanisms of drug interactions: 12.16 Inhibition and promotion of drug uptake. 12.17 Competitive protein binding. 12.18 Receptor inter-actions. 12.19 Effects of metabolites and other degradation products. Pharmacokinetics & Pharmacodynamics 12.20 Drug uptake from: gastrointestinal tract, lungs, nasal, transdermal, subcutaneous, IM, IV, epidural and intrathecal routes 12.21 Bioavailability 12.22 Factors determining the distribution of drugs: perfusion, molecular size, solubility, protein binding. 12.23 The influence of drug formulation on disposition 12.24 Distribution of drugs to organs and tissues: 12.25 Body compartments Influence of specialised membranes: tissue binding and solubility 12.26 Materno-foetal distribution 12.27 Distribution in CSF and extradural space 12.28 Modes of drug elimination: 12.29 Direct excretion 12.30 Metabolism in organs of excretion: phase I & II mechanisms 12.31 Renal excretion and urinary H 12.32 Non-organ breakdown of Drugs 16 12.33 Pharmacokinetic analysis: 12.34 Concept of a pharmacokinetic compartment 12.35 Apparent volume of distribution 12.36 Orders of kinetics 12.37 Clearance concepts applied to whole body and individual organs 12.38 Simple 1 and 2 compartmental models: 12.39 Concepts of wash-in and washout curves 12.40 Physiological models based on perfusion and partition coefficients 12.41 Effect of organ blood flow: Fick principle 12.42 Pharmacokinetic variation: influence of body size, sex, age, disease, pregnancy, anaesthesia, trauma, surgery, smoking, alcohol and other drugs 12.43 Effects of acute organ failure (liver, kidney) on drug elimination Influence of renal replacement therapies on clearance of commonly used drugs 12.44 Pharmacodynamics: concentration-effect relationships: hysteresis 12.45 Pharmacogenetics: familial variation in drug response 12.46 Adverse reactions to drugs: hypersensitivity, allergy, anaphylaxis, anaphylactoid reactions Systemic Pharmacology 12.47 Hypnotics, sedatives and intravenous anaesthetic agents 12.48 Simple analgesics 12.49 Opioids and other analgesics; Opioid antagonists 12.50 Non-steroidal anti-inflammatory drugs 12.51 Neuromuscular blocking agents (depolarising and non-depolarising) and anti cholinesterases 12.52 Drugs acting on the autonomic nervous system (including inotropes, vasodilators vasoconstrictors, antiarrhythmics, diuretics) 12.53 Drugs acting on the respiratory system (including respiratory stimulants and bronchodilators) 12.54 Antihypertensives 12.55 Anticonvulsants 12.56 Anti-diabetic agents 12.57 Diuretics 12.58 Antibiotics 12.59 Corticosteroids and other hormone preparations 12.60

Antacids. Drugs influencing gastric secretion and motility 12.61 Antiemetic agents 12.62 Local anaesthetic agents 12.63 Immunosuppressants 12.64 Principles of therapy based on modulation of inflammatory mediators, indications, actions and limitations 12.65 Plasma volume expanders 12.66 Antihistamines 17 12.67 Antidepressants 12.68 Anticoagulants 12.69 Vitamins and trace element

Rotational postings:

AREAS OF CLINICAL POSTING	DURATION
SICU	9 months
MICU	30 days
Emergency medicine	15 days
Pulmonary critical care unit	15 days
Cardiac critical care unit	15days
Paediatric critical care unit	15 days

TEACHING AND LEARNING METHODS.Following teaching- learning modules will be incorporated

A)Formal Teaching:

a) Journal Club: once per week.

b) Seminar : once a week

c) Lecture : once a week

d)Clinical case presentation : once a month

e) Bedside teaching during clinical rounds : Daily

f) Joint inter-departmental academic meets :Quarterly

e)Skill lab training

B)Academic exposure : Student should attend 2 CMES & 2 Workshops during the period of training

It is desirable to present atleast one paper/poster in conference of regional/state/national significance

C) Teaching exposure : PDCC students shall be required to participate in the teaching and training programme of interns and undergraduate students.

D) E learning activities .

The department to encourage E –learning activities as well

LOG BOOK (enclosed)

Postgraduate students shall maintain a log book of the work carried out by them and the training programme undergone during the period of training .

Log book shall be checked and assessed periodically by the chief faculty member imparting the training.

The formative & Summative Examination Pattern in accordance with the institutional guidelines is as follows:

(i) Formative Examination: -

- **Will be conducted one month prior to summative exam and pattern is as summative exam.**

(ii) Summative Examination: -

- **Paper of 50 Marks**
- **MCQs: 20 x 1=20 Marks**
- **Short Notes: 4 x 5 Marks =20 Marks**
- **LAQ: 1 x 10 Marks=10 Marks**
- **Practicals of 50 Marks:**

Eligibility criteria for summative exam:

1) 40% Marks in formative exam separately in Theory & Practical
2)Attendance of than 75 % attendance is mandatory to be eligible for summative exam

3)For certification the Qualifying marks will be 50% Marks Separately .

Theory & Practicals in the Summative exam.
4) Repeat Summative Exam in 45 Days after results.

EXAMINERS:

Internal Examiner

1)Prof.Dr Gajanan Chavan (HOD Anaesthesiology and critical care.AIIMS Nagpur)

2) Dr Sucheta Meshram (Associate professor & I/C SICU .AIIMS Nagpur)

External Examiner : certified PG Guide from INI/state government medical colleges)

MODEL QUESTION PAPER :

POST DOCTORAL CERTIFICATE COURSE :Critical care medicine

(A)Long anwers (10x1=10)

1) Describe Shock.Pathopysiology of various types of shock.Modalities to treat septic shock

(B) Short note : (5X4=20)

1 Explain Anaphylaxis

2)Total parental nutrition

3) Splenic abscesse 4)Renal replacement therapy

(C) MCQs: (1X20=20)

Practical exam: (50)

Practical viva voce :25marks

(Drugs/equipments/imaging studies/case scenarios/recent advances

Long case : 10 marks

Short case :5 marks

Resuscitation modules :10

BOOKS :

HARRISONS PULMONARY AND CRITICAL CARE MEDICINE

PRINCIPLES OF CRITICAL CARE MEDICINE .UDWADIA

WASHINGTON MANUAL OF CRITICAL CARE MEDICINE

ICU PROTOCOL :RAJESH CHAWLA

THE ICU BOOK:PAUL MARINO

HANDBOOK OF CRITICAL CARE :MALVIYA

RECENT ADVANCES IN CRITICAL CARE :CLEARY

AIRWAY MANAGEMENT :RASHID KHAN

MECHANICAL VENTILATION :MARKARRO

.

ISCCM CRITICAL CARE UPDATES 2023

ISCCM CRITICAL CARE UPDATES 202

JOURNALS

International Journal of critical care and emergency medicine

American Journal of Critical care

European journal of critical care medicine

Indian journal of critical care medicine

Journal of critical care excellence

Indian journal of critical care case report

Indian journal of critical care case report

Journal of Anesthesia ,Analgesia and critical care .

ISCCM Critical care updates 2023

ISCCM Critical care updates 2024

The Egyptian journal of intensive care and emergency medicine