MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)
Grade 'A' Accredited by NAAC
Sector-01, Kamothe, Navi Mumbai -410 209
Tel 022-27432471, 022-27432994, Fax 022 -27431094
E-mail: registrar@mgmuhs.com; Website :www.mgmuhs.com

COMPETENCY BASED MEDICAL EDUCATION

(CBME)

(with effect from 2020-2021 Batches)

Curriculum for

Master of Surgery
Traumatology & Surgery

Amended upto BOM- 62/2020, Dated 16/09/2020

Amended History

1. Approved as per BOM– 62/2020, [Resolution No. 3.2.4.1], Dated 16/09/2020.

Annexure-65
of BOM-62/2020

GUIDELINES FOR COMPETENCY BASED POSTGRADUATE TRAINING PROGRAMME FOR MS IN TRAUMATOLOGY & SURGERY

Preamble

Trauma is a major public health problem in India. High Speed vehicular accidents result in polytraumatised patients who are not owned by particular speciality right now. Emergency surgical patients and accidental trauma patients are one of the leading causes of morbidity and mortality in India. Care of a patient with multiple injuries requires appropriate initial care, expeditious life saving surgery and decision about treatment priorities, definitive surgery, critical care whenever required and rehabilitation.

SUBJECT SPECIFIC OBJECTIVES

Introduction

Emergency surgical problems including Accidental trauma is one of the leading causes of morbidity and mortality in India. Expansion in road network, motorization & urbanization in the country has increased the dimension of death, disability and hospitalization with enormous socio-economic costs.

The incidence of accidental deaths has shown a mixed trend during the decade 1997-2007 with an increase of 45.7% in the year 2007 as compared to 1997. The population growth during the corresponding period was 19.0% whereas the increase in the rate of accidental deaths during the same period was 22.5%. The total number of accidents reported by National Crime Report Bureau in the year 2014 was 4, 51,757 of which the number of persons killed in the road accidents were 1,41,526 and the number of persons injured 4,77,731 in 2014. The accident rate of 35 per thousand vehicles in India is the highest in the world as compared to 10 accidents per thousand vehicles in the developed countries.

Every 12 minutes one Indian dies on the road and 10 times that number are injured. Amongst them 30% are disabled for life either partially or totally. WHO has projected that by the year

2020, road traffic accident in India would be a major killer accounting to 5,46,000 deaths and 1,53,14,000 disability adjusted life years.

In addition to Trauma, Non-Trauma Surgical Emergencies are also on the rise, and pose an added burden on the emergency services of the country. There is a high mortality and morbidity of patients with emergent surgical problems like acute abdominal conditions such as peritonitis (of various etiologies), appendicitis, acute cholecystitis, Intestinal Obstructions, septic presentations like abscesses, etc. These conditions if not managed in time lead to increase in the global burden of disease. According to one WHO estimates conditions treatable by surgery account for 11% of Global burden of disease.

There is lack of exclusively trained specialists to manage the **Acute Surgical conditions including trauma victims** in an effective manner. The need in the trauma care is at various levels of trauma care centers. Presently, there is no exclusive availability of course on trauma and emergency surgery for doctors. Thus, there is need to undertake a Post Graduate course in **Trauma and Acute Care Surgery** leading to the nurturing of a new specialist of Emergency Surgeon who could be capable to manage all aspects of trauma and Acute care surgery comprehensively.

Presently these patients are admitted in the department of Neurosurgery, Orthopaedics, General Surgery with cross referrals for specific needs. Every Medical College Casualty department receives anywhere between 10-30 patients a day who require attention through a single window rather than patients waiting in the Emergency room for multiple consults and clearance.

SUBJECT SPECIFIC OBJECTIVES

- **Theoretical Knowledge**
- Practical and Clinical skills
- Writing thesis/Research articles
- Attitudes including communication skills
- Training in Research Methodology

SUBJECT SPECIFIC COMPETENCIES

By the end of the course, the student should have acquired knowledge (cognitive domain), professionalism (affective domain) and skills (psychomotor domain) as given below:

1. Cognitive domain (Knowledge domain)

The student/ learner should be able to:

1. Describe the principles of cardiopulmonary resuscitation
2. Enumerate, classify and describe the Physiology, Patho-physiology basis of disorders of the various human systems namely (cardio vascular, musculoskeletal etc)
3. Define and describe the various aspect of respiratory and circulatory failure (Shock)
4. Understand the metabolic, nutritional and endocrine effects of Trauma and critical illness
5. Diagnose and manage acute surgical patients including trauma, in all situations including Obstetric patients, Geriatric, Pediatric and mentally disabled patients
6. Have basic understanding of Trauma systems, Trauma scores, GC scale, Triage etc.
7. Describe hematological and coagulation disorders
8. Describe the pharmacokinetics and dynamics of drug metabolism, excretion in critical illness
9. Understanding of biostatistics and research methodology
10. Demonstrate ability to organize emergency trauma & acute care services in the country including ambulance facilities
11. Understand ethical and legal aspects of surgical critical care and acute trauma care
12. Classification, diagnosis and emergency management of musculoskeletal traumas both bone and soft tissues of extremities, operative and non-operative
13. Reinforce the basic understanding of the structure and function of the human body and all other systems
14. Reinforce the pathological basics for diseases with particular focus on traumatic condition and non-traumatic acute surgical condition
15. Describe the microbiological basis of infectious diseases and its pharmacotherapeutics
16. Understand the principles and technologies of administration and management of ICU

17. Demonstrate ability to establish priorities in the initial management of victims of life-threatening and potentially life threatening surgical emergencies.
18. Demonstrate ability to rapidly and thoroughly assess victims of major and minor trauma.
19. Demonstrate ability to manage the airway of acutely ill patients.
20. Demonstrate ability to manage fluid resuscitation of acutely ill surgical patients.
21. Discuss the continuing care of the surgical patient, including aneasthesia, operative, post-operative and rehabilitative phases of care.
22. Demonstrate ability to interpret radiographs and CT Scans on surgical patients, including chest, abdominal, neck, cervical-thoracic and lumbar spine, pelvis and extremity films, and also the point of care Ultrasonography in both trauma and non-trauma patients.
23. Discuss the importance of relevant history of surgical patient including mechanism of injury in the evaluation and treatment of a trauma victim.
24. Demonstrate the ability to assess and initially manage patient with acute non-traumatic surgical conditions such as Intra-Abdominal Catastrophes, Hollow Visceral Surgical Emergencies, Hepato-biliary Surgical Emergencies, Pancreatitis, Abdominal Wall Hernias and acute complications, acute upper and lower GI bleedings etc.
25. Demonstrate ability to manage soft tissue infections and injuries including, lacerations, avulsions and high-pressure injuries.
26. Discuss the diagnosis and emergent management of compartment syndromes.
27. Discuss the diagnosis and emergency management of trauma related uro-genital emergencies
28. Demonstrate appropriate use of analgesics and sedatives in emergency surgical patients.
29. Demonstrate appropriate use of antibiotics in emergency surgery and trauma patients.
30. Demonstrate ability to arrange appropriate consultation and disposition of trauma patients from the ED.
31. Demonstrate ability to direct the care of acutely ill victims in the pre-hospital setting.
32. Discuss principle of disaster management and participate in disaster drills.
33. Demonstrate the ability to manage the acutely burned patient, including minor and major injuries.
34. Discuss indications and procedures for safe transfer of an emergency patient to another center.
35. Demonstrate skills in Advanced Trauma Life Support, Basic life support, advanced cardiac life support,
36. **Optional Courses:** Pediatric cardiac life support, Neonatal Life support, advanced burn life support and advanced hazmat life support.
37. Demonstrate the ability to determine priorities of treatment care in a patient with multiple injuries including spinal injuries and plan definitive care with appropriate specialists.

38. Demonstrate the ability to manage non-trauma acute surgical emergencies both as acute care and definitive surgical management.

2. Affective domain (Attitudes including Communication and Professionalism)

The post graduate student:

1. Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.
2. Always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.
3. Develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

These are detailed below:

a. Communication skills:

The post graduate student:

- Exhibits participation in honest, accurate health related information sharing in a sensitive and suitable manner
- Recognizes that being a good communicator is essential to practice effectively
- Exhibits effective and sensitive listening skills
- Recognizes the importance and timing of breaking bad news and knows how to communicate
- Exhibits participation in discussion of emotional issues
- Exhibits leadership in handling complex and advanced communication
- Recognises the importance of patient confidentiality and the conflict between confidentiality and disclosure
- Able to establish rapport in therapeutic bonding with patients, relatives and other stakeholders through appropriate communication
- Able to obtain comprehensive and relevant history from patients/relatives

- Able to counsel patients on their condition and needs

b. **Teamwork**: Seek cooperation. Coordination and communication among treating specialties and paramedical staff

c. **Counseling of relatives**: regarding patient's condition, seriousness, bereavement and counseling for organ donation in case of brain stem death

d. **Leadership**: Trauma prevention, education of the public, paramedical and medical persons.

e. **Advocacy**: with the government and other agencies towards cause of trauma care

f. **Ethics**: The Code of Medical Ethics as proposed by Medical Council of India will be observed.

C. Psychomotor domain

At the end of the course, the student should be able to perform the following procedures, under supervision during the training period:

Resuscitative procedures:

- Airway management including Endotracheal intubation and difficult airway
- Surgical airway / Cricothyroidotomy/Tracheostomy
- Venous access
- Intraosseous access
- Needle thoracocentesis/Chest drain insertion/Pericardial drainage
- Focussed Assessment Sonography in Trauma (FAST) and Diagnostic Peritoneal Lavage (DPL)
- Suprapubiccystostomy
- Splinting of fractures
- Immobilisation of pelvic fractures in ED
- Application of plaster slab for various extremity fractures
- Fasciotomy
- Control of oromaxillofacial bleeding

Major Operative procedures (for Trauma):

- Laparotomy for trauma

- Thoracotomy for trauma
- Craniotomy for trauma: When neurosurgeon is not available
- Emergency amputation for crush limbs
- Application of external fixator
- Emergency vascular procedures for limb salvage
- Neck surgeries for trauma
- Surgeries for crush injuries, wound management including debrediment.

Critical Care:

- Monitoring in ICU including ICP monitoring
- Ventilatory support techniques
- Inotropic support
- Nutritional support
- Massive transfusion protocols
- Renal support including dialysis
- Thromboprophylaxis
- Pain management
- Management of abdominal compartments syndrome

Non-trauma emergencies:

- Laparotomy for acute abdomen – obstruction, perforation, ischaemia, inflammation and non trauma haemoperitoneum
- Surgical control of upper GI bleed including emergency surgical management of variceal bleed
- Surgical control of lower GI bleed
- Surgical management of skin and soft tissue infections
- Embolectomy for thromboembolism
- Surgical management of acute scrotum
- Surgical management of ovarian torsion, pelvic sepsis and ruptured ectopic gestation
- Obstetric emergencies: Caesarian section when gynaecologist is not available

Procedural Skills

Area/Procedure	Essential	Desirable
Airway		
Tracheotomy, open and percutaneous	X	
Cricothyroidotomy	X	
endotracheal intubation including rapid sequence induction	X	
Head/Face		
Nasal Packing (ant. & post.) and Oral packing	X	
ICP Monitoring	X	
Ventriculostomy		X
Lateral canthotomy		X
Cranial decompression in dire emergencies when neurosurgeon not present	X	
Intermaxillary wiring	X	
Basic plastic reconstruction techniques for facial soft tissues	X	
Exposure and techniques for ORIF of facial fractures including mandible		X
Neck		
Exposure & definitive management of vascular and aero digestive injuries/emergencies	X	
Approaches to Thyroid	X	
Chest		
Exposure & definitive management of cardiac injury, pericardial tamponade		X
Exposure & definitive management of thoracic vascular injury		X
Repair blunt thoracic aortic injury: open or endovascular		X
Non-anatomical pulmonary resections/repairfor trauma	X	
Exposure & definitive management of tracheo-bronchial & lung injuries		X
Diaphragm injury, repair	X	
Definitive management of empyema: decortication (open and VATS)		X
Video-assisted thoracic surgery (VATS) for management of injury and infection		X
Bronchoscopy: diagnostic and therapeutic for injury, infection and foreign body removal	X	
Exposure &emergency management of esophageal injuries & perforations	X	
Damage control techniques	X	
Abdomen & Pelvis		
Exposure & definitive management of gastric, small intestine and colon injuries	X	
Exposure &emergency management of gastric, small intestine and colon inflammation, bleeding perforation & obstructions.	X	
Gastrostomy (open and percutaneous) and jejunostomy	X	
Exposure & definitive management of duodenal	X	

injury/perforation		
Emergency management of rectal injury	X	
Emergency management of liver injury	X	
Emergency management of splenic injury, infection, inflammation	X	
Emergency management of pancreatic injury, infection and inflammation	X	
Emergency management of renal, ureteral and bladder injury	X	
Emergency management of injuries to the female reproductive tract		X
Emergency management of acute operative conditions in the pregnant patient		X
Emergency management of abdominal compartment syndrome	X	
Damage control techniques	X	
Abdominal wall reconstruction following resectional debridement for infection, ischemia		X
Laparoscopic techniques as they pertain to the above procedures	X	
Exposure &emergency management of major abdominal and pelvic vascular injury	X	
Extremities		
Radical soft tissue debridement for necrotizing infection	X	
Exposure and emergency management of upper extremity vascular injuries	X	
Exposure and emergency management of lower extremity vascular injuries	X	
Damage control techniques in the management of extremity vascular injuries, including temporary shunts	X	
Acute thrombo-embolectomy	X	
Hemodialysis access, temporary	X	
Fasciotomy, upper extremity	X	
Fasciotomy, lower extremity	X	
Amputations, lower extremity (Hip disarticulation, AKA, BKA, Trans-met)	X	
Reducing dislocations	X	
Splinting fractures	X	
Applying femoral/tibial traction	X	
Pelvic stabilization with non-operative means	X	
Pelvic stabilization with external fixators		X
Other Procedures		
Split thickness, full thickness skin grafting	X	
Basic Plastic procedures for soft tissue reconstruction and coverage	X	
Thoracic and abdominal organ harvesting for transplantation		X
Upper GI endoscopy		X
Colonoscopy		X

Diagnostic emergency ultrasound	X	
Other procedures required for Surgical Critical Care	X	

TEACHING LEARNING STRATEGIES

General considerations

1. Attends trauma casualty and emergency posting and does emergency duty as per roster of the department.
2. Attends OPD (related to trauma and Emergency Surgery follow up)
3. Attends operation room/theatre
4. Attends 3 morning rounds/week (with concerned unit)
5. Discusses problematic cases with consultant (s) in Emergency/ Follow up OPD/Wards.
6. Care of the indoor patients on beds allotted to him/her.
7. Attends the weekly Journal Club and seminar and presents the same by rotation.
8. Attends lectures by the visiting faculty to the department/college from India/abroad.
9. Attends/participates/presents papers in state/zonal national conferences.
10. Actively participates/helps in organization of departmental workshops, courses, conferences related to emergency surgery and trauma management.

TEACHING AND LEARNING METHODS

Methods of Training and Teaching

The following learning methods are to be used for the teaching of postgraduate students:

1. **Journal Club:** 1 hour duration (Paper presentation/discussion) once per week (Afternoon).
2. **Seminar:** One seminar every week of one hour duration (Afternoon)
3. **Lecture/discussion:** Lectures on newer topics by faculty, in place of Seminar/as per need.
4. **Case presentation** in the ward (trainee will present a clinical case for discussion before a faculty and discussion made pertaining to its management and decision to be recorded in case files)
5. **Case Conference**. Post graduate students are expected to work-up one long case and three short cases and present the same to a faculty member and discuss the management.

6. **Radiology Conferences:** To be held twice weekly in morning in which the radiological features of various problems are discussed.
7. **Quality Assurance Meetings / Mortality-Morbidity meetings:** Special emphasis is made on the unusual incidents and unnatural deaths/ morbidity aspect of the case, so as to assure quality care and also act as an effective teaching tool.
8. **Combined Round/Grand Round:** These exercises are to be done for the hospital once/week or twice a month involving presentation of usual or difficult patients
9. **Clinical teaching:** In emergency, OPD, ward rounds, ICU and the operation theatres.
10. **Log Book:** Post Graduate students shall maintain a record (log) book of the work carried out by them and the training programme undergone during the period of training including details of surgical operations assisted or done independently by M.S. candidates. The Log Books shall be checked and assessed periodically by the faculty members imparting the training.
11. The Post Graduate students shall be required to participate in the teaching and training programme of undergraduate students and interns.
12. Department should encourage e-learning activities.
13. **Clinical postings:** Recommended schedule for three years training:

The post graduate student is required to work full time in the Department of Trauma & Acute Care **Surgery, participate in the patient care and academic and research activities as described below.**

ROTATION

Term I	:	General Surgery: 6 months
Term II	:	Trauma resuscitation: 3 months Intensive Care: 3 months
Term III	:	General Surgery: 6 months
Term IV	:	Orthopaedics: 3 months Neurosurgery: 2 months CT surg Aneasthesia Cardiothoracic Surgery: 1 month
Term V	:	Plastic surgery: 6 weeks Radiology : 4 weeks Forensic Medicine : 2 weeks Trauma team leader: 3 months (includes 1 month of rural posting)

Term VI : General Surgery: 6 months (includes 2 weeks of obstetric posting)

There should be time provided during 18 months of Trauma Surgery unit to undergo recognized BLS, ATLS, ACLS courses.

During the training programme, patient safety is of paramount importance; therefore, skills are to be learnt initially on the models, later to be performed under supervision followed by performing independently. For this purpose, provision of skills laboratories in medical colleges is mandatory.

ASSESSMENT

I. FORMATIVE ASSESSMENT during the training includes:

Formative assessment should be continual and should assess medical knowledge, patient care, procedural & academic skills, interpersonal skills, professionalism, self directed learning and ability to practice in the system.

Quarterly assessment during the MS training should be based on:

- Case presentation, case work up, case handling/management : once a week
- Laboratory performance : twice a week
- Journal club : once a week
- Seminar : once a fortnight
- Case discussions : once a month
- Interdepartmental case or seminar : once a month

  Note: These sessions may be organized as an institutional activity for all postgraduates.
- Attendance at Scientific meetings, CME programmes

Additional details are given below:

1. Personal attributes through 360 degree assessment
2. Clinical Skills performance
   a. OSCE

b. Ward Rounds
c. Case Presentations / Clinical encounters
d. Mini Clinical Examination (Mini CEX)
e. Simulated DOPS
f. Standardized patient management

3. Assessment of academic Activities
   a. Journal Club performance
   b. Thesis review performance
   c. Seminar Presentation
   d. Presentation in conferences & CME
   e. Publications & Posters
   f. Mortality & Morbidity audit
   g. Log book maintenance/E-portfolio

4. **The student to be assessed periodically as per categories listed in postgraduate student appraisal form (Annexure I).**
5. Regular theory and practical assessment – once in 12 months.
6. Acceptance of Thesis (as per MCI norms)

II. SUMMATIVE ASSESSMENT, at the end of the course

The summative examination would be carried out as per the Rules given in **POSTGRADUATE MEDICAL EDUCATION REGULATIONS, 2000.**

1. Theory: There shall be four theory papers, as given below:

Paper I:	Basic Sciences: Surgical anatomy, physiology & principles of resuscitation in trauma and non trauma acute care surgery
Paper II:	Definitive care: Abdominal, pelvic, thoracic trauma, orthopedic trauma including polytrauma
Paper III:	Definitive care: Neurosurgery, reconstructive surgery, non-trauma acute care surgery
Paper IV:	Recent advances, critical care and allied subjects

2. Practical including ward rounds

3. Oral/Viva Voce Examination

Oral examination shall be comprehensive enough to test the candidate's overall knowledge of the subject.

Recommended Reading

Books (latest edition)

1. Trauma. Feliciano, Mattox, Moore (ed), The Mc Grow Hill Co. publishers
2. Emergency Management of Trauma patient Cases, Algorithms. Mark Bisanzo, Michael R Fibin, Kriti Bhatia (ed), Lippincott Williams & Wilkins publishers
3. Trauma – Contemporary Principles & therapy, Lewis Flint, J. Wayne Meredith, C. William Schwab (eds) , Lippincott Williams & Wilkins publishers
4. Disaster Medicine. David Hogan, Jonathan Brownstein (eds), Lippincott Williams & Wilkins publishers
5. Trauma (Vol 1 & 2) - Emergency Resuscitation, Preoperative Anesthesia, Surgical Management. Leslie Wilson, William Wilson (eds). Informa Health Care publishers
6. Hamilton Baily's Emergency Surgery – T. J. McNair, John Wright & Sons, publishers
7. The Injured child - Surgical Management. Judson G. Randolph, Mark M. Ravitch, Kenneth J. Welch, Clifford D. Benson, Eoin Aberdeen (eds) Year Book Medical Publisher
8. Trauma Management – Emergency Medicine Approach. Peter Ferrera, Stephen Colucciello, John Marx, Vincent Verdile, Michael Gibbs (eds), Mosby publishers.
9. Evaluation of Impairments & disabilities. Murlidhar V., Vijay Kanhere (eds), Bhalani Publishing House.
10. Current Emergency diagnosis & Treatment. John Mills, Mary T. Ho, Donald D Trunky. Lange Medical Publications.
11. Emergency Medicine - A comprehensive study guide. Judith Tintinalli, Robert Rothsteinis, Ronald Kozme (eds) McGrow Hill Publication
12. Primary Surgery – Trauma – Maurice King, Oxford Publications
13. Rob & Smith's Operative surgery Accidental Surgery. Champion Howard (eds). Butter Worths publications
14. The Textbook of Penetrating Abdominal Trauma. Rao R. Ivatuari, C. Gene Cayten. Williams & Wilkins

16. Manual of definitive surgical trauma care by Kenneth D. Boffard, (A Hodder Arnold Publication)
17. Top Knife: The Art and Craft of Trauma Surgery by Asher Hirshberg, Kenneth L. Mattox (Authors) TFM publishers
18. ATLS Student Course Manual published by American College of Surgeons
19. ACLS course manual
20. PALS course manual
21. Life Support Course Manual (AIIMS)
22. Rockwood and Green's Fractures in Adults: Two Volumes Plus Integrated Content Website (Rockwood, Green, and Wilkins' Fractures) by Robert W. Bucholz (Editor), Charles M. Court-Brown (Editor), James D. Heckman (Editor)
23. Watson-Jones Fractures and Joint Injuries by J.N. Wilson (Author)

Journals

3-5 International and 02 national journals (all indexed)

WEBSITES

1. www.trauma.org
2. www.traumaindia.org
3. www.atls.in
4. http://www.researchgate.net/literature/Trauma_Surgery

Annexure I

Postgraduate Student Appraisal Form

Name of the Department/Unit :

Name of the PG Student :

Period of Training : FROM.....TO.....

Sr. No.	PARTICULARS	Not Satisfactory	Satisfactory	More Than Satisfactory	Remarks
		1 2 3	4 5 6	7 8 9	
1.	Journal based / recent advances learning				
2.	Patient based /Laboratory or Skill based learning				
3.	Self directed learning and teaching				
4.	Departmental and interdepartmental learning activity				
5.	External and Outreach Activities / CMEs				
6.	Thesis / Research work				
7.	Log Book Maintenance				

Publications Yes/ No

Remarks* _____

_____

_____

_____

***REMARKS:** Any significant positive or negative attributes of a postgraduate student to be mentioned. For score less than 4 in any category, remediation must be suggested. Individual feedback to postgraduate student is strongly recommended.

SIGNATURE OF ASSESSEE **SIGNATURE OF CONSULTANT** **SIGNATURE OF HOD**

MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)

Grade 'A' Accredited by NAAC

Sector-01, Kamothe, Navi Mumbai - 410209

Tel 022-27432471, 022-27432994, Fax 022-27431094

E-mail- registrar@mgmuhs.com Website : www.mgmuhs.com