Curriculum

FNB Fellowship

Trauma & Acute Care Surgery

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I. INTRODUCTION AND NEED:

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%. According to the 2019 Annual data compiled by the National Crimes Record Bureau (NCRB) –

1. Traffic Accidents

A total of 4,67,171 'Traffic Accidents' were reported during the year comprising 4,37,396 ' Road Accidents', 1,788 'Railway Crossing Accidents' and 27,987 'Railway Accidents'. These accidents caused injuries to 4,42,996 persons and 1,81,113 deaths. · The percentage share of deaths due to 'Road Accidents', 'Railway Accidents' and 'Railway Crossing Accidents' was reported as 85.4% (1,54,732 deaths), 13.6% (24,619 deaths) and 1.0% (1,762 deaths) respectively. · It is worth noting that like previous year January (42,896) and May (42,681) continue to be accounted for maximum number of traffic accidents in the country. As per time-period wise analysis, maximum number of traffic accidents (87,271) were reported during 18:00 hrs to 21:00 hrs in the country.

2. Road Accidents

During 2019, a total of 4,37,396 cases of 'Road Accidents' were reported which rendered 4,39,262 persons injured and 1,54,732 deaths. · 38.0% victims of road accidents were riders of 'two wheelers' followed by trucks / lorries, cars and buses which have accounted for 14.6%, 13.7% and 5.9% respectively of road accidental deaths. · Majority (59.6%) of road accidents were due to 'over speeding' which caused 86,241 deaths and 2,71,581 persons injured. Dangerous/careless driving or overtaking contributed to 25.7% road accidents which rendered 42,557 deaths and 1,06,555 persons injured. Besides, only 2.6% of road accidents were due to poor weather conditions. · 59.5% and 40.5% of road accidents were reported in rural areas (2,60,379 cases) and urban areas (1,77,017 cases) respectively. · 29.9% (1,30,943 cases out of 4,37,396 cases) of total road accidents were reported near residential areas.

3. Railway Accidents

A total of 27,987 cases of railway accidents were reported during the year 2019. These railways accidents rendered 3,569 persons injured and 24,619 deaths. · Majority (76.3%) of railways accident cases were reported under 'Fall from trains / collision with people on track' (21,361 out of 27,987).

4. Railway Crossing Accidents

A total of 1,788 cases of railway crossing accidents were reported which caused 1,762 deaths and 165 persons injured. · Uttar Pradesh has reported the maximum cases of railway crossing accidents (851 out of 1,788 cases) accounting for 47.5% of total such accidents.

Since 2000, while road network in the country has grown by 39%, the number of registered vehicles has grown by about 158%. National Highways comprise 2% of the total road network, but witness 28% of the road accidents.

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 die on the road and 10 times that number are injured. Amongst them 30% are disabled for life either partially or totally.

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 cholecystits, 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 trained specialists to manage the Acute Surgical conditions (Trauma and Non-Trauma) in an effective manner. Presently, there is no exclusive availability of course on trauma and emergency surgery for doctors. Thus, there is need to undertake a Post-Doctoral/ Fellowship Programs in Trauma and Acute Care Surgery leading to the nurturing of a specialist of Acute Care Surgeon who could be capable to manage all aspects of Acute care surgery (Trauma and Non-Trauma) comprehensively.

5. Definition:

The proposed specialty of Trauma and Acute Care Surgery will be a specialty of surgery catering to the emergent and delayed needs of an injured patient and patients with emergency non-trauma surgical needs, with responsibility of overall care of emergency surgical patients including coordinating care with other Sub-specialties involved in Emergency Surgical & Trauma Care and maintaining continuity of care.

II. DESCRIPTION AND SCOPE OF WORK:

The Post-Doctoral Fellow (FNB – Trauma and Acute Care Surgery) will be called upon to provide specialty care to optimize and treat Emergency Surgical patients. The "Trauma and Acute Care Surgeon" will work as the team leader of the resuscitation team in the Emergency Department and is expected to participate in the initial evaluation and resuscitation of seriously ill surgical patients both Trauma and Non-Trauma. The care of the patient with emergency surgical needs including multisystem injuries should be supervised by a trauma and acute care surgeon. The trauma and acute care surgeon will perform and coordinate all aspects of treatment of emergency surgical patient including resuscitation, operation, critical care, recuperation and rehabilitation or discharge except for those he is not trained in as mentioned in the detailed curriculum herein.

Trauma and acute care surgeon will perform all emergency department procedures required for immediate resuscitation like airway procedures (intubation, surgical airway etc.), chest decompressions, and central venous access procedures, basic and intermediate care of the burn patient, acute abdominal conditions, infections, acute wound care in emergency. The trauma and acute care surgeon should be able to perform basic limb saving orthopedic trauma management including various splints, closed reductions, insertion of traction pins, external fixators for stabilization and hemorrhage control only in the setting of life threatening trauma and thereafter refer the patient to a specialist Orthopedic surgeon. The trauma and acute care surgeon will perform initial management of neurosurgical trauma emergencies, including intracranial pressure monitor placement or cranial decompression in dire situations only in trauma setting in the absence of a qualified neurosurgeon. He/she should be conversant/confident in identifying cases which do not require operative intervention by a qualified neurosurgeon and should be able to manage these cases.

The trauma and acute care surgeon will perform those definitive operative procedures for which he is trained during the two years training including all emergency surgical conditions including Non – Trauma Emergencies like Acute abdomen of various etiologies, acute infections needing surgical intervention and all other emergent surgical cases including injuries to abdomen & retro peritoneum, neck, thorax, soft tissue, facial and major vasculature. The trauma and acute care surgeon will also perform elective/secondary operative procedures which are either a part of serial operations or a sequel to earlier operative procedures for emergency surgical patients.

The trauma and acute care surgeon will take care of the injured patient in surgical critical care/ Surgical ICU and will perform ICU management specific to the needs of Post-operative/ surgical patients.

1. Need and future prospects:

With Trauma becoming the leading cause of death and disability (burden of disease) in the country, the Govt. of India has planned Specialized Trauma Centers all across the country at various levels. Trauma Care facilities are being planned along the golden quadrilateral and north-south: east-west corridors and up-gradation of many Medical College Hospitals is being done to Level I Trauma Care facilities.

This requires dedicated and trained manpower which will take a lead in further training of specialists in Trauma Care. Therefore, there is not only an urgent need of Trained Trauma Surgeons but the future prospects of this specialty is very good in terms of clinical, teaching & training and research activities all of which are currently lacking in our country.

The Acute Care Surgery (Non-Trauma) is being added to the specialty because of two main reasons:

i. The Emergent needs of the surgical patients whether trauma or non- trauma are better catered to by a surgeon trained to be geared up to emergency situations 24x7;
ii. The extra surgical expertise of the surgeons (Trauma along with non-trauma surgical emergencies) will create a lot of satisfaction and dedication without loss of enthusiasm amongst the newly created specialty professionals.

III. DUTIES AND TEACHING METHODOLOGIES:

1. General considerations

i. Attends trauma casualty and emergency posting and does emergency duty as per roster of the department.
ii. Attends OPD (related to trauma and Emergency Surgery follow-up)
iii. Attends operation room/theatre
iv. Attends clinical patient rounds (with concerned unit)
v. Discuss problematic cases with consultant (s) in Emergency/ Follow up OPD/Wards.
vi. Care of the indoor patients on beds allotted to him/her.
vii. Attends the weekly journal Club and seminar and presents the same by rotation.
viii. Attends lectures by the faculty.
ix. Attends/participates/presents papers in state /zonal /national /international conferences.
x. Actively participates/helps in organization of departmental workshops, courses, conferences related to emergency surgery and trauma management.

2. Methods of Training and Teaching

Learning methods to be used for the teaching of the Fellows may include Bed-side teaching/ Journal Club/ Seminar/ Lecture/discussion/ Case presentations/ Mortality meeting once a week and a Monthly audit.

IV. PROGRAM EXPECTATIONS

1. Residents completing F.N.B (Trauma and Acute Care Surgery) fellowship program will be expected to have:

i. Patient Care Ability: To be trained in all relevant disciplines of emergency surgery so that he acquires the competence to manage most of the trauma cases independently and to do all basic acute care surgeries related to both trauma and non-trauma emergency surgery.
ii. Teaching Ability: Teach the specialty of Trauma and Acute Care Surgery.
iii. Administrative Ability: To be educated about the emergency surgical administrative protocols and the trauma and evacuation services so that he can later administer a Trauma & Emergency Surgery unit and appoint, educate, and

supervise specialized personnel, establish policy and procedures for the unit, and coordinate the activities of the unit with other administrative/ clinical units within the hospital.

iv. Teamwork: He/she should be capable to work as a team member and also act as team leader, in an Emergency Team. He/she should develop general humane approach to patient care with communication ability with the patient's relatives, especially in emergency situations such as in casualty department and victims of accidents. He/she should also maintain human values with ethical considerations.

V. THE TRAINING PATH

This training path should include all content relative to emergency and trauma surgery, including the study of conditions related to acute surgical emergencies including injuries and shock, including their epidemiology, mechanism, physiology, biology, and metabolic implications. The candidate is expected to be certified in essential life support courses like ATLS, BLS/ACLS.

1. Core Content

The training will be inclusive of the following core content:

i. Trauma Surgery:

a. Initial Management: The ABCDs…
b. Airway Management
c. Traumatic Shock Overview
d. Resuscitation and Cardiovascular Endpoints of Resuscitation
e. Neck Trauma
f. Blunt and Penetrating Abdominal Trauma
   - Operative as well as Non-operative
g. Blunt and penetrating Thoracic Trauma
h. Damage Control Surgery
i. Special Considerations in Blunt Trauma (Maxillofacial, Genito-urinary, Soft Tissue Trauma)
j. Vascular Trauma
k. The Mangled Extremity: Revascularization vs. Amputation
l. Head injuries, general principles of management.
   - ED management of Head Injuries (Medical Management)
   - Imaging and Interpretations
   - Monitoring and Non-operative management of TBI

- Operative management in Traumatic Brain Injury catastrophes (Emergency decompression in austere environments)

l. Spinal trauma, general principles of pathophysiology, Injury mechanics and interpretation of special investigations and initial management.
m. Pelvic Trauma diagnosis and primary management
n. Basic management of extremity fractures
- Splinting
- External Fixators for limb salvage in cases of associated vascular injuries

o. Basic management of Burns and Blast Injuries
p. Disaster and Mass Casualty Management Training in Trauma Systems management and Mass casualty management
q. Trauma Scoring systems.

ii. Emergency General Surgery:

a. Intra-Abdominal Catastrophes
b. Hollow Visceral Surgical Emergencies
c. Hepato-biliary Surgical Emergencies
d. Pancreatitis
e. Acute complications of abdominal wall hernias
f. Soft Tissue Infections and abscesses
g. Abdominal Compartment Syndrome/The Open Abdomen
- Critical limb ischemia as an adjunct of extremity compartment syndrome

iii. Surgical Critical Care:

a. Intensive Care Unit Emergencies in the Trauma/Emergency Surgery Patient
b. Supportive Care in the Intensive Care Unit for the Trauma/Emergency Surgery Patient

iv. Miscellaneous:

a. Initial Management of the injured in special situations, pediatric trauma, geriatric trauma, trauma in pregnancy
b. Awareness about Brain death and Organ Transplantation
c. Infectious Issues in Trauma/Emergency Surgery

v. Rehabilitation Care:

a. Nursing care of unconscious patient

b. Nutritional requirements of unconscious patient
c. Acute Rehabilitation of Critically ill surgical patient.

VI. THE DETAILED CURRICULUM WILL INCLUDE KNOWLEDGE AND SKILLS IN THE FOLLOWING FIELDS

The program will possess a well-organized and effective curriculum, emphasizing the practical hands-on training to the fellows. The curriculum will provide residents with direct experience by progressive responsibility for patient management.

The management of the emergency surgical patient has to be learned as the paradigm of Acute/ Immediate Care – Definitive Care – Critical/ ICU Care – Rehabilitation.

The whole training program will be imparted in the above mentioned component of each specialty finally culminating into the understanding of the holistic care of the Emergency Surgical patient including trauma victims.

1. Goals:

To gain knowledge and skills of Emergent Surgical Care and to develop an organized approach to the assessment, resuscitation, stabilization and provision of definitive care for all surgical emergencies.

2. Practical skills to be achieved after completion of training:

The program must provide supervised surgical hands-on training that will enable the fellow to gain competence in the performance and application of the following surgical competencies and skills:

Procedural Skills for FNB (Trauma and Acute Care Surgery)

Area/Procedure	Essential	Desirable
i. Airway		
Tracheotomy, open and/or percutaneous	X	
Cricothyroidotomy	X	
Oral endotracheal intubation	X	
ii. Head/Face		

Area/Procedure	Essential	Desirable
Nasal Packing (ant. & post.) and Oral packing	X	
ICP Monitoring	X	
Cranial decompression in dire emergencies when neurosurgeon not present		X
Intermaxillary wiring	X	
Basic reconstruction techniques (suturing) for facial soft tissues	X	
iii. Neck		
Exposure & definitive management of vascular and aerodigestive injuries	X	
Thyroidectomy	X	
iv. Chest		
Exposure & definitive management of cardiac injury, pericardial tamponade		X
Exposure & definitive management of thoracic vascular injury		X
Exposure & definitive management of tracheo-bronchial & lung injuries	X	
Diaphragm injury, repair	X	
Definitive management of empyema: decortication (open and VATS)	X	
Bronchoscopy: diagnostic and therapeutic for injury, infection and foreign body removal		X
Emergency management of esophageal injuries & perforations	X	
Damage control techniques	X	
v. Abdomen & Pelvis		
Exposure & definitive management of gastric, small	X	

Area/Procedure	Essential	Desirable
intestine and colon injuries		
Exposure & definitive management of gastric, small intestine and colon inflammation, bleeding perforation & obstructions.	X	
Gastrostomy (open and/or percutaneous) and jejunostomy	X	
Exposure & definitive management of duodenal injury	X	
Management of rectal injury	X	
Management of all grades of liver injury	X	
Management of splenic injury, infection, inflammation or diseases	X	
Management of pancreatic injury, infection and inflammation	X	
Pancreatic resection & debridement	X	
Management of renal, ureteral and bladder injury	X	
Management of injuries to the female reproductive tract		X
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 & definitive management of major abdominal and pelvic vascular injury	X	
vi. Extremities		
Radical soft tissue debridement for necrotizing infection	X	
Exposure and management of upper extremity vascular injuries	X	
Exposure and management of lower extremity	X	

Area/Procedure	Essential	Desirable
vascular injuries		
Damage control techniques in the management of extremity vascular injuries, including temporary shunts	X	
Acute thrombo-embolectomy		X
Hemodialysis access, permanent		X
Fasciotomy, upper extremity	X	
Fasciotomy, lower extremity	X	
Amputations, upper and lower extremity	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
vii. Other Procedures		
Split thickness, full thickness skin grafting	X	
Diagnostic Emergency ultrasound (FAST etc.)	X	
Procedures required for Surgical Critical Care (Central Venous Line, Arterial Line etc.)	X	

1. Documentation

The Fellows will maintain a log book (operative and clinical) to document the work done during the 2-year program. The log book will be certified by the faculty in- charge of various departments the resident/ candidate will rotate.

VII. RECOMMENDATIONS FOR THE NUMBER AND TYPES OF ROTATIONS IN F.N.B. (TRAUMA & ACUTE CARE SURGERY)

Departments/ units in which Rotation will be done	**Total duration 24 months**
Department/Division/Unit of Surgery/ Trauma Surgery/ Emergency Surgery including Rotation in Emergency Department/ Casualty	18 months
Surgical ICU	2 months
Dept. of Orthopedics	2 months
Dept. of Neurosurgery	2months

VIII. RECOMMENDED RESOURCES FOR REFERENCE AND READING BOOKS

1. Hamilton Bailey's Emergency Surgery, 14th Edition. Eds. Brian W. Ellis, Simon Paterson-Brown. A Hodder Arnold Publications.

2. Emergency Surgery Eds. Adam Brooks, Bryan A. Cotton, Nigel Tai, Peter F. Mahoney. Wiley Blackwell -2010

3. TRAUMA. 9th Edition, Eds. Feliciano David V.; Mattox Kenneth L.; Moore Ernest E. McGraw-Hill.2020

4. ATLS Providers Manual – 10thEdn. of The American College of Surgeons - Committee on Trauma. 2018

5. TRAUMA – Contemporary Principles and Therapy. Eds. Lewis Flint, J Wayne Meredith, C William Schwab, Donald D Trunkey, Loring W Rue, Paul A Taheri. Lippincot Williams & Wilkins.

6. Trauma Management. Eds. Demetrios Demetriades, Juan A. Asensio. Landes Bioscience.

7. Farquharson's Textbook of Operative General Surgery, Margaret Farquharson, Brendan Moran. Hodder Arnold Publication

Journals

1. Journal of Trauma and Acute Care Surgery. Lippincot Williams & Wilkins
2. Trauma Surgery & Acute Care Open – BMJ Journals
3. World Journal of Emergency Surgery. Bio-MedCentral
4. European Journal of Trauma and Emergency Surgery. Springer
5. Indian Journal of Surgery – Springer
6. World Journal of Surgery – Springer
7. Annals of Surgery – Wolters Kluwer
8. British Journal of Surgery – Wiley Online Library
9. Journal of American College of Surgeons – Elsevier Inc.
10. Injury, International Journal of the Care of the Injured. Elsevier Science
11. Journal of Emergency, Trauma and Shock. Medknow Publications

Websites

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

आयुर्विज्ञान में राष्ट्रीय परीक्षा बोर्ड
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