



**Certificate Course Curriculum
for
Pre-Hospital Trauma Technician
(PTT)**



**Directorate General of Health Services
Ministry of Health & Family Welfare
Nirman Bhawan
New Delhi - 110 108**



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The “Golden Hour”

‘Golden Hour’ is an important concept in Pre-hospital care of the trauma victim. The “Golden Hour” is the first sixty minutes after the occurrence of multi-system trauma. The victim's chances of survival are *greatest* if they receive definitive care within the first hour after a severe injury.

- R Adams Cowley

LIFE and TIME are the world's best teachers, TIME teaches us to make good use of TIME and TIME teaches us the value of LIFE....

– Dr. A.P.J. Abdul Kalam

Dr. Jagdish Prasad
M.S. M.Ch., FIACS
Director General of Health Services



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MESSAGE

It is a matter of immense pleasure that the Programme Division, Directorate General of Health Services has revised the Pre-hospital Trauma Technician course under the National Programme “Capacity Building for developing Trauma Care Facilities in Government Hospitals on National Highways” during the 12th Five Year Plan.

Today, trauma injuries are one of the leading causes of deaths, disabilities and hospitalization with severe socioeconomic cost on the society across the world. The situation has become grim with the lack of standardized and organized trauma care facilities in our country.

Effective systems for pre-hospital trauma care can form the foundation of all emergency care and can be tasked with the responsibility of addressing a broader range of health concerns. The prompt provision of emergency care and rapid transport of injured victims from the scene of injury to a health-care facility can save lives, reduce the incidence of short-term disability and dramatically improve long-term outcomes. The Pre-hospital trauma technician is an integral part of the trauma systems and forms the first focal point for trauma victims.

Keeping in view the gravity of the Trauma Care problem in our country and the need to have skilled manpower to deal with pre-hospital trauma care, the Directorate General of Health Services, Ministry of Health & Family Welfare initiated a course for pre-hospital trauma technicians in the three Central Government hospitals of Delhi in 2007. The curriculum has been revised in 2014, keeping in view technological innovation in the field, with special emphasis on up-skilling the pre-hospital trauma technicians on practical aspects of trauma care.

I anticipate that the curriculum will be able to serve as a comprehensive document for pre-hospital technicians and they will continue to work enthusiastically towards the benefit of trauma victims.

I congratulate the Programme Division and all experts who had been associated in bringing out this curriculum.

Dr. (Prof) Jagdish Prasad

List of Contributors

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(This was developed with support from WHO country office for India)

Certificate Course Curriculum for Pre Hospital Trauma Technician (PTT)

1. Need for Pre-hospital Trauma Care:

- According to WHO “Global Status Report on Road safety 2013”, more than 1.2 million people die in road accidents every year and as many as 50 million are injured.
- Systemic and integrated approach adopted towards management of trauma cases can prevent deaths and disabilities due to road accidents to a large extent.
- Extending appropriate care during the period between injury and initial stabilization of the patient is the most critical period for the patient’s survival.
- Quick first aid, rapid transportation of the victim and initiation of treatment within golden hour by a trained person are pre requisite of trauma care management.

2. Role of Pre-hospital Trauma Technician:

The Pre-hospital trauma technician will be the “First Responder” in Emergency and Accident situation and will be required to undertake the following:

- Assess the extent of injury.
- Stabilize the patient.
- Strive to transfer the patient with appropriate care to the nearest Trauma Care Facility within the ‘Golden Hour’.

3. Aim of the PTT course:

To provide comprehensive training to technicians to enable them to become the “First Responders” in providing requisite care to trauma victims at the site of injury and during transportation to the nearest trauma care facility / health centre.

4. Introduction to the course:

The Certificate Course for Pre Hospital Trauma Technician was initiated by Directorate General of Health Services, Ministry of Health & Family Welfare in 2007. The course is being conducted at present in the following three Central Government Hospitals:

- Safdarjung Hospital, New Delhi
- Dr. Ram Manohar Lohia Hospital, New Delhi
- Lady Hardinge Medical College (LHMC), New Delhi

5. Duration of the course:

- Total duration of the course is 12 months, which is divided as follows:
 - 9-months teaching in the hospital according to the prescribed pedagogy.
 - 3-months internship (hands on/ practical).

6. Medium of Teaching : English and if necessary Bilingual.

7. Batch Size/Group Composition:

A batch of 30 students will be enrolled each year at one centre, making the total intake at all three centres as 90. Preference shall be given to the candidates belonging to the region where the course is held. Reservation for SC/ST/OBC categories shall apply as per government rules.

8. Number of days/ hours:

The 12 month course shall have 2 modules followed by 3 months of internship as under:

S. No.	Module	Duration	Hours		
			Teaching	Assessment	Total
1	Module I	2 months 7 days	215	6 hrs X 3 days X 6 subjects = 108 hrs	323
2	Module II (Part-I)	2 months 15 days	290	6 hrs X 3 days X 3 subjects = 54 hrs	344
3	Module II (Part-II)	4 months 7 days	419	6 hrs X 3 days X 3 subjects = 54 hrs	473
Total			924	216	1140
4	Internship	3 months	NA		

9. Attendance:

A. For 9-months teaching course during hospital posting:

A candidate is required to put in a minimum of 80% attendance in both theory & practical separately in each subject before being allowed to appear in the examination.

B. For 3 months Internship:

During the Internship of 3 months duration, the candidate is required to have 100% attendance.

10. Pedagogy:

A. Teaching faculty:

The Head of Department, Anaesthesia of the concerned Institute will be the overall In-charge of the Programme. The Nodal Officer (Department of Anaesthesia), as nominated by the Head of Department of each hospital, will coordinate the certificate course in their respective institution.

The senior faculty members will be responsible for delivering/ organizing classes for the students. If the classes are allotted to Junior/ Senior Residents, the senior faculty members will supervise the content and quality of the sessions continuously on the basis of feedback.

B. Teaching Methods and Aids:

Interactive and participatory classroom form of teaching will be followed. Following teaching Aids will be used:

- CPR Dummy
- Intubation mannikin
- IV line mannikin

- Different types of Airway management equipments.
- Audio-Visual presentations of various trauma cases.
- Ambulances-transport ambulance-BLS, ACLS
- Projector / LCD
- Ambu Bag
- Respiratory Aids
- Transfusion equipment
- Splints / Collar, Spinal Board
- Catheter, Chest Tubes
- Tourniquet
- Models for practical training
- Ambulance posting
- Audio-Visual presentations of cases (CD, DVDs)

C. Distribution of teaching hours during hospital posting:

- There will be 6 teaching hours in a day for 5 days (Monday to Friday) in a week= 30 hrs. in 5 days.
- On Saturday, there will be 4 teaching hours per day= 4 hrs
- Total teaching hours in 1 week= 30+4= 34 hrs.
- In one month (4 weeks), the total teaching hrs. = 34 X 4= 136 hrs.
- Total teaching hrs. in 9 months = 136 X 9= 1224 hrs.
- Assuming 14 holidays in 9 months and 6 hrs. per day, loss of teaching hrs. = 84 hrs
- The total teaching hrs. left = 1224-84= 1140 hrs

Each subject will have assessment/ examination as per the following schedule:

- 1 day internal assessment based on observation of the performance
 - 1 day written examination(theory)
 - 1 day practical examination
- Total examination days= 12X 3= 36 days
Hence, 36 X 6= 216 hrs (for examination).

Therefore, total teaching hrs in 9 months would be= 1140- 216= 924 hrs

Hence, the entire teaching curriculum in 9 months would cover 924 hrs.

11. Distribution of teaching hours allotted to each subject :

The course has been divided into 2 modules:-

• **Module I:**

Subject	Hours
1. PSM	50
2. Anatomy	45
3. Physiology	40
4. Pharmacology	40
5. Microbiology	30
6. Forensic Medicine	20
Total	215 hrs

- **Module II:**

- **Part-I**

Subject	Hours
1. Orthopaedics	180
2. Neurosurgery	60
3. Burn Plastic	50
Total	290 hrs

- **Part-II**

Subject	Hours
1. Anesthesia	234
2. Surgery	120
3. Obs& Gynaecology	55
Total	419hrs

The Head of the Departments of the above mentioned subject will coordinate among themselves to finalize the yearly training schedule of their respective hospital and forward the same to the Nodal person.

12. Examination

12.1 The objective of the examination is to assess the knowledge and skills of candidate in resuscitation and management of trauma victims in pre hospital phase. The examination will be conducted as per the following schedule:

- **Internal assessment: 10%**
- **End of course examination:90%(Theory: 40%, Practical: 60%)**

The examination will be conducted by each department on the conclusion of their teaching schedule. Each subject will be assessed on 100 marks.

Overall marks:

Module I- 600

Module II: 600 (Part I- 300; Part II- 300)

12.2 Examination Scheme:

- Theory examination will be a combination of –
 - Short question answer
 - MCQs
 - Case scenario
- Practical examination will comprise of-
 - Viva
 - Spots identification
 - Case scenario management

12.3 Qualifying Marks

The students will be required to clear each subject individually and separately. The qualifying marks will be 50% aggregate for each subject. Students, who fail to qualify, will be given 2 more attempts to qualify the concerned subject. However, the student will be allowed to attend classes and progress to the next module. Students who fail to clear any subject by the end of internship would be required to repeat the posting at the end of 1 year, with the new batch for which he/she will not be paid any stipend.

13. Identified Hospitals for the PTT Course:

- Dr. RML, PGIMER, New Delhi
- Vardhman Mahavir Medical College & Safdarjung Hospital, New Delhi
- Lady Hardinge Medical College, New Delhi

14. Internship:

14.1 Internship Schedule- 3 months

Time schedule : 9:00 am to 4:00pm (Monday to Saturday)
: 6 days/week

14.2 Internship Roster:

Department

Number of days/weeks

A. Main Casualty

- | | | |
|------|-------------------------------------|--------|
| i. | Main treatment & Resuscitation area | 2 Wks. |
| ii. | Dressing Room | 2Wks |
| iii. | Injection Room | 1 Wk |

B. Anaesthesia 2 Wks.

C. Orthopaedic Plaster Room & EOT 2 Wks.

D. Burns Department Casualty 1 Wk

E. Trauma Centre 2 Wk

F. St. Jones: 1 Wk

Total 13 wks (3 months)

14.3 Internship training will cover the following subject matter including the part that has been taught in the theory:

- CPR, Bag Mask/Ambu Bag ventilation.
- Defibrillation, Monitoring.
- Establishment of circulatory access, putting up of IV line/ Cannula.
- Maintenance of airway:
 - Oral airway, Oro tracheal, Endo tracheal intubation
 - Cricothyrotomy.
 - Manual removal of foreign Body from throat
 - Oropharyngeal suction method.

- Ryles tube insertion and Gastric lavage method.
- Control of bleeding-methods (manual, pressure dressing).
- Care of unconscious patient due to trauma.
- Wound dressings.
- Splinting of limbs for fractures.
- Immobilization method in Neck/Cervical trauma.
- Intramuscular Injection/Intravascular Injection (under supervision of a Doctor).
- Management of shock- first aid measures.

15. Award of Certificate in Pre-Hospital Trauma Care:

A certificate shall be awarded jointly by the Directorate General of Health Services, Ministry of Health & Family Welfare and the individual Institute after the candidate has qualified in all the modules successfully.

Module – I (Basic Course)

Instruction Hours	-	215 Hrs
Theory / Practical Ratio	-	40:60

Module – I: COMMUNITY MEDICINE, HUMAN ANATOMY, PHYSIOLOGY, PHARMACOLOGY, MICROBIOLOGY AND FORENSIC MEDICINE.

OBJECTIVES OF MODULE I

1. To understand the epidemiology of trauma, and get an overview of Trauma Care Systems in our country.
2. To get basic knowledge of the structure of human body in the context of pre-hospital trauma care, so as to implement the knowledge of anatomy in common emergency conditions.
3. To acquire basic knowledge about various physiological functions of individual systems in the human body.
4. To have basic information about the drugs (including their adverse effects), relevant to trauma care that may be used while transporting the patient from the accident site to the healthcare facility / trauma care facility.
5. To gain information on infectious diseases, various sterilization techniques, concept of wound infections, biomedical waste and occupational exposures in the pre hospital trauma care.
6. To get orientation on the legal and ethical issues concerning professional practice and aspects on notifications and documentation related to Pre-hospital Trauma care.

MODULE 1**PAPER –I****SUBJECT 1: COMMUNITY MEDICINE****TOTAL INSTRUCTION HOURS: 50**

S. No.	Topic	Teaching Hours
1.	Introduction to trauma	2
2.	Epidemiology of trauma	2
	Seminar	2
3.	Trauma – causes	1
4.	Trauma systems – Components <ul style="list-style-type: none">• Injury prevention• Pre hospital care• Emergency department care• Inter facility Transportation• Trauma critical care	5
	Seminar	2
	Tutorial	2
5.	Trauma systems – Trauma centers <ul style="list-style-type: none">• Levels• Role	2
6.	Well-being of Trauma Technicians	2
7.	Social issues in Trauma	1
	Seminar	2
8.	Motivational skills for management of trauma victims	1
9.	Leadership training	1
	Seminar	2
	Tutorial	2
10.	Field situations and management issues	1
11.	Protection of victims and bystanders	1
	Seminar	2
12.	Personal safety	1
13.	Managing violence	1
	Seminar	2
	Tutorial	2
14.	Civil disturbances	1
15.	Mass casualty	1
	Seminar	2
16.	Overview of the Programme ‘Capacity Building for developing Trauma Care Facilities in Government Hospitals on National Highways’	2.5
17.	Overview of ambulances in India	2.5
	Revision	2
	Total	50

SUBJECT 2: HUMAN ANATOMY
TOTAL INSTRUCTION HOURS: 45

THEORY:

S. No.	Topic	Teaching Hours
1.	Upper Limb	1
2.	Cubital fossa and its contents	1
3.	Thorax	1
4.	Heart	1
5.	Anatomy of Head & Neck	1
6.	Thyroid and other organs	1
7.	Nervous System	1
8.	Cerebral Hemisphere	1
9.	Meninges	1
10.	Anatomy of abdomen	1
11.	Organs of abdomen: • Liver • Spleen • Kidneys	1
12.	Pelvic organs and their support	1
13.	Lower Limb	2
14.	Urogenital system	1
15.	Eyeball	1
16.	Ear, Nose & Throat	1
17.	Surface marking of: • Head & Neck • Brain • Upper Limb • Lower Limb • Thorax • Abdomen	1
	Total	18

PRACTICAL:

S. No.	Topic	Teaching Hours
18.	Skull & Mandible	2
19.	Interior of Skull	2
20.	Vertebral Column	2
21.	Bones of Upper Limb	2
22.	Bones of Lower Limb	2
23.	Pelvis	1
24.	Head & Neck	1
25.	Temporo-mandibular region	1
26.	Orbit	2
27.	Thorax Bones	1
28.	Lungs on specimen	1
29.	Heart on specimen	1
30.	Respiratory System	2

31.	Heart & Great vessels	1
32.	Anatomy of abdomen & location of organs	1
33.	Liver & Spleen	1
34.	Kidney, Ureter & Urinary Bladder	1
35.	Brain	1
36.	Spinal cord & Meninges	1
37.	Surface marking on the cadaver	1
	Total	27

SUBJECT 3: PHYSIOLOGY
TOTAL INSTRUCTION HOURS: 40

THEORY:

S. No.	Topic	Teaching Hours
1.	Fluid & electrolytes <ul style="list-style-type: none"> • Distribution of body fluids • Composition of body fluids • Disturbances in body fluids and electrolytes 	2
2.	Blood <ul style="list-style-type: none"> • Blood: Composition and functions • Blood formation, fate of RBC & Jaundice and Anemia • Blood Groups→Types, their importance & Rh incompatibility • Hemostasis • Immunity and AIDS 	3
3.	Circulatory System <ul style="list-style-type: none"> • Physiological Anatomy of CVS • Cardiac cycle, heart rate , heart sounds, ECG • Cardiac output, Venous return, • Blood Pressure: Definition, Normal Value, Regulation of Blood Pressure • Shock : Definition & Different types 	5
4.	Respiratory System <ul style="list-style-type: none"> • Physiological anatomy of respiratory system • Mechanism of respiration • Composition of air and transport of gases • Regulation of respiration (neural and chemical) • Applied –hypoxia and Airway obstructions 	3
5.	Central Nervous System <ul style="list-style-type: none"> • Functional organization of CNS • Spinal injuries 	2
6.	Endocrine System <ul style="list-style-type: none"> • Names & Anatomical location of different endocrine Glands • Hormones secreted by each gland , their functions 	2
7.	Genitourinary System <ul style="list-style-type: none"> • Urinary System • Physiological anatomy 	2

	<ul style="list-style-type: none"> • Function • Urine Composition • Electrolyte balance 	
8.	Temperature regulation <ul style="list-style-type: none"> • Normal body temperature→Core & Oral • Heat Production & heat loss • Regulating Mechanism→ role of Hypothalamus • Applied → Fever , Hypothermia and heat stroke 	2
9.	Patho-physiology of Pain <ul style="list-style-type: none"> • Definition of Pain • Types of pain: referred pain, slow pain, fast pain etc. • Pain Pathway 	2
	Total	23

PRACTICAL:

S. No.	Topic	Teaching Hours
10.	Demonstration: Hemoglobin estimation and peripheral smear	1
11.	General physical examination Examination and observation of the following aspects: <ul style="list-style-type: none"> • General appearance, mental and emotional status • Physique, built and nutritional status • Facial expression and speech • Eyes, skin, feet, neck • Lymph nodes, pallor, icterus, edema, cynosis, nails, hair etc. • Pupillary examination including reflexes 	4
12.	Clinical examination of the respiratory system <ul style="list-style-type: none"> • Inspection , palpation, percussion and auscultation of the respiratory system 	2
13.	Clinical examination of the cardiovascular system: Pulse, BP, Precordium	7
14.	Recording of body temperature <ul style="list-style-type: none"> • Normal body temperature range • Apparatus used, method of measurement & precautions 	1
15.	Sensory system examination and motor system examination <ul style="list-style-type: none"> • Examination of the sensory system • Examination of motor system 	2
	Total	17

SUBJECT 4: PHARMACOLOGY

TOTAL INSTRUCTION HOURS: 40

THEORY:

S. No.	Topic	Teaching Hours
1.	Introduction of the subject, Routes of administration	2
2.	Pharmacokinetics, Pharmacodynamics, Adverse drug reactions	3
3.	Anticholinergic drugs	1
4.	Vasopressor agents, Inotropic agents	2
5.	Vasodilators	1
6.	Emergency treatment of Angina & MI, Antiarrhythmics	3
7.	Intravenous fluids – Crystalloids	2
8.	Intravenous fluids – Colloids	2
9.	Treatment of shock	2
10.	Treatment of bronchial asthma	1
11.	Local anaesthetics	1
12.	Intravenous anaesthetics	1
13.	Skeletal muscle relaxants	1
14.	Sedative, Anxiolytic	1
15.	Analgesics	1
16.	Drugs used in Post partum hemorrhage	1
	Total	25

PRACTICAL

S. No.	Topic	Teaching Hours
17.	Demonstration of various emergency drugs	3
18.	Demonstration of various types of IV fluids	4
19.	Preparation of the IV drip	2
20.	Drugs used in CPR with Case Study	4
21.	Revision	2
	Total	15

SUBJECT 5: MICROBIOLOGY
TOTAL INSTRUCTION HOURS: 30

THEORY:

S. No.	Subject	Teaching Hours
1.	Introduction to infectious diseases <ul style="list-style-type: none"> • Introduction • Causes of infectious diseases • Mode of transmission of infectious diseases • Entry of infectious agents • Defenses against infectious diseases • Prevention from infectious diseases 	1
2.	Blood borne pathogens <ul style="list-style-type: none"> • Introduction • Persons at risk • Pathogens • HBV • HCV • HIV 	1
3.	Wound infections <ul style="list-style-type: none"> • Introduction • Principles of wound management • Prevention of wound infection • Tetanus • Gas gangrene. 	3
4.	Biomedical Waste Management <ul style="list-style-type: none"> • Introduction • Definition of biomedical waste • Quantum of waste that is generated by a hospital • Hazard of biomedical waste • Persons at risk of the hazards of medical procedures • Rules and regulations governing the disposal of biomedical waste • Responsibilities of health care institutions regarding biomedical waste management • Categories of waste generated in hospitals and their management • Color codes and type of containers used for disposal of biomedical waste • Disposal of infectious waste • Disposal of sharps • Storage of bio medical waste in hospital • Recyclable waste 	3
5.	Sterilization and Disinfection <ul style="list-style-type: none"> • Introduction • Definitions • Physical methods to achieve sterilization and disinfection • Properties of disinfectants 	3

	<ul style="list-style-type: none"> • Classification of disinfectants • Chlorine as high level disinfectant • Preparation of working solution of sodium hypochlorite • Sterilization of common hospital instruments • Common Precautions for disinfection 	
6.	Bio-safety and standard precautions <ul style="list-style-type: none"> • Introduction • Bio-safety • Standard precautions • Waste disposal • Occupational exposure • Factors Influencing Occupational Risk of Blood borne Virus Infection • Preventing transmission of Blood borne Viruses in Healthcare Settings • Definition of exposure • Workplace exposure • Post exposure prophylaxis • PEP for HIV as per NACO guidelines • PEP following exposure to HBV patient 	3
7.	Revision	2
	Total	16

PRACTICAL:

S. No.	Subject	Teaching Hours
8.	Demonstration of various sterilization equipment and procedures including visit to CSSD, autoclave room, incinerator	3
9.	Standard precautions and safety procedures	2
10.	Identification of components of PPE	3
11.	Visit to HIV diagnostic center	1
12.	Sample collection techniques and correct containers	1
13.	Case studies: <ul style="list-style-type: none"> • Infection control • Biomedical Waste management • Sterilization and disinfection • Wound infections 	4
	Total	14

SUBJECT 6: FORENSIC MEDICINE
TOTAL INSTRUCTION HOURS: 20

THEORY:

S. No.	Subject	Teaching Hours
1.	Professional practice and ethical issues concerning pre-hospital trauma technicians	1
2.	Role of trauma technician in documentation	2
3.	Issues related to identification	1
4.	Medico-legal issues in trauma	2
5.	Medico-legal issues in Asphyxia	2
	Total	8

PRACTICAL:

S. No.	Subject	Teaching Hours
6.	Demonstration of documentation of report, recording of findings using MLC case records, Post Mortam reports, Age reports	2
7.	Demonstration of injuries using various museum specimens and weapons	2
8.	Demonstration of injuries on autopsy examination	2
9.	Demonstration of issues related to identification on autopsy	2
10.	Demonstration of practical aspects of asphyxia cases: Preservation of knot of ligature material etc.	2
11.	Demonstration of practical aspects of asphyxia on autopsy	2
	Total	12

At the end of every theoretical session – 15 minutes will be spent on Summing up / Revision followed by Question Answer Session.

Module – II

Part-I	-	Basic Course
Instruction Hours	-	290 Hrs
Theory / Practical Ratio	-	40:60

Paper – I: ORTHOPEDICS, NEURO-SURGERY AND BURN & PLASTIC SURGERY

OBJECTIVES

1. To acquaint with the basic knowledge of orthopaedic trauma, spinal injuries and its management.
2. To have basic information on fractures, soft tissue injuries, amputations and their management during pre-hospital trauma care.
3. To understand immobilization techniques, patient transfers, on and off field skills in the pre hospital trauma care.
4. To acquaint with the detailed information on various etiologies, patho-physiology and management aspects for head injury patients in the pre hospital trauma care.
5. To understand the emergencies related to plastic surgery including Burns, Maxillofacial Injury and Soft tissue injury

Module II

PART –I

Subject 1: Orthopedics Total instruction hours: 180

THEORY:

S. NO.	Subject	Teaching Hours
1.	Introduction	1
2.	Spinal Injury <ul style="list-style-type: none">• Introduction :- Procedure, problems, Increasing rate of Injury, Social & County Burden• Diagram of Vertebral Column with Spiral Cord & Nerve• Patho-physiology of S.C. Injury• Mode of Injury• Clinical features• Complete & Incomplete Injury• Management :- A team approach<ul style="list-style-type: none">○ Pre-Hospital Management○ Hospital Management	1
3.	Cervical Spine Injury	1
4.	Dorsal Spine Injury	1
5.	Lumbar Spine Injury	1
6.	Pre-hospital management	1
7.	Hospital Management	1
8.	Other Investigations & conservative treatment	1
9.	Operative treatment and rehabilitation	1
10.	Revision	1
11.	Orthopaedics-(traumatology) <ul style="list-style-type: none">1) Introduction2) Prevalence of trauma3) Mode of trauma and injury4) Role of prime responders5) Importance of first aid6) Limitation of trauma Technician	1
12.	Soft tissue injury Soft Tissue Injury:- (Muscle, tendon, skin) <ul style="list-style-type: none">- Spasm/Tear/Laceration	1
13.	Bone Injury:- <ul style="list-style-type: none">- Fracture – definition, Clinical Features, Types of fracture	1

14.	Injury to Joint - Ligament Sprain/Strain - Dislocation & subluxation	1
15.	Injury to Nerves & Vessels	1
16.	Soft Tissue Injury (STI) upper limb - Clinical features - Diagnosis – r/o fracture - Treatment - Pre-hospital management	3
17.	Soft Tissue Injury-lower limb	4
18.	Injury to Major Blood Vessels • General introduction • Type of lesion • Clinical features :- Open injury, close Injury • Diagnosis • Treatment	1
19.	Vascular injury to upper limb (Pre-hospital management)	1
20.	Vascular injury to lower limb & Pelvic region	1
21.	Nerve injury of upper limb	2
22.	Nerve Injury of lower limb	2
23.	Revision class	1
24.	Fracture healing	1
25.	Complication of fracture	1
26.	Principle of fracture Management • Introduction • Causes of fracture • Assessment A. Pre hospital Management B. Hospital Management	4
27.	Injury to joints	1
28.	Dislocation of lower limb joints	2
29.	Dislocation of upper limb joints	2
30.	Fracture of pelvis, and lower limb bones	7
31.	Fracture of scapula, clavicle and upper limb bones	5
32.	Open fractures – A. Pre hospital Management B. Hospital Management	3
33.	Splints and their uses	2
34.	Compartment Syndrome	2
35.	Traumatic Amputation	1
36.	Re-implantation surgery • Introduction • Methods-transportation, • Rehabilitation –its role	1

37.	Management of Trauma Amputation :- (Arm/Forearm/Tibia/Thigh) A. Pre – hospital management B. Hospital management	4
38.	Pelvis Injury	1
39.	Fractures in the Elderly	2
40.	Fracture rib	1
	Total	70

Practical: Orthopedics Total Hours-110

Place of posting-Plaster room and OPD, CIO Safdarjung

- Plaster room in OPD and ward-11 days,
- Emergency Ortho OT-10 days
- Main OT -1 day

Day	Subject	Teaching Hours
41.	<ul style="list-style-type: none"> • Welcome and introducing lecture/interaction Director CIO • Briefing about the topics to be covered. • Brief round of the dept. and set up 1 hr • DRESSING BANDAGING- by experts professionals 4 hrs 	5
42.	Crape bandaging	5
43.	<ul style="list-style-type: none"> • Strapping • Types (chest, for clavicle #,ribs fingers ,toes etc.) 	5
44.	Dressings (for simple and severe wound) <ul style="list-style-type: none"> • Its principle, technique, importance of no –touch technique, material, ointments, instruments etc. 	5
45.	Dressing of fresh cut injury	5
46.	Stitches and suturing, suture materials	5
47.	Crush Injury <ul style="list-style-type: none"> • Methods of controlling bleeding, pressure, limb elevation, haemostasis, use of artery forceps, knots etc. 	5
48.	Splintage of Upper Limb <ul style="list-style-type: none"> • Types and uses • POP-slab ,cast, its nomenclature 	5
49.	Splintage of Lower Limb <ul style="list-style-type: none"> • Types and uses • POP-slab ,cast, its nomenclature 	5
50.	Other splints- Readymade-crammer wires, malleable splints Thomas splint and bohlersbraun splint	5
51.	Tractions	5

52.	Orthosis and prosthesis <ul style="list-style-type: none"> • Spine board/stretchers/wheel chair/crutches 	5
53.	Fracture reduction and reduction of dislocation-Upper Limb <ul style="list-style-type: none"> • Tutorial on principle, types and demonstration 	5
54.	Fracture reduction and reduction of dislocation-Lower Limb <ul style="list-style-type: none"> • Tutorial on principle, types and demonstration 	5
55.	Day 1-Demonstration of bed making, injection, traction, posture, shifting of spine patient and other, etc.	5
56.	Day 2-Demonstration of bed making, injection, traction, posture, shifting of spine patient and other, etc.	5
57.	Tourniquet- <ul style="list-style-type: none"> • Principle and its role • Application • Complication 	5
58.	EOT posting for demonstration of EOT set up	5
59.	Emergency orthopedics theatre(EOT) of OT area <ul style="list-style-type: none"> • Sterilization methods, ortho implants and fixators 	5
60.	Demonstration of common operative procedures. <ul style="list-style-type: none"> • Dressings, fixators, k-wire fixation 	5
61.	Main OT posting (batch-wise, in small group) To develop awareness and feel of environment	5
62.	Interaction and Group Discussion	5
	Total	110

SUBJECT 2: NEURO-SURGERY
TOTAL INSTRUCTION HOURS: 60

THEORY& PRACTICAL:

S. No.	Subject	Teaching Hours
1.	Anatomy of skull and vertebral column	2
2.	Anatomy of brain, spinal, peripheral nerves	2
3.	Physiology of central and autonomic nervous system	2
4.	Etiology and patho-physiology of head injury	3
5.	Patho-physiology of spinal injury	2
6.	Identification of head and spinal injury and associated injuries	3
7.	Raised intracranial pressure and spinal shock	2
8.	Status epilepticus and its management	2
9.	Emergency drugs used in head and spinal injury	2
10.	Glasgow coma scale	2
11.	Haemostasis, DIC and deep vein thrombosis	3
12.	Presentation, examination and assessment of head injury patient	3
13.	Presentation, examination and assessment of spinal injury patient	3
14.	How to minimize secondary brain and spinal damage	2
15.	Management of skull wounds, ENT bleed and CSF leak	2
16.	Recognition of head trauma from stroke and other medical problem in an unconscious person found roadside	3
17.	Do and don't in head and spinal injury	2
18.	Management of penetrating injury and firearm injury of head and vertebral column	2
19.	Management of head injury in children and elderly patients	2
20.	Monitoring of a head injury patient during transfer	2
21.	Indication for hospitalization and transfer to appropriate trauma centre and first aid	2
22.	Emergency investigations in head and spinal injury	2
23.	Practical demonstration of head bandages, position of patient, airway management	2
24.	Various spinal stabilisation techniques	2
25.	Case of head injury	3
26.	Case of spinal injury	3
	Total	60

SUBJECT 3: BURN& PLASTIC SURGERY

TOTAL INSTRUCTION HOURS: 50

THEORY& PRACTICAL:

S. No.	Subject	Teaching Hours
1.	Causes and Classification	2
2.	Clinical features of different burns & degrees	4
3.	FirstAid : Thermal Burn	2
4.	First Aid : Inhalational Burn	1
5.	First Aid in Chemical burn	2
6.	Radiation Burns	1
7.	First Aid in electrical Burns	2
8.	Pediatric Burns	2
9.	Geriatric Burns	1
10.	Disaster management/Mass casualty (Diwali festivities)	3
11.	Pre-hospital management & Transport	3
12.	Prevention of burns	4
13.	Maxillofacial Injury	4
14.	Maxillofacial Injury: First Aid	2
15.	Care during transport	2
16.	General Principles in pre-hospital management	3
17.	Basic Anatomy on soft tissue injuries	2
18.	First aid of soft tissue wounds	2
19.	Splints & bandaging – general importance	4
20.	Assessment of the soft tissue wound	2
21.	Establishing the IV access	2
	Total	50

Module – II

Part-II	-	Basic Course
Instruction Hours	-	415 Hrs
Theory / Practical Ratio	-	40:60

Paper – II: ANAESTHESIA, SURGERY AND OBS & GYNECOLOGY

OBJECTIVES

1. To gain in depth knowledge of various types of trauma and first aid measures to be taken during pre hospital trauma care.
2. To understand the concept of triage and the importance of 'Golden Hour'.
3. To have the detailed knowledge of the patient assessment, examination and recording of patient details.
4. To have information on hemorrhage, shock, chest and abdominal injuries and their management aspects in pre hospital trauma settings.
5. To have general introduction on cardio-pulmonary resuscitation, various equipments used and procedures done including normal ECG & common ECG abnormalities, and managing trauma victim by oxygen therapy, IV fluids, blood transfusion
6. To orient students on the concepts of basic obstetric care and reproductive tract anatomy and physiology various type of trauma involving female genital tract and Obstetrical patient, and first aid measures to be followed in such circumstances .

MODULE II

PART –II

SUBJECT 1: ANAESTHESIA TOTAL INSTRUCTION HOURS: 234

THEORY:

S. No.	Subject	Teaching Hours
1.	Normal ECG rhythms	6
2.	Abnormal ECG <ul style="list-style-type: none">• Sinus bradycardia• Sinus tachycardia• Pulseless ventricular tachycardia• Ventricular fibrillation• Asystole• Pulseless electrical activity	12
3.	Monitoring <ul style="list-style-type: none">• ECG• NIBP• Pulse oxymetry• ETCO₂• Temperature	10
4.	Oxygen Therapy	5
5.	Different types of shock especially hypo-volemic shock	10
6.	IV Fluids – Crystalloids and colloids	10
7.	Blood transfusion and complication	2
8.	CPR including techniques and devices	12
9.	Management of acute coronary syndrome	2
10.	Adult BLS and pre-hospital trauma services systems (PTS)	2
11.	ACLS and Post Resuscitation support : <ul style="list-style-type: none">• Electrical therapies• Defibrillation• Cardioversion• Pacing	6
12.	Paediatric BLS	2
13.	Neonatal BLS	2
14.	Hypothermia/Hyperthermia	4
15.	Drowning	2
	Total	87

Equipments and Procedures:

S. No.	Subject	Teaching Hours
16.	Thermometer, stethoscope, BP instrument, oropharyngeal airway	5
17.	Measurement of Blood Pressure	10
18.	Face-mask, LMA, Endotracheal tube, laryngoscope	5
19.	Suction machine, suction catheter	5
20.	Transport & ICU ventilator	10
21.	Monitor & defibrillator <ul style="list-style-type: none"> • ECG, NIBP, capnography, pulse oxymeter 	10
22.	Medical gas cylinder, syringe and infusion pumps	10
	Total	55

PRACTICAL:

S. No.	Subject	Teaching Hours
23.	Start of IV line and care- fixation, preparation of IV line	2
24.	Maintenance of airway using triple airway manoeuvre and CPR	22
25.	Insertion of LMA	5
26.	Intubation	22
27.	Crico-thyroidotomy/ tracheostomy (demonstration only)	2
28.	To set up the vital sign monitor on the patient	12
29.	To take 12 lead ECG strip	5
30.	Setting-up of a ventilator	10
31.	Use of nebulizer and humidification	2
32.	Insertion of chest tube (demonstration only)	2
33.	Needle evacuation of tension pneumothorax	4
34.	Urinary catheterization	4
	Total	92

SUBJECT 2: SURGERY
TOTAL INSTRUCTION HOURS: 120

THEORY:

S. No.	Subject	Teaching Hours
1.	Pre hospital trauma care- <ul style="list-style-type: none"> • Introduction • Primary objective 	2
2.	Golden hour- <ul style="list-style-type: none"> • Airway management • Control of excessive bleeding • Initial management of shock 	5
3.	Shock: <ul style="list-style-type: none"> • Introduction • Types • Clinical Feature • Hypovolemic Shock • Traumatic shock • Burn shock • Management 	5
4.	Head Injury: <ul style="list-style-type: none"> • General evaluation • Mechanism of injury • Cardio-respiratory status of the patient • Assessment of motor response • Pupil size and reaction of light • Glassgow coma scale 	5
5.	Spine and spinal cord injury: <ul style="list-style-type: none"> • Basic anatomy and physiology • Initial evaluation of a patient with suspected spinal injury 	5
6.	Musculoskeletal trauma: <ul style="list-style-type: none"> • Significance in a multiple injuries patient • Recognition of life and limb threatening injuries • Initial management and # immobilization • Major arterial hemorrhage • Crush injury and crush syndrome • Compartment syndrome 	5
7.	Chest trauma <ul style="list-style-type: none"> • Identification of life threatening injuries • Airway obstruction • Open pneumothorax • Tension pneumothorax • Flail chest • Cardiac tamponade • Massive hemothorax • Significance of subcutaneous emphysema 	5
8.	Abdominal and pelvic trauma: <ul style="list-style-type: none"> • Anatomy of abdomen • Solid organ in abdominal cavity 	5

	<ul style="list-style-type: none"> • Blunt trauma abdomen • Penetrating trauma • Short term management • Pelvic # and associated injury 	
9.	Pediatric trauma: <ul style="list-style-type: none"> • Unique characteristics of the child as trauma patient • Anatomy and physiological differences • Child abuse 	4
10.	Geriatric trauma: <ul style="list-style-type: none"> • Unique requirements and characteristics of elderly trauma patients 	5
11.	Biomechanics of injury: <ul style="list-style-type: none"> • Blunt trauma • Penetrating trauma • Low energy- Knife • Medium energy- Guns • High energy- Military rifles • Blast injury 	5
12.	Environmental extremes of heat and cold: <ul style="list-style-type: none"> • Cold injury and hypothermia • Heat related illness • Heat exhaustion • Heat stroke 	5
13.	Mass Casualty <ul style="list-style-type: none"> • Mass Casualty event • Mass Casualty incident 	4
14.	Triage <ul style="list-style-type: none"> • Introduction • Objectives • Level of triage • Goal of triage • Function of triage 	5
15.	Common surgical instrument	5
	Total	70

PRACTICAL:

S. No.	Subject	Teaching Hours
16.	Golden hour- <ul style="list-style-type: none"> • Airway management • Control of ext bleeding • Initial management of shock 	5
17.	Shock: <ul style="list-style-type: none"> • Introduction • Types • Clinical Feature • Hypovolemic Shock • Traumatic shock • Burn shock 	5

	<ul style="list-style-type: none"> • Management 	
18.	<p>Head Injury:</p> <ul style="list-style-type: none"> • General evaluation • Mechanism of injury • Cardio-respiratory status of the patient • Assessment of motor response • Pupil size and reaction of light • Glassgow coma scale 	5
19.	<p>Spine and spinal cord injury:</p> <ul style="list-style-type: none"> • Basic anatomy and physiology • Initial evaluation of a patient with suspected spinal injury 	5
20.	<p>Musculoskeletal trauma:</p> <ul style="list-style-type: none"> • Significance in a multiple injuries patient • Recognition of life and limb threatening injuries • Initial management and # immobilization • Major arterial hemorrhage • Crush injury and crush syndrome • Compartment syndrome 	5
21.	<p>Chest trauma</p> <ul style="list-style-type: none"> • Identification of life threatening injuries • Airway obstruction • Open pneumothorax • Tension pneumothorax • Flail chest • Cardiac tamponade • Massive hemothorax • Significance of subcutaneous emphysema 	5
22.	<p>Abdominal and pelvic trauma:</p> <ul style="list-style-type: none"> • Anatomy of abdomen • Solid organ in abdominal cavity • Blunt trauma abdomen • Penetrating trauma • Short term management • Pelvic # and associated injury 	5
23.	<p>Mass Casualty</p> <ul style="list-style-type: none"> • Mass Casualty event • Mass Casualty incident 	5
24.	<p>Triage</p> <ul style="list-style-type: none"> • Introduction • Objectives • Level of triage • Goal of triage • Function of triage 	5
25.	Common surgical instrument	5
	Total	50

SUBJECT 3: OBSTETRICS & GYNAECOLOGY
TOTAL INSTRUCTION HOURS: 55

THEORY:

S.No.	Subject	Teaching Hours
1.	Anatomy and Physiology of female reproductive tract • Reproductive organs & their functioning	1
2.	Normal Pregnancy • Diagnosis of pregnancy • Examination of pregnant woman	1
3.	Normal Labor and its stages • Onset and three stages of labor • Conduct of Delivery • Steps of conduct of normal delivery • Video presentation on conduct of normal delivery • Preterm labor and Premature Rupture of Membranes (PROM) • Special consideration. How the management differs from Normal labor	2
4.	Neonatal Resuscitation	1
5.	Bleeding during pregnancy - • Abortions • Abruptio placenta • Rupture Uterus	1
6.	Management of delivered women • Care of mother and new born baby • Post Partum Hemorrhage	1
7.	Genital Tract Trauma • Types of injury • Management	1
	Total	8

PRACTICAL:

S. No.	Subject	Teaching Hours
8.	Identification of Organs of Female Reproductive Tract on ZOES model and specimens	2
9.	OPD Posting • Examination of non pregnant and pregnant woman	6
10.	Labor Room Posting • Demonstration of labor kit • Demonstration of Normal Delivery in labor room • Observe & Assist normal delivery - 5 in no	18
11.	Gynae Emergency Posting • Abortions • Obstetrical Emergencies • Genital Tract Trauma • Sexual Assault cases • Obstetrical shock • Ethics, Medico legal issues	18
12.	Practical Skill Assessment • The student must demonstrate the ability to perform a comprehensive assessment on Obstetric patients.	3
	Total	47

