GOVERNMENT OF TAMIL NADU
NATIONAL HEALTH MISSION – TAMIL NADU, CHENNAI –6.

From

Dr Darez Ahamed I.A.S
Mission Director & Commissioner of Trauma Care,National Health Mission
359, Anna Salai, Teynampet,
Chennai-6.

To

1. The Directorate of Medical Education Kilpauk, Chennai
2. The Directorate of Medical and Rural Health Services, Chennai

Lr NO: 51815 /NHM/TAEI/2019 Date: 12.03.2019

Sub: National Health Mission (NHM) -TN - Tamil Nadu Accident & Emergency Care Initiative (TAEI) – Communication of all TAEI protocols finalized on the meeting with experts committee on 20.12.2018 - Reg.

Ref. 1. Minutes of meeting with expert committee on 20.12.2018

******

As per the reference cited above, a meeting was held with expert committee and the following were finalized:

1. TAEI Operational Cost guidelines : For utilising the funds released to operationalize TAEI ED in the hospitals.
2. TAEI ER Checklist: For setting up of Emergency Department as per the TAEI Standards.
3. TAEI Case sheet to be used in all Emergency Rooms.
4. TAEI Paediatric Case Sheet in case of paediatric cases in Emergency Room.
5. TAEI Referral Guidelines: to provide minimal care required for resuscitation and stabilisation of casualties within the golden hour before referral out to higher centers.

Now, the Directorate of Medical Education (DME) and Directorate of Medical and Rural Health Services (DMRHS) are requested to communicate to all TAEI centers (list enclosed) and ensure the hospitals use the finalized guidelines.

CC to:

1. The Deans
2. Joint Director of Health Services
3. The Hospital Superintendents

15/03/2019

For Mission Director

Minutes of Meeting

The meeting with expert committee to finalise the TAEI guidelines and protocols was scheduled on 20.12.2018 in 5th Floor Conference Hall between 11am to 2pm. The Agenda of the meeting is as follows:

(1) TAEI Operational Cost Guidelines .
(2) TAEI ER check list.
(3) TAEI Drug list
(4) Referral Protocols.
(5) ER Design for Level 1, 2, 3 Centers.
(6) ED sign boards and Registers.
(7) Pediatric Triage form, Case sheet and Protocol.
(8) ED performance indicators.
(9) Standing orders for Nurses.
(10) Clinical roles and responsibility of ED team members.

The following officials attended the meeting:

TAEI Centres:

(1) Prof. Singara vadivelu, HTNO, RGGGH
(2) Prof . Indhumathi Santhanam, HTNO, ICH
(3) Prof. Srikanth, HTNO, Government Vellore Medical College Hospital
(4) Dr. Palanivel, HTNO, Tambaram Government Hospital
(5) Dr. Ajay Karthik, HTNO, Thiruvallur.
(6) Dr. Rajesh, CMO, RGGGH.
(7) Mrs. Sulochana, Matron, Government Vellore Medical College Hospital
(8) Mrs. Rosilda, Matron, KMC

EMRI

(1) Dr. Sivagurunathan, EMLC, Head

DMS

1. Dr. Ashok, DMS Nodal Officer NQUAS

Following are the recommendations and inputs recorded from the meeting:

SN	Agenda	Recommendations	Given by
1.	TAEI Operational Cost Guidelines	A. In the TAEI committee at the hospital level Nursing superintendent, AO/JAO/OS has been added B. The outsourcing of HR in operational cost was removed as these funds are predominantly to spend on consumables to set up full fledged ED. C. TNMSC rate contract equipment can	

		be directly procured by hospital if otherwise not available D. Travel expenses for attending State and national conferences related to TAEI E. ED uniform for Clinical Support Staff (CT/MRI/OT/POP tech) and non-clinical support staff (MNA/FNA/HW) was finalized. F. Discussions regarding Uniform for EMO was suggested, but was left to the discretion of Medical Colleges to adopt.	
2	TAEI ER Checklist	ER Consumables: 1. Thomas splints of different adult and paeds sizes 2. Tracheostomy set 3. Disaster Cupboards 4. Paediatric Bain circuit ER Equipments: 5. Non invasive ventilators 6. ABG 7. Stretcher weighing scale 8. Stroke bed 9. Resuscitation Trolley 10. Central oxygen/suction/gases 11. Hand held doppler 12. Finger pulsoxymeter ED Drug list: Removed Inj Pipperacilin, Urokinase Added cephataxim DDA to be followed wherever necessary Safety: 1. Fire exit 2. Fire extinguisher 3. Disable friendly access to ED 4. Biomedical waste management To consolidate the ER checklist with NQUAS norms such that it is acceptable in NQUAS accredited hospitals.	
3	TAEI Case sheets	TAEI case sheets is extensive. It was decided to only use TAEI case sheet in ED at Red and yellow areas. In Green zone to use existing hospital sheets/ slips Triage form to be designed and circulated to TAEI ED as it is mandatory to have a checklist kind of a triage form which will be used at the Triage area of ED. The Traige form to be with Triage nurse at the Triage desk.	

		Traige form to be designed by Dec 31st 2018. **Paediatric:** The Case sheet designed and given by Dr. Indhumathi to be adopted by TAEI for paeds cases. The first sheet to be modified as per TAEI standard design by Dec 31st 2018 Paeds Protocols : Finalized and given by Dr. Indhumathi Need to display as per TAEI standards in every ED.	
4	TAEI Registers	Out gate register PAI register Triage register OP/ IP register Referral out / Admission/ Discharge / Handing over Register Procedure Note book	
5	Referral Guidelines	Referral guidelines (what minimal care to be given at treating facility before referral) It was a very challenging topic Points to consider 1. This referral guideline should have legal / punitive implications, only then Govt. Doctors and nurses will work up to what is expected of them Cemonc strengthening happened this way Periodic TAEI referral audits to be conducted Rather than explaining condition wise referral guidelines it was uniformly decided to go by the ABCD protocol of resuscitation that has to be done mandatorily at any TAEI ED without which patient should not be referred out. It was also decided to jot down l red flags for issues to be focused apart from ABCD's, pillar wise considerations to be added. The Basic Referral Guideline has been drafted by TAEI team, Specific Interventions addressing Cardiac, Neuro, Pediatric, Ortho, Medical and Surgical emergencies will be given by concerned State Nodal officers.	

6	ED performance indicators.	5 star rating has been designed Performance indicators elaborated Need to check with NQUAS indicators also	
7	Clinical roles and responsibility of ED team members.	Need to formulate the clinical roles and responsibility of ED team members by Dec 31st 2018	
8	ER Design for Level 1,2,3	Need to finalise with EE Venkatesan by Dec 31st 2018	

For Mission Director

TAEI OPERATIONAL COSTGUIDELINES:

The Tamil Nadu Accident and Emergency Care Initiative proposes to provide operational cost to the TAEI center's. The following are the Operational Cost guidelines for incurring expenditure under Operational cost:

1. Formation of the Committee with a Nodal Officer for each of these Institutions under TAEI.

   A committee shall be formed with a nodal officer (Hospital Trauma Nodal Officer) with the following members

Sl. No.	Composition	Medical Colleges	Government Hospitals
1	Chairman	Dean	Hospital Superintendent/ CMO
2	Member Secretary	Hospital Trauma Nodal Officer (HTNO)	Hospital Trauma Nodal Officer (HTNO)
3	Member	Hospital Superintendent	Resident Medical Officer
4	Member	Nursing Superintendent / Trauma Nurse Co-ordinator (TNC)	Nursing Superintendent / Trauma Nurse Co-ordinator (TNC)
5	Member	Administrative Officer (AO)/ JAO) (Any one member)	Administrative Officer (AO)/ JAO / OS (Any one member)

- The fund for the TAEI operational Cost to be maintained in Savings Bank in any one of the nationalized banks as a joint account operated by Sl.No.1 &2 as mentioned above.Further the relevant records have to be maintained in the office following codal procedures as followed for other accounts.

- In case there is no separate Bank Account for TAEI ER activities , a new Savings Bank account shall be opened in a Nationalised bank with the head of institution and HTNO as joint account holders (TAEI Account),
- This Operational cost duly approved by the committee has to be incurred as per codal procedures and following Tamil Nadu Tender Transparency Act, wherever necessary.
- In any extraordinary emergency circumstances, funds may be spent and necessary ratification may be obtained in the following committee meeting.
- Necessary Utilisation Certificate and Statement of Expenditure has to be furnished to the Office on periodic interval.

2. **The Committee can decide to spend the operational cost funds(Untied funds) for the following items of expenditures:**

To procure:

1. Stationery
2. Printing of TAEI Case sheets , forms & Registers
3. Colour Coding of ER
4. Designing and making/ printing of:
5. Signage
6. Floor markings
7. Foot markings around resuscitation Bay
8. Display boards
9. TAEI protocols (Enclosed in Annexure)
10. TAEI Badges & Stickers
11. IEC materials,
12. Procurement of Crash cart consumables (list attached),
13. Minor instruments & Emergency Drugs if not available in TNMSC
14. Expenses for TAEI meetings , critical case reviews
15. Fuel for generators
16. Annual maintenance contract for emergency equipments if not available in M& R

17. Minor Repairs/ works done through PWD within the powers of the Head of the Institution/ other society norms.
18. Curtains,
19. Bed sheets for red , Yellow and Green zones with TAEI logo printed
20. To meet the need of Capacity building / Training at periodic intervals judicially with Government organisations.
21. Necessary furnitures through TANSI or Kadhi Board or Tamil Nadu Industrial Co-operative Coir Mattresses Products Ltd. for Beds Panayakottai, Thanjavur District duly following Codal procedures
22. Any other materials not available in TNMSC but as per rate contract.
23. Travel expenses for attending State level and National level meetings and workshops in official capacities related to TAEI as per Tamil Nadu Travel Allowances (TNTA) Rules.
24. Telephone and Data charges for Pre-arrival Intimation (PAI) phone as per the local need.
25. TAEI Uniform for Staff and Support Staff working in ED.(List furnished in the Annexure)

ANNEXURE

TAEI Nurses ED Uniform Guidelines

As part of branding of the TAEI centers it is considered important to give a standard uniform for the nurses in the ED. It is mandatory for all the nurses working in the ED (Casualty/ zero delay/ Triage/ Red Yellow , Green areas) to be in the TAEI uniform in all the shifts.

The Dean, the Joint director of Health services and HTNO are requested to co-ordinate in this regard and get two sets of Uniforms per staff to be stitched and issued as per the guidelines furnished below:

This cost may be met from the TAEI operational cost.

TAEI Uniform Guidelines:

Female Nurses

Uniform Type	1. Pants and Shirt model 2. Half sleeved Shirt with Round Collar and thin White piping (Sleeve, Collar, Pocket mouth) 3. Pyjamas with Nada 4. Cover Patti, side open, Liberty cut 5. 2 Pockets below
Logo	TAEI logo to be printed in the left side (chest) of the Shirt 3.5 * 3.5 cms
Colour	Royal Blue
No.of sets per staff	2
Cap	
Shoes and Socks	White cut shoes and Two sets of white socks

Male Nurses

Uniform Type	1. Pants and Shirt 2. Regular Collar 3. Outside Patty 4. Liberty cut 5. Piping in collar and sleeve 6. Pants -One back pocket , 2 cross pockets
Logo	TAEI logo to be printed in the left side (chest) 3.5 * 3.5 cms.
Colour	White shirt and Black Pants Black Shoulder Flap (buttons)
No. of sets per staff	2
Shoes	Black Shoes and two sets of Black socks
Belt	Black

The Uniforms (Scubs) for Emergency Medical Officer's may be finalised based on the discretion of Hospitals

TAEI Support Staff

Non Clinical

Uniform Type	1. Pants and Shirt model 2. Half sleeved Shirt with Round Collar and thin White piping (Sleeve, Collar, Pocket mouth) 3. Pyjamas with Nada 4. Cover Patti, side open, Liberty cut 5. 2 Pockets below
Logo	TAEI logo to be printed in the left side (chest) 3.5 * 3.5 cms.
Colour	Apple Green
Fabric	Cotton Fabric
No.of sets per staff	2
Cap	
Shoes and Socks	White cut shoes and two sets of white socks

Male Non Clinical Staff

Uniform Type	1. Pants and Shirt 2. Regular Collar 3. Outside Patty 4. Liberty cut 5. Piping in collar and sleeve 6. Pants -One back pocket , 2 cross pockets
Logo	TAEI logo to be printed in the left side (chest) 3.5 * 3.5 cms.

Colour	Apple Green
Fabric	Cotton Fabric
No.of sets per staff	2
Shoes	Black Shoes and two sets of Black socks
Belt	Black

TAEI Uniform Guidelines:

Clinical Support Staff

Uniform Type	White Overcoat with TAEI Logo to be printed in the left side (chest) 3.5 * 3.5 cms with Designation printed. Name Board/ Badge printed. CT Technician / X ray Technician / POP Technician / OT Assistant / Paramedic written at the back.
No.of sets per staff	2
Shoes and Socks	White shoes and two sets of white socks

The TAEI center's should provide the utilisation certificates for the TAEI operational cost on a periodic basis.

TAEI ER List

SN	CRASH CART LIST
	Draw 1
1	Adult laryngoscope
2	Paed laryngoscope
3	1,2,3,4 curved blade
4	1,2 straight blade
5	Battery (Additional)
6	Bougie
7	Suction catheter with all sizes ET tube (4,4.5,5,5.5,6,6.5,7,7.5,8 No)
8	Paediatric ET size (2.5-5.5)
9	Stylet (10,14)
10	Tie and Elastoplast
11	Torch with Batteries
12	Magills forceps
13	Oro pharyngeal airway
14	Nasopharngeal airway 6,7
	Draw 2
15	ECG leads 3
16	ECG Jelly, Lignocaine Jelly
17	Sterillium Hand sanitiser
18	Bag Valve Masks (BVM) in Adult, Child, & Infant Sizes Equipped with Operable Pressure Relief Valves and Transparent Masks, with Oxygen Reservoir/Accumulator.
19	The Pediatric BVM Shall Have Masks for Neonate, Infant, and Child.
20	Single Use, Transparent, Non-Rebreather Oxygen Masks in Adult and Pediatric Sizes Nasal Cannulae in Adult and Pediatric Sizes LMA (various sizes)
21	Paediatric Bain Circuit
22	Ryles Tube (12,14,16,18,22)
	Draw 3 - Drugs
22	Adrenalin 5 amps
23	Atropine 5 amps
24	Adenosin 5 amps
25	Amiodaron 6 amp

26 Dopamine 2 amp
27 Scoline(store in fridge)
Antidotes medicine kit
Other Drugs
Draw 4
28 ABG syringe 2
29 16-22 G Needle Venflan (All Sizes- 5 No's each)
30 IV set (Micro & Macro set)
Blood IV set
31 Micropore
32 3 way Adapter
33 Needles
34 Syringe 50 cc
35 Syringe 2cc, 5cc, 10cc
Draw 5
36 5% dextrose
37 RL
38 NS (0.9%, 0.45%)
DNS
Hemocele
39 Intraosseous Needle – 5
PPE -Personal Protection
40 Goggles
41 Surgical Masks

42 Disposable Synthetic Gloves for all Attendants (6.5, 7, 7.5,8)

43 Disposable Biohazard Bags For Non-Sharp Waste

44 Standard Sharps Container Both Fixed and Portable
Disinfectant For Solution for Cleaning Contaminated Equipment
45 Hypochlorite solution

46 Waterless Hand Cleaner, Commercial Antimicrobial (Towelette, Spray, or Liquid)
Plastic Aprons or Fluid Resistant Gowns
Washable full gowns
47 Plaster Of Paris (POP)

Immobilsation devices

Philadelphia Collar/ C collar

Rigid Cervical Immobilization Devices in Appropriate -
Adult,
Child, and
48 Infant Sizes

Head Immobilization Device (NOT SANDBAGS) –
Firm Padding OR
49 Commercially Available Device

50 Upper and Lower Extremity Immobilization Device(s):

Lower Extremity Traction Splint in Appropriate- Thomas Splint
Adult and
51 Child Sizes
52 Broad arm slings
53 Triangular slings
54 Roller gauze
55 Splints
56 Pelvic Binder

Rapid Infusion Catheter (8.5Fr, 6.5 cm)

Pneumatic Shock Garment

ICD Kit

57 Needle Holder straight 8''
58 Kellys Clamp- curved 8"
59 Tray with Lid
60 Stainless steel cup
61 Artery forceps straight 6"
62 Artery forceps straight 8"
63 Toothed forceps
64 Gauze
65 Cotton Balls
66 Biopsy Towel
67 Scalpel Holder with blade
68 Suture scissor sharp

Chest Tube

69 TRACHEOSTOMY SET

Bleeding Control and Wound Management

- Abdominal Trauma Dressing
- Sterile Gauze in Various Sizes
- Gauze Rolls in Assorted Sizes
- Triangular Bandages
- Occlusive Dressings or Equivalent

- Sterile Water or Saline Solutions for Irrigation
- Arterial Tourniquet

- Sterile Burn Sheets or Medical Director Approved Burn Care Supplies
- Adhesive Tape
- 1” & 2” Hypoallergenic
- 1” & 2” Adhesive

Patient Assessment/Diagnostic Measurements

- Stethoscope in Sizes to Accommodate all Patients
  - Paediatric
  - Adult
  - Infant

- Blood Pressure Cuffs in Sizes to Accommodate all Patients
  - Paediatric
  - Adult
  - Infant
- Thermometer(s)
  - Oral thermometer
  - Rectal thermometer
  - Biohazard thermometer

- Scissors for Cutting Clothing, Belts, and Boots
- Broselows Tape
- Pulse Oximeter with
  - Adult and
  - Pediatric Probes

Additional Equipment –

- Glucometer with Reagent Strips and Single-Use Lancets

99 CPAP Equipment
100 Nebulizer Equipment

101 Equipment to Capture Out-Of-Hospital 12 Lead

102 Advanced Airway (Non-Visualized Approved by Title 172 NAC 11)

103 If Monitoring IV Solutions, Intravenous Fluid Bag Pole or Roof Hook

Miscellaneous Equipment

104 Device Capable for Pediatric Immobilization
105 Ocular Irrigation Device
106 Hot Pack(s)
107 Cold Pack(s)
108 Emesis Bags/Basin
109 Urinal
110 Bedpan

STOCK

111 Blankets

112 Sheets – At Least One Change Per Cot
113 Pillows
114 Towels
115 Step Stool for CPR

116 Oro-gastric lavage tube (Boas tube)
117 Foleys Catheter
118 Uro Bag
119 Knee Hammer
120 Cheatles Forceps
121 Catheterisation Tray
122 Central Venous Lines Tray
123 Fetal Scope
124 Hair Trimmer
125 Weight and Height Machine
126 Portable Oxygen Cylinder
127 Nail Cutter
128 Razor set and Electric Trimmer
129 Ophthalmoscope
130 Colour Coded (Biomedical Waste Mangement)

131 Finger Pulsoxymeter
132 Tracheostomy set
133 Hand held Doppler
134 Disaster Cupboards
135 Fire extinguisher & Fire exit

SS bins and trays autoclaved to be provided

Emergency Drugs List

II	DRUGS in ER
1	Ns -500ml
2	Rl-500ml
3	D25%
4	Inj Atropine
5	Inj Adrenaline
6	Inj Amiodarone
7	Inj Soda Bicarb
8	Inj Midazolam
9	Inj Adenosine
10	Inj Dopamine
11	Inj Dobutamine
12	Digoxin
13	Diltiazem
14	Heparin
15	Inj Mgso4
16	Inj Lasix
17	Inj Vasopressin
18	Beta Blockers
19	Calcium Channel Blockers
20	Inj Kcl
21	Inj Ca Gluconate
22	Inj Lidocaine
23	Inj Lorazepam
24	Barbiturates
25	Benzodiazepine
26	Sterile Water
27	Carbamazipine
28	Calcitonin
29	Scoline (To store in fridge)
30	Antisnake Venom(ASV)
31	Activated Charcoal
32	N-acetyl Cysteine
33	Nalaxone
34	Inj Ntg
35	Tetanus Toxoid
36	Inj. Tramadol
37	Inj. Paracetamol 1G- Iv
38	Paracetamol Suppository

39	Fentanyl
40	Ketamine
41	Anti Rabies Vaccine
42	Inj.Vit. K
43	Nor Adrenaline
44	Hydrocortisone
45	Pheniramine Maleate
46	Inj Avil
47	Inj Diazepam
48	Inj. Dexamethasone
49	Inj Morphine
50	Inj Largactil
51	Inj Mannitol
52	Inj Phenargan
53	Inj Insulin
54	Inj Ranitidine
55	Inj Dilantin
56	Inj Tranexamic Acid
57	Inj Pantoprazole
58	Inj Haloperidol
57	Inj. Ondensetron
58	Inj Aminophylline
59	Inj Glycerl Tri Nitrate (GTN)
60	Inj. Cephatoxim
61	Inj. Quinine
62	Inj Streptokkinase
63	Dulcolax Suppository
64	

- DDA to be followed wherever necessary

Records to be maintained:

Registers/Records Maintained

S.No	Name Of The Register	Key Information Recorded In The Register	Frequency Of Updating	Name of Person Responsible	Name of Supervisor
1	Out Gate Register		Immediate	Outsourced security personnel	
2	Pre- Arrival Intimation Register		Immediate	Trauma Nurse Co-ordinator on duty	
3	Triage Register (All case attending ED to be registered) / OP Register		Immediate	Triage Nurse	
4	TAEI IP Register - Patient admission/ Transfer out/ referral out / Discharge		Immediate	Staff Nurse	
5	TAEI ER Procedure Register (all the diagnostic & investigation results, Blood transfusion)		Immediate	Staff Nurse Counter signed by Emergency Medical Officer & Blood Bank Nodal Officer	
6	Handing over & taking over Note Book (Doctors and Nurses)		Shift Hand Over	Staff Nurse	
7	Stock and indent registers for medicines and consumables		Weekly	Pharmacist	
8	Memo Register		Weekly		
9	Other routine registers		Based on Need		

Pre- Arrival Intimation Register: By Trauma Nurse Co-ordiantor on duty.

SN	Name	Age	Sex	Date of PAI	Time of PAI	Diagnosis	No.of cases transferred	Scene case/ IFT	Mode of Injury	Injury type	Call out protocol Code Blue	Triage criteria	From which Hospital	To which Hospital	Time received in ED

OUT GATE REGISTER:- By the Security Guard at the Out Gate

Date & Time	Name Age Sex	Address	Referral slip issued by Doctor or not	Taken out by 108 Ambulance or Private	If Private 1. Name of the Private Ambulance 2. Registration Number	To which Hospital transported to Government / Private	If Private Name of the Hospital

Emergency Room Check List

S.No.	Activities	Status	Remarks
		Yes/No	
	1.OUTSIDE EMERGENCY DEPARTMENT		
1	Signage in the city on main roads to inform the Location of TAEI Center		
2	TAEI Boards & Signage on the boundary wall of the hospital		
3	TAEI – ED One way entry and exit to emergency-with Exit/entrance signage Boards		
	Disable friendly Access to ED		
4	Adequate lighting along the boundary wall and at entry and exit of the TAEI ED		
5	Safe drinking water Port near main exit of the TAEI ED		
6	Designated Ambulance Bay		
7	Parking facility for:		
	(a) Ambulance		
	(b) Staff Vehicles		
	(c) Public Vehicles		
	(d) Clear "no parking zone" outside emergency area to ensure smooth inflow of traffic for bringing and taking emergency cases		
8	Signage for Stretchers, Trolley and wheel chair Bay.		
9	How many:		
	(a) Wheelchairs		
	(b) Trolleys		
	(c) Stretchers (How many have safety belts)		
10	Security staff to manage the entrance of the hospital and parking facility and other vital areas (in all 3 shifts)		
11	Helpers / attendant to provide wheelchairs and trolleys (May I Help You Staff.) at entrance		
12	Washing Area for Trolleys and Wheelchairs		
13	Patient waiting area		
14	Canteen / Food zone		

S.No.	Activities	Status	Remarks
		Yes/No	
	1.INSIDE EMERGENCY DEPARTMENT		
1	ER Floor Marking showing location of emergency services eg. Red , Yellow , Green zone and other marking like Pharmacy, Injection Room, Lab , ECG , minor OT etc.,		
2	TAEI One Stop Crisis Management Room		
3	Police Out Post		
4	**Has the ER been Re-organized ?**		
5	**TAEI - Triage Area**		
(A)	PA System		
(B)	Triage Forms available		
	No.of Traige forms used till now		
	Is there adequate stock of TAEI Triage forms		
(C)	TAEI Triage Board		
(D)	Stethoscope in Sizes to Accommodate all Patients		
	Infant , Paediatric & Adult		
(E)	Blood Pressure Cuffs in Sizes to Accommodate all Patients		
	Infant , Paediatric & Adult		
(F)	Patient Care Flashlights		
(G)	Thermometer(s) with Low Temperature Capability		
	Oral Thermometer		
	Rectal Thermometer		
	Digital Thermometer		
	Biohazard Thermometer		
(H)	Scissors for Cutting Clothing, Belts, and Boots		
(I)	Broselows Tape		
(J)	Pulse Oximeter with		
	Adult and Pediatric probes		
(K)	Glucometer with Reagent strips and single use lancets		

(L)	Multi-paramonitor with Pulse oximeter		
(M)	Scoop Boards/ Spine Board with Head Rest and Belt(7)		
(N)	Sharps Container		
(O)	Triage Registers		
(P)	TAEI App Board - Daily data displayed		
5	**TAEI - Red Zone**		
(A)	No. of beds Available		
(B)	PA (Public Address) System		
(C)	One TAEI Mobile phone for PAI		
(D)	Alarm System (CART)		
(E)	How many ER Resuscitation Bay available (1 ER Resuscitation Bay for 400 IP)		
(F)	Does it have Foot markings around the hydraulic ER resuscitation trolley		
(G)	Adequate Illumination - 400 Lux		
(H)	Hand washing area with:		
	Elbow tap and Mirror		
(I)	Blood Pressure Cuffs in Sizes to Accommodate all Patients		
(J)	Infant , Paediatric & Adult		
(K)	Patient Care Flashlights		
(L)	Thermometer(s) with Low Temperature Capability		
(M)	Oral Thermometer		
(N)	Rectal Thermometer		
(O)	Digital Thermometer		
(P)	Biohazard Thermometer		
(Q)	Pulse Oximeter with		
(R)	Adult and Pediatric probes		
(S)	Glucometer with Reagent strips and single use lancets		
(T)	Multi-paramonitor with Pulse oximeter		
(U)	Scoop Boards		
(V)	Sharps Container		
(W)	Biomedical Waste Management		

(X)	List of PAI Phone numbers displayed		
(Y)	List of TAEI Team members with Phone numbers displayed		
(Z)	TAEI Protocol Display Boards		
6	**TAEI - Yellow Zone**		
(A)	No.of Beds in Yellow zone		
(B)	Hand washing area with:		
	Elbow tap and Mirror		
(C)	Blood Pressure Cuffs in Sizes to Accommodate all Patients		
	Infant , Paediatric & Adult		
(D)	Patient Care Flashlights		
(E)	Thermometer(s) with Low Temperature Capability		
	Oral Thermometer		
	Rectal Thermometer		
	Digital Thermometer		
	Biohazard Thermometer		
(F)	Pulse Oximeter with		
	Adult and Pediatric probes		
(G)	Glucometer with Reagent strips and single use lancets		
(H)	Multi-paramonitor with Pulse oximeter		
(I)	Scoop Boards		
(J)	Sharps Container		
(K)	Biomedical Waste Management		
(L)	List of PAI Phone numbers displayed		
(M)	List of TAEI Team members with Phone numbers displayed		
(N)	TAEI Protocol Display Boards		
7	**TAEI Green Zone**		
(A)	No.of Beds in Yellow zone		
(B)	Hand washing area with:		
	Elbow tap and Mirror		
(C)	Blood Pressure Cuffs in Sizes to Accommodate all Patients		
	Infant , Paediatric & Adult		

(D)	Patient Care Flashlights		
(E)	Thermometer(s) with Low Temperature Capability		
	Oral Thermometer		
	Rectal Thermometer		
	Digital Thermometer		
	Biohazard Thermometer		
(F)	Pulse Oximeter with		
	Adult and Pediatric probes		
(G)	Glucometer with Reagent strips and single use lancets		
(H)	Multi-paramonitor with Pulse oximeter		
(I)	Scoop Boards		
(J)	Sharps Container		
(K)	Biomedical Waste Management		
(L)	List of PAI Phone numbers displayed		
(M)	List of TAEI Team members with Phone numbers displayed		
(N)	TAEI Protocol Display Boards		
8	Decontamination Bay with Shower		
9	Mass Casualty Area with Disaster Cupboards		
10	Doctors Consultation room		
11	Nurses Station		
12	Counseling Room		
13	EOT		
14	POP Room / Minor Procedure Room		
15	Mobile Xray		
16	CT Scan		
17	MRI Scan		

18	Permanent Oxygen Unit, Placed in a Permanent Mounting, with a Minimum Capacity of 1500 Liters and Equipped with a Reduction Gauge and Flow Meter Equipped with Reduction Gage and Flow Meter		
19	Portable Oxygen Unit, with a Minimum Capacity of 300 Liters, Capable of Delivering Oxygen Flows of at Least 15 Liters per Minute and Equipped with a Yoke, Pressure Gage, and Flow Meter.		
20	Spare Portable Oxygen Tank of at Least 300 Liter Capacity		
21	**Scroll outside /LCD display Name and Phone No.**		
(A)	Doctor on duty (EMO 1&2)		
(B)	Specialist on call and second on call of each specialty		
(C)	In charge of ED Department		
(D)	RMO, DTNO, HTNO		
(E)	In charge of Transport/108 Ambulance		
(F)	Help line Hearse & Red Cross Number		
(G)	Help line Women Cell (Rape Victims/Violence against Women etc		
(H)	Tertiary care centre (nearest to the Hospital)		
(I)	Available range of services in TAEI ED		
(J)	Matron of Hospital		
(K)	DTNC		
(L)	TNC on duty		
(M)	TAEI Nurses on duty		
(N)	MNA		
(O)	FNA		
(P)	OT		
(Q)	POP tech		
(R)	Sanitary Workers		
(S)	Security Guard on duty		

22	**TAEI Equipment**	**RED**	**YELLOW**	**GREEN**
	AED/ Defibrillator			
	Central Oxygen Supply			
	Suction Apparatus			
	Ventilator			
	Paediatric Bain Circuit			
	E Fast			
	Multi para Monitor with Pulse oximeter set			
	Finger Pulsoxymeter			
	POCT- Machine (incl Cartridges)			
	Volume Infusion Pump			
	Syringe Infusion Pump			
	Mobile X Ray			
	Oxygen Flow Meter And Humidifier			
	ECG			
	Dressing Trolley			
	Stretchers/Multi Functional Stretcher			
	Wheel Chair			
	Spine Board and Head rest with Belt(7)			
	Scoop Board			
	IV Stand			
	Traction Splints (Hare, Sager, Thomas Ring- Adult & Pediatric sizes)			
	Crash Cart			
	- Adult			
	- Paediatric			
	Camera			
	Desktop			
	Printer			
	Flash Autoclave Machine			
	Auto Clave Machine			
	Spot Light			
	Cell Counter			
	EC Pulse (CPR Machine)			
	Video Laryngoscope			
	DDA - Dangerous Drug Act with Narcotic Register			
	Stroke Bed (stretcher weighing scale)			
	Resuscitation Trolley			
23	**CRASH CART LIST**			
	Draw 1			

	Adult laryngoscope			
	Paed laryngoscope			
	1,2,3,4 curved blade			
	1,2 straight blade			
	Additional Batteries			
	Bougie			
	Suction catheter with all size			
	ET tube (4,4.5,5,5.5,6,6.5,7,7.5,8 No – Each 2 No's)			
	Stillet (10,14)			
	Tie and Elastoplast			
	Magills forceps			
	oro pharyngeal airway			
	nasopharngeal airway 6,7			
	Tongue Depressor			
	Knee Hammer			
	Torch light – Chargable / Batteries			
	Draw 2			
	ECG leads 3			
	Lignocaine Jelly			
	Normal ECG jelly			
	Sterillium Hand sanitiser			
	Bag Valve Masks (BVM) in Adult, Child, & Infant Sizes Equipped with Operable Pressure Relief Valves and Transparent Masks, with Oxygen Reservoir/Accumulator.			
	The Pediatric BVM Masks for Neonate, Infant, and Child.			
	Single Use, Transparent, Non-Rebreather Oxygen Masks in Adult and Pediatric Sizes			
	Nasal Cannulae in Adult and Pediatric Sizes			
	Ryles Tube (12,14,16,18,22)			
	Draw 3			
	Adrenalin 5 amps			
	Atropine 5 amps			
	Adenosin 5 amps			
	Amiodaron 6 amp			
	Dopamine 2 amp			
	Scoline(store in fridge)			
	Antidotes medicine set			
	Other Drugs also			

	Draw 4			
	ABG syringe 2			
	16-22 G Needle Venflan (All sizes- 5 no's each)			
	IV set (Micro and Macro Set)			
	Blood IV set			
	Micropore			
	3 way adapter			
	Syringe 50 cc			
	Syringe 2cc, 5cc, 10cc			
	Draw 5			
	5% dextrose			
	RL			
	0.9% NS and 0.45%NS			
	3%NS			
	DNS			
	Haemocele			
	Intraosseous Needle – 5			
	PPE -Personal Protection			
	Goggles			
	Surgical Masks			
	Disposable Synthetic Gloves for all Attendants (6.5, 7, 7.5, 8.0)			
	Disposable Biohazard Bags For Non-Sharp Waste			
	Standard Sharps Container Both Fixed and Portable			
	Disinfectant Solution for Cleaning Contaminated Equipment			
	Waterless Hand Cleaner, Commercial Antimicrobial (Towelette, Spray, or Liquid)			
	Plastic Aprons-Fluid Resistant Gowns / Full Gowns washable			
	Immobilsation devices			
	Philadelphia Collar/ C collar			
	Rigid Cervical Immobilization Devices in Appropriate – Thomas Splints			
	Adult, Child, and Infant Sizes			
	Head Immobilization Device (NOT SANDBAGS) –			
	Firm Padding OR Commercially Available Device			
	Upper and Lower Extremity Immobilization Device(s):			

	Lower Extremity Traction Splint in Appropriate- Adult and Pediatric sizes			
	Broad arm slings			
	Triangular slings			
	Roller gauze			
	Pelvic Binder			
	Pneumatic Anti-shock Garment			
	Rapid Infusion Catheter (8.5 Fr, 6.5 cm)			
	Plaster of Paris (POP)			
	ICD Kit			
	Needle holder straight 8"			
	kellys Clamp -Curved 8"			
	Tray with lid			
	Stailnless Steel Cup			
	Artery Forceps Stright 6 "			
	Artery Forceps Stright 8 "			
	Toothed Forceps			
	Gauze			
	Cotton Balls			
	Biopsy Towel			
	Scalpel holder with blade			
	Suture scissor Sharp			
	Chest Tube Set			
	Tracheostomy set			
	Bleeding Control and Wound Management			
	Abdominal Trauma Dressing			
	Sterile Gauze in Various Sizes			
	Gauze Rolls in Assorted Sizes			
	Triangular Bandages			
	Occlusive Dressings or Equivalent			
	Sterile Water or Saline Solutions for Irrigation			
	Arterial Tourniquet			
	Sterile Burn Sheets or Medical Director Approved Burn Care Supplies			
	Adhesive Tape			
	1" & 2" Hypoallergenic			
	1" & 2" Adhesive			
	Additional Equipment –			
	Weight & height machine			

	Glucometer with Reagent Strips and Single-Use Lancets			
	CPAP Equipment			
	Nebulizer Equipment			
	Miscellaneous Equipment			
	Device Capable for Pediatric Immobilization			
	Ocular Irrigation Device			
	Hot Pack(s)			
	Cold Pack(s)			
	Emesis Bags/Basin			
	Urinal			
	Bedpan			
	STOCK			
	Blankets			
	Sheets – At Least One Change Per Cot			
	Pillows			
	Towels			
	Step Stool for CPR			
	Oro-Gastric Lavage tube (Boas Tube)			
	Foleys Catheter			
	Uro bags			
	Knee Hammer			
	Cheatles Forces			
	Catheterization Tray			
	Tracheostomy Tray & Set			
	Central Venous Line Tray			
	Fetal Scope			
	Hair Trimmer			
	Weight & height machine			
	Nail Cutter			
	Raizor Set			
	Ophthalmoscope			
	Hand held Doppler			
	Finger Pulsoxymeter			
	Fire Safety Norms (Fire Exit, Fire extinguisher) ** SS Bins & Trays autoclaved to be made available			

Emergency Drugs List

II	DRUGS in ER
1	Ns -500ml
2	Rl-500ml
3	D25%
4	Inj Atropine
5	Inj Adrenaline
6	Inj Amiodarone
7	Inj Soda Bicarb
8	Inj Midazolam
9	Inj Adenosine
10	Inj Dopamine
11	Inj Dobutamine
12	Digoxin
13	Diltiazem
14	Heparin
15	Inj Mgso4
16	Inj Lasix
17	Inj Vasopressin
18	Beta Blockers
19	Calcium Channel Blockers
20	Inj Kcl
21	Inj Ca Gluconate
22	Inj Lidocaine
23	Inj Lorazepam
24	Barbiturates
25	Benzodiazepine
26	Sterile Water
27	Carbamazipine
28	Calcitonin
29	Scoline (To store in fridge)
30	Antisnake Venom(ASV)
31	Activated Charcoal
32	N-acetyl Cysteine
33	Nalaxone
34	Inj Ntg
35	Tetanus Toxoid
36	Inj. Tramadol
37	Inj. Paracetamol 1G- Iv

38	Paracetamol Suppository
39	Fentanyl
40	Ketamine
41	Anti Rabies Vaccine
42	Inj.Vit. K
43	Nor Adrenaline
44	Hydrocortisone
45	Pheniramine Maleate
46	Inj Avil
47	Inj Diazepam
48	Inj. Dexamethasone
49	Inj Morphine
50	Inj Largactil
51	Inj Mannitol
52	Inj Phenargan
53	Inj Insulin
54	Inj Ranitidine
55	Inj Dilantin
56	Inj Tranexamic Acid
57	Inj Pantoprazole
58	Inj Haloperidol
57	Inj. Ondensetron
58	Inj Aminophylline
59	Inj Glycerl Tri Nitrate (GTN)
60	Inj. Cephatoxim
61	Inj. Quinine
62	Inj Streptokkinase
63	Dulcolax Suppository
64	

- DDA to be followed wherever necessary

TAEI ER List

SN	CRASH CART LIST
	Draw 1
1	Adult laryngoscope
2	Paed laryngoscope
3	1,2,3,4 curved blade
4	1,2 straight blade
5	Battery (Additional)
6	Bougie
7	Suction catheter with all sizes
	ET tube (4,4.5,5,5.5,6,6.5,7,7.5,8 No)
8	Paediatric ET size (2.5-5.5)
9	Stylet (10,14)
10	Tie and Elastoplast
11	Torch with Batteries
12	Magills forceps
13	Oro pharyngeal airway
14	Nasopharngeal airway 6,7
	Draw 2
15	ECG leads 3
16	ECG Jelly, Lignocaine Jelly
17	Sterillium Hand sanitiser
	Bag Valve Masks (BVM) in Adult, Child, & Infant Sizes Equipped with Operable Pressure Relief Valves and Transparent Masks, with Oxygen
18	Reservoir/Accumulator.
19	The Pediatric BVM Shall Have Masks for Neonate, Infant, and Child.
	Single Use, Transparent, Non-Rebreather Oxygen Masks in Adult and Pediatric
20	Sizes
	Nasal Cannulae in Adult and Pediatric Sizes
	LMA (various sizes)
21	Paediatric Bain Circuit
22	Ryles Tube (12,14,16,18,22)
	Draw 3 - Drugs
22	Adrenalin 5 amps
23	Atropine 5 amps

24 Adenosin 5 amps
25 Amiodaron 6 amp
26 Dopamine 2 amp
27 Scoline(store in fridge)
Antidotes medicine kit
Other Drugs
Draw 4
28 ABG syringe 2
29 16-22 G Needle Venflan (All Sizes- 5 No's each)
30 IV set (Micro & Macro set)
Blood IV set
31 Micropore
32 3 way Adapter
33 Needles
34 Syringe 50 cc
35 Syringe 2cc, 5cc, 10cc
Draw 5
36 5% dextrose
37 RL
38 NS (0.9%, 0.45%)
DNS
Hemocele
39 Intraosseous Needle – 5
PPE -Personal Protection
40 Goggles
41 Surgical Masks

42 Disposable Synthetic Gloves for all Attendants (6.5, 7, 7.5,8)

43 Disposable Biohazard Bags For Non-Sharp Waste

44 Standard Sharps Container Both Fixed and Portable
Disinfectant For Solution for Cleaning Contaminated Equipment
45 Hypochlorite solution

46 Waterless Hand Cleaner, Commercial Antimicrobial (Towelette, Spray, or Liquid)
Plastic Aprons or Fluid Resistant Gowns
Washable full gowns
47 POP

Immobilsation devices

Philadelphia Collar/ C collar

Rigid Cervical Immobilization Devices in Appropriate -
Adult,
Child, and
48 Infant Sizes

Head Immobilization Device (NOT SANDBAGS) –
Firm Padding OR
49 Commercially Available Device

50 Upper and Lower Extremity Immobilization Device(s):

Lower Extremity Traction Splint in Appropriate- Thomas Splint
Adult and
51 Child Sizes
52 Broad arm slings
53 Triangular slings
54 Roller gauze
55 Splints
56 Pelvic Binder

Rapid Infusion Catheter (8.5Fr, 6.5 cm)

Pneumatic Shock Garment

ICD Kit

57 Needle Holder straight 8''
58 Kellys Clamp- curved 8"
59 Tray with Lid
60 Stainless steel cup
61 Artery forceps straight 6"
62 Artery forceps straight 8"
63 Toothed forceps
64 Gauze
65 Cotton Balls
66 Biopsy Towel
67 Scalpel Holder with blade
68 Suture scissor sharp

Chest Tube

69 TRACHEOSTOMY SET

Bleeding Control and Wound Management

70 Abdominal Trauma Dressing
71 Sterile Gauze in Various Sizes
72 Gauze Rolls in Assorted Sizes
73 Triangular Bandages
74 Occlusive Dressings or Equivalent

75 Sterile Water or Saline Solutions for Irrigation
76 Arterial Tourniquet

77 Sterile Burn Sheets or Medical Director Approved Burn Care Supplies
78 Adhesive Tape
79 1" & 2" Hypoallergenic
80 1" & 2" Adhesive

Patient Assessment/Diagnostic Measurements

81 Stethoscope in Sizes to Accommodate all Patients
82 - Paediatric
83 - Adult
84 - Infant

85 Blood Pressure Cuffs in Sizes to Accommodate all Patients
86 - Paediatric
87 - Adult
88 - Infant
89 Thermometer(s)
90 - Oral thermometer
91 - Rectal thermometer
92 - Biohazard thermometer

93 Scissors for Cutting Clothing, Belts, and Boots
94 Broselows Tape
95 Pulse Oximeter with
96 - Adult and
97 - Pediatric Probes

Additional Equipment –

98 Glucometer with Reagent Strips and Single-Use Lancets

99 CPAP Equipment
100 Nebulizer Equipment

101 Equipment to Capture Out-Of-Hospital 12 Lead

102 Advanced Airway (Non-Visualized Approved by Title 172 NAC 11)

103 If Monitoring IV Solutions, Intravenous Fluid Bag Pole or Roof Hook

Miscellaneous Equipment

104 Device Capable for Pediatric Immobilization
105 Ocular Irrigation Device
106 Hot Pack(s)
107 Cold Pack(s)
108 Emesis Bags/Basin
109 Urinal
110 Bedpan

STOCK

111 Blankets

112 Sheets – At Least One Change Per Cot
113 Pillows
114 Towels
115 Step Stool for CPR

116 Oro-gastric lavage tube (Boas tube)
117 Foleys Catheter
118 Uro Bag
119 Knee Hammer
120 Cheatles Forceps
121 Catheterisation Tray
122 Central Venous Lines Tray
123 Fetal Scope
124 Hair Trimmer
125 Weight and Height Machine
126 Portable Oxygen Cylinder
127 Nail Cutter
128 Razor set and Electric Trimmer
129 Ophthalmoscope
130 Colour Coded (Biomedical Waste Mangement)

131 Finger Pulsoxymeter
132 Tracheostomy set
133 Hand held Doppler
134 Disaster Cupboards
135 Fire extinguisher & Fire exit

SS bins and trays autoclaved to be provided

Government of Tamilnadu ★ Department of Health and Family Welfare

Tamilnadu Accident and Emergency Care Initiative (TAEI)

Name : _____

Age : _____ Gender : _____

IP No : _____

PIN : _____

TAEI No : _____

Aadhar No : _____

Mobile No : _____

Patient Address : _____

_____

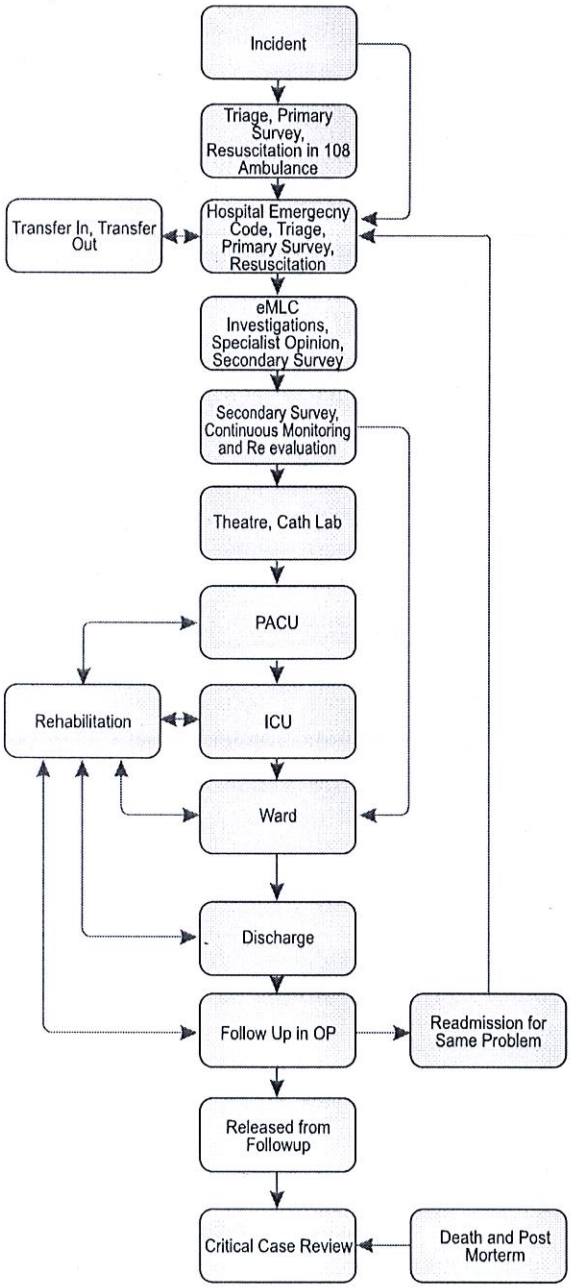
_____

_____

_____

Relative Name & Mobile No. : _____

_____



Provisional Diagnosis

_____

_____

_____

Final Diagnosis

_____

_____

_____

_____

ICD

GCS : _____

GOS : _____

AIS : _____

ISS : _____

MHIPS : _____

Management

_____

_____

_____

_____

Outcome

Discharged / Discharged at Request / Discharged Against Medical Advice / Left Against Medical Advice / Absconded / Expired / Brain Stem Death

On ...../...../201.... at ..... AM / PM.

Government of Tamilnadu ★ Department of Health and Family Welfare

Tamilnadu Accident and Emergency Care Initiative (TAEI)

Pre Arrival Intimation From Scene / IFT..... Hospital

PAI Call Received on __/__/201_ at __:__ AM/PM by ..... PAI Not Received / Not Applicable

Patient received on __/__/201_ at __:__ AM/PM by ..... for this patient

Triage (Refer to Criteria on Page 8)	Pulse : ____/min BP : ___ /____ mm Hg
Patient sorted into ..... Criteria on Date	SPO2 : _____ GCS : E V M
...../...../201_ at Time .....:..... by	AVPU (Alert Voice Pain Unconsciousness) Scale

Primary Survey & Resuscitation done by .....at __:__ AM/PM

		To Look for	Findings	Do as per Need
A	Airway	Airway	Airway Patent	Check cervical spine
			Airway filled with fluds or Airway obstructed	Head Tilt / Chin Lift / Jaw Thrust / OPA / NPA / Intubation / Tracheostomy
		Cervical Spine	Cervical spine stable	Check Breathing
			Cervical spine Unstable or stablity doubtful	Apply Philadelphia Collar and Check Breathing
B	Breathing and Ventilation	Breathing, SPO_2	Spontaneous Breathing	Check Circulation
			Abnormal Breathing (Type of Abnormal Breathing) No Spontaneous Breathing ?	AMBU or Ventilator Support
		Ventilation	Hemothorax ? Pneumothorax ?	Mobile, X Ray, eFast and ICD
			Cardiac Tamponade ?	Pericardiocentesis
C	Circulation, Hemorrhage control	Pulse BP	Pulse? BP ?	Peripheral Venous Access, Central Venous Access, Intra Osseous Access, Venous Cut Down, Blood Transfusion
D	Disability:	Neurological Status, Consiciousness, Focal Neurological Deficit	LOC Fits Headache ENT Bleed	CT Brain Plain
		Power, Reflexes, Sensation	Weakness, Stiffness Impared sensation Abnormal Relexes	Spine Board, X Ray Spine MRI Spine
E	Exposure :	Temperature, Poisons, Trauma	Hypothermia Hyperthermia, Poisons Hidden Injuries Pelvic Injuries	Temperature Control Washing, detoxification Pelvic Binder

Our Endeavour is to Improve the TAEI / ER Case Sheet. Please give your Suggestions, Additions, Deletions, Modifications, Clarifications, Copy Editing, Proof Reading at http://www.taeionline.com/book or mail@taeionline.com by mentioning Page Number.

Government of Tamilnadu ★ Department of Health and Family Welfare

Tamilnadu Accident and Emergency Care Initiative (TAEI)

Check List after Triage

S.No	Step	Responsibility	✓ on Completion
1.	Triage	ER Medical Officer EMO Casualty Medical Officer	
2.	Entry in Accident Register	Casualty Medical Officer	
3.	Inj TT ½ cc IM Stat	ER Staff Nurse	
4.	Starting intravenous Line	ER Staff Nurse	
5.	Intubation (GCS < 8 must be intubated)	ER Medical Officer EMO Anaesthesiologist Advanced Paramedic	
6.	Investigations	ER Staff Nurse	
7.	Injections / Tablets	ER Staff Nurse	

eFAST

Done by : _____ Time : _____

Findings : _____

_____

_____

_____

_____

Immunoglobulins

Crush Injury :

Dog Bite :

Instructions Check List

For All Patients	✓ on Completion or write NA
1. Head Shave	
2. Ryles Tube	
3. Catheter	
4. ICD	
5. EVD	
6.	
7.	
8.	
9.	
10.	

Check List for Surgery

Pre and Per Op	✓ on Completion or write NA
1. Insurance E Number	
2. Implants	
3. Consent Obtained	
4. Patient Confirmed	
5. Diagnosis Confirmed	
6. Side Confirmed	

Check List for Past History

H/o last meal			
H/o Drug Allergy			
H/o Diabetes			Modify Prescriptions
H/o Hypertension			Modify Prescriptions
H/o Asthma, COPD			Modify Prescription JUDICIOUS FLUIDS AVOID NSAID
H/o Heart Diseases			
H/o Thyroid Disorders			
H/o Alcohol / Drug Abuse			
H/o HIV / TB			
H/o HBsAg			
H/o Bleeding Disorders			
H/o Headache			Urgent CT Brain
H/o Vomiting			Urgent CT Brain
H/o Weakness			Urgent Intervention
H/o Seizures			Start Anticonvulsants
H/o Bladder Involvement			Urgent Intervention
H/o Bowel Involvement			Urgent Intervention
H/o Previous Surgeries			
H/o Long term Medical Treatment			
H/o Amenorrhea			

Investigation Check List

For All Patients	✓ on Completion or write NA
1. Urine (Dipstick)	
2. ABG	
3. CBC, Hematocrit	
4. Random Blood Sugar	
5. RFT	
6. Serum Electrolytes	
7. HIV	
8. HBsAg	
9. HCV	
10. Blood Group / Typing	
11. CT / BT	
12. PT / aPTT / INR	
13. ECG	
14. CXR PA View	
15. X Ray Skull AP, Lat	
16. X Ray C Spine	
17. X Ray Extremeties (Bilateral for Comparison)	
18. eFAST / USG	
19. ECHO	
20. CT Scan / MRI	
21. MRI	
22. Neurosurgeon Opinion	
23. Orthopaedician Opinion	
24. Anaesthesiologist Opinion	
25. General Surgeon Opinion	
26. General Physician Opinion	
27. Cardiologist Opinion	
28. Obstetrician Opinion	
29.	
30.	

Government of Tamilnadu ★ Department of Health and Family Welfare

Tamilnadu Accident and Emergency Care Initiative (TAEI)

DETAILED HISTORY

Alleged History of : RTA / TTA / Fall / Assault / _____Chest Pain / Weakness, Paralysis / Burns / Poison / Bites

On : ___/___/201__ at ___:____ AM/PM

Mode of Arrival : 108 / Private Ambulance / Public Transport / Own Vehicle / Walk in

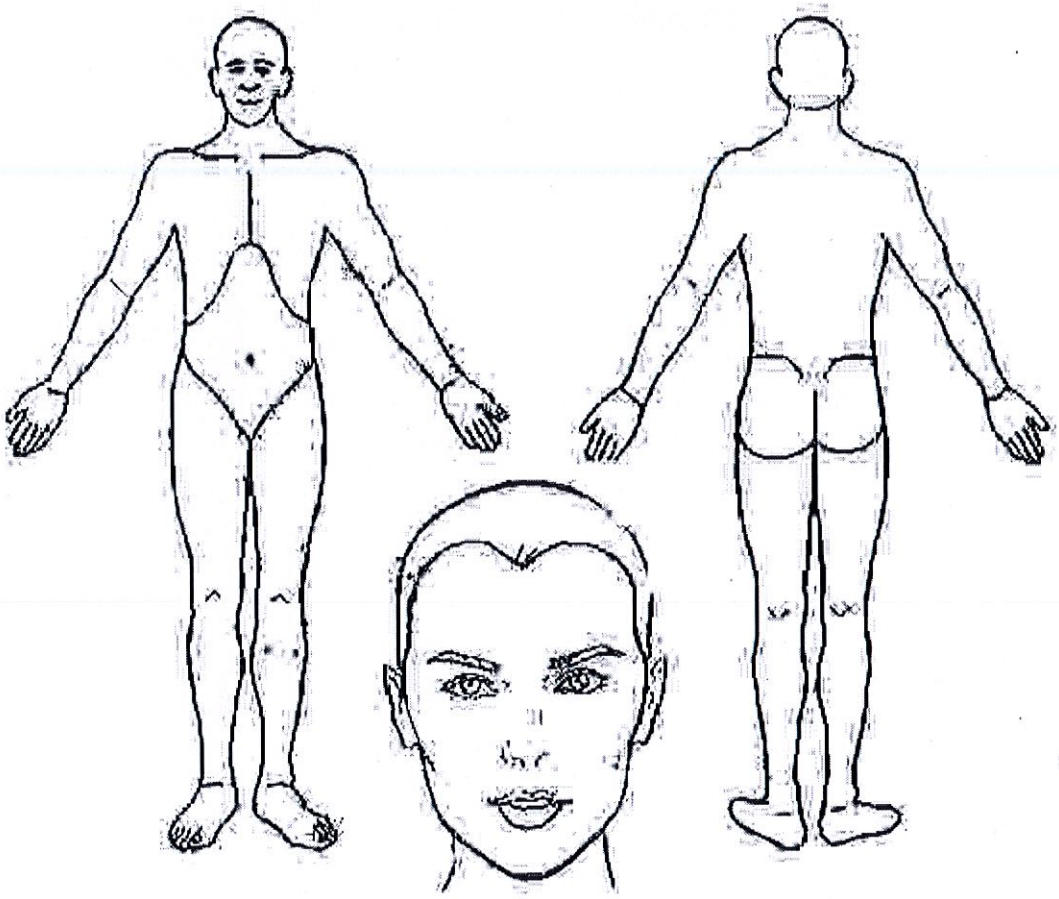
(Please write a detailed Narrative History below. In Case of RTA, Specify the Vehicles involved and whether the patient was driving. In case of Assault, specify the number of persons involved.)

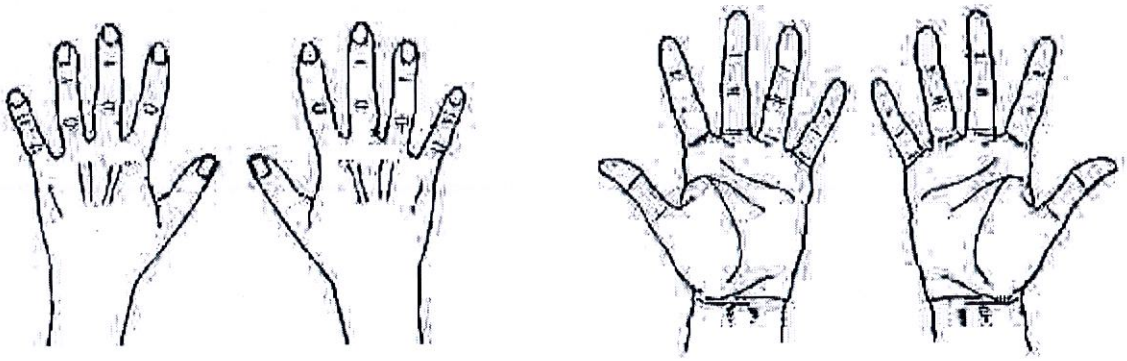
Seen by :

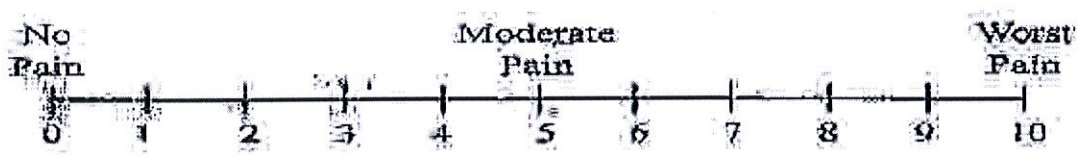
Time :

Government of Tamilnadu ★ Department of Health and Family Welfare

Tamilnadu Accident and Emergency Care Initiative (TAEI)









Government of Tamilnadu ★ Department of Health and Family Welfare

Tamilnadu Accident and Emergency Care Initiative (TAEI)

Specialist Opinion (Time is Must)

Seen by :

Time :

Government of Tamilnadu ★ Department of Health and Family Welfare

Tamilnadu Accident and Emergency Care Initiative (TAEI)

Specialist Opinion (Time is Must)

Seen by :

Time :

Government of Tamilnadu ★ Department of Health and Family Welfare

Tamilnadu Accident and Emergency Care Initiative (TAEI)

Drug Chart

S.No.	By	Drug	Dose	Route	Freq	Day1				Day 2				Day 3			
						7am	1 pm	7pm		7am	1 pm	7pm		7am	1 pm	7pm	

Monitoring / Investigation Chart

Transfer out to ..... ward on Date ..... Time .....

Government of Tamilnadu ★ Department of Health and Family Welfare

Tamilnadu Accident and Emergency Care Initiative (TAEI)

Triage Criteria

	Red Criteria	Yellow Criteria	Green Criteria
Physiological findings	A : Noisy Breathing B : RR <10 or > 24/min	A : Patent Airway B : RR 10 – 24 / min SPO2 > 95 %	A : Patent Airway B : RR 10 – 24 / min SPO2 > 95 %
	C : Radial Pulse – Present / AbsentPulse < 50 or > 100/minSBP < 90 mm HgCapillary Refill > 2 sec D : Responding only to Pain on AVPU GCS <13Spine Injury with Single Breath count More than 15	C : Pulse 50 to 100 SBP > 90 mm HgCapillary Refill < 2 Sec D : Responding to Verbal on AVPUGCS 13,14,15Spine Injury with Single Breath Count < 15	C : Pulse 50 to 100 SBP > 90 mm HgCapillary Refill < 2 Sec D : Alert on AVPU ScaleGCS 15
Findings of Clinical Examination Injuries Identified	• Chest Pain Stroke / Fits / Pregnancy with Bleeding PV Injuries : (1) Gun Shot (2) Stab (3) Obvious Major Vascular Injuries (4) Open Fractures (excluding hand and feet) (5) Two or More long bone Fractures (6) Pelvic Fracture (7) Flail Chest with paradoxical Respiration (8) Chest trauma with (8a) Surgical Emphysema (8b) Seat Belt Mark (8c) CCT Positive (9) Traumatic Amputation (Above Wrist or Ankle) Major Crush or Degloving Injuries, Extremities without pulse • Multiple Injured • Visible Neck Swelling • Burns > 15% apart from limbs Inconclusive • Poisoning with unstable vitals	• Open Fractures or Closed Fractures of Hand and feet • Isolated Long Bone Fracture • GCS 15 with ❖ Alcohol ❖ Anti coagulant ❖ LOC / Vomiting ❖ Nasal / ENT Bleed ❖ Limb Weakness • Burns < 15 % • Compartmental Syndrome	• Abrasions • Lacerations • Bruises • Isolated Fracture of Small Bones of Hand and feed
History Mechanism of Injury	• Chest Pain Stroke Pregnancy with Bleeding PV Fever with Altered Sensorium Injuries (1) Suspected Sexual Assault • All Penetrating Injuries • Blunt Trauma Abdomen • Fall from more than three times the height of the patient • Fall from more than five steps • Struck between heavy vehicles / Roll Over • Railway Track • Co Passenger Dead • Ejected from Vehicle • Steering Wheel • Prolonged Extraction Time (> 5 minutes) from Vehicle • Pedestrian vs Motor Vehicle • Inhalational Injury , Drowning, Suicide Attempt • Mechanism of Injury Not Known	• Suspected Child Abuse • Suspected Elderly Abuse • Significant Assault • Fall from more than double the height of the patient • Fall from less than five steps Pregnancy Hemoptysis Hemetemesis AGE with HR > 120 Acetone + Poisoning with normal sensorium Scorpion Sting Bee Sting Snake Bite Fever with Neck Stiffness Fever with Vomitting DVT Bleeding Disorders	• Came for Medicolegal examination • Dog Bite • AGE with Stable Vitals • Urinary retention • Tooth ache • Other aches and pains

Government of Tamilnadu
Department of Health and Family Welfare
Tamilnadu Accident and Emergency Care Initiative (TAEI)

Paediatric Resuscitation Emergency Medicine (PREM)

Name : _____

Age : _____ Gender : _____

Weight : _____ Temp ____ @ ____ CBG ____ @ ____

IP No : _____

PIN : _____

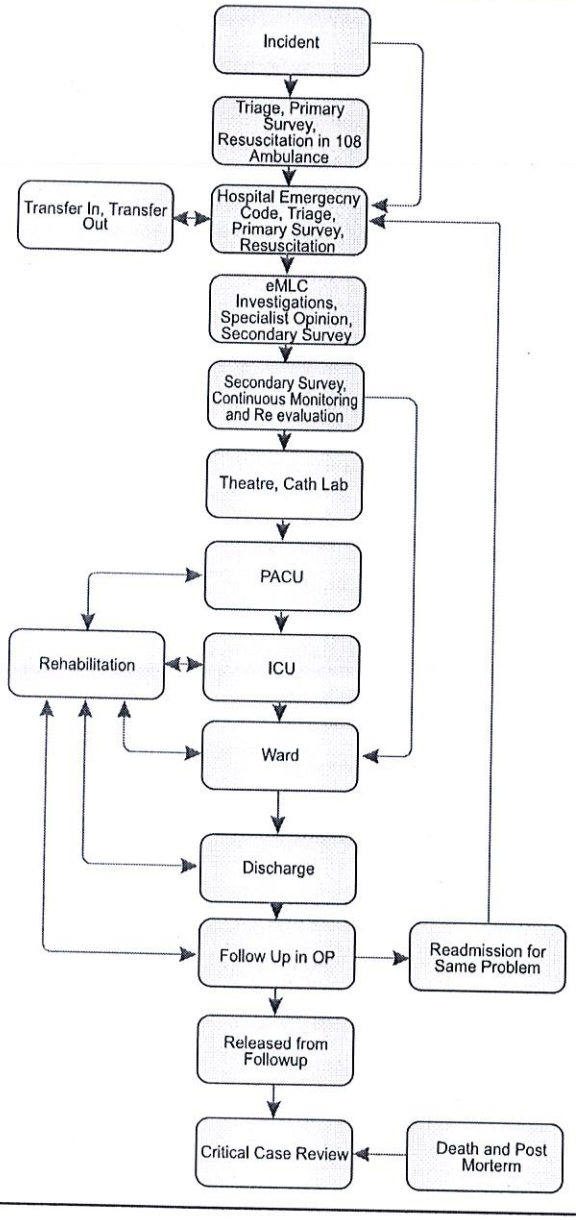
TAEI No : _____

Aadhar No : _____

Mobile No :

Patient Address : _____

Relative Name & Mobile No. : _____



Provisional Diagnosis

_____

_____

_____

Final Diagnosis

_____

_____

_____

_____

ICD

GCS : _____

GOS : _____

AIS : _____

ISS : _____

MHIPS : _____

Management

_____

_____

_____

_____

Outcome

Discharged / Discharged on Request / Discharged Against Medical Advice / Left Against Medical Advice / Absconded / Expired / Brain Stem Death

On ...../...../201.... at ..... AM / PM.

Government of Tamilnadu
Department of Health and Family Welfare
Tamilnadu Accident and Emergency Care Initiative (TAEI)

Paediatric Resuscitation Emergency Medicine (PREM)

Pre Arrival Intimation From Scene / IFT..... Hospital

PAI Call Received on __/__/201_ at __:__ AM/PM by ..... PAI Not Received / Not Applicable

Patient received on __/__/201_ at __:__ AM/PM by ..... for this patient

Triage

Patient sorted into ..... Criteria on Date

...../...../201_ at Time .....:..... by .....

Pulse : ____/min BP : ___ /____ mm Hg

SPO2 : _____ GCS : E V M

AVPU (Alert Voice Pain Unconsciousness) Scale

Primary Survey & Resuscitation done by .....at __:__ AM/PM

Primary Complaints :

1) **Breathlessness** /episodic/acute on chronic

2) **Unresponsive** /GTCS / Posturing/upward gaze

Time: Where: Regained basal level: Yes/No

Precipitating events:

Fever Focus AWD/Vomiting/Noise/FB

Abdominal pain/distension/GI bleed

Jaundice/Rash/Skin bleed

Duration

Snake/Scorpion

Submersion/ Toxin

Fall/RTA/Assault/Trauma

ALOC after precipitating event:

Incessant cry/Lethargy/Not as usual/ More sleepy

Past History

CVS:CHD/RHD/CMY

CNS/Seizure/NDD/ Malformation

Renal/Liver disease/ Malformation

RS: AB/ILD/Malformation/TB

Metabolic/Malignancy/Blood

Bottle feed/PLHA/Sib death

Drugs

Cardiopulmonary cerebral assessment :

Airway: Stable/Unstable/Obstructed/ET

Breathing : RR

Nasal flare/Grunting/Stridor/Retractions

Abdominal/ Thoracic/ Air-entry

Crepts/Wheeze

Colour: Normal/abnormal/Flushed

Circulation : HR

Sounds: Muffled/gallop

Pulse volume

Cool below thigh/knee/ankle/warm

CRT

Liver span: Firm/ Normal

Disability:

Alert/Verbal/Pain/Unresponsive

Pupils —|—

Eyes: Mid position/ Conjugate Deviation

Lid twitch/Nystagmus

DEM/EOM

Tone/posture

SaO_2

Others

O_2:NRM/BVM/JR/ET

Neb: Salbutamol/Ipravent/3%NS/Adrenaline

Inj. Hydrocortisone/T. Prednisolone

Inj. Dexamthasone

BP mmHg

GTCS

Pre-Hospital Resuscitation

A

B

C

D

Others

ECM: 15: 2

Circulation	Dose/kg	Total	Time
Fluids: NS/RL			
Epinephrine Bolus			
Epinephrine infusion			
Dopamine			
Disability			
25% GDW			
Lorazepam			
Midazolam			
Fos-PHT			
Leviteracetam			
10% Calcium			
Paracetamool			
Antibiotic			
Ondensetrone			
Vit K			

Physiological Status :

Airway: stable	**Breathing: Normal**	**Circulation: HR N / Perfusion N**	**Disability :Nil**
Not stable	**Effortless tachypnea**	**Tachycardia/Relative brady /brady**	**ALOC**
Obstructed	**Respiratory distress/Failure**	**Shock / Liver span N/Hepatomegaly**	**CSE/ NCSE**
ET	**Relative Bradypnea**	**Cardiogenic shock**	**ICP**
Tracheostomy	**Apnea**	**Systolic BP N/ Low/ High**	
		Pulse pressure: N/Wide/Narrow	
		MAP: N/Low	

ABG:

CXR: **CT**

USG/ECHO

Time				
HCT				
Platelet count				

CBC
RFT
LFT
Electrolytes
Lactate

EMERGENCY CRITICAL CARE DATA FLOW SHEET

Name: **Age:** **Sex:** **Wt:** **Emergency Reg No:**

Date/Time						
Symptoms						
Airway						
RR						
Grunt/ Stridor						
Retractions						
Abdominal/thoracic						
Air entry						
Added sounds						
Color						
SaO_2						
HR						
Central/Distal pulse						
CPT gap						
CRT						
Liver span						
BP						
AVPU						
Pupils						
Eye deviated/ MP						
Nystagmus						
Lid twitch						
DEM/EOM						
Tone/Posture						
Fits						
Urine output						
Physiological Status	Airway					
	Breathing					
	Circulation					
	Disability					
Interventions	A:					
	B:					
	C: Fluids Dopa/Dob Nor-Epi/Epinephrine					
	D: Anti-fit/3%NS					
	Others					
	Total volume/kg					
	No. of drug					
	Inotrope trigger					
	ET Trigger					

TAEI Referral Protocols:

Glossary:

Referral Guidelines:
Guidelines are required for making the system more efficient and maximizing benefit for the patients.

Definitions of terms
Referral systems: Referral can be defined as a process in which a health professional at a one level of health system having insufficient resources (equipments/drugs/skills) to manage a clinical condition seeks the assistance of a better or differently resourced facility at the same or higher level to assist in or take over the management of the client's case.

Referring facility: The initiating facility from where the decision to refer is made

Referral receiving facility: The institution where a referred patient is received and managed.

Directory of services: The list of specialists or special procedures or investigations available in each facility. This facilitates the search for appropriate service provider.

Back referral: Back referral means referring the patient back to the lower and referred out facility for further follow up and care.

Referral card: The letter to accompany the outward referral from the initiating facility

Referral Register: A maintaining list of all outward and inward referrals for one facility or service provider. Information includes

A. who referred,
B. where referred, when and
C. why and the
D. appropriateness of referral

Levels of care:

In a three tired health system model the three levels of care are

a) primary (Primary health centers and sub centers)

b) secondary (Taluk headquarters hospitals, FRUs)

c) tertiary (District hospitals, general hospitals and medical

hospitals, regional institutes)

Appropriateness of referral:

This is decided based on the preconditions

- ***Timeliness*** i.e. neither too early nor too late as decided by the referring physician as well as the receiving physician and depending upon the patient's clinical condition noted by them respectively.
- ***Effectiveness:*** Whether the objectives of referral achieved or not

(a) to get expert opinion

b) to get an additional skill oriented service example surgery

c) to get admitted and managed at a higher level centre d0 to get a diagnostic investigation done

- Cost effectiveness i.e. the benefits exceed and justify the costs

INTRODUCTION:

In order to meet the Sustainable Development Goals (SDG, the State has fixed a target of reducing Road Traffic Accidents (RTA) by half by the year 2023, the Tamil Nadu Accident and Emergency Care Initiative (TAEI), has been rolled out in the State, aimed at bringing together all the Emergency Medical Services under one umbrella encompassing the 6 pillars namely Management of (i) Stroke, (ii) Myocardial Infarction, (iii) Trauma (includes Road Traffic Accidents), (iv) Burns, (v) Poison and (vi) Paediatric emergencies and other Life threatening conditions.

The Tamil Nadu Accident and Emergency Care Initiative has been setting the way forward for Hospitals, States, Countries and Governments, emphasizing on the importance of Emergency Medical Services, by formulating Protocols and Guidelines to be used at Emergency Department.

This module mainly focuses on framing the minimum standards for referral, to be mandated in the TAEI centers such **that the right patient is treated in the right place within the golden hour**.

The TAEI centers are a network of hospitals, which consist of 26 Medical College Hospitals, 31 District Head Quarters Hospitals and 21 Taluk Hospitals. Considering the differences that exist in the various facilities in terms of Infrastructure, Equipment and HR, the referral guidelines mandates the need for resuscitation such that the Airway, Breathing and Circulation are restored before referral/ shifting an patient and also sets the minimum standards and levels of treatment required of a Level 1, 2 and 3 centers such that effective and efficient treatment is ensured over the continuum of care.

Mandatory Care before Referral:

ANY CASE REFERRED OUT FROM ANY FACILITY NEED TO RESUSCITATE AND STABILISE THE PATIENT AND ONLY THEN REFER OUT.

TO FOLLOW THE RESUSCITATION PROTOCOLS AS FOLLOWS:

Resuscitation at Sub District Hospital

Resuscitation at Sub District Hospital		
Airway	Assessment	1. Ascertain **patency** 2. Rapidly assess for **airway obstruction** Foreign bodies, facial / mandibular / tacheal / laryngeal fractures **3. Maintain the cervical spine** in a neutral position with manual immobilization as necessary when establishing an airway.
	Skills/treatment required	1. Assessment of airway compromise, 2. Manual maneuvers (chin lift, thrust, positioning), 3. Insertion of oral and nasal airway 4. Bag mask Ventilation.
	Resources required	1. Philadelphia collar, 2. Oral/nasal airway, 3. Ambu bag, 4. LMA
Breathing	Assessment	Injuries that should be identified in the Primary survey : 1. Tension pneumothorax 2. Flail chest with pulmonary contussion 3. Massive hemothorax 4. Open pneumothorax **Inspection / palpation /Auscultation / Percussion** 1. Expose the neck and chest 2. Respiratory rate and depth 3. Inspect and palpate: • tracheal deviation ? • symmetrical chest movement ? • use of accessory muscles ? • signs of injury ? • subcutaneous emphysema ? • Cyanosis ? 4. Auscultate the chest 5. Percussion : • Dullness? • Hyperresonance?

	Skills/treatment required	1. Assessment of respiratory distress and adequacy of ventilation, 2. Administration of oxygen, 3. Needle thoracostomy , 4. Three way dressing.
	Resources required	1. Stethoscope 2. Oxygen supply, 3. Face mask with associated tubing, 4. Needle and syringe. 5. Ambu bag.
Circulation and shock	Assessment	1. Level of consciousness 2. Skin color 3. Pulse (quality, rate, regularity) 4. Presence of a: Carotid pulse □ SBP□ 60 mmHg Femoral pulse □ SBP□ 70 mmHg Radial pulse □ SBP□ 80 mmHg 5. Identify source of external hemorrhage. External bleeding is identified and controlled in the primary survey. 6. Identify potential source(s) of internal hemorrhage/Pulse / skin color, capillary refill / Blood pressure 7. Operative intervention for internal bleeding control. 8. Check for Injuries : • External/internal bleeding with hypovolemic shock • Massive hemothorax • Cardiac tamponade
	Skills/treatment required	1. Assessment of shock, 2. Control of hemorrhage, 3. Arterial tourniquet, 4. Splinting of fractures, 5. Fluid resuscitation, 6. Peripheral IV access, 7. Use of fluids and antibiotics for shock, 8. Knowledge of resuscitation paremeters, 9. Pelvic wrap hemorrhage control.
	Resources required	1. Watch with second hand, 2. Stethoscope, 3. BP cuff, 4. Gauze and bandage arterial tourniquet, crystalloids, IV set, thermometer. 5. Thomas splint (3-4 sizes) 6. Pelvic Binders

Chest injury	Skills/treatment required	1. Adequate pain control and respiratory physiotherapy for chest injuries fracture.
	Resources required	1. Analgesics, 2. Local anaesthetics, 3. Syringes.
Abdominal injury	Skills/treatment required	Clinical assessment.
	Resources required	
Head injury	Skills/treatment required	1. Recognisation of altered consciousness, 2. Lateralizing signs, pupils.
Spinal injury	Skills/treatment required	1. Assessment recognisation of presence of spinal injury, 2. monitoring neurological function, 3. immobilization.
	Resources required	1. Cervical collar, 2. back board.
Neck injury	Skills/treatment required	1. External pressure for bleeding.
	Resources required	1. Gauze and 2. bandages.
Extremity Injury	Skills/treatment	1. Recognisation of neurovascular compromise, 2. Basic immobilization (Sling, splint), 3. Pelvic binder for hemorrhage control, 4. Assessment and splinting of hand injury 5. Application of Spine board 6. Proper management and immobilization of patient to prevent complication
	Resources Required	1. Slings and Splints 2. Spine Board
Disablity	Assessment	**Level of consciousness** 1. GCS 2. Pupils size, equality and reaction
	Skills/treatment	**<u>Management</u>** : 1. Intubation and allow mild hyperventilation 2. Administer IV mannitol (1.5-2.0g/kg) 3. Arrange for brain CT
Exposure/Environmental Control		1. Completely undressed the patient. 2. Prevent hypothermia 3. Injured patients may arrive in hypothermic condition 4. Log-roll

<u>Important notes</u> :

1. CT is contraindicated when the patient is hemo-dynamically unstable
2. A decrease in the level of consciousness may due to:
    a. Decreased cerebral oxygenation (A,B)
    b. Decreased cerebral perfusion (C)

c. Direct cerebral injury (D)
d. Alcohol / drugs

3. Always rule out hypoxemia and hypovolemia first.
4. Reevaluation

*Poisoning – Decontamination as per the standard guidelines as per Annexure A.
To ensure the appropriate antidotes are given if required and then refer the patient to higher facility.
Based on the critical nature of the patient, the patient needs to be transferred to appropriate center only, where adequate resources to manage the condition is available.
* Trauma - Guidelines to be followed as per annexure B.
* Stroke – Guidelines to be followed as per annexure C.
* Cardiac emergencies – Guidelines to be followed as per annexure D.
* Paediatric emergencies – Guidelines to be followed as per annexure E.
* Burns emergencies – Guidelines to be followed as per annexure F.

Resuscitation at PHC Level

Resuscitation at PHC Level		
Airway	Assessment	1. Ascertain **patency** 2. Rapidly assess for **airway obstruction** Foreign bodies, facial / mandibular / tacheal / larygeal fractures 3. **Maintain the cervical spine** in a neutral position with manual immobilization as necessary when establishing an airway
	Skills and Treatment required	1. Assessment of airway compromise, 2. Manual maneuvers (chin lift, thrust, positioning), 3. Insertion of oral and nasal airway Bag mask Ventilation. 4. Use of suction, 5. Endo-tracheal intubation.
	Resources required	1. Philadelphia collar, 2. Oral/nasal airway, 3. Ambu bag, 4. LMA 5. suction device with tubing and laryngoscope, 6. endotracheal tube, 7. basic trauma pack.
Breathing	Assessment	Injuries that should be identified in the Primary survey : 1. Tension pneumothorax 2. Flail chest with pulmonary contussion 3. Massive hemothorax 4. Open pneumothorax **Inspection / palpation /Auscultation / Percussion** 1. Expose the neck and chest 2. Respiratory rate and depth 3. Inspect and palpate: • tracheal deviation ? • symmetrical chest movement ? • use of accessory muscles ? • signs of injury ? • subcutaneous emphysema ?

		• Cyanosis ? 4. Auscultate the chest 5. Percussion : • Dullness? • Hyperresonance?
	Skills/treatment required	1. Assessment of respiratory distress and adequacy of ventilation, 2. Administration of oxygen, 3. Needle thoracostomy , 4. Three way dressing. 5. Chest Tube insertion.
	Resources required	1. Stethoscope 2. Oxygen supply, 3. Face mask with associated tubing, 4. Needle and syringe. 5. Ambu bag. 6. Nasal prongs, 7. chest tubes, 8. underwater seal bottle.
Circulation and shock	Assessment	1. Level of consciousness 2. Skin color 3. Pulse (quality, rate, regularity) 4. Presence of a: Carotid pulse □ SBP□ 60 mmHg Femoral pulse □ SBP□ 70 mmHg Radial pulse □ SBP□ 80 mmHg 5. Identify source of external hemorrhage. External bleeding is identified and controlled in the primary survey. 6. Identify potential source(s) of internal hemorrhage/Pulse / skin color, capillary refill / Blood pressure 7. Operative intervention for internal bleeding control. 8. Check for Injuries : • External/internal bleeding with hypovolemic shock • Massive hemothorax • Cardiac tamponade
	Skills/treatment required	1. Assessment of shock, 2. Control of hemorrhage, 3. Arterial tourniquet,

		4. Splinting of fractures, 5. Fluid resuscitation, 6. Peripheral IV access, 7. Use of fluids and antibiotics for shock, 8. peripheral cut down access 9. Knowledge of resuscitation paremeters, 10. Pelvic wrap for hemorrhage control. 11. recognition of hypothermia and external re-warming for it, 12. Urinary catheterization.
	Resources required	1. Watch with second hand, 2. Stethoscope, 3. BP cuff, 4. Gauze and bandage arterial tourniquet, crystalloids, IV set, thermometer. 5. Thomas splint (3-4 sizes) 6. Pelvic Binders 7. urinary catheter, 8. NG weighing scale for children, 9. Lab facility for hematocrit.
Chest injury	Skills/treatment required	1. Adequate pain control and respiratory physiotherapy for chest injuries fracture, rib/intrapleural block.
	Resources required	1. Analgesics, 1. Local anaesthetics, 2. Syringes.
Abdominal injury	Skills/treatment required	Clinical assessment.
	Resources required	
Head injury	Skills/treatment required	1. Recognisation of altered consciousness, 2. Lateralizing signs, pupils. 3. Maintenance of normo-tension and oxygenation to prevent secondary brain injury, protein and calorie supplement, avoidance of over hydration in raised ICP.
	Resources required	
Spinal injury	Skills/treatment required	1. Assessment recognisation of presence of spinal injury, 2. Monitoring neurological function, immobilization. 3. Maintenance of normo-tension

		and oxygenation to prevent secondary spinal injury, proper management immobilization patient to prevent complication e.g. bed sores, urinary rentention/infection.
	Resources required	1. Cervical collar, 2. back board.
Neck injury	Skills/treatment required	1. External pressure for bleeding, 2. Recognisation of platysmal penetration packing for bleeding.
	Resources required	1. Gauze and bandages.
Extremity	Skills/treatment	1. Recognisation of neurovascular compromise, basic immobilization (sling, splint), 2. Pelvic binder for hemorrhage control, 3. Assessment and splinting of hand injury 4. Application of Spine board 5. Proper management and immobilization of patient to prevent complication
	Resources Required	1. Slings and Splints 2. Spine Board
Disablity	Assessment	**Level of consciousness** 1. GCS 2. Pupils size, equality and reaction
	Skills/treatment	**<u>Management</u>** : 1. Intubation and allow mild hyperventilation 2. Administer IV mannitol (1.5-2.0g/kg) 3. Arrange for brain CT
Exposure/Environmental Control		1. Completely undressed the patient. 2. Prevent hypothermia 3. Injured patients may arrive in hypothermic condition 4. Log-roll

<u>Important notes</u> :

1. CT is contraindicated when the patient is hemodynamically unstable
2. A decrease in the level of consciousness may due to:
    e. Decreased cerebral oxygenation (A,B)
    f. Decreased cerebral perfusion (C)
    g. Direct cerebral injury (D)
    h. Alcohol / drugs
3. Always rule out hypoxemia and hypovolemia first.

4. Reevaluation

*Poisoning – Decontamination as per the standard guidelines as per Annexure A.
To ensure the appropriate antidotes are given if required and then refer the patient to higher facility.
Based on the critical nature of the patient, the patient needs to be transferred to appropriate center only, where adequate resources to manage the condition is available.
* Trauma - Guidelines to be followed as per annexure B.
* Stroke – Guidelines to be followed as per annexure C.
* Cardiac emergencies – Guidelines to be followed as per annexure D.
* Paediatric emergencies – Guidelines to be followed as per annexure E.
* Burns emergencies – Guidelines to be followed as per annexure F.

Resuscitation and Management of Patient at CHC/District Hospital

Resuscitation and Management of Patient at CHC/District Hospital		
Airway	Assessment	1. Ascertain patency 2. Rapidly assess for airway obstruction 3. Foreign bodies, facial / mandibular / tacheal / larygeal fractures 4. **<u>Maintain the cervical spine</u>** in a neutral position with manual immobilization as necessary when establishing an airway
	Skills/treatment required	1. Assessment of airway compromise, manual maneuvers (Chin lift, Jaw thrust, positioning), 2. Insertion of oral and nasal airway , 3. Bag Mask ventilation, 4. Use of suction, 5. Endotracheal intubation 6. Cricothyroidotomy
	Resources required	1. Laryngoscope, 2. Endotracheal tube, 3. Basic trauma pack, 4. Magill forceps, 5. Esophageal detector device other advanced airway equipment
Breathing	Assessment	Injuries that should be identified in the Primary survey : 1. Tension pneumothorax 2. Flail chest with pulmonary contussion 3. Massive hemothorax 4. Open pneumothorax **Inspection / palpation /Auscultation / Percussion** 1. Expose the neck and chest 2. Respiratory rate and depth 3. Inspect and palpate: • tracheal deviation ? • symmetrical chest movement ? • use of accessory muscles ? • signs of injury ? • subcutaneous emphysema ? • Cyanosis ? 4. Auscultate the chest 5. Percussion : • Dullness? • Hyperresonance?
	Skills/treatment required	1. Assessment of respiratory distress and adequacy of ventilation, 2. Administration of oxygen, 3. Needle thoracostomy , 4. Three way dressing.

		5. Chest Tube insertion.
	Resources required	1. Stethoscope 2. Oxygen supply, 3. Face mask with associated tubing, 4. Needle and syringe. 5. Ambu bag. 6. Nasal prongs, 7. chest tubes, 8. underwater seal bottle. 9. Pulse oximetry.
Circulation and shock	Assessment	1. Level of consciousness 2. Skin color 3. Pulse (quality, rate, regularity) 4. Presence of a: Carotid pulse □ SBP□ 60 mmHg Femoral pulse □ SBP□ 70 mmHg Radial pulse □ SBP□ 80 mmHg 5. Identify source of external hemorrhage. External bleeding is identified and controlled in the primary survey. 6. Identify potential source(s) of internal hemorrhage/Pulse / skin color, capillary refill / Blood pressure 7. Operative intervention for internal bleeding control. 8. Check for Injuries : • External/internal bleeding with hypovolemic shock • Massive hemothorax • Cardiac tamponade
	Skills/treatment required	1. Assessment of shock, 2. Control of hemorrhage, 3. Arterial tourniquet, 4. Splinting of fractures, 5. Fluid resuscitation, 6. Peripheral IV access, 7. Use of fluids and antibiotics for shock, 8. peripheral cut down access 9. Knowledge of resuscitation paremeters, 10. Pelvic wrap for hemorrhage control. 11. central/intraosseous venous access, 12. recognition of hypothermia and external re-warming for it, 13. Differential diagnosis of shock 14. Urinary catheterization

		15. Transfusion knowledge, 16. Use of pressors for neurogenic shock, 17. Use of warmed fluids, 18. Interfascial packing for severe wounds, 19. Core rewarming.
	Resources required	1. Watch with second hand, 2. stethoscope, 3. BP cuff, 4. gauze and bandage 5. arterial tourniquet, 6. crystalloids, 7. IV set, 8. thermometer, 9. urinary catheter, 10. NG tube, 11. weighing scale for children, 12. blood transfusion capability, 13. CVP line, 14. Intraosseous needle, 15. Lab facility for hematocrit and electrolyte, 16. Vasopressors, fluid warmers.
Chest injury	Skills/treatment required	1. Adequate pain control and 2. respiratory physiotherapy for chest injuries fracture, 3. Rib/intrapleural block, 4. Epidural block.
	Resources required	1. Analgesics, 2. local anaesthetics, 3. syringes, 4. spinal-epidural set, X-Ray machine.
Abdominal injury	Skills/treatment required	1. Clinical assessment, diagnostic peritoneal lavage (DPL), 2. Ultrasonography, 3. Skill for intermediate laparotomy.
	Resources required	1. Ultrasonography machine, 2. Laparotomy set, 3. X-Ray machine, 4. CT scan desirable.
Head injury	Skills/treatment required	1. Recognisation of altered consciousness, 2. Lateralizing signs, pupils, 3. Maintenance of normotension and oxygenation to prevent secondary brain injury, 4. Protein and calorie supplement, 5. avoidance of overhydration in raised ICP, burr holes.
	Resources required	1. X-Ray machine 2. CT scan desirable.

Spinal injury	Skills/treatment required	1. Assessment recognisation of presence of spinal injury, 2. Monitoring neurological function, immobilization, 3. Maintenance of normontension and oxygenation to prevent secondary spinal injury, 4. Proper management immobilization patient to prevent complication e.g. bed sores, urinary rentention/infection, 5. non-surgical management of spinal trauma as indicated.
	Resources required	1. Cervical collar, 2. back board, 3. X-Ray machine, 4. CT scan desirable.
Neck injury	Skills/treatment required	1. External pressure for bleeding, 2. recognisation of platysmal penetration packing for bleeding, 3. skill to explore neck.
	Resources required	1. Gauze and bandages, 2. standard neck dissection set, 3. X-Ray machine, 4. CT scan desirable.
Extremity	Skills/treatment	1. Recognisation of neurovascular compromise, basic immobilization (sling, splint), 2. pelvic wrap for hemorrhage control, assessment and splinting of hand injury, 3. application of spine board, proper management and immobilization of patient to prevent complication, 4. Skin / skeletal traction, internal and external fixation, 5. operative wound management, debridement, 6. closed / open reduction, 7. tendon repair, 8. amputation, repair /fixation of injury, 9. measurement of compartment syndrome and fasciotomy.
	Resources required	1. Slings and splints, 2. spine borad, 3. X-Ray instruments to skin/skeletal traction, 4. Internal / external fixation, 5. Tendon repair and amputation, 6. Portable X ray, 7. Image intensifier, 8. CT scan, 9. MRI desirable.
Disablity	Assessment	**Level of consciousness** 1. GCS 2. Pupils size, equality and reaction

	Skills/treatment	**Management** : 1. Intubation and allow mild hyperventilation 2. Administer IV mannitol (1.5-2.0g/kg) 3. Arrange for brain CT
Exposure/Environmental Control		1. Completely undressed the patient. 2. Prevent hypothermia 3. Injured patients may arrive in hypothermic condition 4. Log-roll

Important notes :

1. CT is contraindicated when the patient is hemodynamically unstable
2. A decrease in the level of consciousness may due to:
    i. Decreased cerebral oxygenation (A,B)
    j. Decreased cerebral perfusion (C)
    k. Direct cerebral injury (D)
    l. Alcohol / drugs
3. Always rule out hypoxemia and hypovolemia first.
4. Reevaluation

*Poisoning – Decontamination as per the standard guidelines
To ensure the appropriate antidotes are given if required and then refer the patient to higher facility.
Based on the critical nature of the patient, the patient needs to be transferred to appropriate center only, where adequate resources to manage the condition is available.
* Trauma - Guidelines to be followed as per annexure B.
* Stroke – Guidelines to be followed as per annexure C.
* Cardiac emergencies – Guidelines to be followed as per annexure D.
* Paediatric emergencies – Guidelines to be followed as per annexure E.
* Burns emergencies – Guidelines to be followed as per annexure F.

Resuscitation and Management of Patient at Tertiary Care Hospital

Resuscitation and Management of Patient at Tertiary Care Hospital		
Airway	Assessment	1. Ascertain patency 2. Rapidly assess for airway obstruction 3. Foreign bodies, facial / mandibular / tacheal / larygeal fractures 4. **Maintain the cervical spine** in a neutral position with manual immobilization as necessary when establishing an airway
		1. Assessment of airway compromise, manual maneuvers (Chin lift, Jaw thrust, positioning), 2. insertion of oral and nasal airway , 3. Bag Mask ventilation, 4. Use of suction, 5. endotracheal intubation 6. Cricothyroidotomy. 7. Oral/ Nasal airway, 8. Ambu bag, suction device with tubing and tip, 9. Laryngoscope, 10. Endotracheal tube, 11. Basic trauma pack, 12. Magill forceps. 13. Esophageal detector device, 14. Other advanced airway equipment.
Breathing	Assessment	Injuries that should be identified in the Primary survey : 1. Tension pneumothorax 2. Flail chest with pulmonary contussion 3. Massive hemothorax 4. Open pneumothorax **Inspection / palpation /Auscultation / Percussion** 1. Expose the neck and chest 2. Respiratory rate and depth 3. Inspect and palpate: • tracheal deviation ? • symmetrical chest movement ? • use of accessory muscles ?

		• signs of injury ? • subcutaneous emphysema ? • Cyanosis ? 4. Auscultate the chest 5. Percussion : • Dullness? • Hyperresonance?
	Skills/treatment required	1. Assessment of respiratory distress and adequacy of ventilation, 2. administration of oxygen, 3. needle thoracostomy, 4. three way dressing, 5. chest tube insertion.
	Resources required	1. Stethoscope, 2. oxygen supply, 3. face mask with associated tubing, 4. need and syringe, 5. nasal prangs, 6. chest tubes, 7. underwater seal bottle, 8. pulse oximetry, 9. ABG analyzer, 10. mechanical ventilators.
Circulation and shock	Assessment	1. Level of consciousness 2. Skin color 3. Pulse (quality, rate, regularity) 4. Presence of a: Carotid pulse □ SBP□ 60 mmHg Femoral pulse □ SBP□ 70 mmHg Radial pulse □ SBP□ 80 mmHg 5. Identify source of external hemorrhage. External bleeding is identified and controlled in the primary survey. 6. Identify potential source(s) of internal hemorrhage/Pulse / skin color, capillary refill / Blood pressure 7. Operative intervention for internal bleeding control. 8. Check for Injuries : • External/internal bleeding with hypovolemic shock • Massive hemothorax • Cardiac tamponade

	Skills/treatment required	1. Assessment of shock, 2. control of hemorrhage, 3. arterial tourniquet, 4. splinting of hypothermia and external re-warming for it use of fluids and antibiotics for shock, 5. peripheral cut down access, urinary catheterization central/intraosseous venous access, 6. pelvic wrap for hemorrhage control, transfusion knowledge, 7. use of pressors for neurogenic shock, 8. use of warmed fluids, 9. core rewarming, 10. interfascial packing for severe wounds. 11. CVP monitoring, ABG analyzer, right heart catheterization.
	Resources required	1. Watch with second hand, 2. stethoscope, 3. BP cuff, 4. gauze and bandage 5. arterial tourniquet, 6. crystalloids, 7. IV set, 8. thermometer, 9. urinary catheter, 10. NG tube, 11. weighing scale for children, 12. blood transfusion capability, 13. CVP line, 14. intraosseous needle, 15. lab facility for hematocrit and electrolyte, 16. Fluid warmers. 17. CVP monitors and more advanced patient monitoring system, 18. colloids, 19. ABG analysis.
Chest injury	Skills/treatment required	1. Adequate pain control and 2. respiratory physiotherapy for chest injuries/rib fractures, 3. rib/intrapleural block, 4. epidural block, 5. Auto-transfusion from chest tubes, 6. skill for thoracotomy.
	Resources required	1. Analgesics, 2. Local anaesthetics, 3. Syringes, 4. Spinal-epidural set,

		5. thoracotomy set, 6. cell saver, 7. X-Ray machine, 8. CT scan desirable.
Abdominal injury	Skills/treatment required	1. Clinical assessment, 2. diagnostic peritoneal lavage (DPL), 3. ultrasonography, 4. skill for intermediate advanced laparotomy CT scan facility.
	Resources required	1. Ultrasonography machine, 2. laparotomy set, 3. X-Ray machine, 4. CT scan facility.
Head injury	Skills/treatment required	1. Recognisation of altered consciousness, 2. lateralizing signs, 3. pupils, 4. maintenance of normotension and oxygenation to prevent secondary brain injury, 5. protein and calorie supplement, 6. avoidance of overhydration in raised ICP, burr holes, 7. monitoring and treatment of raised ICP, 8. surgical treatment of closed/open depressed skill fractures, 9. more advanced neurosurgical procedures.
	Resources required	1. X-Ray machine 2. CT scan, 3. MRI desirable.
Spinal injury	Skills/treatment required	1. Assessment recognisation of presence of spinal injury, 2. monitoring neurological function, 3. immobilization, 4. maintenance of normontension and oxygenation to prevent secondary spinal injury, 5. proper management immobilization patient to prevent complication e.g. bed sores, 6. urinary rentention/infection, 7. non-surgical management of spinal trauma as indicated, 8. assessment by international classification system, surgical treatment of spinal injury/neurological deterioration in presence of spinal cord

		compression.
	Resources required	1. Cervical collar, 2. back board, 3. CT scans, 4. MRI desirable, 5. spinal surgery set.
Neck injury	Skills/treatment required	1. External pressure for bleeding, 2. recognisation of platysmal penetration packing for bleeding, 3. skill to explore neck, 4. contrast radiography, 5. endoscopy, 6. angiography.
	Resources required	1. Gauze and bandages, 2. standard neck dissection set endoscope, 3. X-Ray machine, 4. CT scan, angiography facility, 5. MRI desirable.
Extremity injury	Skills/treatment	1. Recognisation of neurovascular compromise, 2. basic immobilization (sling, splint), 3. pelvic wrap for hemorrhage control, 4. assessment and splinting of hand injury, 5. application of spine board, 6. proper management immobilization patient to prevent complication skin/skeletal traction, 7. internal/external fixation, 8. operative would management, debridement, 9. closed/open reduction, 10. tendon repair, 11. amputation, 12. repair/fixation of hand injury, 13. measurement of compartment syndrome and fasciotomy
	Resources required	1. Slings and splints, 2. spine borad, 3. X-Ray instruments to skin/skeletal traction, 4. internal / external fixation, 5. tendon repair and amputation, 6. portable ray, 7. image intensifier, 8. CT scan, 9. MRI desirable.
Disablity	Assessment	**Level of consciousness** 1. GCS

		2. Pupils size, equality and reaction
	Skills/treatment	**Management** : 1. Intubation and allow mild hyperventilation 2. Administer IV mannitol (1.5-2.0g/kg) 3. Arrange for brain CT
Exposure/Environmental Control		1. Completely undressed the patient. 2. Prevent hypothermia 3. Injured patients may arrive in hypothermic condition 4. Log-roll

Important notes :

1. CT is contraindicated when the patient is hemodynamically unstable
2. A decrease in the level of consciousness may due to:
    m. Decreased cerebral oxygenation (A,B)
    n. Decreased cerebral perfusion (C)
    o. Direct cerebral injury (D)
    p. Alcohol / drugs
3. Always rule out hypoxemia and hypovolemia first.
4. Reevaluation

*Poisoning – Decontamination as per the standard guidelines
To ensure the appropriate antidotes are given if required and then refer the patient to higher facility.
Based on the critical nature of the patient, the patient needs to be transferred to appropriate center only, where adequate resources to manage the condition is available.
* Trauma - Guidelines to be followed as per annexure B.
* Stroke – Guidelines to be followed as per annexure C.
* Cardiac emergencies – Guidelines to be followed as per annexure D.
* Paediatric emergencies – Guidelines to be followed as per annexure E.
* Burns emergencies – Guidelines to be followed as per annexure F.

RED FLAGS

Red Flags to be considered while following the basic Resuscitation protocols at each level of care:

PILLAR WISE:

A.TRAUMA REFERRAL GUIDELINES – MINIMAL CARE TO BE GIVEN BEFORE REFERRAL:

- **PREPARATION**
  - ✧ Resuscitation area
  - ✧ Proper airway equipment
  - ✧ Warmed IV crystalline solutions
  - ✧ Monitoring capabilities
  - ✧ Summon extra medical assistance
  - ✧ Prompt response by lab and radiology personnel
  - ✧ Transfer route
  - ✧ Periodic review
  - ✧ Standard precautions

- **TRIAGE**
  - ✧ Based on the ABCDE priority

- **PRIMARY SURVEY**
  - ✧ **A**irway with Cervical spine protection
  - ✧ **B**reathing and ventilation
  - ✧ **C**irculation with hemorrhage control
  - ✧ **D**isability: Neurologic status
  - ✧ **E**xposure/ **E**nvironmental control

Airway Maintenance with Cervical Spine Protection

Indications For Definite Airway

Need for Airway Protection	Need for Ventilation
Unconscious GCS ≤ 8	Apnea Neuromuscular paralysis Unconscious
Severe maxillofacial fractures	Inadequate respiratory effort Tachypnea Hypoxia Hypercarbia Cyanosis
Risk for aspiration Bleeding Vomiting	Severe closed head injury with need for hyperventilation
Risk for obstruction	

- ✧ **Assessment:**
  - Ascertain patency

- Rapidly assess for airway obstruction
- Foreign bodies, facial / mandibular / tacheal / larygeal fractures.

✧ **Management:**

- Chin lift / jaw thrust maneuver
- Clear the airway of FB
- Insert an orotracheal / nasopharyngeal airway
- Establish a definitive airway
  1. Oro-tracheal / naso-tracheal intubation
  2. Surgical crico-thyroidotomy
- Jet insufflation

✧ **Maintain the cervical spine** in a neutral position with manual immobilization as necessary when establishing an airway

✧ **Immobilization of the c-spine** with appropriate devices after establishing an airway.

✧ **Important Notes:**

- NE does not exclude a cervical spine injury
- Assume a cervical spine injury in any patient with multisystem trauma, especially with an altered level of consciousness or a blunt injury above the clavicle

✧ **Pitfalls:**

- Equipment failure
- Cannot be intubated after paralysis and accompanied with difficult surgical airway
- Unknown laryngeal fracture / incomplete airway transection.

Breathing and Ventilation

Injuries that should be identified in the Primary survey :

1. Tension pneumothorax
2. Flail chest with pulmonary contusion
3. Massive hemothorax
4. Open pneumothorax

✧ **Assessment :**

Inspection / palpation /Auscultation / Percussion

- Expose the neck and chest
- Respiratory rate and depth
- Inspect and palpate: tracheal deviation ? symmetrical chest movement ? use of accessory muscles ? signs of injury ? subcutaneous emphysema ?
- Cyanosis ?
- Auscultate the chest
- Percussion : dullness? hyperresonance?

✧ **Management :**

- Administer high concentrations of oxygen
- Ventilate with BVM
- Alleviate tension pneumothorax : needle decompression / Place chest tube
- Indication for thoracotomy
- Seal an open pneumothorax
- Pulse oximeter

✧ **Important Notes :**

- Always check for one-lung intubation, chest X-rays should be performed

✧ **Pitfalls :**

- If the ventilation problem is produced by a pneumothrax, intubation with MV could lead to deterioration.
- The procedure itself may produce a pneumothorax

Circulation with Hemorrhage Control

✧ **Q : What are the elements that provide the information about the hemodynamic status of the injured patients.**
These elements are:

1. Level of consciousness
2. Skin color
3. Pulse (quality, rate, regularity)

✧ Presence of a carotid pulse SBP≥ 60 mmHg
femoral pulse SBP≥ 70 mmHg
radial puse SBP≥ 80 mmHg

✧ **External bleeding** is identified and controlled in the primary survey.
✧ **Operative intervention** for internal bleeding control.

✧ **Q : What are the injuries that may acutely impair circulation status ?**
These injuries are :

1. External/internal bleeding with hypovolemic shock
2. Massive hemothorax
3. Cardiac tamponade

✧ **Assessment:**

- Identify source of external hemorrhage
- Identify potential source(s) of internal hemorrhage /
- Pulse / skin color, capillary refill / Blood pressure

✧ **Management:**

- Apply direct pressure to external bleeding site.
- Internal hemorrhage ? Need for surgical intervention ?
- Establish IV access / central line / IO
- Fluid resuscitation / blood replacement

✧ **Important Notes** :

- Hypotension following injury must be considered to be hypovolemic in origin until proved otherwise.

✧ **Pitfalls :**

- The elderly, children, athletes and others with chronic medical conditions do not respond to volume loss in similar manner

Disability

✧ **Assessment** :

- **Level of consciousness** in the AVPU scale

Alert

Voice illicits response
Pain illicits response
Unresponsive

- GCS
- Pupils size, equality and reaction

✧ **Management** :

4. Intubation and allow mild hyperventilation
5. Administer IV mannitol (1.5-2.0g/kg)
6. Arrange for brain CT

✧ **Important notes :**

5. CT is contraindicated when the patient is hemodynamically unstable
6. A decrease in the level of consciousness may due to:
   q. Decreased cerebral oxygenation (A,B)
   r. Decreased cerebral perfusion (C)
   s. Direct cerebral injury (D)
   t. Alcohol / drugs

   Always rule out hypoxemia and hypovolemia first.
7. Reevaluation

✧ **Pitfalls :**

- Lucid interval of acute EDH, reevaluation is important.

Exposure / Environment Control

✧ Completely undressed the patient.
✧ Prevent hypothermia
✧ Injured patients may arrive in hypothermic condition
✧ Log-roll

➢ **RESUSCITATION**

✧ To reverse immediately life-threatening situations and maximize patient survival

TREATMENT PRIORITY	NECCESSARY PROCEDURE
Airway	1. Jaw thrust/chin lift/ 2. Suction 3. Intubation 4. Cricothyroidotomy (with protection of C-spine)
Breathing/Ventilation/oxygenation	1. Chest needle decompression 2. Tube thoracostomy 3. Supplemental oxygen 4. Seal open pneumothorax
Circulation/hemorrhage control	1. IV line/ central line 2. Venous cutdown 3. Fluid resuscitation/Blood transfusion 4. Thorocostomy for massive hemothorax 5. Pericardiocentesis for cardiac tamponade
Disability	1. Burr holes for trans-tentorial herniation 2. IV mannitol
Exposure/**E**nvironment	1. Warmed crystalloid fluid 2. Temperature

➢ **ADJUNCTS TO PRIMARY SURVEY AND RESUSCITATION**

- ✧ Electrocardiographic Monitoring.
- ✧ Urinary Catheter
- ✧ Gastric Catheter
- ✧ Monitoring
  - ABG
  - Pulse oximeter
  - Blood pressure
- ✧ X-rays
  - AP CXR
  - AP pelvis
  - C-spine
- ✧ Diagnostic peritoneal lavage
- ✧ Abdominal ultrasonography (FAST)

➢ **CONSIDER NEED FOR PATIENT TRANSFER**

➢ **SECONDARY SURVEY**

- ✧ The secondary survey does not begin until:
  - the primary survey is completed,
  - resuscitation efforts are well established,
  - the patient is demonstrating normalization of vital functions.
- ✧ Head-to-toe evaluation
- ✧ Complete history and PE
- ✧ Reassessment of all vital signs.
- ✧ Complete NE.
- ✧ Indicated x-rays are obtained.
- ✧ Special procedures
- ✧ Tubes and fingers in every orifice

✧ **<u>History</u>:**

AMPLE history
Allergies
Medications currently used
Past illness/ **P**regnancy
Last meal
Events/ **E**nvironment related to the injury
Mechanism/blunt/penetrating/burns/cold/hazardous environment

✧ **<u>Physical Examination</u>**:

Table 1.

✧ **Pitfalls:**

- Facial edema in patients with massive facial injury or patients in coma can preclude a complete eye examination.
- Blunt injury to the neck may produce injuries in which clinical signs and symptoms develop late.(e.g. Injury to the intima of the carotid a.)
- The identification of cervical n. root/brachial plexus injury may not be possible in the comatose patient.
- Decubitus ulcer from immobilization on a rigid spine board/cervical collar.

- Children often sustain significant injury to the intrathoracic structures without evidence of thoracic skeletal trauma.
- A normal initial examination of the abdomen does not exclude a significant intraabdominal injury.
- Patients with impaired sensorium secondary to alcohol/drugs are at risk.
- Injury to the retroperitoneal organs may be difficult to identify.
- Female urethral injury are difficult to detect.
- Blood loss from pelvic fractures can be difficult to control and fatal hemorrhage may result.
- Fractures involving the bones of extremities are often not diagnosed.
- Most of the diagnostic and therapeutic maneuvers increase ICP.

➢ ADJUNCTS TO THE SECONDARY SURVEY

These specialized tests should not be performed until the patient's hemodynamic status has been normalized and the patient has been carefully examined.

- ✧ Additional x-rays of the spine and extremities
- ✧ CT of the head, chest, abdomen, and spine
- ✧ Contrast urography
- ✧ Angiography
- ✧ Bronchoscopy
- ✧ Esophagoscopy
- ✧ Others

➢ REEVALUATION

- ✧ The trauma patient must be reevaluated constantly to assure that new findings are not overlooked.
- ✧ A high index of suspicion
- ✧ Continuous monitoring of vital signs and urinary output is essential.
- ✧ ABG/cardiac monitoring/ pulse oximetry
- ✧ Pain relive- IV opiates/anxiolytics.

➢ DEFINITIVE CARE

- ✧ Transfer to a trauma center or closest appropriate hospital.

➢ TRAUMATIC SHOCK

- ✧ **Recognition of Shock :**
  - Early: Tachycardia and cutaneous vasoconstriction
  - Normal heart rate varies with age, tachycardia is present when
    Infant: >160 BPM
    Preschool age child: >140 BPM
    School age to puberty: >120 BPM
    Adult: >100 BPM
  - The elderly patient may not exhibit tachycardia because of the limited cardiac response to catecholamine stimulation / use of medications

- ✧ **Differentiation of shock:**
  - **Hemorrhagic shock** hypovolemic shock

- **Nonhemorrhagic shock:**
  a. Cardiogenic shock: Blunt cardiac injury, cardiac tamponade, air embolus, myocardial infarction.
  b. Tension pneumothorax
  c. Neurogenic shock
  d. Septic shock

✧ The normal blood volume of adult is 7 % of body weight. Whereas that of a child is 8-9% of body weight.

✧ **Estimated Fluid and Blood Losses: (For a 70-kg man)**

	Class I	**Class II**	**Class III**	**Class IV**
Blood Loss (ml)	Up to 750	750-1500	1500-2000	>2000
Blood Loss (% Blood Volume)	Up to 15 %	15-30 %	30-40 %	>40 %
Pulse Rate	<100	>100	>120	>140
Blood Pressure	Normal	Normal	Decreased	Decreased
Pulse Pressure (mmHg)	Normal or increased	Decreased	Decreased	Decreased
Respiratory Rate	14-20	20-30	30-40	> 35
Urine Output (mL/hr)	>30	20-30	5-15	Negligible
CNS/Mental status	Slightly anxious	Mildly anxious	Anxious, Confused	Confused, Lethargy
Fluid Repacement (3:1 rule)	Crystalloid	Crystalloid	Crystalloid and blood	Crystalloid and blood

✧ **Fluid Therapy:**
- **Fluid bolus:** 1-2 liters for an adult and 20mL/kg for a pediatric patient
- **3:1 rule**
- **39 °C** (1 liter fluid, microwave, high power, 2 minutes)

✧ **Blood Replacement:**
- PRBC/Whole blood
- Crossmatched/type-specific/ type O blood
- FFP (1U FFP for every 5 U PRBC)

✧ CVP monitoring

Thoracic Trauma

➢ **PATHOPHYSIOLOGY**

✧ **1. Hypoxia:** a.Hypovolemia (blood loss); b. Pulmonary ventilation / perfusion mismatch (contusion, hematoma, alveolar collapse); c. Changes in intrathoracic pressure relationships (tension pneumothorax, open pneumothorax)

✧ **2. Hypercarbia:** a. Inadequate ventilation due to changes in intrathoracic pressure; b. Depressed level of consciousness

✧ **3. Metabolic acidosis:** Hypoperfusion of the tissues (shock)

➢ **ASSESSMENT & MANAGEMENT:**

- Must consist of:
  1. Primary survey
  2. Resuscitation of vital functions
  3. Detailed secondary survey
  4. Definitive care

- **PRIMARY SURVEY (Life-threatening injuries)**
  - **Airway:**
    - **Recognition of:** Stridor, change of voice quality, obvious trauma
    - **Major problems:**
      1. FB obstructions,
      2. Laryngeal injury,
      3. Posterior dislocation / fracture dislocation of the sternoclavicular joint.
    - **Management:** Establishing a patent airway/ ET intubation; closed reduction.

  - **Breathing:**
    - **Recognition of:** Neck vein distention, respiratory effort and quality changes, cyanosis
    - **Major problems:**
      1. Tension pneumothorax:
         - Clinical diagnosis
         - Chest pain, air hunger, respiratory distress, tachycardia, hypotension, tracheal deviation, unilateral absence of breath sounds, neck vein distention, cyanosis. (V.S. cardiac tamponade)
         - Hyperresonant percussion.
         - Immediate decompression: Needle decompression/ chest tube.
      2. Open pneumothorax:
         - 2/3 of the diameter of the trachea – impaired effective ventilation
         - Sterile occlusive dressing, taped securely on 3 sides.
         - Chest tube (remote)
      3. Flail chest:
         - ≥ 2 ribs fractured in two or more places.
         - Severe disruption of normal chest wall movement.
         - Paradoxical movement of the chest wall.
         - Crepitus of ribs.
         - The major difficulty is underlying lung injury (pulmonary contusion)
         - Pain.
         - Adequate ventilation, humidified oxygen, fluid resuscitation.
         - The injured lung is sensitive to both underresuscitation of shock and fluid overload.
      4. Massive hemothorax:
         - Compromise respiratory efforts by compression, prevent adequate ventilation.

  - **Circulation:**
    - **Assessment:** Pulse quality, rate and regularity. BP, pulse pressure, observing and palpating the skin for color and temperature. Neck veins.
    - **Important notes:** Neck veins may not be distented in the hypovolemic patient with cardiac tamponade, tension pneumothorax,or traumatic diaphragmatic injury.
    - **Monitor with:** Cardiac monitor/pulse oximeter.
    - **Major problems:**

1. Massive hemothorax:
   - Rapid accumulation of > 1500 mL o blood in the chest cavity.
   - Hypoxia
   - Neck veins may be flat secondary to hypovolemia
   - Absence of breath sounds and/or dullness to percussion on one side of the chest
   - Management: Restoration of blood volume and decompression of the chest cavity.
   - Indication of thoracotomy: a. Immediately 1500 mLof blood evacuated. b. 200mL/hr for 2-4 hrs. c. Patient's physiology status. d. Persistent blood transfusion requirements.
2. Cardiac tamponade:
   - Beck's triad: venous pressure elevation, decline in arterial pressure, muffled heart tones.
   - Pulsus paradoxicus.
   - Kussmaul's sign.
   - PEA
   - Echocardiogram.
   - Management: Pericardiocentesis.

- **RESUSCITATIVE THORACOTOMY**
  - Left anterior thoracotomy
  - The therapeutic maneuvers that can be effectively accomplished with a resuscitative thoracotomy are:
    - Evacuation of pericardial blood causing tamponade.
    - Direct control of exsanguinating intrathoracic hemorrhage
    - Open cardiac massage
    - Cross cramping of the descending aorta to slow blood loss below the diaphragm and increase perfusion to the brain and heart.

- **SECONDARY SURVEY:**
  - Further in-depth PE, Chest x-rays (PA), ABG, Monitoring.
  - Eight lethal injuries are considered:
    1. Simple pneumothorax
    2. Hemothorax
    3. Pulmonary contusion
    4. Tracheobronchial three injuries
    5. Blunt cardiac injuries
    6. Traumatic aortic disruption
    7. Traumatic diaphragmatic injury
    8. Mediastinal traversing wounds.

Simple Pneumothorax

- Breath sounds are decreased on the affected side. Percussion demonstrates hyperresonance.
- CXR
- Chest tube insertion F/U CXR..
- Never use general anesthesia or positive pressure ventilation to patient who sustains traumatic pneumothorax until a chest tube is inserted.

Hemothorax

- ✧ Lung laceration/ intercostal vessel laceration/ Int.mammary a. Laceration.
- ✧ Chest tube
- ✧ Guide line of surgical exploration.

Pulmonary Contusion

- ✧ Respiratory failure.
- ✧ Patients with significant hypoxia should be intubated.
- ✧ Monitoring.

Tracheobronchial Tree Injury

- ✧ Hemoptysis, subcutaneous emphysema, tension pneumothorax with a mediastinal shift.
- ✧ Pneumothorax associated with a persistent large air leak after tube thoracostomy.
- ✧ Bronchoscopy
- ✧ Opposite main stem bronchial intubation.
- ✧ Intubation may be difficult operative intervention

Blunt Cardiac Injury

- ✧ Result in: Myocardial muscle contusion, cardiac chamber rupture, valvular disruption.
- ✧ Hypotension, ECG abnormalities, wall-motion abnormality
- ✧ ECG: VPC, sinus tachycardia, Af, RBBB, ST seg. changes.
- ✧ Elevated CVP.
- ✧ Monitor.

Traumatic Aortic Disruption

- ✧ High index of suspicion
- ✧ Adjunctive radiological signs:
  - Widened mediastinum
  - Obliteration of the aortic knob
  - Deviation of the trachea to the right
  - Obliteration of the space between the pulmonary artery and the aorta
  - Depression of the left main bronchus
  - Deviation of the esophagus to the right
  - Widened paratracheal stripe
  - Widened paraspinal interfaces
  - Presence of a pleural or apical cap
  - Left hemothorax
  - Fractures of the first or second rib or scapula.
- ✧ Angiography is the gold standard.
- ✧ On critical.

Traumatic Diaphragmatic Injury

- ✧ More commonly diagnosed on the left side
- ✧ NG tube
- ✧ UGI series.
- ✧ Direct repair.

Mediastinal Traversing Wounds

- ✧ Surgical consultation is mandatory.

- ✧ Hemodynamic abnormal : thoracic hemorrhage, tension pneumothorax, pericardial tamponade.
- ✧ Mediastinal emphysema: esophageal or tracheobronchial injury.
- ✧ Mediastinal hematoma: great vessel injury.
- ✧ Spinal cord.
- ✧ For stable patient.
  - Angiography
  - Water-soluble contrast esophagography
  - Bronchoscopy
  - CT
  - Ultrasonography.

Others

- ✧ **Subcutaneous emphysema**
- ✧ **Traumatic Asphyxia**
  - Compression of the SVC.
  - Upper torso, facial and arm plethora.
- ✧ **Rib, Sternum, and Scapular fractures.**
- ✧ **Blunt esophageal Rupture**

Abdominal Trauma

- ➢ **Mechanism of Injury:**
  - ✧ **Blunt Trauma:**
    - Spleen, liver, retroperitoneal hematoma
  - ✧ **Penetrating Trauma:**
    - Stab: Liver, small bowel, diaphragm, colon
    - Gunshot: small bowel, colon, liver, abdominal vascular structures.

- ➢ **Assessment:**
  - ✧ **Hitory.**
  - ✧ **PE:**
    - **Inspection**
    - **Auscultation:**
      1. Bowel sounds
    - **Percussion**
      1. signs of peritonitis
      2. Tympanic/ diffuse dullness
    - **Palpation**
      1. Involuntary muscle guarding
    - **Evaluation of penetrating wounds:**
      Determine the depth
    - **Assessing pelvic stability:**
      Manual compression
    - **Penile, perineal and rectal examination:**
      1. Presence of urethral tear.
      2. Rectal exam: Blunt (sphincter tone, position of the prostate, pelvic bone fractures), Penetration (sphincter tone, gross blood from a perforation)
    - **Vaginal examination**

- **Gluteal examination**

✧ **Intubation:**

- **Gastric tube:**
  - Relieve acute gastric dilatation.
  - Presence of blood

- **Urinary catheter:**
  - Relieve urine retention
  - Monitoring urine output.
  - **Caution:** The inability to void, unstable pelvic fracture,blood in the meatus, a scrotal hematoma, perineal ecchymoses, high-riding prostate.

✧ **X-rays studies:**

- **Blunt Trauma:**
  - Hemodynamically stable:
    Supine/upright abdominal x-rays
    Left lateral decubitus film
- **Penetrating Trauma:**
  - Hemodynamically stable:
    Upright CXR.

✧ **Contrast Studies:**

- **Urethrography**
- **Cystogaphy**
- **IVP**
- **GI series**

✧ **Special diagnostic studies in blunt trauma:**

- **DPL**
- **Ultrsonography**
- **Computed tomography**

✧ **Special diagnostic studies in penetrating trauma:**

- **Lower chest wounds**
- **Anterior abdominal**
- **Flank/back**

➢ **Indications For Celiotomy**

✧ **Based on abdominal evaluation**

- **Blunt:** Positive DPL/ ultrasound
- **Blunt:** Recurrent hypotension despite adequate resuscitation
- **Peritonitis**
- **Penetrating:** Hypotension
- **Penetrating:** Bleeding from the stomach, rectum, GU tract.
- **Gunshot wounds:** Traversing the peritoneal cavity
- **Evisceration**

✧ **Based on x-rays studies:**

- Free air, retroperitoneal free air, rupture of the hemidiaphragm
- CT demonstrates ruptured organ/ GI tract.

- **Special Problems**
  - **Blunt Trauma:**
    - **Diaphragm**
    - **Duodemun**
    - **Pancrease**
    - **Genitourinary**
    - **Small bowel**

  - **Pelvic Fractures:**
    - **Assessment:**
      - The flank, scrotum and perianl area should be inspected
      - Blood at the urethral meatus, swelling/bruishing/laceration in the peritoneum, vagina, rectum, or buttock open pelvic facture
      - Palpation of a high-riding prostate gland.
      - Manual manipulation of the pelvis should be performed only once.

    - **Management:**

Exsanguination with/without open pelvic fracture (BP<70mmHg)	**Blood pressure stabilizees with difficulty and closed/unstable fracture (BP 90-110mmHg)**	**Blood Pressure normal and closed/unstable or stable fracture (BP 120 mmHg)**
Initiate ABCDEs ↓ If transfer neccessary, apply PASG ↓ If open go to OR for possible perineal exploration and celiotomy ; if closed, supraumbilical DPL or Ultrasound to exclude intraperitoneal hemorrhage. ↓ Positive Negative ↓ ↓ After operation reduce & apply fixation device as appropriate Red uce & apply fixation device as appropriate ↓ Hemodynamically Abnomal ↓	Initiate ABCDEs ↓ If transfer neccessary, apply PASG ↓ supraumbilical DPL or Ultrasound to exclude intraperitoneal hemorrhage. ↓ Positive Negative ↓ ↓ After celiotomy reduce & apply fixation device as appropriate Reduce & apply fixation device as appropriate ↓ Hemodynamically Abnomal ↓ Angiography ↓	Initiate ABCDEs ↓ If transfer neccessary, apply PASG ↓ Evaluate for other injuries ↓ Apply fixation device if needed for patient mobility

Angiography		

Secondary level:

1. Uncomplicated fractures and dislocation like fracture Tibia, Colle's fracture, Fracture Humerus, fracture patella; ankle fracture etc can be managed in the secondary level center.

2. Uncomplicated fractures of neck of femur in elderly without co- morbid medical conditions can be managed in secondary center. Adequate anesthesia and theatre facility including 'C Arm' should be available in secondary center.

Spinal injuries: Stable fractures (< 50% compression, without neurological deficits) may be managed in secondary center.

Tertiary level care

- Polytrauma should be transferred to tertiary centre only after adequate haemodynamic stabilisation and splinting.

One dose of broad spectrum antibiotic (cephalosporin) along with tetanus prophylaxis should be given.

- Complicated fractures like open fracture which require urgent. surgical intervention may be referred to tertiary center.

- Spinal injuries: Stable fractures (< 50% compression, without neurological deficits) may be managed in secondary center.

Unstable spinal fractures (> 50% compression, 2 column involvement, with Neurological deficits) may be referred to higher center. One dose of methyl prednisolone in a dose of 30mg/kg body weigh may be given as a bolus dose. Along with intravenous Pantoprazole 40 mgs. Can also be given.

Then patient may be transported taking care not to produce further damage (spinal board).

- Knee problems like internal derangement requiring diagnostic and therapeutic arthroscopy may be referred, till trained personnel and equipment is made available in secondary centre.

- Hand injuries, requiring surgical procedures and reconstructive procedure/ re implantation may be referred preferably to plastic

B. CARDIAC EMERGENCIES:

REFERAL PROTOCOL

ACUTE CORONARY SYNDROME

- Patient presenting with anginal chest pain should be given **loading dose**.

Loading Dose:
Aspirin 300mg
Clopidrogel < 75 yrs 300mg
>75yrs 75 mg
Atorvastatin 80mg

- Vitals to be monitored.
- An ECG to be taken within 10 mins and if it is suggestive of STEMI, possible transfer to the HUB hospital for primary PCI is to be considered.
- If the expected door to balloon time is < 90 mins patient may transferred immediately to the HUB hospital for PPCI.
- If the expected door to balloon time is > 90 mins patient may thrombolysed (door to needle time <20 mins) and then transferred to the HUB hospital for Pharmaco invasive therapy.
- If patient has STEMI with hemodynamic instability patient may be referred immediately to the HUB hospital with initial stabilization and ionotropic support as needed (discussed below).
- If the ECG is suggestive of NSTEMI loading dose to be given. First dose of **anticoagulant** may be started and patient may be referred to the HUB hospital.

Anticoagulants Dose:
UFH 5000u IV
LMWH
Enoxaparin 1mg/kg

ACUTE PULMONARY EDEMA: (cardiac cause)

- If patient has a previous history of Coronary Artery Disease or the present ECG shows changes suggestive of acute myocardial infarction or features of an old MI cardiac cause of acute pulmonary edema is certain.
- Monitoring of patients vitals, lung signs and initial stabilization is important.
- If the BP is in hypertensive range **diuretics** to be given with BP monitoring

.

Diuretics Dose:
Initial dose
IV Frusemide 20-40 mg

- If patient presents with hypotension **ionotropes** should be started according to the recorded BP.

Vasodilators:	**Ionotropes**
SBP >110 mmHg	**SBP-85-110 mmHg**
NTG 20 µg/min	Dopamine 1-2 µg/kg/min
	Dobutamine 1-2 µg/kg/min
	SBP< 85 mmHg
	Nor epinephrine 0.2-1.0 µg/kg/min

- If ventilator is available patient may be stabilized with CPAP ventilation
- If ventilator is not available and patient is in hypotension patient may be immediately referred after discussion with the attender of the possible complications during transport time.

ACUTE RHYTHM DISTURBANCE:

TACHYARRHYTHMIA:

Supra ventricular tachycardia:

- Monitor the patient's vitals. If ECG is suggestive of supraventricular (narrow complex tachycardia) access the hemodynamic stability.
- If patient is hemodynamically unstable **DC shock** to be given.

Cardioversion:
DC shock 25-50J

- If patient is hemodyanamically stable adenosine may be given. If there is no response to 3 doses of adenosine, IV metoprolol may be given. If no response DC shock may be tried.

Antiarrythmic agents
Adenosine 6-18 mg IV
Metoprolol 2.5- 5 mg IV
Verapamil 5-10 mg IV
Amiadarone 150 mg IV f/b
infusion 1mg/min

- Patient may be referred if persistent tachycardia despite the above management.
- If the rhythm reverts to sinus with the above management patient may be admitted and observed. Patient may be referred for further evaluation

Ventricular tachycardia:

- Monitor the patient's vitals. If ECG is suggestive of Ventricular (wide complex tachycardia) defibrillate the patient with DC shock.
- Initial stabilization and refer the patient

Defibrillation:
DC shock 100-200J(max 360J)
Amiadarone 150 mg IV f/b infusion
1mg/min

BRADYARRHYTHMIA:

- ECG suggestive of CHB, assess for hemodynamic stability.
- Assess response to atropine.
- Persistence of CHB refers the patient. Isoprenaline infusion may be started before referral.

Isoprenaline
Begin with 2µ/ min infusion

CARDIOGENIC SHOCK:

- Patient presenting with hypotension and shock may be suspected to be cardiogenic If patient has a previous history of Coronary Artery Disease or the present ECG shows changes suggestive of acute myocardial infarction or features of an old MI as mentioned above.
- Monitoring of patients vitals, and initial stabilization to be done.
- Ionotropes should be started according to the recorded BP and patient referred after discussion with the attender of the possible complications during transport time.

Ionotropes
SBP-85-110 mmHg
Dopamine 1-2 µg/kg/min
Dobutamine 1-2 µg/kg/min
SBP< 85 mmHg
Nor epinephrine 0.2-1.0 µg/kg/min

C. BURNS EMERGENCIES:

Burn Protocol to be followed:

I. **At the scene of the Burn incident**

II. **At 108**

III. **At the primary level Centre (PHC)**

IV. **At the District HQ Hospital**

V. **At the Tertiary level Care Centre**

I. At the scene of the Burns

First wear a mask and protective goggles when you have been called to the room if the burn incident is happening or has happened in a closed room.

Make sure the person you're helping is not in contact with the source of the burn.

If the person is still on fire, follow the **STOP, DROP and ROLL procedure.**

STOP, DROP and ROLL exercise**.**

STOP the patient from running around. Cover him with a thick blanket.

DROP him on the floor gently

ROLL him on the floor

Then open the windows and leave all the doors open

Identify the patient who is on fire or has been affected by the fire

For electrical burns, make sure the power source is off before you approach the burned person.

Once the fire is off, move the patient outside the room

Then shift the patient to to the 108, if available, before starting any resuscitation.

If 108 is available,

Patient should immediately be shifted to 108 and the next protocol follows.

If 108 has not yet come,

Make certain that the person burned is breathing. If needed, begin rescue breathing if you know how.

Pour running tap water on the burn wounds

Remove jewelry, belts and other restrictive items, especially from around burned areas and the neck. Give the removed jewelry, belts to the relatives of the patient if they are available.

DO NOT put ice on the burn

DO NOT immerse the patient in a tub of water

DO NOT apply ink, flour, turmeric or any other material on the burn wound

DO NOT apply cotton on any part of the burn areas

Then shift the patient to 108.

First aid for other types of Burns

a. **Chemical burns**
   Quickly remove any contaminated clothing

   Avoid contact with any chemical and further injury to the patient.

   If the chemical is a powder brush it off, avoiding contact, before flushing with water.

   Flood the burned area with copious amounts of water and continue for up to 20 minutes.

   Don’t allow the water to flow down the body of the patient. The water must flush the affected part and then flow directly to the ground

If a chemical solution has splashed into the eye

Hold the affected eyelids open to ensure water washes thoroughly under the lids to remove any trapped chemical.

b. Burns involving the mouth or throat

If the patient has been accidentally exposed to fire or heated gases, damage may occur to the mouth and airway. There may be signs of burning around the lips, nose, mouth, eyebrows or lashes.

A dry cough or hoarse voice is an early sign of airway injury

Remove the patient to an area free of the risk of further injury and preferably into fresh air.

Cool the injury by pouring running water over the burn for 20 minutes.

If there is any breathing difficulty allow the patient to find the position enabling easy breathing with the head and chest raised.

c. **Electrical Burns**

II. At 108

Decide on where the patient is to be shifted

a) Start an IV line if the limbs are free

If the limbs are not free, do not attempt to start an IV line

Start Ringers lactate

Note down the time of starting the IV line

Note down the amount of fluids being given.

b) Start giving humidified O_2 by face mask @ 2 litres/mt
c) Make a quick assessment of the Burn surface area

When the body is involved by burns, it may not look obvious. The only thing that can be noted is the slight change in the colour of the skin.

i. If it is involving only one part of the body, like head, chest, abdomen, only one upper limb or one lower limb, shift the patient to the nearest primary care Centre
ii. If there are burn injuries involving two parts of the body, shift the patient to the nearest District Headquarters hospital
iii. If there are burn injuries involving the entire body, shift the patient to the district headquarters hospital.

Cut the burnt clothes that are loose

Put the cut bits of clothes in a clean bag and label the bag with the name of the patient, part of the body from where the cloth was taken, time of removing the cloth.

Do not peel the burnt clothes if they are stuck to the patient's body

Don't break blisters if they are present.

Pour running tap water on the burns for at least 10 minutes

Cover the burn wounds with a clean gauze

Apply Silver sulfadiazine cream over the areas that appear burned.

Apply a loose bandage to hold the dressings in place

Elevate the burned area. Raise the wound above heart level, if possible.

DO NOT put ice on the burn

DO NOT immerse the patient in a tub of water

DO NOT apply ink, flour, turmeric or any other material on the burn wound

DO NOT apply cotton on any part of the burn areas

d) If the patient is able to swallow a tablet, give a Tablet of Paracetamol (500 mg) with a little water. Do not allow oral fluids until the hospital is reached.

For First-Degree Burns (Affecting Top Layer of Skin)

1. Cool Burn

Hold burned skin under cool (not cold) running water or immerse in cool water until pain subsides.

Use compresses if running water isn't available.

2. Protect Burn

Cover with sterile, non-adhesive bandage or clean cloth.

Do not apply butter or ointments, which can cause infection.

3. Treat Pain

Seek medical help if:

You see signs of infection, like increased pain, redness, swelling, fever, or oozing.

The person needs tetanus or booster shot, depending on date of last injection. Tetanus booster should be given every 10 years.

The burn blister is larger than two inches or oozes.

Redness and pain last more than a few hours.

Pain worsens.

5. Follow Up

For Second-Degree Burns (Affecting Top 2 Layers of Skin)

1. Cool Burn

Immerse in cool water for 10 or 15 minutes.

Use compresses if running water isn't available.

Don't apply ice. It can lower body temperature and cause further pain and damage.

Don't break blisters or apply butter or ointments, which can cause infection.

2. Protect Burn

Cover loosely with sterile, nonstick bandage and secure in place with gauze or tape.

3. Prevent Shock

Unless the person has a head, neck, or leg injury, or it would cause discomfort:

Lay the person flat.

Elevate feet about 12 inches.

Elevate burn area above heart level, if possible.

Cover the person with coat or blanket.

When to refer a burn patient and where to refer?

Patients who should not be treated in a primary health Centre

- all chemical and electrical burns

- large or deep burns – any burn bigger than your hand
- burns that cause white or charred skin – any size
- burns on the face, hands, arms, feet, legs or genitals that cause blisters
- If someone has breathed in smoke or fumes
- children under five years old and pregnant women

What to look for in a burn patient

1. First assess the area and depth of Burn
   Wallace (Rule of 9)

   Depth – Chart

   Associated injuries

      Head injury

      Open wounds

   Associated co-morbids

      Diabetes

      Kidney disease

      Cardiac problems

      Epilepsy

      Congenital anomalies

      Pregnancy lactating mothers

   Age - Less than 5 years and more than 60 years

   Start IV line and give fluids according to the calculations

   Urinary catheterization

   Take blood for sampling

      CBC

      LFT

      RFT

HbsAg

HIV

Urea

Sugar

Creatinine

Start drugs

Analgesics

Antibiotics

Nil oral for 24 hrs

Dressings

III. At PHC

Which patients to treat?

Treat only < 10% superficial burns **without** the following co-morbid conditions

Diabetes mellitus

Kidney disease

Cardiac problems

Hypertension

Ischemic heart disease

Epilepsy

Congenital anomalies

Pregnancy lactating mothers

Conditions that must be referred to District / Taluk HQ hospital straightaway

< 10 % burns with above mentioned co-morbid conditions

10% – 20 % superficial burns

> 60 % burns

Any percentage Electrical Burns

Any percentage chemical burns

Any burn in the very young < 5 years or more than 60 years age,

Any full thickness burn

Burns of special regions: face, hands, feet, perineum

Circumferential burns

Inhalation injury

Documentation

OP form must be filled

Medico-legal case record must be filled

Preparation

Nil

Investigations

Complete Blood Count (CBC)

Renal Function Tests (RFT)

Liver Function Tests (LFT)

IV fluids

Nil

Diet

Normal diet

Drugs to be given

Antibiotics / analgesics / vitamins

Procedures

Nil

Wound management

Complete bath after removing any temporary dressings that may have been done

Clean with dilute Betadine solution 10 ml in 1 bottle of Normal saline

Apply Silver sulfadiazine cream ½ inch thick over the wounds

This process must be done daily

If wounds do not heal or start to heal in 10 days,

or there is persistent temperature > 101 F

or Abnormal blood sugar values (on 2 consecutive instances)

or Abnormal renal parameters

or Abnormal liver parameters

Refer to MC Hospital

IV. At the District HQ Hospital

Which patients to treat?

< 10 % burns with co-morbid conditions like

- Diabetes mellitus
- Hypertension
- Ischemic heart disease
- Epileptic

10% – 20 % superficial burns

> 60 % burns

Any percentage Electrical Burns

Any percentage chemical burns

Receive the patient in a clean corner of the surgical ward

Restrict the number of visitors for the patient

Advise hand washing for the medical / paramedical personnel and the care-givers for the patient

- Before touching the patient or his surroundings
- After touching the patient or his surroundings
- Before doing any procedure like recording temperature / changing IV fluids / doing dressings

Conditions that must be referred to Medical College Hospital straightaway

Any percentage of deep burns

Any percentage electrical burns

Any percentage chemical burns

Documentation

IP form must be filled

Medico-legal case record must be filled

Preparation

Assess weight of the patient

Burn surface Area (% BSA)

Assess the depth of the burns (See Chart)

IV line to be started with 18 G Venflon in the upper limbs

If upper limbs are involved in burns, lower limbs can be used for IV cannula

If IV line is not possible, venous cut-down to be started

Urinary catheterization to be done with indwelling rubber/silastic catheter

Investigations

Complete Blood Count (CBC)

Renal Function Tests (RFT)

Liver Function Tests (LFT)

Blood grouping

Chest X-ray

If pregnancy / history of amenorrhea, Ultrasound abdomen to be done

IV fluids

Fluids to be administered according to the calculated amount

Day 1:

Total fluids to be given on Day 1(24 hours from time of burn)

Modified Parkland Regimen (3 ml X %age BSA X Body weight in kg)

First 8 hours (calculated from the time of the burn): ½ of the calculated total amount

Second 8 hours: ¼ of the calculated total amount

Third 8 hours: ¼ of the calculated total amount

Day 2:

½ the total calculated amount as Ringer's Lactate

Remaining of the calculated total amount must be given as Dextrose.

Day 3 onwards:

Total urine output volume + 1 litre to be given.

Diet

Sips of fluids if tolerated

Do not allow oral fluids if

- unsupervised feeding
- patient is not conscious
- patient disoriented

Drugs to be given

Antibiotics / analgesics / vitamins

Procedures

Day 1: If any associated injuries like lacerations – should be sutured.

Day 3: Wound swab to be taken and sent for culture and antibiotic sensitivity

Wound management

Complete bath after removing any temporary dressings that may have been done

Clean with dilute Betadine solution 10 ml in 1 bottle of Normal saline

Apply Silver sulfadiazine cream ½ inch thick over the wounds

This process must be done daily

For the 10 – 20% burns,

If wounds do not heal or start to heal in 10 days,

or there is persistent temperature > 101 F

or Abnormal blood sugar values (on 2 consecutive instances)

or Abnormal renal parameters

or Abnormal liver parameters

For the > 60% burns,

60 – 80% Burns can be referred to Medical College Hospital, if the patient has normal parameters on CBC, RFT, LFT, blood sugar, adequate urine output

Refer to MC Hospital

V. Burn protocol at Medical College Hospital

1. Admission
    - 1.1 Registration
        - 1.1.1 Triage
        - 1.1.2 Records
        - 1.1.3 Consent forms
    - 1.2. Criteria for admission
    - 1.3. Referral
    - 1.4. Legal procedures
    - 1.5. Investigations

2. Burn care
    - 2.1. Fluid management
        - 2.1.1. Initial fluid therapy
            - 2.1.1.1. Adult

2.1.1.2. Pediatrics

2.1.1.3. Burn patients with comorbid illness

2.1.2. Maintenance fluid therapy

2.1.2.1. Fluid therapy for shock

2.1.3. Transfusion of colloids and blood products

2.1.4. Antibiotic protocol

2.1.5. Pharmacological support for burn care

2.2. Burn wound management

2.2.1. Burn wound assessment

2.2.2. Burn wound cleaning

2.2.3. Burn wound dressing

2.3. Burn surgeries

2.3.1. Emergency procedures

2.3.2. Acute burn wound surgeries

2.3.3. Amputation

2.3.4. Delayed surgeries

2.4. Pain control

2.4.1. Acute burn pain

2.4.2. Postsurgical pain relief

2.4.3. Chronic pain management

2.4.4. Management of pruritus

3. Respiratory care

4. Nutrition

4.1. Acute phase

4.2. Recovery phase

5. Physiotherapy

5.1. Acute stage of burn

5.2. After stabilization of acute stage

6. Management of comorbid conditions

7. Rehabilitation

8. Post burn follow up protocol

1. Admission

1.1. **Registration**

a. All burn patients are seen by the casualty medical officer (CMO).
b. AR (Accident Registry) entry is made.
c. Patients with minor burn are referred to surgery ward for opinion.
d. CMO admits burn patients with major burns.
e. In patient number and diet sheet are issued and patients are sent to burns ward.
f. Inj. Tetanus toxoid0.5 ml is given at the time of initial visit if not given in the hospital from where patient was referred.

1.1.1. Triage

If many burns patients are presented at the same time, triage is done.

CMO examines the patient and segregates the patients as to be admitted as inpatients or to be treated as out patients based on criteria for admission (1.2)

1.1.2. Records

The following registers must be maintained in the Ward where the Burn patients are being admitted

a. Police intimation book
b. Outpatient entry register
c. Burns ward admission register- nominal register
d. Acute burn register (Containing details of the patient with regards to Burns and General condition) (Annexure)
e. Admission –Discharge register
f. Emergency surgery record register
g. Police Outpost Memo book
h. Magistrate memo book - Memo should be sent to the Magistrate to record dying Declaration (DD) for all Burns
    - In women who have been married for less than 7 years
    - Any patient with homicidal burns
    - Any patient with burns with a suspicious / unreliable history
i. Operation register
j. Discharge intimation book
k. Death intimation book

1.1.3. Forms

1.1.1. DIL Form (Annexure)

1.1.2. Consent form for surgery (Annexure)

1.1.3. AMA Discharge (Against medical advice)

1.1.4. Corporation forms in case of death of the patient

1.2 **Criteria for admission**

- Burns>15% BSA in adult
- Burns >10% BSA in children
- Burns over face, hands and genitalia
- Burn in patients in extremes of age.
- Homicidal burns.
- Chemical burns.
- Electrical burns.
- Burns in patients with co-morbidities
- Burns in pregnant women
- Burns sustained in suspicious circumstances.

1.3. **Referral**

1.3.1. Referral to burns ward from other hospitals

a. Burns requiring admission. (Ref 1.2)
b. Burns requiring surgical management.
c. Burns with complications either medical or surgical.

1.4. Legal Procedures

1. All burn patients are treated as medico legal patients.
2. Police and Judiciary are to be informed.
3. All burn deaths are subjected to postmortem examination.
4. Medical records are preserved for 15 years by MRD.

1.5 Investigations

1.5.1: At the time of admission:

Blood sample:

1. CBC
2. Blood sugar
3. Blood urea
4. Serum creatinine
5. Serum electrolytes
6. HIV
7. HBsAg
8. ECG- In patients with co morbidities and > 40 years
9. CT Scan- when associated with Trauma

1.5.2: On second day:

1. All the investigations done on Day 1 are repeated
2. Blood grouping & Rh Typing
3. LFT
4. RFT
5. Total proteins

6. X ray chest

1.5.3: PBD3:

Swab taken from wound for culture & sensitivity
Investigations required as per patients comorbidity/ specialist opinion

1.5.4: Investigations are repeated according to the general condition of the patient

2. Burn Care

2.1 Fluid management

2.1.1. Initial fluid therapy.

2.1.1.1. Adult: Resuscitation is by modified Parkland formula with Ringer lactate solution

3 x BSA X Weight in Kg = fluid requirement for 24 hours

50% of the calculated fluid is given in the first eight hours which is calculated from the time of burns and not from the time of admission.

Rest of the calculated fluid is given in the ration of 25% in next eight hours each.

2.1.1.2. Pediatric patients: they are given burn replacement fluids and maintenance fluids.

3 x BSA X Weight= replacement fluid for 24 hours.

Maintenance fluid is 5% dextrose solution which is calculated as below.

Up to 10 kg: 100 ml/ kg body weight

50 ml/ kg for next 5 Kg and 30 ml/ Kg for > 15 kg.

Total volume is divided into 3 rations for every 8 hour of post burn infusion and is given along with replacement fluids.

2.1.1.3. Fluid requirements for special needs.

2.1.1.3.1. Electrical burn patients: are resuscitated with Ringer lactate solution 7 x BSA X Weight for replacement fluid therapy.

2.1.1.3.2. Diabetic patients who are already on treatment are started with Ringer lactate solutions. CBG and venous blood samples are sent for blood glucose assessment.

If blood glucose is > 200mg/dl then the fluid for replacement is changed to 0.9 % normal saline.

2 units of Inj.Actrapid insulin is started and if needed Dextrose normal saline is transfused.

Eighth hourly glucose monitoring is done.

2.1.1.3.3. Renal diseases complicating burns: Patients with chronic renal disease are given 0.9 normal saline infusion and fluids are adjusted as per the Nephrologist opinion which is based on renal parameters.

Strict intake output chart is mandatory and FFP may be given early.

2.1.2 Maintenance fluids:

From the second post burn day fluid transfusion is for maintenance therapy only.

50% of the calculated fluid is usually given in the next 24 hours. This is given as Ringer lactate and Dextrose normal saline.

2.1.2.1 Oral fluids: all conscious patients are permitted to take oral fluids and diet to avoid enteric translocation of bacteria. Nasogastric tube feeding can be done and high calorie diet can be given when there is no paralytic ileus.

2.1.3 Transfusion of blood, plasma and colloids:

On post burn day 2, all patients are given 1 unit of fresh frozen plasma.
Repeat doses are given when serum proteins are low. Patients with impaired renal parameters and have to have strict fluid restrictions are given FFP to supplement fluids.
Blood transfusions are required in patients with Hb <10 gm/dl.
Blood replacement is required for surgical blood loss or for replacement in postoperative period.
Colloids like Dextrin, Dextran, Haemaccel are used during large volume fluid replacement or in shock management.
Amino acids are available for transfusion to enhance protein supplementation in the post burn period.

2.1.4. Infection Control

Patient must be kept in isolation

Patient must be taken care of by a single Nurse / Ward attendant who are dedicated to this patient only

Follow hygiene precautions

Sterile gloves when handling patients

Hand washing by the attender of the patient

Hand washing by the medical and paramedical personnel

Rigorous wound management (dressing changes, early excision).

– Separate “new” patients (< 7 days from burn) from convalescent patients (≥ 7 days from burn).

– Do not administer antibiotic therapy in the absence of systemic infection.

Infection is defined by the presence of at least 2 of 4 following signs:

Temperature > 38.5 °C or < 36 °C

Tachycardia.

Tachypnoea.

Elevation of white blood cell count by more than 100% (or substantial decrease in the number of white blood cells).

In the event of systemic infection, start empiric antibiotic treatment:

cefazolin IV

Children > 1 month: 25 mg/kg every 8 hours

Adults : 2 g every 8 hours

+ ciprofloxacin PO

Children > 1 month: 15 mg/kg 2 times daily

Adults: 500 mg 3 times daily

– Local infection, in the absence of signs of systemic infection, requires topical treatment with silver sulfadiazine.

2.1.5. Pharmacological support for burn care

– Omeprazole IV from D1

Children: 1 mg/kg once daily

Adults: 40 mg once daily

– Tetanus immunization/prophylaxis (see Tetanus, Chapter 7).

– Thromboprophylaxis: nadroparin SC beginning 48 to 72 hours post-injury. High risk dosing protocol if the BSA is > 50% and/or in the event of high-voltage electrical injury; moderate risk dosing protocol if the BSA is 20 to 50% and/or in the event of burns of the lower limbs.

2.2. Burn wound management

2.2.1. Burn wound assessment

The extent of burn wound is assessed with Lund and Browder chart by marking the burnt areas on the diagram.

Depth of burn is indicated by a single slant line shading for superficial burn and double cross shading for deep burn and full darkening for gangrenous area.

First degree burns are not included for the purpose of calculation of BSA burnt.

First degree burns are epidermal burns characterized by redness and burning sensation. Wash the area with water till the burning sensation is reduced and apply SSD ointment.

Second degree burns are reddish and develop blisters. If the size of blister is less than 1 cm only SSD or saline dressing is done. If the blister is more than 1 cm then de roof and apply SSD/ SALINE dressing. After 24 hours the wounds are covered with collagen. Collagen can be applied for trunk or non-circumferential areas on limbs. Acticoat or Mepilex AG dressing can be used for fingers and circumferential burns on limbs. After dressing limb elevation is done.

Third degree burns are full thickness burns and are whitish or black in appearance if covered with soot particles. There is no pin prick sensation and surface is dry. These areas are usually covered with SSD. Closed dressing with thick absorbent pad and bandage is applied.

2.2.2. Burn wound cleaning

All patients are given a bath and then only dressings are done.

Before every dressing patients are taken to the washroom and are given a shower. Wounds are cleaned with soap and water.

Patients who are critical or on ventilator support are to be given dressings in their beds after cleaning with betadine and saline.

Patients who had chemical burns are given repeated wash with copious running water in the first 24 hours.

Post- operative patients are given dressings in the OT or bedside after first 24 or 48 hours of surgery as per the soakage of dressing.

Non adherent (paraffin gauze) dressing is applied after SSG.

2.2.3. Burn wound dressing

2.3. Burn surgeries

2.3.1 Emergency procedures

2.3.1.1: At the time of admission: all bleeding injuries due to laceration or trauma has to be cleaned debrided and suturing is done under local regional or general anesthesia as required.

2.3.1.2: Full thickness circumferential burns with distal vascular deficit need emergency Fasciotomy.

2.3.1.3: Circumferential deep burns over neck and chest will require crisscross checker incisions up to the level of burns to allow chest expansion.

2.3.1.4: Respiratory burn victims require emergency tracheostomy if intubation and ventilation was not possible.

2.3.2 Gangrene of digits or limb has to be managed by amputation at appropriate level under regional or general anesthesia. All high tension contact burns will lead to gangrene

and hence have to be dealt with Fasciotomy to avoid further extension of gangrene above the level of demarcation.

2.3.3. Acute burn wound surgeries

2.3.3.1: After first 24 hours of burn: All superficial burn patients are taken to the operation theatre for wound debridement.

2.3.3.2: Collagen application under intravenous sedation.

2.3.3.3: After 3 to 5 days of burn:

Full thickness burn less than 20% BSA can be excised tangentially till capillary bleeding is noted and covered either with meshed auto graft or cadaver graft.

2.3.4. Delayed procedures:

2.3.4.1: Escharectomy. All raw areas with eschar need debridement. Eschar with is separating is dealt with Escharectomy. If eschar is circumferential it can be incised to accelerate the separation process.

2.3.4.2: Skin grafting

Post burn granulating raw areas need SSG. (Intermediate thickness split thickness skin graft)

2.3.4.3: Flap cover

When vitals like blood vessels, nerves, bones or cartilage are exposed, appropriate flap from local/ regional area or even micro-vascular (free flap) is done.

2.4. PAIN MANAGEMENT

2.4.1. Acute stage of burn: On admission: Inj.Pentazocain / Inj.Morphin/ Inj.Tramadol

Pediatric burns: Syrup

Inj.Paracetamol infusion

2.4.2. Post-surgical pain: Inj.Pentazocain / Inj.Morphin/ Inj.Tramadol

2.4.3. MANAGEMENT After patients are shifted to step down wards - patients are put on Diazepam at night.

Pruritus: Inj.Chlorpheneramin maleate

T.Gabapentin

Emollients like liquid paraffin body lotion or coconut oil.

3. Respiratory care:

3.1. Patients with respiratory burns:

All patients who sustained burns in closed space patients with facial burns are suspected to have inhalation burn and need care for maintaining airway and oxygen saturation. It is ideal to put all cases of deep facial burns in ventilator for first few days till the facial edema subsides.

When the severity of inhalation burn is more and ventilation is not possible emergency tracheostomy has be done.

3.2. Respiratory infections in burn patients:

Patients may develop bronchitis or aspiration pneumonia during the course of burn management. Proper antibiotics and respiratory therapy is needed, sputum has to be sent for culture and chest physiotherapy is done.

For less severe inhalational burn bronchodilators and nebulization has to be started.

4. Nutrition

4.1. Acute phase

Start feeding early, beginning at 8 hours following the burn

Stop at anytime if patient is not able to tolerate the feeds

– Daily needs in adults

Calories: 25 kcal/kg + 40 kcal X % BSA

Proteins: 1.5 to 2 g/kg body weight

– High energy foods (NRG5, Plumpy'nut, F100 milk) are necessary if the BSA is > 20% (normal food is inadequate).

– Nutritional requirements are administered according to the following distribution: carbohydrates 50%, lipids 30%, proteins 20%.

– Provide 5-10 times the recommended daily intake of vitamins and trace elements.

– Enteral feeds are preferred: oral route or nasogastric tube (necessary if BSA > 20%).

– Start with small quantities on D1, then increase progressively to reach recommended energy requirements within 3 days.

– Assess nutritional status regularly (weigh 2 times weekly).

– Reduce energy loss: occlusive dressings, warm environment (28-33 °C), early grafting; management of pain, insomnia and depression.

4.2. Recovery phase

5. Physiotherapy

5.1. Acute stage of burn

5.2. After stabilization of acute stage

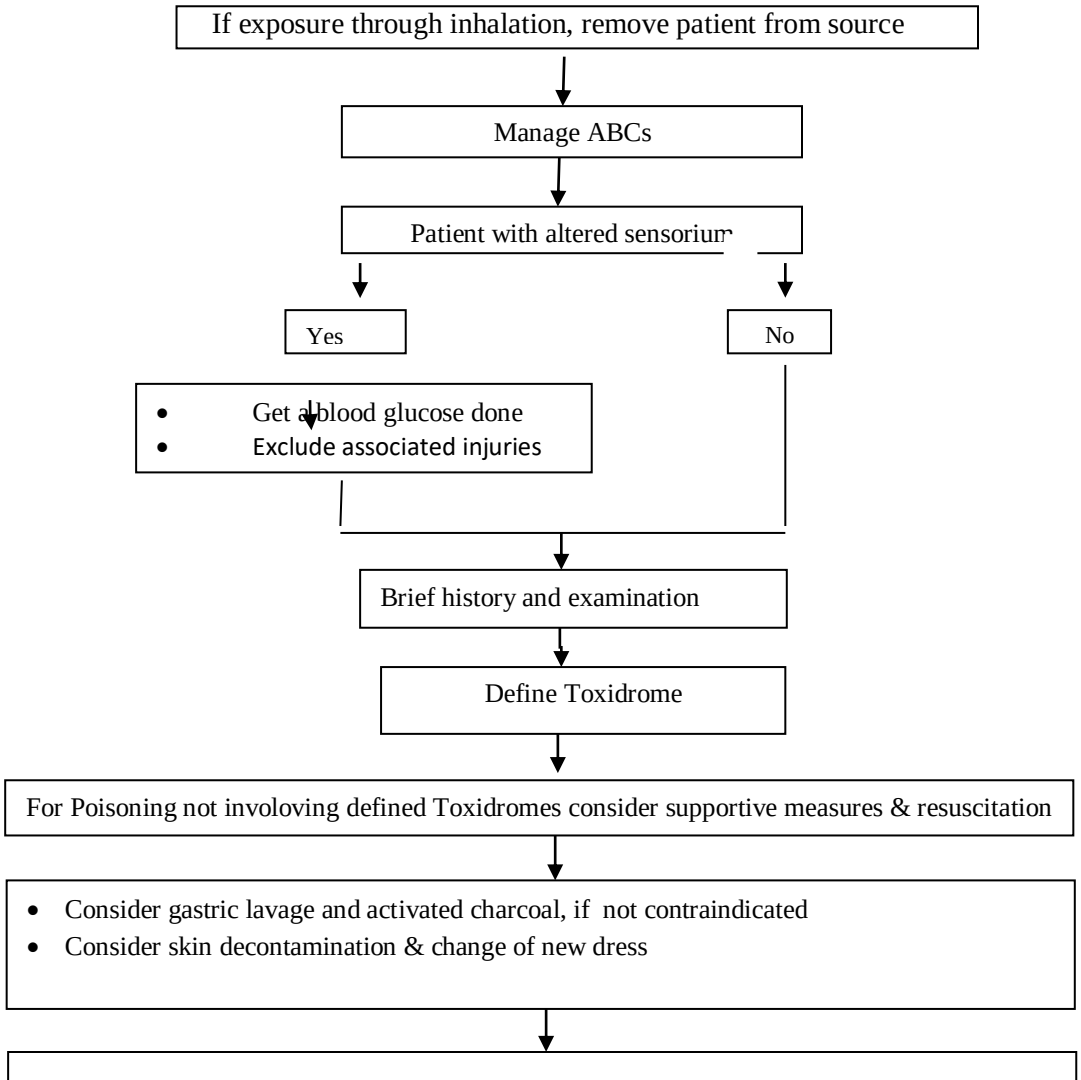
6. Management of comorbid conditions

7. Rehabilitation

8. Post burn follow up protocol

POISON MANAGEMENT:

Algorithm for a Patient with Acute Poisoning



SPECIFIC ANTIDOTES

Methemoglibinemia	Central Cyanosis, CNS toxicity – encephalopathy/ seizure	Inj Methylene Blue IV 1-2mg/kg freshly prepared in 100ml of NS bolus infusion
Benzodiazepine overdosage	Respiratory depression, hypotension	Inj Flumazenil 0.2mg slow iv stat and repeat at 2 mins interval to a maximum of 3mg/hr
Rat Killer Cake poisoning – Bromodialone(super warfarin) Warfarin toxicity	Bleeding tendency, elevated PT/INR	Vitamin K1(Phytonadione) 10mg IV thrice daily as needed
Venomous Snake Bite	Neurotoxicty or Hemotoxicity as determined by 20min Whole Blood Clotting Test or frank Bleeding tendency	Anti Snake Venom IV 8 vials in 200 ml of NS, start as 10 drops/min for 10 – 20 mins if no reaction complete in not more than 60 mins Neurotoxicity protocol*: 8 + 8+ 5 vials in 2nd hourly interval if needed Hemotoxicity protocol*: 8+5+5+5 vials in 6th hourly interval if needed *Tamil Nadu Experience
Scorpion Sting	Autonomic Storm Tachycardia,Dysrhythmia Hypertension,Cold clammy skin, Pulmonary oedema	T Prazosin 30ug/kg P O stat and repeat after 4 hours if needed

Activated Charcoal – Universal Adsorbent	1gm/kg mixed in water to a max of 100gm per dose through Ryles tube or orally and repeated 6th hourly for 48 hours, each dose to be followed by a Cathartic - Epsom salt Contraindicated in Corrosive and Hydrocarbon Poisoning

INSTITUTE OF CHILD HEALTH AND HOSPITAL FOR CHILDREN

PEDIATRIC EMERGENCY DEPARTMENT

Approach to a child with respiratory distress:

- Receive the child on mother's lap
- Open O_2 and give oxygen through Jackson Rees circuit
- Teach mother to hold the oxygen device in a non-threatened manner
- Secure IV line
- Check CBG
- Connect cardiac monitor and pulse oxymetry
- Pulse oxymetry probe to be placed over finger
- Foot should be clean
- **Follow PEMC protocol**

How to manage the unresponsive child:

- Receive the child on the stretcher
- Go to the airway end, wear gloves and open the airway by head tilt and chin lift maneuver

- Initiate Bag Valve Mask ventilation with 100% O_2 with flow of 10 to 15 litres per minute
- Suction Nurses run to the left side of the patient, wear glove and turn the child's head to left lateral position to clear the airway.
    - Oro pharynx suction with wide bore Yankauer suction catheter
    - Insert NG tube and decompress the stomach using suction apparatus
    - Up to 2 years Nasogastric tube and more than 2 years Ryle's tube to be used

- If spontaneous respiration present, provide O_2 through JR circuit
- Airway person has to observe whether O_2 port is kept open, O_2 reservoir is filling and to look for chest rise
- Start I.V line, check CBG
- Connect cardiac monitor and check SPo_2

Note: Always use twin O_2 flow meter in the Emergency

- **One for Bag valve mask**
- **One for JR / NRM**
- **Follow PEMC protocol**

Child with Head injury:

- On arrival received the child and open the airway by Jaw thrust maneuver
- Position the head with Jaw thrust maneuver do not apply head tilt with chin lift
- Do not use JR circuit do not look for DEM open O_2 give oxygen through BVM/NRM
    - Initiate BVM ventilation in an unresponsive child
    - NRM to be used if the child has spontaneous respiration
- Do not insert nasogastric tube do not turn head to one side for suctioning, do not apply vigorous suctioning
- Insert orgastric tube to decompress the stomach
- I.V line to be start and check CBG
- 30° head end elevation
- Connect cardiac monitor and check SPo_2
- Avoid awake intubation, intubate only under PAI

- After stabilize the patient, apply the cervical collar
- Check for other injuries and apply spinal board for immobilization
- **Follow PEMC protocol**

For applying spinal board log roll method:

- The airway person at the head end has to stabiles the neck
- One person should hold the head
- Third person should hold the hip and shoulder
- Fourth person should hold the arm and knee with hands crossed

  Turn the patient to 45° and one person has to look for any external injuries over spine and then apply the spinal board under the victim

  Follow PEMC protocol



STATE HEALTH SOCIETY TN. CHENNAI
14192
12 DEC 2019
NATIONAL HEALTH MISSION

ABSTRACT

National Health Mission – Strengthening of Paediatric Emergency Care System in Tamil Nadu – Establishment of Paediatric Resuscitation Emergency Medicine units under Tamil Nadu Accident and Emergency Care Initiative (TAEI) in the name of PREM – Orders - Issued.

Health and Family Welfare (EAP II-2) Department

G.O (Ms) No.539

Dated :29.11.2019
Vigari, Karthigai-13
Thiruvalluvar Aandu 2050

Read:

1. G.O (Ms) No.84, Health and Family Welfare department, dated: 25.02.2011
2. G.O (Ms) No. 156, Health and Family Welfare (MCA) department, dated: 22.6.2011.
3. G.O (D) No. 619, Health and Family Welfare department, dated 20.3.2017.
4. G.O (Ms) No. 199, Health and Family Welfare department, dated 26.05.2017.
5. G.O (Ms) No.231, Health and Family Welfare department, dated 22.06.2017.
6. G.O (Ms) No.214, Health and Family Welfare department, dated 5.06.2018.
7. G.O (Ms) No.266, Health and Family Welfare department, dated 10.06.2019.
8. From the Mission Director & Commissioner of Trauma Care, National Health Mission, Letter.Ref.No.4081/NHM/TAEI/2017, dated: 27.08.2019.

ORDER:

In G.O first read above, the Government have granted permission for the establishment of "Paediatric Intensive Care" Department at Institute of Child Health and Hospital for Children, Chennai.

2. In G.O second read above, among others, the Government accorded permission to Director and Superintendent, Institute of Child Health and Hospital for Children, Chennai to start one year Fellowship Programme in Paediatric Emergency Medicine and Paediatric Intensive Care at Institute of Child Health and Hospital for Children, Chennai from the year 2011 -12.

3. In G.O third read above, the Government accorded Administrative and financial sanction for a sum of Rs.4,86,70,000/- for innovative strategies to reduce mortality of children presenting with fever to the Japan International Co-operative Agency – OPD block of the Institute of Child Health, Chennai" under Tamil Nadu Innovation Initiatives (TANII) for the financial year 2016-2017.

4. In G.O fourth read above, among others, the Government have permitted the Mission Director, National Health Mission to establish Paediatric Resuscitation and Emergency Medicine Units (PREM) in 28 Hospitals (22 District Headquarters Hospitals and 6 Sub District Headquarters Hospitals). Further, the Government established a 24 Hours Comprehensive Emergency Obstetric and Newborn Care Centres (CEmONC) and Neonatal Intensive Care Unit (NICU) in Government Hospitals to bring down MMR and IMR rate. On the same line, to reduce the road traffic accident deaths the Government accorded permission to Mission Director, National Health Mission to implement the Trauma Care network in the name of 'Tamil Nadu Accident and Emergency Care Initiative (TAEI)' and designated the Mission Director, National Health Mission as

ex-officio Commissioner of Trauma Care in G.O fifth read above. Further, in G.O sixth read above, orders have been issued for establishment of Tamil Nadu Accident and Emergency Care Initiative Steering Committee under the chairmanship of the Principal Secretary to Government and Tamil Nadu Accident and Emergency Care Initiative administrative structure. In the said G.O. among others, the Government ordered that, Tamil Nadu Accident and Emergency Care Initiative encompasses the 6 pillars namely management of Stroke, Myocardial Infarction, Trauma Burns, Poison which includes accidental and deliberate attempts (Self Harm), Paediatric emergencies and other Life threatening conditions. In G.O seventh read above, the Government approved the Tamil Nadu Accident and Emergency Care Initiative Care Policy.

5. Now, the Mission Director, National Health Mission in his letter eighth read above, has stated that, as Paediatric Resuscitation and Emergency Medicine (meaning love in the Indian language) is an important component of Tamil Nadu Accident and Emergency Care Initiative, and aims to reduce deaths due to paediatric emergencies by half by the year 2023. Further, he has furnished the implementation guidelines and **Core concepts** for Paediatric Resuscitation and Emergency Medicine as follows:

i) **MISSION STATEMENT:**

"Low Cost Innovative Strategies for Saving Young Lives in the Golden Hours of Critical Illness with Zero Delay"

ii) **INFRASTRUCTURE**

To strengthen the paediatric care at District Hospital, it is important to set up a comprehensive unit comprising of the following sub-units:

1. Paediatric Outpatient Facility (including immunisation and counselling services)
2. Paediatric Resuscitation and Emergency Medicine Emergency Room
3. Paediatric Inpatient Facility
    a) High Dependency Unit
    b) Paediatric Ward
    c) Diarrhoea Treatment Unit
    d) Isolation Room
4. Ancillary (eg;laboratory, imaging, pharmacy) & Auxiliary Facilities (eg; play area, hospital kitchen)

The general paediatric care facility will function in close coordination with specialised units that already have approved guidelines for operationalisation and include the following:

- Newborn care facilities (Newborn Care Corners, Newborn Stabilisation Unit, Special Newborn Care Unit)
- Nutrition Rehabilitation Centre
- District Early Intervention Centre

iii) **EQUIPMENT FOR PREM**

Sl. No.	Name of equipment	Number per PREM unit
1	Resuscitation trolley	4
2	Warmer	1
3	Yankouver suction	One per trolley
4	IV stand	5
5	Standing BP apparatus (LED) with paediatric cuffs	2
6	Non-invasive ventilator	2
7	Pulse oximeter	5
8	Syringe pumps	10
9	Crash cart	One
10	Defibrillator with ECG recorder (starting from 1 joule)	One

11	Ultra-sound (paediatric probe)	One
12	Mobile x-ray unit	One
13	Silicon Adult Bag valve mask device with paediatric masks	5
14	Suction (electrical)	5
15	Laryngoscope (Pediatric, Neonatal)	2 sets with all sized blades
16	Electrical Suction	1 per resuscitation trolley

iv) PREM CONSUMABLES TO BE STOCKED

Sl. No.	Name of consumable	Requirements based on number of patients/Month
1	Jackson Rees circuit (Paediatric Bains Circuit)	
2	Infusion sets	
3	Venflons (Paediatric and neonatal sizes)	
4	LMA (Paediatric Sizes)	
6	Endotracheal tubes (2.5, 3, 3.5, 4, 4.5, 5, 5.5)	
7	Hand rub	
5	Dynaplast	
6	Tincture Benzoin	
7	Yancouver suction	
8,	Naso-gastric tubes (5, 6, 7, 8, 9, 10, 12)	
9	Foley catheter (8, 10, 12, 14)	
10	Suction catheters (various sizes)	
11	Intra-osseous tray	One
12	Airway tray	One
13	Broselow's tape	One
14	Blood Infusion set	2
15	Intra-osseous needle	5

v) PREM DRUGS TO BE STOCKED:

CRASH CART: DRUGS TO BE STOCKED			
1	Inj. Adrenaline	13	Salbutamol Nebulizer solution
2	Inj. Lorazepam	14	Inj. Ceftriaxzone
3	Inj. Leviteracetem	15	Inj. Acyclovir
4	Ringers Lactate	16	Anti-snake Venom
5	Inj Hydrocortisone	17	Inj Dobutamine
6	Inj. Nor-Adrenaline	18	Inj. Fosphenytoin
7	Inj. Artesonate	19	Normal Saline/ DNS/5% Dextrose/10% Dextrose, 3% Dextrose, 0.45 NS
8	T. Prazosin	20	Ipratropium Bromide Nebulizer solution
9	Tinture Benzoin	21	Inj. Magnesium Sulphate
10	Inj. Dopamine	22	Inj. Azithral
11	Inj. Midazolam	23	Rectal Paracetamol Suppository & Anticonvulsive suppository
12	Inj. Sodium Valproate	24	Hand Rub

vi) **PREM INNOVATIVE CLINICAL TOOLS:**

1. "**PREM-Paediatric Emergency Medicine Course" Protocols**. (Annexure 4) to be displayed in all PREM units and utilized for management of critically ill and injured children
2. **Paediatric Emergency Medication-India** developed with Monash University for reducing medication errors to be available in all Paediatric Resuscitation and Emergency Medical Units at no cost to government.
3. Teaching and training manual/resource/material for teaching skills and decision making to be developed for Paediatric Resuscitation and Emergency Medicine training at ICH-TAEI/PREM at no extra cost to government.

vii) **HANDS ON PREM TRAINING IN SKILLS, KNOWLEDGE AND RESPONSE TIME**

Key to the successful implementation of Tamil Nadu Accident and Emergency Care Initiative – Paediatric Resuscitation and Emergency Medicine, is the round the clock availability of trained doctors and nurses and support staff in all the Tamil Nadu Accident and Emergency Care Initiative units. However, Paediatric Emergency Medicine, a specialty of medicine requiring knowledge, skills and critical thinking in acute settings, is still in its infancy in India. Hence, the lack of formal training during under-graduate, post graduate medical education, in the skills and knowledge needed to effectively manage emergencies can impede Tamil Nadu Accident and Emergency Care Initiative's noble mission to save young lives.

Training to be provided in TAEI-PREM for doctors and nurses and support staff, under 3 heads.

TAEI-PREM TRAINING:

a) **One-day sensitization workshop in Paediatric Emergency Medicine Course** (**PREM-PEMC**) for TAEI doctors in all Medical College Hospitals, Government district head quarters hospitals and sub district hospitals.
b) **Three-month PREM training for TAEI doctors** from District Head Quarters hospitals (PREM units) and also other TAEI centers if required.
c) **Three-month PREM training for nurses** recruited under PREM initiative from District Head Quarters hospitals (PREM units) and also other TAEI centers if required.

viii) **Re-designation of JICA-EMERGENCY BLOCK of ICH as "APEX TRAINING CENTER FOR PREM".**

ix) **REPORTING VIA PREM APP:**

An APP for reporting daily performance for Paediatric Resuscitation and Emergency Medicine has been already in position with the help of IIT Madras. This is an unique method of obtaining data from the Paediatric Resuscitation and Emergency Medical Units from all the hospitals under the scheme.

x) **RESEARCH:**

Data collection and evaluation of Paediatric Resuscitation and Emergency Medicine performance should be facilitated to gather evidence for this unique initiative by the Tamil Nadu Government.

Finally, the Mission Director and Commissioner of Trauma Care, National Health Mission has requested the Government to issue necessary orders in this regard.

6. The Government have examined the proposal of the Mission Director, National Health Mission in detail and decided to accept the same. Accordingly, permission is accorded to the Mission Director, National Health Mission to establish and strengthen the "Paediatric Resuscitation

Emergency Medicine" units in the name of "Paediatric Resuscitation and Emergency Medicine" in Tamil Nadu with the logo and tag line as mentioned in the Annexure I to this order.

7. The Government approved the implementation guidelines and core concepts of Paediatric Resuscitation and Emergency Medicine, which includes infrastructure standards, equipment standards, Consumables required and Drugs to be kept in stock, Standard case recording formats, Supervisory checklist, Periodic reporting format, Guidelines for the play area in the hospitals as detailed in annexure II, III, IV and V respectively to this order and also approved the Paediatric Resuscitation and Emergency Medicine innovative Clinical Tools like the Protocols and training manual and the Mission Director, National Health Mission is permitted to update and upgrade as and when necessary.

8. The Government have further approved the Tamil Nadu Accident and Emergency Care Initiative – Paediatric Resuscitation and Emergency Medicine Training to the Medical and Paramedical Personnel at all level to handle paediatric emergency cases and reporting of paediatric cases via Paediatric Resuscitation and Emergency Medicine App.

9. The Government designated the Japan International Co-operative Agency (JICA) emergency block of Institute of Child Health and Hospital for Children as Apex Training Center for Paediatric Resuscitation and Emergency Medicine.

(BY ORDER OF THE GOVERNOR)

BEELA RAJESH
SECRETARY TO GOVERNMENT

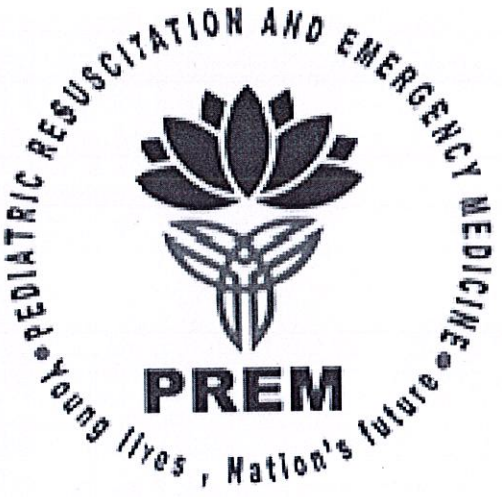
To
The Mission Director,
National Health Mission,
Chennai - 6.
Copy to:
The Special Personal Assistant to Hon'ble Minister (Health and Family Welfare), Chennai – 9
Health and Family Welfare (Data Cell) Department, Chennai - 9.
Stock File / Spare Copy.

//Forwarded by Order//

29/11/19

SECTION OFFICER

ANNEXURE 1



BEELA RAJESH
SECRETARY TO GOVERNMENT

//True Copy//

29/11/19

SECTION OFFICER

29/11/19

ANNEXURE 2

Government of Tamilnadu
Department of Health and Family Welfare
Tamilnadu Accident and Emergency Care Initiative (TAEI)

Paediatric Resuscitation Emergency Medicine (PREM)

Name : _____

Age : _____ Gender : _____

Weight : _____ Temp ____ @ ____ CBG ____ @ ____

IP No : _____

PIN : _____

TAEI No : _____

Aadhar No : _____

Mobile No :

Patient Address : _____

_____

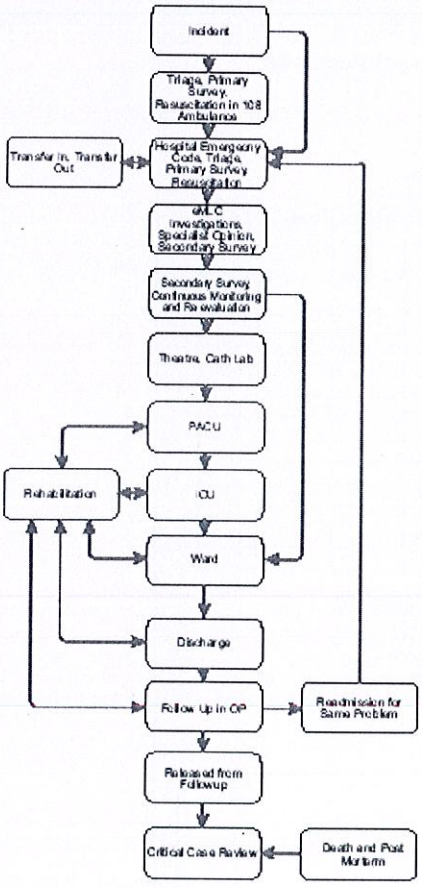
_____

_____

_____

Relative Name & Mobile No. : _____

_____



Provisional Diagnosis

_____

_____

_____

Final Diagnosis

_____

_____

_____

_____

ICD

GCS : _____

GOS : _____

AIS : _____

ISS : _____

MHIPS : _____

Management

_____

_____

_____

_____

Outcome

Discharged / Discharged on Request / Discharged Against Medical Advice / Left Against Medical Advice / Absconded / Expired / Brain Stem Death On ...../...../201.... at ..... AM / PM.

Government of Tamilnadu
Department of Health and Family Welfare
Tamilnadu Accident and Emergency Care Initiative (TAEI)

Paediatric Resuscitation Emergency Medicine (PREM)

Pre Arrival Intimation From Scene / IFT..... Hospital

PAI Call Received on __/__/201_ at __:__ AM/PM by ..... PAI Not Received / Not Applicable

Patient received on __/__/201_ at __:__ AM/PM by ..... for this patient

Triage : Patient sorted into ..... Criteria on Date ...../...../201_ at Time .....:..... by .....

Primary Survey & Resuscitation done by .....at __:__ AM/PM

Primary Complaints :

1) Breathlessness /episodic/acute on chronic

2) Unresponsive /GTCS / Posturing/upward gaze

Time: Where: Regained basal level: Yes/No

Precipitating events:

Fever Focus AWD/Vomiting/Noise/FB

Abdominal pain/distension/GI blood

Jaundice/Rash/Skin bleed

Duration

Snake/Scorpion

Submersion/ Toxin

Fall/RTA/Assault/Trauma

ALOC after precipitating event:

Incessant cry/Lethargy/Not as usual/ More sleepy

Past History

CVS:CHD/RHD/CMY

CNS/Seizure/NDD/ Malformation

Renal/Liver disease/ Malformation

RS: AB/ILD/Malformation/TB

Metabolic/Malignancy/Blood

Bottle feed/PLHA/Sib death

Drugs

Cardiorespiratory cerebral assessment :

Airway: Stable/Unstable/Obstructed/ET

Breathing : RR

Nasal flare/Grunting/Stridor/Retractions

Abdominal/ Thoracic/ Air-entry

Crepts/Wheeze

Colour: Normal/abnormal/Flushed

Circulation : HR

Sounds: Muffled/gallop

Pulse volume

Cool below thigh/knee/ankle/warm

CRT

Liver span: Firm/ Normal

Disability:

Alert/Verbal/Pain/Unresponsive

Pupils —|—

Eyes: Mid position/ Conjugate Deviation

Lid twitch/Nystagmus

DRM/EOM

Tone/posture

SaO2:

Others

Physiological status :

Airway: stable / Not stable / Obstructed / ET / Tracheostomy

Breathing: Normal / Effortless tachypnea / Respiratory distress/failure / Relative Bradypnea / Apnea

Circulation: HR N / Perfusion N / Tachycardia/Relative brady /Brady / Weak / Liver span N/Hepatomegaly / Cardiogenic shock / Systolic BP N/ Low/ High / Pulse pressure: N/Wide/Narrow / MAP: N/Low

Disability : NR / ALOC / CSE/ NCSE / ICP

ABG:

CXR: CT

USG/ECHO

Oxygen: NRBM/BVM/IR/ET

Neb: Salbutamol/Ipratropium/3%NS/Adrenaline

Inj. Hydrocortisone/T. Prednisolone

Inj. Dexamethasone

Pre-Hospital Resuscitation

A

B

C

D

Others

ETCO2: 1st: 2

Circulation	Dose/kg	Total	Time
Fluids: NS/RL			
Epinephrine Bolus			
Epinephrine infusion			
Dopamine			
Dobutamine			
IBW: dose			
Lorazepam			
Midazolam			
Inj-PHT			
Levitracetam			
10% Calcium			
Paracetamol			
Antibiotic			
Cephalosporin			
VitK			

Time				
HCT				
Platelet count				

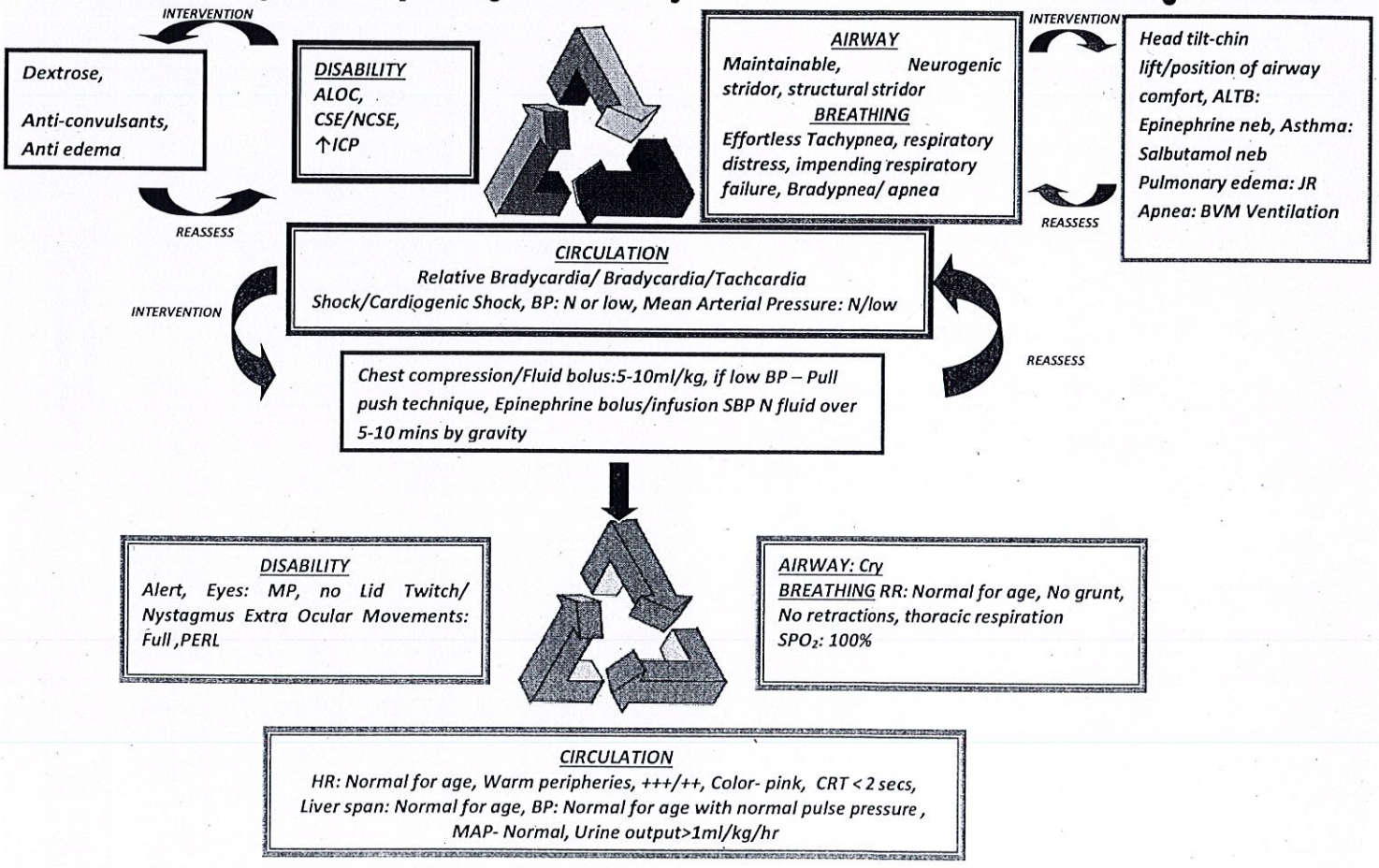
CBC
RFT
LFT
Electrolytes
Lactate

EMERGENCY CRITICAL CARE DATA FLOW SHEET

Name: Age: Sex: Wt: Emergency Reg No:

Date/Time						
Symptoms						
Airway						
RR						
Grunt/ Stridor						
Retractions						
Abdominal/thoracic						
Air entry						
Added sounds						
Color						
SpO2						
HR						
Central/Distal pulse						
CPT gap						
CRT						
Liver span						
BP						
AVPU						
Pupils						
Eye deviated/ MP						
Nystagmus						
Lid twitch						
DEM/EOM						
Tone/Posture						
Fits						
Urine output						
Physiological Status	Airway					
	Breathing					
	Circulation					
	Disability					
Interventions	A:					
	B:					
	C: Fluids Dopa/Dob Nor-Epi/Epinephrine					
	D: Anti-fit/5%NS					
	Others					
	Total volume/kg					
	No. of drug					
	Inotrope trigger					
	ET Trigger					

1)PREM triangle: To help recognize severity of illness and take decisions during resuscitation



2)PREM-PEMC Protocol: How to recognize early septic cardiogenic shock in febrile children in the OPD

History of lethargy, excessive sleepiness, incessant cry, not as usual, combativeness, agitation, talking unintelligibily, inability to sit or stand, being carried in to the OPD: Consider Septic Shock. If acute breathlessness (not episodic/ not chronic) has developed consider pulmonary edema due to acute lung injury/cardiac dysfunction

EARLY WARM SHOCK

DISABILITY
Incessant cry, not as usual, more sleepy,
Tone& posture: N
Eyes: MP,
no lid twitch,
no nystagmus
EOM: N/ PERL

AIRWAY
Stable (cry)
BREATHING
RR:↑, grunt+/- Retractions+, thoracic/abdominal respiration,added sounds +/-



CIRCULATION
HR: ↑*, warm peripheries, pulses, +++/+++, Flushed , CRT< 2 sec, Liver span: N (for age), SBP: ↑ for age, DBP< 50% of SBP, PP> 40 mmHg, MAP: N for age

COLD SHOCK

DISABILITY
Sleepy/Lethargy/pain responsive/hypotonia /posturing/ GTCS +/-
Eye deviation: +/-
Nystagmus : +/-
Lid Twitch: +/- PERL
sluggish response to light



AIRWAY
Unstable (no cry)
BREATHING
RR: Relative bradypnea, grunt, retractions, abdominal respiration

CIRCULATION
HR: ↑/"N"*, +++/0, cool peripheries, CRT> 2 secs, color abnormal, Liver span N/↑, SBP: N for age (relative hypotension), DBP↓, MAP- ↓ for age

HYPOTENSIVE SHOCK

DISABILITY
Pain responsive /Unresponsive hypotonia/posturing
GTCS +/-
Eye deviation: +/-
Nystagmus : +/-
Lid Twitch: +/- PERL



AIRWAY
Unstable/No cry/stridor+/-
BREATHING
RR:↑/"N"apnea
Grunt, stridor, retractions, abdominal respiration *

CIRCULATION
HR: ↑/N for age*/↓,muffled/gallop
Cool peripheries
+++/0, ++/0
Color- abn, CRT > 2 secs
Liver span: N/ ↑
Systolic BP: ↓,MAP- Low

BEWARE
Critically ill children with ALC+ respiratory distress +shock can present with "Normal vital signs"

- *RR, (N range for age) : Consider Relative bradypnea:*
- *HR (N range for age Consider Relative Bradycardia*
- *SBP (N range for age) : Consider Relative Hypotension.*

Age	*Heart rate	**Respiratory rate	Systolic BP
< 1 year	> 180 < 100	> 60 or requiring respiratory support	< 70 mm Hg
2–5 year	> 140 < 90	> 50 or requiring respiratory support	< 70 + age x 2
6–12 year	> 130	> 18 or requiring respiratory support	< 70 + age x 2 up to 10 year < 90 beyond 10 year

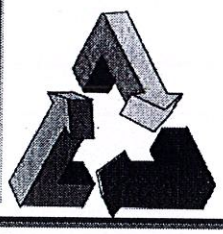
Age related vital signs to recognize SIRS: International sepsis forum 2005

**Respiratory distress with shock in a hypo- or hyperthermic child with or without focus of sepsis consider:*

1. *Pneumonia/Bronchiolitis with shock*
2. *Pulmonary edema with shock*
3. *If respiratory distress/ failure occurs or worsens during fluid resuscitation, consider pulmonary edema due to severe sepsis.*

3)PREM-PEMC Protocol: Management of Vasodilatory Septic Cardiogenic Shock in the PED

- GTCS: Lorazepam 0.1 mg/kg IV x 2, Levitracetam 60 mg/kg IV (Avoid Fos/Phenytoin in cardiogenic shock*
- Avoid treating extensor/flexor posturing/GTCs due to hypoxia / low BP shock/ ICP with anti-convulsants
- Correct documented hypoglycemia/Hypocalcemia -- followed by GNS-+KCL+ Ca (Holliday-Segar)



- Respiratory distress/grunt respiratory failure: O2 via Flow inflating ventilation device (CPAP)
- Apnea: Head tilt-chin lift, suction oro-pharynx, NGT decompression, initiate BVM
- Plan early intubation (call anesthetist)

Reassess/document/ derive PREM triangle to find out need for next fluid bolus/inotrope/intubation trigger

Establish venous access (if not available –intraosseous access)
- SBP(N)/MAP N: 5-10 ml/kg @5-10 minutes
- Low SBP: Pull push 5-10 ml/kg boluses of NS/RL until BP normalizes
- Low SBP on arrival or any step in protocol: call for epinephrine infusion and plan early intubation during fluid resuscitation

1.Collect blood for CBC, C/S, MP NS1,lytes, Lactate, RFT, LFT,> 5 days fever: IgM for Dengue, Scrub, Leptospirosis,
2.Source control
3.Empirical IV Antimicrobial

After each bolus of fluid, if shock+ /worsening of PE/cardiac dysfunction**, Inotrope/intubate. If PE/CD resolves, continue fluid bolus till shock resolution

Therapeutic goals of resolution of shock and pulmonary edema**

Shift to ward

Establish euvolemia before inotrope (Exception Adrenaline)
1. Normal SBP + wide pulse pressure: Dopamine @10µg/kg/min.
2. Low SBP or bradycardia: Epinephrine 0.1-1.0µg/kg/min
3. N SBP + Wide pulse pressure+ low MAP refractory to fluid +Dopamine: Add Nor-epinephrine 0.3-1 mcg/kg/min

Respiratory distress+ vasodilatory shock (N MAP) + ALOC+ no new signs of pulmonary edema/hepatomegaly*

Continue aliquots of 10ml/kg NS /Reassess/document/derive PREM TRIANGLE

Respiratory distress/ Normal MAP vasodilatory shock+ /ALOC+ no new signs of PE/CD*

If no PE/CD, after 60 ml/kg, start Dopa@10mg/kg/minute, continue bolus

Respiratory distress/ Low MAP vasodilatory shock+/Hepatomegaly/ALOC+ Pulmonary edema*

Initiate Dopamine/Continue fluids, (CPAP via JR circuit/NIV, Reassess/document/derive PREM triangle continue smaller aliqouts

RD/ Shock+ N MAP/No Pulmonary edema*

Continue 5-10ml/kg NS bolus

RD/shock/WPP/ low MAP / PE*/CD

NE@0.3-0.5 µ/kg/min+ NS bolus

1.At any step, froth, grunt,crepts,SaO2<92%, hepatomegaly + wide pulse pressure+/- low MAP: Step up NE 1µg/kg/min, intubate, continue fluid bolus until shock resolved.
2. low SBP, gallop, muffling, brady: Epi infusion 0.1 - 1µg/kg/min+ intubate+ Inj.Hydrocortisone 2 mg/kg

CAUTION : Children with septic shock have coexisting acute lung injury and myocardial dysfunction. Fluid administration without initiation of inotrope and /or intubation when intubation triggers are identified could be dangerous leading to cardiac arrest.

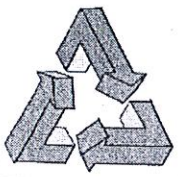
DISABILITY
GCS<8/Impaired alert/ Pain responsive
Fighting mask, agitated, combative,
asking for water, tone /posture: Abn, eye deviation , lid twitch,GTCS



AIRWAY
Instability
new cough, new froth
BREATHING
RR>2 x upper range of RR for age
bradypnea
Grunt
New onset retractions
New onset Abdominal respiration
New onset rales/ wheeze
Spo2<92%

CIRCULATION
Bradycardia ,
gallop/muffling of heart sound
Liver span: ↑
Fall in BP, Low MAP

DISABILITY
Alert,
Tone and posture: N
Eyes: MP,
EOM:Full,
PERL



AIRWAY
Maintainable
BREATHING
RR: N for age
No grunt, No retractions, thoracic respiration

CIRCULATION
HR: (N) for age, Warm peripheries, +++/++
Color- pink, CRT < 2 secs, Liver span: regresses (N span for age)
BP: N for age DBP< 50% of SBP, pulse pressure=30-40, MAP- N for age, Urine output>1ml/kg/hour

*Pulmonary Edema/cardiac dysfunction: Inotrope/intubation Triggers

**Therapeutic goals of resolution of pulmonary edema+ shock

Santhanam I et al Prospective RCT for comparing two fluid regimens in the management of Septic shock in the PED Ped Emergency Care 2008

4)PREM-PEMC PROTOCOL FOR MANAGEMENT OF CONVULSIVE STATUS EPILEPTICUS (CSE) SUBTLE STATUS EPILEPTICUS (SSE) IN THE PED

AIRWAY : Open airway; Head tilt and Chin lift maneuver
Jaw thrust and cervical spine stabilization if trauma is suspected
Oro-pharyngeal suction; NGT decompression, Insert airway adjunct

BREATHING: Spontaneous breathing: O_2 through flow inflating ventilation device at 10-15 litres/min, Apnea: BVM with 100% O2 @ 10-15 litres/min

CIRCULATION : IV access and correct shock, with 1st bolus 10 ml/kg NS/RL*
Correct documented hypoglycemia / Hypocalcemia/start GNS/KCl/Ca
First dose antibiotic if sepsis is suspected

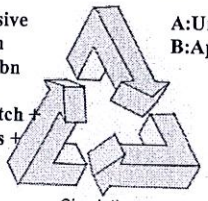
DISABILITY:

Primary Convulsive/ Subtle Status Epilepticus (SE)

No precipitating event (Sudden onset of un-responsiveness) GTCS > 5 minutes,
Not regained basal consciousness in b/w 2 episodes

Disablity: Unresponsive, Tone- Abn, Posture-Abn, GTCS +, Eyelid twitch +, Nystagmus +, Conjugate deviation

Breathing: A:Unstable, B:Apnea



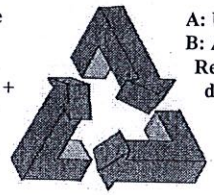
Circulation: HR ↑, vasodilatory shock with ↑ SBP, low DBP, MAP N/↓, Liver Span (N/↑)

Secondary Status epilepticus (commonest due to sepsis)

Fever/AWD/Vomiting/ Breathlessness/Toxin/Trauma etc Followed by LOC followed by GTCs±

Disability: Unresponsive, Tone-Abn, Posture-Abn, Eyelid twitch +, Nystagmus +, Conjugate deviation +, GTCs+/-

Airway& Breathing: A: Unstable, B: Apnea/ Respiratory distress



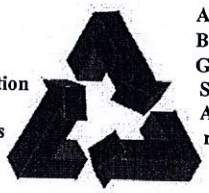
Circulation: HR ↑, vasodilatory shock with ↑ SBP, low DBP, MAP N/↓, Liver Span (N/↑)

(Fit mimics) Posturing** due to severe hypoxia/shock/cardiac dysfunction

Fever/AWD/Asthma/Burns/ Breathlessness/toxin/trauma followed by progressive LOC followed by posturing
Avoid rushing to give anti-convulsants

Disability: Pain responsive, Posturing +, Conjugate deviation nystagmus, lid twitch movements, DEM +/-

Airway& Breathing: A:Unstable, B: RR ↑↓, Grunt ±, SCR +, Abdominal respiration



Circulation: HR ↑↓, S_1 S_2 muffled/gallop, SBP ↓/De-compensated shock + / -, Liver Span ↑

0 Min: IV Lorazepam (0.1 mg/kg; Max 5mg) over 1 min OR
IV Midazolam (0.1 mg/kg) over 1 min OR
IV Diazepam (0.2 mg/kg; Max 10 mg)
IV access not available:
IM Midazolam (0.2 mg/kg/d)
(If low SBP for age, correct hypotension prior to administration of benzodiazepine.

CSE/SSE/Not regained base line sensorium/Unstable Hemodynamics

10 Min: Inj. Lorazepam/ Diazepam: Second dose

CSE/SSE/Not regained base line sensorium/ Unstable Hemodynamics

20 Min: Duration of SE >30 minutes or cardiac dysfunction, low SBP, low MAP, initiate Inj Levetiracetam 60 mg /kg @ 5mg/kg/min
No evidence of CD, N SBP, N MAP: Inj.Fosphenytoin" 30mg/kg IV Loading dose @ 3mg/kg/min (1.5mg Fosphenytoin = 1mg Phenytoin equivalent)

CSE/SSE/Not regained base line sensorium/ Unstable Hemodynamics

40 Min: Consider Sodium valproate 40 mg/kg @ 5 mg/kg/min (avoid if evidence of liver disease/ IEM/bleeding

Inj Pyridoxine 100 mg IV stat < 2 years

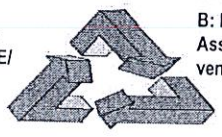
60 Min: Plan intubation with ICP precautions
Midazolam 0.2 mg/kg bolus (Max 10 mg) over 2 minutes
IV Phenobarbitone 20mg/kg @ 2mg/kg/min upto a maximum of 30mg/kg

> 60 Min: Start Midazolam infusion @ 1µg /kg/min ; Increase every 15 min up to 30-50 µgm/kg/min

Energetic management of hypoxia & shock
Avoid anti convulsants on arrival until hypoxia and BP normalizes/cardiogenic shock has resolved
Treat precipitating cause (etiology)

Therapeutic goals of hypoxia, shock, cardiac dysfunction, SSE control

D: Unresponsive/ Baseline mental status, Eyes mid-position, No NCSE/ SSE
PERL



A: Stable /ET
B: RR: N, WOB: N / Assisted ventilation

C: HR N for age, pulses+++/++, warm peripheries, CRT< 2 secs,
liver span N for age,
BP: N, with normal pulse pressure
Urine: > 1 ml/kg/hour

Predictors of Outcome in Children with Status Epilepticus during Resuscitation in PED. Retrospective Observational study *Ann Indian Acad Neurol*. 2017

*Volume of fluids needed to correct shock due to idiopathic SE: 10-30 ml/kg ; Shock due to sepsis/hypovolemia: 60-120ml/kg
**During fluid therapy to correct shock, look out for signs of pulmonary edema/cardiac dysfunction: Pink froth, grunt, retractions, SaO_2< 92% , muffling of heart sounds, gallop, bradycardia, hepatomegaly, fall in MAP<65 mm Hg. If any one sign of PE, apply CPAP, initiate appropriate inotrope*, intubate:

1) *Dopamine: N BP with wide pulse pressure, 3)Epinephrine Low SBP with cool shock,
2) Dobutamine: High BP with cool shock, 4)Nor-Epinephrine: Wide pulse pressure+ Low MAP not responding to fluids and Dopamine

5)PREM-PEMC Protocol: Management of Stridor in PED

1.History of noisy breath, anticipate structural obstruction
2.Assess child in Mom's lap
3.Mom holds O2 mask
4. Avoid laryngoscopic evaluation of alert child in ED with stridor (Can precipitate cardiac arrest)

1.History of unresponsiveness, anticipate falling back of tongue
2. Assess child on resus trolley
3. Head tilt-chin lift, plan early intubation

Stridor + Respiratory distress +No hypoxia



DISABILITY: Alert, Tone and posture: N, Eyes: MP, EOM: N/ PERL
AIRWAY: Stable stridor
BREATHING: RR:N, No grunt, Retractions+
CIRCULATION: HR: N, Perfusion: N, Color: N, BP: N, SaO2: 100%

Stridor+ Respiratory distress+ Early hypoxia



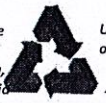
DISABILITY: Hyperalert, Tone and posture: N, Eyes: MP, EOM: N/ PERL
AIRWAY: Stable stridor
BREATHING: RR:↑, No grunt, retractions, Abdominal
CIRCULATION: tachycardia, Perfusion: N, Color: N, BP: N, SaO2: 100%

Stridor+ Respiratory failure+ Severe hypoxia



DISABILITY: pain responsive, Tone/posture: abn, Eye deviation, Nystagmus ,Lid Twitch,PERL
AIRWAY: Unstable stridor
BREATHING: RR:↑/↓, Grunt/SCR/ abdominal
CIRCULATION: HR: ↑/↓, Cardiogenic shock, Color: abn, MAP ↓SaO2: <92%

Neurogenic stridor: Collapse of airway tube +falling back of tongue in unresponsiveness



DISABILITY: Unresponsive posturing, Eye deviation, Nystagmus ,Lid Twitch, unequal pupil , DEM+
AIRWAY: Unstable obstructed
BREATHING: Apneic
CIRCULATION: Relative bradycardia, Cardiogenic shock, BP: N/↑

Resus based on severity of hypoxia/shock/etiology

ETIOLOGY	AGE	FEVER	COUGH	VOICE	STRIDOR	DYSPHAGIA	OTHERS				
ALTB	3m-5y	+	Brassy	Hoarse	Harsh	–	–	Oral Prednisolone 2mg/kg stat or Nebulised budesonide 2-4mg/4ml NS	Epinephrine nebulisation 0.5mg/kg up to maximum 5mg(1:1000) Inj. Dexamethasone 0.5mg/kg IV/IM stat	O_2 Call for ENT/ Anesthetic help	Bag valve mask ventilation
Epiglottitis	2Y-7Y	+++	Ineffective	Hot potato	Soft	+	Drooling of saliva	Rapid shift to EOT accompanied by airway expert Avoid X-ray in ER	Rapid shift to EOT accompanied by airway expert Avoid placing child supine for Xray	Fluid bolus (20-30 ml/kg (small volume) Inotrope if PE/CD are identified	Early intubation using ICP precautions for controlled ventilation Shock correction
Retro Pharyngeal Abscess	<5Y	+++	Ineffective	Muffled	Soft	+	Drooling of saliva, neck stiffness, torticollis	Rapid shift to EOT accompanied by airway expert Avoid X-Ray in ER Avoid laryngoscopic evaluation (even if ordered by ENT Physician)	Rapid shift to EOT accompanied by airway expert Avoid making child supine for X-ray	Plan to shift to OR Avoid paralytic agents	Evaluate for cause
FB Aspiration	6M-2Y	–	Sudden Choking	Normal	Varies based on the site of obstruction	±	–	Plan shift to EOT	Plan shift to EOT		
Angioedema Allergen +	Any	–	Dry staccato	Hoarse	Varies	±	Swelling of lips, tongue, Mucosa, Face	100% O2 through JR Early intubation by airway expert Shock correction Inj. Epinephrine 0.1mg/kg DEEP IM (1:1000) Inj. Hydrocortisone 5mg/kg IV Inj.Diphenhydramine1-2mg/kg maximum 50 mg over 5-10 mins IV Inj. Ranitidine 1mg/kg upto 50mgIV Salbutamol Nebulisation			

6) PREM Protocol: Management of Acute Exacerbation of Asthma in the PED

Moderate Asthma (Respiratory Distress +No hypoxia)

Alert, Tone & Posture N
EOM: N
PERL



RR: ↑, No grunt, SCR+, Thoracic Wheeze/Crept
oO2 : >92%s

HR: N
Perfusion: N
Color : N
Liver span : N
SaO2 : 100%

Oral steroids *
MDI+ spacer every 2min up to 10 puffs depending on response

RD +No hypoxia

Patient has signs and symptoms across categories, always treat according to their most severe features. Attempt to push to green triangle

Anticipate worsening of hypoxia in hypoxic asthmatics during salbutamol nebulization

Agitation/Posturing/unresponsiveness during salbutamol nebulization consider non asthmatic etiology

Physician and pulse-Ox monitoring during nebulization is mandatory

Rapid cardiopulmonary assessment (RPCA) necessary after each bronchodilator to decide the next step in protocol

Avoid intubation if possible. Absolute indications : ★

Respiratory arrest
Cardiac arrest
Severe exhaustion
Rapid deterioration of mental status

Acute Severe Asthma-Respiratory Distress + Some hypoxia

Alert, Tone& Posture N
EOM: N
PERL



A: Cry
B: RR >50/min 2-5 year*,>30/min >5 year*
SCR+, No grunt, Thoracic respiration

HR >130/min 2-5 year
>120/min >5 year, color N
Warm peripheries, +++/++,CRT<2
Liver span: N,SBP: N,PP 30-40

100% O2 via Non rebreathing mask

2.5 mg Salbutamol nebulized via O_2 over 20 minutes.

Reassess/document/derive PREM triangle to find out need for next neb.

RD+ Some hypoxia

Add T. Prednisolone:
10mg < 2 year
20mg 2-5 year
30- 40 mg >5 year

RD+ No hypoxia

Repeat MDI+ spacer every 2min up to 10 puffs

RD+ some hypoxia

Repeat salbutamol nebulization 1 – 3 hourly

Respiratory failure + Severe hypoxia:
Fighting the mask, Agitation
Combativeness
Exhaustion, Diaphoresis
Head bobbing
RR > 80/ min

★

Life threatening Asthma-Respiratory Distress+ Severe hypoxia

Hyperalert
Tone & Posture N
EOM: N
PERL



A: Cry
B: RR ↑*
SCR, Abdominal respiration
wheeze SpO2 : ≤92%

HR >130/min 2-5 year
>120/min >5 year,color abnormal
+++/+++, warm, CRT< 2 secs, SBP
DBP< 50% of SBP, MAP N/ low,
Liver span: N

100% O_2 via flow inflating ventilation device

Nebulized Salbutamol + Ipratropium Bromide 500 µg via O2 @ 20 minute Reassess/document/derive PREM triangle to find out need for repeat nebs until resolution of hypoxia. (More than 3 nebs may be needed).

**Inj Hydrocortisone <2 year: 4 mg/kg
2-5 year: 50mg
>5 year: 100 mg

Correct vasodilatory shock with 10 ml/kg boluses max 30 ml/kg (up to 60ml/kg if sepsis coexists. Inotrope if MAP drops

RD +some hypoxia

Continue nebulization salbutamol
1 – 3 hourly Ipratropium 4- 6th hourly
Continue steroids

Modified from British guidelines on the management of asthma (2019)

RF+ severe hypoxia

RD + severe hypoxia

RD+ Severe hypoxia

Near Fatal Asthma- Respiratory failure+ Severe hypoxia ★

Pain responsive/ Unresponsive
Tone & Posture : Abn
Conjugate eye/nystagmus
PERL



A: No cry
B:RR "N" for age: Bradypnea
Grunt/No wheeze
SaO2 : <92%

HR: "N" for age (relative brady)
+++/+/cool peripheries/CRT> 2 secs,
SBP"Normal"(relative-hypotension)/low, Liver span : N

O_2 via Non-Invasive Ventilation

2.5mg Salbutamol+ Ipratropium 500µg+$MgSO_4$ 150 mg via O_2

Inj. Adrenaline 0.1ml/kg 1:10,000 SQ (max 3 doses based on reassessment)

Treat Shock+ SBP (N): 10 ml/kg NS (max 30 ml/kg. Low MAP: Plan inotrope infusion

Inj Hydrocortisone**

Reassess/document/derive PREM triangle to find out need for repeat nebs until resolution of hypoxia. (More than 3 nebs may be needed). Correct vasodilatory shock

RF+ severe hypoxia

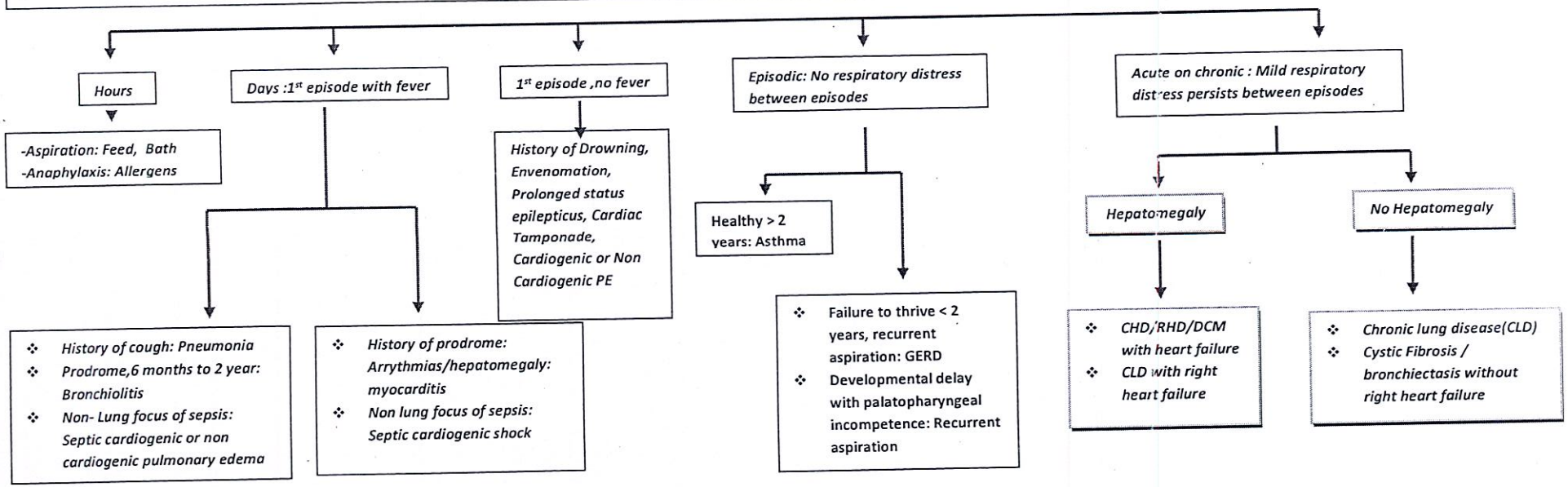
Inj. MgSO4 (0.1 ml/kg 50%) IV bolus over ½ max 2g (only one dose)

RF+ severe hypoxia

Inj. Aminophylline 5mg/kg loading dose (omit if already on Theophylline) followed by infusion @ 1mg/kg/hr

7PREM-PEMC-Approach to establishing etiology of respiratory distress in the PED

- Child >6months, with a patent airway, should be seated in mother's lap during rapid cardio-pulmonary cerebral assessment and subsequent resuscitation.
- Mother holds O_2mask of the JR circuit. Resuscitation trolley with bag valve mask should be available close at hand. If child deteriorates, should be rapidly shifted to the trolley



All that wheezes is not asthma, probe history to avoid potentially lethal complications of salbutamol nebulisation in hypoxic children with respiratory distress

- Bronchospasm: Asthma(episodic) , Anaphylaxis
- Bronchiolar edema: Bronchiolitis(1st episode)
- Mucus plugs: Cystic Fibrosis(acute on chronic)
- Interstitial /alveolar edema compressing bronchioles: Pulmonary edema

1. Chronic respiratory distress – congenital heart disease
2. Acute 1st episode respiratory distress with non-lung focus of sepsis : Septic cardiogenic shock
3. Pulmonary capillary leak : Acute lung injury occurs , can occur in serious illness of any etiology

Suprasternal and sternal retractions: Suspect upper airway obstruction ,
Inter-costal retractions – consider lung pathology.
Effortless tachypnea: DKA, metabolic acidosis (normal lung)

Infants < 2 month of age

- First episode, hyperacute/acute respiratory distress: consider CHD
- Recurrent episodes in <2 yrs with failure to thrive, immunocompromised : consider recurrent pneumonia
- Acute respiratory distress with failure to thrive : consider CCF or CLD despite negative history
- Hepatomegaly with effortless tachypnea: consider intrinsic liver disease

Using the PREM Assessment Triangle to recognize physiological status in 60 seconds

NORMAL

DISABILITY
Mom says alert, Tone and posture: N Eyes: MP, No lid twitch, No nystagmus, EOM: N PERL



AIRWAY
Stable (cry, vocalizes)
BREATHING
RR:N (For age), No grunt, SCR, thoracic respiration

CIRCULATION
HR: N (N for age), warm peripheries, +++/++, pink, CRT< 2 sec, Liver span: N (for age), SBP: N for age, DBP> 50% of SBP, PP: 30-40 mmHg, MAP: N for age

SIRS

DISABILITY
Mom says alert, Tone and posture: N Eyes: MP, No lid twitch, No nystagmus, EOM: N, PERL



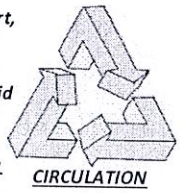
AIRWAY
Stable (cry, vocalizes)
BREATHING
RR:>2 SD for age, no grunt, no SCR, thoracic respiration,

OTHERS:
Temperature <36.5 °C or >38°C
Focus of infection

CIRCULATION
HR: >2 SD for age warm peripheries, +++/++, pink, CRT< 2 sec, Liver span: N (for age), SBP: N for age, DBP> 50% of SBP, PP: 30-40 mmHg, MAP: N for age

RESPIRATORY DISTRESS

DISABILITY
Mom says alert, Tone and posture: N Eyes: MP No lid twitch, No nystagmus EOM: N, PERL

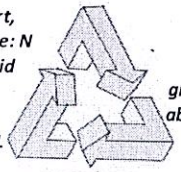


AIRWAY
Stable
BREATHING
RR:↑ for age No grunt, SCR+, thoracic respiration+

CIRCULATION
HR: ↑/ N warm peripheries, +++/++, pink, CRT< 2 sec, Liver span: N (for age), SBP: N for age, DBP> 50% of SBP, PP: 30-40 mmHg, MAP: N for age

CARDIAC FAILURE

DISABILITY
Mom says alert, Tone and posture: N Eyes: MP, No lid twitch, No nystagmus EOM: N, PERL

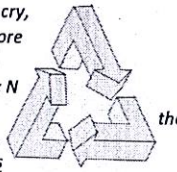


AIRWAY
Stable: cry
BREATHING
RR:↑ for age, no grunt, SCR, thoracic or abdominal respiration, crepts: +/-

CIRCULATION
HR: ↑ ,warm peripheries, +++/+++, pink, CRT< 2 sec, Liver span: ↑ (for age), SBP: N for age, DBP< 50% of SBP, PP> 40 mmHg, MAP: N for age

COMPENSATED SHOCK

DISABILITY
Mom: Incessant cry, not as usual, more sleepy, Tone& posture: N Eyes: MP, no lid twitch, no nystagmus EOM: N/ PERL

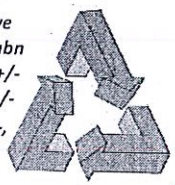


AIRWAY
Stable: Cry
BREATHING
RR:↑ for age, no grunt,SCR, thoracicrespiration , crepts: +/-

CIRCULATION
HR: ↑ warm peripheries, +++/+++, pink, CRT< 2 sec, Liver span: N (for age), SBP: N for age, DBP< 50% of SBP, PP> 40 mmHg, MAP: N for age

RESPIRATORY FAILURE

DISABILITY
Pain responsive Tone/posture: abn Eye deviation: +/- Nystagmus : +/- Lid Twitch: +/-, PERL

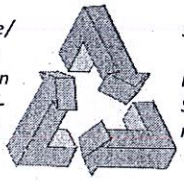


AIRWAY
Stable: Cry
BREATHING
RR:↑/N for age, grunt+, SCR+, abdominal respiration+

CIRCULATION
HR: ↑, warm peripheries, +++/+++, pink, CRT< 2 sec, Liver span: N (for age), SBP: N for age, DBP< 50% of SBP, PP> 40 mmHg, MAP: N for

CARDIOGENIC SHOCK

DISABILITY
Impaired-alert/inconsolable/ pain responsive Tone/posture: abn Eye deviation: +/- Nystagmus : +/- Lid Twitch: +/- PERL

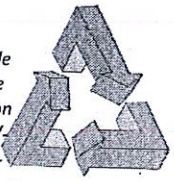


AIRWAY
Stable: Cry
BREATHING
RR:↑, grunt, SCR, abdominal respiration

CIRCULATION
HR: ↑/↓/ N, muffled, gallop, +++/+, cool peripheries, CRT> 2 seconds, color abn, Hepatomegaly ±, SBP: N for age, DBP N/< 50% of SBP, PP N or > 40 mmHa. MAP: N for age

DECOMPENSATED SHOCK

DISABILITY
Impaired alert/inconsolable /pain responsive Tone/posture: abn Eye deviation: +/- Nystagmus : +/- Lid Twitch: +/- GTCS+/--



AIRWAY
Unstable
BREATHING
RR:↑/↓, grunt, SCR, abdominal respiration

CIRCULATION
HR: ↑/↓/N, ++/0, cool peripheries, CRT> 2 secs, color abnormal, Liver span N/↑, SBP: ↓ for age, DBP↓, MAP- ↓ for age

IMMINENT ARREST

DISABILITY
Unresponsive, Posturing/ GTCS: +/- Eye deviation: +/-Nystagmus : +/- Lid Twitch: +/-, Pupils sluggish



AIRWAY
Unstable: No cry
BREATHING:
Apnea

CIRCULATION
HR: ↓, muffled, gallop, ++/0, cool below thigh, CRT> 2 secs, color abnormal, Liver span N or ↑, SBP: ↓ ,MAP ↓

PREM Assesment Triangle- 8: Recognition of Relative Bradypnea and Relative Bradycardia

NORMAL

DISABILITY
Alert, Tone and posture: N,
Eyes: MP, EOM: N, No lid twitch, no nystagmus, PERL



AIRWAY
Stable/cry
BREATHING
RR:N(For age), No grunt, No SCR, thoracic respiration, BAE N,

CIRCULATION
HR: N (Normal for age), warm peripheries, +++/++, CRT< 2 secs, color: N, Liver span: N (for age), SBP: N, DBP< 50% of SBP, PP: 30-40 mmHg, MAP: N (for age)

NORMAL VITAL SIGNS FOR AGE

Age (kg)	Respiration	Heart rate	SBP
Newborn (3.5)	30–60	90–180	50–70
6 month (7)	24–40	85–170	65–106
1 year (10)	20–40	80–140	72–110
3 year (15)	20–30	80–130	78–114
6 year (20)	18–25	70–120	80–116
8 year (25)	18–25	70–110	84–122
10 year (30)	16–20	65–110	90–130
12 year (40)	14–20	60–110	94–136

Age	Liver span
2 month	5 cm
1 year	6 cm
2 year	6.5 cm
3 year	7 cm
4 year	7.5 cm
5 year	8 cm
12 year	9 cm

Hypoxia/shock

↓

Compensatory mechanism -RR, HR and SBP increases

↓

Compensation fails -RR, HR and SBP fall to normal range of vital signs for age

↓

RELATIVE BRADYPNEA / IMMINENT ARREST

DISABILITY
Pain responsive /unresponsive
Posturing/GTCs, Eyes: deviated/upward
Nystagmus ±, lid twitch±,



AIRWAY
No cry/stridor±,
BREATHING
RR:N (For age), relative bradypnea
Grunt ±, SCR ±,
Abdominal-respiration

- Head tilt, chin lift
- Suction oro-pharynx
- NGT-decompression
- Connect O_2 to BVM
- Initiate bag-valve - mask ventilation

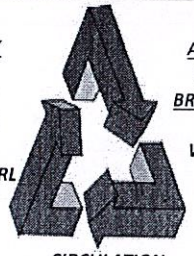
CIRCULATION
Relative bradycardia (HR:N for age)
Cool peripheries, ±+/0, cyanosis, CRT>2secs, Hepatomegaly, BP-Low, MAP-Low

→ Initiate chest compressions @ 15: 2
Call for 0.1 ml/kg (1: 10,000 dilution) epinephrine

Being reassured with "normal" vital signs based on the monitor can be misleading and dangerous in the ED. Cardiopulmonary cerebral assessment, documentation, interpretation of vital signs, derivation of physiological status (PREM triangle) crucial to determine whether vital signs are "normal" or not!

9) PREM PEMC Protocol : Approach to management of Snake bite In ER

Bite / Stable



DISABILITY
Alert,
Tone and posture: N
Eyes: MP
EOM: Full PERL

AIRWAY
Stable
BREATHING
RR:N
WOB: N

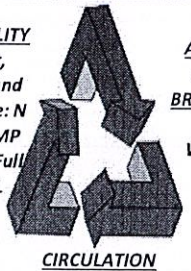
CIRCULATION
HR: N or ↑
Perfusion : N
Liver span: N
BP: N

THERS: Cellulitis , (Severe, painful progressive swelling, Swelling apidly crossing the joint) bite mark, Tender lymphadenitis, WBCT : />20 mins, confirmed snake bite

- Reassurance, immobilize the limb,
- inj . TT, antibiotics if cellulitis
- ASV 8-10 vials for both adults & children in NS/ GNS over 1-2 hrs

ASV ALLERGY
Anticipate ASV allergy in all cases
Adrenaline (0.1ml/kg of 1:10000 dilution as IM, MAX:0.5 ml of 1:1000), should always be ready to administer
0.2 mg/kg of antihistamine I.V. and 2-6mg/kg of hydrocortisone IV
After the allergy subsides, continue ASV infusion at slower rates for 10-15 mins. Reassess, then normal drip rate may be resumed.

Hemotoxic/ Stable



DISABILITY
Alert,
Tone and posture: N
Eyes: MP
EOM: Full
PERL

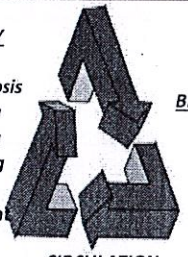
AIRWAY
Stable
BREATHING
RR:N
WOB: N

CIRCULATION
HR: N or ↑
Perfusion : N
Liver span: N
BP: N

OTHERS: WBCT > 20 mins, bleed from bite site, other bleeding manifestations

- ASV 8-10 vials
- WBCT 6th hourly after ASV. If WBCT more than 20 mins then give repeat dose.(Max-30). If patient continue to bleed briskly, ASV should be given with 1 to 2 hrs)
- FFP, cryoprecipitate, fresh blood, plasmapheresis after neutralizing the venom by using ASV.

Neurotoxic/ Stable



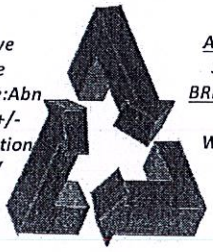
DISABILITY
Alert,
Diplopia /Ptosis
Dysarthria
Dysphagia
Descending paralysis
EOM: Absent
PERL

AIRWAY
Stable
BREATHING
RR:N
WOB: N

CIRCULATION
HR: N or ↑
Perfusion : N
Liver span: N
BP: N

- O2 through JR
- ASV 8-10 vials (max- 20)
- Atropine 0.02 -0.05 mg/kg, ½ hourly
- Neostigmine 40 µg/kg ½ hourly till neurological recovery. (More helpful in Cobra bite)Thereafter to be given as tapering dose (10-40 µg/kg) at 1 hr, 2 hr, 6hr and 12 hr.
- If no improvement after 3 doses of Neostigmine, atropine give Inj. Calcium Gluconate 1-2 ml/kg (1:1) dilution), Max 10 ml, IV slowly over 5-10 mins. (Calcium ion acts as neurotransmitter in presynaptic fibers as Krait bite. Repeat 6 hourly.

DIVC/Hemorrhage



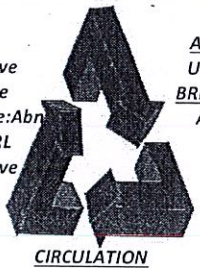
DISABILITY
Pain responsive
Unresponsive
Tone and posture:Abn
unequal pupil +/-
Conjugate deviation
Nystagmus /
Lid Twitch

AIRWAY
Stable
BREATHING
RR:↑
WOB: ↑

CIRCULATION
HR: ↑/↓
Perfusion : Abn
Liver span: N/↑
BP: N/↑/↓

- Oxygen through Jackson Rees circuit
- Crystalloids 20ml/kg maximum 6oml/kg
- Inotropic support, ASV maximum 30 vials
- Blood & blood components after neutralizing the venom by using ASV

Unstable/ Neurotoxic



DISABILITY
Pain responsive
Unresponsive
Tone and posture:Abn
Eyes MP, PERL
DEM - Defective

AIRWAY
Unstable
BREATHING
Apneic

CIRCULATION
HR: ↑/↓
Perfusion : Abn
Liver span: N/↑
BP: N/↑/↓

- Oxygen through bag valve mask, intubate and ventilate
- Crystalloids 20ml/kg maximum 6oml/kg
- Inotropic support, ASV 8-10 vials maximum 30 vials
- Inj. Atropine , Neostigmine ½ hrly and continue as above

UNKNOWN BITE

If WBCT- N: No ASV

Repeat WBCT ½ hourly for 3 hour, then hourly for 24 hour

If WBCT abnormal start ASV

SURGICAL ISSUES

- Compartment syndrome is rare phenomena in children
- Early and adequate antivenom is the best strategy to decrease limb edema thereby preventing irreversible muscle damage. (Gangrene).

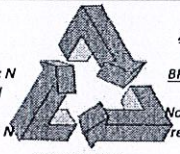
10) PREM PEMC Protocol : Management of Scorpion Sting in PED

Scorpion Sting

LOCAL EFFECTS
- Oral paracetamol 15mg/kg/dose
- Ice compression at the site of bite

SYSTEMIC EFFECTS
Autonomic storm:Profuse sweating, vomiting, cold peripheries, hypersalivation, Priaprism, bradycardia

NO SHOCK



DISABILITY
alert,
Tone and posture: N
Eyes: MP, No lid twitch, No nystagmus, EOM: N
PERL

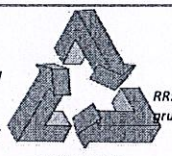
AIRWAY
Stable
BREATHING
RR:N
No grunt/No retractions

CIRCULATION
HR: N
Perfusion : N
Liver span: N
BP: N

- Prazosin 30µg/kg/dose by oral/NGT
- Maintain supine position to prevent hypotension

- Shock + no PE (Evidence of hypovolemia) (vomiting+ or severe perspiration+)
- Continue O2 through JR circuit
- Initiate dobutamine, continue 5-10 ml/kg until shock resolves (max 40 ml/kg)

COMPENSATED SHOCK



DISABILITY
alert,
Tone and posture: N
Eyes: MP, No lid twitch, No nystagmus, EOM: N
PERL

AIRWAY
Stable
BREATHING
RR:↑/No grunt/retractions++

CIRCULATION
HR: Tachycardia
Cold shock
Liver span: N/hepatomegaly
BP: N/↑

- O_2 through Jackson-Rees Circuit
- NS/RL boluses @10ml/kg up to max 20ml/kg

- Shock +PE or hepatomegaly+
- Stop fluids
- Initiate dobutamine
- Intubate using PAI

HYPOTENSIVE SHOCK



DISABILITY
Pain responsive
Unresponsive
Tone and posture:Abn
Conjugate deviation±
Nystagmus ±
Lid Twitch±

AIRWAY
Stable
BREATHING
RR:↑/↓
Grunt/Retraction

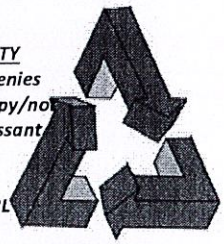
CIRCULATION
HR: ↑/"N"Relative bradycardia
Cold shock, Liver span: N/hepatomegaly, SBP: ↓

- O_2 through JR circuit
- BVM ventilation
- Plan early intubation if bradypnea
- NS/RL boluses@5-10ml/kg
- Epinephrine infusion @0.3-0.5µg/kg/min
- Withhold Prazosin until BP becomes normal for age

NOTE:
- Risk of cardiogenic or non cardiogenic pulmonary edema complicates shock management due to scorpion envenomation
- During fluid therapy, monitor for airway instability, pink froth, increase or decrease in respiratory rates, grunt, retractions, abdominal respiration, fresh rales, gallop, increasing liver span, agitation, fighting the mask and drop in oxygen saturation (i.e signs of pulmonary edema). If any one or cluster of these signs develop, stop further fluid , initiate inotropes and prepare to intubate
- Prazosin can be repeated after 3 hrs and every 6th hrly till extremities are warm and dry (usually not more than 4 doses are required)

11)PREM -PEMC Protocol: Recognition of Dengue shock in the febrile child @OPD

PROBABLE DENGUE



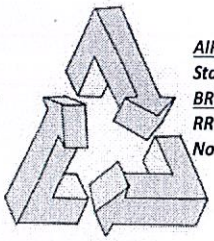
DISABILITY
Alert (mom denies lethargy/sleepy/not as usual/incessant cry/Tone and posture: N
Eyes: MP/PERL

AIRWAY
Stable
BREATHING
RR:N, No grunt, No retractions,

CIRCULATION
HR: N
Perfusion : N
Liver span: N, SBP: N, DBP: N, Pulse pressure N, MAP: N

OTHERS
- Fever
- Erythematous rash
- Tourniquet test positive
- NS1 ELISA: Positive
- Leucopenia, HCT: N, Platelets: N

DENGUE WITH WARNING SIGNS (LEAKING/NO SHOCK)



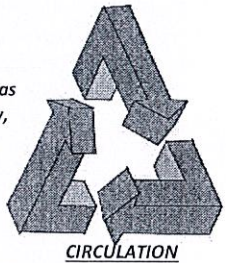
DISABILITY
Alert (mom denies lethargy/sleepy/not as usual/incessant cry/Tone and posture: N
Eyes: MP/PERL

AIRWAY
Stable
BREATHING
RR:N
No grunt/ No retractions

CIRCULATION
HR: N
Perfusion : N, Hepatomegaly, SBP: N, DBP: N, Pulse pressure N, MAP: N

OTHERS*
- Abdominal pain
- Persistent vomiting
- Mucosal bleed
- Fluid accumulation (puffy eyelids, slightly distended abdomen, minimal fluid in pleura)
- HCT: ↑, Platelets: ↓

DENGUE WITH COMPENSATED SHOCK*



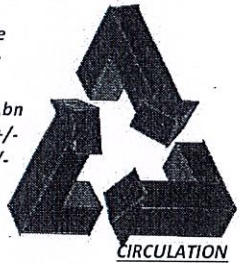
DISABILITY
Impaired alert, Incessant cry, not as usual, more sleepy,
Tone& posture: N
Eyes: MP,
EOM: N/ PERL

AIRWAY
Stable
BREATHING
RR:↑, No grunt/Retractions+
Air entry may be diminished due to pleural effiusion

CIRCULATION
HR: "N"(relative bradycardia),+++/+, cool peripheries, CRT> 2 secs, color abnormal, Liver span N/↑, SBP: normal for age, DBP> 50% of SBP, PP<20mmha(narrow).MAP- N. oliauria

- HCT increased
- Thrombocytopenia

DENGUE WITH DECOMPENSATED SHOCK*



DISABILITY
Pain responsive /Unresponsive
GTCS +/-
Tone& posture: Abn
Eye deviation: +/-
Nystagmus : +/-
Lid Twitch: +/-
PERL

AIRWAY
Stable/unstable
BREATHING
RR:↑/↓
Grunt+/-/retractions
Air-entry may be diminished due to pleural effiusion

CIRCULATION
HR: Relative bradycardia,muffle/gallop ,Cool peripheries +++/0, ++/0, Color- abn, CRT > 2 secs,Liver span: hepatomegaly
Systolic BP: ↓,MAP- Low, oliguria

- HCT increased
- Thrombocytopenia

DENGUE SHOCK



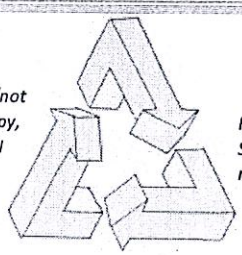
DISABILITY
Appears alert
Tone& posture: N
Eyes: MP,
EOM: N/ PERL

AIRWAY
Stable (cry, vocalizes)
BREATHING
RR:"N" (Relative bradypnea), No SCR, thoracic respiration, air-entry may be diminished due to pleural effiusion , no added sounds

CIRCULATION
HR:"Normal"(relative bradycardia), +++/+ cool peripheries. CRT< 2 sec, Liver span: ↑, SBP: N /↓ , DBP: > 50% SBP (often difficult to find out)
PP<20 mmHg(Narrow), MAP: N/↓

- Temperature : N
- Bleeding (petechiae,malena, hematamesis)
- Pleural effusion
- Ascites, HCT increased, Thrombocytopenia

EARLY SEPTIC SHOCK



DISABILITY
Impaired alert/Incessant cry/not as usual/more sleepy,
Tone& posture: N
Eyes: MP,
EOM: N/ PERL

AIRWAY
Stable: Cry
BREATHING
RR:↑,grunt± SCR±, thoracic respiration

CIRCULATION
HR: ↑↑↑,warm peripheries, +++/+++, pink, CRT< 2 sec, Liver span: N (for age), SBP: ↑ for age, DBP< 50% of SBP, PP> 40 mmHg, MAP: N/ low for age

- Temperature 36.5°C - 38°C
- Focus of infection
- Leukocytosis, HCT N, Platelets N

12-PREM PEMC Protocol: Management of Dengue Shock

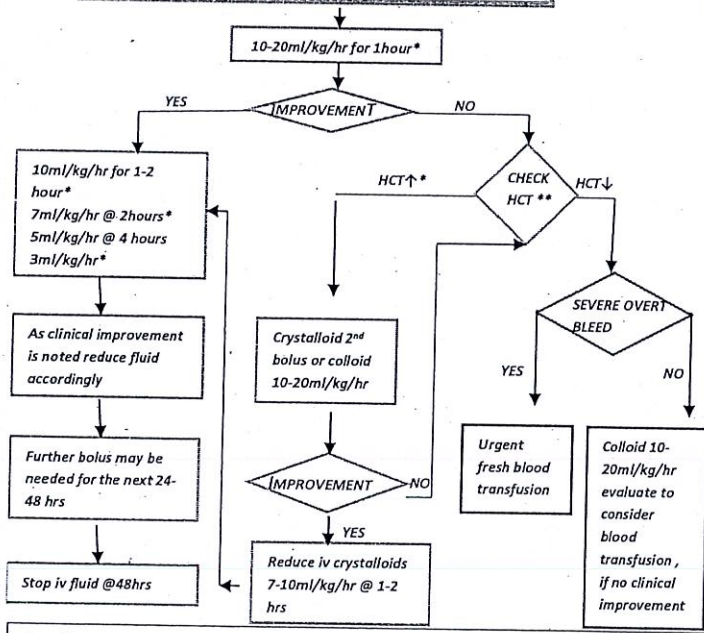
PROBABLE DENGUE

- Bed rest
- Adequate fluid intake :ORS, fruit juices
- Paracetamol 10mg/kg 6th hourly (no NSAIDS)
- Ask mom to note input/output chart (urine measured using measuring cup)
- Watch for warning signs

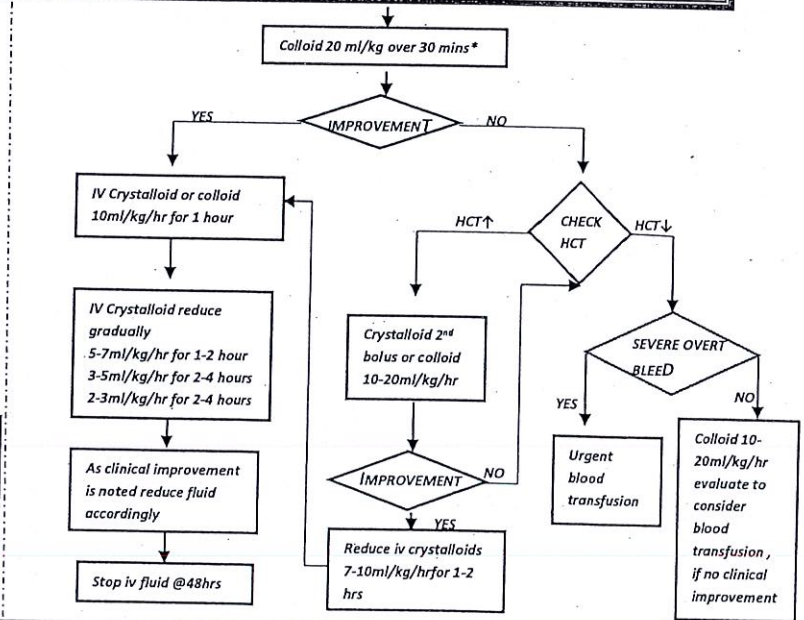
DENGUE WITH WARNING SIGNS (LEAKY/NO SHOCK)

- Oral fluids/ORS@ 3ml/kg/hr if child tolerates oral. If not, NS 3ml/kg/hr
- Hemodynamically stable raised HCT, decreased urine output: NS @ 5-7ml/kg/hr for 1-2 hrs, 3-5ml/kg/hr for next 2-4 hrs, then 3ml/kg/hr
- Repeat rapid cardiopulmonary assessment every hour during the critical phase*
- Monitor urine output every 2-4 hourly. Ensure urine output>0.5 ml/kg/hr
- Monitor HCT after every fluid therapy** and then every 4-6 hourly

DENGUE WITH COMPENSATED SHOCK*



DENGUE WITH DECOMPENSATED SHOCK*



Provide O_2 throughout shock resus via JR/NIV since leak in to lungs is anticipated. After every fluid bolus,1) Repeat rapid cardiopulmonary cerebral assessment, document, interpret vital signs using reference for age, derive PREM Triangle for physiological status in 60 seconds.2) Check urine output 3) Check HCT 4) Plan next intervention. Order appropriate Inotrope if signs of pulmonary edema or hepatomegaly noted. Order Epinephrine infusion if low SBP. GNS/KCl/Ca maintenance (Holliday-Segar rates). Avoid intubation by using NIV. Intubate ONLY if intubation triggers are noted. Avoid platelet transfusions. If signs of septic shock co-exist treat based on physiological status.

BEELA RAJESH
SECRETARY TO GOVERNMENT

//True Copy//

29/11/19

SECTION OFFICER

29/11/19

ANNEXURE 3

PREM UNIT INSPECTION Check List

S.No.	Activities	Status	Remarks
		Yes/No	
	1.OUTSIDE PREM DEPARTMENT		
1.	PREM Entrance signage Board		
2.	Name board with contact numbers of PREM staff members on duty		
3.	Disable friendly Access to PREM unit		
4.	Rest room (toilet facilities) proximal to PREM unit		
5.	Access to clean drinking water		
6.	Hand rub facility prior to entry into PREM unit (Hospital acquired infection control)		
7.	Signage for Stretchers, Trolley and wheel chair Bay.		
	(a) Wheelchairs		
	(b) Trolleys		
	(c) Stretchers (How many have safety belts)		
8.	Security staff for child safety at entrance of PREM (in all 3 shifts)		
9.	Play area for children in waiting area outside PREM units		
10.	Pantry for preparation of food		

s.no	Activities	Status	Remarks
		Yes/No	
	2. INSIDE PREM DEPARTMENT		
	PREM App Board		
	Display boards PREM- PEMC protocols		
	PREM Case records available		
	Is there adequate stock of PREM case records/forms		
	Infant , Pediatric sized bag valve mask device with masks		
	Standing BP apparatus (LED)		
	Blood Pressure Cuffs in Sizes to Accommodate all Patients (Infant, Pediatric)		
	Hand rub stand on each side of resuscitation trolley		

	Digital Thermometer(s) with Low Temperature Capability		
	Electronic weighing balance		
	Pediatric Medication book-India (weight based medication book developed by Monash University)		
	Broselow's Tape		
	Disposable Jackson Rees circuits with pediatric masks		
	Glucometer with Reagent strips and single use lancets		
	Syringe pumps (at least one/per trolley)		
	Scoop Boards/ Spine Board with Head Rest and Belt(7)		
	IV Stands		
	ECG machine		
	Crash cart +		
	Suction apparatus (electrical) one for each trolley		
	No. of resuscitation trolleys Available for PREM		
	One Central oxygen and suction lines for each PREM resuscitation trolley		
	Plug points: 5 and 15 amp plug points		
	4 plug points on either side of the resuscitation trolley		
	Plug points at 3 feet above ground		
	Biomedical waste bins with posters and sharps container		
	Does it have hydraulic ER resuscitation trolley		
	Airway stool at head end of resuscitation trolley		
	Hand washing area with: Elbow tap and Mirror		
	Rectal Thermometer		
	Digital Thermometer		
	Biohazard Thermometer		
	Pulse Oximeter with Pediatric probes		
	Glucometer with Reagent strips and single use lancets		
	Multi-paramonitor		
	Scoop Boards		

	Sharps Container		
	Biomedical Waste Management		
	PREM-HDU		
	Minimum 4 beds in DHQH/SDH Minimum 8 beds in MCH		
	Hand washing area with:		
	Elbow tap and Mirror		
	Blood Pressure Cuffs in Sizes to Accommodate all Patients		
	Silicon Pediatric bag valve mask device		
	Masks of varying sizes		
	Thermometer(s) with Low Temperature Capability		
	Pulse Oximeter with Pediatric probes		
	Glucometer with Reagent strips and single use lancets		
	Multi-paramonitor with Pulse oximeter		
	Scoop Boards		
	Sharps Container		
	Biomedical Waste Management		
	List of PAI Phone numbers displayed		
	List of PREM Team members with Phone numbers displayed		
	PREM Protocol Display Boards		
	Biomedical Waste Management		
	Counseling Room		
	Permanent Oxygen Unit, Placed in a Permanent Mounting, with a Minimum Capacity of 1500 Liters and Equipped with a Reduction Gauge and Flow Meter Equipped with Reduction Gage and Flow Meter		
	Portable Oxygen Unit, with a Minimum Capacity of 300 Liters, Capable of Delivering Oxygen Flows of at Least 15 Liters per Minute and Equipped with a Yoke, Pressure Gage, and Flow Meter.		
	Spare Portable Oxygen Tank of at Least 300 Liter Capacity		
	Scroll outside /LCD display Name and Phone No.		
	Doctor on duty (EMO 1&2)		

	Specialist on call and second on call of each specialty		
	In charge of PREM ER		
	RMO		
	In charge of Transport/108 Ambulance		
	Help line Hearse & Red Cross Number		
	Help line Child abuse		
	Tertiary care centre (nearest to the Hospital)		
	PREM Nurses on duty		
	MNA		
	FNA		
	OT		
	POP tech		
	Sanitary Workers		
	Security Guard on duty		

22	**PREM Equipment**	**Yes**	**No**	**No available**	**No not working**
	Bag valve mask device (paediatric sized with reservoir)				
	Central Oxygen Supply				
	Suction Apparatus				
	Non invasive ventilator with Pediatric mask CPAP				
	Paediatric Bain Circuit				
	Multi para Monitor with Pulse oximeter set				
	Finger Pulsoxymeter				
	POCT- Machine (incl Cartridges)				
	Volume Infusion Pump				
	Syringe Infusion Pump				
	Mobile X Ray				
	Oxygen Flow Meter And Humidifier				
	ECG				
	Dressing Trolley				
	Stretchers/Multi Functional Stretcher				
	Wheel Chair				
	Spine Board and Head rest with Belt(7)				
	Scoop Board				
	IV Stand				
	Crash Cart				
	Yankouver suction				
	Intra-osseous tray				

	Computer and Printer				
	Flash Autoclave Machine				
	Auto Clave Machine				
	Spot Light				
	Cell Counter				
	DDA - Dangerous Drug Act with Narcotic Register				
	Paediatric Resuscitation Trolley				
	Neonatal Radiant warmer				
	Saline stand				
	X ray lobby				
	Electronic weighing machine				
	Ultra-sound (pediatric probe)				
23	**CRASH CART LIST**				
	Draw 1				
	Paed laryngoscope				
	1,2,3,4 curved blade				
	1,2 straight blade				
	Additional Batteries				
	Bougie				
	Suction catheter with all size				
	ET tube (4,4.5,5,5.5,6,6.5,7,7.5,8 No – Each 2 No's)				
	Stillet (10,14)				
	Magills forceps				
	oro pharyngeal airway				
	nasopharngeal airway 6,7				
	Knee Hammer				
	Torch light – Chargable / Batteries				
	Draw 2				
	ECG leads 3				
	Lignocaine Jelly				
	Normal ECG jelly				
	Sterillium Hand sanitiser				
	Bag Valve Masks (BVM) in Child, & Infant Sizes Equipped with Operable Pressure Relief Valves and Transparent Masks, with Oxygen Reservoir/Accumulator.				
	The Pediatric BVM Masks for Neonate, Infant, and Child.				
	Single Use, Transparent, Non-Rebreather Oxygen Masks in Pediatric Sizes				
	Nasal Cannulae in Pediatric Sizes				
	Ryles Tube (12,14,16,18,22)				

	Draw 3				
	Inj. Adrenaline Inj. Lorazepam Inj. Leviteracetem Ringers Lactate Inj Hydrocortisone Inj. Nor-Adrenaline Inj. Artesonate T. Prazosin Tinture Benzoin Inj. Dopamine Inj. Midazolam Inj. Sodium Valproate Salbutamol Nebulizer solution Inj. Ceftriaxzone Inj. Acyclovir Anti-snake Venom Inj Dobutamine Inj. Fosphenytoin Normal Saline/ DNS/5% Dextrose/10% Dextrose, 3% Dextrose, 0.45 NS Ipratropium Bromide Nebulizer solution Inj. Magnesium Sulphate Inj. Azithral Rectal Paracetamol Suppository & Anticonvulsive suppository				
	Antidotes medicine set				
	Other Drugs also				
	Draw 4				
	ABG syringe 2				
	16-22 G Needle Venflan (All sizes- 5 no's each)				
	IV set (Micro and Macro Set)				
	Blood IV set				
	Micropore				
	3 way adapter				
	Syringe 50 cc				
	Syringe 2cc, 5cc, 10cc				
	Draw 5				
	5% dextrose				
	RL				
	0.9% NS and 0.45%NS				
	3%NS				
	DNS				
	Haemocele				
	Intraosseous Needle – 5				

	PPE -Personal Protection				
	Goggles				
	Surgical Masks				
	Disposable Synthetic Gloves for all Attendants (6.5, 7, 7.5, 8.0)				
	Disposable Biohazard Bags For Non-Sharp Waste				
	Standard Sharps Container Both Fixed and Portable				
	Disinfectant Solution for Cleaning Contaminated Equipment				
	Waterless Hand Cleaner, Commercial Antimicrobial (Towelette, Spray, or Liquid)				
	Plastic ApronsFluid Resistant Gowns				
	Immobilsation devices				
	Philadelphia Collar/ C collar				
	Rigid Cervical Immobilization Devices in Appropriate - Child and Infant Sizes				
	Head Immobilization Device (NOT SANDBAGS) –				
	Firm Padding OR Commercially Available Device				
	Upper and Lower Extremity Immobilization Device(s):				
	Lower Extremity Traction Splint in Appropriate-				
	Adult and Pediatric sizes				
	Broad arm slings				
	Triangular slings				
	Roller gauze				
	Pelvic Binder				
	ICD Kit				
	Needle holder straight 8"				
	kellys Clamp -Curved 8"				
	Tray with lid				
	Stailnless Steel Cup				
	Artery Forceps Stright 6 "				
	Artery Forceps Stright 8 "				
	Toothed Forceps				
	Gauze				
	Cotton Balls				
	Scalpel holder with blade				
	Suture scissor Sharp				
	Chest Tube Set				
	Bleeding Control and Wound Management				
	Abdominal Trauma Dressing				
	Sterile Gauze in Various Sizes				
	Gauze Rolls in Assorted Sizes				
	Triangular Bandages				

	Occlusive Dressings or Equivalent				
	Sterile Water or Saline Solutions for Irrigation				
	Arterial Tourniquet				
	Sterile Burn Sheets or Medical Director Approved Burn Care Supplies				
	Adhesive Tape				
	1" & 2" Hypoallergenic				
	1" & 2" Adhesive				
	Additional Equipment –				
	Weight & height machine				
	Glucometer with Reagent Strips and Single-Use Lancets				
	Nebulizer Equipment				
	Miscellaneous Equipment				
	Device Capable for Pediatric Immobilization				
	Ocular Irrigation Device				
	Hot Pack(s)				
	Cold Pack(s)				
	Emesis Bags/Basin				
	STOCK				
	Blankets				
	Sheets – At Least One Change Per Cot				
	Pillows				
	Towels				
	Step Stool for CPR				
	Oro-Gastric Lavage tube (Boas Tube)				
	Foleys Catheter				
	Uro bags				
	Catheterization Tray				
	Ophthalmoscope				
	Hand held Doppler				
	Fire Safety Norms (Fire Exit, Fire extinguisher)				

Emergency Indicators

SN	Emergency Indicators (per month)	Current month	Previous month
1	Total no.of cases with airway obstructed/unmaintained		
2	No.of cases with breathing distress		
3	No.of cases with shock		
4	No.of status epilepticus		

5	No.of trauma cases		
6	No.of Poison cases admitted		
7	Poison Death during hospital stay		
8	No.of snake bites admitted		
9	No.of Snake bite death during hospital stay		
10	No.of scorpion bites admitted		
11	No.of scorpion bite deaths		
12	No.of Self Harm		
13	No.of burns admitted		
14	No.of burns death		
15	No.of Jaundice		
16	No.of GI bleed		
17	No.of cases with CHD/RHD		
18	No.of cases with renal disease		
19	No.of Children with HIV AIDS		
20	Total Number of Patients attended at PREM ER		
21	Number Referral IN		
22	Number Referral OUT		
23	No.of cases brought by 108 AS		
24	No.of cases brought by other transport		
25	No.of DAMA		
26	Number Of cases attended during night (7PM to 7AM)		
27	No. of emergency surgeries done		
28	No.of Intubation done		
29	No.of hypoxia corrected		
30	No.of C spine immobilized		
31	No.of cases corrected for raised ICP		
32	No.of Shock treated		
33	No.of Blood Transfusion		
34	No.of Intraosseous Infusion Done		
35	No.of decontamination done		
36	Total ASV given		
37	No.of CPR done		

38	No.of Thoracocentesis done		
39	No.of cases treated with ORS		

REMARKS OF INSPECTING OFFICER:

BEELA RAJESH
SECRETARY TO GOVERNMENT

//True Copy//

29/11/19

SECTION OFFICER

27/11/19

ANNEXURE 4

Periodic Reporting Format - Emergency Indicators

SN	Emergency Indicators (per month)	Current month	Previous month
1	Total no.of cases with airway obstructed/unmaintained		
2	No.of cases with breathing distress		
3	No.of cases with shock		
4	No.of status epilepticus		
5	No.of trauma cases		
6	No.of Poison cases admitted		
7	Poison Death during hospital stay		
8	No.of snake bites admitted		
9	No.of Snake bite death during hospital stay		
10	No.of scorpion bites admitted		
11	No.of scorpion bite deaths		
12	No.of Self Harm		
13	No.of burns admitted		
14	No.of burns death		
15	No.of Jaundice		
16	No.of GI bleed		
17	No.of cases with CHD/RHD		
18	No.of cases with renal disease		
19	No.of Children with HIV AIDS		
20	Total Number of Patients attended at PREM ER		
21	Number Referral IN		
22	Number Referral OUT		
23	No.of cases brought by 108 AS		
24	No.of cases brought by other transport		
25	No.of DAMA		
26	Number Of cases attended during night (7PM to 7AM)		
27	No. of emergency surgeries done		
28	No.of Intubation done		
29	No.of hypoxia corrected		
30	No.of C spine immobilized		
31	No.of cases corrected for raised ICP		
32	No.of Shock treated		
33	No.of Blood Transfusion		
34	No.of Intraosseous Infusion Done		

35	No.of decontamination done		
36	Total ASV given		
37	No.of CPR done		
38	No.of Thoracocentesis done		
39	No.of cases treated with ORS		

BEELA RAJESH
SECRETARY TO GOVERNMENT

//True Copy//

29/11/19

SECTION OFFICER

29/11/19

ANNEXURE 5

GUIDELINES FOR THE PLAY AREA IN THE HOSPITALS

Playtime for a child is an important part of the healing process. Play areas offer safe, fun-filled places of refuge where no medical procedures are performed. The Inpatient Playroom provides a variety of toys, games, arts, crafts, music and daily activities for inpatient children, their siblings and families.

- Activity areas or playrooms must be designed to ensure safety and provide supervision by staff at all times.
- The room should be finished and furnished to encourage children to be engaged in a safe and comfortable environment.
- The activities given to children for play should not consume a lot of child's energy as these children are recuperating from illness.
- The space should be designed to be flexible and support a variety of activities such as quiet and active play, creative play.
- The design should encourage children to both explore the room and engage in variety of activities.

Suggestions to set up effective play area interior:

- Nontoxic colours should be used for equipment and toys
- Small stair case with ramp with hand rails at one side of the corner; ball pool can be provided
- Small table and chairs where two to three children can sit and do colouring/creative play/clay/picture reading
- Fine motor work station for the kids who cannot run or have low activity levels
- On one side of the room swing can be provided which is very low and easily accessibility to children
- Tactile wall panel for sensory input and where children of different age groups can play at the same time
- Activity table for the toddlers where they are able to sit on the chair and play.
- Different types of tricycles and cars.
- Foam blocks
- Building blocks
- Puzzles
- Mirror to one side of the wall at a lower level for infants and toddlers.

BEELA RAJESH
SECRETARY TO GOVERNMENT

//True Copy//

29/11/19

SECTION OFFICER

29/11/19