

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 (Paediatric, 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-Paediatic Emergency Medicine Course" Protocols. (Annexure 4) to be displayed in all PREM units and utilized for management of critically ill and injured children
2. **Paediatic Emergency Medication-India** developed with Monash University for reducing medication errors to be available in all Paediatic 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 Paediatic 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 – Paediatic 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, Paediatic 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 Paediatic 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 Paediatic Resuscitation and Emergency Medicine has been already in position with the help of IIT Madras. This is a unique method of obtaining data from the Paediatic Resuscitation and Emergency Medical Units from all the hospitals under the scheme.

x) **RESEARCH:**

Data collection and evaluation of Paediatic 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 "Paediatic 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) émergency 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**

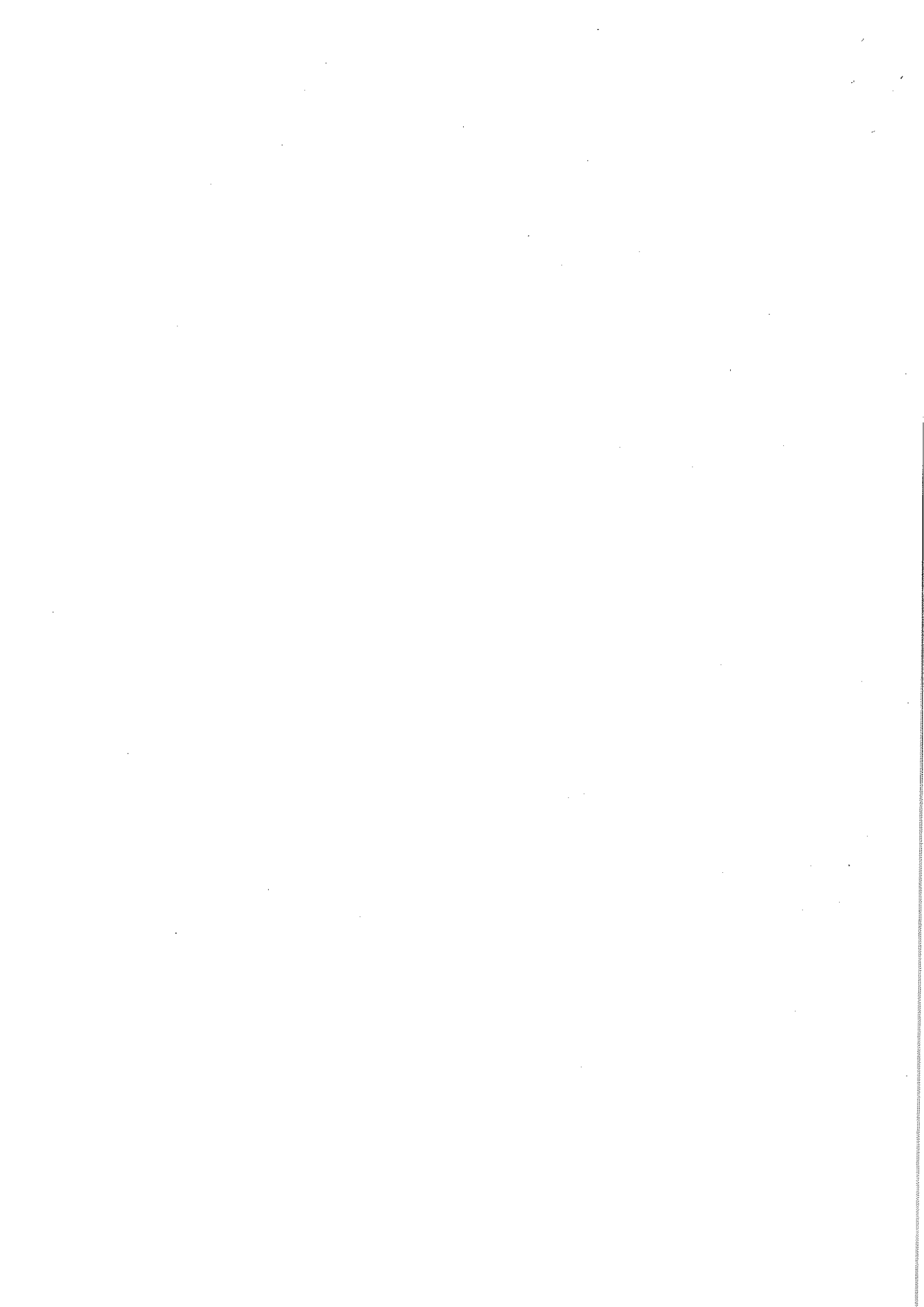
To
The Mission Director,
National Health Mission,
Chennai - 6.

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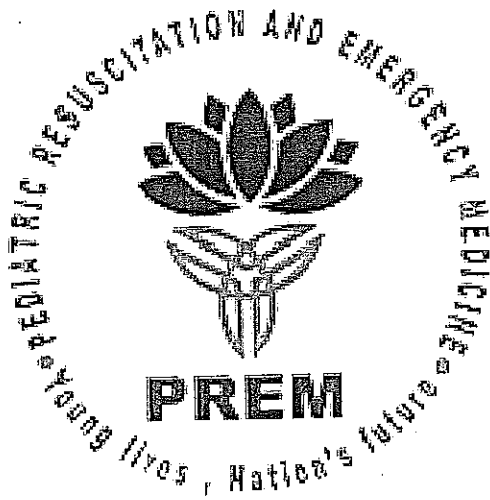
The Special Personal Assistant to Hon'ble Minister (Health and Family Welfare), Chennai – 9
Health and Family Welfare (Data Cell) Department, Chennai - 9.
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//Forwarded by Order//

12.05.2017
29/1/17
SECTION OFFICER



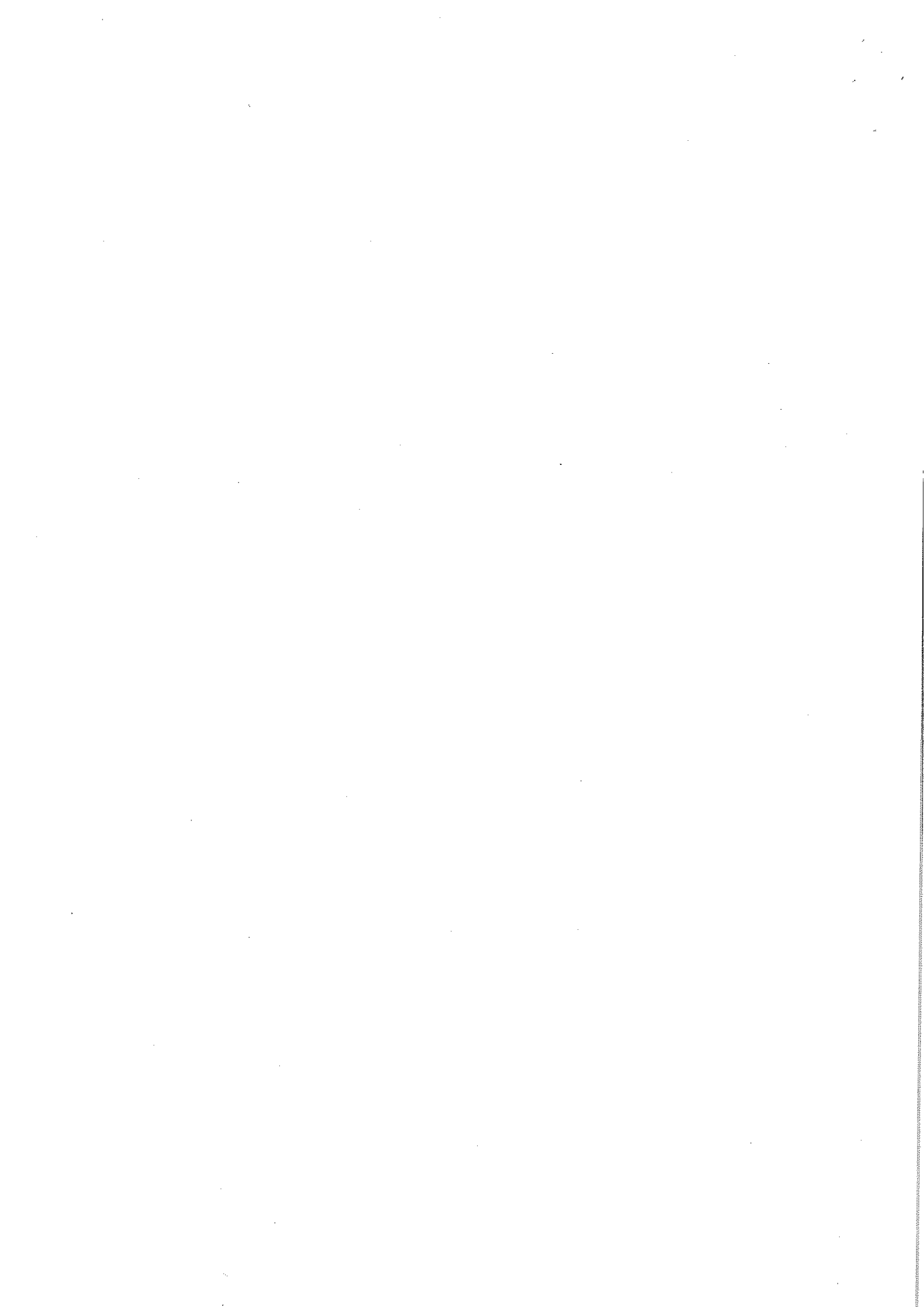
ANNEXURE 1



BEELA RAJESH
SECRETARY TO GOVERNMENT

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A. G. G. G. G.
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SECTION OFFICER
2/11/79



ANNEXURE 2

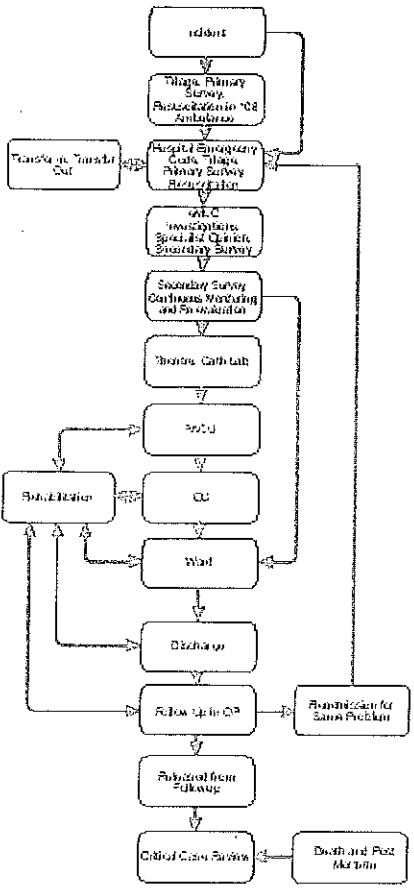


Government of Tamilnadu
Department of Health and Family Welfare
Tamilnadu Accident and Emergency Care Initiative (TAEI)
Paediatric Resuscitation Emergency Medicine (PREM)

Name : _____
 Age : _____ Gender : _____
 Weight : _____ Temp _____ @ _____ CBG _____ @ _____
 IP No : _____
 PIN : _____
 TAEI No : _____
 Author 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 Tamil Nadu
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 :	Description	Past History
1) Breathlessness /Spit/foam/cyanosis on chronic	Snake/Scorpion	CVE/CHD/RHD/CMV
2) Unresponsive /GTCB / Posturing/upward gaze	Submersion/ Toxic	CNS/Seizure/NDI/ Malformation
Time: Where: Required basal level: Yes/No	Fall/RTA/Assault/Trauma	Renal/Liver disease/ Malformation
Preceding events:	ALOC after preceding event:	RS: AB/ILD/Malformation/TB
Febrile/ Fever AWD/Vomiting/Noise/EB	Insect/ant cry/Lethargy/Not at work/	Motile/Red/Malignancy/Head
Abdominal pain/Gastroemesis/GI bleed	More sleepy	Bottle Prod/PLHA/5th death
Jaundice/Rash/Skin bleed		Drugs

Cardiopulmonary assessment :	Co:NRM/BVM/IR/ET	Pre-Hospital Resuscitation
Airway: Stable/Unstable/Obstructed/ET	None/Spontaneous/Improved/NGM/Adequate	A
Breathing : RR	Inj. Hydrocortisone/T. Prednisolone	B
Nasal Flare/Chesting/Indistinct/Retractions	Inj. Dexamethasone	C
Abdominal/Thoracic/Air-entry		D
Cough/Wheezes		Others
Colour: Normal/Abnormal/Patched		None/1-2
Circulation : HR		

Sounds: Murmur/gallop
Pulse volume
Cool below thigh/axilla/ankle/warm
CRT
Liver span: Firm/Normal
Disability:
Alert/Verbal/Post/Unresponsive
Pupils: ---
Eyes: Mild position/ Conjunctiva Deviation
Lid twitch/Nystagmus
DHR/BOM
Tongue/teeth
Sx/Ox

Concentration	Dose/kg	Total	Time
Fluid: R/R/L			
Epinephrine			
Prism			
Hydrocortisone			
Dexamethasone			
Diazepam			
Disinfectant			
IRP/Clow			
Lorazepam			
Magnesium			
For-ET			
Levobupivacaine			
10% Chloram			
Paracetamol			
Amidol			
Cardiacotone			
VKK			

Others
Physiological Status :

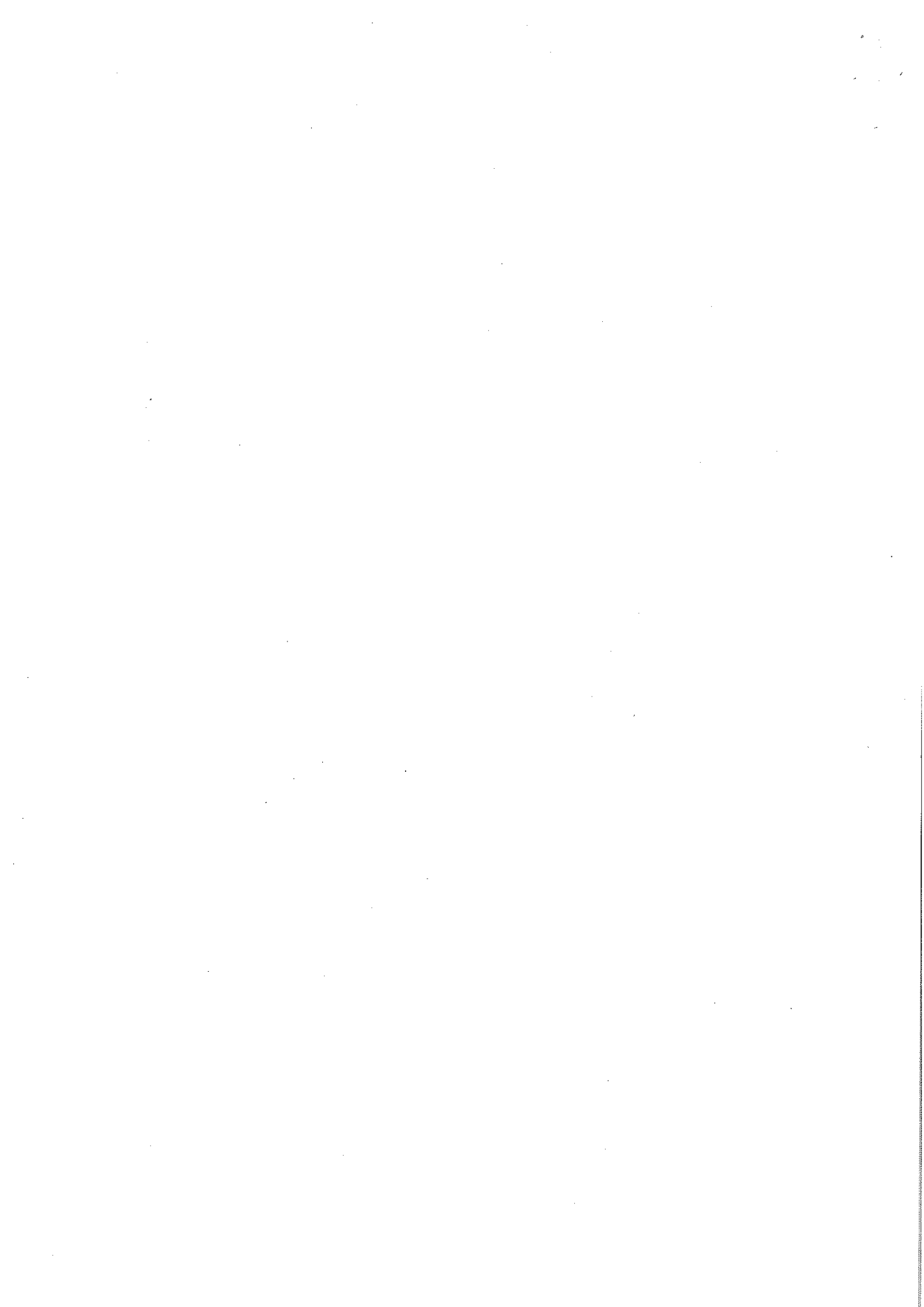
Airway: stable	Breathing: Normal	Circulation: HR N / Perfusion R	Disability: NR
Not stable	Relative tachypnea	Tachycardia/Relative brady/brady	ALOC
Obstructed	Respiratory distress/stridor	Shock / Liver span N/Regurgitometry	CH/ NCH
ET	Relative Bradypnea	Cardiology check	ICP
Tracheostomy	Apnea	Systemic BP N/ Low/ High	
		Pulse pressure N/W/M/Very low	
		MAP: N/Low	

CHB:	CT	<table border="1"> <tr><td>Temp</td><td></td><td></td><td></td><td></td></tr> <tr><td>HCT</td><td></td><td></td><td></td><td></td></tr> <tr><td>Platelet count</td><td></td><td></td><td></td><td></td></tr> </table>	Temp					HCT					Platelet count					<table border="1"> <tr><td>CBC</td><td></td></tr> <tr><td>BFT</td><td></td></tr> <tr><td>LFT</td><td></td></tr> <tr><td>Electrolytes</td><td></td></tr> <tr><td>Lactate</td><td></td></tr> </table>	CBC		BFT		LFT		Electrolytes		Lactate	
Temp																												
HCT																												
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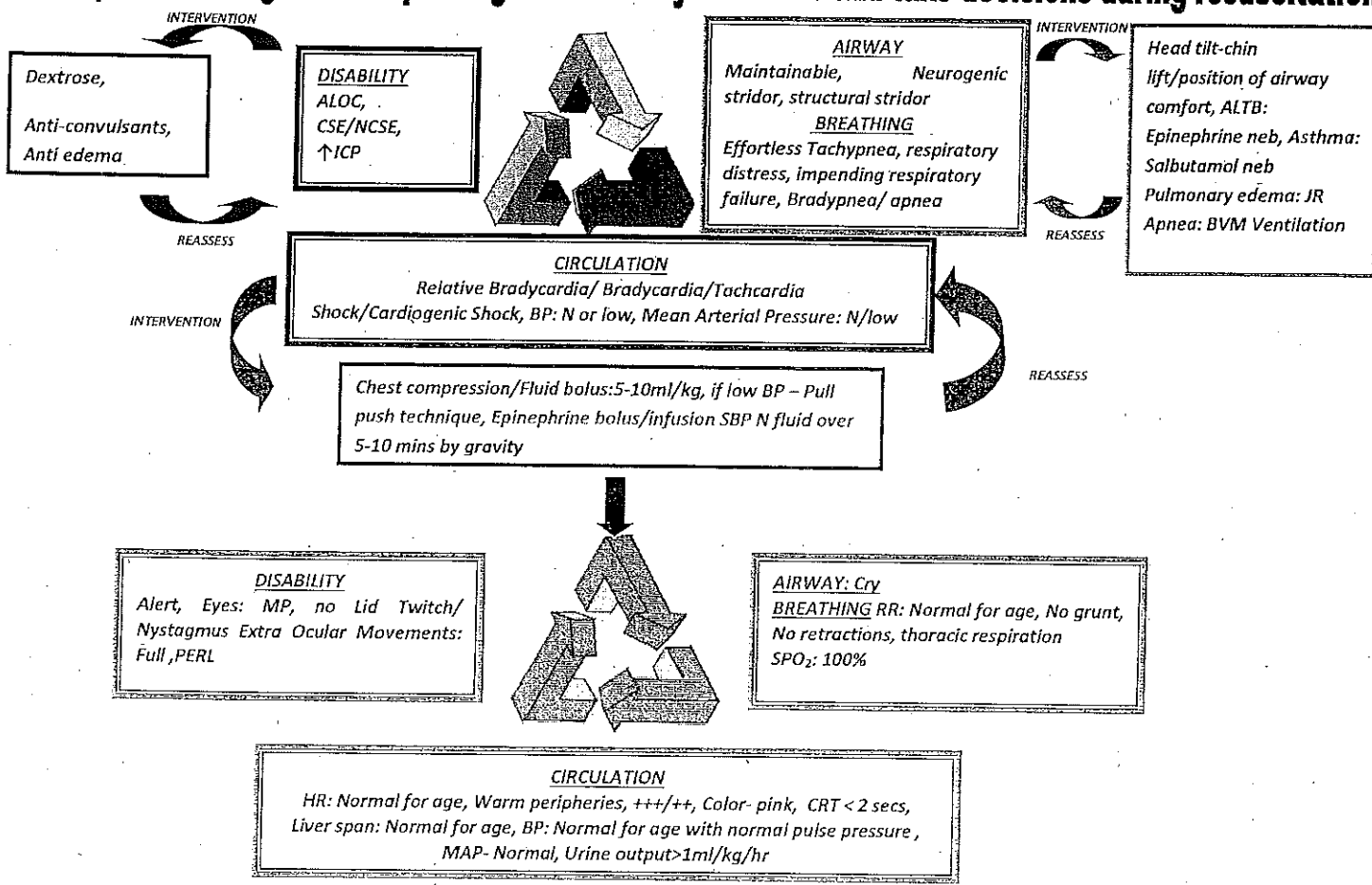
EMERGENCY CRITICAL CARE DATA FLOW SHEET

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

Diagnosis/Reason					
Symptoms					
Airway					
RR					
Grunt/Stridor					
Retractions					
Abnormalities/Barrel					
Air entry					
Added sounds					
Color					
SpO ₂					
HR					
Central/Distal pulse					
CPT gap					
CRT					
Liver span					
BP					
AVPU					
Pupils					
Eye deviated/MP					
Nystagmus					
Lid twitch					
DESM/ROM					
Tone/Posture					
PRs					
Urine output					
Physiological Status	Airway				
	Breathing				
	Circulation				
	Disability				
Interventions	A:				
	B:				
	C: Fluids				
	Dopa/Deb				
	Kor- Epi/Epinephrine				
	D: Anti- E2/VALPS				
	Others				
	Total volume/kg				
	No. of drug				
	Inotropic 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 cardlogenic shock in febrile children in the OPD

History of lethargy, excessive sleepiness, incessant cry, not as usual, combativeness, agitation, talking unintelligibly, 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



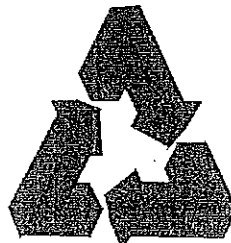
AIRWAY
Unstable (no cry)
BREATHING
RR: Relative
bradypnea, grunt,
retractions,
abdominal
respiration

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



CIRCULATION

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

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

BEWARE

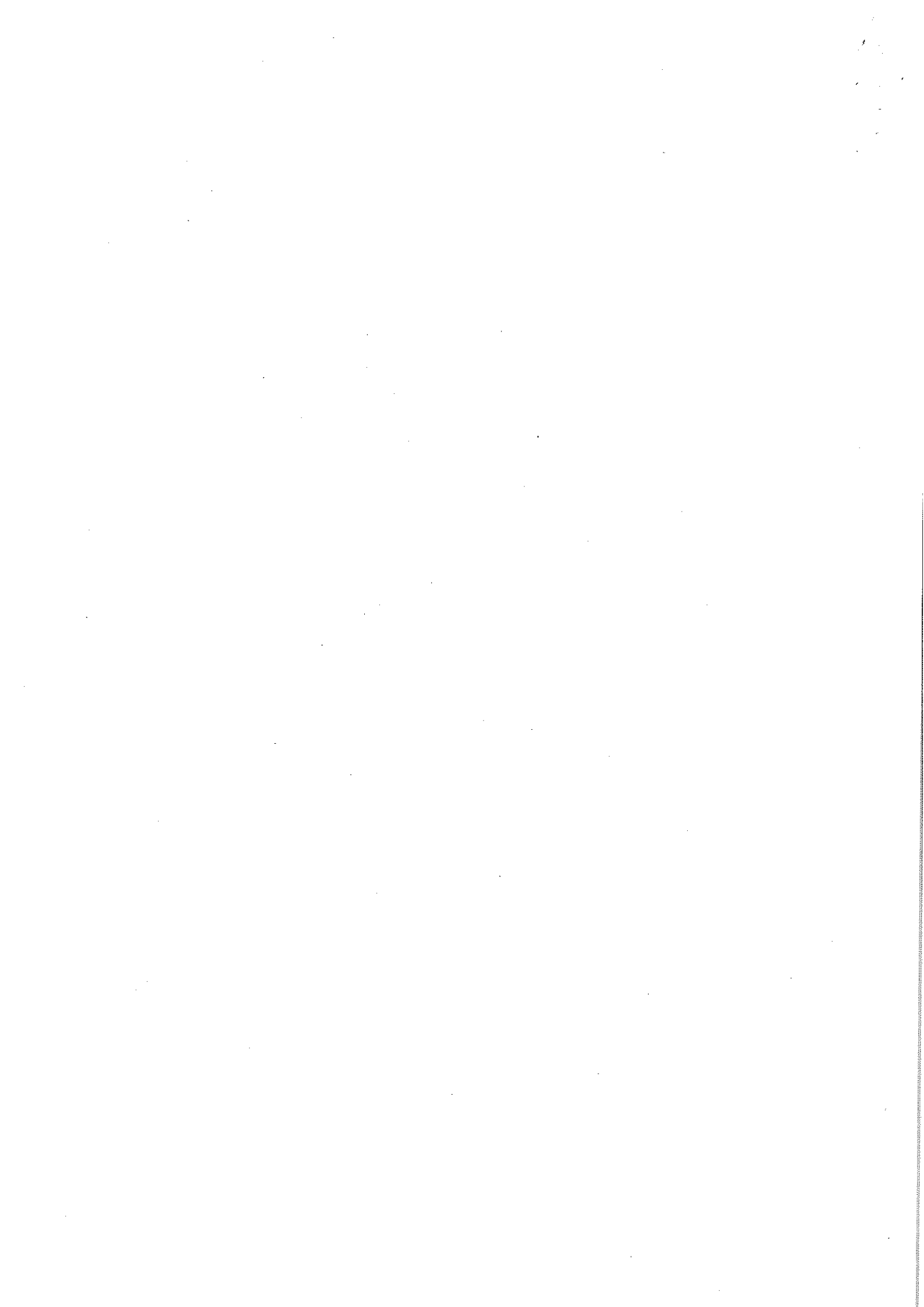
Critically ill children with ALC+
respiratory distress +shock can
present with "Normal vital
signs"

- 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

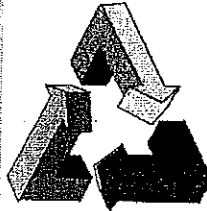
*Respiratory distress with shock in a hypo- or
hyperthermic child with or without focus of
sepsis consider:

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)

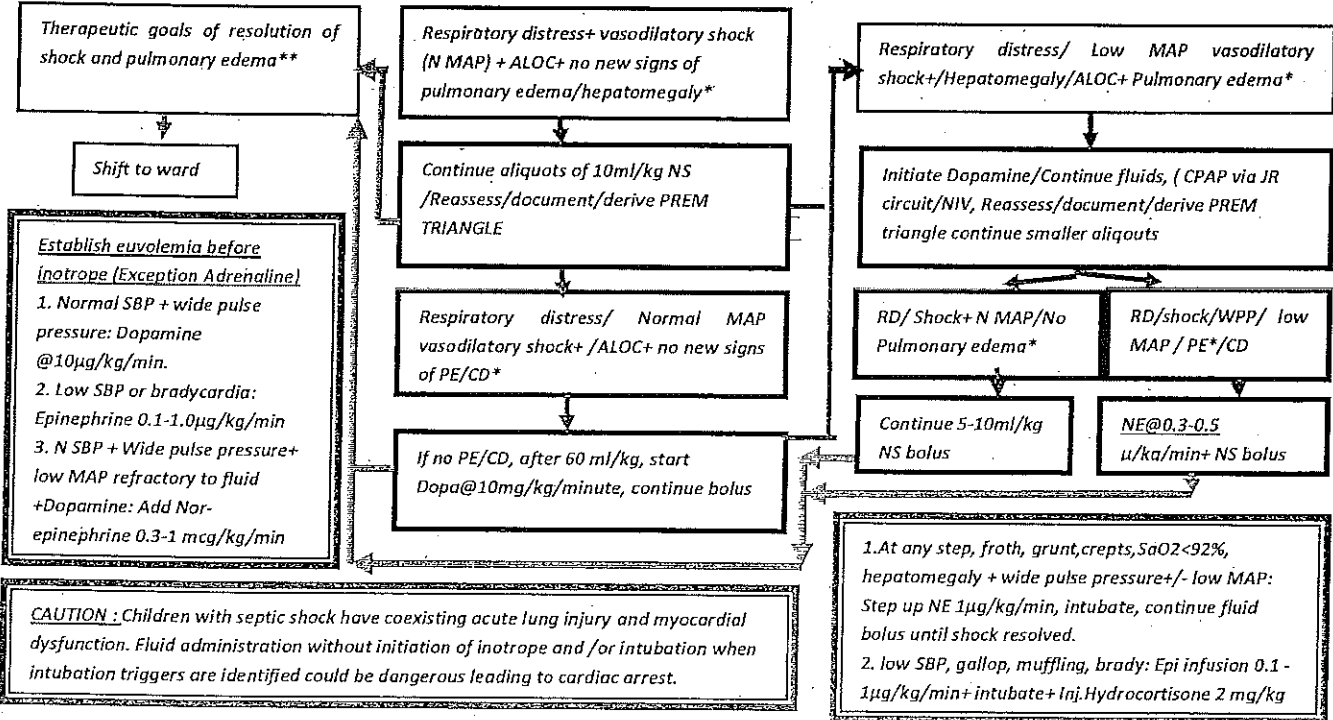
Reassess/document/ derive PREM triangle to find out need for next fluid bolus/inotrope/intubation trigger

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



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
CREATININE
RR>2 x upper range of RR for age
Bradypnea
Grunt
New onset retractions
New onset Abdominal respiration
New onset rales/wheezes
SpO2<92%

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

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



4) PREM-EMIC PROTOCOL FOR MANAGEMENT OF CONVULSIVE/ SUBTLE STATUS EPILEPTICUS (CSE)/SUBTLE STATUS EPILEPTICUS (SSE) IN THE ICU

- 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: O₂ 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/KC/Ca
First dose antibiotic if sepsis is suspected
- DISABILITY:**

Primary Convulsive/ Subtle Status Epilepticus (SE)

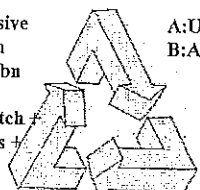
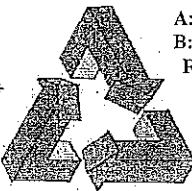
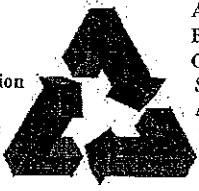
No precipitating event (Sudden onset of un-responsiveness) Fever/AWD/Vomiting/ Breathlessness/Toxin/Trauma etc
GTCS > 5 minutes,
Not regained basal consciousness in b/w 2 episodes

Secondary Status epilepticus (commonest due to sepsis)

Followed by LOC followed by GTCS±

(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	Breathing	Disability	Airway & Breathing	Disability	Airway & Breathing
Unresponsive Tone- Abn Posture- Abn GTCS + Eyelid twitch + Nystagmus + Conjugate deviation	A: Unstable B: Apnea	Unresponsive Tone- Abn Posture- Abn Eyelid twitch + Nystagmus + Conjugate deviation + GTCS +/-	A: Unstable B: Apnea/ Respiratory distress	Pain responsive Posturing + Conjugate deviation nystagmus, lid twitch movements DEM +/-	A: Unstable B: RR ↑↓ Grunt ± SCR + Abdominal respiration
					
Circulation HR ↑, vasodilatory shock with ↑ SBP, low DBP, MAP N/↓ Liver Span (N/↑)		Circulation HR ↑, vasodilatory shock with ↑ SBP, low DBP, MAP N/↓ Liver Span (N/↑)		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.)

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

10 Min: CSE/SSE/Not regained base line sensorium/ Unstable Hemodynamics

Inj. Lorazepam/ Diazepam - Second dose

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

20 Min: CSE/SSE/Not regained base line sensorium/ Unstable Hemodynamics

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

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

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

40 Min: CSE/SSE/Not regained base line sensorium/ Unstable Hemodynamics

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

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/hr

60 Min: Plan intubation with ICP precautions
Midazolam 0.2 mg/kg bolus (Max 10 mg) over 2 minutes
IV Phenytoin 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 µg/mg/min

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, SaO₂ < 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, 2) Dobutamine: High BP with cool shock, 3) Epinephrine Low SBP 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

- History of noisy breath, anticipate structural obstruction
 - Assess child in Mom's lap
 - Mom holds O2 mask
 - Avoid laryngoscopic evaluation of alert child in ED with stridor (Can precipitate cardiac arrest)
- History of unresponsiveness, anticipate falling back of tongue
 - Assess child on resus trolley
 - Head tilt-chin lift, plan early intubation

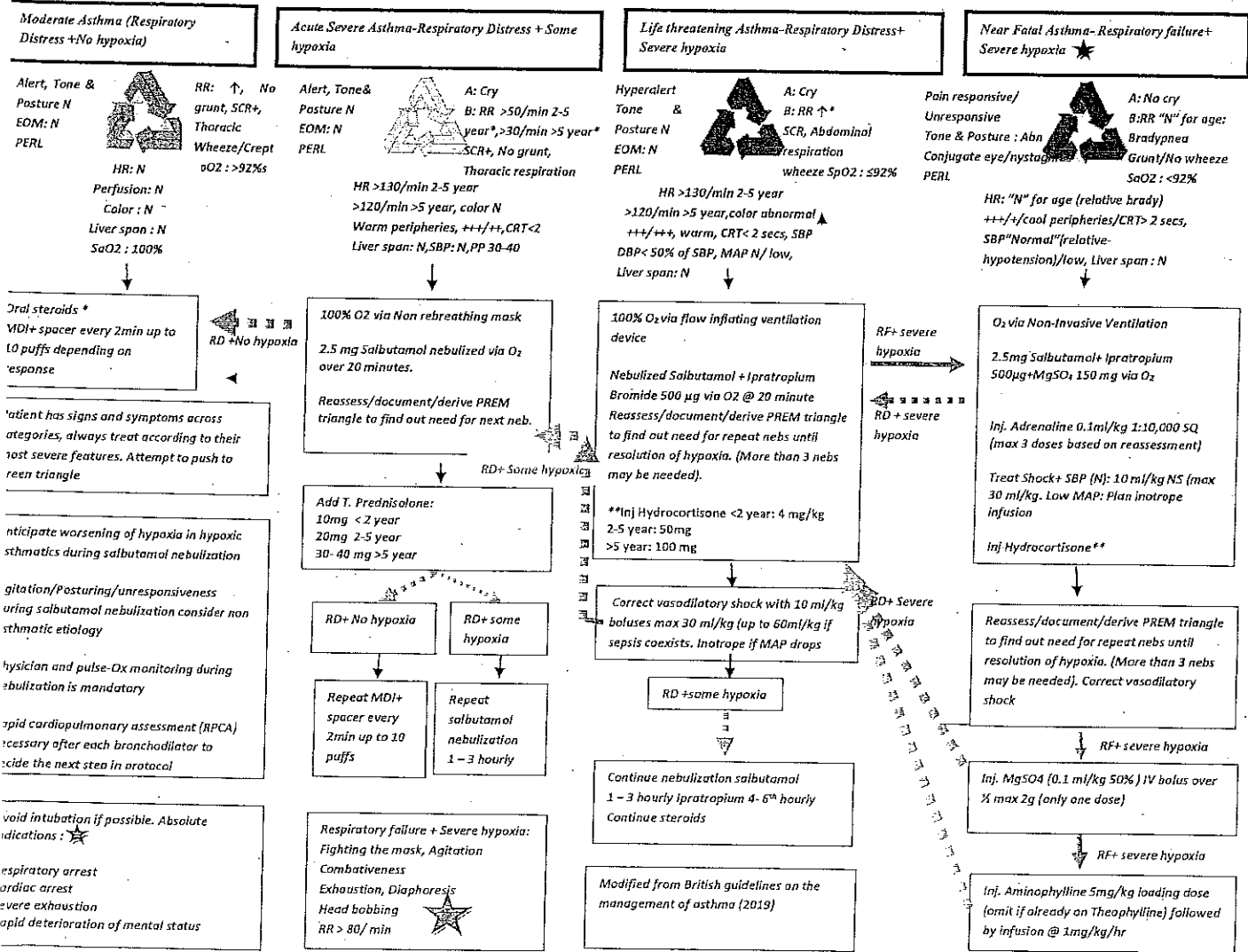
<p style="text-align: center;">Stridor + Respiratory distress +No hypoxia</p> <p>DISABILITY Alert, Tone and posture: N Eyes: MP EOM: N/ PERL</p> <p>AIRWAY Stable stridor BREATHING RR: N No grunt</p> <p>CIRCULATION Retractions+ HR: N Perfusion: N Color: N BP: N, SaO2: 100%</p>	<p style="text-align: center;">Stridor+ Respiratory distress+ Early hypoxia</p> <p>DISABILITY Hyperalert Tone and posture: N Eyes: MP EOM: N/ PERL</p> <p>AIRWAY Stable stridor BREATHING RR: ↑ No grunt, Abdominal</p> <p>CIRCULATION retractions, tachycardia Perfusion: N Color: N BP: N, SaO2: 100%</p>	<p style="text-align: center;">Stridor+ Respiratory failure+ Severe hypoxia</p> <p>DISABILITY pain responsive Tone/posture: abn Eye deviation, Nystagmus, Lid Twitch, PERL</p> <p>AIRWAY Unstable stridor BREATHING RR: ↑/↓ Grunt/SCR/ abdominal</p> <p>CIRCULATION HR: ↑/↓ Cardiogenic shock Color: abn MAP ↓, SaO2: <92%</p>	<p style="text-align: center;">Neurogenic stridor: Collapse of airway tube +falling back of tongue in unresponsiveness</p> <p>DISABILITY Unresponsive posturing Eye deviation, Nystagmus, Lid Twitch, unequal pupil, DEM+</p> <p>AIRWAY Unstable obstructed BREATHING Apneic</p> <p>CIRCULATION Relative bradycardia Cardiogenic shock BP: N/↑</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Resus based on severity of hypoxia/shock/etiology

ETIOLOGY	AGE	FEVER	COUGH	VOICE	STRIDOR	DYSPHAGIA	OTHERS	TREATMENT	MONITORING	ADDITIONAL	
TB	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	O2 Call for ENT/ Anesthetic help	Bag valve mask ventilation
Epiglottitis	2Y-7Y	+++	Ineffective	Hot potato	Soft	+	Dropoling 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 X-ray	Fluid bolus (20-30 ml/kg (small volume)) Inotropes if PE/CD are identified	Early intubation using ICP precautions for controlled ventilation Shock correction
Acute laryngeal edema	<5Y	+++	Ineffective	Muffled	Soft	+	Dropoling 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
Aspiration	6M-2Y	-	Sudden Choking	Normal	Varies based on the site of obstruction	±		Plan shift to EOT	Plan shift to EOT		
Angioedema (allergic)	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. Diphenhydramine 1-2mg/kg maximum 50 mg over 5-10 mins IV Inj. Ranitidine 5mg/kg upto 50mg IV Salbutamol Nebulisation			



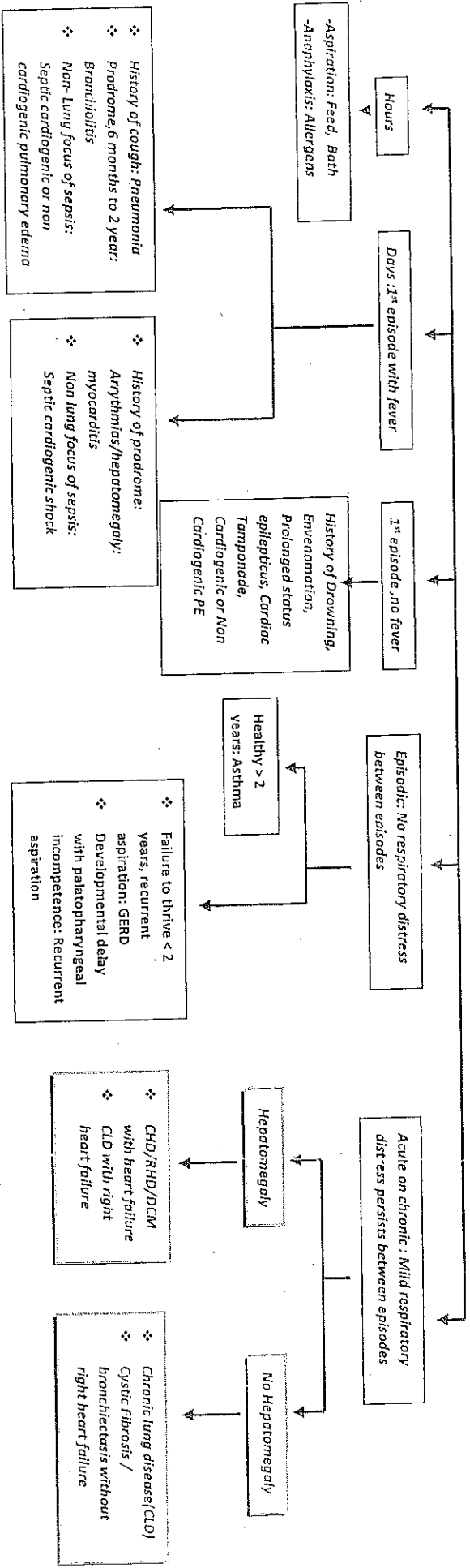
6) PREM Protocol: Management of Acute Exacerbation of Asthma in the PED





PREVENTION: A Practical Approach to the Pathology of Respiratory Distress in the NDB

> Child >6months, with a patent airway, should be seated in mother's lap during rapid cardio-pulmonary cerebral assessment and subsequent resuscitation.
 > Mother holds Osmask of the IR 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 or 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-castal retractions – consider lung pathology.
 Effortless tachypnea: DKA, metabolic acidosis (normal lung)

Infants < 2 month of age

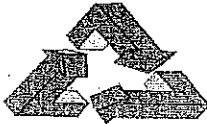
- First episode, hyperacute/acute respiratory distress: consider CHD
- Recurrent episodes in <2 yrs with failure to thrive, immunocompromised : consider recurrent pneumonia
- Acute respiratory distress with failure to thrive : consider CCF or CLD despite negative history
- Hepatomegaly with effortless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



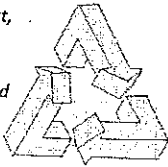
AIRWAY
Stable (cry, vocalizes)
BREATHING
RR: > 2 SD for age, no
grunt, no SCR, thoracic
respiration,

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

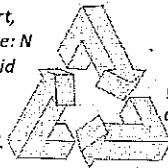


AIRWAY
Stable
BREATHING
RR: ↑ for age
No grunt, SCR+,
thoracic
respiration+

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

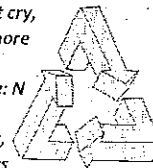


AIRWAY
Stable: cry
BREATHING
RR: ↑ for age, no
grunt, SCR, thoracic or
abdominal respiration,
crepts: +/-

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

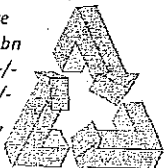


AIRWAY
Stable: Cry
BREATHING
RR: ↑ for age,
no grunt, SCR,
thoracic respiration
, crepts: +/-

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

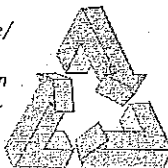


AIRWAY
Stable: Cry
BREATHING
RR: ↑/N for
age, grunt+,
SCR+,
abdominal
respiration+

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 mmHg. 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

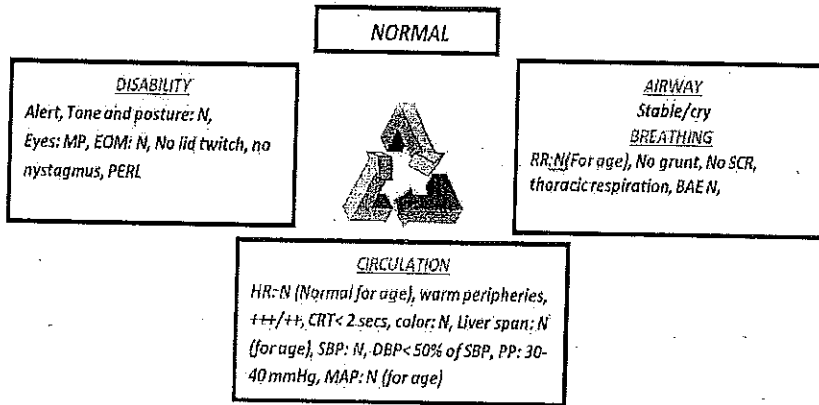


AIRWAY
Unstable: No cry
BREATHING:
Apnea

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

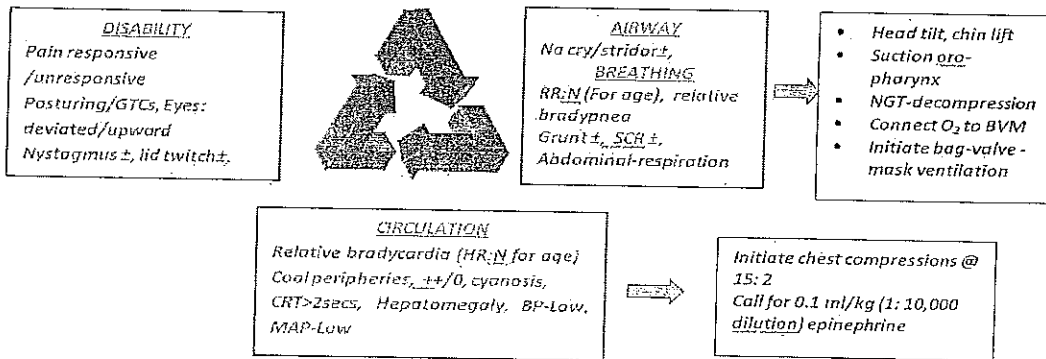
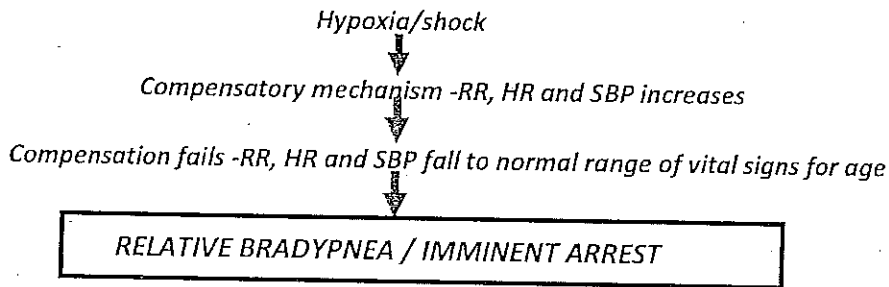


PREM Assesment Triangle- 8: Recognition of Relative Bradypnea and Relative Bradycardia

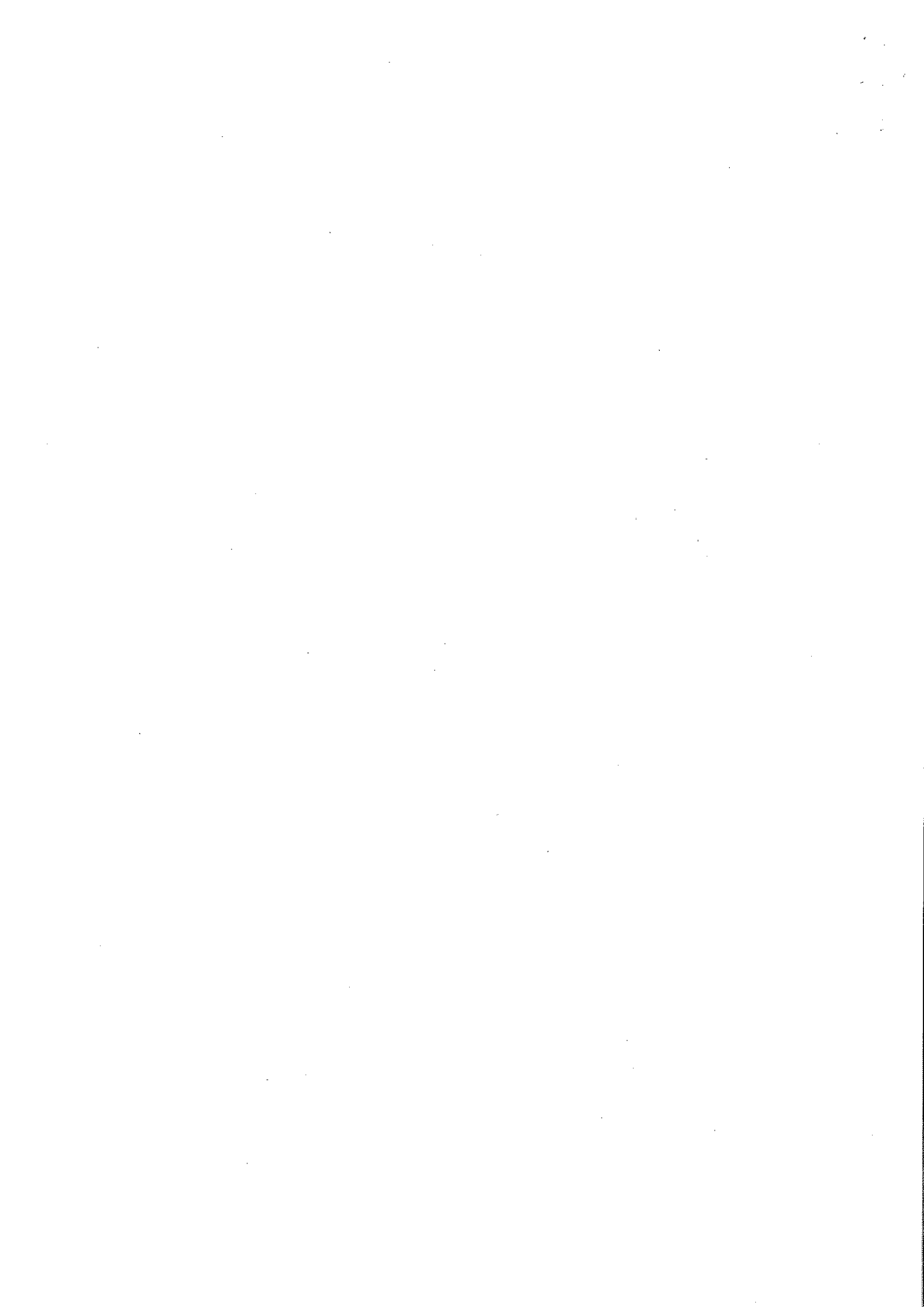


NORMAL VITAL SIGNS FOR AGE

Age (kg)	Respiration	Heart rate	SBP	Age	Liver span
Newborn (3.5)	30-60	90-180	50-70	2 month	5 cm
6 month (7)	24-40	85-170	65-106	1 year	6 cm
1 year (10)	20-40	80-140	72-110	2 year	6.5 cm
3 year (15)	20-30	80-130	78-114	3 year	7 cm
6 year (20)	18-25	70-120	80-116	4 year	7.5 cm
8 year (25)	18-25	70-110	84-122	5 year	8 cm
10 year (30)	16-20	65-110	90-130	12 year	9 cm
12 year (40)	14-20	60-110	94-136		

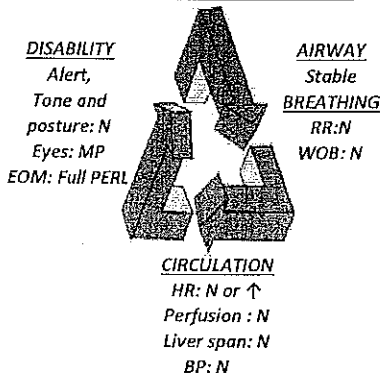


Being reassured with "normal" vital signs based on the monitor can be misleading and dangerous in the ED. Cardiopulmonary cerebral assessment, documentation, interpretation of vital signs, derivation of physiological status (PREM triangle) crucial to determine whether vital signs are "normal" or not!

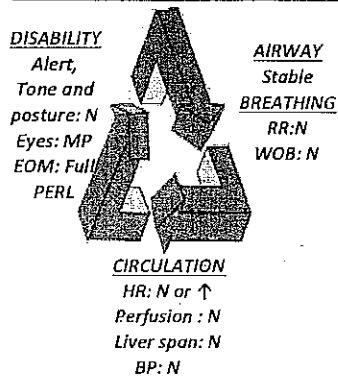


9) PREM PEMC Protocol : Approach to management of Snake bite In ER

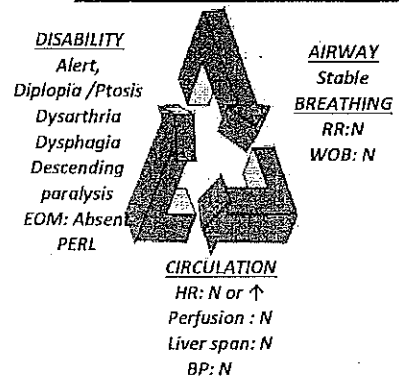
Bite / Stable



Hemotoxic/ Stable



Neurotoxic/ Stable



HERS: Cellulitis, (Severe, painful progressive swelling, Swelling widely 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

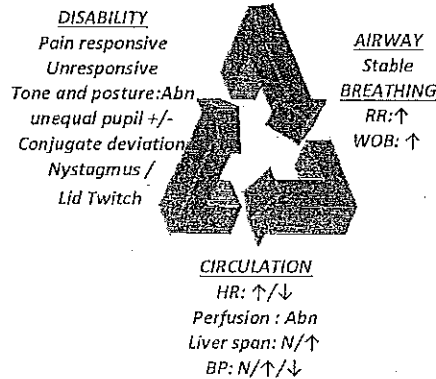
IV ALLERGY
Anticipate ASV allergy in all cases
Adrenaline (0.1ml/kg of 1:10000 dilution as IM, MAX:0.5 ml of 1000), should always be ready to administer
2 mg/kg of antihistamine i.v. and 2-6mg/kg of hydrocortisone IV after the allergy subsides, continue ASV infusion at slower rates for >15 mins. Reassess,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

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

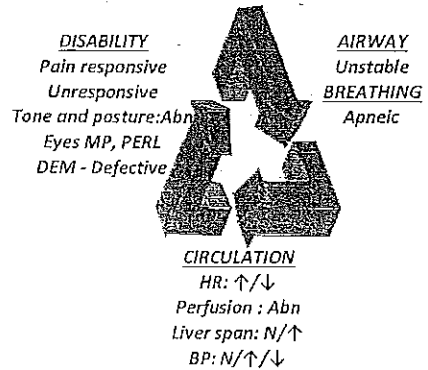
- ❖ ASV 8-10 vials
- ❖ WBCT 6th hourly after ASV. If WBCT more than 20 mins then give repeat dose.(Max-30). If patient continue to bleed briskly, ASV should be given with 1 to 2 hrs)
- ❖ FFP, cryoprecipitate, fresh blood, plasmapheresis after neutralizing the venom by using ASV.

- ❖ 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



Unstable/ Neurotoxic



UNKNOWN BITE

If WBCT > N: No ASV

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

If WBCT abnormal start ASV

- ❖ Oxygen through Jackson Rees circuit
- ❖ Crystalloids 20ml/kg maximum 60ml/kg
- ❖ Inotropic support, ASV maximum 30 vials
- ❖ Blood & blood components after neutralizing the venom by using ASV

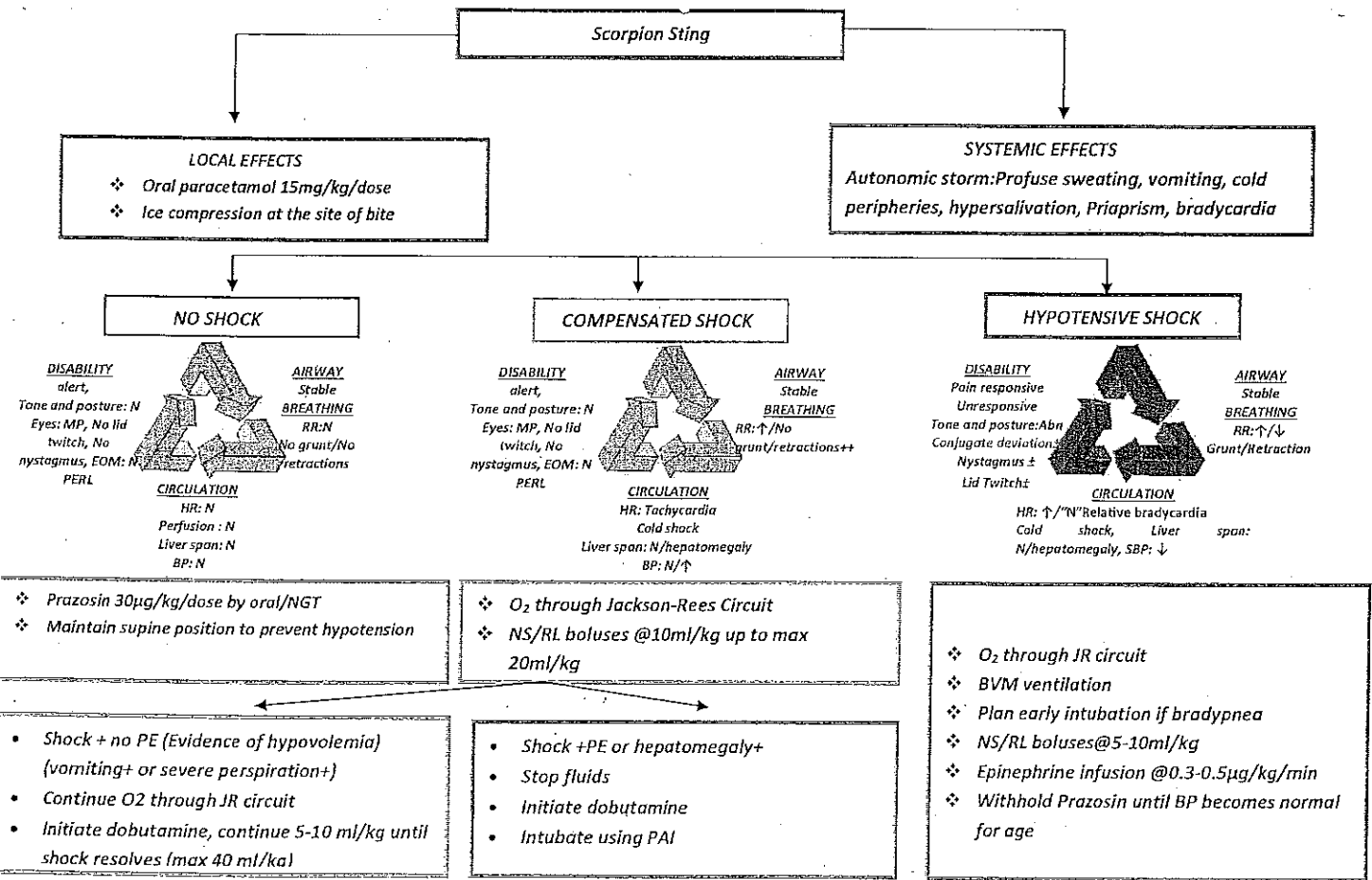
- ❖ Oxygen through bag valve mask, intubate and ventilate
- ❖ Crystalloids 20ml/kg maximum 60ml/kg
- ❖ Inotropic support, ASV 8-10 vials maximum 30 vials
- ❖ Inj. Atropine, Neostigmine ½ hrly and continue as above

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).

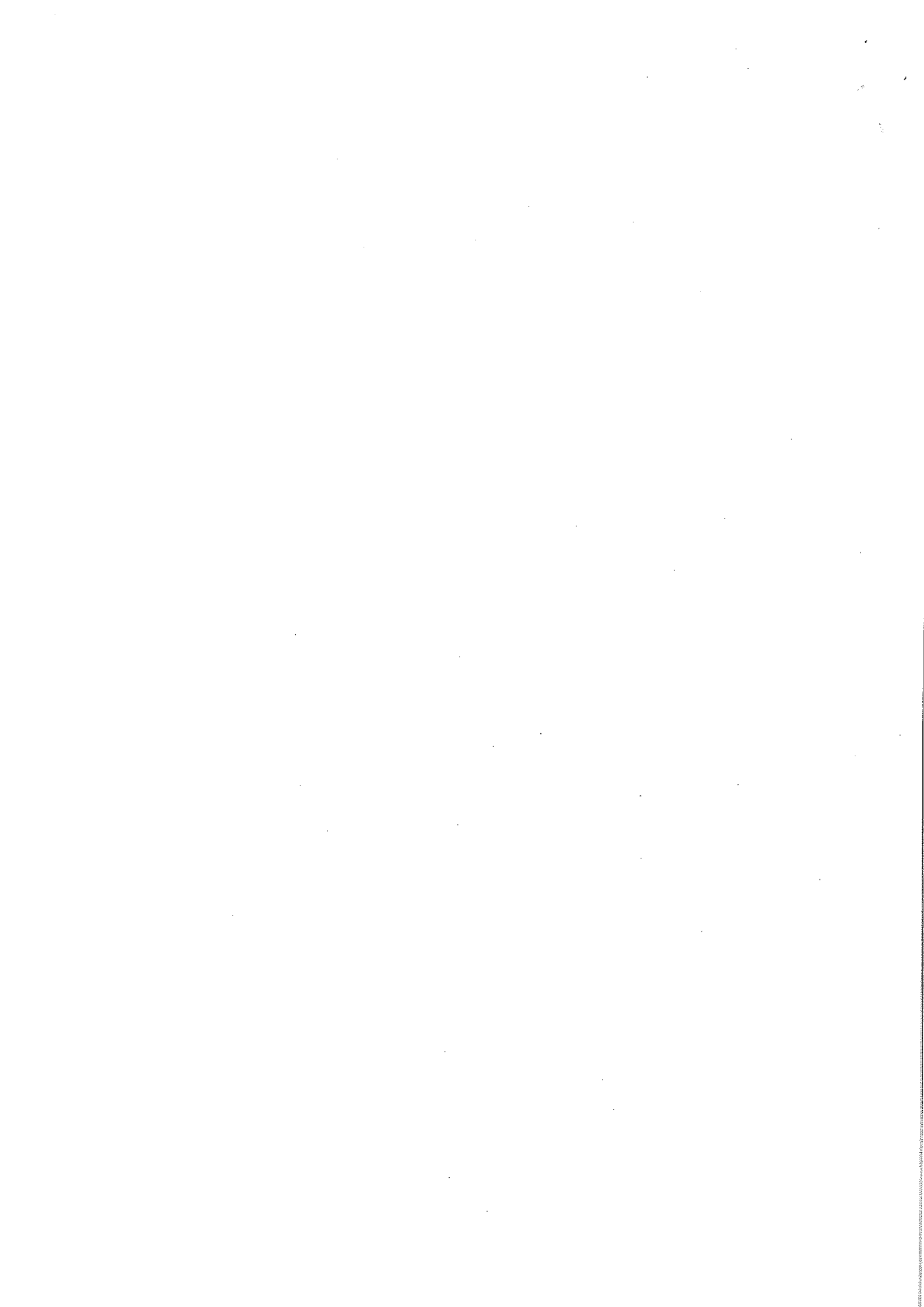


10) PREM PEMC Protocol : Management of Scorpion Sting in PED



NOTE:

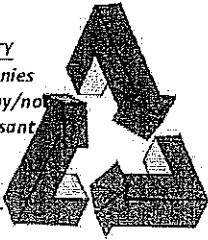
- Risk of cardiogenic or non cardiogenic pulmonary edema complicates shock management due to scorpion envenomation
- During fluid therapy, monitor for airway instability, pink froth, increase or decrease in respiratory rates, grunt, retractions, abdominal respiration, fresh rales, gallop, increasing 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)PRE-w -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,

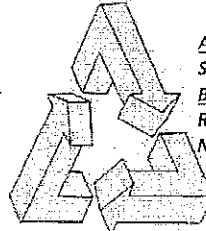
OTHERS

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

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

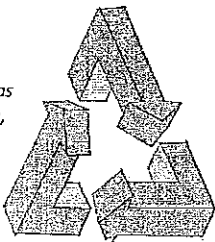
CIRCULATION
HR: N
Perfusion : N, Hepatomegaly,
SBP: N, DBP: N, Pulse pressure N, MAP: N

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



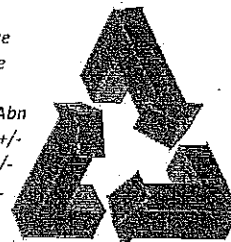
AIRWAY
Stable
BREATHING
RR:↑, No grunt/Retractions+
Air entry may be diminished due to pleural effusion

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

- HCT increased
- Thrombocytopenia

DENGUE WITH DECOMPENSATED SHOCK*

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



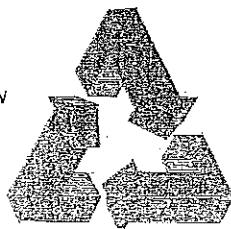
AIRWAY
Stable/unstable
BREATHING
RR:↑/↓
Grunt+/-/retractions
Air-entry may be diminished due to pleural effusion

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



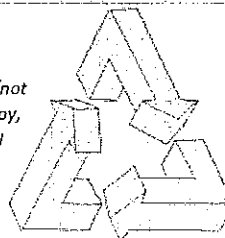
AIRWAY
Stable (cry, vocalizes)
BREATHING
RR:"N" (Relative bradypnea), No SCR, thoracic respiration, air-entry may be diminished due to pleural effusion, no added sounds

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, hematemesis)
- 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

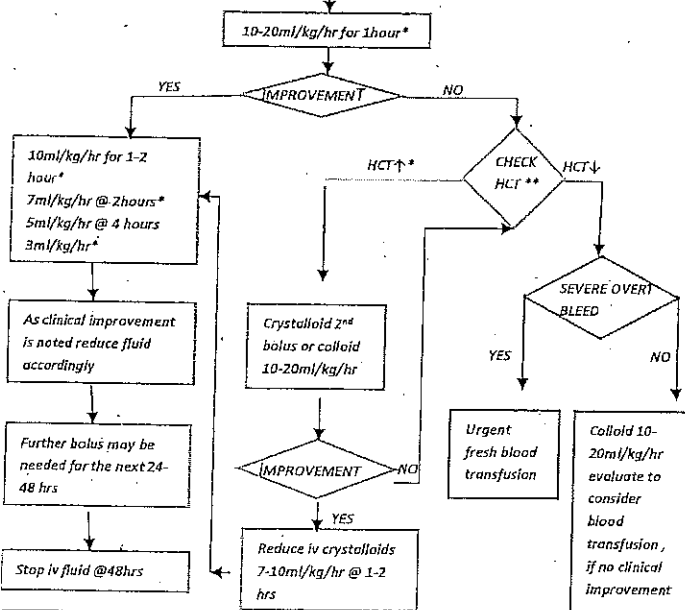
PROBABLE DENGUE

- ❖ 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

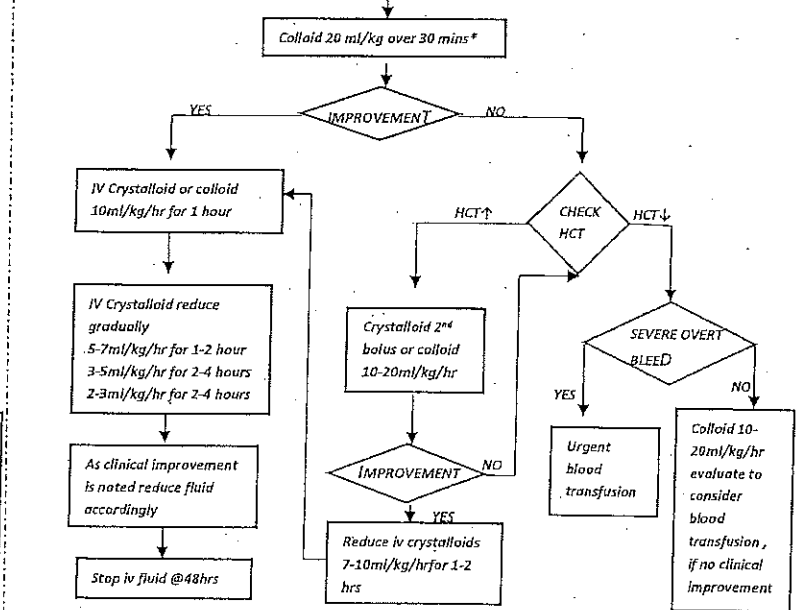
DENGUE WITH WARNING SIGNS (LEAKY/NO SHOCK)

- ❖ 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 O₂ 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.

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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				
	nasopharyngeal 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				
	Immobilisation 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				
	Stainless 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**

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A. V. V. V.
29/11/19
SECTION OFFICER

51
21/11/19

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

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L.S. Lingaiah
29/11/19

SECTION OFFICER

BE
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.

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24/11/13

