

Perinatal resuscitation in the developing EMS setting

(1045-1100 am)
2nd August Singapore

Global Resuscitation Alliance (GRA) Utstein-Style Consensus Meeting on
10- Programs/Actions Recommendations for Developing EMS Systems

Dr G. V. Ramana Rao
Director EMLC & Research
GVKEMRI
India

Flow of presentation:

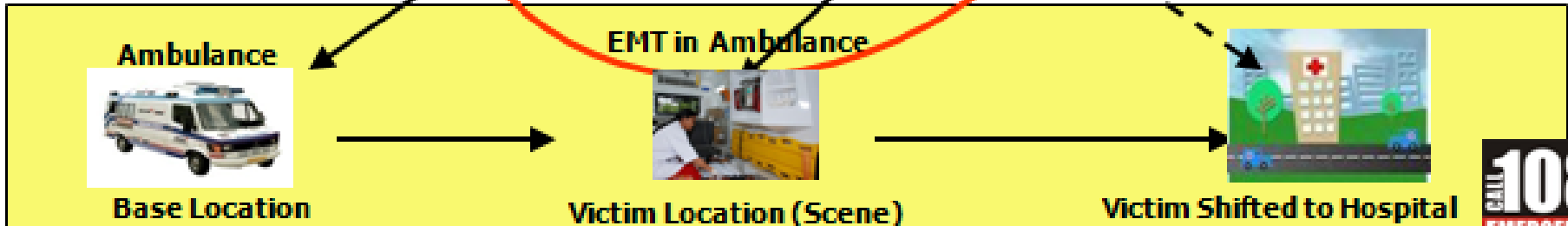
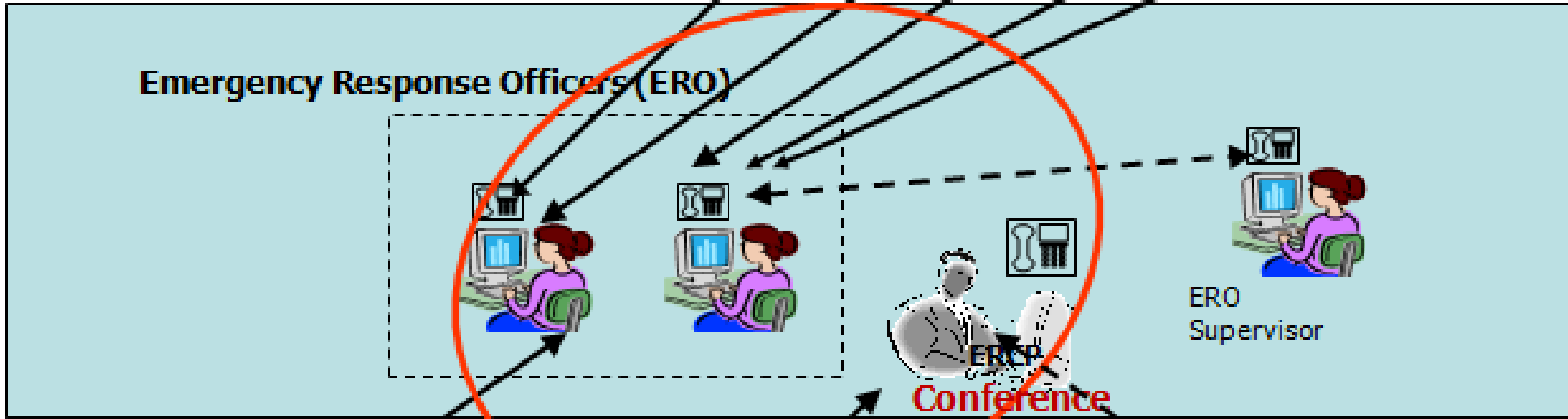
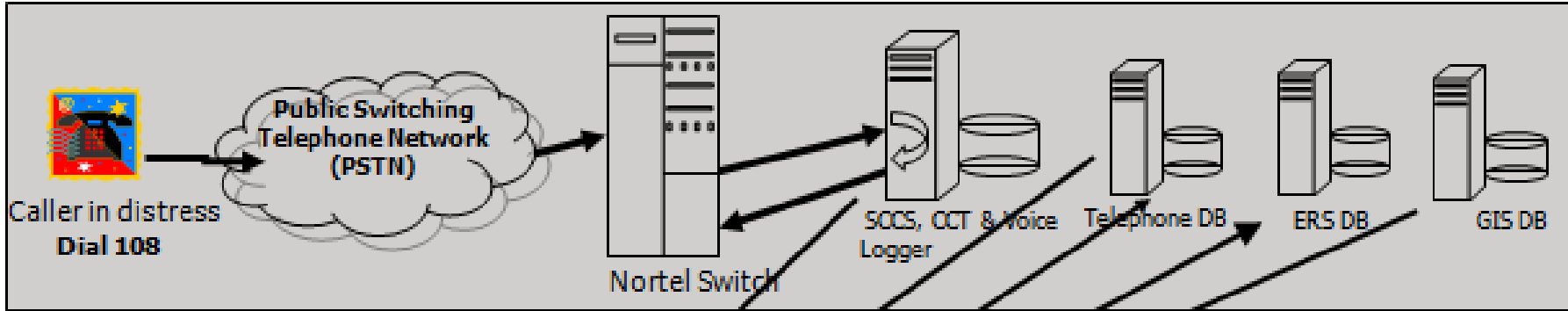
- About 108 GVK EMRI (EMS organization in India)
- Neonatal Mortality- India
- Neonatal Resuscitation – experiences at GVKEMRI
- Future perspectives

Innovative Process



- Developed detailed process understanding and well defined responsibilities through out the organization
- Maintained all information related to emergency in Patient Care Records (PCRs)
- Patient information is shared with the hospital on arrival
- 48 hour follow up with the patients admitted to hospital

COMPUTER SERVER ROOM



Launched on 15th Aug, '05 in Hyderabad and expanded to 2 Countries

In India 14 States and 2 Union Territories, In Sri Lanka 2 Provinces



Population covered:	750 M
Emergencies attended:	54 M
Ambulances:	10,850

Number of child births 2010 and 2016

Year	Child Birth Count during the Year	Cumulative	Average / Day
2009 - 10	31166	77588	85/Day
2010 - 11	36409	113997	100/Day
2011 - 12	38547	152544	105/Day
2012 - 13	46399	198943	127/Day
2013 - 14	100348	299291	275/Day
2014 - 15	67879	367170	186/Day
2015 - 16	53147	420317	145/Day
2016 - 17	30290	450607	110/Day

Neonatal Cases Served - 2016

States of Andhra Pradesh (AP) and Telangana (TS) (Source:108 GVKEMRI)

State	Total Aailed Emergencies	Neonatal	%
AP	641238	7908	1.2%
TS	448711	5758	1.4%

2016	AP	Neonatal	%
Jan	54643	662	1.2%
Feb	50507	690	1.4%
Mar	57048	704	1.2%
Apr	58648	787	1.3%
May	60228	733	1.2%
Jun	56995	737	1.3%
Jul	61009	692	1.1%
Aug	57103	685	1.2%
Sep	50734	638	1.3%
Oct	46969	546	1.2%
Nov	42794	486	1.1%
Dec	44560	548	1.2%
Total	641238	7908	1.2%

2016	TS	Neonatal	%
Jan	33399	481	1.4%
Feb	33491	400	1.2%
Mar	35474	462	1.4%
Apr	38425	509	1.5%
May	41187	555	1.7%
Jun	39019	493	1.5%
Jul	41778	596	1.8%
Aug	40180	455	1.4%
Sep	35918	464	1.4%
Oct	37458	463	1.4%
Nov	35839	395	1.2%
Dec	36543	485	1.5%
Total	448711	5758	1.4%

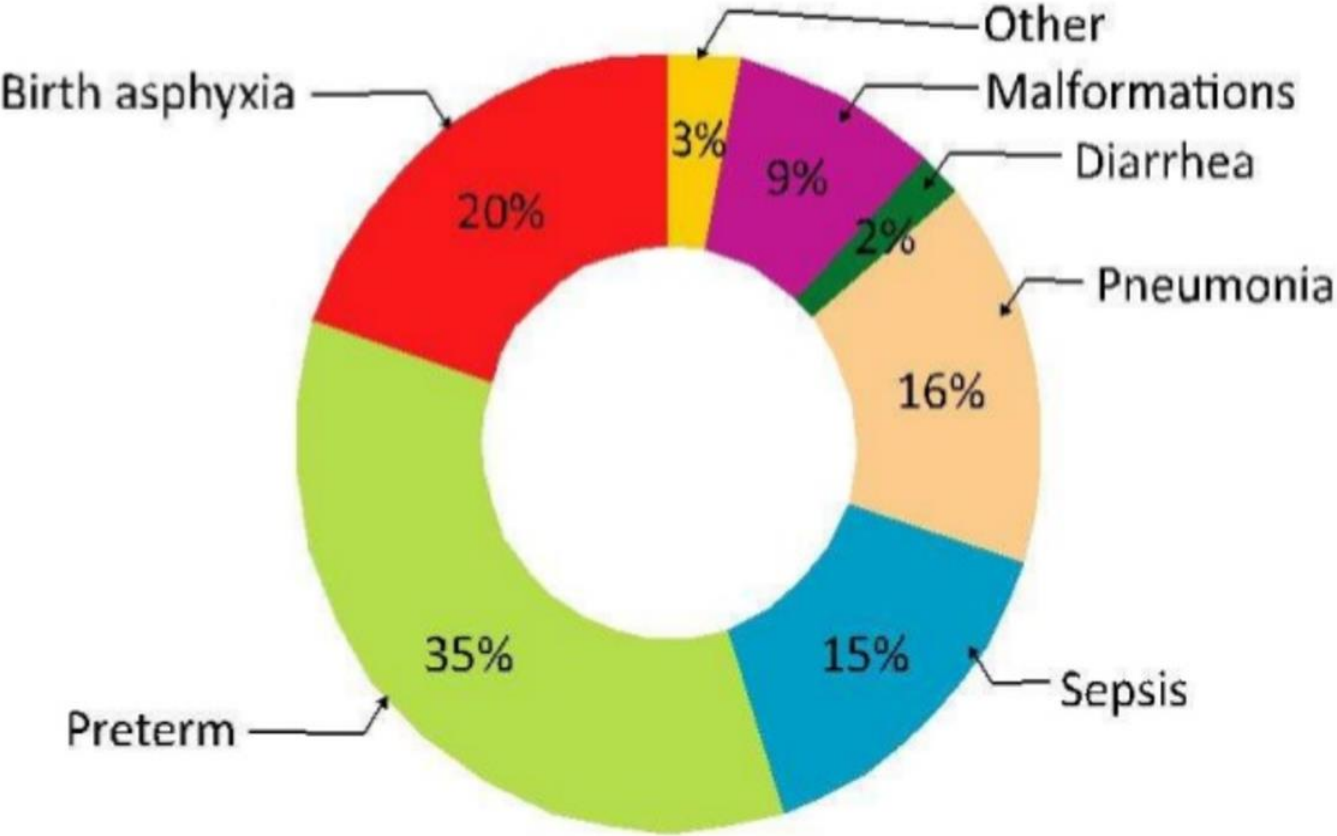


NITI Aayog

(National Institution for Transforming India),
Government of India

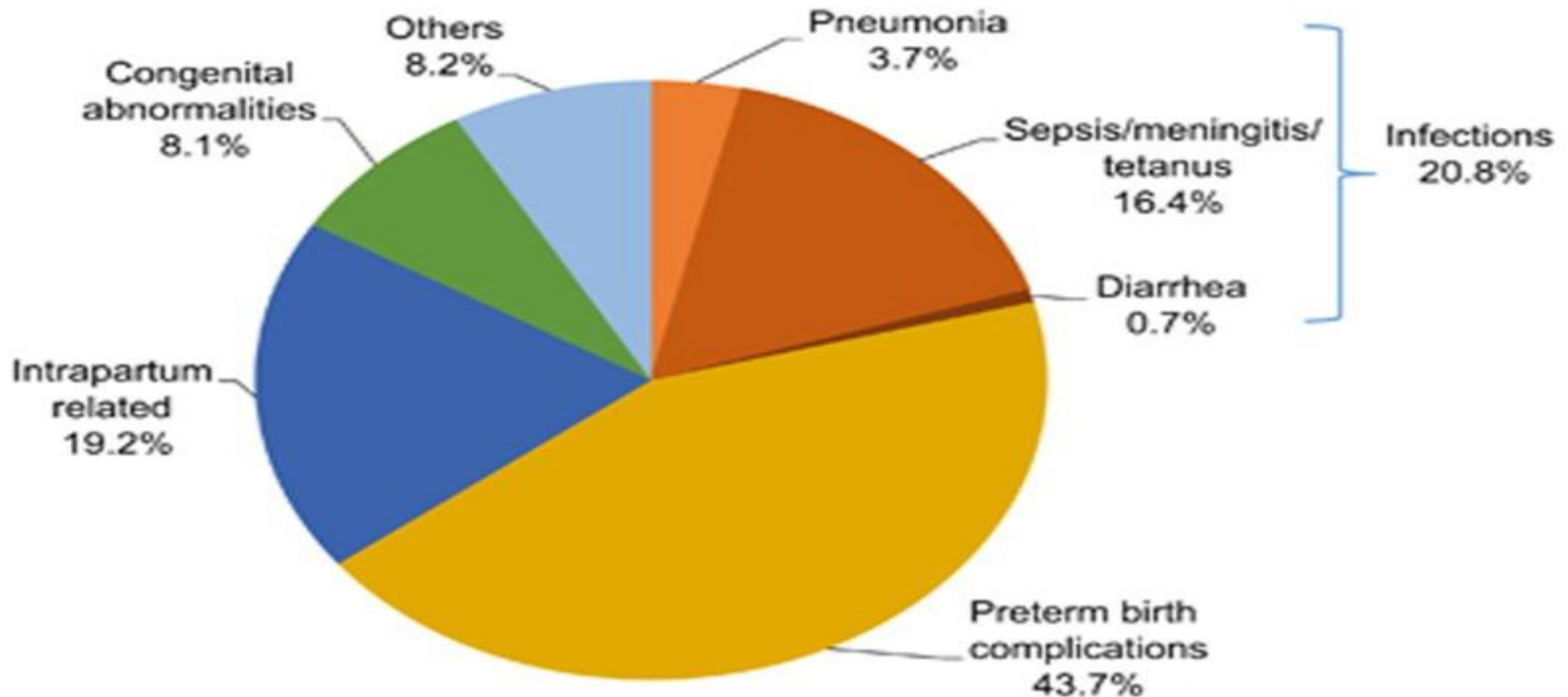
Neo-Natal Mortality Rates by residence, India and bigger States (per 1000 live births)	2011 Total	2011 Rural	2011 Urban	2012 Total	2012 Rural	2012 Urban	2013 Total	2013 Rural	2013 Urban
India	31	34	17	29	33	16	28	31	15
Andhra Pradesh #	28	34	13	27	33	12	25	31	10
Assam	30	32	10	29	31	10	27	29	10
Bihar	29	31	12	28	29	12	28	29	11
Chhattisgarh	34	34	31	31	32	28	31	31	26
Delhi	18	25	17	16	25	14	16	24	15

Causes of neonatal deaths in India



Source: Liu et al, Lancet 2012
Statistical Report

India – NNM- Causes (Sources – GOI)



India- National Health Policy (NHP)2017

- **Child and Adolescent Health:** The policy endorses the national consensus on accelerated achievement of neonatal mortality targets and „single digit“ stillbirth rates through improved home based and facility based management of sick new-borns.
- **Secondary Care Services:** The policy aspires to provide at the district level most of the secondary care which is currently provided at a medical college hospital. Basic secondary care services, such as caesarean section and neonatal care would be made available at the least at sub-divisional level in a cluster of few blocks.

NATIONAL HEALTH POLICY

2017



सत्यमेव जयते

Ministry of Health and Family Welfare
Government of India

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Education / Training

- Basic EMT
- Neonatal EMT
- Advanced EMT
- Basic Life Support in Obstetric (BLSO) certification – Affiliated to American Academy of Family Physician
- Basic Life Support (BLS)- Affiliated to American Heart Association

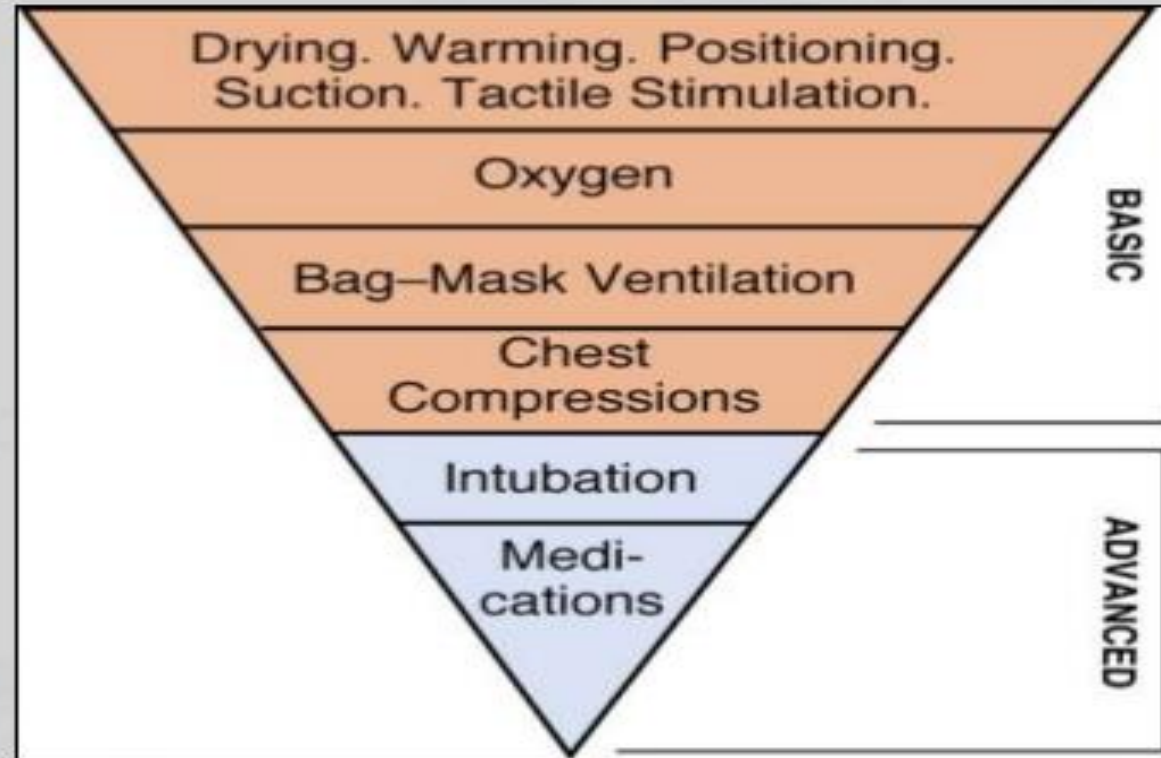


Pre hospital Care

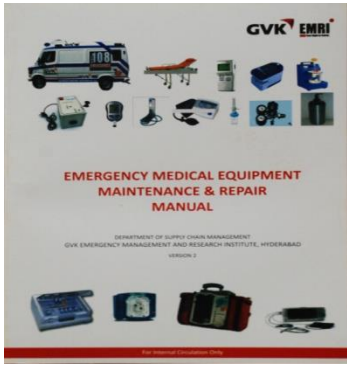
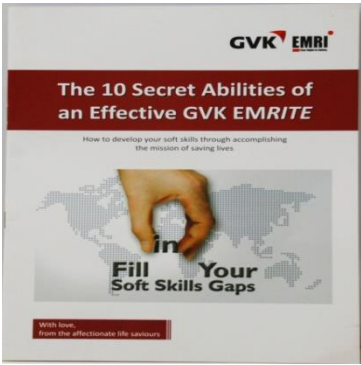
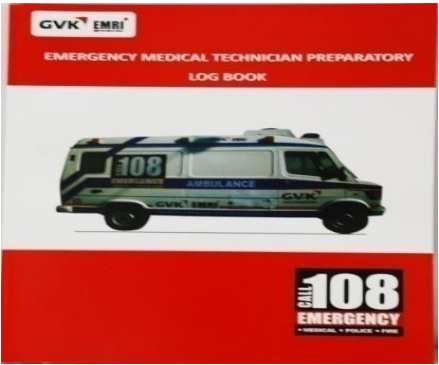
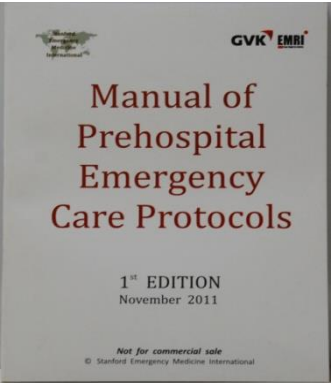
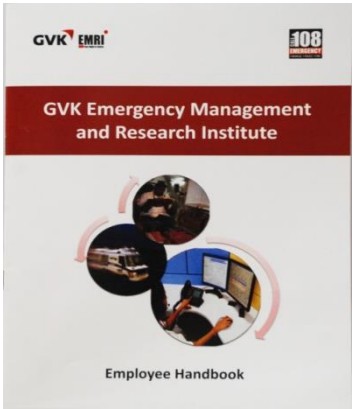
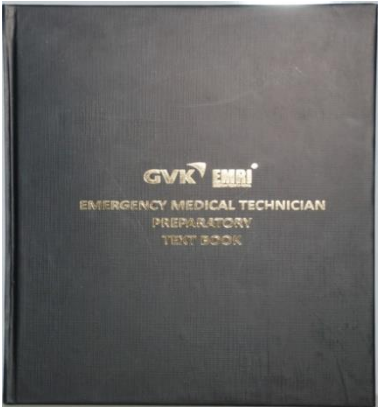
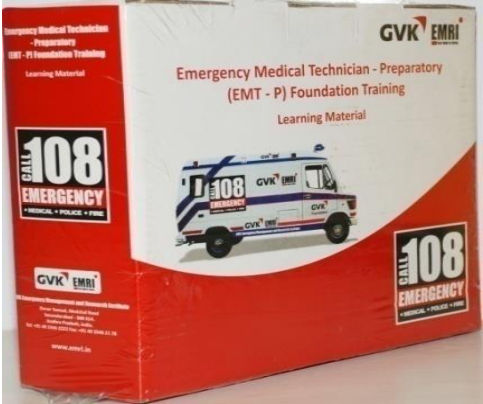
- Manual of pre-hospital emergency care protocol
- Pre hospital Care Records

Resuscitation Overview

Inverted Pyramid for Resuscitation



Training EMT



Skill practice with manikins





Manual of Prehospital Emergency Care Protocols

2nd EDITION

October 2012

Not for commercial sale

© Stanford Emergency Medicine International

GVK EMRI NNR Protocol

NEONATAL RESUSCITATION

Definition

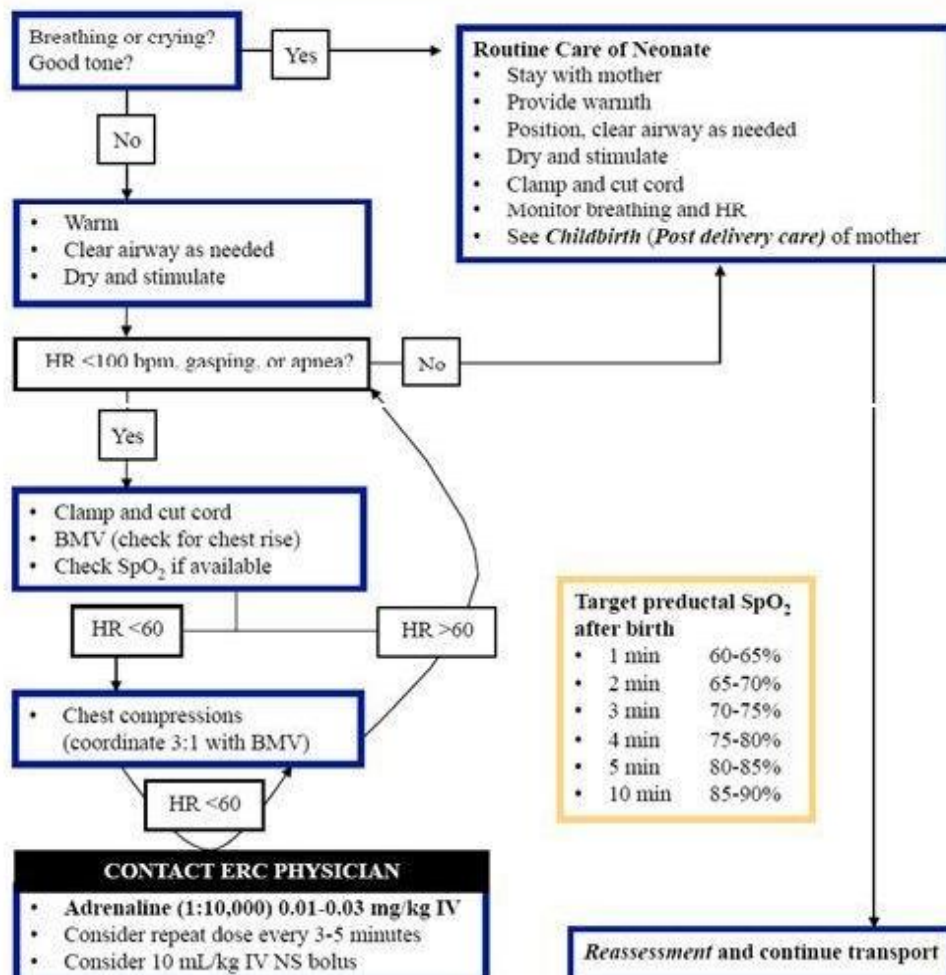
- Resuscitation of a newborn to 1 month old

Key points

- Do not take longer than 60 sec to warm, dry, stimulate and clear airway if obstructed, and begin ventilation if required
- Assessment of HR should be done by palpation of the umbilical cord stump or auscultation

Serious signs and symptoms

- Respiratory distress (apnea, gasping, or labored breathing)
- Heart rate <100



Target preductal SpO ₂ after birth	
• 1 min	60-65%
• 2 min	65-70%
• 3 min	70-75%
• 4 min	75-80%
• 5 min	80-85%
• 10 min	85-90%

ERC Physician

Key points

- Suction only for obvious obstruction to spontaneous breathing
 - Suctioning of meconium has not been shown to improve mortality
- Bradycardia (HR <100) in newborns is usually from inadequate lung inflation or profound ↓ O₂
 - Adequate ventilation is the most important intervention
 - Pulse checks every 30 seconds until HR >100 and ventilating

Prehospital management options

- Rewarming techniques include placing skin-to-skin with mother, blankets, and wrap in plastic
- BMV
 - If provider inexperienced with advanced airway management, BMV preferred
 - Lungs easily injured by over inflation; inflate only enough to see chest wall begin to rise
 - Use ventilation rates 40-60 breaths per minute
 - Measure of adequate initial ventilation is prompt improvement in HR (HR >100)
- LMA (size 1): effective for ventilating newborns weighing >2000 g or ≥34 weeks gestation
- ETT indications (use size 3.0):
 - Initial endotracheal suctioning of nonvigorous meconium-stained newborns
 - If BMV is ineffective or prolonged
 - If chest compressions are performed
- Chest compressions (See Figure)
 - Indicated for HR <60 despite adequate ventilation with oxygen for 30 seconds.
 - Do compressions on lower third of sternum
 - 3:1 ratio of compressions to ventilations (90 compressions and 30 breaths/min)
- Medications
 - Adrenaline (1:10,000) 0.01-0.03 mg/kg/dose IV
 - Can consider 0.05-0.1 mg/kg through endotracheal tube if no IV
 - 10 mL/kg IV NS (especially if pale skin, poor perfusion, weak pulse)
- Postresuscitation care
 - Consider Glucose 1 mg/kg IV (mix D25 with equal parts water to obtain D12.5)



APGAR SCORE	0	1	2
Appearance	Blue / pale	Body pink, hands blue	Pink
Pulse	Absent	Below 100	Above 100
Grimace	None	Grimace	Cough, sneeze, cry
Activity	Flaccid	Some	Active motion
Respiration	Absent	Weak, slow	Good, crying

Table 1: Determine APGAR score at 1 and 5 minutes after birth.

References

- Kattwinkel J (ed). Part 15: Neonatal resuscitation: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*. 2010;

Protocol

NEONATAL RESUSCITATION

Definition

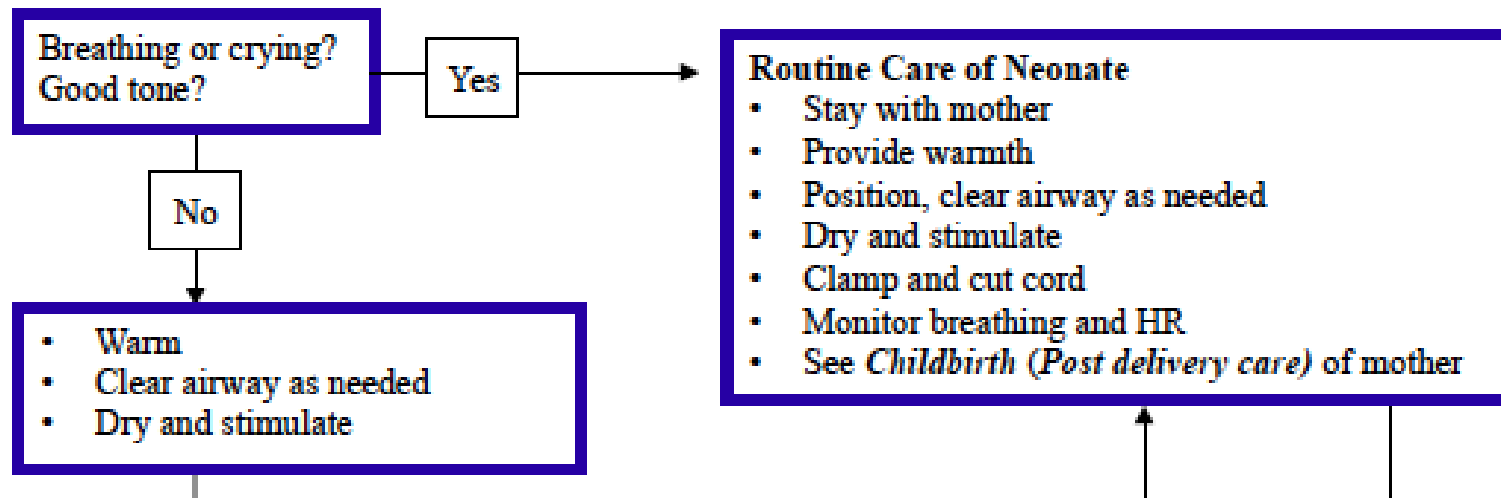
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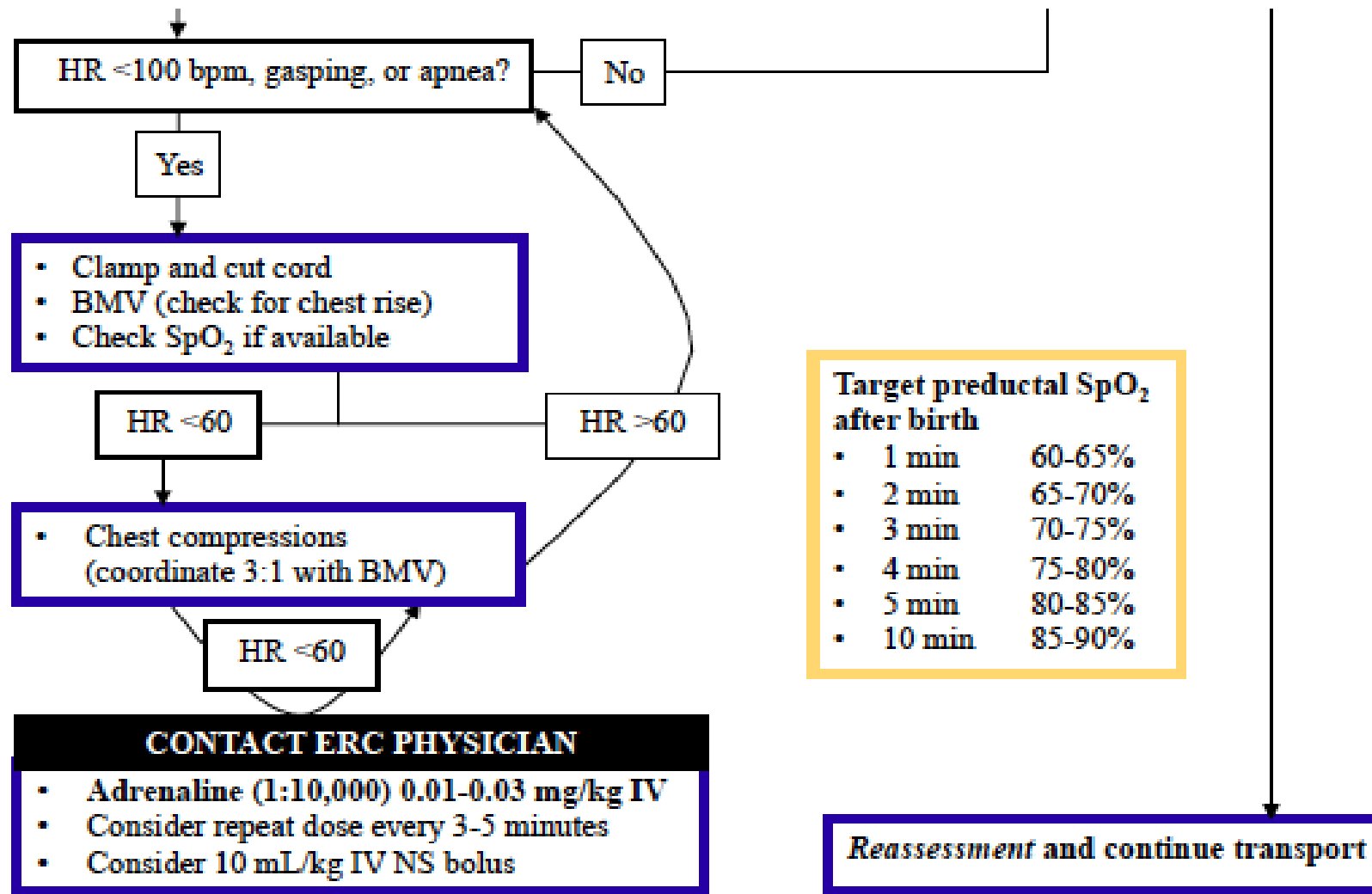
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Protocol



Protocol

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Thumbs Overlapping



Thumbs Side by Side

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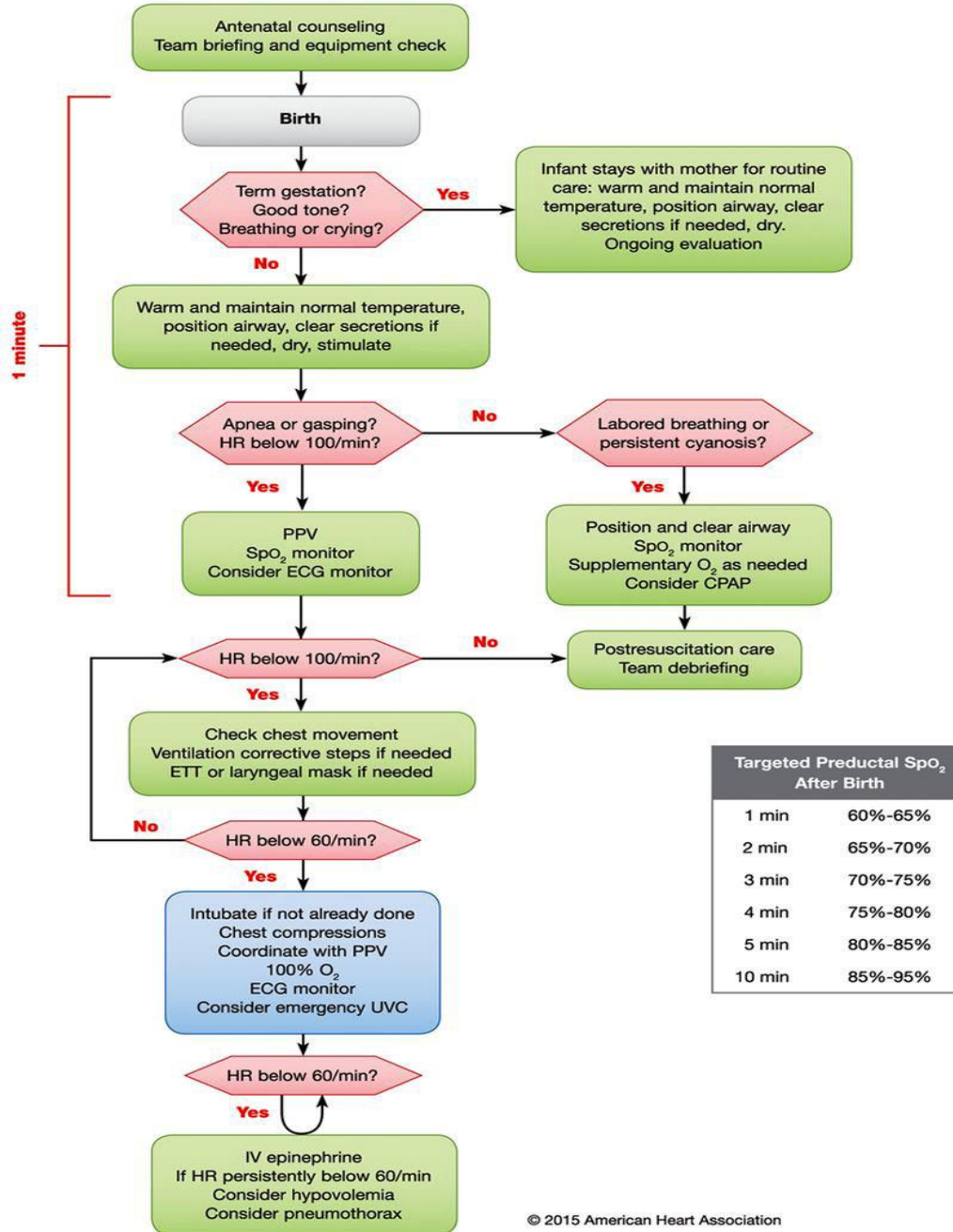
Neonatal resuscitation – inputs in BLSO certification course



Neonatal resuscitation

- 1) **“You are preparing the ambulance to go out to a delivery. What is in the delivery kit?”**
 - lists components of standard ambulance kit including newborn ambu bag, blanket for baby, cord clamp
- 2) **“You are called to a delivery and the baby is delivered as you arrive. What should you do for the newborn?”**
 - Rapid Initial Assessment of newborn (Term? Breathing or crying? Good muscle tone?)
If yes to all – dry, wrap, hat, put baby to breast
- 3) **“Is it better to wait a few minutes to resuscitate baby or to start right away?”**
 - start during the Golden Minute, the first minute after delivery
 - baby much more likely to survive if you start during the Golden Minute
- 4) **“You are called to a delivery and the baby is delivered as you arrive. The baby is limp and not breathing. What do you do?”**
 - dry and stimulate (rub back, tap feet – no shaking, no dangling)
 - put fetus in ‘sniffing position’
 - HR and RR and color of newborn
 - if abnormal HR, RR or color of newborn with positive pressure ventilation (correct size mask and bag, uses room air, 40-60 breaths per minute)
 - if abnormal HR following ventilation then do chest compressions
 - teacher should make sure that participants practice 30 seconds of ventilation so that participants learn how long that actually is

Neonatal Resuscitation Algorithm—2015 Update



Targeted Preductal SpO ₂ After Birth	
1 min	60%-65%
2 min	65%-70%
3 min	70%-75%
4 min	75%-80%
5 min	80%-85%
10 min	85%-95%

2-Year-Advanced EMT course @GVKEMRI- Paediatric Module



Advanced Post Graduate Diploma in Emergency Care Under Osmania University- Industry Hub

With effect from 2009-2010

The Syllabi & scheme of Instruction and Examination rules for the Advanced Post Graduate Diploma in Emergency Care have been approved by the Board of Studies. This course will be started from year 2009-10:

Teaching & Examination pattern approved by the University.

The course comprises of four semesters.

Theory classes and practicals for this course will be conducted by EMRI as per the scheme of instruction approved by OU board of studies.

Semester I, II, and III have four theory and four practical papers. Semester four has 480 Hours of hospital internship and 720 Hours of ambulance internship time.

Theory and Practical examinations:

There will be internal assessment and university examination for all four semesters.

All Examinations will be conducted by Osmania University at EMRI. All the University Examinations will be conducted by the Examiners appointed from a Panel by the University:

Unit-III

16. Neonatology – Introduction, General pathophysiology and assessment, Specific intervention and resuscitation steps, Special conditions, Pre-mature and low birth weight infants, Thermoregulation, hypoglycemia, vomiting and diarrhea
17. Common birth injuries in new born
18. Pediatrics – Introduction, Approach to pediatric patients, Pediatric assessment, Respiratory, cardiovascular, medical and Toxicological emergencies
19. SIDS, apparent life threatening event, Child abuse and neglect, trauma, Burns, Children with special health care needs and Pediatric mental health

Pre-hospital Care Record



Emergency Management and Research Institute Prehospital Care Record



PCR No. _____
Form No. _____

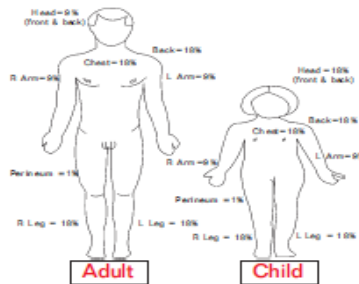
Zone : _____ CaseID _____
City/Town/Village _____ Vehicle Location _____
Ambulance/FR EMRI Govt. ASP Hosp.
TripNo _____ TrpPaid: Y/N _____ Amount _____
PilotID _____ PilotName _____
Date dd/mm/yyyy Time H:MM

Call received at ambulance _____
Vehicle departure from location _____
Vehicle arrival at scene _____
Reaching victim _____
Vehicle departure from scene _____
Enroute to hospital _____
Arrival at hospital _____
Handed over victim at hospital _____
Departure from hospital _____
Vehicle design _____
Back to base _____

- Traffic conditions on way to incident location
- Delay in reaching victim
- Reason if not proceeded
- Reason for not serving victim after reaching site
- Destination determination

- Self determination
- Refusal against Transport
- Transport decline form signed
- Refusal against Medical advice
- Medical decline form signed
- Other medical authorisation at scene
- Restraints used
- Do not resuscitate
- Destination diversion
- Treated and Discharged

Extraction details _____
Name of Good Samaritan _____
Contact No. _____
Service _____
Address _____



EMT Summary:

Patient Name _____ Date _____ Incident ID _____
Age Sex: M/F Occupation _____ Vehicle No. _____ Vehicle Type: ALS/BLS/RLS / FR _____
Social Status BC / ST/BC/OC Insurance : Yes/No Area: Urban/Rural/Tribal Incident Location _____
Ration Card: White/Pink No. _____ Street _____ City/Town/Village _____
Ident/Ration Mark 1 _____ Mandi _____ District _____
2 _____ Father/Spouse Name _____ Contact No. _____
Height (cm) _____ Weight (kg) _____ Blood Group _____ Name of the Attendant _____ Contact No. _____
Res. Address _____ Relationship _____
Aid at scene before vehicle arrival: _____
Chief Complaint: Primary Duration Associate Duration
Breathing: Normal / Shallow / Laboured / Agonal A V P U MCI

Past Illness
DM. Respiratory
HTN Epilepsy
HV Behavioural
CAD Surgeries
Stroke Trauma

History of Medication
Antibiotics Diuretics
Antidiabetics Bronchodilators
Antihypertensives Antidepressants
Anticoagulants Antianginals
Antipsychotics Antithrombotics
NSAIDs Anti Cancer

Type of Case : Trauma / Medical
Type of emergency
Cause of emergency
Anatomical area of emergency
Mechanism of Injury
Presenting symptoms

Allergies, if any _____ Habits : Smoking / Alcohol _____

Family Physician Name _____ Contact No _____ Advise _____

Vital Signs	At Scene 0 Minutes	Enroute Minutes	Handing over at hospital Minutes
Skin			
Colour (Pink/Dusky/Cyanotic)			
Temp (Warm/Hot/ Cool / Cold)			
Condition (Normal / Diaphoretic/ Moist / Dry)			
Capillary refill (<2, 2-4, >4)			
Temperature			
Pulse			
Rate/Min			
Rhythm (Regular/Irregular)			
Volume (Normal/Thready)			
B.P.			
Respiration			
Rate/Min			
Right Air Entry (Yes/No)			
Left Air Entry (Yes/No)			
Adventitious sounds (Crepes/Rhales)			
SPO₂			
Pupils			
Right Size (Normal/Constricted/Dilated)			
Reaction to light (Brisk/Sluggish/Non reacting)			
Left Size (Normal/Constricted/Dilated)			
Reaction to light (Brisk/Sluggish/Non reacting)			
G.C.S.	E <input type="checkbox"/> V <input type="checkbox"/> M <input type="checkbox"/>	E <input type="checkbox"/> V <input type="checkbox"/> M <input type="checkbox"/>	E <input type="checkbox"/> V <input type="checkbox"/> M <input type="checkbox"/>
Blood glucose (mg/dl)			

Pregnancy: Yes/No LMP (DD/MM/YYYY) _____ G P D A
Abnormal Bleeding: Yes/No APGAR Score : A P A R Total _____ Time of Birth Sex M/F _____
Aid enroute at any other hospital, if any _____
Hospital Name _____ Telephone _____

Pre Hospital Care
AED OPA/NPA
Bag mask Ryles Tube
C Collar Spinaling
CPR Suction
ECG Telemetry
ETI Ventilator
IV Fluids Wound care
Oxygen Own medication
Others _____

Event during transport
Improved
Status quo
Worsened
Death

ERCPC Name & Advice

Medicines Used

Occupation Code	Type of Emergency Code	Case of Emergency Code	Traffic Condition Code
01 Unemployed	01 Fire	01 Fire	01 Normal
02 Unemployed	02 Fire	02 Fire	02 Obstacles
03 Unemployed	03 Fire	03 Fire	03 Congested traffic
04 Unemployed	04 Fire	04 Fire	04 Accident in ambulance
05 Unemployed	05 Fire	05 Fire	05 Other accident on way
06 Unemployed	06 Fire	06 Fire	06 Obstruction of traffic
07 Unemployed	07 Fire	07 Fire	07 Delay in traffic
08 Unemployed	08 Fire	08 Fire	08 Delay in reaching site
09 Unemployed	09 Fire	09 Fire	09 Vehicle delay
10 Unemployed	10 Fire	10 Fire	
11 Unemployed	11 Fire	11 Fire	
12 Unemployed	12 Fire	12 Fire	
13 Unemployed	13 Fire	13 Fire	
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97 Unemployed	97 Fire	97 Fire	
98 Unemployed	98 Fire	98 Fire	
99 Unemployed	99 Fire	99 Fire	
00 Unemployed	00 Fire	00 Fire	

Reason if not proceeded Code

01 Not available

02 Staff absent

03 On duty

04 No bus

05 Other

Delay in reaching victim Code

01 Delay in reaching site

02 Delay in reaching site

03 Delay in reaching site

04 Delay in reaching site

05 Delay in reaching site

06 Delay in reaching site

07 Delay in reaching site

08 Delay in reaching site

09 Delay in reaching site

10 Delay in reaching site

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12 Delay in reaching site

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Destination Determination Code

01 Hospital

02 Hospital

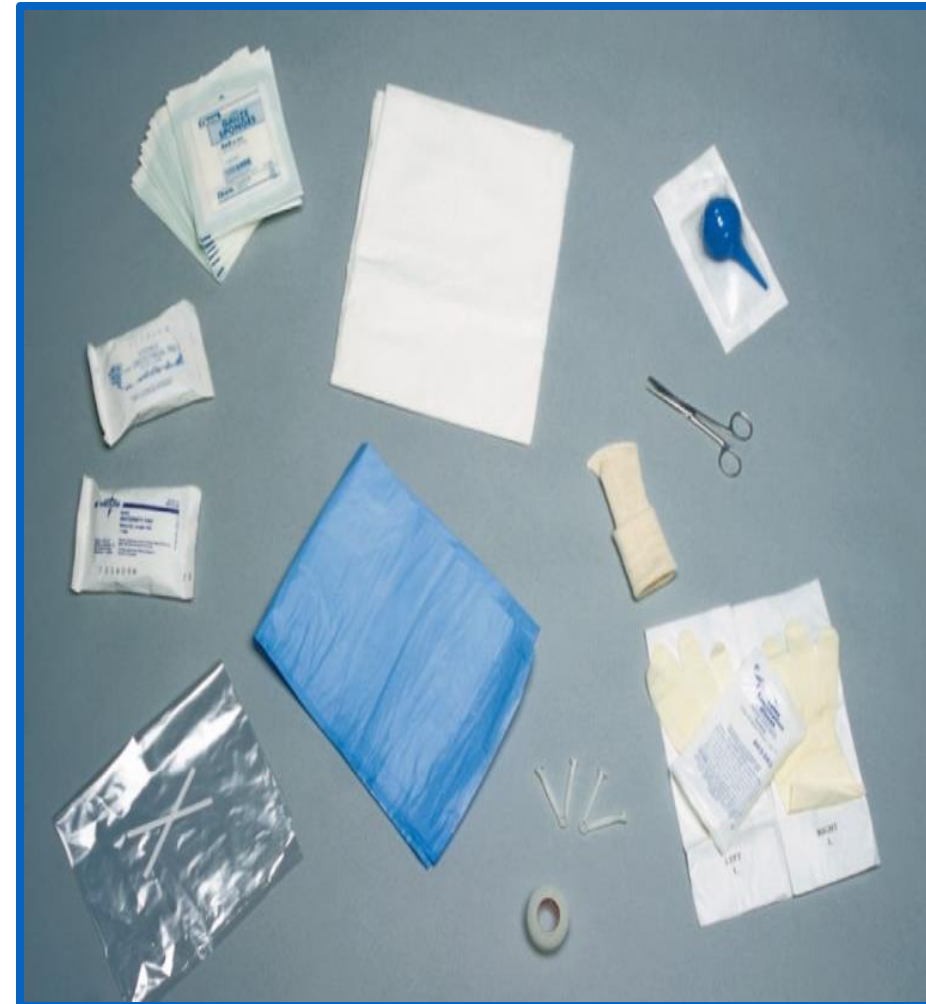
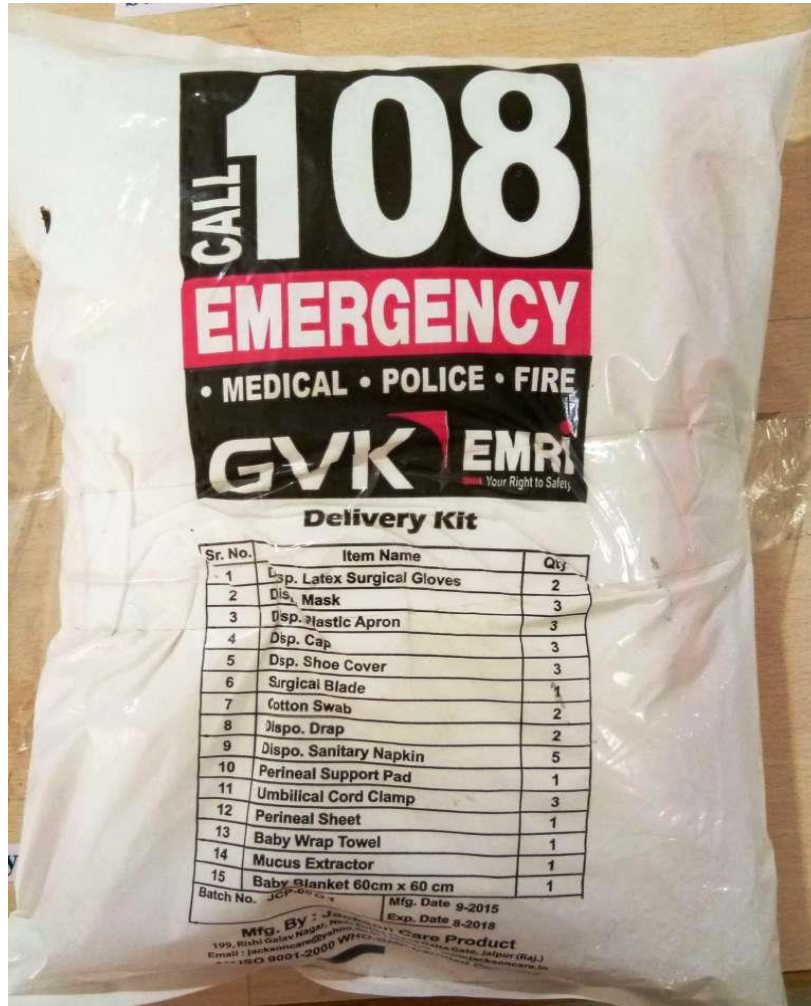
03 Hospital

Ambulance – Equipment, drugs and consumables



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Disposal Delivery Kit



The classification of waste in a health care facility is as briefed below:

Color Coding	Type of Container	Waste Category
Yellow	Plastic Bag	Human Anatomical Waste (human tissues, organs, body parts) organs, body. Fluid, blood. Items contaminated with blood, and body fluids including cotton, dressings, soiled plaster casts. other material contaminated with blood
Red	Disinfected Container/Plastic bag	Tubing's, catheters, intravenous sets etc.
Blue / white translucent	Plastic bag/Puncture proof container	Waste sharps (needles, syringes, scalpels, blades, glass, etc. that may cause puncture and cuts. This includes both used and unused sharps)

Steps for Successful resuscitation

All the health care Professionals who attend the mother at birth must be skilled at Resuscitation and know to recognize babies who are at Risk they Must

- Anticipate
- Be prepared
- Know what to do in Order
- Should be able to work in co-ordination

Neonatal Ambulance- Tamil Nadu State



Referral Protocol

Scenario	Referring Institution	Receiving Institution
1	PHC	NICU
2	GH	NICU
3	Medical College	Medical College
4	Private Nursing Home	Government Hospital
5	Private Hospital	Private Hospital
6	Government	Private Hospital

Duration of Neonatal training

Duration of Training	45 days
Theory Phase Training	10 days
Hospital phase Training	15 days
Ambulance phase Training	10 days

Neonatal EMT Training

- Introduction to neonatal emergencies
- Neonatal resuscitation
- Sick new born assessment
- Common neonatal problems thermoregulation
- Neonatal transport
- Management of various disorders- hypoglycemia, neonatal shock, neonatal seizures, respiratory distress, neonatal sepsis, neonatal jaundice
- Fluid management
- Breastfeeding
- **Assessment of newborn:**
 - Identification of risk factors
 - DOWNES score
 - Weighing newborns
 - Krammer's rule

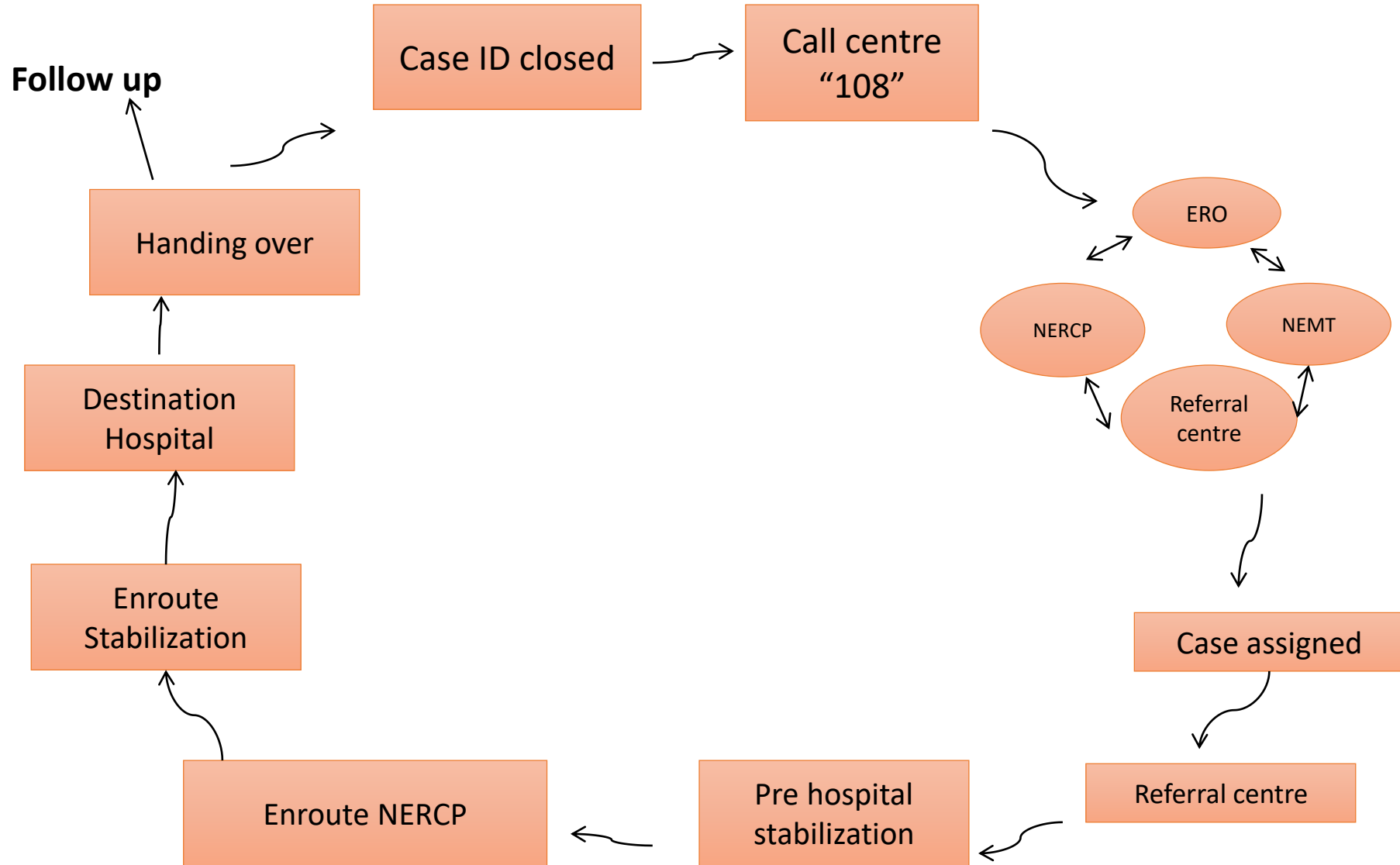
- **Assessment of newborn:**
 - Identification of risk factors
 - DOWNES score
 - Weighing newborns
 - Krammer's rule
- **Monitoring of neonates:**
 - Clinically with monitors
 - CRT
 - CBG
- **Thermoregulation**
 - Axillary temperature
 - KMC
 - Use of radiant warmer
- **Use of incubators**
- **Phototherapy**
- **Gastric lavage**
- **IV cannulation**
- **Use of infusion pump and syringe pump**

i	Bag Valve Mask Ventilation
ii	Oxygen administration
iii	IV cannulation
iv	Administration of medications:
	a. Calculation of drugs
	b. IM
	c. IV
v	Setting, Use & Maintenance of basic equipment
	a. O2 analyzer
	b. Monitors
	c. Infusion and syringe pump
	d. Radiant warmer
	e. Incubator
	f. Ventilator
vi	Feeding the infant
	a. Breastfeeding
	b. Expression of breast milk
	c. Naso gastric feeding
	d. Paladai feeding/ cup feeding
vii	Gastric lavage

Neonatal Ambulance - Interior View



Communication Protocol- NNA



District wise distribution of NNA- TN

S.No	District	No. Ambulance	S.No	District	No. Ambulance
1	ARIYALUR	2	17	PUDUKOTTAI	2
2	CHENNAI	3	18	RAMANATHAPURAM	2
3	COIMBATORE	1	19	SALEM	2
4	CUDDALORE	2	20	SIVAGANGA	2
5	DHARMAPURI	2	21	THANJAVUR	1
6	DINDIGUL	2	22	THENI	2
7	ERODE	2	23	THIRUVALLUR	2
8	KANCHEEPURAM	2	24	THIRUVANNAMALAI	2
9	KANYAKUMARI	1	25	THIRUVARUR	2
10	KARUR	1	26	THOOTHUKUDI	2
11	KRISHNAGIRI	2	27	TIRUCHIRAPPALLI	2
12	MADURAI	3	28	TIRUNELVELI	2
13	NAGAPATTINAM	1	29	TIRUPUR	2
14	NAMAKKAL	2	30	VELLORE	3
15	NILGIRIS	1	31	VILLUPURAM	2
16	PERAMBALUR	1	32	VIRUDHUNAGAR	2

Total number of neonatal ambulances = 60

Neonatal Ambulance cases- TN

Parameters	Average per Year	Month	Day
Average No. Cases	18364	1530	51

Neonatal Case- TN

On 13th June , Chetpet Neonatal ambulance was assigned for IFT case at 02:37hrs from Porur PHC. Baby of Samsath, 2 hrs old male with birth weight of 2.8kg was referred to ICH,Egmore for the complaints of Birth Asphyxia and Cord around the neck. At birth baby not cried and had apnea. They started BVM after that baby had weak cry.

On arrival at the scene, baby was comatose and very poor activity. NEMT assess vitals, Skin color- Pale, CRT- >3sec, Temperature -36 F, HR- 78 beats/minutes, Respiration – On Bag Valve Mask ventilation, SpO2- 88-94% (with O2) , CBG-139mg/dl.

After stabilization baby shifted to ambulance and placed in sniffing position. In ambulance NEMT reassess the vitals. Baby had bradycardia and pale skin color. Immediately our NEMT started the CPR and BVM. ERCP advice taken and 10ml/kg of Normal saline bolus and Injection adrenaline were given. Airway was cleared with frequent suction. Enroute to the hospital continuous Compression and ventilation given. TABC was maintained. Tactile stimulation done. Then the Neonate was safely shifted to ICH.

Vitals signs at handing over were HR – 96/min, SpO2 – 90-96%. With timely proper pre hospital care by NEMT saved the baby's lives.



CHETPET NEONATAL AMBULANCE

CASE ID: 3399513; DATE: 13-06-2017

CALL TIME: 02:37HRS;

NERCP: DR. VIDHYA

NEMT : MR. ESAKKI MUTHU – 041125

RECEIVING HOSPITAL: ICH, EGMORE

EXCEPTIONAL CASE - HOSPICIO NEO - FEBRUARY 2017**Patient in Ambulance****EMT :
LINA ROSA DE BRAGANCA****PILOT :
MANOHAR VELIP****AMBULANCE LOCATION:**
HOSPICIO NEO**CASE ID:** 2016000017881**DATE:** 29/01/2017**CALL TIME:** 16:47**ERCP:** Dr. SHREYA**RECEIVING HOSPITAL:**
ROYAL HOSPITAL, MARGAO.**SOUTH DISTRICT**

- **EMT : LINA ROSA DE BRAGANCA (075676)**
- **PILOT : MANOHAR VELIP (070564)**

NEED OF VENTILATORY SUPPORT

On 29th of Feb 2017, at 16:47 neonatal ambulance Margao received a call from ERC saying that there was an IFT from GMC Bambolim to Royal hospital Margao. During conference with on duty doctor EMT A Lina realized that the baby is c/o abdominal distention with Respiratory distress requiring Ventilator support.

The Neonatal ambulance staff reaches GMC after preheating the incubator. EMT-A Lina took case detail from the doctor on duty. Immediately after taking history EMT-A went and found that the neonate a 22 days old male term baby born to G2P1 by SVD has abdominal distention with sepsis. Intestinal surgery is needed and the neonate is intubated and has to be referred for Ventilator support. With the help of pilot, the neonate shifted in ambulance.

In the ambulance EMT-A Lina attached the monitor and assisted ventilation and recorded baseline vitals are as follows:

L.O.C Alert Pulse 158bpm Respirations 48breaths/min Spo2 94% RBSL 84mg/dl

Then en route to hospital ERCP conference was taken and ERCP advised EMT to continue positive pressure ventilation with oxygen. The neonate was maintaining saturation of 94 to 100% with body temperature of 37 degree Celsius and incubator care. The baby was later shifted to Royal hospital, Margao.

REFLECTION By :**EMT: LINA ROSA DE BRAGANCA**

I am very happy that I got an opportunity to be associated with GVK EMRI 108 Ambulance services. It is very challenging to deal with chest pain emergency.

PILOT: MANOHAR VELIP

I would like to thank GVK EMRI for giving me an opportunity to be a part of life saving mission.



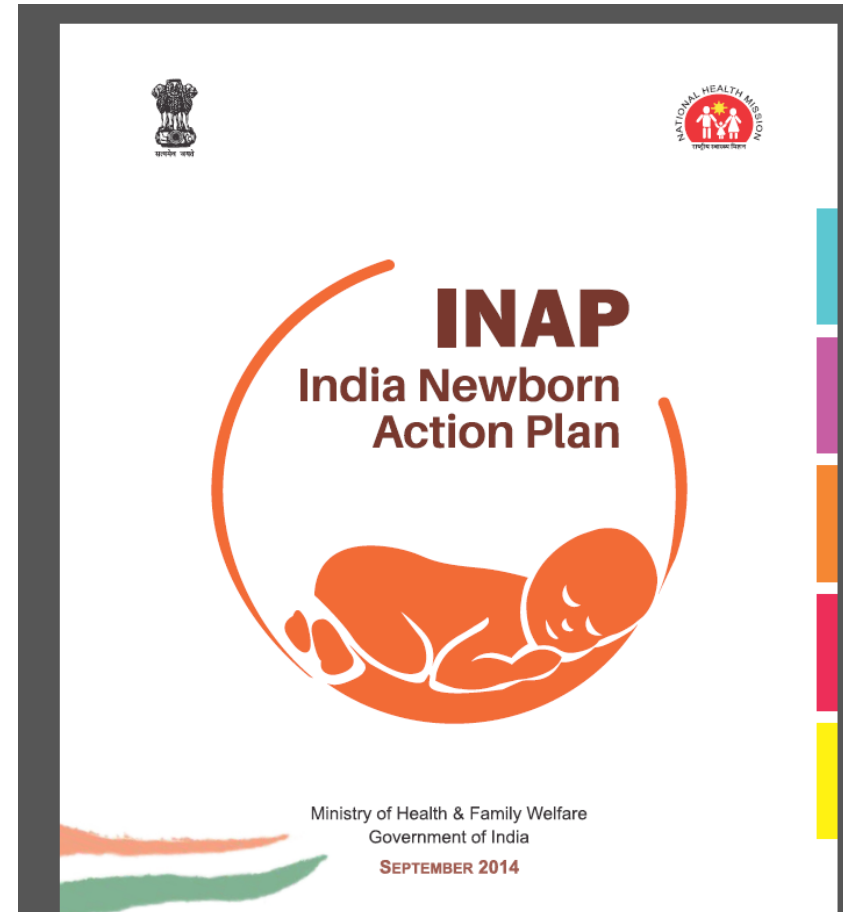
Summary

Neonatal resuscitation – EMS- DVC

- EMT Training including neonatal resuscitation
- Advanced EMT training, as a long term strategy
- Inter-facility Transfer of high risk new-borns in special Neonatal ambulances
- Prehospital care Protocol for primary transportation and IFT
- Ambulance equipment, drugs and consumables
- Medical oversight (On-line medical Direction)
- Referral System (NBC- SNCU- NICU)
- Monitoring
- Retraining
- Case studies, retrospective analysis, clinical audits
- Align with national health care delivery systems

Future

- Six pillars of intervention packages impacting stillbirths and newborn health have been identified, which include:
 - o Preconception and antenatal care
 - o Care during labour and child birth
 - o Immediate new-born care
 - o Care of healthy new-born
 - o Care of small and sick new-born
 - o Care beyond new-born survival



Future – EMS DVC- Neonatal Resuscitation @ GVKEMRI

- Expansion of Neonatal ambulances
- Newer medical equipment – LMA (example)
- RQI – field trials (Little Anne)- cost effective- mobile van based
- Valid certified EMTs

Thank you

www.emri.in

[ramanarao_gv@emri.in](mailto:ramananarao_gv@emri.in)