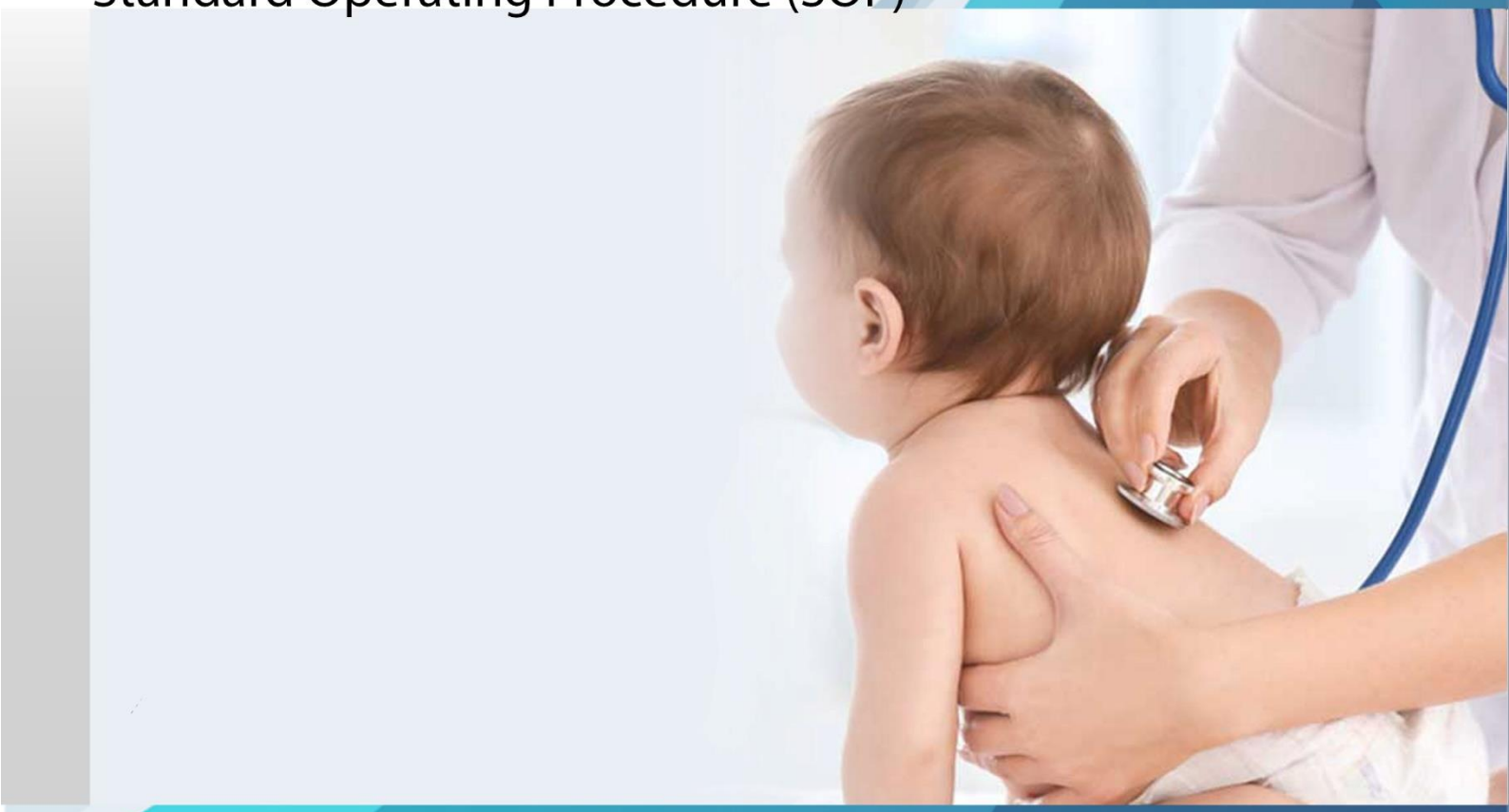
ပြည်ထောင်စုမြန်မာနိုင်ငံ၊ အထူးဒေသ(၁) ကျန်းမာရေးဌာန

缅甸联邦第一特区卫生部

The Union of Myanmar, SR(1) Department of Health

Neonatal Resuscitation

Standard Operating Procedure (SOP)



Contents

Neonatal resuscitation

KEYS TO SUCCESSFUL RESUSCITATION

Anticipation	Fast
Preparation	Be gentle
Call for Help	Provide warmth
Document/record	Maintain hygiene
Remember mother	

Preparation for Birth

Essential:

- A draught free, warm room with temperature >25°C
- A clean, dry and warm delivery surface
- A radiant heater
  If not available
  - Overhead bulbs (200 watts)
  - Hot water bottles under mattress can be used
- Two clean, warm towels/clothes
- A folded piece of cloth (½ to 18 thick)
- A newborn size self-inflating bag (250-500 ml capacity) Infant masks in two sizes '1' for normal weight baby and '0' for small baby A suction device (low pressure suction machine, suction catheter with the side holes and thumb pressure-suctioning device-size 10 French and above is posable bulb syringe, disposable Dee-Lee trap or disposable mucus extractor)
- Oxygen source with adjustable flow meter
- A clock (with seconds hand)
- Stethoscope
- Equipped emergency box containing (District Hospital)
  - Laryngoscope with No.1 and 0 size straight blades
  - Extra batteries and laryngoscope bulbs
  - Uniform diameter endotracheal tubes sizes 2.5, 3.0 and 3.5 mm
  - Drugs (epinephrine, sodium bicarbonate 4.2%, 0.9% normal saline)
  - Umbilical catheterization tray with No. 4 and 5 French umbilical catheters If not available feeding tube No.5 or No.6
  - Syringes (1 ml, 3 ml, 5 ml, 10 ml and 20 ml) and needles

The ABCD of resuscitation

- Establish open Airway
- Initiate Breathing
- Maintain Circulation
- Drugs(last)

Resuscitation is to be done in steps; one specific step is followed by another specification step.

- Initial steps.
- Positive pressure ventilation
- Alternative Airways-Endotracheal tubes and laryngeal masks
- Chest compression
- Medications

I. Initial steps

- Provide warmth
- Position the head and neck
- Clear secretions if needed
- Dry
- Stimulate

Warmth - Place under the radiant warmer.
Position - The baby should be positioned on her back (spine), with the head and neck neutral or slightly extended in the "sniffing the morning air" position.
Clear secretions from the airway if needed-

- If the baby is not breathing or gasping
- If secretions are obstructing the airway
- If the baby is having difficulty clearing their secretions
- If there is meconium-stained fluid
- If you anticipate starting PPV

Dry - Place the baby on a warm towel or blanket and gently dry the fluid. If becomes wet, discard it and use fresh warm towels or blankets for continued drying.
(Drying is not necessary for very preterm babies less than 32 weeks' gestation because they should be covered immediately in polyethylene plastic)
Stimulate -

- Brief additional tactile stimulation may stimulate breathing
- Gently rub the newborn's back, trunk or extremities

II. Positive Pressure Ventilation (PPV)

Indications for positive pressure ventilation

1. Apnoea (not breathing)
2. Gasping

3. Heart rate less than 100 bpm
4. Oxygen saturation below the target range despite free-flow oxygen or CPAP

Note -

- When indicated, PPV should be started within 1 minute of birth.
- Positive pressure ventilation initially with 21% oxygen for newborns greater than or equal to 35 weeks gestation
- For the initial resuscitation of newborns less than 35 weeks gestation, start with 21% to 30% oxygen

III. Alternative Airways

Insertion of an endotracheal tube or a laryngeal mask should be considered in the following circumstances:

- If PPV with a face mask does not result in clinical improvement, to improve ventilation efficacy
- If PPV lasts for more than a few minutes, to improve the efficacy and ease of assisted ventilation

Insertion of an endotracheal tube is strongly recommended:

- If chest compressions are necessary, it will maximize the efficacy of each positive-pressure breath and allow the compressor to give compressions from the head of the bed
- In special circumstances such as
  - Stabilization of a newborn with a suspected diaphragmatic hernia
  - For surfactant administration
  - For direct tracheal suction if the airway is obstructed by thick secretions

Table 1.1 Endotracheal tube size for babies of various weights and gestational ages

Tube size (mm) (inside diameter)	Weight (g)	Gestational age (wks)
2.5	Below 1000	Below 28
3.0	1000-2000	28-34
3.5	2000-3000	34-38
3.5-4.0	Above 3000	Above 38

IV. Indications for Chest Compressions

Chest compressions are indicated when the heart rate remains less than 60bpm after at least 30 seconds of PPV that inflates the lungs, as evidenced by chest movement with ventilation. (*Increase the oxygen concentration to 100% when chest compressions are started)

V. Medications

1. Epinephrine-1:10,000 (0.1-0.3 ml/kg)
   - It is indicated if the baby's heart rate remains below 60 beats per minute after
     - At least 30 seconds of PPV that inflates the lungs as evidenced by chest movement
       AND
     - Another 60 seconds of chest compressions with PPV using 100% oxygen
   - Route – Intravenous (IV) (preferred) or Intraosseous (l0)
     (Endotracheal route only while intravenous or Intraosseous is being obtained 0.5 to 1 ml/ kg)
   - Administration-as quickly as possible
   - Repeat every 3-5 mins if the heart rate remains less than 60 bpm

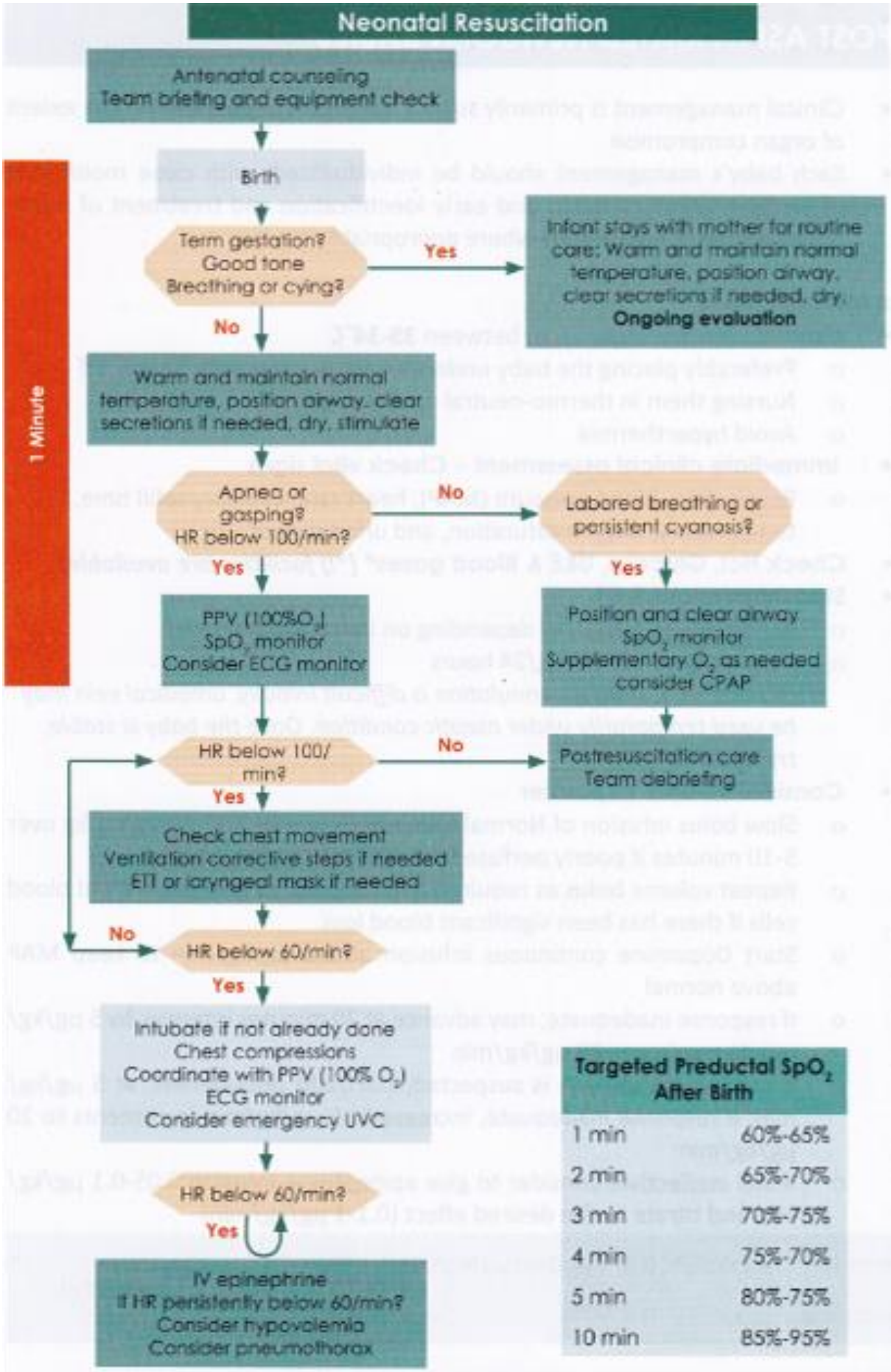
2. IV or Intraosseous volume expanders

   - Normal saline (0.9% NaCI) 10 ml/kg over 5-10 mins
     (Use caution with preterm newborns less than 30 weeks gestation)
   - Suspected anemia: 'O-negative' packed red cells

Emergency volume expansion is indicated if the baby is not responding to the steps of resuscitation AND has signs of shock or a history of acute blood loss

Discontinuing Resuscitative Efforts

If there is a confirmed absence of heart rate after 10 minutes of resuscitation it is reasonable to stop resuscitative efforts: however, the decision to continue or discontinue should be individualized.


Neonatal Resuscitation
Antenatal counseling
Team briefing and equipment check
Birth
1 Minute
Term gestation?
Good tone
Breathing or crying?
Yes
Infant stays with mother for routine care: Warm and maintain normal temperature, position airway, clear secretions if needed, dry.
Ongoing evaluation
No
Warm and maintain normal temperature, position airway, clear secretions if needed, dry, stimulate
Apnea or gasping?
HR below 100/min?
No
Labored breathing or persistent cyanosis?
Yes
Yes
PPV (100% O2)
SpO2 monitor
Consider ECG monitor
Position and clear airway
SpO2 monitor
Supplementary O2 as needed
consider CPAP
HR below 100/min?
No
Postresuscitation care
Team debriefing
Yes
Check chest movement
Ventilation corrective steps if needed
ETT or laryngeal mask if needed
No
HR below 60/min?
Yes
Intubate if not already done
Chest compressions
Coordinate with PPV (100% O2)
ECG monitor
Consider emergency UVC
HR below 60/min?
Yes
IV epinephrine
If HR persistently below 60/min?
Consider hypovolemia
Consider pneumothorax
Targeted Preductal SpO2 After Birth
1 min 60%-65%
2 min 65%-70%
3 min 70%-75%
4 min 75%-70%
5 min 80%-75%
10 min 85%-95%