

NICU FLASHCARDS

Contents

1. Alarm settings
2. HR Management
3. SaO₂ management
4. Intravenous management
5. Things to escalate
6. NLS algorithm
7. ETT size
8. Blood gas analysis
9. Initial ventilator settings
10. Ventilator Manoeuvres
11. Guardrail drugs formula
12. Care of infant on high flow
13. Care of infant on CPAP

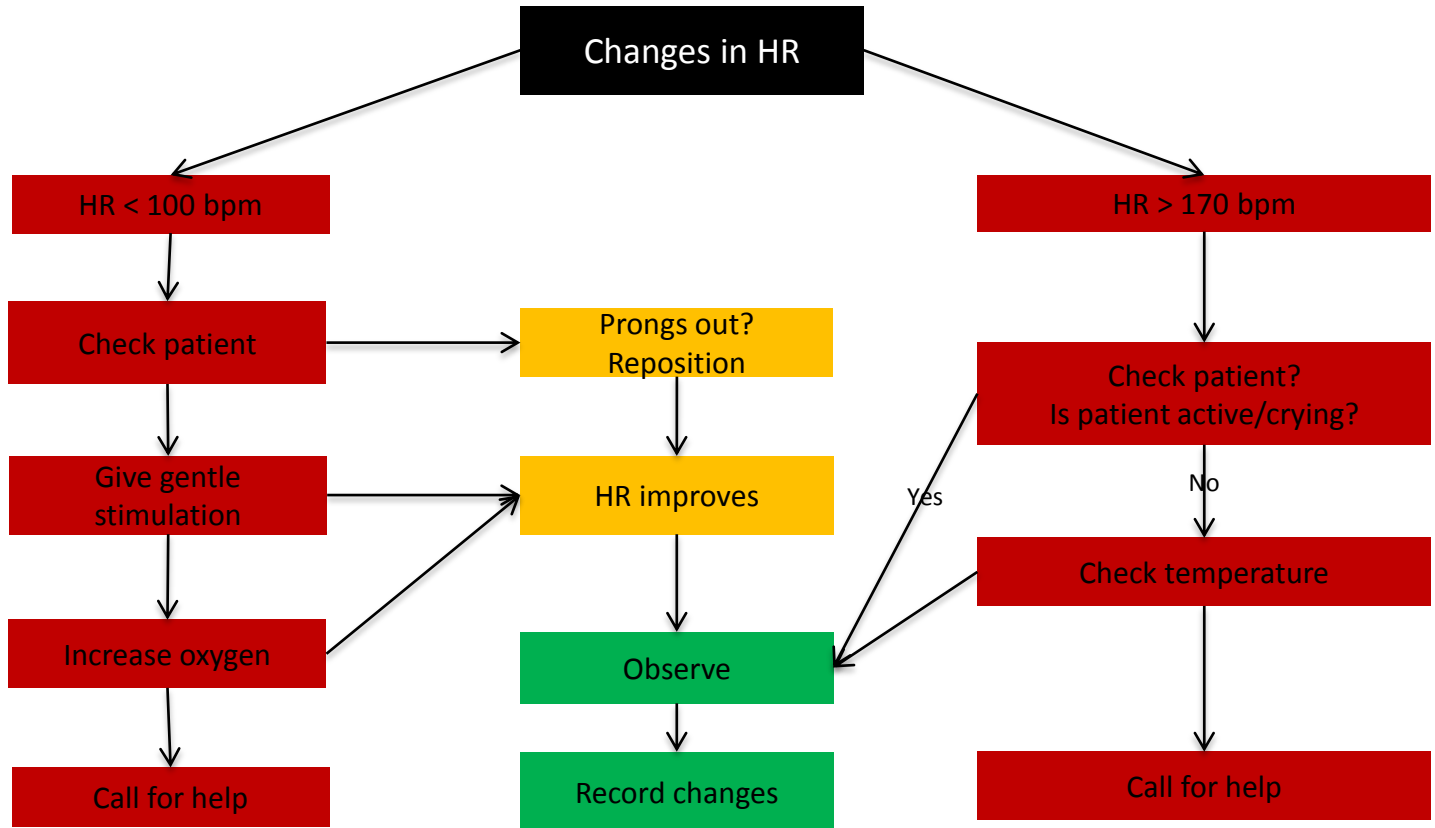


Alarm Settings

Saturations			
Gestation	Air/O ₂	Target	Alarm Limits
Preterm <37 weeks Or Birth Weight <1.5kg	Oxygen	91 - 95%	90 - 96%*
	Air	91 - 95%	90 – 100%
Term Infant ≥37 weeks	Oxygen	≥95%	94 - 99%
	Air	≥95%	94 - 100%
Preterm infant with corrected gestation ≥37 weeks	Oxygen	≥93%	92 - 99%
	Air	≥93%	92 – 100%

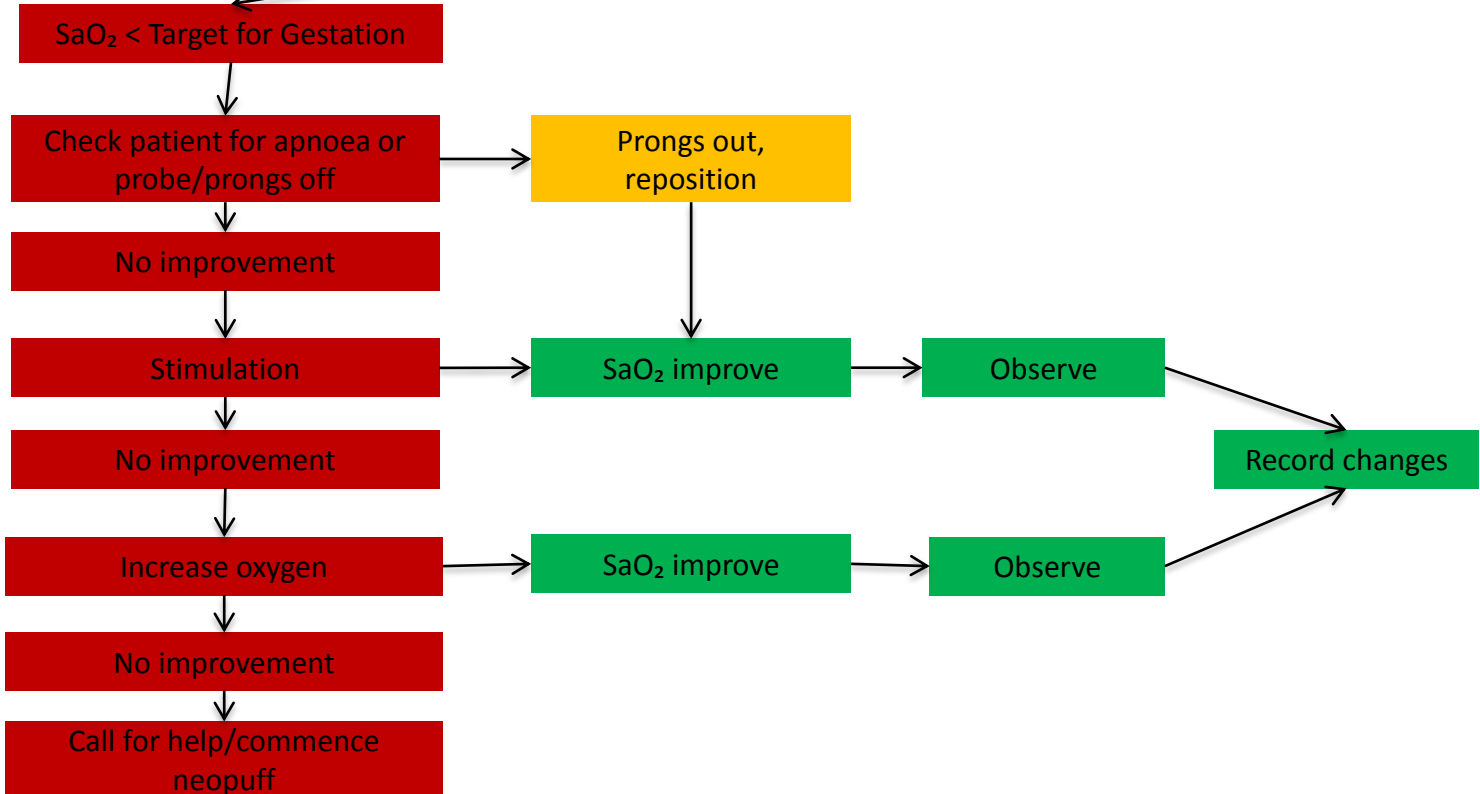
	Gestational Age	Alarm Limits
Heart Rate	Preterm < 37 weeks	100 – 180 bpm
	Term > 37 weeks	100 – 160 bpm
Temperature	All gestations	36.5° - 37.5°
Blood Pressure	Depending on gestation is the minimum acceptable Mean BP (mBP)	e.g. 32 weeks = mBP should be minimum 32 27 weeks = mBP is 27 and above

Heart Rate (HR) Management

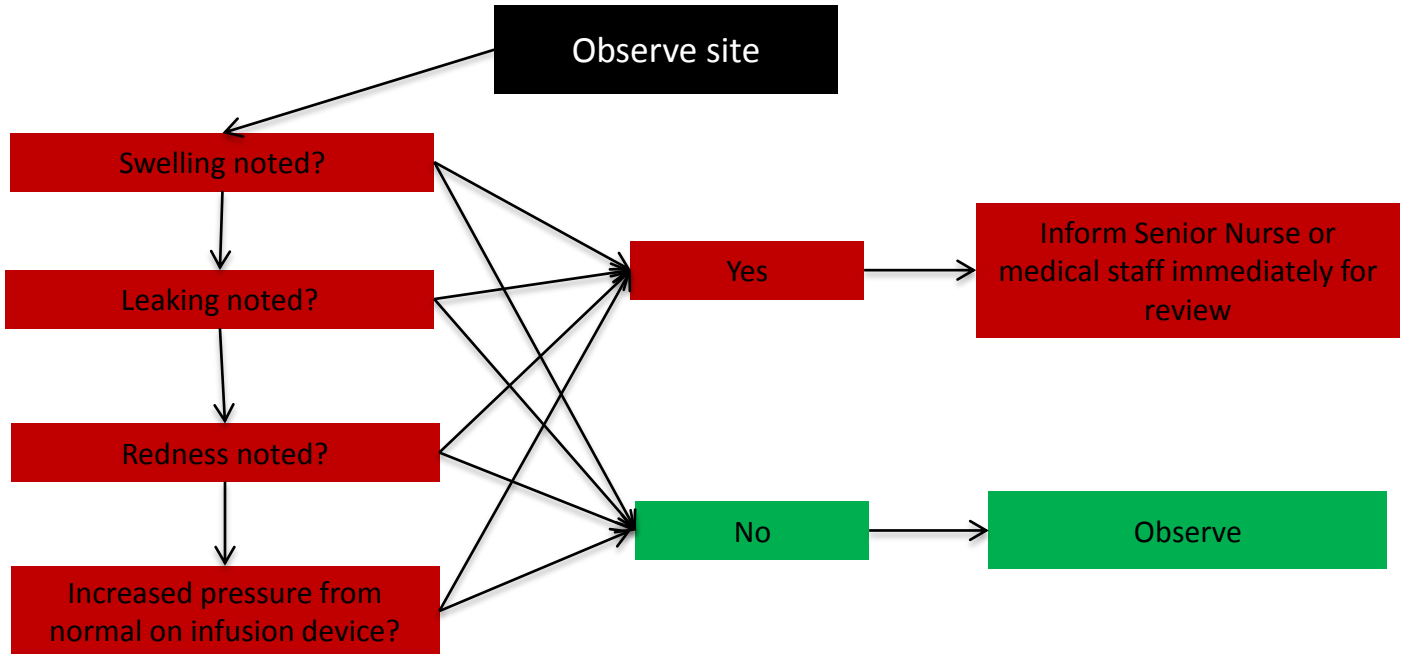


SaO₂ Management

Changes in SaO₂



Intravenous Management



Things to escalate

Frequent or increased apnoea's to the baby's normal

Frequent or increased desaturations to the baby's normal

Abdominal distension

No stool for >48 hours/looser stool/increased frequency of stool

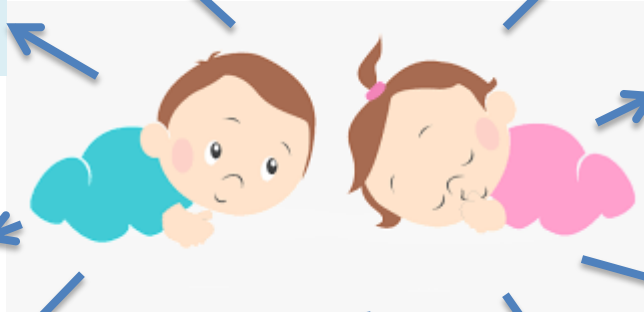
Change in colour or tone of baby

Low temperature or high temperature

Abnormal movements
i.e. Jerky/lip smacking

Less frequent wet nappies or less urine output

Poor feeding/vomiting



(Antenatal counselling)
Team briefing and equipment check

Birth

Dry the baby
Maintain normal temperature
Start the clock or note the time

Assess (tone), breathing, heart rate

If gasping or not breathing:
Open the airway
Give 5 inflation breaths
Consider SpO₂ ± ECG monitoring

Re-assess
If no increase in heart rate look for chest movement during inflation

If chest not moving:
Recheck head position
Consider 2-person airway control and other airway manoeuvres
Repeat inflation breaths
SpO₂ ± ECG monitoring
Look for a response

If no increase in heart rate look for chest movement

When the chest is moving:
If heart rate is not detectable or very slow (< 60 min⁻¹) ventilate for 30 seconds

Reassess heart rate
If still < 60 min⁻¹ start chest compressions; coordinate with ventilation breaths (ratio 3:1)

Re-assess heart rate every 30 seconds
If heart rate is not detectable or very slow (< 60 min⁻¹) consider venous access and drugs

Update parents and debrief team

60 s

Acceptable pre-ductal SpO₂

2 min	60%
3 min	70%
4 min	80%
5 min	85%
10 min	90%

Increase oxygen (guided by oximetry if available)

AT ALL TIMES ASK: DO YOU NEED HELP?

Maintain temperature

ET Tube size & insertion depth

Weight	Gestational Age	ET tube size (mm ID)	Tube insertion depth at lip (in cm) using the Lip-to-Tip rule (add 6 to the infant's weight in kg)
< 750g	<28	2.5	6
< 1000g (Below 1kg)	<28	2.5	7
1000-2000g (1-2kg)	28-34	3.0	8
2000-3000g (2-3kg)	34-38	3.5	9
>3000g (Greater than 3kg)	>38	3.5-4.0	10

If the weight is not known, use the gestational age to estimate correct size

Blood Gas Analysis

	Arterial Values	Capillary Values	What to do
pH	7.25 – 7.35	7.25-7.35	If < 7.25 = Acidosis = ESCALATE If > 7.35 = Alkalosis = ESCALATE
PCO ₂	35-45mmHg Or 5.5-8 kpa	35-50mmHg Or 5.5-8 kpa	If outside the normal values ESCALATE
PO ₂	60-80mmHg Or 6-12 kpa	Not useful for assessing oxygenation	If outside the normal values ESCALATE
Bicarbonate (HCO ₂)	18-25mm/L	18-25mm/L	If outside the normal values ESCALATE
Base Excess (BE)	-4 to +4	-4 to +4	If outside the normal values ESCALATE

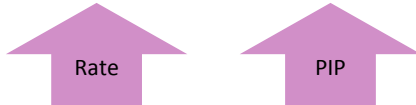
NB: Always check the blood sugar, SBR and Hb
Always show the gas to the sister in charge and medical staff

Suggestions of initial ventilator support

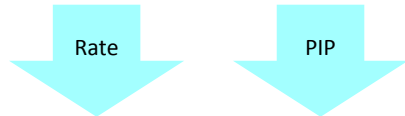
Settings	VLBW (<1.5kg)	LBW (1.5 to 2.5kg)	Term (>2.5kg)
Rate (Per minute)	30 to 45	20 to 40	20 to 40
Inspiratory Time (In seconds)	0.3 to 0.35	0.3 to 0.35	0.35 to 0.4
Positive Inspiratory Pressure (PIP) [cmH ₂ O]	16 to 22	18 to 24	20 to 28
Positive End Expiratory Pressure (PEEP) [cmH ₂ O]	4 to 7	4 to 7	4 to 7

Ventilator Manoeuvres

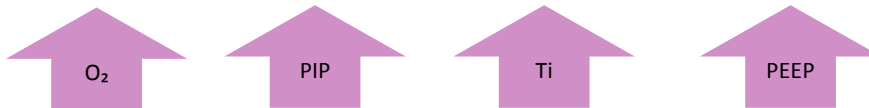
☐ Elevated PCO_2



☐ Low PCO_2



☐ $PO_2 < 50$ (arterial) or low saturation



☐ $PO_2 > 100$ (arterial)



NB: Medical staff will make the changes on the ventilators. This is reference only

Guardrail drugs – Formula (File in ITU)

Check Rate: **mcg/kg/min**

Rate ml/hour =
 $\frac{\text{Weight x (mcg/kg/min) x 60}}{\text{What you have (mcg)}} \times \text{Infusion fluid volume}$

Example:

Weight 0.600kg
Dopamine concentration 30mg in 25ml
Prescribed dose 5mcg/kg/min

$$\text{Rate ml/hour} = \frac{0.6 \times 5 \times 60}{30 \times 1000} \times 25 = 0.15\text{mls/hr}$$

Check Rate: **mcg/kg/hour**

Rate ml/hour =
 $\frac{\text{Weight x (mcg/kg/hour)}}{\text{What you have (mcg)}} \times \text{Infusion fluid volume}$

Example:

Weight 1.350kg
Morphine concentration 2mg in 25ml
Prescribed dose 10mcg/kg/hour

$$\text{Rate ml/hour} = \frac{1.350 \times 10}{2 \times 1000} \times 25 = 0.17\text{mls/hr}$$

Check Rate: **Unit/kg/hour**

Rate ml/hour =
 $\frac{\text{Weight x (unit/kg/hour)}}{\text{What you have (unit)}} \times \text{Infusion fluid volume}$

Example:

Weight 0.725kg
Insulin concentration 20 units in 50ml
Prescribed dose 0.1unit/kg/hour

$$\text{Rate ml/hour} = \frac{0.725 \times 0.1}{20} \times 50 = 0.18\text{mls/hr}$$

Check Rate: **ng/kg/min**

Rate ml/hour =
 $\frac{\text{Weight x (ng/kg/min) x 60}}{\text{What you have (ng)}} \times \text{Infusion fluid volume}$

Example:

Weight 2.850kg
Dinoprostone concentration 0.025mg in 25ml
Prescribed dose 15ng/kg/min

$$\text{Rate ml/hour} = \frac{2.850 \times 15 \times 60}{0.025 \times 1000 \times 1000} \times 25 = 2.56\text{mls/hr}$$

Care of the Infant on High Flow: Part 1

When to use?

- Primary mode (>28 weeks corrected age)
- Post extubation mode (>26+0 weeks corrected age)
- FIO₂ <40% (unless medical decision)

Flow Rate

- Start at 6-8L as per medical decision
- Ensure the centre of the ball on the flow meter is sitting at the desired number
- Wean by 0.5-1l every 24-48 hours as per medical decision

Humidity

- The F&P humidity monitors and adjusts the temperature to maintain a delivered temperature of 37 degrees. This is dependant on the machine used. Please confirm with user manual
- Ensure all probes are correctly fitted and remain in situ
- The humidity fluid bag is self feeding – replace when it is almost empty

Observations of equipment

- Hourly check of flow rate
- Hourly check of humidity temperature and level of water
- FiO₂ concentration
- The circuit needs changing every 7 days – check daily

Observations of infant

- Hourly recordings of Heart rate, Resps rate and effort
- Monitor work of breathing- recession, head bobbing etc
- Monitor FIO₂ requirement and infants saturations
- Monitor desaturations and bradycaria
- If BP stable record x1 per shift
- Escalate to nurse in charge and/or medic if any changes to the above observations
- Check the infant is not lying on the tubing
- Care re nasal suctioning – should not routinely be required

Care of the Infant on High Flow: Part 2

Cannula size

- Use the size guide as a starting point but all babies are different and may need to size up or size down
- The cannula should only fill 50% of the nares
- Care should be taken that the flanges are not pressing on the septum or the eyes

Cannula fit

- Perform the cheeky test: If you gently squeeze the cheeks the prongs should remain in the nares. If they pop out, you will need to reposition and reassess

Skin care

- Check position of nasal cannula hourly – clear space around nares
- Full assessment of septum /nares with cares
- Ensure nares are clean and dry
- Replace wiggle pads weekly and assess skin underneath. Escalate as required

General care

- Check the infant is not lying on the tubing
- Check behind the ears for signs of rubbing from the wired part of the prong circuit
- Ensure supportive positioning
- Complete regular pain score

Care of the Infant on CPAP: Part 1

What is CPAP?

- Continuous Positive Airway Pressure, provides a PEEP (Positive End Expiratory Pressure to):
- Increase the FRC by exceeding the closing capacity of the lungs,
- Stabilise and prevent the collapse of alveoli.
- Provide a splint to the chest wall and airway, increasing lung volumes, recruiting alveoli, and preventing further damage or collapse

When to use

- Significant signs of respiratory distress
- Pulmonary oedema
- Non Invasive support prior to intubation
- Post extubation
- Tracheo-malacia or other abnormality of the lower airways.
- Transient Tachypnoea of the Newborn (TTN)

When not to use

- Known pneumothorax
- Facial and nasal abnormalities e.g. bilateral choanal atresia, cleft palate, tracheoesophageal atresia.
- Diaphragmatic hernia.
- Unrepaired gastroschisis.
- Consider -larger babies often do not tolerate application of CPAP devices well, resulting in restlessness and labile oxygen requirement

Equipment

- Check **humidity** chamber is filled to correct level, self feeding bag has sufficient fluid and all probes are securely fitted
- Before use, perform safety checks as outlined by manufacturer (eg, alarms and pressure dump are working)
- Set flow rate to achieve desired PEEP (usually no more than 2l/m above PEEP (cm)

Care of the Infant on CPAP: Part 2

Hat

- Measure head circumference as per manufacturers guidelines
- Ensure the hat is pulled down over the ears and nape of the neck and is resting on the eyebrows
- Remove hat and headgear daily to assess skin integrity and pressure areas
- Ensure ears are flat, check and clean behind ears daily
- Measure HC and change hat at least weekly

Prongs & Mask

- Use the manufacturers size guide to measure for prongs/mask by using special measuring tape
- Prongs should completely fill nostrils without stretching or compromising skin integrity of nares or septum
- If using a mask ensure it is not pressing on the end of the nose, occluding the nares (too small) or pressing on the orbits (too big)
- Every hour, gently release the mask or prongs to relieve any skin pressure
- Alternate between prongs and mask 3-6 hourly, even if only tolerated for a short period
- Discard and replace any soiled prongs or masks

Care

- Insert OGT (*not* NGT) and aspirate regularly to relieve abdomen
- Ensure tubing is not pulling or underneath baby
- Provide supportive positioning
- Assess skin integrity and pressure areas
- Monitor for pain and discomfort

Observe and Record

- Flow, FIO₂, PEEP and humidity temp hourly
- Changes in respiratory effort, rate or FIO₂ and escalate
- HR, brady, desats and escalate any changes to NIC or medics
- BP once per shift if stable