NON-INVASIVE RESPIRATORY SUPPORT

	< 1.2 kg Current Weight	≥ 1.2 kg Current Weight
	Irrespective of gestational age at birth OR whether used on admission or after extubation	
Initial Set-up	**Start** • Bubble Mask NCPAP at 8 cmH_2O and 8 l/min for any weight	**Start** • High Flow Therapy at • 8 l/min
	• **Aim** ○ < 28 days of life: $FiO_2 \leq 0.4$, pH ≥ 7.2 and $pCO_2 \leq 8.5$ kPa ○ ≥ 28 days of life: $FiO_2 \leq 0.4$ pH ≥ 7.2 and $pCO_2 \leq 10$ kPa	
Once on NIRS	• **First 4 hours (until day 7) of life:** Give surfactant at around 200 mg/kg, if FiO_2 > 0.4 or > 0.3 and rapidly rising • **Use INSURE** for surfactant delivery	• **First 4 hours (until day 7) of life:** Give surfactant at around 200 mg/kg, if FiO_2 > 0.4 or > 0.3 and rapidly rising • **Use LISA** for surfactant delivery • **Consider Infant Flow CPAP (NCPAP)** if FiO_2 high (with/without high pCO2); start at 8 cmH_2O and 8 l/min
	• **Consider SiPAP (DUOPAP)** if FiO_2 acceptable, but pCO_2 > 8.5 kPa (IT 0.5 s, rate 30) • **Consider intubation and mechanical ventilation** if FiO_2 or pCO_2 high or recurrent or severe apnoeas despite measures above	
Weaning	1. **Wean Bubble NCPAP** by: • 1 cmH_2O every 6 hours if in air • 1 cmH_2O every 12 hours if $FiO_2 \leq 0.3$ • 1 cmH_2O every 24 hours if $FiO_2 \leq 0.4$ • do not wean if FiO_2 > 0.4 • alternate mask and prongs regularly 2. **Change to High Flow Therapy**: • once stable for at least 6 hours on NCPAP pressure of 5 cmH_2O • start at 8 l/min if < 4 kg 3. **Wean High Flow Therapy** by: • 1 l/min every 6 hours if in air • 1 l/min every 12 hours if $FiO_2 \leq 0.3$ • 1 l/min every 24 hours if $FiO_2 \leq 0.4$ • do not wean if > 0.4 until day 28 of life	1a. **Wean High Flow Therapy** by: • 1 l/min every 6 hours if in air • 1 l/min every 12 hours if $FiO_2 \leq 0.3$ • 1 l/min every 24 hours if $FiO_2 \leq 0.4$ • do not wean if FiO_2 > 0.4 • alternate mask and prongs regularly 1b. **If on Infant Flow NCPAP, wean** by: • 1 cmH_2O every 6 hours if in air • 1 cmH_2O every 12 hours if $FiO_2 \leq 0.3$ • 1 cmH_2O every 24 hours if $FiO_2 \leq 0.4$ • do not wean if > 0.4 • alternate mask and prongs regularly 2. **Change to High Flow Therapy**: • once stable for at least 6 hours on NCPAP pressure of 5 cmH_2O • start at 8 l/min if < 4kg 3. **Wean High Flow Therapy** by: • 1 l/min every 6 hours if in air • 1 l/min every 12 hours if $FiO_2 \leq 0.3$ • 1 l/min every 24 hours if $FiO_2 \leq 0.4$ • do not wean if > 0.4 until day 28 of life
	4. **Stop High Flow Therapy if:** • < 5 kg and on 5 l/min in air • < 4 kg and on 4 l/min in air • < 3 kg and on 3 l/min in air • 1.2 - 2 kg and on 2 l/min in air • < 1.2 kg and 1 l/min in air • consider weaning down further before stopping if FiO2 > 0.21 ≤ 0.3 • do not stop high flow therapy if FiO2 > 0.3 5. **After day 28 of life** wean by 1 cmH_2O or 1 l/min as instructed by Consultant but not faster than every 24 hours and not with a FiO_2 > 0.4. Consider Low Flow Therapy when $FiO_2 \leq 0.4$ 6. **Use Low Flow Therapy** for ongoing oxygen requirement – use oxygen chart to indicate low flow required	

Department of Neonatology, BSUH, 2019

Low Flow Nasal Cannula
Estimated Inspired Oxygen Concentration

Flow	Weight						
	1.0 kg	1.25 kg	1.5 kg	2 kg	2.5 kg	3 kg	3.5 kg
< 0.06							
0.06							
0.125							
0.15							
0.25							
0.5							
0.75							
1.0							

Oxygen Concentration	≤ 25 %	≤ 30 %	≤ 40 %	≤ 50 %	> 50 %

Checks for Prevention of NCPAP/High Flow Failure and/or Midface Injuries

- Ensure the bonnet/head gear is a snug fit covering the infant's ears and the front edge of the bonnet sitting just above the eyebrows.
- Check prongs are correct size. Select prongs that are snug – they should fill the nares without stretching the skin. They should sit at least 1 mm away from the nares and not rub. With bubble CPAP the bridge between the prongs should never press against the septum or the philtrum.
- The hat ties should not be pulled tightly, this will increase the likelihood of pressure marks along the cheeks and ears, it will also cause the nasal septum to deviate or become sore.
- Do not place gauze under the tie straps as this will affect seal of CPAP. It may be better to go up a size on prongs if you are getting inadequate seal. You can apply Duoderm H or T shaped patch to ease pressure.
- With each care, at least, the skin around the nose, nares, septum and surrounding area should be inspected for signs of redness, bleeding, crusting, excoriation and any narrowing of the passages 4 hourly.
- Ideally a 6 French oro-gastric tube should be sited to prevent abdominal distension and connected to a syringe without the plunger to allow removal of air from the stomach. Aspirate 4 – 6 hourly. Monitor the tube position regularly as due to oral secretions the oro-gastric tube is prone to slipping.
- Ensure desired CPAP pressure is being delivered through continuous assessment to ensure that there is an ongoing slow gentle bubbling and generation of pressure.
- Check equipment at regular intervals, ensure good humidity and water level at all times, particularly if secretions are thick. Excess water from tubing will need to be emptied.

Troubleshooting

- Check prongs have not become displaced.
- Check prongs are not blocked through excess secretions.
- Check seal - a chin strap should be considered to improve pressure delivery, taking care not to apply it too tightly which can occlude the airway.
- Check for rainout in the tubing - pressure delivery to the baby will be affected if incubator temperature and humidity are very low. The baby will also get flooding of water down the tube which may cause apnoea or desaturation.
- Check hose has not become disconnected and other causes for leaks
- Consider suction of nasopharynx, aspirating excess gastric air, offering a pacifier, containment, minimal handling, low dose analgesia
- Consider other causes for respiratory deterioration, e.g. pneumothorax, consolidation, effusions