Neonatal Resuscitation Guideline

Document Type:	Guideline
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Approved By:	Neonatal Forum/CYP QSPE
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Target Audience:

People who need to know about this document in detail	All Staff providing care to Neonates Within Cwm Taf Morgannwg University Health Board (CTMUHB).
People who need to have a broad understanding of this document	Medical Director Clinical Directors For Neonatal ILG Directors Clinical Service Managers Heads of Nursing/Matrons/Sisters All staff via intranet and team briefings RADAR Committee ILG RADAR Forum(s). Clinical Policies Working Group
People who need to know that this document exists	Neonatal Staff Midwifery Staff Resuscitation department

Integrated Impact Assessment:

Equality Impact Assessment Date & Outcome	Date: Outcome: Not required as stipulated in the 'Policy for the Development, Review and Approval of Organisational Wide Policies' (CTMUHB 2021)
Welsh Language Standard	Choose an item.
Date of approval by Equality Team:	(00/00/0000)
Aligns to the following Wellbeing of Future Generation Act Objective	Choose an item.
Documents to read alongside this Policy	Criteria for Attendance at Delivery by Neonatal Staff (SharePoint Neonatal Policies)

Disclaimer:
If the review date of this document has passed please ensure that the version you are using is the most up to date version either by contacting the author or CTM_Corporate_Governance@wales.nhs.uk

1. Minor Amendments

If a minor change is required to the document, which does not require a full review please identify the change below and update the version number.

Type of change	Why change made	Page number	Date of change	Version 1 to 1.1	Name of responsible person
Details: ? Neonatologist	Dr. Amit Kandhari is no longer with CTM	Front page	08 July 2025	V2 to V3	B Elipane
Details: ? Lead Nurse, Lead Nurse, Neonatal Improvement Programme	Leanne Richards is no longer in the post.	Front page	08 July 2025	V2 to V3	B Elipane
Delayed cord clamping. Add statement "A longer period may be more beneficial".	As per NLS guidelines.	8	08 July 2025	V2 to V3	B Elipane
No. 4 statement, add: "Acceptable pre-ductal SpO^2 : 2min=65%, 5min=85% and 10min= 90%."	As per NLS guidelines	9	08 July 2025	V2 to V3	B Elipane
No 9 statement, add: Use Neonatal Resuscitation Record Form (Resuscitation Proform) accordingly.	Ensure the use Neonatal Resuscitation Record Form as early as possible.	10	08 July 2025	V2 to V3	B Elipane
Add information: **At all times ask, "Is Help Needed".**	As per NLS algorithm	12	08 July 2025	V2 to V3	B Elipane
Add information: • Dry, wrap in warm towel "and put hat on the head".	As part of Thermal Control	12-13	08 July 2025	V2 to V3	B Elipane
Add information: Preterm babies less than 32 weeks gestation should be managed in the same way as term babies with these considerations: Consider	As per NLS Guidelines	13	08 July 2025	V2 to V3	B Elipane

alternative/additional methods for thermal care e.g. polyethylene wrap (plastic bag). Apply a saturation probe +/- ECG. Gently support, initially with CPAP, if breathing.					
Add information: If chest compressions are required, then inspired oxygen concentration should be increased to 100% and consideration given to securing the airway (if not already done).	As per NLS Guidelines	16	08 July 2025	V2 to V3	B Elipane
Remove information: ~~**Increase Fi02 to 100% when giving chest compressions.**~~	Better flow of the statement	17	08 July 2025	V2 to V3	B Elipane
Add Information: **Ensure that adequate ventilation and cardiac compressions are continued throughout these procedures and that thermal care is optimised**	Emphasise importance of continuing effective airway management and optimising normothermia	18	08 July 2025	V2 to V3	B Elipane

CONTENTS

2. Introduction

These guidelines have been developed for Cwm Taf Morgannwg University Health Board, incorporating previous guidance from Cwm Taf University Health Board and Swansea Bay University Health Board, and guidance from the Resuscitation Council. These guidelines replace any previous health board versions.

All healthcare professionals who are involved with the birth of babies or in the management of illness in neonates should be skilled in newborn resuscitation. This would include all midwives, obstetric doctors and staff on the neonatal unit.
Most infants adapt well to extra-uterine life but some require help with stabilisation, or resuscitation. Up to 85% breathe spontaneously without intervention; a further 10% respond after drying, stimulation and airway opening manoeuvres; approximately 5% receive positive pressure ventilation. Intubation rates vary between 0.4 and 2%. Less than 0.3% of infants receive chest compressions and only 0.05% receive adrenaline.

3. Risk Factors

A number of risk factors have been identified as increasing the likelihood of requiring help with stabilisation, or resuscitation.

Antepartum factors
Fetal Intrauterine growth restriction < 37 weeks gestation Multiple pregnancy Serious congenital abnormality Oligo or polyhydramnios
Maternal Infection Gestational diabetes Pregnancy-induced hypertension Pre-eclampsia High BMI Short stature Preterm lack of antenatal steroids

Intrapartum factors
Evidence of fetal compromise (non-reassuring CTG, etc.) Meconium stained amniotic fluid Delivering vaginally by breech Forceps or vacuum delivery Significant bleeding Caesarean-section before 39 weeks Emergency Caesarean-section General anaesthesia

4. Staff present during birth

In a high-risk situation ensure there are at least two doctors present (SHO and Registrar or Consultant) and 1 QIS neonatal nurse. Ideally, if possible, a consultant should be present at births under 32 weeks gestation. Please see CTM Criteria for Attendance at Delivery by Neonatal Staff Policy 2021.

All healthcare professionals who are involved with the birth of babies or in the management of illness in neonates should be skilled in newborn resuscitation. This would include all midwives, obstetric doctors and staff on the neonatal unit.
All staff should attend a yearly update on newborn resuscitation. It is our aim that all appropriate midwifery and neonatal staff should also complete the Newborn Life Support (NLS) Course every 4 years.

5. Equipment and environment

All equipment must be regularly checked and ready for use. Where possible, the environment and equipment should be prepared in advance of the delivery of the infant. Resuscitation should take place in a warm, well-illuminated, draught-free area with a flat resuscitation surface and a radiant heater. Equipment to monitor the condition of the infant and to support ventilation should be immediately available. Additional equipment that might be required in case of more prolonged resuscitation should be easily accessible.

6. Delayed cord clamping

The options for managing cord clamping and the rationale should be discussed with parents before birth. Where immediate resuscitation or stabilisation is not required, aim to delay clamping the cord for at least 60 seconds. A longer period may be more beneficial. Clamping should ideally take place after the lungs are aerated. During this period a Paediatrician should ensure to listen to baby's heart rate (where possible) and continually assess the baby. Where delayed cord clamping is not possible consider cord milking in infants more than 28 weeks gestation.

7. Preparation for babies where there are maternal or fetal risk factors

1. Introduce yourself to the parents. Check the maternal notes and take the relevant history. Explain what is likely to happen that the baby will require resuscitation and will be admitted to the neonatal unit. In preterm deliveries check whether antenatal steroids were given. If magnesium sulphate is indicated, it can be given

as a bolus. Please refer to the extreme preterm pathway if indicated. (On SharePoint under Neonatal Network perinatal guidelines).

2. Check that the radiant heater is on maximum power. Ensure that the towels and blankets are warmed. For premature babies < 32 weeks gestation, ensure you have a plastic bag available. Ensure baby is not covered by towels if in a bag so radiant heat can reach the bag.
Ensure a proper size hat along with a range of sizes on either side is available. Delivery room temperature should be kept at 23 – 25°C. For infants less than 28 weeks gestation, delivery room temperature should be > 25°C. You need 15-20 minutes to achieve this. So act early and liaise with theatre sister. Aim to maintain temperature of the baby following birth between 36.5 and 37.5° C.

3. Check that the oxygen supply, connections, pressure control valves, T-piece and the face masks are to hand and working satisfactorily. Preset the pressures to 25/5 in a preterm infant less than 32 weeks and 30/5 for more than 32 weeks in a term infant. Step up / down pressure and FiO2 according to response to resuscitation (Heart rate, chest expansion) and oxygen saturation. Start at 30% FiO2 for infants below 28 weeks gestation, air to 30% for 28 to 32 week gestation and in air for infants more than 32 week gestation.

4. Check that an oxygen saturation monitor is available with appropriate probe and fixation materials. Acceptable pre-ductal $SpO^{2:}$ 2min= 65%, 5min=85% and 10min= 90%.

5. In the case of preterm birth, check that transfer and ventilation facilities en route to NNU after stabilisation are in order. Check that the incubator transporting the baby to the neonatal unit is ready in the room, warmed to 37°C for extreme preterm and 35°C for all other babies, and that the oxygen supply is working. Check that the ventilator on the transport incubator is working and a new CPAP circuit is available. For premature babies less than 29 weeks make sure the surfactant is out of the fridge and warming to room temperature.

6. Check the suction equipment and set the vacuum control to 10 cms of water pressure.

7. Check the laryngoscope is working, that the light is bright and the bulb (if present) is tightened. For a large baby use a large blade (size 1) and for a preterm baby make sure that there is a small blade (size 0 for preterm and 00 for extreme preterm babies) available.

8. Check the availability and sizes of the endotracheal tube and that the ETT fixation system is available. Please use only Elastoplast (brown tape) for ET tube fixation and measure appropriate size Neobar using size guide tape measure. Most average

sized term babies need a size 3.5 tube to ensure effective ventilation. Use a size 3 tube for any baby > 1 kg, and a 2.5 tube for smaller babies. Please use either NeoMate app or local ET tube size guide for right size and length of fixation of ET tube.

9. If the clinical situation indicates for e.g. severe prolonged fetal bradycardia, hydrops etc.), draw up emergency drugs e.g. Adrenaline, concentration 1:10,000 (dose mentioned below) and prepare for umbilical venous access. Consider informing consultant early. Use Neonatal Resuscitation Record Form (Resuscitation Proform) accordingly.

10. Check that a stethoscope is present and working. Lay out a measuring tape at the head end of the resuscitaire in order to be able to measure the head circumference straight away if condition permits.

11. Close the door to eliminate draughts and try and keep the room as warm as possible.

8. Preparation for birth of a healthy baby where the midwife is the lead professional

- Prepare an area for newborn resuscitation with all necessary equipment checked and to hand.
- Check bag/valve/mask is in good working order with appropriate size mask
- Pre warm towels.
- If any problems with resuscitation are anticipated during labour and birth consider calling a 999 ambulance and inform the receiving hospital or inform labour ward co-ordinator if the birth is in a midwifery led unit.
- If available and necessary, check the resuscitaire and all equipment is in good working order.
- If appropriate take resuscitaire into the birthing room.
- If baby needs to be transferred to hospital prepare transfer blanket

9. What to do at birth

Initial assessment => note the time and start the clock
A rapid initial assessment should usually occur before the umbilical cord is clamped and cut:
Observe tone (and colour).
Assess adequacy of breathing.
Count the heart rate (using stethoscope)

Take appropriate action to keep the baby warm during these initial steps. This rapid assessment serves to establish a baseline, identify the need for support and/or resuscitation and the appropriateness and duration of delaying umbilical cord clamping. Frequent re-assessment of heart rate and breathing will guide whether further interventions are needed.

Tactile Stimulation
Initial handling is an opportunity to stimulate the infant during assessment by drying the infant, gently stimulating the infant as you dry them (e.g. rub the soles of the feet or back). Avoid more aggressive methods of stimulation.

Tone and Colour
A very floppy infant is likely to need respiratory support. Colour is a poor means of judging oxygenation as cyanosis can be difficult to recognise. Pallor might indicate shock or rarely hypovolaemia – consider blood loss.

Breathing
Is the infant breathing? - Note the rate, depth and symmetry, work/effort of breathing as:

- adequate
- inadequate/abnormal pattern - such as gasping or grunting
- absent

Heart rate
Determine the heart rate with a stethoscope and a saturation monitor for later continuous assessment.

- Fast (≥ 100/min) – satisfactory
- Slow (60-100/ min) – intermediate, possible hypoxia
- Very slow/absent (< 60/min) – critical, hypoxia likely

If the infant fails to establish spontaneous and effective breathing following assessment and stimulation, and/or the heart rate does not increase, or decreases if initially fast, respiratory support should be started.

Recommended actions according to initial assessment

At all times ask "Is Help Needed"

Transition	Assessment	Actions
Satisfactory transition: • Good tone • Vigorous breathing or crying • Heart rate - fast (> 100/min)	• Breathing does not require support • Heart rate is acceptable	• Delay cord clamping for at least 60 seconds • Dry, wrap in warm towel and put hat on the head. • Keep with mother or carer and ensure maintenance of temperature. • Consider early skin-to-skin care if stable.
Incomplete transition: • Reduced tone • Breathing inadequately (or apnoeic) • Heart rate - slow (<100/min)	• Breathing requires support • Slow heart rate may indicate hypoxia	• Delay cord clamping only if you are able to appropriately support the infant; consider cord milking if > 28 weeks. • Dry, stimulate, wrap in a warm towel and put hat on the head. • Maintain the airway, - lung inflation and ventilation. • Assess changes in heart rate and breathing. • Apply a saturation probe. • If no improvement in heart rate, continue with ventilation. • Help may be required => call Paediatric team urgently if not present
Poor / failed transition: • Floppy +/- Pale	• Breathing requires support	• Clamp cord immediately and transfer to the resuscitation platform.

• Breathing inadequately or apnoeic • Heart rate - very slow (<60/ min) or undetectable	• Heart rate suggestive of significant hypoxia	• Delay cord clamping only if you are able to appropriately support/resuscitate the infant. • Dry, stimulate, wrap in warm towel and put hat on the head. • Maintain the airway – lung inflation and ventilation. • Assess changes in heart rate and breathing. • Apply a saturation probe • Continue newborn life support according to response. • Help is likely to be required => crash call Paediatric team if not present. Consider calling consultant early especially out of hours

Preterm babies less than 32 weeks gestation should be managed in the same way as term babies with these considerations: Consider alternative/additional methods for thermal care e.g. polyethylene wrap (plastic bag). Apply a saturation probe +/- ECG. Gently support, initially with CPAP, if breathing.

10. Ongoing Newborn Life Support

Following initial assessment continue respiratory support if infant hasn't established adequate, regular breathing or if the heart rate is less than 100/minute.

Airway
Place the infant on their back with the head supported in a neutral position. In floppy infants, pulling the jaw forwards (jaw lift) can help open and/or maintain the airway and reduce mask leak. When using a face mask, two person methods of airway support are superior. A **laryngeal mask** is an alternative means of establishing and securing an airway in infants of ≥ 34 weeks gestation (~2000g). An oropharyngeal

airway is an alternative means of establishing and securing an airway, although it can increase airway obstruction in infants < 34 weeks. A nasopharyngeal airway may be considered where there is difficulty maintaining an airway and mask support fails to achieve adequate aeration.

Airway obstruction

Airway obstruction can be due to inappropriate positioning, decreased airway tone and/or laryngeal adduction, especially in preterm infants at birth.

Suction is only required if airway obstruction, due to mucus, vernix, meconium, blood clots, etc., is confirmed through inspection of the pharynx after failure to achieve aeration. Any suctioning should be undertaken under direct vision, ideally using a laryngoscope and a wide bore catheter. LMA could be used if appropriate.

Meconium

Non-vigorous newborn infants delivered through meconium-stained amniotic fluid are at significant risk for requiring advanced resuscitation and a neonatal team competent in advanced resuscitation is required. If chest rise is not seen after 5 inflation breaths, repositioning and delivering a further 5 inflation breaths, inspect the airway under direct vision. Routine suctioning of the airway of non-vigorous infants is likely to delay initiating ventilation and is not recommended. Rarely, an infant may require tracheal intubation and tracheal suctioning to relieve airway obstruction.

Initial inflation breaths and assisted ventilation

If infant is apnoeic, gasping or not breathing effectively, aim to start positive pressure ventilation as soon as possible – ideally within 60 seconds. Apply an appropriately fitting face mask connected to a means of providing positive pressure ventilation, ensure a good mask seal by using an align, roll, check approach. Give five inflation breaths maintaining the inflation pressure for up to 2-3 seconds. For term infants use 30 cm H_2O and for preterm babies (less than 32 weeks) use 25 cm H_2O pressure. Initial FiO_2 set up at 21% for infants more than 32 week gestation, 21-30% for 28-32 week gestation and 30% for infants less than 28 week gestation. Reassess after the inflation breaths by auscultating the heart rate with a stethoscope. A pulse oximeter can give a continuous heart rate and oximetry reading in the delivery room. With practice it is possible to attach a pulse oximeter probe to infant's right hand and to obtain a useful reading of heart rate and oxygen saturation about 90 s after delivery. If the heart rate has improved (> 100/min), you can assume that you have inflated the lung and therefore proceed to ventilation breaths. If the heart rate does not respond to inflation breaths the only way to check that the lungs have been inflated successfully is to see chest rise in response to your inflation breaths. Failure to move chest may indicate obstruction of the airway or insufficient inflation pressure to aerate the lungs.

If birth is where the midwife is the lead professional, these initial inflation breaths can be performed with the baby positioned between the mother's legs using bag/valve/mask. If further resuscitation is required and there is a resuscitaire available, it should be brought into the birthing room.

If the baby requires more resuscitation than 5 inflation breaths, transfer arrangements should be considered, if not already initiated. All resuscitation measures should be continued during transfer to the appropriate neonatal unit.

If there is no increase in the heart rate, check for chest movement.

If you do not see a heart rate response and there is no chest movement with the inflation breaths assess the need for the following in a systematic manner–

- Reposition – ensure neutral position of baby's head. It is very easy to over extend the neck during resuscitation!!
- Ensure you have gas flow to the resuscitaire (at least 6 litres / min).
- Re-evaluate the size of the mask and ensure appropriate seal.
- Apply single or double jaw thrust. If you have help it may be easier to use the two-person jaw thrust technique.
- Ensure you have appropriate inflation pressure (30 cm of H2O for term and 25 cm of H2O for preterm infants) and you are delivering long inspiratory times of 2-3 seconds.
- Inspect the pharynx and suction under direct vision to remove obstructing foreign matter if present.
- Assess the need for intubation/LMA (for infants > 34 weeks gestation or > 2 Kg) or oropharyngeal (Guedel) airway if unable to secure the airway with other means.
- Assess the need for higher pressures? Do you need to use a self-inflating bag valve mask device in there are issues with resuscitaire?
- At all times evaluate the need for further help.
- Connect the saturation monitor to the baby (if not done already)

If there is a good response to these manoeuvres with an increase in the heart rate, then proceed to ventilation breaths. A rate of 30 ventilation breaths per minute is sufficient. **You may need to reduce your inflation pressures appropriately.** Watch for the baby's heart rate, chest movement, breathing effort, oxygen saturations. Assess colour if saturation recording not available and keep on assessing the situation every 30 seconds.

If inadequate response to heart rate or saturations despite good chest movement increase oxygen concentration in a step wise fashion (where a blender is available) using the guide on NLS algorithm (see laminated chart on resuscitaire). If no blender is available, switch to 100% oxygen.

Discontinue ventilation when baby has adequate respiratory effort and able to maintain oxygen saturation (colour) and heart rate. Evaluate clinical background, degree of resuscitation and response, work of breathing, colour and tone to ascertain the need to admit to neonatal unit and **also request for cord gas results.**

If insertion of a laryngeal mask or tracheal intubation is considered, it must be undertaken by personnel competent in the procedure with appropriate equipment and always confirm the ET tube placement with capnograph. During intubation ensure that a good view of the larynx is obtained. The most common problem is overextension of the neck and deviation from midline. This should be avoided as this gives a distorted view of the upper airway. The baby should be intubated effectively within 30 seconds. If this is not successful, you should go back to mask ventilation until the baby is pink. Do not allow the baby to become hypoxic during an attempt to intubate. In a baby who is preterm and intubated give surfactant as soon as intubation is achieved successfully and tube secured. Otherwise continue with mask ventilation and call for help.

ALWAYS REMEMBER: WITHOUT ADEQUATE LUNG AERATION, CHEST COMPRESSIONS WILL BE INEFFECTIVE; THEREFORE, WHERE THE HEART RATE REMAINS VERY SLOW, CONFIRM EFFECTIVE VENTILATION THROUGH OBSERVED CHEST MOVEMENT BEFORE PROGRESSING TO CHEST COMPRESSIONS.

Chest compressions

If the heart rate remains very slow (less than 60/minute) despite good chest movement on 5 inflation breaths followed by 30 seconds of ventilation breaths, (It is necessary to be absolutely sure about this), proceed to chest compressions. If the HR is rising, another 30 seconds of ventilation breaths can be continued before starting chest compressions.

If chest compressions are required, then inspired oxygen concentration should be increased to 100% and consideration given to securing the airway (if not already done).

Chest compressions necessitate the involvement of a second pair of hands. The chest should be encircled in both hands with the thumbs placed on the lower third of the sternum and the fingers over the spine. The landmark to place your thumbs is just below the imaginary line joining the nipples. The depth of cardiac compression should be about 1/3 of the "depth of the chest". Chest compressions should be done at about 90/minute along with ventilation breaths of 30/minute at a ratio of 3:1. Allow sufficient relaxation time as the coronary arteries are perfused in diastole. The person doing cardiac massage should give their sole attention to this task. This is the preferred method in all cases.

Reassess every 30 seconds and listen to the heart rate (usually after 15 cycles of 3:1). Try to minimise interruptions to ventilation and compressions. The same person should ideally assess the heart rate throughout the resuscitation. If heart rate remains very slow or absent, continue chest compressions and ensure that airway remains secured. Do not stop cardiac massage until the heart rate is consistently > 60/min and rising. Consider vascular access and drugs

Vascular access
During the resuscitation of a compromised infant at birth peripheral venous access is likely to be difficult and suboptimal for vasopressor administration.

Umbilical Venous Access
The umbilical vein offers rapid vascular access in newborn infants and is the primary method of access during resuscitation. Obtain central venous promptly by catheterising the umbilical vein. Prime the umbilical vein catheter (UVC) with saline prior to insertion to prevent an air embolus. Remember this is an emergency CLEAN procedure but not a sterile procedure – so don't waste time gowning up!! Confirm position in a blood vessel through aspiration of blood prior to administrating drugs/fluids and should be sent for a gas and blood sugar measurement. Very rarely where umbilical venous access cannot be obtained or fails, intraosseous route is an alternative for drug administration in neonatal resuscitation.
The umbilical route may still be achievable some days after birth and should be considered in cases of postnatal collapse.

Intraosseous Access (https://youtu.be/iQCP38AsHew)
Intraosseous (IO) access can be an alternative method of emergency access for drugs/fluids. Please click on the above link to watch a training video.
Drugs
If the heart rate fails to improve after 30 seconds of good quality cardiac compression, drugs should be considered. If birth has occurred outside an obstetric unit, the baby will need to be transferred first. **After each drug flush the line with 1-2 mls of 0.9% saline**

Adrenaline:

- Intravenous is the preferred route, intraosseous is an alternative:
  - 20 micrograms/kg (0.2 mL/kg of 1:10,000 adrenaline [1000 micrograms in 10 mL]).
- Intra-tracheal route if intubated and no other access available.
  - 100 micrograms/kg (1.0 mL/kg of 1:10,000 adrenaline [1000 micrograms in 10 mL])
- If tracheal adrenaline is given IV or IO access should still be sought.
- Subsequent doses every 3-5 minutes if heart rate remains < 60 min-1.

Glucose:

- In a prolonged resuscitation to reduce likelihood of hypoglycaemia.
- Intravenous or intraosseous:
  - 250 mg/kg bolus (2.5 mL/kg of 10% glucose solution).
- Avoid giving IV dextrose routinely as hyperglycaemia is known to be associated with poor outcome during a hypoxic ischemic insult

Volume replacement:

- With suspected blood loss or shock unresponsive to other resuscitative measures.
- Intravenous or intraosseous:
  - 10 mL/kg of group O Rh-negative blood or normal saline.

Sodium bicarbonate:

- May be considered in a prolonged unresponsive resuscitation to reverse intracardiac acidosis.
- Intravenous or intraosseous:
  - 1–2 mmol/kg sodium bicarbonate (2–4 mL kg-1 of 4.2% solution) by slow intravenous injection

Ensure that adequate ventilation and cardiac compressions are continued throughout these procedures and that thermal care is optimised

Thermal Care

- Aim to keep the temperature between 36.5 °C and 37.5 °C.
- Rewarm if the temperature falls below this level and there are no indications to consider therapeutic hypothermia

Documentation

- Assign a staff member as a scribe wherever possible and fill in resuscitation form
- Ensure clinical records allow:
  - accurate retrospective evaluation of the clinical state of the infant at birth
  - documentation of interventions and response during the resuscitation

11. What to do if resuscitation is not effective?

If resuscitation is not effective the following possibilities should be considered:-

- Check equipment, gas supply, adequacy of oxygen
- ET tube is not in the trachea? =>Check with capnograph (CO_2 detector) – consider visualizing the larynx to confirm if this is the case. Also consider that the tube might be in the right main bronchus. In this situation the air entry on the right is better than on the left. Withdraw the tube to an appropriate length to correct the problem.
- Consider that the baby may have a pneumothorax – air entry will be unequal and the apex beat may be displaced.
- Consider that there may be hypoplastic lungs, particularly if there is a history of prolonged rupture of membranes or oligohydramnios or fetal abnormality such as absent kidneys.
- Consider that there may be another diagnosis such as a diaphragmatic hernia – in this situation the apex beat is usually displaced to the right and the abdomen is scaphoid.

Discontinuing resuscitation

- When the heart rate has been undetectable for >10 minutes after delivery, review:
  - clinical factors (e.g. gestation, dysmorphic features)
  - effectiveness of resuscitation
  - clinical team views about continuing resuscitation.
- Stopping resuscitation should be discussed and occur if there has been no response after 20 minutes and **reversible problems (tension pneumothorax, hypovolaemia, equipment failure) have been excluded.**

Partial or incomplete heart rate improvement with resuscitative efforts makes treatment decisions more complex. It may be appropriate to take the infant to the intensive care unit and consider withdrawing life sustaining treatment if they do not improve. You may consider discussing with the tertiary neonatal consultant if in doubt. **The decision to stop resuscitation should be discussed with the parents carefully by experienced clinicians**

12. Births outside an obstetric unit

All resuscitation measures should be continued during transfer to the appropriate neonatal unit. Any decision to discontinue resuscitation should be made in the receiving hospital by the neonatal doctor and/or after discussion with the neonatal consultant.

When not to start resuscitation?

- Decisions about withholding life sustaining treatment should usually be made after discussion with parents in the light of regional or national evidence on outcomes (**Please follow All Wales Extreme Preterm Pathway**)
- If the baby is obviously macerated or known to have died in-utero.
- If there are known to be lethal congenital abnormalities and this course of action has to be agreed previously between the Obstetrician and the parents (Although beware!–sometimes antenatal diagnosis may be inaccurate!)
- Resuscitation should usually be commenced in situations where there is uncertainty about outcome and there has been no chance to have prior discussions with parents.
- In conditions where there is low survival (< 50%), high morbidity and the anticipated burden of medical treatment for the child is high, parental wishes regarding resuscitation should be sought and usually supported.

Following resuscitation:

- Maintain temperature (36.5-37.50 C) and airway support as required. Consider the need for therapeutic hypothermia.
- Ensure early intravenous access if indicated and maintain normal blood sugar levels.
- The case notes must be completed thoroughly by all staff involved.
- It is also helpful to record the time at which the heart rate was first noted to be >100/ min, the time of the baby's first gasp and time to establish regular spontaneous breathing. This gives useful information for prognosis.
- A paired cord arterial and venous blood sample should be obtained to determine the level of acidosis present at birth.
- An early blood gas on the baby will also help to determine the effectiveness of resuscitation. A blood glucose and lactate measurement should be documented with the blood gases.
- All other relevant documentation should be completed e.g. transfer/incident forms

13. Communication with parents

Parents should be kept informed of the resuscitation or stabilisation care provided to their infant. **If possible, identify a member of healthcare staff to support them and to keep them informed during resuscitation as witnessing the resuscitation of their infant may be extremely distressing for parents.**

14. References

Adapted from Neonatal Life Support Guidelines May 2021 Available at: https://www.resus.org.uk/library/2021-resuscitation-guidelines/newborn-resuscitation-and-support-transition-infants-birth Accessed on 08 July 2025.
Swansea Bay Neonatal Guideline
Criteria for Attendance at Delivery by Neonatal Staff (SharePoint Neonatal Policies)

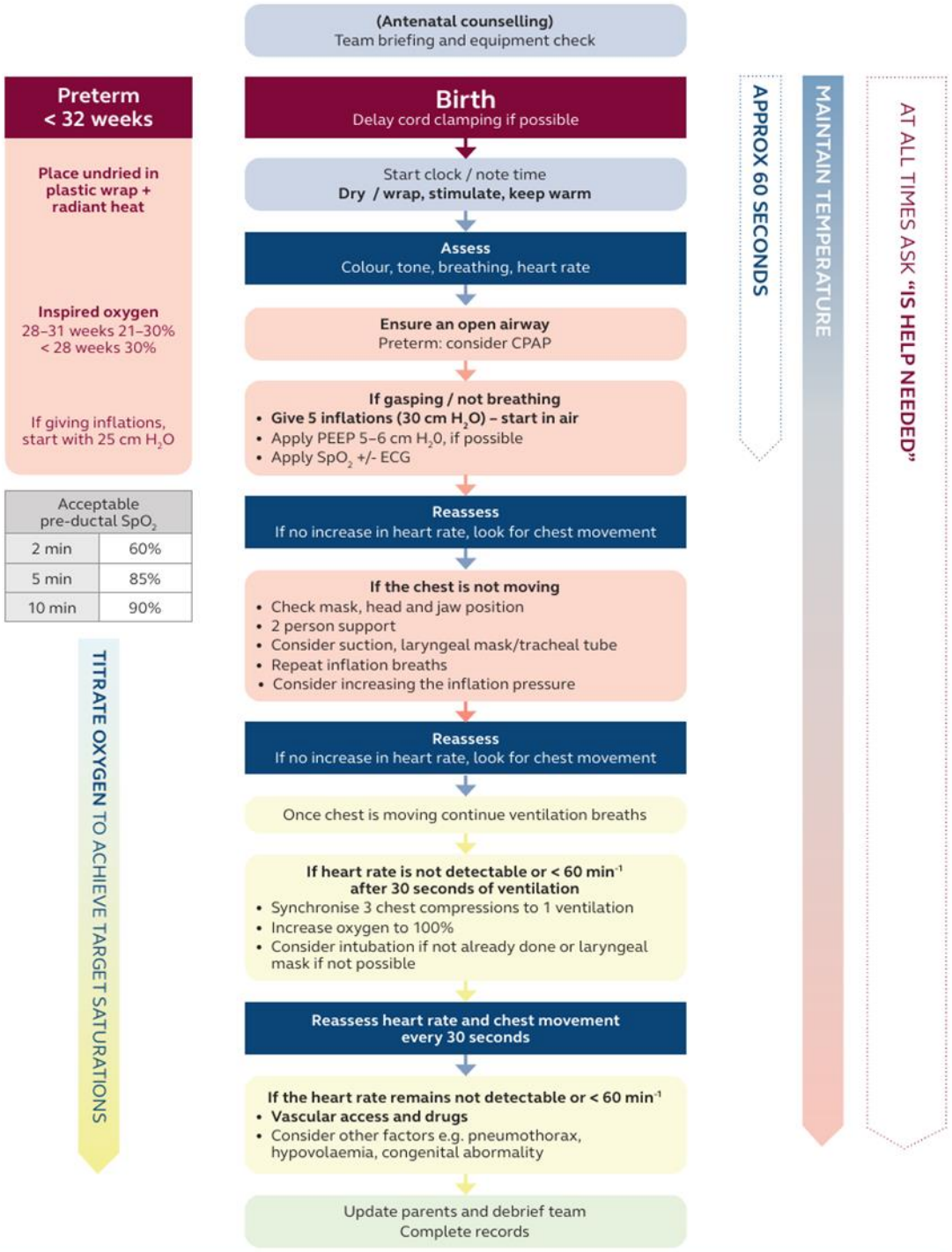
Please see documents below

15. Appendix 1
Resuscitation Concil Guidelines

Resuscitation Council UK

GUIDELINES 2021

Newborn life support



16. Appendix 2
Resuscitation Proforma

Patient Details (Attach addressograph when available) Name: DOB: Hosp Num: _____ Gestation :_____/40 ***≥ 32 weeks** = 21% O_2* ***28 - 31 weeks** = 21% - 30% O_2* ***<28 weeks** = 30% O_2* Weight est:_____kg	**Date of Arrival**:____/____/____ Crash Bleep / Phone Call / Alarm **Condition at Time of Arrival** Not Born ☐ Born ☐ DOB: ____/____/____ Time OB :_____:_____ Delay cord clamping: YES / NO Dry and Wrap ☐ Time:___:___ Plastic Bag : YES / NO *<32 weeks*	**Time of Arrival**:___:___	**Location**: **1st Assessment after Birth/Labour Ward** **Colour**: Pink / Blue / Pale **Tone:** Normal / ↓ / None **Resp**: Regular / Gasping / None **HR:** >100 / 60 – 100 / <60 / 0 FiO_2:_____ SaO_2:_____ **Do you need senior help? YES / NO**

1. Airway → 2. Breathing:	**3. Circulation:** →	**4. Drugs:**	**Times:**	***Required:***
Neutral ☐ 2 Person ☐ LMA ☐ Other:_____ >34 weeks **5 Inflation Breaths**: *If < 32 weeks - start **25cm H_2O*** *≥ 32 weeks – start **30cm H_2O*** _____sets / Time___:___ **Apply PEEP**: 5-6cm H_2O if possible - Applied ☐ **Chest Rise**: YES / NO **HR:**_____ Increased**?:** YES/NO **Ventilation Breaths**: _____sets / Time___:___ **Intubation Attempts**: ___Attempts/Time___:__ ___Attempts/Time___:__ **Intubation Successful:** Time:___:___ Size ET:____ Length:____ $C0_2$ detector used:_____ First gasp Time:____:____ Surfactant: YES / NO (Early administration of surfactant for Preterms)	HR post ventilation breath_____ Proceed to chest compressions only when effective ventilation is established (chest movements observed) **Chest Compression** (3:1 ratio) Start Time:____:____ Increased O2 to 100% ☐ Stop Time:___:____ **Vascular Access:** UVC Successful: Time:____:____ _____cm Blood Aspirated:_____ Sample Kept: ☐ For Glucose:_____ Gas:_____ Cord Gas: pH_____, $PC0_2$_____, BE_____, **Suction Required: Yes / No**	**Adrenaline** ETT/UVC		*1/10,000* *0.2 mls/kg – IV* *1.0mls/kg - ET*
		Sodium Bicarb UVC		*4.2%* *2 – 4mls/kg*
		Dextrose UVC		*10%* *2.5mls/kg*
		(vol) NaCL UVC		*0.9%* *10mls/kg*
		(vol) Blood UVC		*O Rh-neg Blood* *10ml/kg*

Patient Destination:
LW / PNW / BC / NNU / Other

Transporting to NNU
Transport Incubator / Resuscitaire
(monitor and document saturations during transfer)

Temperature Prior to moving: _____°C

Consultant Called: YES / NO **Time**__:__
Consultant Present: YES / NO **Time**__:__

Parents spoken with: **Time___:___**
Spoken with by**:**_____

Time on Resuscitaire (saturation targets)	**HR**	**$Sa0_2$**	**$Fi0_2$ –** Mode of delivery	**Action Taken/Comments**
0. Mins				
1. Mins				
2. Mins – **65%**				
Time on Resuscitaire	**HR**	**$Sa0_2$**	**$Fi0_2$**	**Action Taken/Comments**
3. Mins				
4. Mins				
5. Mins – **85%** (<32 weeks – 80%)				
6. Mins				
7. Mins				
8. Mins				
9. Mins				
10. Mins – **90%**				
11. Mins				
12. Mins				
13. mins				
14. mins				
15. mins				
16. mins				
17. mins				
18. mins				
19. mins				
20. mins				

25. mins				
30. mins				
Members of Neonatal Team Present:-				

17. Audit and training

- The Neonatal Units will audit resuscitation management practices monthly in the Perinatal Mortality Review Tool (PMRT)
- www.npeu.ox.ac.uk/pmrt

- On-going monitoring and auditing of this guideline will be the responsibility of the medical and nursing lead for audit.

- The audit will:

  - Be presented in the multi-disciplinary audit meetings.
  - Highlight where non-conformance to the standards is occurring. Any training/retraining, whether individual or team, will be identified and addressed appropriately.

- All staff are required to familiarise themselves with this guideline and ensure they are fully aware of their responsibilities.