

[HOSPITAL / HEALTH AUTHORITY NAME]

NEONATAL EMERGENCY ASSESSMENT AND STABILIZATION PATHWAY

Protocol 41: Newborn Resuscitation, Sepsis, Jaundice, Hypoglycaemia, Feeding Failure, Respiratory Distress, Congenital and Surgical Emergencies, Transfer, and Safe Disposition

DRAFT FOR EMERGENCY MEDICINE, NEONATOLOGY / PAEDIATRICS, MATERNITY, NURSING, MIDWIFERY, ANAESTHESIA / CRITICAL CARE, PHARMACY, LABORATORY, RADIOLOGY, SURGERY, EMS, NEONATAL TRANSPORT, SAFEGUARDING, AND CLINICAL GOVERNANCE

STATUS: This is a draft clinical-governance document. It must be adapted to local neonatal service capability, current newborn-life-support algorithms, gestational-age pathways, antibiotic and antiviral regimens, bilirubin treatment charts, glucose policy, medication concentrations, transport resources, referral geography, and national law before implementation.

NEONATAL SAFETY RULE: A newborn may deteriorate rapidly and may have serious infection, respiratory failure, duct-dependent congenital heart disease, hypoglycaemia, bowel obstruction, or neurological injury without fever or an initially dramatic examination. Poor feeding, abnormal temperature, apnoea, colour change, altered tone or responsiveness, jaundice in the first 24 hours, bilious vomiting, reduced urine or stool, caregiver concern, or repeat presentation requires urgent senior assessment and documented reassessment.

| Document control | Details |
|-------------------|---|
| Document owner | Emergency Department / Medical Services Directorate / Nursing Services / Maternity and Neonatal Services / Clinical Governance |
| Clinical leads | Emergency Medicine; Neonatology / Paediatrics; Maternity; Anaesthesia / Critical Care; Nursing / Midwifery; Pharmacy; Laboratory; Radiology; Surgery; Safeguarding; EMS / Neonatal Transport |
| Applies to | Babies from birth through 28 completed days, including babies born unexpectedly in the ED or community and recently discharged preterm or medically complex babies requiring neonatal assessment. |
| Interfaces | Protocol 1 Patient Journey; Protocol 2 Triage; Protocol 3 Resuscitation / Sepsis / Shock; Protocol 17 Altered Mental Status; Protocol 19 Seizures; Protocol 26 Vomiting / Diarrhoea / Dehydration; Protocol 27 Glycaemic Emergencies; Protocol 30 Anaphylaxis; Protocol 38 Obstetric Emergencies; Protocol 40 Seriously Ill Child; Protocol 43 Safeguarding; Protocol 48 Airway; Protocol 49 Major Haemorrhage; Protocol 52 End-of-Life Care. |
| Version / status | Draft 1.0 for local multidisciplinary validation |
| Review cycle | After any neonatal death, unplanned resuscitation, delayed recognition, severe hypothermia, medication or glucose event, jaundice-related escalation, failed or delayed transfer, safeguarding incident, major guideline update, or at least every 2 years. |
| Required approval | Emergency Department; Neonatal / Paediatric Service; Maternity; Nursing / Midwifery; Anaesthesia / ICU; Pharmacy; Laboratory; Radiology; Surgery; Safeguarding; EMS / Transport; Clinical Governance. |

1. Purpose

To provide a standardized emergency-department pathway for rapid recognition, age- and gestation-appropriate assessment, immediate stabilization, specialist escalation and safe transfer or disposition of newborn babies. The protocol integrates newborn resuscitation, thermal protection, serial physiological assessment, glucose and feeding evaluation, infection management, jaundice, respiratory and circulatory emergencies, congenital and surgical disease, safeguarding, family partnership and neonatal transport.

The aims are to reduce avoidable harm from delayed ventilation, missed sepsis, cold stress, hypoglycaemia, unsafe fluid or medication dosing, delayed recognition of duct-dependent heart disease or bowel obstruction, reliance on visual jaundice assessment alone, inadequate feeding review, fragmented transfer responsibility and unsafe discharge.

2. Scope

This protocol begins at pre-alert, birth or first ED contact and continues through resuscitation, post-resuscitation care, neonatal-unit admission, paediatric admission, surgery, critical-care or interfacility transfer, safeguarding placement, discharge or death. It applies to babies from birth through 28 completed days. For preterm infants, corrected gestational age, recent neonatal-unit discharge and the infant's baseline physiology must also guide pathway selection.

A baby born within the preceding 24 hours, a baby with failure of transition, or a neonate with a primary respiratory problem may be managed initially with the current newborn-life-support algorithm. Outside the birth setting, teams may use the resuscitation approach in which they are trained while summoning neonatal expertise, but the whole team must state clearly which algorithm is being followed. Babies older than 28 days usually enter Protocol 40 unless a neonatal specialist advises otherwise.

3. Core policy statements

- Every neonate is a high-risk patient. Perform immediate visual assessment, full neonatal observations, temperature, preductal oxygen saturation when critically ill, glucose when indicated, measured naked weight in kilograms, gestational and postnatal age, feeding and elimination history, and documented serial reassessment.
- Airway opening and effective ventilation are the priorities in newborn resuscitation. Treatment of life threats must not wait for registration, a complete history, laboratory confirmation, imaging, transfer acceptance or the arrival of a neonatal team.

- Maintain the warm chain from first contact. Remove wet materials, use skin-to-skin care only when the baby is stable and continuously observed, and use a controlled radiant warmer or incubator for an unwell, preterm or low-birth-weight baby. Check glucose whenever temperature is abnormal.
- Neonatal sepsis may present with temperature instability, poor feeding, apnoea, respiratory distress, jaundice, altered tone, lethargy, irritability or unexplained metabolic deterioration. Absence of fever does not exclude infection.
- Feeding is a vital sign. A neonate who is unable to feed normally, tires, sweats, coughs, chokes, becomes cyanotic, vomits repeatedly, has reduced urine or stool, or is losing excessive weight requires diagnostic assessment rather than reassurance alone.
- Use only locally approved neonatal medicine, fluid, glucose, antibiotic, antiviral, phototherapy and resuscitation charts. Prescribe by current measured weight in kilograms and gestational / postnatal age, with independent checks for high-risk medicines and infusions.
- Care must be family-centred, culturally safe and trauma-informed. Parental concern, knowledge of the baby's normal behaviour and barriers to feeding, transport or follow-up form part of the clinical assessment.
- Discharge is exceptional when a neonate has had an emergency sign, abnormal temperature, hypoglycaemia, apnoea, cyanosis, significant jaundice, poor feeding, bilious vomiting, seizure, suspected infection, persistent physiological abnormality, safeguarding concern or unresolved diagnostic uncertainty.

4. Definitions and severity framework

| Term | Operational definition / response |
|---------------------------------|--|
| Neonate | A baby from birth through 28 completed days. For preterm babies, corrected gestational age and recent neonatal-unit discharge influence risk and pathway selection. |
| Preterm / low birth weight | Born before 37 completed weeks / birth weight below 2500 g. These babies have increased risk of respiratory failure, hypothermia, hypoglycaemia, infection, apnoea, feeding failure and rapid deterioration. |
| Emergency sign | Apnoea or gasping; absent or ineffective breathing; severe respiratory distress; central cyanosis; heart rate below the newborn resuscitation threshold; shock; coma or marked lethargy; active seizure; severe hypoglycaemic symptoms; or major congenital / surgical emergency. Treat immediately. |
| Priority sign | Abnormal temperature, poor feeding, recurrent vomiting, jaundice, reduced urine or stool, weight loss, parental concern, prematurity, recent neonatal discharge, abnormal cry or tone, rash, possible infection, or repeat attendance. Requires urgent senior assessment. |
| Failure of transition | Inability to establish or maintain effective breathing, oxygenation, circulation, temperature or metabolic stability after birth. |
| Apnoea | Cessation of breathing, or a shorter pause associated with bradycardia, desaturation, colour change or altered tone. Any recurrent apnoea in a neonate is an emergency. |
| Neonatal sepsis | Suspected or confirmed bacterial infection in the first 28 days, categorized locally as early- or late-onset. Clinical deterioration may occur without fever or a positive initial test. |
| Significant hyperbilirubinaemia | Bilirubin at or approaching the treatment threshold for gestational age and postnatal age in hours, or jaundice with signs of haemolysis, infection, cholestasis or acute bilirubin encephalopathy. |
| Bilious vomiting | Green vomit indicating bile until proven otherwise. Treat as possible intestinal obstruction or volvulus and obtain urgent surgical / radiological assessment. |
| Feeding failure | Inability to establish or sustain expected breast or formula intake, ineffective suck / swallow, tiring, choking, repeated vomiting, inadequate urine / stool, excessive weight loss or dehydration. |
| Neonatal transport | Specialist stabilization and transfer using appropriately trained staff, temperature-controlled equipment, airway / respiratory support, glucose monitoring, vascular access, medicines and structured handover. |

5. Roles and accountability

| Role | Minimum responsibility |
|---------------------------------|--|
| Triage / receiving nurse | Immediate visual assessment; emergency / priority signs; temperature, respiratory rate, heart rate, oxygen saturation, perfusion, glucose when indicated, weight and feeding screen; activate neonatal response and repeat observations. |
| ED clinician | Lead ABCDE stabilization, select and state the resuscitation algorithm, obtain birth / maternal history, initiate time-critical treatment, consult neonatology / paediatrics and coordinate disposition or transfer. |
| Neonatal / paediatric clinician | Provide early senior assessment, gestation-specific treatment, infection / jaundice / feeding decisions, admission criteria, family communication and neonatal transport leadership. |
| Maternity / obstetric team | Support unplanned birth, maternal stabilization, placental / cord information, intrapartum risk history, parent-baby care and coordination when mother and baby require different destinations. |

| Role | Minimum responsibility |
|--|--|
| Anaesthesia / critical care | Support difficult airway, ventilation, vascular access, shock, procedural care and critical transport. |
| Nursing / midwifery | Maintain thermal care, monitoring, feeding and elimination charting, medication safety, family support, skin / cord care and transfer readiness. |
| Pharmacy | Maintain neonatal formulary, dilution and infusion standards, antibiotic / antiviral availability, glucose preparations, antidotes and independent high-risk checks. |
| Laboratory / radiology | Prioritize neonatal samples and imaging, use age-appropriate ranges, minimize blood volume and radiation, and directly communicate critical bilirubin, glucose, gas, electrolyte, culture and imaging results. |
| Surgery / cardiology / other specialty | Provide urgent diagnosis and definitive planning for bilious vomiting, obstruction, congenital heart disease, neurological or other specialist emergencies. |
| EMS / neonatal transport | Provide risk-matched retrieval, incubator / warming, oxygen and ventilation, monitoring, pumps, secure lines, skilled escort, contingency planning and formal handover. |
| Safeguarding / social work | Assess immediate safety, unexplained injury or delay, caregiver capacity, domestic violence, substance exposure, safe sleep, mandatory reporting and safe placement. |

6. Required readiness

| Readiness domain | Minimum local requirement |
|------------------------------|---|
| Environment | Warm, draught-free resuscitation area; radiant warmer or incubator; newborn resuscitation surface; family space; privacy; safe examination and safeguarding area. |
| Airway / breathing equipment | Neonatal masks, self-inflating bag and / or T-piece device, pressure-limiting system, oxygen-air blender where available, suction, laryngoscopes, endotracheal tubes, supraglottic airway, capnography, CPAP capability and neonatal ventilator access. |
| Monitoring / access | Pulse oximetry suitable for neonates, ECG, temperature probes, neonatal BP cuffs, glucose meter with laboratory confirmation pathway, blood-gas access, IV / IO equipment and neonatal / umbilical access equipment for trained staff. |
| Thermal resources | Warm towels, hats, polyethylene wrapping for very preterm babies when locally indicated, skin-to-skin policy, radiant warmer / incubator, warmed gases and fluids where available, and continuous temperature monitoring for high-risk babies. |
| Medicines / fluids | Locally approved neonatal emergency medicines, glucose, isotonic crystalloid, blood-product access, empiric antimicrobials, antiviral treatment, vitamin K, anticonvulsants, prostaglandin pathway and standardized infusion concentrations. |
| Diagnostic tools | Bilirubin measurement, hour-specific treatment graphs, transcutaneous bilirubin device if used, neonatal reference ranges, portable imaging and urgent access to echocardiography / ultrasound / upper-GI imaging through referral pathways. |
| Workforce | At least one clinician and nurse each shift competent in newborn initial stabilization, with 24-hour neonatal / paediatric and anaesthetic escalation and a clear maternity response for unexpected birth. |
| Transfer | Named neonatal receiving units, 24-hour consultation / retrieval contacts, transport incubator or approved thermal device, neonatal ventilatory support, backup plan for weather / inter-island delay and parent transport arrangements. |

7. Pre-alert, triage, and neonatal danger signs

| Danger sign / concern | Operational response |
|--|---|
| Not breathing, gasping, ineffective respirations, heart rate below the newborn algorithm threshold or sudden collapse | Immediate newborn-life-support response, effective ventilation, ECG / pulse oximetry, senior neonatal and anaesthetic activation, and preparation for advanced resuscitation. |
| Apnoea, central cyanosis, severe recession, grunting, persistent tachypnoea, poor air entry, asymmetric chest movement or exhaustion | Resuscitation area; airway positioning, oxygen / ventilation support, pre- and postductal saturation when indicated, urgent neonatal review and cause-directed treatment. |
| Shock or poor perfusion: weak pulses, prolonged refill, pallor / mottling, cool extremities, hypotension, oliguria, altered responsiveness or metabolic acidosis | Immediate ABCDE, glucose, IV / IO access, cautious cause-directed volume, blood or vasoactive support, and early neonatal / critical-care transfer planning. |
| Temperature 38.0°C or higher, temperature below 36.0°C, persistent temperature below 36.5°C, or unexplained instability | Warm / cool safely, check glucose, evaluate for infection and dehydration, obtain senior neonatal review and admit unless a documented specialist pathway states otherwise. |
| Poor feeding, weak suck, tiring, sweating, choking, cyanosis, recurrent vomiting, reduced wet nappies, no stool, excessive weight loss or caregiver concern | Urgent feeding and hydration assessment, naked weight, glucose, cardiorespiratory examination, direct observation of a feed and neonatal review. |
| Marked lethargy, irritability, high-pitched or weak cry, abnormal tone, bulging fontanelle, seizure, abnormal movements or reduced responsiveness | Airway / breathing support, glucose and electrolytes, infection / neurological pathway, anticonvulsant treatment when indicated and urgent transfer. |
| Jaundice in the first 24 hours, rapidly deepening jaundice, jaundice with pallor, poor feeding, lethargy, arching, high-pitched cry, dark urine or pale stool | Urgent serum bilirubin and specialist review; use hour-specific treatment thresholds; prepare phototherapy / exchange-transfer pathway when indicated. |

| Danger sign / concern | Operational response |
|--|--|
| Green bilious vomit, abdominal distension, tenderness, bloody stool, absent anus, no meconium, incarcerated hernia or rapidly worsening vomiting | Nil by mouth, gastric decompression, IV access, glucose / fluids, sepsis / ischaemia assessment, urgent surgery and radiology, and transfer. |
| Weak / absent femoral pulses, differential saturations, persistent cyanosis, hepatomegaly, murmur with illness, shock after initial well period or unexplained acidosis | Suspect critical congenital heart disease; obtain pre- and postductal saturations, ECG / gas, urgent neonatal / cardiology advice and prostaglandin pathway if directed. |
| Unexplained injury, delay in seeking care, inconsistent history, unsafe sleeping / transport, caregiver impairment, domestic violence or concern for neglect | Treat medical needs first, preserve objective documentation, activate safeguarding pathway and do not discharge until safety is resolved. |
| TRIAGE OVERRIDE: Any apnoea, colour change, poor feeding with abnormal behaviour, temperature instability, bilious vomiting, jaundice in the first 24 hours, repeat presentation, parental concern or inability to obtain reliable observations overrides an apparently reassuring first examination. | |

8. The first 10 minutes

1. Move the baby to a warm monitored resuscitation area. Call the senior ED clinician, neonatal / paediatric team and neonatal nurse; add maternity, anaesthesia / critical care, surgery, cardiology, laboratory, blood bank, safeguarding and transport according to the threat.
2. State the baby's exact postnatal age, gestational age, corrected age if preterm, birth weight, current naked weight and whether the baby is newly born, recently discharged or medically complex.
3. Prevent heat loss immediately: remove wet materials, dry and cover the head, use skin-to-skin only for a stable observed baby, and use a radiant warmer / incubator with servo temperature monitoring for an unwell or preterm baby.
4. Complete ABCDE while treating each problem. Record respiratory rate / effort, heart rate, preductal SpO2 when critically ill, perfusion, blood pressure when feasible, temperature, responsiveness / tone and pain.
5. Check point-of-care glucose early in every unwell neonate, abnormal-temperature baby, preterm / low-birth-weight baby, poor feeder, seizure, apnoea, altered baby or baby after resuscitation. Send confirmatory testing without delaying treatment when the result is low or discordant.
6. For a newly born baby or failure of transition, follow the current newborn-life-support algorithm: position the airway, establish effective ventilation promptly and assess response by heart rate and chest movement.
7. Obtain IV access; use IO access when critically ill and IV access is not rapidly achievable. Umbilical access is for appropriately trained staff. Draw only time-critical samples and minimize blood volume.
8. Give time-critical treatment: antibiotics for suspected serious infection, glucose for symptomatic or severe hypoglycaemia, ventilation / CPAP as indicated, cautious volume or blood for shock, anticonvulsant therapy for persistent seizure, and gastric decompression for bilious vomiting or obstruction.
9. Obtain a focused maternal and birth history in parallel: gestation, membranes, maternal fever / infection, GBS status, intrapartum antibiotics, mode / place of birth, meconium, Apgar / resuscitation, feeding, vitamin K, blood groups, pregnancy complications, medicines and substance exposure.
10. Reassess after every intervention, contact the receiving neonatal service early, assign named responsibility, explain the plan to the family and document times, doses, response, unresolved threats and transfer contingency.

9. Neonatal observations, NEWTT, and escalation

- Use one locally approved neonatal early-warning track-and-trigger system, such as NEWTT2 or a nationally approved equivalent, matched to the care setting. Record the individual parameters and response, not only a total score.
- Parental concern, clinician concern, abnormal colour or behaviour, poor feeding, recurrent apnoea, increasing oxygen need, persistent temperature instability or repeated attendance requires direct senior review even when a score is low.
- Trend is essential. Repeat full observations after every intervention, at the interval required by acuity and before any transfer, admission or discharge decision.
- Interpret findings in relation to gestational age, postnatal age in hours, sleep / crying, environmental temperature, baseline oxygen saturation, congenital disease and recent neonatal-unit treatment, but never explain away dangerous physiology without reassessment.
- An "unable to obtain" temperature, saturation, blood pressure, glucose or weight in a sick neonate is a reason to escalate, not a normal result.

| Observation state | Minimum response |
|--|---|
| Peri-arrest, apnoea, gasping, HR below algorithm threshold or severe cyanosis | Resuscitation team now; continuous ECG / SpO2; effective ventilation; newborn algorithm; neonatal and anaesthetic presence; definitive transfer planning. |
| Single extreme parameter, recurrent apnoea, severe respiratory distress, shock, seizure or marked lethargy | Immediate senior bedside review, ABCDE treatment and continuous monitoring; identify NICU / retrieval needs without delay. |
| Persistent moderate abnormality, poor feeding, abnormal temperature or parental concern | Prompt neonatal / paediatric review, targeted investigation and repeat observations within a defined short interval. Escalate if no objective improvement. |
| Improving after treatment | Continue observation until improvement is sustained, cause is addressed, feeding / temperature / glucose are stable and disposition criteria are met. |
| Transfer or discharge consideration | Fresh complete observations, weight, feeding and elimination review, glucose / bilirubin as indicated, family teach-back, follow-up and ownership of pending results. |

10. ABCDE assessment and immediate treatment

10.1 Airway

- Position the head in a neutral “sniffing” position; avoid excessive flexion or extension. Use a shoulder roll only when needed for body shape or gestation.
- Open the airway and suction only when secretions or material are visibly obstructing ventilation. Routine oral, nasal or tracheal suctioning is not indicated solely for meconium-stained fluid.
- Use a correctly sized mask and two-person technique when ventilation is ineffective. Check mask seal, head position, airway patency, pressure and chest movement before escalating.
- Use an oropharyngeal airway, supraglottic airway or tracheal intubation according to current newborn-life-support guidance, staff competence and the baby's response. Confirm tracheal placement with clinical assessment and exhaled CO₂ when circulation permits.
- Drooling, inability to pass a feeding tube, copious secretions, recurrent choking or cyanosis may indicate oesophageal atresia / tracheo-oesophageal fistula; stop oral feeding, suction the upper pouch if trained, elevate the head and seek surgical transfer.

10.2 Breathing

- Assess breathing pattern, respiratory rate, recession, grunting, nasal flaring, symmetry, air entry, breath sounds, pre- and postductal saturation when indicated, response to oxygen and fatigue.
- For resuscitation at birth, use the locally adopted newborn algorithm and gestation-specific starting oxygen concentration / saturation targets. Titrate oxygen to avoid both hypoxaemia and unnecessary hyperoxia.
- Provide effective positive-pressure ventilation when breathing is absent or inadequate. Consider CPAP for a spontaneously breathing baby with respiratory distress only with suitable equipment, monitoring and neonatal expertise.
- Consider transient tachypnoea, respiratory distress syndrome, pneumonia / sepsis, meconium aspiration, pneumothorax, congenital heart disease, diaphragmatic hernia, airway anomaly, metabolic acidosis and neurological depression.
- Sudden deterioration with asymmetric air entry, severe hypoxaemia, bradycardia or shock may be tension pneumothorax. Do not delay emergency decompression in an unstable baby while waiting for imaging.
- If congenital diaphragmatic hernia is suspected from severe distress, scaphoid abdomen or antenatal history, avoid bag-mask ventilation where possible; intubate, decompress the stomach and obtain urgent neonatal / surgical transfer.

10.3 Circulation

- Assess heart rate and rhythm, central and peripheral pulses, capillary refill, skin colour / temperature, blood pressure, urine output, liver size, lung signs and bleeding. Use ECG for rapid heart-rate assessment during resuscitation when available.
- In the newly born baby, a low or falling heart rate most often reflects inadequate ventilation. Correct ventilation before assuming primary cardiac disease.
- For suspected hypovolaemic or distributive shock, use cautious 10 mL/kg isotonic crystalloid aliquots with immediate reassessment. Use blood early for suspected haemorrhage. Avoid repeated empiric boluses in cardiogenic or duct-dependent shock.
- Persistent shock requires early neonatal / critical-care advice, vasoactive support through a controlled pathway, correction of glucose / calcium / temperature / acidosis and rapid transfer.
- Consider occult blood loss, fetomaternal haemorrhage, placental or cord bleeding, sepsis, myocarditis, arrhythmia, congenital heart disease, adrenal crisis and metabolic disease.

10.4 Disability

- Assess alertness, spontaneous movement, flexor tone, suck, cry, pupils, fontanelle, posture and response to handling. Compare with gestation and normal sleep state.
- Check glucose immediately; also evaluate calcium, sodium, magnesium, blood gas, infection, hypoxic-ischaemic injury, intracranial haemorrhage, stroke, toxic exposure and inborn metabolic disease according to presentation.
- Neonatal seizures may be subtle: recurrent eye deviation, chewing, bicycling, tonic posturing, autonomic change or unexplained apnoea. Stabilize airway / breathing, correct glucose and other reversible causes, and use the neonatal seizure pathway.
- After perinatal depression or resuscitation, assess for neonatal encephalopathy urgently. Avoid hyperthermia and contact the receiving NICU early enough for time-critical therapeutic-hypothermia decisions. Do not use uncontrolled passive cooling unless specifically directed.

10.5 Exposure and environment

- Expose only as needed under a heat source. Examine skin, colour, jaundice, petechiae, vesicles, perfusion, hydration, scalp / birth injury, cord, abdomen, anus, genitalia, spine, limbs and congenital anomalies.
- Record axillary temperature with a reliable device and use continuous monitoring when unstable. Search for environmental and clinical causes of hypo- or hyperthermia.
- Inspect the umbilicus for bleeding, erythema, purulent discharge or abnormal vessels; inspect the eyes and mouth; document stool and urine passage.
- Look for non-accidental injury, unsafe cord or skin treatments, harmful traditional remedies and signs of maternal or caregiver illness that may affect the baby's safety.

11. Newborn resuscitation and unplanned birth

| Stage | Required action |
|-------------------------------|---|
| Before / at birth | Activate maternity and neonatal help; warm the room; prepare resuscitation surface, timer, ventilation device, masks, suction, oxygen-air blending, oximetry, ECG, airway equipment, glucose, medicines and transport. Clarify gestation and anticipated complications. |
| Cord and thermal care | For a stable baby, follow local delayed-cord-clamping policy and dry / maintain warmth. When urgent resuscitation cannot be performed with the cord intact, clamp promptly to avoid delaying ventilation. |
| Initial assessment | Assess breathing / crying, tone and heart rate. A well baby remains warm, skin-to-skin and observed. An apnoeic, gasping, hypotonic or bradycardic baby requires immediate airway positioning and ventilation. |
| Ventilation | Ventilation is the key intervention. Confirm visible chest movement and rising heart rate. Use corrective steps and advanced airway support when mask ventilation is ineffective. |
| Chest compressions | If heart rate remains below 60/min after at least 30 seconds of effective ventilation, start coordinated 3:1 compressions to ventilations while ensuring airway effectiveness and following the current newborn algorithm. |
| Medicines / volume | Obtain vascular access and give adrenaline or volume only according to the controlled newborn-resuscitation algorithm and neonatal formulary. Consider blood loss when there is pallor, weak pulses or obstetric haemorrhage. |
| Post-resuscitation | Admit / transfer for monitoring of breathing, oxygenation, temperature, glucose, blood gas, perfusion, urine, neurological state and seizures. Evaluate for infection, pneumothorax, haemorrhage and encephalopathy. |
| Mother and placenta | Stabilize the mother under Protocol 38; record placental / cord abnormalities, maternal bleeding, infection and medications; ensure clear plans when mother and baby require different facilities. |
| Communication / documentation | Record exact times, heart-rate response, ventilation pressures / oxygen, airway attempts, compressions, medicines, cord management, temperature, Apgar scores when appropriate and discussions with parents. |

VENTILATION RULE: In newborn resuscitation, persistent bradycardia is usually a ventilation problem until proven otherwise. Recheck position, mask seal, airway patency, pressure and chest movement before escalating medicines.

12. Neonatal infection, sepsis, and meningitis

| Clinical / historical feature | Priority action |
|-------------------------------|--|
| Maternal or birth risk | Review gestation, prolonged rupture of membranes, maternal fever / suspected chorioamnionitis, GBS status, intrapartum antibiotics, preterm labour, foul-smelling fluid and invasive procedures. Apply the current local early-onset infection pathway. |
| Possible neonatal infection | Temperature instability, respiratory distress, apnoea, feeding change, vomiting, abdominal distension, jaundice, lethargy, irritability, abnormal tone, seizures, poor perfusion, glucose instability or unexplained acidosis require senior assessment. |
| Investigations | Obtain blood culture before antibiotics when this does not delay treatment. Use targeted CBC, CRP / procalcitonin if locally adopted, gas / lactate, glucose, electrolytes, urine and imaging. A normal initial test does not rule out sepsis. |
| Antibiotics | Give locally approved empiric antibiotics promptly after the decision to treat, with a target no later than 1 hour in a critically ill or high-risk baby. Select early-versus late-onset and meningitis coverage according to policy and resistance data. |
| Lumbar puncture | Perform when indicated and the baby is stable, but do not delay antibiotics or transfer in shock, respiratory compromise, seizures, raised intracranial-pressure concern or other instability. |
| Herpes simplex virus | Consider with vesicles, seizures, encephalopathy, hepatitis / coagulopathy, severe sepsis without bacterial cause, maternal primary infection or compatible exposure. Obtain appropriate samples and begin aciclovir according to local policy without waiting for confirmation when suspicion is significant. |
| Source control / isolation | Inspect cord, skin, eyes, joints, lungs and abdomen. Use infection-prevention precautions and urgent surgical / specialist review when a focal source is suspected. |
| Review of treatment | Reassess cultures, inflammatory markers, clinical course and antibiotic need at defined times. Document the decision to stop, narrow, switch route or continue therapy and communicate it to the family. |

13. Respiratory distress, apnoea, and cyanosis

- Any recurrent apnoea, bradycardia or desaturation requires monitored admission and urgent neonatal review. Provide stimulation only while opening the airway and preparing effective ventilation; do not rely on stimulation as definitive treatment.
- Check glucose, temperature, blood gas, infection, haemoglobin and electrolytes. Review maternal medicines, birth trauma, prematurity, reflux / aspiration, seizures and airway anomalies.
- Use preductal saturation from the right hand and postductal saturation from a foot when critical congenital heart disease or persistent pulmonary hypertension is possible. Interpret with postnatal age and local screening / emergency standards.

- Persistent central cyanosis despite adequate ventilation, differential saturation, weak femoral pulses, shock, hepatomegaly or severe acidosis requires urgent neonatal / cardiology advice. Prostaglandin infusion may be life-saving in duct-dependent disease but requires a controlled protocol and airway preparedness because apnoea can occur.
- For a baby with a tracheostomy, home oxygen, chronic lung disease or other device, obtain the baseline plan and equipment from the caregiver but treat new deterioration as an emergency.

14. Shock, circulatory collapse, and critical congenital heart disease

| Cause / pattern | Management priorities |
|------------------------------------|---|
| Hypovolaemia / haemorrhage | Look for obstetric, placental, cord, internal or fetomaternal blood loss; obtain blood group / crossmatch; use cautious crystalloid while arranging appropriately dosed warmed blood and definitive haemorrhage control. |
| Septic / distributive shock | Antibiotics, cultures when they do not delay treatment, cautious fluid aliquots with reassessment, early vasoactive support, temperature / glucose correction and source control. |
| Cardiogenic / duct-dependent shock | Weak femoral pulses, differential BP / saturation, hepatomegaly, gallop, pulmonary oedema, unexplained acidosis or collapse at duct closure. Avoid repeated fluid boluses; obtain urgent echo / cardiology advice and activate prostaglandin pathway when directed. |
| Obstructive shock | Consider tension pneumothorax, tamponade and congenital diaphragmatic hernia. Treat the obstruction immediately and obtain critical-care / surgical transfer. |
| Arrhythmia | Confirm rhythm with ECG, correct hypoxia / glucose / electrolytes, and follow neonatal / paediatric arrhythmia guidance with senior cardiology or critical-care support. |
| Persistent deterioration | Continuous monitoring, repeat gas / lactate, urine output, glucose, calcium and temperature; early airway control and neonatal retrieval rather than prolonged repeated ED interventions. |

FLUID SAFETY RULE: Neonates tolerate both under-resuscitation and fluid overload poorly. Give small cause-directed aliquots, document cumulative volume and reassess heart rate, perfusion, liver size, lungs, oxygen need, blood pressure, urine and acid-base status after every bolus.

15. Hypoglycaemia and metabolic instability

| Situation | Required response |
|---|---|
| Risk factors | Prematurity, low or high birth weight, maternal diabetes, perinatal stress, hypothermia, infection, poor intake, endocrine / metabolic disease, polycythaemia and relevant medicines require a locally approved screening pathway. |
| Symptoms | Jitteriness, abnormal cry, lethargy, poor feeding, apnoea, cyanosis, hypothermia, hypotonia, seizure or coma require immediate glucose testing and treatment of the baby, not the number alone. |
| Measurement | Use a validated point-of-care device for rapid action and send blood-gas or laboratory confirmation for low, persistent or discordant values. Do not delay urgent treatment while waiting for confirmation. |
| Well, asymptomatic baby | Support warmth and effective feeding. Use expressed breast milk, formula supplementation or buccal dextrose gel only according to the local neonatal hypoglycaemia framework and repeat glucose at the specified interval. |
| Symptomatic, very low or unable to feed | Obtain IV access and give glucose using the locally approved neonatal dose / concentration and infusion pathway. Recheck promptly, avoid rebound or extravasation injury and monitor electrolytes. |
| Persistent / recurrent hypoglycaemia | Increase monitoring and specialist input; consider hyperinsulinism, cortisol / growth-hormone deficiency, sepsis, liver disease or inborn metabolic disease. Obtain critical samples when safe and specified by the neonatal service. |
| Other metabolic abnormalities | Check and correct calcium, magnesium, sodium, potassium and acid-base disorders through neonatal protocols. Avoid rapid sodium correction and concentrated-electrolyte errors. |

16. Jaundice and hyperbilirubinaemia

- Assess jaundice in good natural or white light, including sclerae and gums, but do not rely on visual depth or skin colour to estimate bilirubin. Detection may be harder in darker skin.
- Jaundice visible in the first 24 hours is pathological until proven otherwise: obtain a serum bilirubin urgently, ideally within 2 hours, and arrange urgent medical review. Repeat according to the approved chart until below threshold and stable or falling.
- For visible jaundice after 24 hours, measure bilirubin promptly, generally within 6 hours. Interpret the result by gestational age and exact postnatal age in hours using the locally approved treatment graph and laboratory method.
- Use serum bilirubin rather than transcutaneous measurement in the first 24 hours, in babies below the gestational-age limit of the device / guideline, at or above treatment thresholds, or when results are clinically discordant.
- Look for haemolysis, blood-group incompatibility, G6PD deficiency, bruising / cephalhaematoma, infection, polycythaemia, hypothyroidism and metabolic disease. Obtain direct / conjugated bilirubin when cholestasis is possible.
- Poor feeding, marked sleepiness, hypotonia followed by hypertonia / arching, high-pitched cry, fever, apnoea or seizure may indicate acute bilirubin encephalopathy. Start intensive treatment and exchange-transfusion transfer without delay.

- Pale or chalky stools and dark urine are red flags for cholestasis / biliary obstruction. Prolonged jaundice requires a structured investigation pathway and reliable follow-up.

17. Feeding failure, dehydration, and weight loss

| Assessment domain | Required assessment / action |
|-------------------------|---|
| Feeding history | Breast / formula plan, frequency, duration, latch / transfer, swallowing, expressed volumes, supplements, vomiting, tiring, sweating, choking, cyanosis and caregiver concerns. |
| Direct observation | Observe a complete feed when safe. Assess alertness, rooting, suck, swallow, breathing coordination, milk transfer and caregiver technique; involve lactation / neonatal nursing support early. |
| Hydration / elimination | Naked weight and percentage change from birth, mucosa, fontanelle, perfusion, urine frequency / colour, stool passage, ongoing losses and environmental heat. |
| Red flags | Poor feeding with lethargy, temperature instability, tachypnoea, cyanosis, sweating, bilious vomiting, no urine, no meconium, severe weight loss or repeated presentation requires admission and diagnostic evaluation. |
| Investigations | Glucose, sodium, potassium, urea / creatinine, bilirubin, blood gas and infection testing according to severity. Hyponatraemic dehydration may appear deceptively well and requires controlled correction. |
| Treatment | Support breastfeeding and expressed milk when appropriate; use supplemental enteral feeding, NG feeding or IV glucose / fluids according to physiology and specialist advice. Never give plain water to a neonate. |
| Discharge planning | Document an effective feed, weight plan, expected urine / stool, next review within an appropriate short interval and a clear route for urgent return. |

18. Vomiting, abdominal distension, and surgical / congenital emergencies

| Presentation | Emergency response |
|--|---|
| Bilious green vomiting | Treat as intestinal obstruction until proven otherwise. Stop feeds, insert an orogastric / nasogastric tube for free drainage, obtain IV access, check glucose / gas / lactate, give fluids and antibiotics when indicated, and obtain urgent surgical / radiological transfer. |
| Abdominal distension, tenderness or bloody stool | Consider volvulus, necrotising enterocolitis, Hirschsprung-associated enterocolitis, sepsis, perforation or obstruction. Nil by mouth, decompress, stabilize and seek urgent surgery. |
| Failure to pass meconium / abnormal anus | Inspect the perineum and anus, avoid repeated rectal instrumentation, assess for obstruction and congenital anomalies, and obtain surgical advice. |
| Projectile or persistent non-bilious vomiting | Assess hydration, glucose, electrolytes, sepsis and feeding; consider pyloric stenosis, raised intracranial pressure, metabolic disease and overfeeding. |
| Incarcerated inguinal hernia / acute scrotum | Provide analgesia, keep nil by mouth, obtain urgent surgical review and do not delay transfer for non-essential imaging. |
| Copious secretions / choking with feeds | Suspect oesophageal atresia / fistula; stop feeds, maintain upper-pouch suction when trained, position safely and transfer for surgical care. |
| Abdominal wall or neural-tube defect | Protect exposed tissue with warm sterile non-adherent / occlusive coverings according to the anomaly, avoid pressure or heat loss, give glucose / fluids and antibiotics as directed, and arrange neonatal surgical transfer. |

19. Seizures, abnormal tone, and neonatal encephalopathy

- Stabilize airway, breathing, circulation, temperature and glucose. Record the event or obtain caregiver video when this does not delay treatment.
- Correct hypoglycaemia and clinically important electrolyte abnormalities immediately. Obtain blood gas, infection evaluation and neuroimaging / EEG through the neonatal service.
- Treat persistent or recurrent seizures using the locally approved neonatal pathway and weight-based formulary. Reassess ventilation because anticonvulsants may depress respiration.
- Consider hypoxic-ischaemic encephalopathy, sepsis / meningitis / HSV, intracranial haemorrhage, arterial ischaemic stroke, metabolic disease, drug withdrawal / toxicity and non-accidental injury.
- Babies with encephalopathy, seizures, abnormal tone, feeding failure or perinatal depression require monitored admission and early tertiary neonatal consultation.

20. Temperature emergencies

| Temperature state | Management |
|----------------------------------|---|
| Normal target | Maintain approximately 36.5-37.5°C using the local neonatal temperature standard and continuous or frequent monitoring in high-risk babies. |
| Mild / moderate hypothermia | Move to a warm environment, remove wet materials, use supervised skin-to-skin for a stable baby or controlled warmer / incubator for an unwell baby, check glucose and feeding, and assess for infection. |
| Severe or persistent hypothermia | Continuous cardiorespiratory monitoring, controlled rewarming, glucose / gas / electrolytes, sepsis evaluation and neonatal admission / transfer. Avoid burns and rapid uncontrolled external heating. |

| Temperature state | Management |
|---------------------------------|---|
| Hyperthermia | Remove excessive external heat, reassess environmental settings, evaluate dehydration and infection, check glucose / electrolytes and cool gradually to the normal range. |
| Preterm / low-birth-weight baby | Use enhanced thermal protection, minimize exposure, warm gases / fluids when available and monitor continuously because deterioration and glucose consumption may be rapid. |

21. Prematurity, low birth weight, complex disease, and congenital anomalies

- Confirm gestational age, corrected age, birth weight, discharge weight, neonatal-unit course, respiratory support, apnoea history, retinopathy / neurological issues, feeding plan, immunizations / prophylaxis and follow-up team.
- Preterm and low-birth-weight babies have lower physiological reserve and a lower threshold for admission, respiratory support, temperature control, glucose monitoring and infection treatment.
- For babies with home oxygen, feeding tubes, ostomies, shunts, central lines, tracheostomies or palliative plans, obtain the emergency care plan and contact the responsible neonatal / specialty service early. A baseline abnormality must not be assumed to explain a new deterioration.
- Identify congenital anomalies that affect airway, breathing, circulation, feeding, elimination or temperature. Protect exposed tissue, avoid contraindicated ventilation / feeding and arrange definitive specialty transfer.
- When a life-limiting diagnosis or treatment ceiling is documented, provide active comfort, symptom relief and family support while verifying the plan and activating Protocol 52. Uncertainty is not a reason to withhold stabilization.

22. Investigations, imaging, and medication safety

- Investigations must answer a clinical question and must not delay stabilization. Minimize blood volume, consolidate sampling and document cumulative phlebotomy in very small babies.
- Use neonatal and gestation-specific reference ranges. Interpret glucose, bilirubin, haemoglobin, white-cell count, creatinine, electrolytes, blood gas and CSF by postnatal age and clinical context.
- Use point-of-care ultrasound and portable imaging when appropriate, but obtain definitive upper-GI imaging, echocardiography, neuroimaging or surgical studies urgently when they will change management.
- Every prescription states measured weight in kilograms, gestation / postnatal age when relevant, indication, dose in mg or micrograms, volume in mL, concentration, route, interval, maximum / cumulative dose, infusion rate and monitoring plan.
- Use an independent check for glucose boluses / infusions, concentrated electrolytes, antibiotics, antivirals, anticonvulsants, prostaglandin, vasoactive infusions, sedatives, opioids and blood products. Avoid trailing zeros and naked decimal points.
- Adjust doses for renal / hepatic function and previous neonatal-unit treatment. Confirm maternal medicines and breast-milk exposure when toxicity or withdrawal is possible.

23. Safeguarding, consent, and family-centred care

- Keep the parent or caregiver with the baby whenever clinically safe, explain procedures in plain language and support feeding, bonding and skin-to-skin care when appropriate.
- Ask what has changed from the baby's normal behaviour and what concerns the caregiver most. Revisit the answer after treatment and before disposition.
- Assess delay in presentation, inconsistent birth or injury history, unsafe sleep, caregiver intoxication or severe mental illness, domestic violence, trafficking, harmful remedies, neglect of feeding or medical needs and unexplained bruising / injury.
- Obtain consent from the person with parental responsibility when feasible, but emergency treatment necessary to preserve life or prevent serious harm must not be delayed. Follow local law and safeguarding policy.
- Protect maternal confidentiality while obtaining clinically necessary pregnancy, infection, medication, substance-use and mental-health information. Offer support rather than blame.
- After critical illness, transfer, disability or death, provide a private explanation, opportunities for questions, psychosocial / spiritual support, lactation guidance when relevant and clear follow-up contacts.

24. Reassessment and observation

| Trigger | Required reassessment |
|---|--|
| After ventilation, oxygen / CPAP, fluid / blood, glucose, antibiotic, anticonvulsant, warming / cooling, phototherapy or feeding intervention | Repeat affected ABCDE domain, full observations, temperature, glucose / bilirubin as indicated, perfusion, urine, pain / comfort and adverse effects; document objective response and next action. |
| Persistent abnormal observations or feeding | Immediate senior review, repeat examination and diagnostic reconsideration. Do not normalize or copy forward neonatal observations without verifying them. |
| No improvement in expected interval | Escalate respiratory / circulatory support, add neonatal / critical-care / surgical input, reconsider diagnosis and prepare transfer rather than simply extending ED observation. |
| Clinical improvement | Confirm sustained temperature, glucose, oxygenation, breathing, perfusion, alertness, effective feeding and elimination; ensure the underlying risk has been addressed. |
| Before any transition | Fresh observations and weight, line / airway check, medicine reconciliation, pending-result ownership, family update and structured handover. |

25. Consultation, escalation, and neonatal transfer

- Consult neonatology / paediatrics immediately for any emergency sign, abnormal temperature, apnoea, cyanosis, respiratory distress, shock, seizure, poor feeding with illness, suspected infection, jaundice in the first 24 hours, bilirubin near treatment threshold, bilious vomiting, preterm deterioration, congenital anomaly or diagnostic uncertainty.
- Contact the receiving neonatal service and transport team before deterioration makes transfer unsafe. Stabilization and retrieval planning occur together; do not wait for every investigation to return.
- The referring clinician remains responsible until explicit handover and transfer of responsibility occur. Record accepting clinician, destination, urgency, transport team, expected departure, treatment targets and escalation plan if delayed.
- Transport must match risk: incubator / thermal device, airway and ventilation capability, oxygen reserve, suction, glucose monitoring, vascular access, pumps, medicines, fluids / blood, secure gastric drainage, neonatal restraints and appropriately trained escort.
- For an unstable baby, stabilize temperature, airway / ventilation, glucose, perfusion and seizures before departure as far as possible without causing harmful delay. Repeat blood gas and imaging only when results will change transport management.
- Provide a structured handover covering gestation, age in hours / days, birth and maternal history, weight, baseline / neonatal course, ABCDE trend, resuscitation, glucose, bilirubin, feeding / elimination, medicines, cultures, imaging, safeguarding, family location and outstanding actions.
- When mother and baby are separated by transfer, establish who will update each parent, how expressed milk will travel, whether the mother also requires transfer and how consent / identification will be maintained.

TRANSFER DELAY RULE: Weather, cot availability, retrieval delay or inter-island logistics are clinical risks. Continue definitive treatment locally, reassess at defined intervals, maintain temperature / glucose / respiratory support and escalate deterioration to the receiving consultant in real time.

26. Disposition criteria

| Disposition | Minimum criteria |
|---------------------------------|--|
| NICU / urgent tertiary transfer | Mechanical ventilation or significant respiratory support, recurrent apnoea, shock / vasoactive need, severe prematurity / low weight beyond local capability, encephalopathy / seizures, critical congenital heart or surgical disease, exchange transfusion, therapeutic hypothermia, multi-organ dysfunction or rapid deterioration. |
| Neonatal / paediatric admission | Suspected infection, abnormal temperature, oxygen or IV therapy, hypoglycaemia requiring treatment, poor feeding / dehydration, significant jaundice, repeated vomiting, abnormal observations, complex comorbidity, safeguarding concern or uncertain diagnosis. |
| Short observation | Only for a clearly defined low-risk issue with stable complete observations, controlled temperature / glucose, effective feeding, explicit review intervals, senior neonatal ownership and a maximum observation duration. Convert to admission if milestones are not met. |
| Discharge | Senior neonatal / paediatric agreement; normal and sustained physiology; normal temperature without external rescue; adequate glucose when tested; effective observed feeding; acceptable weight / hydration; urine and stool plan; no infection, jaundice, surgical, cardiac or safeguarding red flag; reliable caregiver, transport and rapid follow-up. |
| Departure before completion | Immediate senior and safeguarding review, explanation of the risk, attempt to resolve barriers, emergency treatment as legally permitted, written instructions, direct follow-up and documentation of all contacts. |

SAFE DISCHARGE RULE: A neonate is not safe for discharge merely because crying, colour or a single set of observations appears normal. The baby must demonstrate sustained physiological stability, warmth, effective feeding, appropriate elimination, a resolved or low-risk diagnosis and reliable early follow-up.

27. Communication with parents and caregivers

- Introduce the team, explain the baby's condition and use the baby's name. Allow a parent to remain nearby during resuscitation when safe and supported by a staff member.
- Explain uncertainty honestly: what serious conditions were considered, what has been treated, what remains possible, why admission / transfer is needed and what change would require immediate action.
- Use an interpreter rather than relatives for complex information. Confirm understanding with teach-back, including feeding, medicines, jaundice / temperature monitoring, safe sleep, follow-up and emergency return signs.
- Give parents clear destination and contact information during transfer and document who will provide the next update. Avoid leaving families to coordinate clinical information between services.
- After resuscitation or death, provide compassionate debriefing, memory-making and bereavement support according to local policy and avoid assigning blame before formal review.

28. Documentation and handover

- ☐ Arrival / birth time, exact postnatal age, gestational and corrected age, birth weight, current naked weight and source of referral.
- ☐ Maternal / pregnancy / birth history: membranes, fever / infection, GBS, intrapartum antibiotics, delivery, meconium, Apgar / resuscitation, blood groups, medicines / substances and placenta / cord findings.
- ☐ Full serial neonatal observations, pre- / postductal saturation when indicated, temperature, perfusion, blood pressure, glucose, feeding, urine / stool and early-warning escalation response.
- ☐ ABCDE findings, working diagnosis, dangerous alternatives considered, uncertainty and linked protocols activated.

- ☐ Every medicine, glucose preparation, fluid and blood product: indication, dose, concentration, route, time, checker, cumulative volume and response.
- ☐ Investigations, neonatal reference interpretation, cultures, bilirubin age-in-hours / threshold graph, critical results, pending tests and named owner.
- ☐ Airway / ventilation details, resuscitation algorithm, heart-rate response, oxygen concentration / pressures, airway attempts, compressions and post-resuscitation status.
- ☐ Consultant / receiving clinician names, advice, acceptance, transport capability, mother-baby plan and contingency for delay.
- ☐ Safeguarding assessment, parental concern, communication, consent, interpreter use and family location / contact.
- ☐ Reassessment immediately before transition, disposition rationale, follow-up, written advice, teach-back and responsible adult receiving the baby.

29. Quality indicators and audit

| Indicator | Suggested measure |
|------------------------------|--|
| Complete neonatal assessment | Percentage with gestation / age, weight, respiratory rate, heart rate, SpO ₂ , temperature, perfusion, glucose when indicated, feeding and elimination documented within acuity target. |
| Resuscitation reliability | Time to effective ventilation; documented chest movement / heart-rate response; adherence to current newborn algorithm; temperature on completion. |
| Thermal safety | Admission temperature; percentage below 36.5°C or above 37.5°C; documented glucose and corrective action; thermal events reviewed. |
| Sepsis care | Time from decision to antibiotics; blood culture before antibiotics when this does not delay care; antibiotic review and stop / continue decision documented. |
| Hypoglycaemia safety | At-risk screening compliance; time to treatment of symptomatic / severe low glucose; repeat measurement and independent check of IV glucose. |
| Jaundice care | Age in hours and gestation recorded; bilirubin measured within urgent target; correct treatment graph used; time to phototherapy / exchange transfer. |
| Feeding / weight safety | Direct feeding assessment, naked weight and percentage loss documented; hypernatraemia and readmissions for feeding failure reviewed. |
| Surgical red flags | Time from bilious vomiting recognition to nil-by-mouth, gastric decompression, surgery contact and definitive imaging / transfer. |
| Transfer quality | Time to neonatal consultation / acceptance / departure; temperature, glucose and respiratory stability before departure; adverse transport events. |
| Family / safeguarding | Parental concern documented and addressed; interpreter and teach-back use; safeguarding screens and safe placement completed. |
| Outcome review | Neonatal death, unplanned ICU transfer, return within 72 hours, medication error, delayed diagnosis and serious incident reviewed through multidisciplinary learning. |

30. Training and implementation

- All ED staff require induction and recurrent competency assessment in newborn assessment, thermal protection, effective mask ventilation, newborn-life-support algorithms, glucose management, neonatal sepsis, jaundice, feeding assessment, safeguarding and transfer.
- Run multidisciplinary simulation for unexpected ED birth, ineffective ventilation / bradycardia, preterm hypothermia, neonatal sepsis, apnoea, duct-dependent collapse, bilious vomiting, seizure, severe hypoglycaemia and delayed inter-island retrieval.
- Use standardized equipment layout, neonatal cognitive aids, dose / dilution charts, bilirubin graphs, transfer checklists and role allocation. Debrief after resuscitation and assign system actions with completion dates.
- Maintain regular liaison among ED, maternity, neonatal / paediatric, laboratory, radiology, pharmacy, surgery, EMS and receiving NICUs. Test communication and transport contingencies, including oxygen / battery duration and weather disruption.
- Engage parents in reviewing the environment, feeding support, communication materials, transfer processes and bereavement care.

31. Local configuration checklist

| Local element | Complete before approval |
|---|--------------------------|
| Neonatal age boundary and interface with Protocol 40 | _____ |
| Current newborn-life-support algorithm and equipment layout | _____ |
| Approved neonatal early-warning / observation chart | _____ |
| 24-hour neonatal / paediatric and anaesthetic contacts | _____ |
| Maternity response for unexpected ED / community birth | _____ |
| NICU / neonatal transport destination and backup | _____ |
| Antibiotic, antiviral and meningitis regimens | _____ |
| Glucose thresholds, dextrose gel and IV glucose pathway | _____ |
| Bilirubin assay, TcB policy, treatment graphs and phototherapy | _____ |
| Exchange transfusion / therapeutic hypothermia referral pathway | _____ |
| Bilious vomiting imaging and neonatal surgery pathway | _____ |

| Local element | Complete before approval |
|--|--------------------------|
| Critical congenital heart / prostaglandin pathway | _____ |
| Thermal equipment and transport-incubator availability | _____ |
| Neonatal formulary, infusion concentrations and independent checks | _____ |
| Safeguarding, death, placenta / forensic and bereavement processes | _____ |

32. References and source framework

The local validation group should review the most recent versions of the following sources and reconcile them with national policy, local epidemiology, antimicrobial resistance, laboratory methods, formulary, professional scope and service capability.

| Source | Use in this protocol |
|---|--|
| Resuscitation Council UK. Newborn resuscitation and support of transition of infants at birth, 2025 Guidelines; Newborn Life Support algorithm, 2025 / updated resource 2026. | Resuscitation at birth, ventilation priority, heart-rate response, chest compressions, oxygen titration, thermal care, post-resuscitation monitoring and out-of-hospital / ED use. |
| NICE NG195. Neonatal infection: antibiotics for prevention and treatment, 2021; reviewed and updated 13 May 2026. | Risk factors, recognition, investigations, timing and review of antibiotics, meningitis, parent information and care after discharge. |
| NICE CG98. Jaundice in newborn babies under 28 days, last updated October 2023. | Visual assessment limitations, urgent bilirubin timing, hour-specific treatment thresholds, phototherapy, exchange transfusion and investigation of underlying disease. |
| British Association of Perinatal Medicine. NEWTT2: Deterioration of the Newborn, 2023. | Newborn track-and-trigger observations, at-risk groups, escalation and inclusion of parental concern. |
| British Association of Perinatal Medicine. Identification and Management of Neonatal Hypoglycaemia in the Full Term Infant (Birth-72 hours), 2024. | Risk-based screening, operational treatment pathways, feeding / dextrose gel, IV treatment and family partnership. |
| British Association of Perinatal Medicine. Management of Bilious Vomiting in the Newborn Period and Radiological Support for Neonatal Services, 2024. | Recognition of bile-stained vomiting, stabilization, urgent imaging, surgery and transfer standards. |
| World Health Organization. Safe and Effective Thermal Protection for Inpatient Care of Newborns; thermal-protection and essential-newborn-care resources. | Normal temperature range, prevention and management of hypo- / hyperthermia, skin-to-skin care, warming and monitoring. |
| NHS England. Neonatal critical care service specification, March 2024. | Levels of neonatal care, initial stabilization, complex / prolonged intensive care and transfer to NICU. |
| Local / national neonatal formulary, antimicrobial policy, laboratory bilirubin method, transfusion policy, congenital-heart pathway and neonatal-transport standards. | Exact medicine doses, concentrations, treatment thresholds, testing methods, specialist capability and referral logistics. |

Evidence governance note

- Local approval must reconcile international guidance with national law, maternal / newborn services, local microbiology, bilirubin assay, glucose device, neonatal equipment, weather and transfer capability.
- Exact medicine doses, concentrations, glucose thresholds, antibiotic regimens, prostaglandin infusion, vasoactive therapy, phototherapy / exchange thresholds and feeding volumes must be maintained in separately controlled neonatal order sets with pharmacy and neonatal sign-off.
- Physiological ranges and early-warning thresholds must come from the locally approved neonatal chart. Recognition values in annexes are aids, not standalone admission or discharge criteria.
- The protocol should be rechecked after materially relevant updates from RCUK / ERC, NICE, BAPM, WHO, national neonatal bodies or after any serious neonatal incident.

Annex A. One-page neonatal emergency workflow

| Step | Action |
|----------------------|---|
| 1. Recognize | Neonate = high risk. Identify apnoea / gasping, cyanosis, severe distress, shock, seizure, abnormal temperature, poor feeding, jaundice <24 h, bilious vomiting, abnormal tone, congenital / surgical red flag or parental concern. |
| 2. Warm and escalate | Warm monitored resuscitation area. Call senior ED + neonatology / paediatrics; add maternity, anaesthesia / ICU, surgery, cardiology, safeguarding and transport according to threat. |
| 3. Stabilize | ABCDE; effective ventilation; oxygen titration; temperature protection; ECG / SpO ₂ ; glucose; measured weight; IV / IO; cautious fluid / blood; time-critical medicines. |
| 4. Define context | Gestation, age in hours / days, birth place / mode, maternal infection / GBS / medicines, Apgar / resuscitation, feeding, urine / stool, vitamin K, neonatal-unit history and baseline. |
| 5. Select pathway | Newborn resuscitation; infection / meningitis / HSV; respiratory distress / apnoea; shock / congenital heart; hypoglycaemia; jaundice; feeding / dehydration; seizure / encephalopathy; bilious vomiting / surgery; safeguarding. |
| 6. Treat now | Ventilate, warm, glucose, antibiotics / antivirals, cautious fluid / blood, anticonvulsant, phototherapy pathway, gastric decompression, prostaglandin or surgery only as locally directed. |
| 7. Reassess | Repeat ABCDE, complete observations / early-warning response, temperature, glucose / bilirubin, feeding, urine / stool, treatment response and parental concern. |

| Step | Action |
|---------------------|---|
| 8. Transfer / admit | Contact receiving neonatal service early; prepare transport incubator, airway / oxygen, lines, pumps, medicines, records, mother-baby plan and contingency for delay. |
| 9. Discharge rarely | Only after senior neonatal agreement, sustained normal physiology, warmth, effective feed, acceptable weight / hydration, no red flags, reliable supervision and rapid follow-up. |

Annex B. Neonatal physiological recognition guide

Use the locally approved neonatal observation / NEWTT chart for definitive thresholds. The following are broad recognition aids only; gestation, postnatal age, sleep / crying, congenital disease, oxygen therapy and recent resuscitation affect interpretation.

| Parameter | Expected / recognition guide | Urgent concern |
|------------------------|--|---|
| Heart rate | Often about 100-160/min after transition | Persistent <100/min in a newly born or unwell baby; <60/min after effective ventilation; persistent >180/min; bradycardia with apnoea / poor perfusion. |
| Respiratory rate | Often about 30-60/min | Apnoea, gasping, persistent >60/min with work of breathing, grunting, severe recession, poor air entry or falling rate with fatigue. |
| Temperature | Target approximately 36.5-37.5°C | <36.0°C, persistent <36.5°C, >=38.0°C or rapid unexplained change. |
| Oxygen saturation | Rises over the first minutes after birth; after transition depends on condition / local policy | Persistent central cyanosis, unexpectedly low or falling saturation, significant pre- / postductal difference, or oxygen need. |
| Perfusion | Warm centrally, palpable pulses, refill generally <=3 seconds | Weak pulses, prolonged refill, mottling / pallor, cool extremities, hypotension, oliguria, hepatomegaly or acidosis. |
| Neurological / feeding | Normal flexor tone for gestation, wakes / cues for feeds, coordinated suck-swallow-breathe | Marked lethargy, irritability, high-pitched or weak cry, abnormal tone, seizure, poor suck, tiring, choking or reduced responsiveness. |
| Elimination | Urine and meconium patterns progress with age and feeding | No urine, concentrated urine with poor intake, no meconium with distension / vomiting, pale stool or bloody stool. |

- A low heart rate in a newly born baby is most commonly due to inadequate ventilation. Confirm effective chest movement and rising heart rate.
- Blood pressure is difficult to measure and hypotension is late. Treat poor perfusion and metabolic deterioration even if a single BP appears acceptable.
- Use the correct neonatal cuff and document limb / method. Compare upper and lower limb pressures only within a specialist congenital-heart assessment.

Annex C. Unplanned birth and newborn-life-support checklist

- ☐ Maternity, neonatal / paediatric and anaesthetic teams activated; gestation and anticipated complications stated.
- ☐ Warm room / radiant warmer, timer, warm towels, hat, wrap for very preterm baby, temperature probe and transport warmer ready.
- ☐ Ventilation device checked; correct mask; oxygen-air source / blender; suction; pulse oximeter; ECG; airway and vascular equipment ready.
- ☐ Cord management follows local policy; urgent ventilation not delayed when resuscitation with cord intact is impractical.
- ☐ Breathing, tone and heart rate assessed; effective ventilation started promptly when needed; chest movement and heart-rate response documented.
- ☐ Chest compressions / medicines follow current newborn algorithm; exact times, oxygen, pressures, access and response recorded.
- ☐ Glucose, temperature, gas, perfusion and neurological state checked after resuscitation; neonatal encephalopathy / cooling pathway considered.
- ☐ Mother stabilized; placenta / cord / blood loss / infection information recorded; parent update and mother-baby destination plan documented.

Annex D. Neonatal infection and sepsis checklist

- ☐ Gestation, age in hours / days, maternal fever / chorioamnionitis, rupture of membranes, GBS status and intrapartum antibiotics documented.
- ☐ Temperature, breathing / apnoea, feeding, tone, colour / perfusion, glucose, jaundice, abdomen, cord, skin / vesicles and neurological signs assessed.
- ☐ Blood culture obtained before antibiotics when this did not delay treatment; other samples and imaging targeted to presentation.
- ☐ Antibiotic decision time, first-dose time, regimen / dose / weight and independent check recorded.
- ☐ Meningitis and HSV considered; lumbar puncture deferred only for documented instability or contraindication; aciclovir pathway activated when indicated.
- ☐ Source control, isolation and transfer needs addressed; cultures / results and antibiotic review have named ownership.
- ☐ Parents informed of suspected infection, treatment, uncertainty, expected review and return / follow-up plan.

Annex E. Jaundice, hypoglycaemia, feeding, and hydration safety checklist

- ☐ Gestational age, exact postnatal age in hours, birth weight, current naked weight and percentage change documented.
- ☐ Jaundice onset recorded; serum bilirubin obtained urgently if <24 hours; result plotted on the approved gestation / age-in-hours graph.
- ☐ Haemolysis / G6PD / sepsis / bruising / cholestasis risks assessed; stool and urine colour documented.
- ☐ Glucose risk factors and symptoms assessed; point-of-care result confirmed when low / persistent; treatment and repeat interval follow local pathway.
- ☐ Complete feed observed; latch / transfer, suck-swallow-breathe, tiring, choking, vomiting, supplements and caregiver technique assessed.
- ☐ Urine / stool, mucosa, fontanelle, perfusion and ongoing losses documented; sodium / renal function checked when dehydration or excessive weight loss is possible.
- ☐ Phototherapy, feeding supplement, dextrose gel, IV glucose / fluid or transfer prescriptions independently checked and response documented.
- ☐ Family received written feeding / jaundice / temperature advice, teach-back and a named early follow-up appointment.

Annex F. Neonatal transfer checklist

- ☐ Accepting NICU / neonatal unit, consultant, direct contact, urgency and alternate destination confirmed.
- ☐ Gestation, corrected age, age in hours / days, birth and current weight, allergies, baseline / neonatal course and safeguarding status stated.
- ☐ Airway / ventilation / CPAP plan; oxygen, gas and battery supply exceed expected journey plus contingency; tube / mask size and position checked.
- ☐ Temperature controlled; transport incubator / approved warmer ready; latest temperature and rewarming / cooling plan documented.
- ☐ Glucose stable or active infusion secured; latest gas, perfusion, urine, bilirubin and seizure status documented.
- ☐ IV / IO / umbilical lines secured and labelled; infusions, medicines, fluids / blood and gastric drainage sufficient for journey and delay.
- ☐ Monitoring and appropriately skilled escort match risk; emergency neonatal equipment and resuscitation algorithm travel with team.
- ☐ Copies of maternal / birth record, resuscitation, observation, medication, culture, laboratory, imaging, consent and safeguarding information travel securely.
- ☐ Mother / parent location, transport, expressed-milk and communication plan documented; identification bands verified.
- ☐ Formal handover completed and time of transfer of responsibility recorded.

Annex G. Minimum discharge and return-safety information

| Domain | Information to provide and document |
|---------------------------|--|
| Working diagnosis | What was found, what serious conditions were considered, what remains uncertain and why discharge is safe. |
| Feeding / weight | Feeding method and frequency, supplements / expressed milk, expected urine / stool, current weight, next weight check and where to obtain help. |
| Jaundice / temperature | How and when bilirubin / temperature will be reviewed; never use sunlight as treatment; avoid over-wrapping or chilling. |
| Medicines / cord care | Name, dose and next time; safe administration; vitamin K / prophylaxis status; clean dry cord care and harmful remedies to avoid. |
| Safe sleep / transport | Back to sleep on a firm flat surface, smoke-free environment, no unsafe bed-sharing, correct car restraint and caregiver alertness. |
| Return immediately | Apnoea, blue / pale / mottled colour, breathing difficulty, temperature $\geq 38^{\circ}\text{C}$ or $< 36^{\circ}\text{C}$, difficult waking, seizure, poor feeding, repeated or green vomiting, fewer wet nappies, no stool with distension, rapidly worsening jaundice, pale stool, dark urine, bleeding or caregiver concern. |
| Follow-up / understanding | Named service and date / time, transport and contact route, pending-result owner, interpreter use, caregiver teach-back and responsible adult receiving the baby. |

END OF PROTOCOL 41 - DRAFT 1.0 FOR LOCAL MULTIDISCIPLINARY VALIDATION