Birmingham Women's and Children's NHS Foundation Trust

Standard Operating Procedure for care of babies born at BWH with Transposition of Great Arteries

(applies to BWH, BCH sites)

Version:	1.1.
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Purpose of the guideline:	To provide a clear pathway process for the management of babies with TGA who require a BS procedure.
Who should use the guideline?	Any member of staff involved in the care of a baby with TGA who require a BAS procedure.
How was the guideline developed?	With input from Cardiology, KIDSNTS, PICU and NICU and obstetric/maternity teams.
How will the guideline be monitored?	Via Datix and feedback from all teams involved with the care of TGA babies who require a BS procedure.
Approved by:	
Date Approved:	
Review Date:	*(usually 3 years from approval date eg January yyyy)*

1. Terms

Transposition of the Great Arteries = TGA
Balloon Septostomy = BS
BWC = Birmingham Women's and Children's Foundation Trust
BC = Birmingham Children's Hospital site (Steelhouse Lane)
BW = Birmingham Women's Hospital site (Mindelsohn Way)
KIDSNTS = BWC Transport Team
BC PICU = Birmingham Children's Paediatric Intensive Care Unit
BW NICU = Birmingham Women's Neonatal Intensive Care Unit
DS = Delivery Suite

2. Introduction and background:

If a baby with TGA is born with an intact atrial septum or if the septum and/or PDA closes soon after birth, the baby can suffer catastrophic cardiac failure due to unbalanced pulmonary and systemic pressures, which can quickly become incompatible with life.

In September 2019 there was an alert sent out to inform the BW NICU that Edward Life Sciences had withdrawn all the existing stock of the Miller and Fogarty Septostomy balloon secondary to some adverse events reported to the FDA in the United States. The only alternative was to use the Z5 balloon from Numed which is meant to be used over a guidewire. This requires passing the wire across the atrial communication before putting the balloon over the left atrium. This warrants all septostomy procedures to be performed in the catheter theatre and had major implications for the pathway of the babies born with TGA who require a septostomy.

In view of the above, TGA patients born at BWH can no longer be treated on site, therefore It is essential that these babies are identified antenatally and highlighted as **time critical** so that they can be assessed, stabilised and moved safely to a cardiac theatre after birth for an urgent septostomy.

This SOP has a been developed to provide the various teams that will be involved in the care of a baby with TGA a clear pathway to coordinate the care from antenatal phase, to resuscitation and stabilisation at birth and transfer to theatre/PICU or Ward 11.

3. Content:

3.1 Antenatal care:

- All babies with antenatal diagnosis of TGA will be delivered at BWH. There is a small population who may be undiagnosed.
- These mothers will have regular scans and counselling provided by Fetal Cardiology and Fetal Medicine teams.
- The parents will be fully informed at all points of the pathway so they can be engaged and aware of the plans and possible outcomes. These babies are usually delivered spontaneously, if possible.
- Detailed information will be provided to parents regarding the split site working between BWH and BCH and thus involving transport of babies (a specific counselling template has been created to maintain uniformity in information provided by the Fetal Cardiologists).

- Parents will be offered additional discussions or meetings with Neonatologists and also visit to BCH to meet the Cardiac Nurse specialist. These need to be planned and the consultations with neonatology are currently uncomissioned.
- The Fetal Medicine Consultant Midwife will email the Matrons and NICU Business administrator with upcoming TGA and other cot dependant deliveries expected in the coming four weeks, at the beginning of every month.
- The Maternity booking administrator will inform the Neonatal matrons/HoN of all upcoming cot dependant theatre bookings and the NICU Matrons will check the Fetal Medicine database every Monday, and record **with Name, DoB, Hosp Number and EDD**, and this will communicated by email to the BCH team as early as possible, at least one week.
- The Delivery Suite and Ward 1 staff will inform the NICU Matron/NIC if there are any babies in induction of labour (IOL) suite with an antenatally diagnosed TGA.

3.2 Delivery/Induction:

- At admission to hospital the NICU Nurse in charge/Matron/HoN/Constulant will be informed that woman is on site, by the obstetrician or DS Midwife in charge or matron.
- This information should be shared with the rest of the team as soon as possible and highlighted at the NICU daily Huddle (every day until the baby is born) to allocate teams to attend the potential delivery.
- Attending team at delivery must include Neonatal Consultant, Senior trainee/ANNP, junior doctor and at least two neonatal nurses/one of them senior/qualified neonatal nurse)
- The NNU consultant will refer the patient and inform KIDSNTS who will conference the on-call cardiologist. The KIDSNTS Consultant will make the PICU Consultant aware of the possible be requirement.
- This is crucial to ensure optimal coordination of all teams involved especially transport team availability and bed allocated at BCH site.
- There should be fluent communication between teams at every shift change so that regarding progress up until the imminent delivery of the patient.
- At the time of Labour (spontaneous or induction) or Elective (Category 3) CS there will be communication with NICU Nurse in charge/Consultant who will mobilise the attending team and inform KIDS/NTS.
- The baby must be born on Delivery Suite/ DS theatre and not in any other theatre, including Gynae theatre. The NICU nurse in charge must be informed of the location by the DS midwife in charge and will disseminate this information appropriately.

3.3 Neonatal care:

DELIVERY ROOM/THEATRE:

  - BW NICU team (this is the allocated on call doctors and nurses who are qualified in speciality) **will attend the delivery, so need to be called in plenty of time**. The Neonatal consultant must be on site.
  - BW NICU team will assess the baby and resuscitate as per Neonatal Life Support (NLS) guidelines.

- SpO2 75-85% should be acceptable in cases with antenatal diagnosis of duct-dependent cyanotic heart lesion. Stable babies with normal breathing and SpO2 >75% may not require immediate intubation.
- **There may be occasions where antenatal scans suggest baby may require urgent septostomy for closed or restrictive atrial septum, in which case the teams involved may consider that the KIDS/NTS team should be present at the time of delivery to support the NNU team and facilitate time critical transfer**.
- Attending teams should be clearly identified, and roles clearly allocated to avoid confusion:
    - Generally, the NICU team will be responsible of initial resuscitation and stabilisation and KIDS/NTS will complete transfer to BCH following handover.
- Following resuscitation, baby will be transferred as soon as possible to the NICU for ongoing stabilisation, unless they are being taken directly to BCH from the delivery suite. The parents will be kept informed.

NEONATAL UNIT

On arrival, the medical team will assess the baby and discuss in conference call with KIDSNTS and the cardiologist to agree on a management plan and decide regarding the transfer and whether is it a time critical transfer.

- Arrangements should be made as soon as the baby is admitted to the unit to register the baby on Badgernet (to ensure an NHS number is generated) and call the on-call radiographer to attend.

- **Airway:** secure airway as per NLS algorithm and be vigilant of apnoea secondary to a prostaglandin infusion.
    - Where possible use premedication (see below).
    - Proceed to elective intubation if baby is due to be transferred out or requires >20 nanogram/kg/min Prostaglandin infusion.

- **Breathing:** Ensure gentle ventilation/ avoid hyperventilation (can increase pulmonary blood flow)
    - Aim for:
      SpO2 75-85%
      pH 7.35-7.40
      pCO2 5-7 Kpa
      PaO2 4-6 KPa

- **Circulation:** Obtain IV access (minimum 2x venous lines, ASAP) to commence Prostin (Prostoglandin E2) infusion which will be prepared and ready with an estimated birth weight, if necessary and administered by the NICU nurses following BW guidance.

- The NICU medical team will site an umbilical arterial catheter (UAC) and an umbilical venous catheter (UVC), where possible, <u>if this does not compromise or delay urgent transfer.</u>

The NICU medical and nursing team will prescribe and administer the following **as per the BW NICU guidance (Neonatal Formulary)** as soon as IV access is available:

- Vitamin K (intramuscular)
- Benzylpenicillin and Gentamicin (if required)
- Maintenance iv fluids (10% Glucose 60ml/kg/day)
- Morphine Loading Dose and Morphine Infusion (if ventilated and due to be transferred)
- Rocuronium Loading Dose and Rocuronium Infusion (If ventilated and due to be transferred)
- Inotropes: if concerns with shock, (consider ECHO if available) discuss with cardiologist and KIDS/NTS.

The BW NICU and KIDSNTS teams will work together with clear instructions as to who is leading the resuscitation and stabilisation of the baby.

<u>3.4 Transport:</u>

- If the KIDSNTS neonatal team is not available the paediatric team will be mobilised, if available. If there are other personnel available to mobilise this will be co-ordinated by the KIDSNTS team.
- If both KIDSNTS teams are unable to mobilise and there are no KIDSNTS personnel available then the BW NICU team will have to mobilise a team to carry out a time critical transfer of the baby.
- The on-call cardiologist will mobilise the Interventional team and Cathlab/theatre teams in preparation for the BS procedure and the baby will either be admitted to the BCH CICU or PICU. Flex beds may be considered or the baby may go straight to Cath lab. This is dependent on PICU bed availability.

<u>3.5 Post procedure care/plan:</u>

- Following the BS procedure in cathlab/theatre the baby will be transferred to BC CICU or PICU (depending on bed availability), or ward 11, if appropriate.
- If a BC PICU bed in not available, then there will be discussion regarding the possible transport of the baby back to BW NICU. This is dependant up on NICU capacity and KIDSNTS availability.

4. References:

1 Congenital heart disease: Duct- dependent lesions (Including hypoplastic left heart syndrome (HLHS) and left-sided outflow tract obstructions) Neonatal Guidelines 2019-2021. Staffordshire, Shropshire & Black Country Neonatal Operational Delivery Network NHS.

2 Duct dependent congenital heart disease. Clinical guideline (v5, January 2020) E Polke Children's Acute Transport Service NHS. www.cats.nhs.uk