Document Control

Title: Urgent referral for management of patent ductus arteriosus (PDA) in premature babies Reference: NWCHDN_10			
Authors: > Helen Sanderson (NWCHDN Manager) > Dr Caroline Jones (Paediatric Consultant Cardiologist and Clinical Lead) > Linda Griffiths (NWCHDN Lead Nurse) > Megan Johnson (MDT Coordinator at Alder Hey NHS Foundation Trust) > Dr Gaik Min Tan (ST Paediatrics)			**Lead Clinician:** Dr Caroline Jones (Paediatric Consultant Cardiologist and Clinical Lead)
Directorate/ Network: North West , North Wales and Isle of Man Congenital Heart Disease Operational Delivery Network			
Version	Date Issued	Status	Comment/ Change/ approval
V1.0	June 2019	FINAL	Original version written by Helen Sanderson
V2.0	10/12/2020	Draft	Old Fax form removed. Pathway signposts to MDT discussion. JCC attached
V3.0	14/01/2021	FINAL	JCC removed – recommend contacting team for up to date form. Contact numbers added
Main Contact: Helen Sanderson			Phone: 0151 252 5308 Email: northwestchdnetwork@alderhey.nhs.uk
Superseded Documents: NA			
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Stakeholders Consulted (list all) > NWNODN > NW Connect Transport Team > NW Paediatric Critical Care Network			
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Comments			

Urgent Referral for Management of Patent Ductus Arteriosus (PDA) in Premature Babies

Date: 14/01/2021
Helen Sanderson (NWCHDN Manager),
Dr Caroline Jones (Paediatric Consultant Cardiologist and Clinical Lead),
Linda Griffiths (NWCHDN Lead Nurse),
Megan Johnson (MDT Coordinator at Alder Hey NHS Foundation Trust),
Dr Gaik Min Tan (ST Paediatrics)

Contributors:
NWNODN
NW Connect Transport Team
NW Paediatric Critical Care Network

Assessment and Referral

This pathway is to be followed in association with the **Neonatal Guideline GL-ODN-09 "The Management of Patent Ductus Arteriosus (PDA)"** developed by the North West Neonatal Operational Delivery Network. If after this sequential assessment the baby is felt to require consideration for surgical or interventional closure of a haemodynamically significant Persistent Ductus Arteriosus (hsPDA) please follow the referral guidelines below.

All babies requiring congenital heart surgery or intervention must be discussed at the Supra Regional Congenital Heart Disease MDT which is held weekly on Thursdays at Alder Hey Children's NHS Foundation Trust (and on MS Teams). It is assumed that the baby is being cared for in a regional neonatal unit.

Please contact the MDT co-ordinators (megan.johnson23@nhs.net 0151 282 4514 and tracy.oakes@nhs.net 0151 282 4515) to be sent the latest **MDT discussion template form (yellow sheet). This should be completed by the referring team and contain the following minimum information.** Investigations should all be less than 1 week old (clotting sample < 4 weeks if previously normal and no suspicion of acquired, inherited or drug induced clotting abnormality).

- Latest weight, GA/weight at birth and postnatal age.
- Dates of medical treatment for hsPDA.
- Other co-morbidities and prognosis from neonatal team.
- Blood results including as a minimum, FBC, U+E, clotting and CRP (neonates at Liverpool Women's should have a blood group sent (shared blood bank)).
- Latest chest x ray report.
- Current level of ventilatory support and chronology of respiratory support required.
- **Echocardiogram report** – complete examination to exclude other CHD. Assessment should be standardised according to the NWNODN guidance.

The diagnosis of hsPDA should be made in the presence of supportive clinical signs and at least 3 of the above echo indices:

1. PDA diameter > 2.0 mm (either using 2D or colour Doppler) ;
   Short axis and sagittal arch/ ductal cut to look at PDA geometry (used to assess suitability for intervention)
2. Ductal flow pattern ('growing' pattern or pulsatile with Vmax < 2 m/s and Vmax/Vmin > 2);
3. Retrograde post ductal aortic/coeliac/SMA diastolic flow;
4. La/Ao > 2;
5. LVO > 300 ml/kg/min;
6. Mitral valve E/A ratio > 1

Image transfer

Where possible the latest chest X-ray and echocardiogram should be sent to Alder Hey Carestream PACS (if not already available on Cheshire and Mersey PACS).

The echocardiogram presented for discussion should contain a full set of images to exclude other congenital heart disease. Echocardiographic assessment of hsPDA should follow NWNODN guidance and standardised measurements should be made.

The case should be discussed with the cardiology ST on call or the consultant of the week. Completed discussion forms should be sent to the cardiology ST on call via email to Ahc-tr.cardreg@nhs.net. They will review the form and enter the patient onto the MDT database. Manchester patients don't require prior discussion and will discussed as other CHD cases are by the RMCH cardiology and/or neonatology team.

If there is agreement then a planned date for discussion will be given. In rare cases where there is an emergency or a theatre slot available prior to Thursday meeting then an 'emergency MDT' may be called according to CHD peer review standards. All cases discussed in this fashion must be retrospectively brought to the Thursday MDT.

MDT discussion

The case will be discussed at the NW Cardiac MDT on a Thursday morning (08:30 – 11:30). Chest X-ray and echo assessment will be reviewed. Where possible it is useful for the lead neonatologist or paediatrician to join the meeting and present the clinical case (via MS Teams). Please email the MDT co-ordinators for invites and rough timing for case discussion.

If there is consensus that surgery or intervention is required then the baby will be formally listed, triage category (timing for surgery/intervention) will be assigned in the meeting.

If the referring team are not present at the meeting it will be the responsibility of the cardiac ST (or consultant) to feedback the outcome of the meeting and plans for intervention. Provisional date should be assigned at the Thursday cardiac listing meeting (after the MDT) and then the surgical or intervention pathway co-ordinators will liaise with the referring centre regarding the planned date of surgery and instructions (including timing of COVID testing required).

Following listing any changes to clinical condition should be discussed with the on call cardiology team this particularly includes escalation of ventilation, new vasoactive support, any infection concerns.

Consent

The child's parent(s) must accompany the child to Alder Hey to sign the consent form, arriving no later than 8am. If parents arrive later than 8am this may result in surgery being delayed or cancelled.

Transport

Please note due to the changing pattern in referral for PDA closure in the NW (and patient acuity) we no longer offer a 'park and ride' service for PDA closure. Usually it will be planned for patients to arrive early on the morning of surgery. In some cases where neonates are more complex with need for inotropes or severe chronic lung disease earlier transfer for ICU and anaesthetic assessment may be required.

All neonates will stay at least one night on PICU post procedure for stabilisation and post procedure assessment.

It should be expected that patients will be intubated and ventilated for transfer back to the referring neonatal unit (even when pre-operatively on non-invasive support). In rare cases the neonate may need to return to another tertiary neonatal centre to recover if ventilation is not provided in the local centre. When the cardiac team and ICU are satisfied about clinical condition the referring team (and transport) will be contacted to accept the patient back into neonatal care

****THERE IS NO LONGER ANY NEED TO TRANSFER ANY BLOOD PRODUCTS WITH THE PATIENT****

Summary of PDA Referral Pathway

hsPDA confirmed on assessment
Neonatal guidance suggests intervention
Patient should be fully assessed and be free of inter-current infection

Referring team to complete MDT Form

MDT Coordinators
Megan Johnson
megan.johnson23@nhs.net
0151 282 4514
Tracy Oakes
tracy.oakes@nhs.net
0151 282 4515

Neonatal team contacts Alder Hey Paediatric Cardiology ST or consultant of the week

Via Switchboard on 0151 228 4811

Directly on Consultant of the week phone 0151 252 5220

Via SpR on Call 0151 228 4811 Bleep 369

Echo images/CXR to be sent via PACS where possible
MDT discussion form to be sent to cardiology ST on call Ahc-tr.cardreg@nhs.net for review and telephone discussion
Referral accepted
MDT coordinator will liaise with referrer to agree date for MDT discussion via MS Teams

Patient discussed at regional cardiac MDT
If suitable patient listed for surgery or intervention
On call team to feedback meeting outcome and plan to referring team

Provisional date arranged (listing meeting)
Cardiac surgery or interventional PCO to liaise with referring centre regarding date and enter on calendar

Transport to be arranged for date
Please telephone ICU on 0151 252 5242/ 5241 on the morning of transfer and prior to departure to confirm bed available and provide clinical handover

ICU to contact referring centre and transport team when patient ready for transport back to neonatal care

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Please note any **changes to clinical condition** following referral should be discussed with the cardiology on call team e.g
**Escalation of respiratory support*
**New vasoactive support*
**Infection concerns*