Paediatricians with Expertise in Cardiology Special Interest Group

G240 USING THE DELPHI METHOD TO DEVELOP CONSENSUS ON A REFERRAL PATHWAY FOR POTENTIALLY ABNORMAL NEURODEVELOPMENT IN CHILDREN WITH HEART DISEASE

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Introduction Children with congenital heart disease (CHD) have complex medical and neurodevelopmental needs. Our aim was to develop a professional consensus-based protocol for referral pathways following the application of the Brief Developmental Assessment (BDA) – an early recognition tool which allows categorisation of a child's current neurodevelopmental status as GREEN (appropriate for age), RED (delayed) or AMBER (equivocal). The BDA has been validated in age groups covering 4 months to 5 years, and supports specialist referral by providing targeted additional and helpful information on the child's development.

Methods The Delphi consensus process involved emailed survey questionnaires, eliciting individual decisions, aggregating group responses and providing formal feedback of group choices. A survey detailing two scenarios – a child identified with *red BDA* and a child identified with *amber BDA* – was sent to 80 key professionals and stakeholders involved in managing children with CHD seeking agreement on clear referral pathways on identification of red or amber BDA.

Results The survey was completed by 77 Delphi panel members in Round 1 and 73 in Round 2. For red BDA, there was strong agreement that children should be under the care of a community paediatrician and local child development team, and that referral to a community paediatrician should be undertaken at the point of first assessment. For amber BDA, there was consensus that the child should be under the care of a paediatrician with expertise in cardiology (PEC) (or general paediatrician if no PEC) based at their local hospital, and if not under the care of a PEC that it is the responsibility of the child's paediatric cardiologist to refer them to a PEC.

Conclusions The Delphi process helped facilitate consensus on referral pathways for specialist assessment/treatment following red and amber BDA. On notification of abnormal BDA from the tertiary hospital, the PEC (or general paediatrician if no PEC) at the local hospital and the health visitor are key health professionals who can link a child with CHD and developmental problems with the local child development team for appropriate neurodevelopmental assessment and intervention.

G241 INCIDENCE AND OUTCOMES OF INFANTS WITH CONGENITAL DIAPHRAGMATIC HERNIA ASSOCIATED WITH CARDIOVASCULAR MALFORMATION: A 10 YEARS RETROSPECTIVE STUDY

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Background Congenital diaphragmatic hernia (CDH) occurs in 1.7–5.7/10,000 live births and is associated with significant neonatal mortality. It is reported to be associated with congenital cardiovascular malformations (CCM) in up to 10.6% cases, an association which significantly increases mortality.

Aims To study the incidence and outcomes of infants with CDH associated with significant CCM in a UK tertiary neonatal referral centre.

Methods PA retrospective observational study involved all infants diagnosed with CDH and admitted to our maternity hospital between Jan 2007-Dec 2016. Data was collected from electronic patient records.

Results A total of 52 infants diagnosed with CDH were identified. median gestation was 38 weeks (IQR: 36–39 weeks) and average birth weight was 2820 grams (IQR: 2200–3260 grams).

10 infants (19%) had associated CCM as shown in table 1. PFO and PDA were excluded as thought normal findings in this population.

Overall survival in our cohort was 79% (41/52) whilst 11 patients (21%) died during infancy. 4 of the 10 infants (40%) with CDH and CCM died whilst mortality was 17% in infants without such association. Pre-operative mortality was higher in infants with CCM, 30% Vs 12% in infants without CCM. Half of the infants with CCM needed transfer to specialist ECMO cardiac centres. Only 2 of the 42 infants without CCM needed transfer for ECMO.

Conclusion In our cohort, there was an increased incidence of significant CCM concomitant with CDH than previously reported. Moreover, there was lower incidence of mortality in our cohort. Associated CCM, however, still greatly increased the risk of requiring additional specialist care and increased mortality rates as compared to CDH alone.

Abstract G241 Table 1 Types of congenital cardiac malformation associated with CDH

Type of congenital cardiac malformation	No of cases (%)
Atrioventricular septal defect (AVSD)	3 (30%)
Ventricular septal defect (VSD)	2 (20%)
Hypoplastic left heart syndrome	1 (10%)
Tetralogy of Fallot (TOF)	1 (10%)
Coarctation of aorta	1 (10%)
Ebstein anomaly	1 (10%)

G242 IMPROVED ANTENATAL DETECTION OF CRITICAL CONGENITAL HEART DISEASE RESULTS IN IMPROVED OUTCOME

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Introduction Isolated reports from selected populations suggest early diagnosis of critical congenital heart disease (cCHD) may result in improved outcome, especially in conditions where the surgical outcome is excellent; however, there are few population-based data to support this hypothesis. Furthermore, interpretation is frequently complicated by failure to account for noncardiac comorbidity that may drive outcome.

Methods We undertook a population-based review of newborns with cCHD born between 2006 and 2014. Cases were acquired from the National Fetal Cardiology and Cardiac Surgical databases and from the statutory reporting body for perinatal deaths. All diagnoses from 20 weeks gestation and diagnoses made at post-mortem were included. The timing of diagnosis, survival to cardiac surgery and 30 day mortality were reviewed in all livebirths where there was potential for a two-ventricle circulation. Those with syndromes, additional major noncardiac anomalies were excluded from the analysis as were those born prematurely (i.e. <35 weeks gestation).

Results Of the 436 infants born with cCHD and a potential 2 ventricle circulation, 371 did not have a syndrome or a major non-cardiac abnormality.

The rate of antenatal diagnosis increased during the study period while the rate of postnatal diagnosis before and after hospital discharge declined ($p=0.006$).

The 30 day mortality rate declined from 7.0% to 0.9% during the study period ($p=0.049$) and was largely confined to those who died prior to cardiac surgery.

Termination of pregnancy was uncommon and did not vary over the study period.

Conclusions There has been a significant increase in the rate of antenatal diagnosis in infants with a potential two ventricle circulation. This has been an associated decrease in 30 day mortality.

It is likely there are a number of factors responsible for these findings including earlier diagnosis allowing delivery at the cardiac surgical centre, and enhanced intensive care treatment before surgery.

G243 A MORE EFFICIENT REGIONAL CARDIAC NETWORK: YES, WECCAN!

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Background and aims Outpatient paediatric cardiology services in the West Midlands Children's Cardiac Network (WeCCaN) consist of cardiology clinics in the tertiary centre and clinics in District General Hospitals (DGHs) run by either Consultant Paediatric Cardiologists (joint cardiology clinics) or by Paediatricians with Expertise in Cardiology (PECs). We aimed to assess the

communication between tertiary cardiology, local Paediatricians and PECs and establish whether the cardiac network runs efficiently.

Methods We collected data from all patients seen in tertiary cardiology clinics over a period of one month (November 2016).

Results In total 1023 patients were seen between 01/11/2016 and 30/11/2016 in 108 Cardiology clinics and 12 specialist cardiac clinics. Age range was 3 weeks-19 years and M:F ratio was 1.3:1. Diagnosis was divided in: simple structural defects (35%), complex structural defects (28%), non-structural heart disease (21%) and acquired/inherited disease (16%). 195 patients were new (12%) and 828 were follow-up (81%). There was no cardiac pathology identified in 66% of new referrals. 369 patients (36%) had underlying non-cardiac comorbidities.

Communication to PECs took place in 26% of new referrals and 34% of follow-up patients (postcode in a region with PEC service). Letters to General/Community Paediatrician were sent in 45% of new referrals and 53% of follow-up patients. Looking into disease severity and reasons for referral/follow-up, we concluded that 77% of new and 30% of follow-up patients could have seen a PEC instead of a Consultant Paediatric Cardiologist.

Conclusions

- Communication between tertiary Cardiology and PECs is suboptimal: We are currently working towards an information-sharing network, by providing access to our cardiac database for all West Midlands PECs.
- Communication with Paediatricians is suboptimal: We wish to approach Community Paediatricians and create a working relationship to ensure that all patients with complex heart disease undergo neurodevelopmental surveillance.
- 2/3rd of new patients and 1/3rd of follow-ups could have seen a PEC.
- 1 in 6 patients are under cardiac surveillance for acquired/inherited disease: Re-designing cardiac services to include PEC and/or combined nurse practitioner/physiologist-led clinics in the tertiary centre is being discussed to improve efficiency and enhance workforce development.

G244 HOW GOOD ARE PAEDIATRIC DOCTORS IN INTERPRETING ECGS

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Aim

- Conduct a survey among Yorkshire paediatric doctors and identify deficiencies in paediatric ECG interpretation skills and knowledge.
- Assess the need for a paediatric ECG e-module.

Methods An online questionnaire was sent out to all Yorkshire Paediatric doctors. The questionnaire dealt with topics ranging from lead placements to common paediatric abnormalities in separate sections. In each subsection, subjective questions relating to confidence in interpretation were followed by objective questions. Participants were also asked about the usefulness of a problem based ECG e-module and were asked to provide suggestions for topics to be included.

Results Total numbers: