OC37 CHALLENGES AND SUCCESSES OF IMPLEMENTING A PAEDIATRIC EARLY WARNING SYSTEM IN A LIMITED RESOURCE PAEDIATRIC ONCOLOGY SETTING

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10.1136/archdischild-2019-epa.36

Outlining the experience of implementing a paediatric early warning system (PEWS) for Upendo Paediatric Oncology Ward at Muhimbili National Hospital (MNH), Dar Es Salaam, Tanzania.

Background Children on the paediatric oncology ward in Muhimbili National Hospital, Dar es Salaam, were experiencing poor clinical outcomes after common emergencies with 100% mortality rates for any child requiring CPR. From 2012 to 2015, a team of Irish paediatric specialists, supported by a Tanzanian NGO called Tumaini la Maisha, provided an annual standard paediatric resuscitation training programme.

Despite these efforts, staff knowledge, skill retention and clinical outcomes did not improve. An observational analysis in 2016 revealed poor vital sign assessment practices, lack of documentation and examples of failure to detect, escalate and respond to child clinical deterioration.

Intervention We designed five bespoke age-specific paediatric observation charts with inbuilt vital sign triggers, escalation pathway, communication guide, 'event record' and a locally appropriate resuscitation course to suit the specific needs of the ward.

Implementation Strategy Over three annual visits from 2016–2018, PEWS was introduced to Upendo ward with the tailored education programme for medical and nursing staff. Resources including pdf charts, posters, training slide-set and a PEWS implementation policy were provided to facilitate local ownership of the PEWS. Local champions were identified to act as trainers and peer support during the time between visiting faculty visits. In 2018, Paediatric Pocket Guides were introduced as additional aide-memoires for oncology guidelines and PEWS reference ranges.

Challenges Challenges to implementation of the new charts and escalation behaviours included lack of availability of basic monitoring equipment, low staffing ratios, weekly turnover of medical interns, and insufficient acute care facilities. Ward nursing culture of task-based rather than patient-based care, non-structured handover practices and lack of integrated communication between nurses and the medical team presented the greatest challenge to embedding PEWS.

Successes and Learning By 2018 two new specifically designed courses were developed for MNH. The Paediatric Assessment of Illness, Resuscitation and Stabilisation (PAIRS) and 8-week paediatric oncology nursing course were conducted. PEWS training was central to the ethos of both courses and removed most of the cultural barriers identified above. PEWS and patient-centred care are now standard on the ward with all staff utilising the Paediatric Pocket Guides to supplement their knowledge of PEWS. Early recognition of the acutely unwell and deteriorating child is now a well understood goal of all staff. This initiative shows the importance of audit and local engagement to bring about successful clinical change.

OC38 IMPACT OF MALNUTRITION ON EARLY CHILDHOOD DEVELOPMENT

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10.1136/archdischild-2019-epa.37

Background Malnutrition and impaired early childhood development continue to exist as two giant childhood health problems, particularly in the developing world. Both conditions often co-exist and exert effect on each other, aggravating the problems. Here we have studied the impact of malnutrition on early childhood development in different age groups, in a marginalized rural community in India, to identify the most vulnerable age group.

Method We screened 837 children aged 0–3 years and 540 aged 3–6 years. Anthropometric measurements (weight, height and mid-arm circumference) were recorded and nutritional status determined by deriving the Z-score for weight for length. Developmental delay was assessed by Denver Development Screening Test II, Trivandrum Development Screening Chart and Amiel-Tyson method of tone assessment.

Result Occurrence of malnutrition was similar in both age groups (33–35%), with minimum incidence among 0–1 year age group. Incidence of developmental delay was 6.5% and 3.1% in 0–3 year and 3–6 year age groups respectively. In 0–3 years age group Incidence of developmental delay was significantly higher among children with malnutrition (p value <0.05); no such correlation was seen among the older children.

Conclusion Malnutrition during 1st three years of life, is a major risk factor for poor neuro-developmental outcome. A multi-pronged approach to provide proper nutrition to mother and child, improve health and hygiene and adequate psychomotor stimulation will improve developmental outcome in children.

OC39 THE INCIDENCE OF CONGENITAL HEART DISEASE IN BAKU-AZERBAIJAN. PROSPECTIVE EPIDEMIOLOGY STUDY

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10.1136/archdischild-2019-epa.38

Background The incidence of Congenital Heart Disease (CHD) in Azerbaijan has never been calculated with a prospective study, using Echo-2D as a study method

Aim First prospective epidemiology study calculating incidence and types of CHD in Baku, Azerbaijan.

Population-method From June 2016 to August 2018, 2570 term neonates were screened in 2 major maternity units. The screening was randomized to equal females/males with no known previous obstetric alert regarding CHD. Scanning was done by two teams of pediatric cardiologists in echo-2D. Each team was 'blinded' to the findings of each other. All scans were recorded, and a third senior physician reevaluated them.

Results From 2570 term neonates of the general population we detected 47 CHD's. From them, 17 were c-CHD and 5, s-

CHD. 25 were simple or moderate complex non-cyanotic CHD. The estimated incidence was 1.828%. 17/47 (36.2%) were cyanotic. The incidence of simple CHD was 25/47(53.2%). Analysis of the specific anatomy is presented in table 1.

Abstract OC39 Table 1

1	BAov (functional/anatomic) no additional disease	3.035%
2	VSD (isolated/all types)	14.9%
3	ASD (isolated/all types)	8.5%
4	PDA (isolated)	6.384%
5	c-AVSD	4.258%
6	A-P window	2.128%
7	Coronary artery abnormalities	4.256%
8	PA valve stenosis	4.256%
9	Ao valve stenosis	4.256%
10	Mitral valve disease	2.128%
11	CoA (isolated/all types)	4.256%
12	IAA (isolated/all types)	2.128%
13	ToF (all types)	6.384%
14	d-TGA (all types)	4.256%
15	PAv atresia with IVS	4.256%
16	DORV (all types)	4.256%
17	TAPVD (all types)	4.256%
18	Tricuspid valve atresia	2.128%
19	HLHS	2.128%
20	c-c-TGA	2.128%
21	Truncus Arteriosus	2.128%
22	Ebstein Anomaly	2.128%
23	Univentricular Anatomy	2.128%
24	Heterotaxia Syndromes	2.128%
25	Shone's Complex	2.128%
26	Core triatrium	2.128%

Conclusions This first-ever prospective epidemiology study in Azerbaijan involving a cohort equal to 1.65% of the annual living births of the country, estimated a high incidence. This is among the highest reported globally. The amount of critical & cyanotic CHD was 46.8% and 36.2% respectable. These high numbers are possibly related to an isolated population and conjugated marriage customs of the country. This represents a public population health burden.

OC40

IS DOWN SYNDROME RELATED ARTHRITIS (DA) A DISTINCT DISEASE FROM JUVENILE IDIOPATHIC ARTHRITIS (JIA)?

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10.1136/archdischild-2019-epa.39

DA is frequently polyarticular-RF-negative with predominance in the small joints of the hands and wrists. It has an erosive phenotype, and clinically appears to be a more aggressive disease than JIA. Arthritis occurs more frequently in children with Down syndrome (DS), with prevalence 20 times greater than JIA. To date little is known about the underlying mechanisms that drive DA disease pathogenesis, however these features suggest that DA may be distinct from JIA. We wanted to explore this hypothesis by examining B-cell subsets and T-

cell cytokine profiles; and characterising and comparing the synovial membrane immunohistochemistry in DA versus JIA.

Methods Multicolour-flow cytometry was used to analyse B and T cell phenotypes in PBMCs from 40 children (n=10/group - Healthy Control (HC), JIA, DS, DA), and assessed by Flowjo software analysis. Cells were stained as follows; B-cell panel (CD38, CD24, CD20, CD80, CD27, IgM, CD138, CD45, CD19, MHC class II, BCMA, CD40, CD86, IgD); T-cell panel - cytokines analysed after 5-hours PMA/Ionomycin stimulation (CD3, CD8, CD161, IFN- γ , TNF- α , IL-17a, GM-CSF).

Synovial tissue was obtained through US-guided biopsy and analysed by immunohistochemistry for CD3, CD20, CD68, FVIII (DA n=3; JIA n=4). Levels of vascularity and lining layer hyperplasia were also scored. Analysis was performed using a semi-quantification scoring method.

Results Flow cytometry analysis revealed that children with DA had a significantly lower number of circulating CD19 +CD20+ B cells when compared to children with JIA (p<0.05) and HC (p<0.001). However, they had a greater proportion of memory B cells (CD27+) when compared to children with DS (p<0.05).

IFN- γ and TNF- α production by CD8+/CD8- T cells was greater in DA compared to both JIA (CD8+IFN γ + p<0.001; CD8+TNF α + p<0.01; CD8-IFN γ + p<0.05; CD8-TNF α p<0.05) and HC (CD8+IFN γ + p<0.05; CD8+TNF α + p<0.05; CD8-IFN γ + p<0.05; CD8-TNF α p<0.01).

Examination of synovial tissue demonstrated marked increase in synovial lining layer hyperplasia in DA (median 6 (3-9)) versus JIA (median 3(2-4)). Higher levels of CD3+ cells (p<0.05), Macrophages (p<0.05), CD20+ cells and FVIII in DA were also observed.

Conclusion Significant differences were observed in the immune and histological profiles of DA and JIA. These differences may begin to explain the erosive phenotype observed in DA. This study is important as it is the first of its kind to describe the immuno-histology of DA. Understanding the pathogenesis of DA will allow for more targeted, personalised treatment approaches, in turn improving outcomes and therefore quality of life for children with Down syndrome and arthritis.

OC42

PHARMACOLOGICAL INDUCTION OF A20: ANTI-INFLAMMATORY EFFECTS IN PAEDIATRIC ASTHMA

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10.1136/archdischild-2019-epa.40

Background Chronic exaggerated inflammation in asthma is mediated by the activation of pro-inflammatory transcription factor NF- κ B(p65) and an intrinsic lack of its down-regulator A20. A20 has strong anti-inflammatory effects when induced, and as such could be an attractive anti-inflammatory pharmacological target. Bioinformatic approaches using statistically significant connection Map (sscMap)) predict that prednisone and amitriptyline would induce A20 in asthmatic airway epithelial cells. We performed a proof of concept study to determine whether amitriptyline applied to nasal airway epithelial cells (AEC) from children could be beneficial in asthma.