quality improvement system is a digital innovation deployed at Kamuzu Central Hospital (KCH), Neonatal Unit, Malawi, from April 2019, facilitating automated, real-time, prospective audit via a data dashboard.

Objectives To describe the pattern of admissions and outcomes in a Malawian neonatal unit over a one-year period via a prototype data dashboard, using a bedside electronic data collection and quality improvement system: NeoTree.

Methods An electronic audit of admissions to KCH, Neonatal Unit (1st May 2019 to 31st April 2020) was carried out. Data were collected prospectively by nursing staff at the point of care, using electronic forms in the NeoTree app on tablet devices. Admission and outcome forms contained embedded reminders, education and training regarding newborn care according to national and international guidelines. Data were exported from the tablets to a cloud database. The data were then reviewed, visualised, and retrieved via a Microsoft Power BI dashboard. Data cleaning and descriptive statistics were executed using R.

Results A total of 2732 neonates were admitted and 2413 (88.3%) had an outcome recorded electronically using the NeoTree app. Of 2413 whose outcome was known, 1899 (78.7%) were discharged alive, 12 (0.5%) were referred to another hospital and 10 (0.4%) left the hospital before being discharged. One fifth (n=492) infants died, giving an overall case fatality rate of 204/1000 admissions. Of 492 deaths, the commonest causes of death were prematurity with respiratory distress (n=252, 51%), neonatal sepsis (n=116, 23%), and neonatal encephalopathy (n=80, 16%). Almost half (45%) of deaths occurred within the first 72 hours of admission. The most common perceived modifiable factors around deaths were inadequate monitoring of vital signs and management of sepsis. Monthly trends were tracked in relation to a change in admission criteria and the COVID-19 pandemic. 202 (8.1%) neonates were HIV exposed and 143 (70.8%) of these received nevirapine as prophylaxis leaving 59 (29.2%) vulnerable to vertical infection. Data collected on the NeoTree app were on average 96% complete across all data fields and coverage of admissions, discharges and deaths was 97%, 99% and 91% respectively when compared with the ward logbook.

Conclusions This is the first electronic, point-of-care audit of neonatal admissions and outcomes to a neonatal unit, collected by health professionals using a mobile app, reported via a data dashboard. This system achieved high coverage and completeness of data over a one-year period suggesting that M-health quality improvement systems such as the NeoTree can provide and improve quality of data for audit, timely reporting, and effective decision making regarding neonatal care in low resource settings, even during significant external stresses such as the COVID-19 pandemic. A larger scale evaluation of impact on quality of care and case fatality rate is planned.

British Association of Perinatal Medicine and Neonatal Society

1504

NEONATAL HYPERTENSION: INCIDENCE AND OUTCOME FROM TEN YEARS' EXPERIENCE OF A REGIONAL NICU

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Background Hypertension in the neonatal period is uncommon with studies reporting an incidence of 0.2–3%. There is little data on the clinical course and outcome of these infants.

Objectives To evaluate the incidence and outcome of neonatal hypertension

Methods A retrospective observational study in newborn infants admitted to NICU over a 10 year period (January 2011 to December 2020). Hypertension was defined as systolic BP >95th centile for gestation and age for at least 3 consecutive readings measured using an indwelling arterial line or non-invasive devices such as Dinamap or manual measurement using a Doppler.

- Inclusion criteria – Coding of Neonatal hypertension in Badgernet neonatal database.
- Exclusion criteria – Early death in the perinatal period or in the first week of life

Demographic details of infants with neonatal hypertension were obtained. Case records were further interrogated to evaluate the management of neonatal hypertension, clinical course, and duration of medical treatment. Information on medical treatment at home and follow-up reviews were ascertained to determine the outcome.

Results 24 infants were found to have hypertension from a total of 11192 admissions to the NICU over the 10 year period, giving an incidence of 0.22%. Mean gestation at birth, birth weight and age at diagnosis were 35+2 weeks, 2.58 Kg respectively. The median age at diagnosis was 2 weeks (IQR 1–4 weeks). 14/24 (58%) infants were out-born.

13 (54%) were found to have a renal abnormality. 7 (29%) had an umbilical arterial line inserted. 5 (21%) had exposure to antenatal steroids. 1 (2.5%) of the infants were found to have a structural cardiac abnormality. Anti-hypertensive therapy was initiated in 12 (50%) and the rest were managed with fluid restriction. At the time of discharge, hypertension had resolved in 13 (54%). At the latest follow-up (mean 31 months), only 3 remained on anti-hypertensive treatment after one year of life with a structurally normal heart on echocardiography.

Conclusions Neonatal hypertension is rare and the most common aetiology is kidney disease. Hypertension resolves in the vast majority of infants in the first year of life.

RCPCCH Trainees Committee

1510

INVOLVE ME AND I LEARN – INTEGRATING MEDICAL STUDENTS IN MULTIDISCIPLINARY IN-SITU SIMULATION

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Background Paediatric exposure during medical school is often limited to rotations that last a few weeks, and include multiple areas such as clinics, NICU, wards and the emergency department. Many students finish their placement with good theoretical knowledge of managing the critically unwell child but limited practical experience and application of such. Simulation is a growing part of the medical school curriculum however it mainly remains adult based. Simulation

offers a safe environment in which medical students can put their knowledge into practice while developing the clinical and communication skills vital for working in hospital MDTs.

Objectives By involving medical students in departmental MDT simulation we aimed to increase their exposure in managing paediatric emergencies. Further aims included for medical students to gain an appreciation of the importance of non-technical skills, communication and team-working. Shared learning with the MDT can help medical students feel valued and part of the firm while improving team-based competencies which cannot be taught in the lecture theatre.

Methods Our department's in-situ paediatric simulation teaching occurs every fortnight and is open to the paediatric and emergency medical and nursing teams. Medical students completing paediatric placements were invited to participate in these sessions. They completed post session questionnaires.

Results Over a one-year period medical students were able to attend 10 MDT paediatric in-situ simulations. Other participants included paediatric and emergency doctors and members of the nursing team (including students). The clinical scenarios focused on different paediatric emergencies including sepsis, status epilepticus and congenital heart disease. On average 2–3 medical students were able to attend each session; they were encouraged to participate in the simulation and were involved in the debrief. 91% of medical students strongly agreed that the difficulty was about right for their level. 93% strongly agreed the sessions were relevant for their practice. 78% felt involved in the learning. 97% strongly agreed they found the debrief useful.

Conclusions

- Medical students often have limited exposure in managing the critically unwell child. Involving them in paediatric MDT simulations gives them practical experience of dealing with paediatric emergencies.
- Medical students benefit from shared learning with the MDT and develop skills in technical and functional expertise, problem-solving and decision-making.
- Simulation with the MDT offers a unique way for medical students to develop their interpersonal and communication skills and team-based competencies.
- We advocate the development of an established paediatric simulation programme within the medical school curriculum. Not only will this enhance medical students' paediatric rotations but could be the spark that inspires a student's lifelong passion for the speciality.

Quality Improvement and Patient Safety

1513 IMPROVING HANDOVER AMONG JUNIOR DOCTORS

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Background Handover is the single most important duty that a junior doctor performs throughout the years of training. There is no one perfect handover process, but over time, the art of handing over becomes refined and maybe perfect by trial and error as well as learning from others.

Objectives Improving clinical handover by junior doctors in a local NHS hospital.

Methods Following the PDSA cycle for improvement, the initial planning started with identifying the problem, formulating a data collection proforma and establishing the end desired result. The criteria's to be audited were identified from the drivers of change. The areas of handover to be assessed were, the structure of handover & organisation, safety briefing, unit ward management, workload and non-technical skills e.g., highlighting protected teaching times for junior doctors

The first set of data collection was run over fifteen consecutive days including weekend. The assessors were Consultants and registrars. A month after introducing the handover poster, the second round of data collection was then carried out. The proforma for assessment was the same as the first round. The assessments were carried out for fifteen consecutive days including weekend. The data gathered was analysed by the project lead for both rounds.

The audit findings were shared among the team to build awareness. The existing departmental policy for clinical handover was updated and designed in a poster format and displayed at strategic positions of the ward so that the effect can be maximised.

Results Findings from the first round of data collection

Safety briefing	Unit ward management	Structure of handover & organisation	Workload	Non -technical skills
65%	68%	92%	28%	24%

The first round of data collection showed that the structure of handover & organisation was clearly the strongest feature of the clinical handover. But the workload and non-technical skills were not discussed regularly by the outgoing team. HDU proforma and the number of non-completed e discharges which fall under the workload criteria was only discussed in 28% of handover meetings.

Findings from the second round of data collection

Safety briefing	Unit ward management	Structure of handover & organisation	Workload	Non -technical skills
99%	100%	100%	76%	80%

Analysis of data collected from second-round showed three out of five criteria achieved the 100 per cent target. There was considerable improvement in the presentation of workload and non -technical skills too. The workload had moved from 28% compliance in cycle 1 to 76% in cycle 2 and teaching from 24% to 80%.

Conclusions The introduction of the handover poster had significantly improved the efficiency and safety of patient handover in the general Paediatric ward of the local NHS hospital. The change has led to a decrease in communication failures hence maintaining the communication chain and better functioning as a team. This project has shown success locally and there is a potential that it can be adopted for other units in an NHS setting as well.