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%) were on antihypertensive medications, 143 (70.8%) of these received nevirapine as prophylaxis leaving 59 (29.2%) vulnerable neonates were HIV exposed and 143 (70.8%) of these were on antiretroviral therapy. 142 (61.2%) were exposed to maternal hypertension, 5 (2.1%) had exposure to antenatal steroids. 1 (2.5%) of the infants were found to be hypertensive at birth and the remaining were normotensive at birth. 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.
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 work 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 team 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.

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**Quality Improvement and Patient Safety**

**IMPROVING HANDOVER AMONG JUNIOR DOCTORS**

1 Anustupa Banerjee, 2 S Saxty. 1 Newcross Hospital; 2 Newcross Hospital

**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

<table>
<thead>
<tr>
<th>Safety briefing</th>
<th>Unit ward management</th>
<th>Structure of handover &amp; organisation</th>
<th>Workload</th>
<th>Non-technical skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>65%</td>
<td>68%</td>
<td>92%</td>
<td>28%</td>
<td>24%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Safety briefing</th>
<th>Unit ward management</th>
<th>Structure of handover &amp; organisation</th>
<th>Workload</th>
<th>Non-technical skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>99%</td>
<td>100%</td>
<td>100%</td>
<td>76%</td>
<td>80%</td>
</tr>
</tbody>
</table>

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.