Results 157 children (mean 11.6 years; range 2 months – 17.8 years) were identified. 56 children (36%) had a cardiomyopathy, 23 (15%) had structural heart disease and 78 (50%) were receiving bisoprolol with a structural normal heart for the prevention or treatment of arrhythmias. 149 children had a weight documented. The starting dose of bisoprolol ranged from 0.02 mg/kg/day to 0.19 mg/kg/day (mean 0.06 mg/kg/day); independent of the indication. The dose was up titrated in 90 (57%) of children. The weight was documented in 77 of these patients and up-titrated doses in these patients ranged from 0.02 mg/kg/day to 0.4 mg/kg/day (mean 0.14 mg/kg/day). A total of 24 (15%) of children had documented adverse events attributed to bisoprolol. Fatigue or dizziness were the most common reported adverse events, with 67% of the total events. In total, 5 children (3%) stopped bisoprolol due to adverse events; 4 due to fatigue or dizziness and 1 because of wheeze in a known asthmatic. HR was documented before and after initiation of bisoprolol in 89 patients (57%). The mean change was a decrease of 8 beats per minute (bpm) and all were within normal limits. Systolic blood pressure (BP) was documented before and after initiation of bisoprolol in 61 patients (39%). The mean change was a reduction of 4.2 millimeters of mercury (mmHg) and all were within normal limits.

Conclusion Our experience shows that initiating bisoprolol in paediatric cardiology patients with a cardiomyopathy, structural heart disease and normal structural heart, to treat arrhythmias, heart failure, outflow tract obstruction and systemic hypertension at a dose of 0.06 mg/kg once a day, up to a maintenance dose of 0.14 mg/kg/day was safe. However, this is limited by the sample size and retrospective nature of the study. Further studies are needed to be able to comment on the efficacy in this cohort of patients.

P11 ADAPTATION AND IMPLEMENTATION OF STANDARDISED CONCENTRATIONS AND GUARDRAILS TECHNOLOGY IN PAEDIATRIC INTENSIVE CARE

[1]Henal Gandhi, [2]Naomi Rogers, [1]Stephen Tugwell, [2]Linda Eftychiou, [1]Charlotte Briar, [1]Eva Zizkova, [1]Sukeshi Makhecha*. *[1]Royal Brompton Hospital; [2]Kings Health Partners Cardiovascular and Respiratory Partnership Programme*

10.1136/archdischild-2023-NPPG.10

Context Implementation of standardised concentrations of continuous infusions (SCCI) in paediatrics and guardrails technology on smart pumps significantly reduces medication errors and improves patient safety.[1–3] There is a national drive to implement SCCI coupled with guardrails technology on smart pumps, driven by the Neonatal and Paediatric Pharmacists Group (NPPG) and Royal College of Paediatrics and Child Health (RCPCH).[2 3] The merger of two specialist paediatric hospitals prompted alignment of governance processes, of which SCCI implementation across the organisation was key. This article focuses on Hospital B's experience of implementing SCCI and guardrails, utilizing resources from Hospital A, who implemented in 2018.[3]

Methods A team led by pharmacists was convened to lead this quality improvement initiative, linking with Hospital A, to obtain resources including the guardrails library (dataset) and learning from their experience. Hospital B's pharmacists engaged with key stakeholders within paediatrics including a consultant, nurse educator, QI lead nurse and bedside nurse, to review, adapt and validate the library to suit their patient cohort. Plan Do Study Act cycles were used to continuously improve the process of implementation. A staff education session was conducted, outlining the importance and use of SCCI and guardrails.

Results The dataset obtained from Hospital A required some adaptation across 49 drugs; 18 drugs were removed as not routinely used at Hospital B. 71% (22/31) of the adapted standard concentrations were similar whilst 29% (9/31) were amended.

100% of the dataset underwent changes, mostly minor; 12 drugs had units amended whilst 28 of the default doses, 18 of the soft minimum doses, 20 of the soft maximum doses and 23 of the hard max doses were amended.

Rationale for these changes include a slightly different patient cohort in Hospital B; mainly with fluid restriction in patients post-surgery requiring higher doses of sedation and inotropes. Additionally, the SCCI were tailored in line with guidelines, available formulations/strengths such as ready-to-use esmolol and to the adult cohort to aid familiarity, facilitating cross-working between adult and paediatric wards. And for guardrails, minimum or default doses were reduced to enable the lowest dose to be given whilst maximum doses were increased. All changes were to align to guidelines, BNFc or local practice. Unit changes were made to ensure familiarity.

Conclusions and Lessons Learned In conclusion 'one size does not fit all' and using a dataset without adapting it to context poses safety risks. Adaptation of datasets by individuals tailored to local practice and patient cohort is key for successful and safe implementation. This is aligned with the evidence translation literature, which recognises that adoption of changes is complex and context dependent.[4]

Key learning points include engagement of key stakeholders is essential to ensure good communication and buy-in. Tailoring of datasets to meet patient needs is vital; considering PDSA cycles and the test, learn and scale up approach. Comprehensive education and training is crucial to ensure correct utilisation and safety, particularly as implementing changes poses increased risk of medication errors.

REFERENCES

1. Royal College of Paediatrics and Child's Health, Standardising intravenous infusion concentrations for children in the UK, April 2021, Pages 1 -12 https://www.rcpch.ac.uk/sites/default/files/2021-05/Standard Infusions JMC Paper v0.2.pdf
2. National Patient Safety Agency, Patient Safety Alert, March 2007, pages 1–12. https://healthcareea.vctms.co.uk/assets/content/9652/4759/content/injectable.pdf
3. Joanne Perkins, Virginia Aguado-Lorenzo, Sara Arenas-Lopez, Standard concentration infusions in paediatric intensive care: the clinical approach. *Journal of Pharmacy and Pharmacology* 2017;**69**:537–543. https://doi.org/10.1111/jphp.12604
4. Reed JE, Howe C, Doyle C, *et al*. Simple rules for evidence translation in complex systems: a qualitative study. *BMC Med* 2018;**16**:92. https://doi.org/10.1186/s12916-018-1076-9

P12 AN AUDIT OF THE USE OF DEXMEDETOMIDINE FOR SEDATION IN A TERTIARY PICU

[1]Mary Healy, [1]Sian Bentley, [1]Sukeshi Makhecha*, [2]Sarah Al-Dhahir. *[1]Royal Brompton and Harefield Hospitals; [2]University College London*

10.1136/archdischild-2023-NPPG.11

Aim Dexmedetomidine is a selective central alpha-2 adrenergic receptor agonist. It induces sedation closely mimicking natural sleep, reduces anxiety and has sympatholytic effects – without having a clinically significant effect on respiratory function. Dexmedetomidine has a short half-life and quick onset of action, which have resulted in it being increasingly

favoured on the unit over the cheaper first line alpha-2 adrenergic agonist clonidine. Our 'Guidelines for Analgesia and Sedation in Children on the Paediatric Intensive Care Unit (PICU)'[1] were updated in 2020 to include guidance on the use of dexmedetomidine, including approved indications, for the first time. We aimed to assess compliance and efficacy of dexmedetomidine in hospitalised children on the PICU or Paediatric High Dependency Unit (PHDU) against indications and doses in our updated guidelines between September 2020 and May 2021:

- IV dexmedetomidine should be prescribed for one of the listed indications
- The dose of IV dexmedetomidine should not exceed 1.4 microgram/kg/hour
- The duration of IV dexmedetomidine should not exceed 72 hours

Method The audit was registered with the trust. Children prescribed IV dexmedetomidine on the PICU or PHDU were identified using the electronic prescribing system. Indication was identified using electronic medical notes. COMFORT scores were documented before and after dexmedetomidine initiation.[2] Education on the updated guidelines were provided before the data collection period and an update in January 2021 was delivered in the format of a monthly 'DRUGgle'.

Results 33 patients with a median age of 2.2 years (range 2 months – 14.4 years) received IV dexmedetomidine. 32/33 prescriptions (97%) were as per the agreed indications. One patient (3%) was prescribed dexmedetomidine despite not having a trial of standard therapies. 18/32 (56%) of the courses for approved indications were to aid extubation, 12 (36%) for sedation in patients on non-invasive ventilation, and 2 patients (6%) received dexmedetomidine after prolonged use of standard therapies failed. In the 14 patients (total of 18 dexmedetomidine courses) for indications other than to aid extubation, COMFORT scores were recorded for 15 courses, but none had documented target scores. Patients remained or moved into a comfortable sedation score (12–17 COMFORT-B, 18–25 for COMFORT-Original) in 9 cases, 5 were slightly over sedated (10–11 COMFORT-B, 14–17 COMFORT-Original) and 1 infusion resulted in over sedation (<13 COMFORT-Original). IV dexmedetomidine did not exceed the maximum dose of 1.4 microgram/kg/hr in any of the patients identified. IV dexmedetomidine infusion was administered for more than 72 hours in 3 patients (9%): in two, a transition to clonidine was not attempted in a timely manner, in the third this was not successful due to labile blood pressure, bradycardia and restlessness. The main limitation was clarity on documented indications.

Conclusion Overall, compliance to approved indications for dexmedetomidine prescriptions was high; with 97% of all prescriptions as per updated guidelines. The dose never exceeded the recommended, but an infusion was administered for more than 72 hours in 9% of patients. COMFORT scores were maintained in comfortable range in almost all cases. A repeat audit will be carried out.

REFERENCES

1. Royal Brompton and Harefield NHS Foundation Trust. Guidelines for Analgesia and Sedation in Children on the Paediatric Intensive Care Unit (PICU). 2020.
2. The Wellcome-Wolfson Institute for Experimental Medicine. SANDWICH – Sedation and Weaning in Children. COMFORT Original and COMFORT Behavioural Scores, 2018 [Online]. Available from: https://nicola.qub.ac.uk/sites/sandwich/SANDWICHQIBundle/COMFORT/COMFORTOriginalScore/HowtoInterpretaCOMFORTOScore/

P13 TRAMETINIB FOR CHYLOTHORAX MANAGEMENT IN NOONAN SYNDROME: DISCUSSION ABOUT EFFICACY, SAFETY AND TOLERABILITY

Teresa Brooks*, Sarah Whiteley, Stephen Morris, Alix Dunlop-Jones, Ines Hribernik, Jamie Bentham. *Leeds Children's Hospital*

10.1136/archdischild-2023-NPPG.12

Introduction Trametinib is a novel medicine that inhibits the mitogen-activated protein kinase enzyme (MEK), part of the mitogen-activated protein kinases (MAPK) signalling pathway. MAPKs regulates cell behaviour by controlling DNA transcription and subsequent protein production. It was developed to inhibit growth of cancers with an up-regulated MAPK signalling pathway. However, its role is expanding to other conditions which also have a link to MAPK pathways. Noonan syndrome is a genetic multisystem disorder which is linked to dysregulation of MAPK pathway.[1] Lymphatic abnormalities, most commonly peripheral lymphoedema, are estimated to be present in up to 20% of individuals. There had been one case report in literature whereby a patient with Noonan's syndrome was treated with MEK inhibitor (trametinib) with remodelling of lymphatic vasculature and complete resolution of symptoms.[2]

Situation A 3-year-old girl with previous intensive care admissions for chylothorax. Background issues included Noonan syndrome (RIT1 mutation), hypertrophic obstructive cardiomyopathy (HOCM), multiple congenital cardiac abnormalities, and spontaneous bowel perforation with a history of high output ileostomy. Previous failed treatments for the chylothoraces using conventional methods included medium-chained triglyceride (MCT) diet, parenteral nutrition (PN) and octreotide. Trametinib was accessed through Novartis' compassionate scheme as a rescue treatment. Patients treated with MEK inhibitors are likely to encounter adverse effects including skin irritation, diarrhoea, hypertension, vision changes and pneumonitis. Dosage adjustment or withholding treatment is required if renal, hepatic or worsening cardiovascular impairment occurs. It was felt that this child needed a bespoke side effect management protocol due to their comorbidities. The protocol was devised by the pharmacist in consultation with the mother of the child, dietitian, cardiologist and general surgeon. It was important to particularly target the management of skin rashes, increased stoma losses, pneumonitis, hypertension and cardiac impairment. Tolerability and side effects were monitored and the protocol was followed and adjusted as clinically appropriate based on multidisciplinary team (MDT) and family discussions.

Lessons Learnt This medication is only routinely used in oncology patients in an outpatient setting. Therefore, the side effect management is based on practice within this patient cohort.[3] In this situation the treatment was novel, using a theoretical pathway to guide its use. In addition, this child had comorbidities which complicated assessment of side effects. The side effects seen were skin irritation, increased stoma output and nausea, despite proactive management. Skin irritation was managed with short courses of steroid cream and regular emollients under guidance from a dermatologist. High stoma losses (>20 mL/kg) occurred despite maximum dose of loperamide and withholding most enteral nutrition, allowing small bites of fat-free food for comfort, and drinks of rehydration solution as part of a stoma losses replacement plan. In total, 12 weeks of treatment was given, with no chylothorax reoccurrence seen at 10 weeks post-treatment. In conclusion, our