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### CHILD PRESENTING WITH PAROXYSMAL ATRIO-VENTRICULAR HEART BLOCK, A MULTI-DISCIPLINARY TEAM APPROACH

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**Clinical Pearl** What the case involved: 16 month old female presented to local emergency department with short sudden episodes of floppiness and head dropping, followed by immediate return to normal self. Referred to regional centre for neurology review, 24 hour ECG noted marked bradycardia during episodes of head dropping. On cardiology review there were no abnormalities detected on examination, echo or 12 lead ECG. Multi-disciplinary team approach required to determine management. 24 hour ECG evidenced abrupt onset of complete atrio-ventricular block, ventricular standstill of up to 7 seconds with spontaneous recovery of atrio-ventricular conduction.

**Pharmacist contribution:** Literature reviewed and treatment options determined by multi-disciplinary team. Evidence strongly supportive of theophylline.<sup>1-3</sup> Issues with prescribing and use of unlicensed medicines considered and authorisation obtained. Treatment commenced and 24hour ECG performed and analysed daily to determine effect of theophylline on number of atrio-ventricular block episodes. Pharmacokinetic knowledge applied to determine appropriate dose, dosage interval, interpretation of levels and response to treatment. A family centred care approach was taken throughout and parents understood and engaged with the treatment plan. A response to treatment was observed as demonstrated by reduced clinical symptoms, confirmed by ECG findings which showed a small reduction in the number of atrio-ventricular block episodes. However, parents and nursing staff reported notable drug side effects of sweating, agitation and bad behaviour two hours post dose, despite achieving therapeutic concentrations. Parents also felt the frequency of drug administration required at home would be difficult to manage and they had a level of anxiety regarding the unpredictable frequency of the episodes and feeling the need to be in attendance at all times. In the long-term this could have significant implications for family life. On review the multi-disciplinary team and parents agreed the response to theophylline was not adequate enough for a long-term option and the patient proceeded to pacemaker insertion. All were in agreement that this was the correct decision.

**Outcome** Permanent pacemaker inserted, programmed to VVI mode. This mode will prevent bradycardia by pacing the ventricle if there is a loss of atrio-ventricular synchrony and inhibit ventricular pacing in response to intrinsic ventricular

rhythm. Most recent pacing check: ventricular pacing 1.8% of the time = approx. 2.7hours/week

**Lessons Learned** Advantage of multi-disciplinary team approach to care. The benefits of engaging parents in discussions and treatment plans were highlighted and improved the patient and family journey. The multi-disciplinary team acknowledged this and will endeavour to apply this approach in the future. The multi-disciplinary team improved their knowledge of the processes involved when using unlicensed medicines and the complex issues around this. The processes followed in this scenario confirmed the importance of evidence and research to plan future novel treatment options.

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### INTRODUCTION OF STANDARDISED PARENTERAL NUTRITION FOR USE IN PRETERM NEONATES IN A NEONATAL INTENSIVE CARE UNIT AT A LARGE TERTIARY HOSPITAL

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**Aim** Following the publication of the updated NICE guidelines<sup>1</sup> recommending the use of standardised parenteral nutrition (PN) in preterm and term babies, alongside the known associated risks to patient safety with increased manipulations,<sup>2</sup> and the need to reduce workload pressures in the aseptic department, the decision was made to introduce standardised PN, Numeta G13 and G16 produced by Baxter, for all babies in the neonatal unit.

When initially introduced, 85% of babies weighing less than 1kg were changed to a bespoke PN. Of the babies who required a switch, 75% had hyponatraemia and/or hypophosphatemia and 45% were switched due to hyperglycaemia. Insulin usage in this cohort had increased from 33% to 76%. An earlier study trialling standard additions of sodium glycerophosphate had reduced the switch rate due to electrolyte imbalance. The aim of this prospective study was to trial an alternative building regimen to reduce the number of patients requiring a switch to bespoke PN due to hyperglycaemia.

**Method** Standardised PN was routinely titrated by 20ml/kg/day, starting at 60ml/kg/day, up to 120ml/kg/day, with extra glucose 5% to provide enough fluid for hydration. For this prospective study, any neonate weighing less than 1.5kg was commenced on a slower build starting with 40ml/kg/day and building by 20ml/kg/day up to 120ml/kg/day. Glucose 5% was continued to be used as the 'top-up' fluid of choice. This equated to a more gradual build of glucose over the initial 5 day period. Hyperglycaemia was managed using the Trust's 'Management of Hyperglycaemia in the Neonate' guideline.<sup>3</sup> 22 patients were included in the study and their insulin requirements and requirement to switch to a bespoke PN were recorded.

**Results** Insulin usage in this cohort decreased from 75% to 45%. Although higher than the usage prior to the introduction of standardised PN, this is likely explained by the