compliance to a certain degree and this drug is not used often enough to be familiar to the average junior doctor. The use of vancomycin in complex and requires an understanding of pharmacokinetics and drug handling unique to the pharmacist skill set. Our aim for the future is that as our pharmacist team acquires more independent prescribers, direct adjustment of treatment plans will become a pharmacist role within the Trust.

REFERENCE

1. Haylor J. Vancomycin use in paediatrics - prescribing and monitoring. University Hospitals Bristol Foundation Trust Clinical Audit 2014.

P004

AN EVALUATION OF THE MANAGEMENT OF THROMBOSIS IN NEONATES AND INFANTS USING DALTEPARIN

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Aim To assess the safety and efficacy of the current dalteparin dosing recommendations in achieving therapeutic anti-Xa levels, when used for the treatment of thrombosis in neonates and infants. The objectives included: To assess the number of neonates/infants administered dalteparin for thrombotic events To evaluate how many neonates/infants achieved a therapeutic anti-Xa level (4 hour post-dose level of 0.5–1 unit/ml) To measure the duration between starting dalteparin and achieving a therapeutic anti-Xa level.

Methods Retrospective electronic searches were conducted to identify neonates and children prescribed and administered dalteparin between January 2016 and October 2017. These included reports from the JAC pharmacy dispensing programme, Medchart (electronic prescription chart) and Omnicell (ward electronic medicines storage system). A data collection form was designed using Excel, and piloted on a few randomly selected patients. Following the pilot, appropriate changes were made to the form. Inclusion criteria included: Treatment doses of dalteparin Neonates/infants under 12 months age Exclusion criteria included: Dalteparin thromboprophylaxis Missing data e.g. no anti-Xa levels recorded Patients were started on dalteparin using the dosing recommendations outlined in the dalteparin monograph in the Hospital paediatric formulary and the Trust's Paediatric thrombosis guideline: 150 units/kg twice a day for babies under 5 kg 100 units/kg twice a day for babies over 5kg Doses that achieved therapeutic peak anti-Xa levels (4 hour post dose level of 0.5–1 unit/ml) were obtained by analysing the patient's Medchart (electronic prescription chart) and electronic patient record (EPR). The duration between receiving an initial dose of dalteparin and achieving a therapeutic anti-Xa concentration was recorded to evaluate clinical effectiveness. Creatinine, urea and platelet measurements were analysed to assess the safety of dalteparin, as dalteparin can accumulate in patients with renal impairment, and thrombocytopenia is a common side-effect.

Results A total of 25 patients were included in the study: 18 neonates and 7 infants. In the neonatal group, ages ranged from 32 weeks preterm to 42 days post term delivery. The median age at time of dalteparin administration was 15 days. Weights ranged from 1.8 kg to 4.2 kg. In the infant group, ages ranged from 2 to 11 months. Weights ranged from 3.2 kg to 11.7 kg. 100% (25/25) patients achieved a therapeutic

anti-Xa level; however, 100% (25/25) patients required dose adjustments to reach these levels. The mean dose required to reach therapeutic anti-Xa levels in neonates and infants was 250 units/kg (± 60) and 140 units/kg (± 50), respectively. In neonates, the duration between initial dalteparin administration and achieving therapeutic anti-Xa levels ranged from 2–8 days. In 8/18 (44%) patients, it took a minimum 5 days to achieve therapeutic anti-Xa levels. No episodes of renal impairment or thrombocytopenia were observed.

Conclusion Dalteparin was successful in achieving therapeutic anti-Xa levels in neonates and infants following cumulative dose increases from the initial dose. The initial recommended dose of dalteparin for neonates is too low and should be increased to 250 units/kg achieve therapeutic anti-Xa levels quicker, and to minimise the need for numerous blood tests and dose adjustments. Further studies are required to verify these results, due to the small patient numbers.

P005

DIPHTHERIA TREATMENT

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Background Diphtheria is a life threatening but vaccine preventable disease. 5 cases were identified by Public Health England (PHE) in 2017.¹ Respiratory diphtheria is characterised by a pseudomembrane which obstructs the airways. Corynebacterium diphtheria produces an exotoxin that causes local tissue necrosis, myocarditis, polyneuropathy, paralysis, respiratory failure and death.

Clinical case A 4 year old boy was admitted via A&E with suspected croup requiring intubation and ventilation on intensive care unit (ICU). Throat swabs confirmed diphtheria diagnosis, PHE was contacted and diphtheria antitoxin was obtained. The patient received two subcutaneous doses of diphtheria-antitoxin. He developed myocarditis, Acute Kidney Injury (AKI), impaired left ventricular function and polyneuropathy. He was treated with 14 days intravenous vancomycin and clindamycin following multiple antibiotic changes.

Pharmacy contribution Anti-toxin: Diphtheria anti-toxin was obtained and advice was provided regarding an appropriate dose and route of administration. Ward staff were reluctant to give a subcutaneous infusion. A pharmacist provided reassurance that this was the only way to treat the infection and a subcutaneous cannula was inserted. He was given 0.2 ml subcutaneously as a test dose followed by the remaining 40,000 units. His second dose was given as a test dose of 0.2 ml followed by 60,000 units between two sites due to multi-organ involvement. Chemoprophylaxis: The patient's family and 34 staff members required prophylactic antibiotics. They received azithromycin 500 mg once daily for 3 days. Staff members had throat swabs and were to remain off work until these swabs were negative which resulted in the Trust cancelling elective operations and admissions. Pharmacy confirmed azithromycin was safe for 34 adult patients and checked for interactions with currently prescribed medicines and advised appropriately.

Critical care Creatinine doubled and the pharmacist reviewed drugs to account for renal impairment. The pharmacist highlighted that clarithromycin can prolong QT interval. An echocardiogram revealed the patient had prolonged QT interval and clarithromycin was switched to an alternative after discussion with the microbiologist.