2017/18 to 2018/19; approximately £9,300 and £57,000 respectively. One patient was given a higher dose over a shorter period but the total dose for each course was the same. The shortened regimen meant that doses were rounded to the nearest vial size, which reduced wastage. The demand for IVIG is increasing and due to its limited availability and high cost, it is important that IVIG is only given to patients that meet the specified requirements.

Recommendations

- Ensure patients are only supplied with IVIG if the above standards are met
- Neurology pharmacist to re-audit data annually to ensure that IVIG is being given according to guidelines

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P54 MAPPING THE PREVALENCE AND NATURE OF DRUG RELATED PROBLEMS AMONG HOSPITALISED CHILDREN IN THE UNITED KINGDOM: A SYSTEMATIC REVIEW

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Aims Problems with medication account for 10–20% of all adverse healthcare events in the NHS, costing between £200–400 million per year.[1] Children are more likely to experience medication related harm.[2] International reviews of the prevalence of drug-related problems are over ten years old.[3] There is a need for a focussed and critical review of the prevalence and nature of drug-related problems in hospitalised children in the UK to support the development and targeting of interventions to improve medication safety.[4]

Methods Nine electronic databases (Medline, Embase, CINAHL, PsychInfo, IPA, Scopus, HMIC, BNI, The Cochrane library and clinical trial databases) were searched from January 1999 to September 2018. Studies were included if they were based in the UK, reported on the frequency of adverse drug reactions (ADRs), adverse drug events (ADEs) or medication errors (MEs) affecting hospitalised children, and quality appraisal of the studies was conducted.

Results 26 studies were included; none of which specifically reported on the prevalence of ADEs. Three ADR studies reported a median prevalence of 28.3% of patients (IQR 13); >70% of reactions warranted withdrawal of medication. Sixteen studies reported on prescribing errors and the median prescribing error rate in all paediatric contexts was 10.7% of prescriptions (IQR 6) Seven studies explored prescribing errors in PICU and the prevalence was twice that in non-ICU areas (11.1% prescriptions; IQR 2.9 versus 6.5% prescriptions; IQR 4.3). The median rate of dose prescribing errors was 11.1% doses prescribed (IQR 10.6). Four studies reported administration errors of which three used consistent methods. Across these three studies, a median prevalence of 12.4% of administrations (IQR 7.3) was found. Administration technique errors represented 53% of these errors (IQR 14.7). Errors detected during medicines reconciliation at hospital admission affected 43% of patients, 33% (IQR 13) of prescribed medication with 70.3% (IQR 14) classified as potentially harmful. Medication errors detected during reconciliation on discharge from hospital affected 33% of patients and 19.7% of medicines, with 22% considered potentially harmful. No studies examined the prevalence of monitoring or dispensing errors.

Conclusions Children are commonly affected by drug-related problems throughout their hospital journey. Given the high prevalence and risk of patient harm, there is an urgent need for outcome-focussed research on preventable ADEs in paediatric hospital settings in the UK. A deeper understanding of medication processes for children in hospital from a systems and theoretical perspective will also support the development and tragetting of effective interventions to improve patient safety.

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P55 IMMUNOSUPPRESSION IN THE FIRST SIX WEEKS FOLLOWING PAEDIATRIC CARDIAC TRANSPLANT

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Aim The aim of this audit was to establish whether immunosuppression was being prescribed correctly and whether target levels were being reached during the first six weeks post-transplant.[1 2]

Method The standards were discussed and agreed, due to an absence of standardised local or national written protocols, with the lead paediatric cardiothoracic transplant consultant and a specialist transplant liaison nurse. The paediatric transplant database provided a list of patients between October 2016 and July 2018, from which paediatric cardiac transplant patients were included in this audit. All data were collected retrospectively, for the first six weeks post-transplant, from patient's electronic records.

Results Twenty-three patients were included in the audit; fifteen males and eight females and the mean age was 6 years old. The standards for the timing and dosing of the first ciclosporin dose were met for 87% and 78% of patients respectively. Six patients (26%) had a ciclosporin level within the target range by day 4 post-transplant, for the remaining seventeen patients the average was day 9 post-transplant. The mean levels remained within this range or slightly above after day 9. Azathioprine or mycophenolate was started within 7 days of transplant in 6 patients (23%). Four patients (17%) had documented episodes of rejection; in one patient all other standards were met and in the other three only one additional standard was not met. Nineteen patients (83%) did not have a documented episode of rejection.

Conclusions Post-transplant management is individualised based on multiple factors such as clinical conditions e.g. renal/liver impairment and whether other agents such as ATG or steroids are being used.[1] The lack of documentation around the treatment decisions made it difficult to explain deviations from standards in this audit. Ciclosporin standards were not met completely but were most likely unfeasible due to a narrow target range and the time between first dose and level monitoring. There did not appear to be a clear association between standards not being met and episodes of rejection. It would be beneficial to repeat this as a larger, prospective audit using revised standards.

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P56 WITHDRAWN AS AUTHOR REQUESTED IT IS NOT PUBLISHED

P57 CONTINUOUS DRUG DELIVERY IS SIGNIFICANTLY AFFECTED BY RELATIVE HEIGHT CHANGES BETWEEN PATIENT AND SYRINGE DRIVER

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Aims Syringe drivers are the principle method of giving continuous infusions of important drugs to patients. Many of these drugs are critical for the maintenance of normal physiology. Anecdotal evidence abounds of severe patient instability on movement of syringe drivers during infusion. Our objective was to define the variation in drug delivery seen in three different syringe drivers, with changes in relative height between the syringe driver and the end of the giving set.

Methods Three syringe drivers (Alaris CC (Becton Dickinson), Perfusor Space (B Braun), and Synamed µSP6000 (Arcomed)) were analysed for reliability of flow at 0.5, 1, 2, and 5 ml/hr. A small air bubble was introduced into the giving set, and the progression of this was documented before and after a vertical movement of the syringe driver by 25 or 50 cm upwards or downwards relative to the delivery port.

Results For all pumps, delivery was interrupted on movement of the pumps downwards, and a bolus was given with movement of the pump upwards. Delivery halted at lower pump speeds for longer than higher pump speeds. The maximum delivery interruption was 11.8 minutes. Boluses given on moving the pump up were calculated as the equivalent number of minutes needed to deliver the bolus volume at steady state. The maximum bolus given was equivalent to 15.8 minutes of delivery. We were unable to eliminate the effects seen by very slow, steady movement of the pumps up or down. Static height differences made no difference to delivery.

Conclusions Syringe drivers should not be moved vertically in relation to the patient. Critical drug delivery is interrupted for up to 12 minutes with relative downward movements, and significant boluses of drugs are given with relative upward movements. As far as possible, elimination of relative height movements is advised, and extreme caution is necessary if any movements are unavoidable.

P58 MANAGING ACCESS TO 'OUT OF HOURS' MEDICATIONS IN A TERTIARY PAEDIATRIC HOSPITAL

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Aims Many UK and Irish hospitals provide a Monday to Friday pharmacy service; automated dispensing cabinets and hospital-wide information systems remain uncommon. Locating and accessing out of hours (OOH) medications can be a significant workload for nursing staff. In an Irish 230-bed tertiary paediatric hospital processes involve: nursing staff contacting other wards by telephone to source items; completion of an 'Out of Hours Requisition'; and either transferring stock between wards or contacting nursing administration staff (NAS) to access stock from the Pharmacy Department. A quality improvement project was undertaken to: measure current levels of OOH medications; identify areas for improvement; implement and assess impact of new processes.

Methods 'Out of Hours Requisition' data were entered into a custom-built database and analysed for the period January - December 2018. The findings were discussed with nursing staff and NAS. Improving processes for locating medications was identified as a key area for improvement. The 'Out of Hours Requisition' form was amended to provide clearer instructions for completion. Using data from clinical area stock lists, a searchable Medicines Locator Database was developed and made accessible to all staff in the pharmacy department, clinical areas and the NAS office in December 2018 enabling staff to remotely identify the location of all medications stocked in the hospital. Data for 'Out of Hours Requisitions' for the period January - May 2019 were collated, analysed and compared with data from the same time period in 2018 (January - May). Microsoft Excel® was used for data collection, analyses and development of the Medicines Locator Database.

Results A total of 1747 OOH medications were accessed by NAS from pharmacy in 2018, 746 during the period January - May 2018. Anti-microbial agents (36%) were most common, with requests originating from 16 clinical areas. Request from the paediatric intensive care units (36%) and the surgical/orthopaedic ward (36%) were most frequent. 515 medications were accessed in the first 5 months after the introduction of the Medicines Locator Database (January - May 2019). This represents a 35% reduction in the number of medications dispensed in the same time period in 2018. No changes to the types of medications were identified, but some differences in clinical areas were found.

Conclusion This significant reduction (35%) in numbers of medications accessed out of hours, and the corresponding reduction in workload for NAS, demonstrates the benefits of reviewing medication management processes. Further substantial time savings for nursing staff locating stock at ward level are likely. Readily-available technology can be successfully