two sessions). 36 medicines were switched, generating £46,500 per year recurrent savings.

Feedback was good. Staff liked the opportunity for positive interaction with children and families appreciated the ease of obtaining tablet medications versus liquids. We subsequently trained other teams, including our research team who were recruiting for a study in which swallowing tablets is an inclusion criteria.

Conclusions In a short timeframe it is possible to embed a system to convert children to tablet medication, improving patient experience and realising considerable cost savings. It requires staff training and cultural change. Pill swallowing is an easy skill to teach and learn and children as young as five can successfully swallow pills. We automatically teach inhaler technique so equally we should teach CYP how to swallow tablets as a skill for life. We would encourage all units to set up pill swallowing training.

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P01 AN EVALUATION OF VANCOMYCIN THERAPY IN PAEDIATRIC PATIENTS POST GUIDELINE CHANGE

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Aim To evaluate the prescribed dose of vancomycin as per local guideline and review the achieved therapeutic drug levels.

Method Retrospective data was collected from paediatric inpatients that were prescribed vancomycin for more than 24 hours during the audit period. Data was obtained from the Trust's electronic prescribing system, LastWord. Measured standards included initial vancomycin dose, dose prescribed for renal impairment, time to first trough level and any required dose adjustments as per local guidance. The dose bands for each age group were[1]; birth - 6 months 15 mg/g 8 hourly; >6 months -12 months 20 mg/kg 8 hourly; >12 months – 12 years 25 mg/kg 8 hourly; >12 years 20 mg/kg 8 hourly. The number of patients achieving therapeutic vancomycin trough levels was recorded. Safety data was collected, including reported adverse effects, infusion related reactions and renal impairment. Renal impairment was defined as an increase in creatinine by 50%. Data was collected from April 2018 for 6 months. Relevant data with regards to patient demographics, dosing and drug levels were collected and analysed using Microsoft Excel.

Results 12 patients received 15 doses of vancomycin over 6 months. 67% of initial vancomycin doses were prescribed as per local guideline, 60% of therapeutic trough levels were taken at the right time and 71% of patients that were prescribed the correct dose *and* had levels taken at the right time achieved therapeutic trough levels. 12 patients required dose adjustments. One patient with renal impairment was not prescribed the recommended dose as per local guidance. One patient reported an infusion related reaction, which was overcome by increasing the infusion time. Two patients who received therapy for >7 days accumulated vancomycin and recorded high trough levels, with no adverse events. One patient reported an increase in creatinine by 50% over the treatment period.

Conclusions Vancomycin has the potential to induce nephrotoxicity and ototoxicity when consistently at high serum drug levels. Due to its narrow therapeutic index, drug levels should be monitored to ensure the drug does not accumulate. The licensed dose and dose listed in the BNF for Children [2 3] has historically under dosed patients at our trust, leading to the risk of ineffective therapy and bacterial resistance. It is unclear from research what the optimal dose is for paediatric patients.

More research is needed to determine the correct paediatric dose of vancomycin. Higher doses than currently recommended as per licence resulted in three quarters of patients achieving therapeutic levels, however 12 patients still required dose adjustment. No patients suffered irreversible adverse effects or toxicity, suggesting that higher doses are safe to use in the paediatric population. Further education is required for those involved in the prescribing, administering and monitoring of Vancomycin in paediatric patients to ensure its safe use. Additional monitoring is required for those receiving higher doses >7 days to prevent drug accumulation, alternatively a loading dose followed by lower maintenance dose may be a more suitable dosing regimen.

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P02 METHODS USED WHEN PREPARING NON-STANDARD GLUCOSE CONCENTRATIONS: A SURVEY OF UK NEONATAL UNITS

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Aims Administering intravenous (IV) glucose is common practice on the Neonatal Intensive Care Unit (NICU). The varying metabolic demands of patients in this environment coupled with the need for fluid restriction means the limited range of pre-made commercial products is not appropriate in every case. This can necessitate bedside preparation of glucose solutions, usually through addition of concentrated 50% glucose solution to a commercially available bag. Most IV glucose bags available contain an overage, i.e. they are filled to a greater volume than stated on the bag. Overages are quoted as ranges rather than absolute values, and vary according to manufacturer. This may lead to uncertainty as to the exact amount of 50% glucose to add in order to create the intended final concentration.

We aimed to determine the availability of guidelines to facilitate the safe, accurate preparation of non-standard glucose concentrations in NICUs across the UK, and to ascertain the range of methodologies in use.

Methods NICUs throughout the UK were identified and contacted via telephone. The following questions were asked:

1. Do you ever prepare non–standard glucose concentrations, for example 12.5%, 15% or 25%?

2. If yes, do you have a guideline which describes how these infusions should be prepared?

Where non-standard glucose concentrations were used and a guideline available, NICUs were asked to share this guideline for the purposes of analysis. Following receipt of the guidelines, they were categorised according to the broad method of glucose solution manufacture:

a. Removal of fluid from bag prior to addition of 50% glucose, taking into account published overage.
b. Removal of fluid from bag prior to addition of 50% glucose, not taking into account published overage.
c. Addition of 50% glucose, without prior removal of fluid from bag.
d. Mixing ratios of concentrations in a burette.
e. 'Piggybacking' a 50% glucose infusion onto an infusion of 5% glucose, guided by use of an online calculator.

Results 69.2% of the 65 NICUs contacted responded (n=45). 66.7% of respondents (n=30) had guidelines in use: these 30 guidelines were subjected to analysis.

Method a) was used in 6.7% of guidelines seen (n=2); method b) was used in 60% of cases (n=18); method c) was used in 3.3% of cases (n=1); method d) was used in 6.7% of cases (n=2); method e) was used in 10% of cases (n=3). 6.7% of guidelines used a different method according to the glucose concentration required (n=2). 6.7% of guidelines advised preparation of glucose in a syringe rather than an infusion bag (n=2).

Although method b) was the most commonly used, there was wide variation in recommended volumes to be added and/or removed.

Only 6.7% of guidelines reviewed specified the brand of infusion bag to be used (n=2).

Conclusions Considerable variation was seen in the methods of glucose infusion preparation used throughout the UK, suggesting a range of opinions as to the most accurate method of manufacture. Further work is needed to determine the relative accuracy of the different methods, and the clinical significance of the variation observed.

P03 PREPARING GLUCOSE INFUSIONS IN NEONATAL INTENSIVE CARE: DOES IT MATTER WHICH METHOD IS USED?

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Aims Administering intravenous (IV) glucose is common on the Neonatal Intensive Care Unit. Bedside preparation of glucose solutions is often necessary, usually through addition of concentrated 50% glucose to a commercially available bag. Accuracy in the glucose concentration of locally prepared bags will be influenced by a number of factors: variable overages in IV fluid bags, method of preparation and imprecision of measurement during preparation. We aimed to assess the accuracy of three different methods of preparation which had been identified through a national survey.

Methods Bags of 12.5%, 15% and 25% glucose were manufactured through the addition of 50% glucose solution to commercially available bags of 10% or 20% glucose. Three bags of each concentration, were manufactured by each of the methods below:

a. Removal of fluid from base bag prior to addition of 50% glucose, taking into account published overage.
b. Removal of fluid from base bag prior to addition of 50% glucose, not taking into account published overage.
c. Addition of 50% glucose, without prior removal of fluid from base bag.

Three 5 mL samples were then taken from each prepared bag and sent for analysis. Glucose concentration was measured using a quantitative spectrophotometric method. As a control, three 5 mL samples were taken from three bags each of commercially available 5%, 10% and 20% glucose infusion solutions and assayed as above.

Results A total of 81 'test' samples were sent for analysis along with 27 control samples. One 20% glucose control sample was lost in transport meaning that 80 samples were analysed. The median result for each concentration and method was calculated. For method a) where the intended final glucose concentration was 12.5%, 15% and 25%, the actual concentrations obtained were 11.2%, 13.3% and 22.9% respectively. For method b) where the intended final glucose concentration was 12.5%, 15% and 25%, the actual concentrations obtained were 12.4%, 13.4% and 22.0% respectively. For method c) where the intended final glucose concentration was 12.5%, 15% and 25%, the actual concentrations obtained were 12.1%, 13.8% and 20.3% respectively. For the 5%, 10% and 20% control solutions the median reported glucose concentrations were 5.1%, 10.3% and 19.9% respectively.

Conclusions Irrespective of method used and the intended strength, the measured glucose concentration was lower than that being aimed for. In some cases, the glucose concentration was only 80% of that intended. It is not possible to conclude that one method is superior in terms of accuracy. Although it might be possible from our results to suggest the most accurate method for each concentration, this is unlikely to be predictable as manufacturers quote overages as a range rather than an absolute value. In clinical practice, preparation of a glucose solution with a lower concentration than that expected may result in prolonged hypoglycaemia with potential neurological sequelae. An alternative to bedside manufacture of glucose infusion solutions is needed. This could include pharmacy compounding of glucose strengths not commercially available or 'piggy-backing' of 50% glucose onto an infusion of a commercially available strength, ideally supported by a glucose load calculator.

P04 BARRIERS AND FACILITATORS TO MEDICINES ADHERENCE IN CHILDREN: A SYSTEMATIC REVIEW

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Aim Improving adherence to medicines in children with chronic conditions may lead to significant economic and health benefits.[1] To improve adherence, the multifactorial causes of poor adherence should be understood.[1] A systematic review for barriers and facilitators to medicines adherence in children was conducted seven years ago.[2] We updated this to identify barriers and facilitators to medicines adherence in children reported in the last ten years.

Method A systematic literature search was performed using PubMed, EMBASE, Medline, CINAHL, IPA and Cochrane library databases covering the period November 2008 to