physiotherapists, podiatrists, dieticians and therapeutic radiographers. However, the first cohort of 51 students comprised entirely of paediatric nurses. The majority of students passed each assessment first time. All students passed the 5-minute information giving OSCE, but 25% of the students had to re-sit the pharmacology MCQ paper and 17% had to re-sit the drug calculations paper. Following the resits the remaining students all passed except for one student who failed the course.

Conclusion Overall, the course was well received, with positive feedback from most students and stakeholders. Valuable suggestions were also received for further improvements to the course and pharmacology module. These are currently being implemented with intake of students.

REFERENCE

1. Royal Pharmaceutical Society (2016) A competency framework for all prescribers. Available from: http://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Professional%20standards/Prescribing%20competency%20framework/prescribing-competency-framework.pdf [Accessed 25/6/19]

P23 ACCELERATING AND DE-RISKING THE PRODUCTION OF PAEDIATRIC ORAL FORMULATIONS

[1]Dilawar Khan*, [1]Daniel Kirby, [2]Simon Bryson, [2]Maryam Shah, [1]Mohammed Afzal. *[1]Aston University; [2]Proveca ltd*

10.1136/archdischild-2020-NPPG.32

Background & Aim As part of the EU paediatric regulation, the paediatric use marketing authorisation (PUMA) was introduced, with an aim to stimulate research in existing compounds that are off-patent and/or to help transform known off-label use into authorised use.[1] However, success has been limited, with only a few products gaining a PUMA, such as Sialanar 320 micrograms/mL glycopyrronium (equivalent to 400 micrograms/mL glycopyrronium bromide). A distinct challenge to overcome in this area is the development of more 'age appropriate formulations', particularly with an excipient composition and load that is suitable for paediatric patients. This project aims to establish an excipient screening platform, supplemented with analytical characterisation of materials, which will act as a decision making tool to accelerate and de-risk the production of age appropriate paediatric medicines.

Method To develop this excipient screening platform, a list of drugs that require an age appropriate formulation was produced using the 'needs for paediatric medicines' documents provided by the European medicines agency (EMA),[2]whilst common problematic excipients in paediatrics were identified using an EMA reflection paper.[3] Literature and prescribing data were also reviewed to ensure drugs selected would benefit from an age appropriate formulation. Differential scanning calorimetry (DSC) to determine compatibility of selected drugs with widely used excipients was carried out using a TA DSCQ200 instrument (TA Instruments, New Castle, DE) with TA Instruments Universal Analysis 2000 software. Data was collected under nitrogen atmosphere (50 mL min^{-1}) using pierced flat-bottomed TZero aluminium pans (sample mass about 2 mg) and heating rate of 10 °C min^{-1} in the range from 50 to 400°C. For samples containing both the drug and an excipient, 1 mg of each was measured out and gently mixed with a spatula for one minute.

Results The most common class of drugs identified as requiring age appropriate formulations were related to cardiovascular disorders and neurology, whilst the majority of drugs identified also exhibit poor aqueous solubilities. Some identified problematic excipients include ethanol, sodium benzoate and sorbitol; however, these excipients may still be used in paediatric formulations, as long as they are below certain concentrations (for example, ethanol concentration should not exceed 0.5% w/v for under 6 years old). Two drugs identified through the initial screening, carvedilol and nifedipine, were analysed by DSC, alone and then alongside starch from corn and starch 1500; the resulting DSC curves showed no changes in peak size, position (peak onset temperatures for nifedipine and carvedilol were observed at 173.2°C and 117.3°C, respectively) and shape, as well as no additional peaks, therefore suggesting compatibility between the tested samples.

Conclusion This first phase of the development of an excipient screening platform will continue to scan several different excipients with selected active pharmaceutical ingredients (APIs) in order to create compatibility profiles. The excipient screening platform generated will accelerate and de-risk the production of age appropriate formulations, as it would allow screening for potential incompatibilities and acceptability, alongside informing formulation of appropriate oral paediatric dosage forms.

REFERENCES

1. European Commission. State of Paediatric Medicines in the EU. 10 years of the EU Paediatric Regulation. COM (2017) 626. Available at: https://ec.europa.eu/health/sites/health/files/files/paediatrics/docs/2017_childrensmedicines_report_en.pdf
2. Needs for paediatric medicines - European Medicines Agency [Internet]. 2019 [cited 28 June 2019]. Available from: https://www.ema.europa.eu/en/human-regulatory/research-development/paediatric-medicines/needs-paediatric-medicines
3. Reflection paper: formulations of choice for the paediatric population [Internet]. European Medicines Agency. 2019 [cited 28 June 2019]. Available from: https://www.ema.europa.eu/en/documents/scientific-guideline/reflection-paper-formulations-choice-paediatric-population_en.pdf

P24 DOES AN INTERDISCIPLINARY APPROACH TO TABLET/CAPSULE SWALLOWING INCREASE THE UPTAKE OF OR TRANSITION TO SOLID ORAL DOSAGE FORMS IN PAEDIATRIC PATIENTS WITH ALL ACUTE LYMPHOBLASTIC LEUKAEMIA?

Anna Kinsella*. *Leeds Teaching Hospitals Trust*

10.1136/archdischild-2020-NPPG.33

Aim Most paediatric formulations produced for children are generally liquids or powders for reconstitution. Palatability of liquid formulations is often cited as a barrier to medication adherence.[1] An alternative to liquid formulations is the conventional solid oral dosage forms, such as tablets or capsules. However, another barrier faced by paediatric patients is the inability to swallow tablets.[2] This presents a number of challenges for children with ALL, as treatment contains a phase of extended 'maintenance' therapy to prevent relapse. This involves taking oral chemotherapy daily, ± monthly chemotherapy injections, over 2 years for girls and 3 years for boys. Prior to 2014, paediatric oncology pharmacists would work with children refusing to take or struggling with their liquid medicines. It was a simple approach, where 'tic-tacs®' were used and swallowinSg these was practiced together. Through education sessions and informal discussions with nursing, medical and play therapists, a culture evolved in 2014 whereby medicine taking was not just the responsibility of pharmacy but of the wider team. Nursing and medical staff were actively involved identifying families that needed support with

their medicines. Display boards were created advertising the option of tablets for different medicines and highlighting the different swallowing techniques. The play specialists became 'Medicine Champions' using novel approaches to provide children with the tools, confidence and ability to take tablets. Children who successfully mastered swallowing tablets were presented a 'star award' certificate for their achievement. Photographs of children with their certificates were displayed in the outpatient clinic.

Method Paediatric patients diagnosed with ALL between 2012 and 2017 were retrospectively identified using chemotherapy prescriptions, patient's medical notes and electronic patient medical records. Data collected included age at diagnosis, formulation choice initiated on and whether patients switched formulations during the course of their treatment. Children were excluded for the following reasons: if they had a history of swallowing difficulties/choking, if the child had learning difficulties or if the child was deceased.

Results 172 patients were diagnosed with ALL between 1st January 2012 and 31st December 2017; 14 patients were excluded (13 deceased,1 learning difficulties). The percentage of children aged 3–12 years taking tablets in 2012 and 2013 was 41% (n=7) and 20% (n=2) respectively. This increased to 69% (n=11) in 2014, remained consistently above 60% in 2015/2016 and increased again to 76% (n=14) in 2017. Between 2014 and 2017, 100% of patient's $\geq$ 6 years took their oral chemotherapy as tablets. Over 65% of all patients 0 – 18 years were taking liquids in 2012/2013. From 2014 to 2017 less than 50% of all patients each year were taking liquids. No patients were identified as switching back from tablets to liquid.

Conclusion This study supports an interdisciplinary approach to tablet taking. By bringing together different members of staff with the necessary knowledge, skills and experiences, we were able to provide families with the tools and confidence to support their child in mastering the technique of swallowing tablets, increasing the number of patients initiating on or transitioning to solid oral dosage forms by approximately 50%.

REFERENCES

1. Baguley D, *et al*. Prescribing for children – taste and palatability affect adherence to antibiotics: a review. *Arch Dis Childhood,* 2012;**97**:293–7.
2. Polaha J. Dalton WT III, Lancaster BM. Parental report of medication acceptance among youth: implications for everyday practice. *South Med J*. 2008;**101**:1106–1112.

P25 INCIDENTS INVOLVING PAEDIATRIC PARENTERAL NUTRITION

[1]Kouzhu Zhu, [2]Andrea Gill*. *[1]Wuxi Children's Hospital*; *[2]Alder Hey Children's Hospital, Liverpool*

10.1136/archdischild-2020-NPPG.34

Aim Parenteral nutrition (PN) is one of the medications most frequently reported to be involved in medication errors in hospital.[1] PN is a class of high alert medications listed by The Institute for Safe Medication Practices.[2] Medication errors involving PN may have potentially serious consequences especially in infants.[3] The purpose of this study was to determine the type of incidents reported, who reported it, severity of incidents and the part of the process involved in the error with the aim of ensuring quality and safety in PN processes.

Method The incidents involving PN reported on the Ulysses system in a specialist children's hospital were surveyed between April 2018 and March 2019. Incidents were assigned to different error-type categories. We focused on the whole process of prescribing, transcription, preparation, and administration of PN. Severity classification was based on the National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) index.[4]

Results There were 34 incidents involving PN ranging from 1 to 8 per month. Job titles who reported these incidents were nurses (16 incidents), pharmacists (14 incidents), dieticians (2 incidents) and unknown (2 incidents). The most common types of incidents were omitted medicine/dose (7 incidents), labelling error (6 incidents), wrong quantity supplied (4 incidents) and wrong/unclear dose (4 incidents). The processes during which the incident had occurred were administration/supply of a medicine (14 incidents), preparation of medicines/dispensing in a pharmacy (13 incidents) and prescribing (7 incidents). The majority of incidents (82.4%, 28/34) were assigned category C (no harmful consequences), while 14.7% (5/34) and 2.9% (1/34) were assigned to category B (an error occurred but the error did not reach the patient) and category D (an error occurred that reached the patient and required monitoring to confirm that it resulted in no harm to the patient and/or required intervention to preclude harm) respectively. The following actions have been taken to try to prevent error with PN: training, providing information, introduction of new labels, changes to the profiles on infusion pumps, reinforcing independent checking and the increased use of standard PN solutions.

Conclusion Nurses and pharmacists are the main reporters of incidents of PN. Omitted medicine/dose is the most common incident reported. The majority of errors involved administration of PN. The majority of all incidents did not cause harm to patients.

REFERENCES

1. Rinke ML, Bundy DG, Velasquez CA, *et al*. Interventions to reduce pediatric medication errors: a systematic review[J]. *Pediatrics*, 2014, **134**(2):338–60.
2. Institute for Safe Medication Practices. ISMP List of High-Alert Medications in Acute Care Settings. Horsham, PA. Available from: http://www.ismp.org/Tools/institutionalhighAlert.asp (accessed January 15, 2017)
3. NHS/PSA/W/2017/005,Risk of severe harm and death from infusing total parenteral nutrition too rapidly in babies. Available from: https://improvement.nhs.uk/news-alerts/infusing-total-parenteral-nutrition-too-rapidly-in-babies/
4. National Coordinating Council for Medication Error Reporting and Prevention. *NCC MERP Index for Categorizing Medication Errors*. Available from http://www.nccmerp.org/sites/default/files/indexColor2001-06-12.pdf (accessed March 10, 2017)

P26 PHARMACY DISCHARGE SERVICE TO FACILITATE EARLY DISCHARGES AND TO IMPROVE THE QUALITY OF ELECTRONIC DISCHARGE LETTERS (EDL'S)

Sonal Ladani, Mohammed AbouDaya*, William Thornhill, Nanna Christiansen. *Evelina London Children's Hospital. Guy's and St Thomas' NHS Foundation Trust*

10.1136/archdischild-2020-NPPG.35

Aim The current discharge process on the paediatric wards involves transcribing medications from one electronic system to another, this has led to errors and compromises patient safety. Discharges are also sometimes delayed due to patients waiting for their medications. The newly implemented discharge service involves pharmacists working closely with the medical team to identify patients for discharge as early as possible and to accurately transcribe medications onto the electronic patient record (EPR).