frequently not treated according to the local guideline. The initial audit results were used to highlight the issue to our surgical and neonatal teams. After the re-audit, it is clear that this approach improved the compliance with the guideline in terms of which antibiotics were used. However, we also found that the duration of treatment still varied considerably.

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P39 PHARMACY PREPARATIONS FOR THE BIRTH OF TWINS TO AN EBOLA SURVIVOR

¹Fiona Marra, ²Gayle Robertson, ¹Joanne Gallagher, ¹Peter Mulholland*. ¹Royal Hospital for Children, Glasgow; ²Pharmacy Distribution Centre, Glasgow

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Background A 43 year old patient previously treated for re-activation of Ebola Virus Disease¹ presented to hospital with a twin pregnancy. As a conservative precaution, Remdesivir was obtained for potential use in the mother and the neonates.

Method All literature was reviewed on the drug in trial and restricted license, along with drugs previously administered in this patient. The recommendation was made to consider Remdesivir and Favipiravir. The patient had received Remdesivir with probable benefit in the past. As the drug is unlicensed, the clinical team from Gilead, California were closely involved. Details of drug dosage and side effects were provided following a non-disclosure agreement. Preparations were made for an import licence following approval by NHS Greater Glasgow and Clyde health board and the Medicines and Healthcare products Regulatory Agency to import the product from California into the UK.

Temperature monitored storage was arranged in advance and the drug appropriately stored. The pharmacy manual was supplied by Gilead and worksheets were prepared in advance.² A small team of out of hours aseptic pharmacists and technicians were briefed in order to facilitate immediate supply if required. Based on published data, there were no known drug interactions and no contra-indications to breastfeeding.³

Outcome In the weeks leading up to the delivery the infectious diseases pharmacist, aseptic lead pharmacist and neonatal pharmacist were on call for that period to then cascade requirements down to other pharmacy staff, if required out of hours. The twins were delivered safely with no issues for the neonates or the mother.

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P40 A QUALITATIVE STUDY ON THE SUPPLY OF SPECIALIST MEDICATION IN CHILDREN AT THE INTERFACE OF CARE

¹Ka Mei Camie Ng*, ²Hong Thoong. ¹UCL School of Pharmacy; ²Great Ormond Street Hospital, London

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Aim To explore the views and experiences of healthcare professionals in primary care around the supply of specialist medication after a child is discharged from a specialist paediatric centre and suggest ways to improve it.

Method A qualitative study conducted with semi-structured interview via telephone was carried out to explore the views of primary pharmaceutical advisors on the supply of specialist medicine in children. Participants were identified by reviewing outpatient prescriptions from 19 November 2018 to 30 November 2018. Telephone interviews were recorded on interview forms, as the form of data. Framework analysis was used to analyse the data.

Results A total of 109 outpatient prescriptions with 56 Clinical Commissioning Groups (CCGs) were identified. 8 CCG pharmaceutical advisors were recruited. Four key themes were identified.

Theme 1: In order to overcome issues around the supply of specialist medicines, it is important to understand different supplying considerations in primary care. Factors including patient clinical status, GP's expertise and confidence in prescribing and shared care agreement.

Theme 2: Actions that are untaken by primary care to solve supplying issues include drug alternatives, direct communication between clinicians and the clinical input of pharmacists.

Theme 3: Views on current shared care arrangements were generally negative. For example, participant 2 expressed: 'Good principle... but they are too wordy, they are 10 pages long'.

Theme 4: Views on improvement in continual medicines supply included participants explaining the lack of understanding between GP and Specialist. Participant 1 commented, 'Specialist has to understand we lack the expertise to prescribe the drug. It is not just about money...'.
Conclusion Currently there is a lack of an integrated system in medicines supply at the tertiary to secondary/primary care interface. In order to deliver continuity of patient care, there is a need for different healthcare professionals to break down preconceptions and understand the pathway and policy involved in different care setting. A shared care should involve patient and carers, GP and the hospital consultant when making decision on the child's health. Moreover, pharmacists in different settings have an active role in medicine optimisation and it is important to value their opinions to improve the continuation of specialist medicines supply.

P41 PHARMACOKINETICS-BASED ESTIMATION OF EVOLOCUMAB DOSING FOR HOMOZYGOUS FAMILIAL HYPERCHOLESTEROLEMIA (HOFH) IN PATIENTS AGED 6 TO 12 YEARS OLD

Chris Paget*, Adam Sutherland. *Manchester University NHS Foundation Trust*

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Background Homozygous familial hypercholesterolaemia (HoFH) is a rare genetic disorder characterised by high

plasma cholesterol levels and premature development of atherosclerotic cardiovascular disease.¹

Evolocumab is a high-cost monoclonal antibody to PCSK-9, an enzyme critical in cholesterol homeostasis. It is a subcutaneous injection commissioned for HoFH in children ≥ 12 years with persistently raised LDL-cholesterol (LDL-C) despite maximal tolerated lipid-lowering therapy.^{2,3} There is an unmet clinical need to allow patients ≥ 6 years meeting the same treatment threshold to access evolocumab and attenuate progression to invasive lipid apheresis or liver transplantation. However, as there are no published studies with PCSK-9 inhibitors in children < 12 years, no established dosing regimen exists.

Aims and objectives

- Propose a safe, efficacious and cost-effective dose of evolocumab to be administered to eligible patients aged 6 to 12 years old with HoFH.
- Review all patients at 12 weeks to determine if 30% target LDL-C reduction is achieved thereby warranting treatment continuation in line with commissioning criteria.
- Review all patients at 12 months to establish if LDL-C reduction sustained.
- Assess all patients for incidence and nature of treatment-related adverse effects.

Method

- Proposed evolocumab dosing determined using four criteria: potential dosing adjustments required based on population physiological and pharmacokinetic data, drug safety profile, practicalities of administration and cost implications.
- Clinic letters for all patients were reviewed 12 weeks and 12 months after treatment commenced.

Results In children < 12 years dosing was proposed to start at 140 mg every 2 weeks, as this is the lowest administrable dose but is clinically equivalent to the 420 mg monthly dose (if information is extrapolated from heterozygous familial hypercholesterolemia studies⁴) and more cost-effective in terms of number of injections required. Furthermore, dose reduction in younger patients unlikely to be required as blood volume-dependent clearance of monoclonal antibodies and synthetic rates of PCSK-9 production do not significantly vary with age. Wide therapeutic index is implied as doses can be increased to 420 mg every 2 weeks and PCSK-9 has a limited physiological role with negligible 'off target' toxicity due to its inhibition.^{2,3} Therapeutic drug monitoring is not currently an option. Evolocumab was initiated using the proposed dose regimen in two eligible patients. Patient 1 had a 65% reduction in LDL-C (5.9 mmol/L to 1.9 mmol/L) at week 12, marginally subsiding at 12 months (2.7 mmol/L). No adverse effects reported and patient not yet progressed to lipid apheresis or liver transplantation. Patient 2 had only a 7% reduction in LDL-C (6.97 mmol/L to 6.48 mmol/L) at week 12 therefore evolocumab was stopped. No adverse effects were experienced. Lipid apheresis was continued throughout treatment.

Conclusions and Discussion Extrapolated dose of 140 mg every 2 weeks was safe and well-tolerated. Larger patient numbers are needed to further determine efficacy and safety, particularly due to promising significant and sustained LDL-C reduction in one patient. Licensed dose increases due to poor response in patients ≥ 12 years warrant investigation in younger population to allow potential treatment escalation for refractory patients. Therapeutic drug monitoring and antibody level testing are possible future research opportunities.

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P42

ALL-IN-ONE PARENTERAL NUTRITION: A NATIONAL SURVEY

Amy Phipps*. *University Hospitals Bristol NHS Foundation Trust*

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Aims To gather details about the current usage of All-in-One (AIO) Parenteral Nutrition (PN) for children in the UK, reasons that organisations have switched to using AIO PN and benefits that occurred. For organisations not using AIO PN, the aim is to find out if they have plans to use it in the future and why/not. The ultimate aim is to determine whether AIO PN should be used locally and/or nationally via standardised paediatric PN to improve patient safety.

Background Conventional split-phase PN is subject to 'rate switch' errors when lipid is infused at the rate intended for aqueous PN and vice versa. A 2017 alert from NHS Improvement (NHSI) highlighted that serious adverse effects have occurred due to overly-rapid infusion of PN in babies and children. Using AIO PN eliminates the risk of rate switch errors although there is scant evidence in literature of enhanced safety. A project group has been developing national standardised paediatric PN, with work ongoing. Local rate switch incidents, the NHSI alert and a desire to provide appropriate national standardised PN are the drivers behind this survey.

Methods A survey monkey® was designed and circulated to members of the Neonatal and Paediatric Pharmacists Group (NPPG) via email. Members were asked to respond on behalf of their organisation if they provided PN to babies or children. The survey included 10 questions/fields, with discrete choices such as yes/no/don't know or 'select all that apply'.

Results 51 responses were received from 48 organisations. Close to 50% were using AIO PN for inpatients. *Organisations using AIO PN*: 70% used both AIO and split-phase PN. AIO PN was used mainly for larger children: adolescents/children > 40 kg (64% of organisations); children 30–39.9 kg (60%); and children 20–29.9 kg (48%). Nurse preference/ease of administration (45%), addressing a local safety concern (25%) and responding to the NHSI safety alert (21%) were the most common reasons for using AIO PN. AIO PN was perceived as having a positive impact including: improved patient safety (42% of organisations); improved local aseptic unit capacity (38%); and improved nurse satisfaction (29%). Methods of providing AIO PN included: locally prepared-licensed multi-chamber bag with additions (54%); externally prepared-as bespoke/scratch (39%); licensed multi-chamber bag without additions (39%); externally prepared-standard bag (12%); externally prepared-licensed multi-chamber bag with additions (12%); locally prepared-as bespoke/scratch either