

January 2020. For each individual active pharmaceutical ingredient (API), a list of the dispensed concentrations and total number of items dispensed at that concentration was provided in a Microsoft Excel spreadsheet. Data on medicines listed within Chapter 5 of the BNF were not provided by the NHSBA.

The data were then assessed by three paediatric pharmacists: liquid medicines not intended for oral use (e.g. nasal sprays and enemas) were excluded from analysis, as were multivitamin products, cough and cold remedies and simple antacids. Analysis included independent determination of the number of concentrations per API, total volume of API dispensed, identification of licensing status and assessment of therapeutic risk. In assessing licensing status, if there was a licensed liquid of the API at that concentration listed on the *Electronic Medicines Compendium* or the MHRA products website, it was assumed that all liquids supplied at that concentration were licensed.

Results Following application of exclusion criteria, 257 APIs were identified. 67 APIs were classified as high risk due to one of the following:

- multiple concentrations of unlicensed products (n=39)
- multiple concentrations of a mixture of licensed and unlicensed products (n=25)
- no unlicensed products, but multiple concentrations of licensed products and narrow therapeutic index (n=3)

For the high risk APIs, the median number of concentrations per drug was 3 (IQR 2-5), range 2-15. 18 of the high risk APIs are used primarily for neurological conditions, 17 were cardiovascular agents, and 10 were electrolyte or nutritional drugs.

The APIs with the highest number of different concentrations in use were colecalciferol (15), omeprazole (13), glycopyrronium bromide (12), ergocalciferol (10), melatonin (9), gabapentin (8), spironolactone (8), azathioprine (8), sodium chloride (8), clonidine (7) and co-careldopa (7). Nationally recommended standard concentrations have been published for azathioprine, sodium chloride and spironolactone¹; the proportion of dispensed items at the recommended standard concentration for each drug were 72%, 58% and 57% respectively.

By volume, the most frequently dispensed APIs were (number of items dispensed; number of different concentrations): colecalciferol (87,553; 15), melatonin (72,215; 9), omeprazole (58,235; 13) calcium carbonate (57,915; 5), folic acid (32,878; 3), clobazam (27,466; 7), dexamethasone (20,500; 5), glycopyrronium bromide (20,200; 12), gabapentin (14,417; 8) and diazepam (11,757; 4).

Conclusion Oral liquid medicines dispensed for children in England vary considerably in terms of concentration. For the relatively few drugs for which there is a nationally recommended standard concentration, significant variation still exists. The continued use of multiple concentrations for the same API potentially poses a significant risk to patient safety. Further national standardisation is required, and methods of driving adoption of such recommendations need to be developed.

REFERENCE

1. Neonatal and Paediatric Pharmacists Group and Royal College of Paediatrics and Child Health, UK. *Using Standardised Concentrations of Unlicensed Liquid Medicines in Children*. April 2020. Available at: <https://nppg.org.uk/wp-content/uploads/2020/04/NPPG-Position-Statement-18-01-V5-April-2020.pdf>

P05

A PROJECT TO RATIONALISE THE PRESCRIBING OF UNLICENSED SPECIALS FOR CHILDREN IN A UK CLINICAL COMMISSIONING GROUP

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Aim Due to a lack of licensed formulations for children, the use of unlicensed and off-label medicines is, in many circumstances, the only appropriate alternative.¹ Data obtained on prescribing of unlicensed specials to children <18 years of age in a UK Clinical Commissioning Group (CCG) demonstrated both a wide variability in concentrations being supplied, and a significant amount being spent. A project was therefore set up with the aim of standardising prescribing of these medicines, to improve patient safety (through reduction of inadvertent dose misadministration due to changes in concentrations) and reduce costs.

Method ePACT2 data on medicines prescribed within the CCG and identified as unlicensed specials (as designated by the Drug Tariff) was used to create a specials dashboard in Microsoft Excel. A target list of medicines, based on variability of strengths and preparations available, as well as cost, was identified. A team of two dedicated specialist paediatric pharmacists was funded to set out strategies to standardise prescribing of those target list medicines, as well as to improve awareness of prescribing and supply of unlicensed medicines to children.

The project team employed a variety of methods to achieve their aim including; email communications advertising their roles and the support offered; coordinating meetings with GP's and primary care pharmacists to discuss practice and primary care network-specific specials prescribing; promoting use of the local paediatric formulary; delivery of a paediatric prescribing webinar; and guidance on switches to alternative formulations.

Results Since July 2021, the project team have responded to 12 e-mail queries related to specials prescribing from GP practices. 21 meetings to discuss practice-level specials prescribing data were co-ordinated between July-August 2021, with 61 switches to a preferred formulation for safety and/or cost-effectiveness identified and discussed with GP's and practice pharmacists for review. The webinar was well attended by multiple boroughs and healthcare sectors, and although it cannot be quantified, awareness of the local paediatric formulary has improved.

In one instance the dashboard highlighted a significant patient safety issue, whereby a child was prescribed three different concentrations of unlicensed phenobarbital oral liquid over three consecutive months. The project team worked with the GP practice pharmacist to ensure the patient was receiving the correct dose of phenobarbital, and to rationalise the concentration of oral liquid for future prescriptions.

The project is on-going and at this time the impact on spend cannot be shown but will be reported later this year.

Conclusion Although work has been undertaken at national level to standardise concentrations of unlicensed liquid medicines,² this work has highlighted that there is still much to be done to reduce the variability in concentrations of prescribed medicines and the potential harm associated with this. The number of queries received from colleagues within primary care has emphasised a need for greater understanding of prescribing and supply of unlicensed medicines to children, as

well as clear lines of communication between healthcare sectors. The specific knowledge and skills of specialist paediatric pharmacists are highly valuable in driving special medicines rationalisation for children in the community.

REFERENCE

1. Rawlence E, Lowey A, Tomlin S, *et al.* Is the provision of paediatric oral liquid unlicensed medicines safe? *Arch Dis Child Educ Pract Ed* 2018;**103**:310-313.
2. Neonatal and Paediatric Pharmacists Group and Royal College of Paediatrics and Child Health, UK. *Using Standardised Concentrations of Unlicensed Liquid Medicines in Children*. April 2020. Available at: <https://nppg.org.uk/wp-content/uploads/2020/04/NPPG-Position-Statement-18-01-V5-April-2020.pdf>

P06

DEVELOPMENT OF A HYDROXYCARBAMIDE TELEPHONE CLINIC FOR CHILDREN WITH SICKLE CELL DISEASE

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Aim Develop the hydroxycarbamide prescribing process for sickle cell disease to improve outcomes and patient experience through: implementing electronic prescribing; identifying and addressing non-adherence; optimising doses; improving accessibility of medication and developing a hydroxycarbamide telephone clinic.

Method The clinic was planned to be piloted mid-2020 however due to the COVID pandemic requiring more services to be delivered remotely the timeline was accelerated and all patients switched to telephone reviews in March 2020.

New patients are commenced on hydroxycarbamide at a face-to-face outpatient appointment which includes counselling and consent, review of baseline bloods, introduction to the telephone clinic and medication counselling.

Patients are then eligible for the hydroxycarbamide telephone clinic. Patients attend outpatient phlebotomy for the necessary monitoring blood tests prior to their telephone appointment. At the telephone appointment a virtual review takes place including a review of symptoms, blood results, medication adherence and adverse effects. An 8-12 week supply of hydroxycarbamide is prescribed by a nurse or pharmacist prescriber and sent to the patient's local pharmacy or home address by the hospital outsourced pharmacy. Follow up appointments are made every 8-12 weeks.

Patients continue to have face to face medical appointments; the interval is determined by individual patient factors but a minimum of annually.

Results In September 2019 (prior to electronic prescribing) an audit of patients who had been on hydroxycarbamide for 9 months or more (n=26) had a mean dose of 21.7mg/kg. A repeat audit in July 2021 showed a mean dose of 26.9mg/kg (n=36).

Electronic prescribing has facilitated more accurate prescription records and structured dose escalation. It also supports better monitoring of adherence since it is clear during a review when the next supply should be required. This along with questioning what medication supply patients have at home allows adherence issues to be identified and discussed with patients/carers.

An audit of haematology outpatient clinic waiting times prior to implementation showed an average wait time of 82 minutes; one of the recommendations was to implement this telephone clinic. In a patient/carer survey on care during the pandemic, 88% of respondents were happy with the telephone

reviews they had received and 82% wished to continue with telephone clinics.

Conclusion The results show an escalation in hydroxycarbamide dose which correlates with a higher fetal haemoglobin, this in turn is associated with increased survival.¹ This has been facilitated by the increased opportunity to focus on prescribing and medication review. From March 2020 to May 2021, due to the pandemic, dose escalation only took place if patients were admitted with crisis so further improvement may be seen in the future.

Full patient/carer involvement wasn't possible in the initial set up of this new service due to pandemic limitations and the rapid implementation this necessitated. This may have contributed towards challenges with attendance for blood tests. Although the results show positive attitudes towards the clinic, re-audit of outpatient waiting times and patient/carer satisfaction is planned as the service is developed further.

REFERENCE

1. Qureshi A, Kaya B, Panchar S, *et al.* Guidelines for the use of hydroxycarbamide in children and adults with sickle cell disease: a british society for haematology guideline. *British Journal of Haematology* 2018;**181**:460-475.

P07

HORMONAL CONTRACEPTIVES: SAFE FOR USE IN ADOLESCENT GIRLS?

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Aim There is an increased use of Hormonal Contraceptives (HCs) in female adolescents, during a period of growth, development and hormonal changes.^{1 2} Due to the limited long-term safety data available for adolescents, most of the guidelines that inform clinical practice for the use of HCs are extrapolated from adult safety data.³ This study aimed to provide a comprehensive review of the existing evidence on the safety profile of HCs use in adolescent girls under the age of 19 years.

Method A systematic review was carried out by searching through Medline, EMBASE, CINAHL, BNI and Cochrane Central Register of Controlled Trials for articles published between 2000-2019. All studies reporting side effects of HCs in young females, 19 years of age or under were included. The studies were not limited to those only using hormonal contraceptives for contraception purposes. In the main analysis we evaluated the association between the different hormonal contraceptives and the type of side effects. Two reviewers checked the quality of the studies and independently extracted data. Meta-analyses were performed, where possible, using random-effects model.

Results Fifty-two studies were included in the review, with an overall good quality picture. Of these, 28.8% (15/52) of them were included in the meta-analyses with a total of 6453 participants. The most reported side effect was changes in bone mineral density (BMD) (38%, 20/52), followed by changes in bleeding patterns (33%, 17/52) and weight gain (15%, 8/52). There was a significant association between the use of HCs and reduced bone development [spinal BMD mean difference -0.39, 95% CI -0.58 to -0.20, P<0.0001; femoral neck BMD mean difference -0.25, 95% CI -0.41 to -0.09, P=0.002; hip BMD mean difference -0.34, 95% CI -0.67 to 0.00, P=0.05] and altered bleeding patterns (OR