P43 PHARMACOKINETICS AND TARGET ATTAINMENT OF ANTIBIOTICS IN CRITICALLY ILL CHILDREN – A SYSTEMATIC REVIEW OF CURRENT LITERATURE

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Background Pharmacokinetics (PK) are severely altered in critically ill patients due to changes in volume of distribution (Vd) and/or drug clearance (Cl). To what extent this affects the PK of antibiotics in critically children is largely unknown. We aimed to identify gaps in current knowledge and to compare published PK parameters and target attainment of antibiotics in critically ill children to healthy children and critically ill adults.

Methods Systematic literature search in PubMed, EMBASE and Web of Science. Articles were labelled as relevant when they included information on PK of antibiotics in critically ill, non-neonatal, pediatric patients. Extracted PK-parameters included Vd, Cl, trough concentrations, AUC, probability of target attainment, and elimination half-life.

Results 45 relevant articles were identified. Studies focusing on vancomycin were most prevalent (15/45). Other studies included data on penicillins, cephalosporins, carbapenems and aminoglycosides, but data on ceftriaxone, ceftazidime, penicillin and metronidazole could not be found. Critically ill children generally show a larger Vd and higher Cl than healthy children and critically ill adults. Reduced target attainment was described in critically ill children for multiple antibiotics, including amoxicillin, piperacillin, cefotaxime, vancomycin, gentamicin, teicoplanin, amikacin and daptomycin. 32/45 articles included information on both Vd and Cl, but a dosing advice was given in only 18 articles.

Conclusion The majority of studies focus on agents where therapeutic drug monitoring is applied, while other antibiotics lack data altogether. The larger Vd and higher Cl that is observed in critically ill children might warrant a higher dose or extended infusions of antibiotics in this patient population to increase target attainment. Studies frequently fail to provide a dosing advice for this patient population, even if the necessary information is available. Our study shows gaps in current knowledge and encourages future researchers to provide dosing advice for special populations whenever possible.

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P44 TYPE 2 DIABETES MELLITUS IN CHILDREN: NON-INSULIN MEDICATION, WHERE ARE WE UP TO?

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Background Childhood type 2 diabetes mellitus (T2DM) is a relatively rare condition but is an important health concern as its prevalence continues to rise. Current management consists of lifestyle modification, metformin and insulin. Several new

pharmacological classes are currently used in adult medicine but are not yet available in paediatric care.

In this review we will look at the current evidence for use of these newer medications in the paediatric population.

Methods A literature search (EMBASE, Medline, Pubmed, CINAHL) was performed for papers studying the use of non-insulin medications in children; including a separate search of 'clinicaltrials.gov' to identify any ongoing trials in paediatric T2DM.

Results Newer classes of medications include incretin mimetics, dipeptidyl peptidase-4-inhibitors, sodium/glucose-cotransporter-2-inhibitors, and thiazolidinediones. There have been a small number of pharmacokinetic/pharmacodynamic studies carried out in small cohorts of paediatric participants, but larger long-term efficacy and safety trials are lacking. These studies and individual case-reports have shown good tolerability but are unable to identify any long-term effects associated with these medications.

Randomised controlled trials studying rosiglitazone and glimepiride use in children have been performed. However, safety concerns in adults and notable side-effects including weight gain, mean their future use is uncertain.

Currently many relevant trials involving paediatric patients listed on 'clinicaltrials.gov' are awaiting completion.

Conclusion Medical management for T2DM in children remains limited. Ongoing studies are aiming to equip practitioners with wider treatment options in the future. However, there are concerns regarding the long-term safety of these medications due to the increased risk of pancreatitis, gallbladder conditions and bladder malignancy in adult patients.

Paediatric T2DM patients suffer from complications earlier and more severely compared with adults, making this is a pressing issue. Long-term surveillance studies to identify adverse effects and a framework for highlighting research gaps are required to enable improvements in paediatric T2DM management.

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P45 THE ACCEPTABILITY OF USING GENETIC INFORMATION TO GUIDE TREATMENT OF ASTHMA TO CHILDREN, YOUNG PEOPLE, AND PARENTS (PILOT STUDY)

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Background There are multiple pharmacogenomic studies in children's asthma. It has not been established how (or if) children, young people or their parents/legal guardians would accept use of their genetic information to guide their treatment.

Aim To determine the views of CYP and parents/legal guardians, on aspects of using genetic testing to guide management of childhood asthma.

Methods Focus group session with both the Liverpool's young people advisory group (YPAG), and Parents' group, at Alder Hey Children's Hospital. Group members completed anonymous questionnaires determining the importance and privacy

associated with different themes of data, with a special focus on health data.

Results There were 11 responders, five parents/guardians and six CYP. Both the parents and the CYP considered personal data, such as date of birth, NI number and name, both the most important and the most private. Health data was considered the second most important, and private, although parents rated data from social media data an equal second in terms of privacy. Within healthcare data, CYP considered data regarding their mental health, followed by medical conditions and genomic data, as the sources to be of highest importance. Parents considered their child's illnesses most important, followed by genomic data. In relation to privacy, CYP considered genomic data first followed by information concerning their mental health. The parents considered genomic data highest for data privacy.

Conclusion From this session it is clear that health data in general, and genetic data in particular, has a high value of importance to CYP and parents, but there are variations in how data is prioritised. These pilot data will inform a large scale patient and parent acceptability study in personalised medicine and childhood asthma (CHANGE study).

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SPONTANEOUS REPORTING OF SUSPECTED ADVERSE DRUG REACTIONS BY CHILDREN AND YOUNG PEOPLE: PAST, PRESENT AND FUTURE

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Background UK patients of all ages can contribute to the Medicines and Healthcare Regulatory Agency (MHRA) Yellow Card scheme (YCS), reporting suspected adverse drug reactions (ADRs). Children's and young people's (CYPs) contribution to, and awareness of, the YCS is not known.

Methods Suspected ADR reports received by the MHRA from 01/01/2008 to 29/11/2018 were examined. Prospective data from CYP and parents in paediatric outpatients were collected as part of the QQuestionnaire study about Adverse Drug ReAcTions In Children (QUADRATIC) study (IRAS 242352).

Results CYP contributed 2.3% of YCS reports for patients < 19 years. Patients from age 10 years old have contributed YCS reports, and CYP reports are increasing annually. Reports from CYP contain different suspected medications and reactions compared to YCS for all patients age < 19 years. Common CYP generated reports prioritise adolescent vaccinations (Human papilloma virus most reported, n=69), oral contraceptives, acne medication, anti-infectives, and antidepressants. Common CYP generated reports identified depression, anxiety and suicidal ideation, which were not amongst common

reports about CYP. Amongst CYP (n=50) attending outpatients, the YCS was not known to any CYP. The YCS was known to 16.3% of parents (8/49) interviewed. From this population of patients with a chronic illness, with high rates of drug therapy, 68 suspected ADRs were identified overall.

Conclusion CYP contribute to YCS, with distinct patterns of suspected medications and reactions. Awareness of the YCS appears poor, particularly in populations you would expect to have a greater level of knowledge and understanding about medicines.

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PREVALENCE, INCIDENCE AND PATTERNS OF ANTI-ASTHMA MEDICATION USE IN CHILDREN: A NATIONWIDE PRESCRIPTION STUDY IN FRANCE

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Background Use of antiasthmatic medications has increased over the years worldwide. The aim of this study was to describe the use of antiasthmatic drugs in children in France.

Methods Data were retrieved from the permanent sample (1/97th) of the French national healthcare database - the *Système National des Données de Santé* (SNDS) for all individuals aged from 5 to 18 years old (n=143,909) from 1 January 2011 to 31 December 2017. Prevalence and incidence rate of antiasthmatic dispensing were calculated. All analyses were stratified by calendar year, age (5–11, 12–18 years) and gender. Users were classified as occasional if they had only one dispensing of antiasthmatic drugs over the year, moderate and high if they had antiasthmatic drug dispensing at two distinct occasions or at three or more occasions, respectively.

Results The annual prevalence of antiasthmatic drug use varied between 12 (2011) and 11 (2017) per 100 persons and incidence varied between 4.3 (2013) and 3.8 (2017) per 100 PYs. Prevalence and incidence of use were higher in children aged between 5–11 years compared to adolescents and in boys compared to girls. Most users were occasional (52%) and only one third redeemed prescriptions on a regular basis (high users: 30%). No trend was observed regarding these percentages over time or with gender and age group.

Conclusions Use of antiasthmatic drugs in France is higher than previously described in other European countries. Prevalence of use is also higher than the prevalence of asthma as assessed in epidemiological national studies suggesting that these drugs are over-prescribed.

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