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P36 WHAT CAN BE LEARNT FROM SERIOUS DRUG RELATED MEDICAL ERRORS IN PEDIATRIC PATIENTS IN GOTHENBURG 2015–2017?

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Background 2017 a rise in serious drug related medical errors in pediatric care at Sahlgrenska University hospital was discovered. 2018 a pediatric Clinical Decision Support System (CDSS) called ePed with weight based dose calculation, dosage control and easy access to pediatric drug information was integrated with the Electronic Medical Record.
Aim Analyze causes and underlying factors to serious drug related medical errors, labeled Lex Maria, in children and further evaluate if these errors could be prevented within the framework of ePed.
Method 28 Lex Maria cases in children ≤16 years were registered during 2015–2017 at Sahlgrenska University hospital, Gothenburg. These were analyzed and summarized according to type of error, underlying cause and when during the drug managing process the error occurred. Finally, comparison between years was made.
Results 2015 and 2016 five Lex Maria cases occurred respectively. 2017 the number increased to 18 cases. Most commonly the patients received an incorrect dose. Errors divide equally between prescription, preparation and administration. Drugs requiring dilution were of certain risk especially when diluted in several steps. Midazolam was the most frequently involved drug. In 2017 especially one ward stands out in numbers and was responsible for 10 of the 18 cases.
Conclusions ePed will help to avoid human calculation errors in prescription and provides easy access to pediatric drug information facilitating drug preparation and administration. Nurses are particularly exposed to medication incidents since they usually are the last link to the patient and need to be their own control. High-risk medicines need to be identified and made safe. A complex interplay between individual/human and systemic factors contribute to errors. However, to reduce serious drug related errors a CDSS is of great value but adequate education for medical staff, both pharmacologically and about the system is vital. Future follow up will be needed.
Disclosure(s) Nothing to disclose

P37 REFERENCE RANGES OF BLOOD NT-PROBNP IN PAEDIATRIC HEART FAILURE AND HEALTHY CONTROLS: COMPILATION OF LITERATURE DATA

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Background N-terminal pro-brain natriuretic peptide (NT-proBNP) is a valuable biomarker for diagnosis and prognosis of heart failure in adults, included into the European Society Guidelines for heart failure (2016).[1] It is also considered as a diagnostic and follow-up marker in paediatric heart failure. The aetiology of paediatric heart failure is heterogeneous and maturation of the cardiac and neurohumoral system influences NT-proBNP levels. Since substantial information is mandatory to enable a long-term follow-up of children with heart failure, the aim was to collect published paediatric NT-proBNP data.
Methods In January 2019, a literature search using PubMed was performed comprising the following keywords: NT-proBNP, heart failure/dilated cardiomyopathy/congenital heart defect/congenital heart disease/healthy and child/neonate/toddler/infant/paediatric. Eligible publications had to determine levels of NT-proBNP in plasma or serum in paediatric heart failure or healthy children (0–18 years) with the Roche NT-proBNP-immunoassay.
Results The search resulted in 343 records, of which 95 measured NT-proBNP in paediatric controls or heart failure. Of them, 48 studies were excluded due to the use of other immunoassays. Following, 47 studies were included into the analysis of which 27 reported NT-proBNP levels in 3435 healthy children and 38 NT-proBNP concentrations in 1885 children with heart failure. The age range of reported levels comprised the day of birth up to 18 years in both groups. The data set revealed that younger children have higher NT-proBNP values than older children and that heart failure patients had increased NT-proBNP levels compared to healthy controls which are also dependent on the severity of disease.
Conclusion The literature search and analysis confirmed that NT-proBNP is an important marker for the detection of heart failure and classification of disease severity in children. Thus, the compiled data set forms a solid data basis for long-term follow-up of a paediatric patient population with heart failure.

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P38 IDENTIFICATION OF NIFURTIMOX METABOLITES IN URINE OF PEDIATRIC CHAGAS DISEASE PATIENTS BY UHPLC-MS/MS

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Background Nifurtimox (NFX) is one of the only 2 available drugs for the treatment of Chagas disease, a parasitic disease endemic to Latin America. In spite of widespread use of this medication, little is known regarding its metabolism, particularly in children.

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The objective of this study was to develop a method to identify NFX metabolites in human samples, and apply it to the discovery of NFX metabolites in urine from pediatric patients undergoing treatment for Chagas disease.

Methods Urine was collected from 12 pediatric patients and 8 healthy volunteers (controls), and anonymized before analysis. Informed consent was obtained from all participants. Samples were aliquoted, deproteinized with ACN (BNZ as internal standard) and centrifuged in cold. 10% of supernatant in water was injected into a 1.8 µm C18 column and chromatographed in 3.5 min under a water/ACN gradient at 0.4 mL/min in a *Shimadzu Nexera X2* UHPLC equipment. Species were positively ionized by a *Turbo IonSpray* source. Metabolites were identified and characterized by an *ABSciex 6500 QTRAP* spectrometer through Enhanced-Mass-Screening (EMS), Neutral-Loss (NL), Precursor-Ion (PREC), Enhanced-Product-Ion (EPI) and MS^3 experiments. For chromatographic monitoring, parameters were optimized and the three most intense Multiple-Reaction-Monitoring (MRM) transitions were selected.

Results Denitrated NFX conjugated with cysteine (M1) and N-acetyl-cysteine (M2), as well as other phase I metabolites like saturated nitrile (M3), hydroxyamide (M4), carboxylic acid (M5) or aldehyde (M6) were identified in most samples. The final MS/MS detection method was high reproducible and sensitive for all metabolites.

Conclusions We found the main NFX metabolites in pediatric urine using a fast MS/MS method that can allow us to efficiently study the role of NFX and its metabolites in pediatric treatment response and the adverse drug reactions, and in combination with PK/PD experiments will facilitate future clinical trials, and possibly develop new therapeutic drug monitoring strategies.

REFERENCE

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Disclosure(s) Nothing to disclose

P39 ESTABLISHMENT OF THE SWISS DATABASE FOR DOSING MEDICINAL PRODUCTS IN PEDIATRICS

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Background Drug therapy in children is challenging. Due to the lack of licensed drugs for paediatric use, off-label or unlicensed prescription is frequent. To improve quality and safety of prescription of medicinal products for children in Switzerland, the requirement to create and continuously run a national database was added in the revision of the therapeutic products act (TPA Art. 67a). The task of operating the database was given to SwissPedDose, an association representing eight Swiss children's hospitals, the Swiss Society of Paediatrics (SGP) and the Swiss Association of Public Health Administration and Hospital Pharmacists (GSASA).

Methods Substances used in three therapeutic areas 'general paediatrics', 'infectious diseases' and 'neonatology' are selected according to their frequency of use in the eight participating hospitals. Dosage data of substance-indication pairs are requested from the hospital pharmacists. Based on these data and literature review a dosage suggestion consisting of substance, indication, route of administration, dose, daily repetitions and, if applicable, additional remarks is then elaborated by a specialised pharmacist of SwissPedDose. This suggestion is then discussed by experienced physicians delegated from the eight clinics. The elaboration, discussion and agreement on a national dosage recommendation takes place and is documented in an online platform specially programmed for this structured harmonisation process. Once an agreement has been achieved, the national dosage recommendation is sent to the eight participating clinics and published in a free accessible public database.

Results As of December 31st 2018, 195 dosage recommendations for children including 87 indications and 54 substances have been harmonised and published and are available for medical professionals on https://swisspeddose.ch/database.

Conclusion The goal of published recommendations for 100 substances by March 2021 is feasible to reach due to interprofessional collaboration. SwissPedDose may thus contribute to a more efficient and safe use of drugs prescribed to children in Switzerland.

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P40 COMPARISON OF ANTIBIOTIC CONSUMPTION BETWEEN PEDIATRIC HOSPITALS

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Background Antibiotic exposure and reduced microbiome diversity in early childhood are associated with the incidence of inflammatory bowel disease,[1] asthma[2] and type-1 diabetes[3] later in life. Together with the emergence of microbial resistance, those adverse effects of antibiotics impacting on the individual and population levels.

Periodic monitoring of therapeutically used antibiotics in the framework of antimicrobial stewardship is required for their effective and restricted use in hospitals.

Children´s hospitals face two challenges for a meaningful quantification of antibiotic consumption:

§ Firstly, the algorithm DDD/inpatient days used in adult patients do not take into account the heterogeneity of the pediatric population. Up to date there is no global consensus on how to calculate and interpret the antibiotic consumption of wards and hospitals for children.

§ Second challenge is the relative scarcity of suitable pediatric hospitals as basis for comparison.

This study deals with the comparison and interpretation of antibiotic consumption between two similarly structured children´s hospitals in Austria.

Methodology The annual use of antibiotics was assessed in two large pediatric clinical settings at geographically distinct locations in Austria, encompassing all relevant wards, such as neonatology, internal medicine, surgery, pediatric oncology and PICU´s. The analysis discriminates among the wards and classes of antibiotics.

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