214 ERRORS IN MEDICATION PRESCRIPTIONS IN PAEDIATRIC INTENSIVE CARE PATIENTS

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Background and aims Prescribing errors frequently occur in paediatric medicine, especially in paediatric intensive care units (PICUs). Computerized physician order entry (CPOE) systems may help to prevent these errors. This study examined the frequency, nature and determinants of prescribing errors in electronic and handwritten prescriptions in a PICU population.

Methods All prescriptions (electronic and handwritten) for children aged 0–18 years hospitalized in a 14-bed PICU of a university medical center, The Netherlands, from February 2008 - December 2010, were prospectively collected and checked for prescribing errors and determinants (prescription-, patient- and medication-related) thereof.

Results 23,207 prescriptions for 659 patients were collected, of which 14,887 (64%) were handwritten and 8,312 (36%) electronically ordered. 6% of the prescriptions contained a therapeutic error and 54% was administratively incomplete (1–7 missing items per prescription). Electronically ordered prescriptions contained significantly less therapeutic and administrative errors than handwritten prescriptions ($p<0.001$), mainly due to better legibility and completeness. More than 10% of the prescribed doses was outside the therapeutic range of the Dutch paediatric drug formulary. Important determinants of prescribing errors were handwritten prescriptions (OR=3.1 [2.9–3.3]), intravenous medication (OR=2.9 [2.6–3.3]), the youngest of age (up to 1 month OR=1.2 [1.1–1.4] and drugs affecting the musculo-skeletal system (OR=3.4 [2.9–3.9]).

Conclusions PICU prescribing errors occur frequently. CPOE systems reduce error rates but do not fully prevent these. Data to support what is exactly needed to build better prescribing systems for PICU patients are scarce. This study provides information for improvements in electronic prescribing for PICU patients.

215 THE ACCURACY IN INTERPRETING THE PAEDIATRIC ELECTROCARDIOGRAM AND THE NEED FOR FURTHER TRAINING

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Background and aims Accurate interpretation of the paediatric ECG is of great clinical significance and safety in managing unwell children. Paediatric trainees are assumed adequate knowledge in interpreting ECGs but there are limited studies demonstrating this.

Methods In an online survey-based questionnaire, participants interpreted 10 common clinical conditions with recognisable ECGs, including a normal paediatric and neonatal ECG. A brief educational page followed, then 10 different post-test ECGs on the same conditions. Brief demographics were collected on participant's grade and previous ECG training.

Results 764(n) participants accessed the online survey. Trainees completing only the first 10 ECGs we described as the '10-test', and those completing the full survey with 10-test and 10-post-test ECGs after reading our educational material, as the '20-test'.

Abstract 215 Table 1

Sub-Group	Total Participants	10-test (score)	10-test (n)	20-test Pre-test (score)	20-test Post-test (score)	20-test (n)
ST 1–3	n=195, 25.6%	60.5%	137	63.7%	77.0%	92
ST 4–6	n=137, 17.9%	65.1%	92	69.2%	71.2%	65
ST 7–8 & Consultants	n=185, 24.2%	68.0%	130	69.8%	74.4%	92
Others - includes ED/ Anaesthetics/ANPs/GP	n=247, 32.3%	61.5%	155	58.1%	69.3%	103
TOTAL	**n = 764**	**61.0%**	**514**	**65.6%**	**73.0%**	**352**

Conclusions Our study is the largest of its kind assessing ECG interpretation in UK Paediatric practice. Only 27.9% participants had previous formal training, with training and our educational material reflecting improvements by upto 13%. Without routine access to ECG interpretation by tertiary cardiology centres, more formal training needs incorporating into the UK Paediatric training program to accurately identify significant ECG anomalies, inform clinical decisions and optimise patient safety.

216 MEDICATION ERRORS IN PAEDIATRICS: *P*ATIENT, *P*ILL AND *P*ROCESS

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Background and aims Medication errors, defined as preventable events that may lead to incorrect medication use or patient harm, is a big problem in healthcare. Especially children are considered to be at high risk of experiencing harm due to medication errors. Interventions to prevent errors have led to limited improvements. If, however, we could identify error prone situations, more effective interventions could be developed and thereby prevent patient harm. The purpose of this study was to establish the prevalence of harm due to medication errors categorized in characteristics of *P*atients and *P*ills in all phases of the medication *P*rocess.

Methods We investigated medication errors using a multifaceted approach including direct observations, and review of patients' files, pharmacy logs and voluntary incidents reports. All medication errors were classified in terms of (potential) patient harm.

Results We collected data of 426 patients admitted to five paediatric, non-ICU wards during three months. In 236 patients at least one medication error was identified: 55% (236/426). A total of 39 errors were harmful affecting 37 patients: 9% (37/426).

Significantly more harmful medication errors were found in patients after surgery: 68% (25/37).

In 59% (23/39)of the ADEs analgesics were involved: non-opioids 49% (19/39) and opioids 10% (4/39). Prescribing and administrating were the most error prone activities: 28% (11/39)and 62% (24/39).

Conclusions Our results identified error prone *P*atients, *P*ills and medication *P*rocess. This will guide future targeted interventions to improve medication safety for children.

217 ACCEPTANCE AND PREFERENCE OF FOUR ORAL DOSAGE FORMS IN INFANTS AND PRE-SCHOOL CHILDREN IN THE NETHERLANDS

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Background and aims Liquid formulations are easy to swallow but they may have disadvantages such as a bad taste, preservatives or restricted storage conditions. These disadvantages may be overcome by oral solid flexible dosage forms such as powders or mini-tablets. The aim of this study was to investigate the acceptance and preference of four oral dosage forms in children aged 1–4 years in the Netherlands.
Methods Parents administered four different placebo formulations: a 4-mm round, uncoated mini-tablet, powder, suspension and syrup at home to their (healthy) child twice on one day following a randomized cross-over design. They were asked to report the child acceptance by the result of the intake and by a child acceptance score on a 10-cm visual analogue scale (VAS). At the end of the study parents were asked to report the child and parent preference.
Results 183 children were included and 151 children were evaluated. The mini-tablet was fully swallowed in 97% of all cases, the powder 81%, the suspension 86% and the syrup 83%. The mean VAS-scores were: tablet 9.01; powder 8.00; suspension 7.78; syrup 8.04. The mini-tablet was significantly better accepted than the three other dosage forms ($p<0.05$). The same pattern was observed when only the first intake was considered given a carry-over effect. Children and parents preferred the tablet and syrup over the suspension and the suspension over the powder ($p<0.05$).
Conclusions All dosage forms were well accepted, but the mini-tablets were the best accepted and preferred dosage form.

218 SOCIOECONOMIC STATUS IN RELATION TO LIPID AND GLUCOSE METABOLISM IN EARLY CHILDHOOD. THE ABCD-STUDY

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Objective The objective of this study was to explore the relations of socioeconomic status to lipid and glucose metabolism as indicators of cardiovascular health in 5–6 year olds.
Methods In 1308 5–6 year old ethnic Dutch children from the ABCD cohort study, lipids (cholesterol, LDL-C, HDL-C, triglycerides), glucose and C-peptide (n = 974) were measured after an overnight-fast. Insulin resistance was calculated with HOMA. Using linear regression the association of lipid and glucose metabolism to socioeconomic status as indicated by maternal education and income adequacy was examined.
Results There were no differences in cholesterol, HDL-C, LDL-C, and triglycerides between socioeconomic groups. However, children with low educated mothers had on average a higher glucose ($p=0.01$), C-peptide ($p = 0.001$), and insulin resistance ($p = 0.001$) compared to children with high educated mothers. These associations could not be explained by birth weight, maternal BMI, breastfeeding duration, and physical activity. Childhood BMI partly explains these associations, but after adjustment for BMI the association between maternal education and markers of the glucose metabolism remained significant (models controlled for age, height, and sex).
Conclusion Socioeconomic status appears to be an independent risk factor for cardiovascular function and seems to emerge in early childhood. In absence of underlying mechanisms these empirical findings are relevant for public health care and further explanatory research.

219 INCIDENCE TESTING OF HUNTER SYNDROME IN A POPULATION AT RISK - FIRST RESULTS OF A BINATIONAL SCREENING PROGRAMME

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Background Hunter syndrome (Mucopolysaccharidosis type II; X-linked inheritance; prevalence rate in Europe approximately 1:77000 male newborns) is a rare, progressive, multisystemic disease, caused by deficiency of the lysosomal enzyme Iduronate-2-sulfatase. Due to the very heterogeneous phenotype Hunter syndrome is often not diagnosed before pre-school age. This is unfortunate, because patients would significantly benefit from the earliest possible start of treatment containing enzyme replacement therapy.

Early screening methods are possible, but due to the rarity of this disease they are too expensive to be performed in all newborns. An at-risk patient population screening provides opportunity for timely identification of the patients. All children with Hunter syndrome have an umbilical hernia and about 60% develop an inguinal hernia in early childhood. This is significantly more than in the general population.
Methods Since February 2012 an at-risk population screening (male sex < 18 years old, presence of an umbilical hernia, surgery for inguinal hernia) is carried out in Germany and Austria. Test centers are over 90 surgical test centers which operate on children routinely. Patients are screened via Iduronate-2-sulfatase enzymatic assay from dried blood spots cards and an additional questionnaire.
Results and conclusion We will present the first results after 6 months study period. In case of positive screening results, a routine screening for the above mentioned at-risk population should be discussed. Simultaneously, an extended study within the European Union can then be planned and organized.
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220 CORD BLOOD CHEMERIN AND OBESTATIN IN LARGE FOR GESTATIONAL AGE INFANTS

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Background and aims Increased neonatal adiposity is associated with childhood obesity and subsequent development of adult diseases. Chemerin was recently introduced as a novel adipocytokine inducing insulin resistance and regulating maternal-fetal metabolic homeostasis during pregnancy. Obestatin is a peptide hormone involved in the control of insulin secretion and adipocyte function. This study aimed to assess circulating concentrations of chemerin and obestatin in fetal samples from large-for-gestational-age-(LGA) and appropriate-for-gestational-age-(AGA) pregnancies and investigate their association with gender, parity and delivery mode.
Methods Cord blood chemerin and obestatin concentrations were prospectively measured by enzyme-linked immunosorbent assay in 40 LGA (9 born from diabetic mothers and 31 born from non-diabetic mothers) and 40 AGA singleton full-term infants.
Results Cord blood chemerin concentrations were significantly higher in LGA compared to AGA neonates, after controlling for confounding factors ($b=38.91$, $p<0.001$, SE 9.29). In contrast, no significant differences in obestatin concentrations were observed between groups. Cord blood concentrations of both hormones did not depend on gender, parity or delivery mode.
Conclusions Higher chemerin concentrations in LGA neonates, possibly implying predisposition to insulin resistance, may serve as