The same pattern of differences between the eGFR estimations was observed when BMI groups (normal versus overweight) were analysed separately, with all formulas being significantly different for Schwartz except for CKD-EPI.
CONCLUSION: As expected, formulas with creatinine were similar to each other but significantly different when compared with formulas that included cystatin. As demonstrated in previous studies, the combined formulas appear to be the closest estimates of the GFR calculated by exogenous methods. Thus, estimates that consider only creatinine may overestimate the GFR. The eGFR obtained by the adjusted CDK-EPI formula is similar to that obtained by the Schwartz bedside, unlike the other formulas. In this study, we did not find differences regarding the BMI, probably due to the number of this sample.

MO1027 KIDNEY TUBULAR DAMAGE ASSOCIATED WITH EARLY SEPSIS AND LONGER HOSPITAL STAY IN NEWBORNS WITH NEONATAL INFECTION

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BACKGROUND AND AIMS: The aim of the study was to evaluate the early association of urinary cystatin-C (uCysC) (proximal tubular injury biomarkers) with sepsis and longer hospital stay in premature newborns (NBs) with neonatal infection.
METHOD: This is a prospective study with NBs from Neonatal Intensive Care Unit (nUTI), between August 2019 and September 2020. Three groups were constructed: healthy NBs, NBs with neonatal infection without sepsis and NBs with sepsis. Premature newborns with kidney disease, renal malformation, insufficient data in the medical record, or samples with scarce volume were excluded. Urine samples were collected for biomarkers measurements. Urinary cystatin-C was quantified in the urine and expressed with or without ratio by urinary creatinine to investigate the urinary concentration bias.
RESULTS: In total, 62 NBs were included: 27 healthy, 24 with neonatal infection without sepsis and 11 with sepsis. No acute kidney injury (AKI) was found in NBs and 22 (63%) had longer hospital stay (> 30 days). Higher levels of urinary cystatin-C, both adjusted for urinary creatinine, were elevated in NBs's sepsis group. Moreover, in NBs with a longer hospital stay, there was an elevated level of urinary cystatin-C, which was capable to predict the need for > 30 days of hospital stay (AUC-ROC = 0.783, $P = .01$).
CONCLUSION: Our study demonstrated that kidney tubular damage biomarker, such as uCysC, was associated with early sepsis in premature NBs and was useful to prognosis evaluation.

MO1028 VASCULAR ACCESS TYPE IN HAEMODIALYSIS PAEDIATRICS PATIENTS—FROM CENTRAL VENOUS CATHETER TO ARTERIOVENOUS FISTULA

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BACKGROUND AND AIMS: Haemodialysis (HD) in children has become progressively more used, the efficiency of the treatment, as well as the technical improvements, are evident. Permanent access in the form of a fistula is the preferred type of vascular access (VA) for most paediatric patients on maintenance HD. However, age-related anatomical limitations, shorter waiting times for transplantation, or lack of paediatric/surgical expertise limit its use. Central venous catheter (CVC) remains the most used access in children. Here we present the results of the last 14 years of experience in paediatric HD vascular access from a reference centre in northern Portugal.
METHOD: A retrospective descriptive study of patients admitted to our paediatric HD Unit between January 2007 and December 2021. Clinical data were collected from medical records.
RESULTS: In total 46 patients were enrolled, mainly boys ($n = 26$, 56.5%), mean age at admission 10.8 $\pm$ 5.3 years (1–17), 39.1% weighing < 30 kg ($n = 18$) and 17.4% <15 kg ($n = 8$). More than half were incident patients starting on HD ($n = 25$, 54.3%), 45.7% ($n = 21$) were transferred from peritoneal dialysis (PD) and one patient had a previous kidney transplant (KT). Regarding CKD etiology, 52.2% ($n = 24$) were mainly due to congenital anomalies of the kidney and urinary tract; chronic glomerulonephritis was responsible for 19.6% of cases ($n = 9$). Most patients started HD with a CVC ($n = 38$, 82.6%), including two patients with an arteriovenous fistula (AVF) who required a temporary CVC until fistula maturation. At the end of follow-up, about 43.5% ($n = 20$) of the patients ended up with an AVF (compared with 17.4% at the beginning) and, not surprisingly, 90% ($n = 18$) of them weighed > 30 kg and only one child < 15 kg. The mean duration of dialysis was 1.1 $\pm$ 0.5 years (1 month–8 years); 28 patients were submitted to KT (60.9%), 7 transferred to PD (15.2%) and 4 (8.7%) remain on HD. Average waiting times for KT are quite longer in patients with AVF (1.56 years), in comparison to CVC (0.584 years).
CONCLUSION: In children, choosing the best vascular access remains a challenge. CVCs continue to be the most used type of vascular access. This option can be justified by the limitations of smaller patients, the expectation of a short waiting time for KT and the need to cannulate every other day (with the pain and fear associated with it). CVCs were associated with less effective dialysis and higher complication rates. On the other hand, AVFs have shown excellent long-term patency in paediatric HD patients. In our group, no significant complications were reported and no thrombosis occurred.

MO1029 IS THERE A RELATIONSHIP BETWEEN FIBROBLAST GROWTH FACTOR 23 AND BLOOD PRESSURE IN CHILDREN WITH CHRONIC KIDNEY DISEASE?

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BACKGROUND AND AIMS: Chronic kidney disease (CKD) is a complex medical and social problem worldwide due to high prevalence and mortality rates. According to the ESPN/ERA-EDTA, the prevalence of CKD stages 3–5 in children is about 55–60 pmarp [1]. Moreover, CKD usually causes different severe complications, including pathologic changes in the cardiovascular system, which significantly affect long-term survival. Unlike many complications of CKD, hypertension can be present in the earliest stages of the disease [2]. Nowadays, there has been a scientific and practical interest in Fibroblast growth factor 23 (FGF-23) which is mostly considered as a phosphate-regulating biomarker [3]. There are some speculations that FGF-23 affects blood pressure (BP) in adults due to the impact on the renin-angiotensin-aldosterone system (RAAS) by decreasing calcitriol [4] and the direct effect of FGF-23 on sodium reabsorption, which has been demonstrated in experimental models [5].
Therefore, the aim of our study was to investigate the link between FGF-23 and BP in children with CKD.
METHOD: There were 73 children with CKD stages 1–5, mean age was 9.79 $\pm$ 0.58 years. BP was determined by 3 times measurement and calculating the mean value. Received results were compared with percentile norms according to age and gender in order to divide patients into two groups: normotensive and hypertensive. FGF-23 was determined in serum by multimatrix ELISA kit (Biomedica Medizinprodukte GmbH, Austria). Statistical analysis was performed using SPSS version 26 (IBM, USA).
RESULTS: In the group with normal BP the median of FGF-23 in serum was 1.8 [0.7–3.4] pmol/L. In comparison, in the group with a hypertensive level of BP median indicator of FGF-23 was 7.6 (1.98–18.5) pmol/L ($P < .001$). The prevalence of elevated FGF-23 in children with high BP predominates 1.6 times [95% confidence interval (95% CI): 1.2–2.1]. It is also noticed that pulse BP positively correlated with FGF-23 level in serum ($r = 0.402$, $P < .001$).
CONCLUSION: Our findings confirm that FGF-23 is linked to BP in children with CKD what makes us conclude that more careful attention to children with a high level of FGF-23 is needed in relation to hypertension and as a consequence cardiovascular complications. However, more investigations should be done in order to establish a causal relationship.

REFERENCES

1. Harambat J, van Stralen KJ, Kim JJ *et al.* Epidemiology of chronic kidney disease in children. *Pediatr Nephrol* 2012; **27**: 363–373
2. Mitsnefes MM. Cardiovascular disease in children with chronic kidney disease. *J Am Soc Nephrol* 2012; **23**: 578–585
3. Fukumoto S, YamashitaT. FGF23 is a hormone-regulating phosphate metabolism—unique biological characteristics of FGF23. *Bone* 2007; **40**: 1190–1195
4. Akhabue E, Montag S, Reis JP *et al.* FGF23 (Fibroblast Growth Factor-23) and Incident Hypertension in Young and Middle-aged Adults: The CARDIA Study. *Hypertension* 2018; **72**: 70–76

5. Bacchetta J, Bardet C, Prié D. Physiology of FGF23 and overview of genetic diseases associated with renal phosphate wasting. *Metabolism* 2020; **103S**: 153865

MO1030 AKI AWARENESS AND SURVIVAL IN PAEDIATRIC PATIENTS IN A WESTERN ROMANIA EMERGENCY HOSPITAL—A 7 YEARS RETROSPECTIVE COHORT STUDY

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BACKGROUND AND AIMS: Acute kidney injury (AKI) is a globally increasing healthcare problem being usually associated with low awareness and high mortality. Several large studies have drawn attention to the increasing cases of AKI in the paediatric population, mostly in the neonatal setting but also in critically ill patients and young adults. It was suggested that increased awareness could lead to early diagnosis and intervention, therefore improved survival.
METHOD: We performed a retrospective cohort study in 'Louis Turcanu' Emergency County Hospital for Children in Timisoara, Romania. Data have been extracted from the hospital electronic database, between 1 January 2014 and 31 December 2020. The cohort included 127 457 patients (aged 1 day–18 years) who had at least two serum creatinine levels determined during the same hospital admission. AKI was defined and staged according to Kidney Disease Improving Global Outcomes (KDIGO) guidelines (and 2021 Consensus conference). AKI awareness was considered the recognition of AKI diagnosis during admission as noted in the medical records according to ICD-10 Clinical Modification codes (N17.0, N17.1, N17.2, N17.8, N19, N99.0 and P96.0). AKI non-awareness was considered in patients presenting AKI criteria without diagnoses recognition in the medical records. We considered baseline serum creatinine the lowest serum creatinine value in 7 days from admission.
RESULTS: Over the 7-year period, 1867 patients developed AKI out of 127 457 hospital admissions. The overall AKI incidence was 1.46% and the annual incidence increased 3.95-fold during the 7 years (from 0.6% in the first year to 2.37% in the seventh). Staging AKI according to Acute Kidney Injury Network (AKIN), stage 1 was identified by us in 23.2% of the AKI cases, stage 2 in 31.3% and stage 3 in 45.5%. AKI awareness (as defined above) was 27.5% (overall), being significantly increased in premature babies ($P < .012$), full-term neonates ($P < .0001$) and toddlers ($P < .0001$). In AKI stages 1 and 2 the diagnosis of AKI (included in the patient's documents according to ICD 10) was less frequent as compared to stage 3. So, we considered that AKI awareness is significantly lower in early AKI stages (1 and 2) (i.e.16.9 and 19.7% respectively) as compared with late AKI (stage 3) 38.3% ($P < .001$). Only 19 patients (1.01%) required renal replacement therapy (RRT). During the 7-year period, the all-cause mortality in our cohort was 0.32% (410 patients died) being 0.13% in the no AKI patients and 12.8% in the AKI group (57.89% in patients treated with RRT). Odds ratio (OR) of death in the AKI diagnosed patients (aware and non-aware) was 107.67 versus non-AKI patients ($P < .0001$). The risk of death in the AKI aware group was 3.3 higher versus AKI non-aware group ($P < .001$). These not expected, reverse results, are attributable to a very low awareness (as defined by us in Methods) in the early stages of AKI. A higher mortality rate was associated with AKIN stage 3—OR of 1.53 ($P < .001$). The average length of hospital stay was significantly higher in AKI patients (20.79 days) as compared with the no AKI group (5.74 days).
CONCLUSION: The awareness of AKI in children remains a problem worldwide with implications on the survival of patients. Being aware of AKI means early identifying the risk of AKI, early diagnosis and early intervention. As it was presented above late diagnosis and awareness are associated with high mortality rate and the need for interventions (RRT) associated with high mortality risk.

MO1031 BURNOUT SYNDROME AMONG PAEDIATRIC NEPHROLOGISTS—REPORT ON ITS PREVALENCE, SEVERITY AND PREDISPOSING FACTORS

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BACKGROUND AND AIMS: Burnout is an occupational-related syndrome comprising emotional exhaustion, depersonalization and reduced feelings of work-related personal accomplishments. Addressing and mitigating burnout is essential for avoiding high workforce turnover, patient dissatisfaction and a lower quality of care. There are some reports on burnout among adult nephrologists and general paediatricians, but little has been known about burnout among paediatric nephrologists. The aim of our study was to assess the prevalence and severity of burnout syndrome among Polish paediatric nephrologists.
METHOD: A 25-items online survey consisting of abbreviated Maslach Burnout Inventory and additional self-created questions about work-related factors was completed by 97 physicians affiliated with the Polish Society of Paediatric Nephrology. 75.3% of them were women, the median time of professional experience in the study group was 15 years.
RESULTS: High level of emotional exhaustion, depersonalization and reduced feeling of personal accomplishments was observed in 39.2%, 38.1% and 21.6% of participants, respectively. 26.8% of participants presented at least a medium level of burnout in all three dimensions and 8.2% of them presented high three-dimensional burnout. No associations of burnout intensity and gender, job seniority and the use of holiday leave were found. 41.2% of participants stated, that they would like to take part in burnout prevention and support programme. According to the study participants, excessive bureaucracy in healthcare systems, rush and working overtime were the main job-related problems that can influence burnout intensity.
CONCLUSION: Burnout is an important factor in the professional landscape of paediatric nephrology. Actions aiming at reducing the risk of occupational burnout among paediatric nephrologists should be applied both at personal and institutional levels.

MO1032 ASSESSING THE EFFECTIVENESS OF READY STEADY GO—PEEER PROJECT YOUTH WORK IN MEETING THE PSYCHOSOCIAL NEEDS OF CHILDREN AND YOUNG PEOPLE

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BACKGROUND: Studies show that young people (YP) with chronic kidney disease do less well than their well peers in terms of mental health and employability. In the UK 30% of YP on renal replacement therapy have mental health issues compared to 15% of the general population and more are unemployed compared with their well peers. Many of the issues start in childhood as studies show that children with chronic kidney disease have significant psychosocial issues including:

- Depression
- Anxiety
- Educational difficulties
- Relationship issues
- Low self-esteem
- Social isolation, family dependency
- Professional restriction

To address these issues, we developed the PEEER project to help improve **P**atient **E**mpowerment, self-**E**steem, **E**mployability and **R**esilience.

- PEEER brings YP together to participate in fun activities to help build self-esteem, develop an 'I can do' attitude, build a peer support group and reduce the sense of isolation patients feel.

Table 1.

Patients seen in youth support clinics	January — March 2020	April — December 2020
Total number	109	639
Monthly average	35	71