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PAEDIATRICS: INTERNATIONAL SCIENTIFIC CONFERENCE ON MEDICINE AND HEALTH SCIENCES OF THE UNIVERSITY OF LATVIA, 2026

On 26 March 2026, the University of Latvia hosted the International Scientific Conference on Medicine and Health Sciences.

During the Conference, paediatric topics are discussed in the Paediatric Cardiology and Cardiac Surgery session (organised in cooperation with Charité — Universitätsmedizin Berlin, Germany) and in two sessions of Paediatrics, Gynaecology and Obstetrics.

At the Session for Paediatric Cardiology, a state-of-the-art lecture, delivered by V. Ozoliņš (Children's Clinical University Hospital, Rīga), provides an insight into the development and implementation of hybrid treatment strategies for congenital heart diseases in children. Further, K. Schmitt (Berlin Charité — Universitätsmedizin, Berlin) discusses how large clinical registries and big data analysis contribute to research, monitoring, and improved outcomes in paediatric cardiology. Two presentations from Berlin Charité — Universitätsmedizin highlight recent technological and methodological innovations in echocardiography.

The other topics in Cardiology sessions cover the experience in different clinical situations in paediatric cardiology. The researchers present the analysis of outcomes of standardised long-term follow-up protocols for patients with Tetralogy of Fallot as well as clinical experiences of percutaneous pulmonary valve implantation procedures performed in Latvia. In addition, clinical case of *Contegra conduit* endocarditis caused by dental sepsis and the first experience of the use of the MEK inhibitor trametinib to treat hypertrophic cardiomyopathy in a paediatric patient with Noonan syndrome are demonstrated. Neonatology issues are addressed, discussing the role of point-of-care ultrasound in neonatal care and evaluation of subtle prenatal echocardiographic findings that may indicate underlying foetal cardiac abnormalities. Several abstracts within the paediatric sessions deal with the mental health of children.

I. Ebela (University of Latvia, Rīga) discusses systemic gaps in the protection of children from addictions and gender-based discrimination, highlighting areas for policy and healthcare improvement. Complex barriers that socially vulnerable adolescents face in developing healthy eating habits, as well as ideas for the development of possible nutrition interventions are the focus of two other abstracts. Finally, M. Aliusef (University of Latvia, Rīga) examines the relationship between perceived stress levels and sleep quality among Ukrainian adolescents, demonstrating that children affected by war and displacement experience poor sleep quality and perceived stress. Sleep medicine is a topic in another study demonstrating that manual review of automatically generated apnea-hypopnea index and oxygen desaturation index results can significantly influence subsequent therapy decisions.

Since the early-life microbiome has a profound influence on the child's health status further, much attention is devoted to gut microbiome development issues. Several abstracts analyse the effect of antibiotic exposure and the type of delivery on intestinal microbiome and its functional profiles, as well as the association between gut microbiota and gut-brain axis disorders.

The potential link between caesarean delivery and the subsequent risk of asthma development later in childhood (demonstrated by one of the abstracts) could also be attributed to changes in gut microbiota composition. In addition, the association between human breast milk microbiota and infant gut microbiota has been studied.

Researchers have also addressed different aspects of congenital diseases. I. Zīle-Velika presents an analysis of the prevalence and clinical characteristics of congenital urinary system malforma-

medial neck lesions. M. Bazgier and colleagues (Medical University of Gdańsk, Gdańsk) show that Duchenne muscular dystrophy is associated with progressive myocardial fibrosis, subsequent left ventricular systolic dysfunction, and characteristic electrocardiographic (ECG) abnormalities, suggesting that identification of ECG markers associated with declining cardiac function may facilitate earlier detection of cardiomyopathy in this population.

Several abstracts in paediatric sessions are focused on current clinical problems and issues of follow-up of patients with chronic paediatric diseases. Analysis of patients with juvenile idiopathic arthritis shows that targeted interventions (like enhanced recording of disease activity) can improve the longitudinal assessment of such patients. Further, a profound evaluation of common causes and characteristic presentations of non-infectious stridor in children under five years of age could provide knowledge about effective clinical management. Finally, analysis of prehospital pain management strategies and treatment approaches for paediatric burn injuries during emergency medical service responses highlights treatment problems during the prehospital stage.

Ilva Daugule

RELATIONSHIP BETWEEN PERCEIVED STRESS AND SLEEP QUALITY IN UKRAINIAN ADOLESCENTS AFFECTED BY WAR

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Background. Armed conflict and forced displacement are powerful stressors that can substantially impair psychological well-being and quality of life. Ukrainian children exposed to war constitute a particularly vulnerable population; however, stress responses are heterogeneous, and not all adolescents develop clinically significant post-traumatic stress symptoms.

Aim. The aim of this study was to examine the association between perceived stress and sleep quality in Ukrainian adolescents aged 14–18 years affected by the war and forced displacement into Latvia.

Methods. An anonymous Ukrainian-language online survey (QuestionPro) was distributed via refugee support groups. Adolescents completed it in the presence of their parents or guardians. The average completion time was 11 minutes. Collected data included demographic characteristics and validated instruments: the Pittsburgh Sleep Quality Index (PSQI-U) and the Perceived Stress Scale (PSS-10). Statistical analysis was performed using EZR software, version 1.61 (11 November 2022).

Results. A total of 33 adolescents participated in the study, of whom 21 met the inclusion criteria (13 females, 7 males, 1 did not disclose their gender). Mean age: 16.0 ± 1.6 years in girls and 15.6 ± 1.8 years in boys, with no statistically significant difference ($p = 0.721$). Based on PSQI, 19% (n = 4) were good sleepers (PSQI ≤ 5) and 81% (n = 17) were poor sleepers (PSQI > 5), $p < 0.001$. Mean PSS-10 score was 23.53 ± 2.77, substantially higher than normative data for under-25s (16.78 ± 6.86). Spearman correlations indicated age was related to night awakenings (r = 0.708) and getting up to use the bathroom (r = 0.727). The number of relocations was correlated with subjective sleep quality (r = 0.597), difficulty performing daily activities (r = 0.59), and perceived helplessness (r = 0.544). PSS-10 scores were correlated with age (r = 0.724), sleep-disordered breathing (r = 0.588), nightmares (r = 0.692), and difficulty staying awake during daily activities (r = 0.706). Exploratory logistic regression showed that perceived stress predicted daytime dysfunction (OR = 1.95; 95% CI 1.00–3.78; $p = 0.049$). ROC analysis confirmed very good discriminative ability (AUC = 0.87; 95% CI 0.69–1.00).

Conclusions. This pilot study found that Ukrainian adolescents affected by war and displacement experience poor sleep quality and perceived stress. Higher stress nearly doubles the risk of daytime dysfunction, potentially affecting learning and long-term well-being.

BARRIERS TO HEALTHY EATING HABITS SOCIALLY VULNERABLE ADOLESCENTS: YOUTH PARTICIPATORY ACTION RESEARCH

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Background. Adolescence is a crucial period when eating habits are established that are likely to continue into adulthood. However, socially vulnerable young people face challenges in maintaining a healthy diet. Traditional research methods often fail to reflect the true nature of the problem. Using Youth Participatory Action Research (YPAR) approach with Photovoice, adolescents documented their life experiences in visual stories, providing a unique insight into the multi-layered barriers they face.

Aim. To identify and characterise barriers to implementing healthy eating practices based on adolescents lived experiences using Youth Participatory Action Research approach.

Methods. This qualitative YPAR study recruited socially vulnerable adolescents (aged 12–16) from a Riga community centre. Eleven participants (64% girls) engaged in seven photovoice sessions (February–March 2025), with attendance varying by individual availability. Sessions included guided group discussions using the SHOWeD method to explore healthy eating barriers and experiences. The sessions were audio recorded, transcribed, and analysed using NVivo 12. A sociological ecological model structured the analysis at the individual, interpersonal, community, and societal levels.

Results. Analysis identified 203 barrier-related codes (53% of total data), revealing multilevel obstacles. At the individual level, irregular eating patterns and taste preferences dominated. At the interpersonal level, family dynamics emerged as critical, with participants describing limited meal preparation, lack of family meals together, and parental indifference to food preferences. Social environment factors included peer influence and school food quality. Structural barriers included time constraints, lifestyle factors, and financial limitations. Participants expressed psychological barriers including helplessness and lack of motivation. Only eight intervention-related codes emerged, suggesting limited awareness of solutions.

Conclusions. The barriers to healthy eating among socially vulnerable adolescents are complex and multi-layered, and individual problems are mainly related to interpersonal (family, social environment) and structural factors (time, lifestyle). Photovoice successfully reflected authentic youth perspectives and contextual barriers that are not visible in traditional surveys. Multilevel interventions must simultaneously address family eating habits, social environment, time management, and youth agency. Education and community policy development should be guided by youth-led strategies.

Acknowledgements. This research was conducted within the CO-creating commuNity iNterventions on diEt and physical aCtivity to increase health equiTy in chIldren and adOlesceNts (CONNECTION), funded by EU ERA4Health. The authors declare no conflicts of interest.

TARGETED CLINICIAN-FOCUSED INTERVENTION IMPROVES DISEASE ACTIVITY DOCUMENTATION IN JUVENILE IDIOPATHIC ARTHRITIS

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Background. Accurate and standardised measurement of disease activity in children with juvenile idiopathic arthritis (JIA) is fundamental for monitoring the disease course and guiding the optimal patient management over time. Consistent recording of disease activity markers, such as Clinical Juvenile Arthritis Disease Activity Score (cJADAS), ensures reliable longitudinal assessment.

Aim. To determine the effect of a targeted clinician-focused intervention on cJADAS score monitoring in a JIA patient group during routine outpatient appointments.

Methods. A retrospective before-and-after study was conducted in a tertiary paediatric rheumatology centre analysing JIA patients'(all subtypes) electronic healthcare records between the period of December 2022 till December 2024. The intervention was implemented in January 2023. It consisted of clinician education regarding cJADAS documentation as a key performance indicator in patient monitoring and a standardised checklist. All cases that had at least four visits during the chosen period were selected for review. The primary outcome was cJADAS documentation per visit before and after implementation assessed using Chi-square

test (statistical significance was defined as $p < 0.05$) and risk ratio analysis.

Results. In total, 864 records (414 before and 450 after implementation) of 161 JIA patients were included in analysis. The median patient age across all visits was 12.7 years (range 2–17 y); of whom 75% were female. The most frequent JIA subtype was oligoarthritis (46.0%, n = 74), followed by RF-negative polyarthritis (25.5%, n = 41) and RF-positive polyarthritis (8.1%, n = 13). cJADAS scores were documented in 21 of 414 visits (5.1%) before the intervention and in 109 of 450 visits (24.2%) after, with almost a five times increase in documentation ($p < 0.001$, risk ratio 4.75). The most reported cJADAS value both before and after intervention was 0 (61.9% and 83.2%, respectively), representing clinical remission. However, overall disease activity evaluation, e.g., naming active disease or remission, was even more rarely summarized (40% vs 28%; risk ratio 1.22, $p < 0.001$) for non-specialist physicians when cJADAS documentation improved.

Conclusions. This study demonstrated that implementation of a targeted clinician-focused intervention can significantly improve the frequency of cJADAS documentation during routine outpatient visits. Enhanced recording of disease activity may facilitate more consistent longitudinal assessment of paediatric patients with JIA.

Acknowledgements. All authors declare that they have no conflicts of interest.

ASSOCIATION OF QRS VOLTAGE ABNORMALITIES WITH LEFT VENTRICULAR EJECTION FRACTION IN DUCHENNE MUSCULAR DYSTROPH

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Background. Duchenne muscular dystrophy (DMD) is associated with pessiveyocardial fibrosis, subsequent left ventricular systolic dysfunction, and characteristic electrocardiographic (ECG) abnormalities, including altered wave amplitudes and conduction intervals. Identifying ECG markers associated with declining cardiac function may facilitate earlier detection of cardiomyopathy in this population.

Aim. To evaluate the association between ECG wave voltages and durations and left ventricular ejection fraction (LVEF) in patients with DMD, and to identify age-independent ECG predictors of systolic dysfunction.

Methods. This single-centre observational study analysed standard 12-lead ECGs and concurrent echocardiograms obtained during routine follow-up of patients with genetically confirmed DMD. P-wave, PR-interval, QRS-complex, and QT-interval durations, as well as P- and QRS-wave voltages, were measured using electronic calipers. Mean duration values were calculated across all leads. Voltage z-scores were derived using age-adjusted reference values by Rijnbeek et al. LVEF was calculated using the Teichholz method. Associations between ECG parameters, age (predictors), and LVEF (outcome) were evaluated using Pearson correlation, ordinary linear regression, and multiple linear regression adjusting for age. Data are presented as mean ± SD; *p* fs18 0.05 was considered statistically significant.

Results. A total of 246 ECG–echocardiography pairs from 102 patients (two females), mean age 9.77 ± 3.89 years, were analysed. R-wave voltage z-scores showed significant negative correlations with LVEF in leads II, III, aVF, and V6 (p = 0.001, 0.004, 0.004, and < 0.001, respectively). S-wave voltage z-scores correlated negatively with LVEF in leads III and aVF (p = 0.04 and 0.001) and positively in lead V2 (p = 0.04). Given the age dependence of several voltage parameters, multiple linear regression models were applied. After adjustment for age, R-wave voltage z-scores in leads II, III, aVF, and V6 (p = 0.005, 0.009, 0.018, and 0.019) and S-wave voltage z-score in lead aVF (p = 0.009) remained independent predictors of LVEF.

Conclusions. In patients with DMD, selected QRS voltage z-scores are independently associated with left ventricular systolic function. These ECG parameters may represent accessible markers of myocardial involvement and warrant further investigation as potential tools for early risk stratification and clinical management in DMD.

A CASE REPORT: CONTEGRA CONDUIT ENDOCARDITIS SECONDARY TO DENTAL SEPSIS

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Background. In patients who have undergone radical correction of Tetralogy of Fallot (TOF) using artificial conduits, Infectious Endocarditis (IE) is a well-known complication. Despite advancements in surgical techniques, these patients require lifelong monitoring and consistent preventive care, particularly since conduit- associated IE can present with subtle or atypical symptoms that may complicate the diagnostic process.

Aim. The objective of this case report is to highlight the diagnostic challenges associated with the fluctuating clinical presentation of IE in a patient with a Contegra RVOT conduit. By documenting an IE case secondary to dental sepsis, this report highlights the importance of oral hygiene in this high-risk population, while noting that patients with a history of endocarditis require careful monitoring despite often non-specific clinical findings.

Methods. A patient with a three-month history of intermittent fever presented to the emergency room. The patient had previously undergone radical correction of TOF with placement of a Contegra valved conduit in 2020 and had a known history of prior IE. Upon initial examination, three black and carious teeth were discovered. Blood cultures were acquired, and empiric antibacterial therapy was initiated and later adjusted based on the results. As the oral cavity was identified as a potential primary source, the patient underwent a general examination and status dentalis assessment — bite wings and OPG. The extracted teeth included the maxillary second primary molars, the maxillary primary canine, and the mandibular first primary molars, which were identified as the source of bacteraemia.

Echocardiography and PET/CT confirmed Contegra conduit endocarditis with significant pulmonary stenosis (peak gradient of 80–100 mmHg). Based on the diagnostic assessment and patient history, an acute conduit replacement was performed.

Results. Within 24 hours of initiating antibacterial therapy, the patient became fully afebrile and exhibited no further clinical signs of bacteraemia, despite the identification of significant vegetations and conduit stenosis on preoperative imaging. An acute replacement of the Contegra conduit was performed. The patient recovered with no significant postoperative complications and was discharged eight days later without significant complications and with a functioning pulmonary conduit.

Conclusions. Infectious endocarditis on artificial conduits requires strict monitoring due to fluctuating clinical presentation. This case underscores the necessity of prompt multidisciplinary approach and swift identification of the primary infection site, alongside the surgical replacement for optimal outcomes in high-risk patients.

CHANGES IN THE GUT MICROBIOTA AND DEVELOPMENT OF GASTROINTESTINAL TRACT SYMPTOMS IN CHILDREN AFTER ANTIBACTERIAL THERAPY

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Background. The development of the intestinal microbiota in children is affected by multiple factors. Antibiotics are widely used in paediatric practice and may alter gut microbial composition, potentially promoting the development of gastrointestinal symptoms.

Aim. The study aims to analyse changes in the composition of the intestinal microbiota of children and the development of gastrointestinal symptoms after antibiotic therapy.

Methods. Parents of children who were prescribed antibacterial treatment due to a concomitant disease were asked to answer a questionnaire and provide a child's stool sample at three time points: before treatment, one week after initiation, and one month after treatment. Bacterial DNA was extracted, and 16S rRNA gene sequencing was performed to analyse bacterial composition. Changes in Median Relative Abundance (MRA, %) of bacterial taxa in baseline and post-treatment samples were analysed using Wilcoxon tests.

Results. A total of 46 patients (M/F: 23/23), mean age 25.22 months (SD ± 10.36), were included in the study. The most commonly reported symptom associated with antibiotic therapy was loose and/or frequent bowel movements (9 children (19.6%)). Stool samples were available for 42 children. The MRA of the *Bifidobacterium* was decreased one week ($p = 0.253$) and one month ($p = 0.016$) after antibacterial therapy: initially 0.539 (IQR 0.676), after a week 0.293 (IQR 0.584), after a month 0.424 (IQR 0.386). A statistically significant decline of MRA of the following families was observed one week after the therapy: *Clostridiaceae, Coriobacteriaceae, Veillonellaceae, Eubacterium coprostanoligenes, Peptostreptococcaceae, Clostridium sensu stricto 1, Collinsella, Ru-minococcus, Ruminococcus torques, Agathobacter*. A statistically significant increase of MRA one month after antibacterial therapy was observed for *Sunerellaceae, Tannerellaceae* and *Ruminococcus gnavus* group genus. MRA of *Enterococcaceae* before antibacterial therapy was higher in patients without changes in stool (mean rank 16.75 vs 11.82; $p = 0.041$).

Conclusion. In the studied patient population, almost one-fifth of children developed loose stools and/or frequent bowel movements after antibacterial therapy. Antibacterial therapy caused changes in gut microbiota composition that were still detectable one month after treatment. These findings indicate that antibacterial therapy can induce sustained alterations in gut microbiota composition in children.

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IMPACT OF MANUALLY REVIEWED AUTOMATED AHI AND ODI SCORES ON THERAPY DECISIONS IN PAEDIATRIC PATIENTS

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Background. Sleep studies are commonly used for respiratory assessment and to evaluate obstructive sleep apnea (OSA) in children, with key measures like the Apnea-Hypopnea Index (AHI) and Oxygen Desaturation Index (ODI) guiding diagnosis and treatment. Many devices now provide automated scoring of respiratory events to help meet growing clinical demand. However, the reliability of these automated results in paediatric populations is not well established.

Aim. Compare automatic vs. manual scoring and determine if there are changes in therapy.

Methods. A retrospective study was performed. The data were obtained from the Epilepsy and Sleep Medicine Centre, Children's Clinical University Hospital, using polygraphy (Scala–Löwenstein) and polysomnography (Sonata–Löwenstein) examination results.

Results. The study included 151 patients (58.9% were male). The median age was 7 years (range: 11 months to 17 years). AHI severity classification based on automatically generated scores versus manually reviewed results: severe (60.3% vs. 9.3%), moderate (27.8% vs. 14.6%), mild (7.9% vs. 52.3%), normal (4.0% vs. 23.8%). ODI: severe (43% vs. 26.5%), moderate (33.1% vs. 25.2%), mild (22.5% vs. 41.7%), normal (1.3% vs. 6.6%). Based on manual AHI review, 10.6% showed changes from severe to normal, 31.1% from severe to mild, and 9.9% from severe to moderate. And ODI, 0.7% from severe to normal, 7.3% from severe to mild, and 9.3% from severe to moderate. Therapy changed in terms of AHI in 71.5% of cases.

Conclusion. This study demonstrates that manual review of automatically generated AHI and ODI results can significantly influence subsequent therapy decisions.

EFFECT OF DIFFERENT DELIVERY MODES ON INTESTINAL FUNCTIONAL PROFILES AND METABOLITE PATTERNS IN INFANTS UP TO 18 MONTHS

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Background. Early gut microbial composition and functional capacity are strongly shaped by the mode of delivery, which determines initial microbial exposure during infancy. These early colonisation patterns are essential for immune system maturation, intestinal barrier development, and metabolic regulation – processes that are closely linked to gut microbiome functional activity as reflected by microbial metabolite production, with potential long-term health implications.

Aim. To evaluate the effect of different delivery modes on intestinal functional profiles and metabolite patterns in infants up to 18 months of age.

Methods. This cross-sectional study was conducted as part of a broader prospective research project on infant gut microbiota in Latvia. Parents of infants up to 18 months of age were recruited at primary healthcare centres, completed a questionnaire, and provided faecal samples, which were analysed using shotgun metagenomic sequencing to assess gut microbiome functional profiles in relation to perinatal and health-related factors. Statistical analysis was performed using t-tests and correlation analysis, with a p-value < 0.05 considered statistically significant.

Results. In total 40 infants were included in the study, with a mean age of 12.1 months (SD 2.9). Overall, nearly 30,000 microbial functional features were evaluated to characterise gut functional profiles in infants. Among infants born via vaginal delivery (n = 32), gut functional profiles were dominated by a consistent subset of highly prevalent functions. From the ten most representative functional features identified, nine were detected in all vaginally delivered infants (32/32), including ribosomal proteins (50S L34 and 50S L28) and metabolism-related enzymes such as diacetyl reductase and ferredoxin. Hybrid signal transduction histidine kinase B was observed in 30 out of 32 samples, indicating a highly conserved functional core within this group.

In infants delivered by C-section (n = 8), gut functional profiles were characterised by a consistent set of core functional features that were repeatedly detected across all samples (8/8), for example Streptopain (SpeB), transposon Tn552–associated DNA invertase (BinR) and the SecB protein-export system. These features rep- resented a stable functional baseline within the C-section group.

Conclusions. Early-life gut functional profiles in infants show a stable set of core microbial metabolic functions across delivery modes. Differences associated with the mode of delivery are reflected in the level of functional activity, indicating that delivery mode contributes to variation in gut functional development during infancy.

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SYSTEMIC DEFICIENCIES IN SAFEGUARDING CHILDREN AGAINST ADDICTIONS, SEXUAL EXPLOITATION, AND GENDER-BASED DISCRIMINATION

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Background. The present stage explores systemic gaps in ensuring children's rights to protection against the use of addictive substances, involvement in the provision of sexual services, and discrimination against sexual minorities. These categories of violations are known to contribute to depression, attempted suicide, and lifelong chronic health disorders, consequently creating a long-term economic burden on the state. UN Recommendations to Latvia have repeatedly pinpointed these violations of the Convention be eliminated.

Aim. The aim of the current study was to identify systemic shortcomings and propose solutions for enhancing child protection against addictive substance use, involvement in sexual service provision, and discrimination against sexual minorities.

Methods. Thematic lectures were delivered to 2,326 students across 11 faculties at the University of Latvia, followed by an independent assignment evaluating internationally established state obligations in safeguarding children's health, education, and protection from violence. Students completed questionnaire developed by the University of Latvia and Latvian "Protect the Children", data were compiled in Excel spreadsheets and analysed qualitatively.

Results. Answers for the questions split as follows: "Has the state done enough to protect children from addictive substance use?": No –72.7%; Yes – 9.5%; Difficult to judge –17.8%. "Does the state take sufficient action to protect children against involvement in sexual services "in kind" (food, drugs, clothing, etc.)?": Sufficient action – 4%; No action – 14.3%; Insufficient action – 4%; "Does the state guarantee rights of children belonging to sexual minorities to healthy development and safety from surrounding violence?": No – 43%; Yes – 13%; Don't know – 39.2%; Do not want to know – 6%; "Should the Istanbul Convention be ratified?": Yes – 64.7%; Difficult to judge – 29.4%; No – 5%. Suggested measures to prevent discrimination against sexual minority children included: Broad education in all educational institutions and public media – 51.6%; National psychological support service – 30.2%; Family counselling when needed – 8%; Referendum on equal rights – 9.2%; Nothing needs to be done – 1%.

Conclusion. A systemic lack of effective algorithms and protective mechanisms persists in safeguarding children from addictive substances, sexual exploitation including the provision of sexual services "in kind" and discrimination based on sexual identity. These gaps contribute to developmental disorders, depression, and suicidal behaviour, producing long-term socioeconomic burdens for the country. Addressing these deficiencies is essential for fulfilling the state's obligations under the UN Convention on the Rights of the Child.

Acknowledgements. The authors declare no conflicts of interest.

CO-CREATED NUTRITION INTERVENTIONS TO ADDRESS HEALTHY EATING BARRIERS AMONG VULNERABLE ADOLESCENTS: A PARTICIPATORY ACTION RESEARCH STUDY

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Background. Nutrition among adolescents living in urban vulnerable settings remains a significant public health concern, since everyday eating habits are shaped by socioeconomic constraints, limited access to healthy food options, and social environments. Understanding adolescents' perspectives on their eating habits and the barriers they experience is essential for developing context-sensitive and sustainable community-based nutrition interventions.

Methods. This qualitative study was conducted in a community centre in Rīga using a Participatory Action Research (PAR) approach. Adolescents aged 12–16 years (n = 11) participated in seven co-creation sessions. Participatory methods included group discussions, photovoice, and storytelling, enabling adolescents to critically explore their eating habits, food choices, and perceived barriers to healthy nutrition.

Results. The findings indicate that adolescents' eating habits in urban vulnerable settings are influenced by multiple, interconnected barriers embedded in their social, economic, and environmental context. Building on these insights, adolescents collaboratively developed nutrition intervention ideas that were grouped into three main areas: nutrition education, environmental changes to improve access to healthier food options, and social and financial support through family, peer, and community involvement.

Conclusions. This study highlights the value of Participatory Action Research for developing nutrition interventions with adolescents in urban vulnerable settings. Involving adolescents in identifying challenges and intervention ideas ensures that proposed actions reflect their lived experiences and social context. Co-created interventions may contribute to healthier eating habits and help reduce nutrition-related vulnerability among adolescents in urban community settings by addressing both individual behaviours and structural constraints.

FIRST EXPERIENCE IN LATVIA WITH THE MEK INHIBITOR TRAMETINIB FOR HYPERTROPHIC CARDIOMYOPATHY IN A PAEDIATRIC PATIENT WITH NOONAN SYNDROME

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Background. Emerging evidence suggests that mitogen-activated protein kinase (MEK) inhibitors may provide a targeted therapeutic approach for hypertrophic cardiomyopathy (HCM) associated with RASopathies.

Aim. To report the first clinical application of the MEK inhibitor trametinib in Latvia for the treatment of severe HCM in a paediatric patient with Noonan syndrome.

Methods. Targeted therapy with trametinib was initiated in an infant with genetically confirmed Noonan syndrome presenting with progressive left ventricular outflow tract obstruction (LVOTO) and left ventricular (LV) hypertrophy refractory to maximal conventional medical management.

Results. The patient was born at 37 weeks of gestation (3.3 kg) after an unmonitored pregnancy presenting with a pronounced systolic murmur and transient respiratory distress.

Physical examination revealed dysmorphic features consistent with a RASopathy, including a broad forehead, hypertelorism, a depressed nasal bridge, and a short neck. Initial echocardiography demonstrated marked biventricular hypertrophy (interventricular septal thickness (IVSd) 11 mm, LV mass index 120 g/m²), mild LVOTO, thickened aortic valve leaflets, and mild pulmonary artery stenosis. Despite the initiation of propranolol, follow-up at one month showed persistent hypertrophy (IVSd 10 mm; LV mass index 110 g/m²) with systolic anterior motion (SAM) of the mitral valve and escalating gradients (LVOT peak gradient [PG] 67 mmHg; RVOT/pulmonary valve PG 85 mmHg).

Following pulmonary artery balloon angioplasty, the postoperative course was complicated by haemodynamic instability and a prolonged intensive care unit (ICU) stay driven by severe LVOTO and SAM. Genetic analysis identified a pathogenic variant in the *RIT1* gene, confirming Noonan syndrome. Following a literature review and multidisciplinary consultation with international centres (Munich and Montreal), off-label trametinib (0.125 mg daily) was initiated 13 days post-angioplasty. The patient was stepped down from the ICU 2 days after starting Trametinib and discharged on postoperative day 26 (IVSd 7–9 mm; LVOT PGmax/mean 59/27 mmHg). At 6 weeks, LVOT gradients decreased to 46/18 mmHg; NT-proBNP declined from 12,090 pg/ml to 4,596 pg/ml. After 7 months, IVSd was 7–8 mm, LVOT PGmax 25 mmHg, and NT-proBNP 1,669 pg/ml. Following an elective RVOT infundibulectomy for persistent subvalvular stenosis, one-year follow-up confirmed complete resolution of LVOTO and significant regression of LV hypertrophy. No adverse drug-related effects were documented.

Conclusion. The initiation of trametinib resulted in a significant clinical improvement and regression of LV hypertrophy and LVOTO. This case supports the efficacy and safety of MEK inhibition as a disease-modifying strategy in RIT1-associated Noonan syndrome.

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SILENT SIGNS IN THE FOETAL HEART

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Background. Cardiac rhabdomyomas are the most common benign cardiac tumours in the foetal and neonatal periods and are strongly associated with tuberous sclerosis complex (TSC). Prenatal diagnosis can be challenging, as neurological manifestations may not yet be detectable at this stage. Foetal echocardiography often plays an essential role, as cardiac involvement may represent the earliest detectable sign of the disease.

Aim. To highlight the role of foetal echocardiography in the prenatal diagnosis of tuberous sclerosis complex through the detection of cardiac rhabdomyomas.

Methods. A detailed foetal echocardiographic examination was performed following routine prenatal screening that identified intracardiac masses. Given the strong association with TSC, multidisciplinary foetal assessment was initiated,

including foetal brain magnetic resonance imaging and genetic testing. Prenatal counselling was provided based on imaging and genetic findings.

Results. Foetal echocardiography at 20 weeks of gestation demonstrated multiple small echogenic intracardiac masses, suspicious for rhabdomyomas. On repeat evaluation two weeks later, the lesions had increased in size and were consistent with a diagnosis of rhabdomyomas, with the largest measuring 4 × 6 mm. Cardiac anatomy and function remained preserved, with no evidence of inflow or outflow tract obstruction or arrhythmia. Foetal brain magnetic resonance imaging revealed no structural abnormalities. Molecular testing confirmed tuberous sclerosis complex, identifying a pathogenic de novo heterozygous variant in the TSC1 gene (NM_000368.5(TSC1):c.1450dup; p.Arg484Lysfs'5). The foetus was at 23 weeks of gestation (gravida I). Following comprehensive counselling regarding prognosis, the multisystem nature of tuberous sclerosis complex, and potential neurodevelopmental outcomes, the pregnancy was electively terminated. Postmortem examination confirmed the diagnosis of cardiac rhabdomyomas.

Conclusions. Foetal echocardiography and the prenatal detection of cardiac rhabdomyomas can serve as a key diagnostic tool for early identification of tuberous sclerosis complex, while foetal brain MRI complements the assessment by evaluating potential central nervous system involvement. Although these tumours are often not visible on routine prenatal imaging until around 24 weeks of gestation, their identification at earlier stage allows timely genetic evaluation, multidisciplinary counselling, and informed parental decision making.

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PREVALENCE AND LOCALISATION OF CERVICAL CYSTS IN CHILDREN IN LATVIA

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Background. Congenital and developmental cystic lesions of the neck represent one of the most common causes of paediatric neck masses. The most frequently encountered entities include thyroglossal duct cysts (medial cervical cyst), branchial cleft cysts (lateral cervical cyst), and dermoid cysts. These lesions arise from embryological remnants of cervical structures and typically present during childhood. Clinically, cervical cysts most commonly manifest as painless neck swellings, although they may also become symptomatic due to infection, inflammation, or compression of adjacent structures. Accurate differentiation between various cystic lesions is essential because treatment strategies, surgical approaches, and recurrence risks vary depending on the underlying pathology. Despite the clinical importance of these lesions, epidemiological data regarding the prevalence, anatomical distribution, and clinical characteristics of paediatric cervical cysts in Latvia remain limited. A better understanding of local epidemiological patterns may facilitate earlier diagnosis, improve differential diagnostic accuracy, and optimise treatment planning.

Aim. This study aims at defining the epidemiology, anatomical distribution, and clinical characteristics of cervical cysts in paediatric patients in Latvia, examining diagnostic pathways, treatment strategies, and postoperative outcomes. The objective includes identifying patterns relevant for improving differential diagnosis and management of paediatric cervical cystic lesions.

Methods. A retrospective descriptive study was conducted at the Children's Clinical University Hospital (CCUH), Rīga, Latvia. Medical records of paediatric patients aged 0–17 years diagnosed with cervical cysts between 2020 and 2024 were reviewed. Extracted data included patient demographics, clinical presentation, cyst type, anatomical localisation, imaging findings, treatment modalities, histopathological results, postoperative course and recurrence. A total of 107 patients met the inclusion criteria; cases with incomplete records were excluded. Descriptive statistical analysis was performed using Microsoft Excel. Associations between categorical variables were assessed using the chi-square test, with $p < 0.05$ considered statistically significant.

Results. A total of 107 pediatric patients aged 0–17 years with cervical cysts were included. Medial cervical cysts predominated (n = 86), while lateral cervical cysts (n = 16) and dermoid cysts (n = 5) were less common. Sex distribution was equal for medial and lateral cysts, whereas dermoid cysts showed no evident sex predominance. The most frequent clinical manifestation was a visible neck mass, often associated with inflammatory episodes and localised pain. Less commonly reported symptoms included dysphagia, stridorous breathing, and sleep-related apnea. Management consisted of surgical treatment or clinical observation, depending on cyst type, size, and clinical presentation. During the study period, 18 recurrences were documented.

Conclusions. Cervical cysts in children in Latvia most commonly present as medial neck lesions with equal sex distribution. Visible neck mass and infection are the predominant clinical features. Surgical treatment remains the primary management strategy, while observation in selected cases. Knowledge of local epidemiological patterns and recurrence rates may improve diagnostic accuracy and optimise management.

THE IMPACT OF PERINATAL ANTIBIOTIC EXPOSURE ON INFANT GUT MICROBIOTA DEVELOPMENT DURING INFANCY

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Background. Antibacterial therapy is one of the most significant achievements in the treatment of infectious diseases. However, concerns regarding its excessive use and associated adverse effects are becoming increasingly relevant. This is also applicable to the perinatal period, during which antibiotic exposure plays a significant role in the development of infant gut microbiota, influencing metabolic regulation, protection against pathogens and immune system maturation.

Aim. The aim of the study was to evaluate the impact of antibiotic use during pregnancy and childbirth on the development of the infant gut microbiota during the first two years of life.

Methods. A retrospective cross-sectional study was conducted in primary healthcare centres. Parents of infants completed a questionnaire and provided a faecal sample. Gut microbiota composition was determined using microbial sequencing data, and alpha and beta diversity indices were calculated in relation to antibiotic use during the prenatal period and delivery.

Results. A total of 65 infants were included in the analysis: 27 females and 38 males, with the mean age of 12 months. Out of them, 50 infants (76.9%) were delivered vaginally, while 15 (23.1%) — by caesarean section; the mean gestational age was 39.6 ± 1.2 weeks, the mean birth weight — 3.531 ± 401 g; body length ranged from 49 to 59 cm. Alpha diversity, assessed using the Shannon index, did not differ significantly between infants with and without antibiotic exposure during pregnancy. In contrast, alpha diversity was lower in infants exposed to antibiotics during delivery (median Shannon index: 1.83 vs 2.20, $p < 0.01$).

Gut microbiota analysis showed that infants exposed to antibiotics during delivery were enriched by facultative anaerobes, including *Escherichia coli*, *Clostridium neonatale*, and *Enterococcus faecalis*, whereas infants without antibiotic exposure were dominated by *Bifidobacterium* species and *Bacteroides fragilis.* While the median relative abundance of *Escherichia coli* was higher in antibiotic-exposed infants (0.0117 vs. 0.0073), this difference was not statistically significant ($p > 0.05$). In contrast, the median relative abundance of *Bifidobacterium infantis* was significantly lower in the antibiotic-exposed group (0.000408 vs. 0.0627; $p < 0.01$).

Conclusion. Antibiotic use during delivery is associated with significant alterations in the infant gut microbiota during the first years of life. These findings highlight the need for careful evaluation of antibiotic use during childbirth.

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PREHOSPITAL PAIN MANAGEMENT AND TREATMENT OF PAEDIATRIC BURNS DURING EMERGENCY MEDICAL SERVICE RESPONSES IN LATGALE REGION (2020–2022)

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Background. Infants are the least protected and most vulnerable to burns, as they cannot consciously avoid or move away from potentially dangerous heat sources. The incidence of burns among children is higher compared to adults. Pain management in paediatric burns is a crucial aspect of treatment to ensure the comfort and well-being of young patients.

Aim. The aim of the current study was to analyse statistical data from the Emergency Medical Service regarding paediatric burns in Latgale region during the period from 2020 to 2022.

Methods. A descriptive, retrospective study was conducted. Data were collected from electronic emergency call card re-

cords of Emergency Medical Service responses in Latgale region from January 2020 to December 2022. During this period, a total of 13,308 calls involving paediatric patients were registered. Based on the inclusion criteria, 238 electronic call cards related to burn injuries were selected for analysis.

Results. Overall, analgesia was provided in 43.3% (n = 103) of paediatric burn cases. The most common routes of medication administration were *per rectum* in 32.0% (33/103), intravenous in 29.1% (30/103), and intranasal in 19.4% (20/103) of cases ($p < 0.0001$). Analgesia was most frequently administered in cases of second-degree burns (66.3%, n = 61). In contrast, first-degree burns were treated with analgesia in 50.9% (n = 29) of cases, while in 49.1% (n = 57) of cases no analgesia was provided ($p < 0.0001$). The most commonly used analgesic medication was fentanyl 0.05 mg/ml solution for injection. Fentanyl 0.05 mg/ml was administered in 44.7% (n = 46) of cases ($p < 0.0001$). Intravenous access was established in 28.6% (n = 68) of all emergency calls during the study period. Infusion therapy was provided to 22.3% (n = 53) of patients, most frequently to those with second-degree burns (54.7%, 29/53). Local dressing application was performed in 50.0% (n = 119) of patients, most commonly in patients with second-degree burns (56.0%, n = 67). Oxygen inhalation was indicated in 8.0% (n = 19) of cases, while oxygen therapy was not required in 92.0% (n = 219) of patients.

Conclusion. The majority of paediatric patients did not receive analgesia during the prehospital stage of care. Intravenous access was established in approximately one-third of patients.

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COMMON ARTERIAL TRUNK — IS ANYTHING ABOUT IT REALLY COMMON?

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Background. Common Arterial Trunk (CAT) is a rare congenital heart defect associated with a high lifelong risk of reinterventions and Infective Endocarditis (IE). While surgical repair is the gold standard in infancy, the growing population of adults with congenital heart disease (ACHD) requires personalised, minimally invasive approaches to reduce the morbidity associated with repeated open-heart surgeries.

Aim. To present a complex clinical course of an ACHD patient with CAT, highlighting the role of hybrid management and percutaneous interventions in treating multilevel complications.

Methods. A retrospective analysis of a 23-year-old male patient's medical records (2002–2025) was performed, including echocardiography, cardiac MRI, CT scans, and reports from interventional procedures.

Results. The patient underwent primary CAT type I surgical correction at 2 months of age. His history includes multiple interventions: balloon angioplasty (age 9) and initial Melody valve implantation (age 10). In 2021, he presented with fever of unknown origin; based on clinical findings, *Haemophilus parainfluenzae* infective endocarditis (IE) was diagnosed. Due to aortic root dilation (52 mm), significant aortic regurgitation, and mild Melody valve dysfunction, he was qualified for surgery. He underwent a Bentall procedure and BioIntegral prosthesis implantation. Follow-up imaging in 2024 revealed progressive multilevel stenosis of the pulmonary graft (RV-PA gradient: 78 mmHg) in haemodynamic measurement resulting in exercise intolerance. After an unsuccessful balloon angioplasty, a CT scan revealed an additional 60% stenosis of the re-implanted Left Anterior Descending (LAD) artery. The patient underwent successful PCI of the LM/LAD with DES implantation. Finally, in July 2025, a second Melody valve was successfully implanted percutaneously, post-procedural RV-PA gradient decreased to 27 mmHg. Post-procedural recovery was marked by an increase in exercise capacity and overall clinical stabilisation.

Conclusions. As the ACHD population grows, seeking optimal, less invasive treatment methods is crucial. Percutaneous interventions, such as Melody valve implantation offer a safer alternative to repeated cardiac surgeries, reducing surgical adhesions and recovery time. An individualised, multidisciplinary approach is essential to manage the structural complexity and high IE risk in CAT patients.

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NON-INFECTIOUS STRIDOR IN CHILDREN UNDER 5 YEARS OF AGE: ETIOLOGY, DIAGNOSIS, AND TREATMENT

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Background. Stridor in children is a common clinical sign indicating upper airway obstruction and represents an important clinical problem. Although it is most often caused by infectious conditions, non-infectious causes of stridor also occur. Early recognition of non-infectious stridor is crucial, as delayed diagnosis may lead to life-threatening complications or the development of chronic respiratory disorders.

Aim. The aim of this study was to investigate the frequency, etiological factors, and clinical manifestations of non-infectious stridor, as well as the diagnostic and treatment methods applied in children under five years of age treated at the Children's Clinical University Hospital between October 2020 and October 2025. Based on the obtained data, the study aimed to analyse the structure of non-infectious stridor cases, identify the most common causes and clinical features, and evaluate diagnostic approaches and treatment strategies.

Methods. The study included 83 patients under five years of age who were treated at the Children's Clinical University Hospital between October 2020 and October 2025. A retrospective analysis of clinical data was performed, including a review of medical records, diagnostic investigation results, and treatment courses.

Results. Of the 83 patients included in the study, 49 were male and 34 were female. The age of the participants ranged from 1 month to 36 months. The most common etiologies were laryngomalacia (51%), idiopathic causes (18%), and tracheomalacia (15%). Bronchoscopy was used as a diagnostic method in 39% of cases, while flexible bronchoscopy was performed in 38% of cases. Overall, 76% of patients were managed with clinical observation, 12% received conservative treatment, and 8% required surgical intervention (data refer to treatment approaches across all etiologies).

Conclusion. By analysing the frequency, etiological factors, and clinical manifestations, this study highlights the most common causes and characteristic presentations of non-infectious stridor in children under five years of age. Furthermore, the evaluation of diagnostic methods and treatment approaches provides valuable insights into effective clinical management. These findings may contribute to earlier diagnosis, optimised treatment decisions, and improved clinical outcomes for young children with non-infectious stridor.

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ASSOCIATION BETWEEN HUMAN BREAST MILK AND INFANT'S GUT MICROBIOTA

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Background. Human breast milk (HBM) contains diverse microbiota that contribute to the development of the infant's gut microbiota, which plays a crucial role in immune system maturation and metabolic programming important both in first months and later years in child's life. Factors such as mode of delivery may influence microbiota of HBM, as well as infant's gut microbial composition; however, the relationship between them remains insufficiently understood.

Aim. To investigate the association between HBM microbiota and infant's gut microbiota and determine potential influence of the mode of delivery on both of them.

Methods. Breastfeeding mothers were asked to donate a milk sample, a stool sample from their infants and fill out a questionnaire (pregnancy/delivery, anthropometric data, feeding type etc.). Detection of bacterial taxonomic units both in milk and faeces (isolation of DNA followed by 16S gene sequencing) were performed. Correlations between mean relative abundances (RA) of bacterial taxa both from milk and faecal samples, as well as influence of mode of delivery were determined. Statistical analysis: Spearman correlation, T-Test.

Results. In total, 22 mothers (mean age 29.14 years; SD ± 4.06) provided a milk sample and a faecal sample of their

infants (mean age 5.32 months (SD ± 3.83); 54.5% (12/22) boys.

Most abundant bacterial phyla in milk samples were Proteobacteria (52.49%), Actinobacteria (37.60%), Firmicutes (9.89%); families — Nocardiaceae (25.05%), Xanthomonadaceae (16.05%), Pseudomonadaceae (15.04%), Moraxellaceae (9.05%), Enterobacteriaceae (6.36%), Brevibacteriaceae (5.64%); genera — Rhodococcus (25.26%), Stenotrophomonas (16.22%), Pseudomonas (15.18%), Acinetobacter (9.11%), Klebsiella (6.37%), Brevibacterium (5.71%).

Most abundant bacterial phyla in infant's faecal samples were Actinobacteria (32.88%), Firmicutes (31.93%), Proteobacteria (21.32%), and Bacteroidetes (12.30%).

Statistically significant correlation was found between Actinobacteria and Proteobacteria in milk (p = 0.003; ρ = –0,621). Also, there was a correlation between milk's Firmicutes and faecal Actinobacteria (p = 0.088; ρ = –0.372). Mothers who had vaginal birth, had more Proteobacteria in their milk than those who had a C-section(58.44% vs 32.30%; p = 0.059), but less Firmicutes (4.75% vs 27.40%) and Actinobacteria (36.81% vs 40.30%). Infants born vaginally had more Actinobacteria in their faecal samples comparing to those who were born in C-section (38.0% vs 15.4%; p = 0.058), but less Firmicutes (31.7% vs 32.7%) and Proteobacteria (19.7% vs 26.8%).

Conclusion. Dominating bacterial taxa in milk is Proteobacteria and Actinobacteria. Mode of delivery was associated with differences in the mean RA of major bacterial phyla in both breast milk and infant faeces, which supports the role of HBM as a contributor to early infant gut microbial development and highlight the influence of perinatal factors on microbiota composition.

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INFANT GUT MICROBIOTA ASSOCIATION WITH GUT-BRAIN AXIS DISORDERS

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Background. Infant gut microbiota is one of the key modulators of a child's health. Based on recent studies, it is considered that interaction between gut microbiome and nervous system is playing a role in the development of disorders of gut-brain interaction (DGBI).

Aim. To analyse infant gut microbiota and compare the taxonomic differences between infant groups, with and without disorders of gut-brain interaction.

Methods. A longitudinal study has been performed in primary healthcare centres during 2020–2024. Parents of healthy infants were asked to fill out a questionnaire and to bring the child's faecal sample at baseline (0–6 months) and follow-up (7–15 months). Further, DNA from the faecal samples was isolated and shotgun metagenomic sequencing analyses were performed. Relative abundances of taxonomic entities were determined and compared between groups of children with and without DGBI.

Results. The final sample included 66 children. Overall, gut microbiota composition in children with and without parent-reported DGBI reflected microbial composition of the general participant sample. In the baseline samples only MRA of Tanneleraceae was higher in infants without any DGBI compared to those with any DGBI (0.00014 vs 0.0019; p = 0.03). However, in the follow-up samples several families showed differences between the samples: MRA of *Enterobacteriacae, Micrococcacae, Turicibacteriacae* was higher in infants with DGBI while *Acutalibacteraceae, Gastranaerphiaceae* and UBA1242 were higher among those who did not report presence of any DGBI in the first half year of life. Among children with regurgitation, higher abundance of two *Streptococcus* species *(S. sanguinis* H (p = 0.03) and *S.* sp 900755085 (p = 0.04)) was observed. Further, in children without regurgitation higher abundance of *Lactobacillus acidophilus* (p = 0.03), *Ralstonia picketii* (p = 0.02); *Klebsiella A grimontii* (p = 0.03) was observed. In follow up samples higher abundance of *Veilonella* species and *Streptococcus* species, as well as several low-abundant species were observed. In the baseline sample, MRA of *Akkermansiaceae* (p = 0.005), *Sphaerochaetaceae* (p = 0.004) and UBA 660 (p = 0.01) was higher in infants without colic. But in children with colic MRA of *Enterobacter (A-timonensis, roggenkampii)* and *Lactobacillus* species, as well as *Enterococcus D casseliflavus, Bifidobacterium dentinum* (p = 0.002); *Lawsonellsa clevelandensis* (p = 0.001) and *Collinsella aerofacins* H (p = 0.009) was significantly higher.

Conclusions. The differences in species level between children with or without DGBI support the role of gut bacteria in gut–brain axis communication systems that should remain a challenge for further studies.

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CONGENITAL MALFORMATIONS OF THE URINARY SYSTEM IN NEWBORNS, 2014–2023

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Background. Urinary system malformations are among the most frequently observed congenital anomalies in newborns. Their clinical impact varies widely, making early diagnosis essential for optimizing outcomes.

Aim. To assess the rate of congenital malformations of the urinary system over a ten-year period.

Methods. Data source – Health Care Monitoring Datalink (HCMD). We used three data sources: Medical Birth Register, Register of Patients with Particular Diseases Regarding Patients with Congenital Anomalies, and National Death Cause database. Data from 2014–2023 about congenital anomalies (ICD-10; Q60-Q64) were used (n = 630). The prevalence of live birth (per 10,000) with congenital anomalies of urinary system was calculated, including congenital anomalies of kidney and urinary tract (n = 261) (CAKUT (Q60.0; Q60.1; Q60.6; Q61.4; Q62.0; Q62.1; Q62.3; Q63.1; Q63.2; Q64.0; Q64.1; Q64.2)) according European Surveillance of Congenital Anomalies (EUROCAT) coding.

Results. The 10-year live birth prevalence was 33.5/10,000 (95% CI 30.9–36.2). More than one-third of affected newborns had multiple congenital anomalies (36.5%; n = 230), indicating a high proportion of non-isolated cases. 64.1% (n = 404) was boys, mean birth weight 3534.4g (95% CI 3487.2-3581.7) and 39 gestation week (GW) (95%CI 38.9–39.2). During the study time period, congenital megaureter (Q62.2; n = 222) –11.8/10,000 (95% CI 10.3–13.5) had the highest prevalence. A total 45.5% CAKUTs or diagnosed-based prevalence was 19.8/10,000 (95% CI 17.8–21.9). Among CAKUT diagnoses, congenital hydronephrosis (Q62.0; n = 220) was the most frequent anomaly, accounting for the largest proportion of cases (59.1%) and prevalence 11.7/10,000 (95% CI 10.2–13.3). This was followed by renal dysplasia (Q61.4; 11.3%; n = 42) with 2.2/10,000 (95% CI 1.6–3.0) and horseshoe, fused, or lobulated kidney (Q63.1; 8.1%; n = 30) –1.6/10,000. Renal agenesis showed a marked pre-dominance of unilateral cases (Q60.0; 8.3%; n = 31) –1.6/10,000 compared with bilateral agenesis (Q60.1; 0.5%). Other anomalies, including ureteral abnormalities (Q62.1, Q62.3), renal ectopia (Q63.2), and lower urinary tract malformations (Q64.0–Q64.2), each accounted for a smaller proportion of cases (≤2.7%). Overall mortality among newborns with congenital urinary system malformations was 2.2% (14/630).

Conclusion. CAKUT accounted for nearly half of congenital urinary system malformations, with congenital hydronephrosis being the most frequent diagnosis. Despite a substantial prevalence and a high proportion of non-isolated cases, overall mortality was low, underscoring generally favourable survival and the importance of early detection and registry-based monitoring.

STANDARDISATION OF FOLLOW-UP OF PATIENTS WITH TETRALOGY OF FALLOT IN LATVIA OVER THE LAST 20 YEARS

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Background. Tetralogy of Fallot (ToF) is the most common cyanotic congenital heart defect. Despite early surgical correction, lifelong staged follow-up in accordance with available guidelines, including repeated interventional and surgical procedures, is crucial.

Aim. The aim of the current study was to summarise preliminary follow-up data for patients with ToF who underwent surgery at the Children's Clinical University Hospital of Latvia and to create a national cohort for standardised follow-up.

Methods. A total of 82 patients with ToF who underwent surgery between 2004 and 2024 were available for follow-up. All current data were obtained from electronic medical records: 1) previous procedures, type of surgical correction, median age at operation; 2) follow-up: re-interventions and current status, assessed by echocardiography, MRI, spiroergometry, ECG, and 24-h Holter monitoring.

Results. The median age at the operation was 7 months (3 months : 5.8 years); previous minimally invasive surgical interventions were performed in 10 patients (12%). The surgical techniques were described in 77 of them: valve-sparing technique in 21 (26 %) patients, transanular patch technique in 39 (48 %), RVOT patch technique in 6 (7 %), primary pulmonary valve replacement with bioprosthesis Contegra®, Medtronic in 5 (6%), and other techniques in 6 (7%). Re-intervention for residual defects in the long term was necessary in 9 patients (11%). Follow-up data were available for 75 patients (88 %), of whom 22 (27%) were adults and adolescents. During a median follow-up of 8 years (5 months : 17.2 years), echocardiography and ECG were performed for all patients at least once a year. Echocardiography showed max PG 40 mmHg in the pulmonary artery in 8 (11%) patients. Adults and adolescents underwent MRI in 22 (100%), spiroergometry in 11 (50%), and 24-h Holter monitoring in 19 (86%). MRI revealed severe enlargement of the right ventricle and pulmonary regurgitation in 3 (14%) patients in this group.

Conclusion. The study demonstrated improved standardised follow-up, particularly in adolescents and adults after correction of ToF, and underscores the need for a follow-up programme after correction of ToF for subsequent interventional treatment and medication, thereby preventing severe long-term complications and functional deterioration.

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Contents