Amsterdam Kindersymposium 2025

Kindergeneeskunde in tijden van Crisis

Abstract Boek

Inhoud

NVK accreditatie is toegekend
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Programma Amsterdam Kindersymposium 2025

Kindergeneeskunde in tijden van Crisis

7:30 - 8:45	**Registratie, Koffie en Thee**	
8:00 - 8:45	**Nutricia breakfast session** (EN)	Marnix Foyer
8:45- 9:00	**Opening Amsterdam Kindersymposium 2025** *Prof. dr. Willem de Vries & moderatoren*	Mary Dresselhuyszaal
9:00 - 9:40	**Gezondheid van kinderen op de vlucht** (NL) *Hanaâ Benjeddi*	Mary Dresselhuyszaal
9:40 - 10:30	**Medicijntekorten: beleid versus praktijk** (NL) *Aris Prins*	Mary Dresselhuyszaal
10:30 - 11:00	**Koffie pauze**	
11:00 - 12:20	**SLAM sessie I** (EN)	Alle zalen
12:20 - 13:20	**Lunch pauze en sponsorloop**	
13:20 - 14:00	**Lessen geleerd: infectiebestrijding & COVID-19 crisismanagement.** *Prof. Dr. Patricia Bruijning*	Mary Dresselhuyszaal
14:00 - 15:20	**SLAM sessie II** (EN)	Alle zalen
15:20 - 15:40	**Koffie pauze**xxx	
15:40 - 16:20 Xx	**Impact van stress en trauma op het brein** (NL) *Prof. dr. Erik Scherder*	Mary Dresselhuyszaal
16:20 - 16:45	**SLAM Battle & Prijs uitreiking** (EN) *Moderatoren Arthur Edridge & Fien van Dongen*	Mary Dresselhuyszaal
16:45 - 17:00	**Emma jaar boek presentatie & afsluiting** (NL) *Prof. dr. Willem de Vries & moderatoren*	Mary Dresselhuyszaal
17:00 - 18:30	**Borrel**	DeLaMar Foyer

Voorwoord Prof. Dr. Willem de Vries

Inmiddels voor de veertiende keer, organiseert een commissie van jonge onderzoekers van het Emma Kinderziekenhuis, het Amsterdam Kindersymposium.

Het is traditie dat de jonge onderzoekers van onderzoeksgroepen van het Emma Kinderziekenhuis, maar ook onderzoekers van regionale ziekenhuizen en andere academische ziekenhuizen, op dit symposium hun nieuwste bevindingen presenteren. Wij zijn blij te zien dat elk jaar ook steeds meer onderzoekers uit andere regio's hun bevindingen komen delen en dat het aantal bezoekers uit het hele land toeneemt.

Wetenschappelijk onderzoek speelt een cruciale rol in de vooruitgang van de geneeskunde. Het stelt ons in staat om de diagnose en behandeling van kinderen steeds verder te verbeteren. Door middel van onderzoek krijgen we meer inzicht in de mechanismen achter ziekteprocessen, leren we welke behandelingen het beste zijn voor patiënten én hun families, en kunnen we zorg op maat bieden die het verschil maakt.

Ook dit jaar vindt het Amsterdam Kindersymposium weer plaats in het DeLaMar theater. Het theater, oorspronkelijk gebouwd als school, biedt de perfecte setting voor ons symposium. In de late 19e eeuw gingen kinderen hier naar school, en na de Tweede Wereldoorlog werd het gebouw omgebouwd tot theater. Deze geschiedenis maakt de locatie des te bijzonderder voor ons symposium op 31 januari, waar ook gepresenteerd en geleerd wordt.

De SLAM-presentaties vormen de ruggengraat van het symposium, de plenaire sessies zullen in het teken staan van het hoofdthema: "Kindergeneeskunde in tijden van crisis". Dit is een uiterst relevant onderwerp in een tijd waarin de wereld waarin wij leven op vele fronten op drift is.
De commissie heeft zeer interessante sprekers uitgenodigd en 60 abstracts geselecteerd om te presenteren. Dit belooft een bijzonder inspirerende en leerzame dag te worden voor iedereen.

Ik wens jullie allemaal een mooie en waardevolle dag in het DeLaMar theater tijdens het Amsterdam Kindersymposium 2025.`

Willem de Vries

Hoofd Emma Kinderziekenhuis van Amsterdam UMC

Voorwoord symposium commissie

Met veel enthousiasme nodigen we u uit voor de 14e editie van het Amsterdam Kindersymposium in het DeLaMar Theater in Amsterdam. Het thema van dit jaar is: '**Kindergeneeskunde in tijden van Crisis**'. Met dit thema als inspiratie hebben we een aantal indrukwekkende sprekers geselecteerd die hun werk zullen presenteren over onderwerpen binnen en rondom de kindergeneeskunde in tijden van crisis. Onderwerpen zoals medicijntekorten, overgewicht, mentale gezondheid, de vaccinatiecrisis, en de vluchtelingencrisis zijn actueler dan ooit. Zorgverleners en onderzoekers binnen de geneeskunde streven ernaar de zorg te optimaliseren, zodat we zowel nu als in de toekomst goede zorg aan alle kinderen kunnen bieden.

Nutricia sponsort de jaarlijkse **ontbijtsessie**, waar u kunt genieten van een heerlijk ontbijt terwijl u wakker wordt met inspirerende lezingen over onderzoek op het gebied van pediatrische gastro-enterologie en voeding. Aansluitend verwelkomen we **Hanaâ Benjeddi**, die ons meer zal vertellen over kindergeneeskundige zorg tijdens een vluchtelingencrisis, zoals op Lesbos. Vervolgens deelt **Aris Prins** zijn visie op medicijntekorten en de hoge medicijnprijzen. Na de eerste SLAM-sessie zal **Patricia Bruijning** vertellen over de lessen die we hebben geleerd over crisismanagement tijdens de COVID-19-pandemie. Na de tweede SLAM-sessie neemt **Erik Scherder** ons mee in de relatie tussen het brein en trauma. Het Amsterdam Kindersymposium wordt afgesloten met de presentatie van het Emma Jaarboek, dat als eerste wordt overhandigd aan een patiënt die zijn/haar verhaal op het podium zal delen!

We kijken uit naar een inspirerende dag en hopen dat u zult genieten van het Amsterdam Kindersymposium 2025. Wij willen iedereen bedanken die heeft bijgedragen aan het succes van dit symposium en hopen deze waardevolle traditie in de toekomst verder te kunnen uitbreiden.

De Amsterdam Kindersymposium Commissie 2024-2025,

Eva Vermeer, Jane Splinter, Jip Groen, Julie van der Post, Koen Vermeijden, Larissa Heideman, Lydian de Ligt, Lilianne van Stam, Rimke de Kroon & Rosemarie de Ridder

Ontmoet de moderatoren

Dagvoorzitter dr. Arthur Edridge

Arthur Edridge is in 2022 gepromoveerd op het onderwerp '*Encephalopathies of unknown cause in children in sub-Saharan Africa*'. Vanuit dit promotieonderzoek – waarin hij als een wetenschappelijke Indiana Jones allerlei onverklaarde ziektes in Afrika heeft onderzocht - is hij geïnteresseerd geraakt in het bestuderen van nieuwe en opkomende infectieziekten.

Na zijn Afrikaanse avonturen is Arthur in 2023 begonnen met de opleiding tot kinderarts en vader geworden. Recent is hij verhuisd naar het enerverende Weesp. Om dit spannende leven in balans te houden is hij regelmatig aan racefietsen en hardlopen, en probeert hij het beste brood te bakken van de stad.

Dagvoorzitter dr. Fien van Dongen

Fien van Dongen is gepromoveerd op '*Rotavirus vaccination for infants with medical risk conditions*' in september 2021. En is sinds 2022 in opleiding tot kinderarts. De opleiding combineert zij met vervolgonderzoek naar rotavirusvaccinatie en luchtweginfecties. Dat rotavirusvaccinatie nu een jaar geleden is ingevoerd in het Rijksvaccinatieprogramma ziet zij als een overwinning.

Voor het eerst sinds 1950 neemt de wereldwijde levensverwachting weer af na de covid-19 crisis. Om haar eigen levensverwachting positief te beïnvloeden is zij begonnen met krachttraining. Krachttraining en goede cardiorespiratoire conditie schijnen grote voorspellers te zijn voor *longevity*.

"Not everything that is faced can be changed, but nothing can be changed until it is faced" – James Baldwin

Ontmoet de sprekers

Hanaâ Benjeddi

Kinderarts en fellow Kinder Intensive Care **Hanaâ Benjeddi** heeft ruime ervaring in de kindergeneeskunde en internationale gezondheidszorg. Hanaâ werkte voor de wereldgezondheidsorganisatie en zet zich met haar bijzondere onderzoek in voor kinderen op de vlucht die verblijven op Lesbos. Tijdens het Amsterdam Kindersymposium deelt Hanaâ haar inspirerende verhaal, waarin ze ingaat op de uitdagingen en mogelijkheden binnen de medische zorg voor deze kinderen, en de belangrijke rol van artsen en onderzoekers bij het creëren van verandering. Haar toewijding en expertise bieden een unieke blik op hoe zorg en onderzoek het verschil kunnen maken in de levens van kinderen op de vlucht.

Aris Prins

Aris Prins is openbaar apotheker en voorzitter van de Koninklijke Nederlandse Maatschappij ter bevordering der Pharmacie (KNMP) en tot 1 januari 2025 zowel voorzitter de Europese koepelorganisatie van apothekers (PGEU).

Niet alleen zet hij zich in om de samenwerking tussen de apotheker en andere zorgverleners zo efficiënt mogelijk te maken, ook focust hij zich op de enorme medicijntekorten in Nederland. Daarbij was hij een zichtbaar onderdeel van een VWS-campagne tegen antibioticaresistentie en vraagt hij aandacht voor antibioticatekorten bij kinderen. Vanuit zijn rol als voorzitter van de Europese koepelorganisatie van apothekers stimuleert Aris Prins Europa om meer zelfvoorzienend te worden en solidariteit tussen lidstaten te versterken.

Prof. Patricia Bruijning

Prof. Patricia Bruijning is kinderarts-epidemioloog en hoogleraar vaccinatie- en infectiebestrijdingsepidemiologie. Ze was de hoofdonderzoeker van verschillende grote vaccinstudies, waaronder rotavirus-, griep-, pneumokokken- en COVID-19-vaccins. Haar werk is van grote invloed geweest op vaccinadviezen van de Gezondheidsraad en op vaccinatierichtlijnen en beslissingen rondom vaccinatiebeleid. Haar studies naar de transmissiedynamiek van COVID-19 in onder andere gezinnen en scholen leverden belangrijke inzichten voor het coronabeleid rondom kinderen.

In haar rol als hoogleraar streeft prof. Bruijning ernaar middels epidemiologisch onderzoek bij te dragen aan betere kennis voor publiek vaccinatiebeleid en andere interventies ter bestrijding van infectieziekten, met bijzondere aandacht voor kinderen.

Prof. dr. Erik Scherder

Prof. dr. Erik Scherder is hoogleraar klinische neuropsychologie. Hij is onder andere gespecialiseerd in de invloed van beweging, muziek en stress op het brein. Prof. dr. Erik Scherder weet complexe onderwerpen op een enthousiaste, toegankelijke en inspirerende manier over te brengen op een breed publiek. Hij deelt zijn kennis via meerdere boeken, lezingen en optredens in de media, zoals bij *de Wereld Draait Door* of in zijn programma *Erik Scherder en het nut van optimisme*. Bovendien probeert Prof. Dr. Scherder iedereen aan te moedigen om voldoende te bewegen met de app *ommetje*.

Tijdens het Amsterdam Kinder Symposium neemt prof. dr. Erik Scherder ons mee in de effecten van stress en trauma op het brein.

Partners

Van de allereerste voeding voor baby's tot geavanceerde sonde- en drinkvoedingen voor mensen met ernstige aandoeningen; aan alle voeding die Nutricia produceert ligt uitgebreid wetenschappelijk onderzoek ten grondslag. Met behulp van talloze zorgprofessionals en vooraanstaande wetenschappers, en door samenwerking met universiteiten en ziekenhuizen, is Nutricia in staat innovatieve producten te ontwikkelen die voor veel mensen echt een verschil maken.

Rhythm Pharmaceuticals is een wereldwijd biofarmaceutisch bedrijf dat zich inzet voor het transformeren van het leven van patiënten met zeldzame neuro-endocriene aandoeningen door zorg en precisiegeneesmiddelen die de onderliggende oorzaak aanpakken, snel vooruit te helpen. Bij Rhythm zijn we toegewijd aan het ontdekken van therapieën voor zeldzame neuro-endocriene ziekten. Onze wetenschap richt zich op het ontwikkelen van behandelingen voor patiënten met hyperfagie (onverzadigbare honger) en obesitas veroorzaakt door een verstoorde melanocortin-4 receptor (MC4R)-route. Daarnaast onderzoeken we ook behandelingen voor andere zeldzame aandoeningen, waaronder congenitale hyperinsulinisme.

 Bij Viatris, een Mylan Healthcare-bedrijf, streven we ernaar de kwaliteit van leven van kinderen met milde tot matige atopische dermatitis te verbeteren door snelle symptoomcontrole te bereiken en verergering van de aandoening te voorkomen. We richten ons op het verbeteren van de toegang tot zorg en het verduidelijken van de rol van calcineurineremmers als waardevolle aanvulling op topische corticosteroïden (TCS) voor snellere en langdurigere verlichting.

MASIMO

Masimo is een wereldwijd medisch technologiebedrijf dat technologieën voor monitoring in ziekenhuizen en thuis produceert. Dit omvat metingen, sensoren, patiëntmonitoren en oplossingen voor connectie, automatisering en telezorg. Onze missie is om patiëntuitkomsten te verbeteren, de zorgkosten te verlagen, niet-invasieve monitoring naar nieuwe locaties en toepassingen te brengen en het leven te verbeteren.

Masimo's baanbrekende *rainbow SET® Pulse CO-Oximetry*-metingen maken nauwkeurige monitoring mogelijk onder uitdagende omstandigheden en bij alle huidtinten. Masimo Hospital Automation™-oplossingen zoals Root®, Radius VSM™ en Patient SafetyNet™ blijven de zorgverlening verbeteren. Daarnaast drijft Masimo SafetyNet® voor remote patiëntmanagement, in combinatie met de Masimo W1®, de vooruitgang in telezorg en virtuele zorg verder vooruit.

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Ace Pharmaceuticals biedt op maat gemaakte oplossingen in belangrijke therapeutische zorggebieden. Wij zorgen voor de beschikbaarheid van geneesmiddelen voor specifieke patiëntengroepen, met een focus op apotheekbereidingen, geregistreerde geneesmiddelen en zelfzorgproducten. Ons aanbod is gericht op het ondersteunen van kleine, vaak gespecialiseerde patiëntengroepen. Daarnaast spelen wij als farmaceutisch partner een actieve rol in de ontwikkeling van geneesmiddelen binnen Clinical Trial Studies, waarmee we bijdragen aan de vooruitgang in de gezondheidszorg.

Rushwood levert middels educatie en kwalitatief hoogwaardige producten een meetbare bijdrage aan veiligheid en comfort voor patiënt en zorgverlener. Een van onze producten Gloup medicatie slikgel zorgt voor het makkelijk en veilig slikken van medicatie als water geen optie is. Bovendien heeft Gloup geen enkele interactie met medicatie en uit studie is gebleken dat Gloup bio-equivalent is aan water. Ook voor kinderen kan Gloup een grote bijdrage leveren. Gloup is geschikt vanaf twee jaar en er is zelfs een specifieke Gloup Kids die voor kinderen jonger dan zes jaar onbeperkt gebruikt mag worden.

Graag stellen we ons even voor…. Wij zijn Proefschriftspecialist! Een bedrijf sterk gespecialiseerd in het drukken en opmaken van proefschriften. Kwaliteit, gemak en snelheid is wat veel promovendi zoeken en precies dat is wat bij ons in het DNA zit. Wij maken op een snelle en kwalitatief hoogstaande wijze proefschriften voor promovendi in heel Nederland. Met 41 jaar ervaring weten wij alle ins & outs als het aankomt op het drukken van proefschriften en andersoortige boek-producties. Alle producties worden in-house bij onze vestiging onder de rook van Amsterdam, in Zaandam, geproduceerd. Door onze nabijheid bij zowel het VUmc als het AMC kunnen wij de boeken altijd op de korts mogelijke termijn met eigen vervoer bezorgen. Uiteraard kun je ook altijd langskomen bij ons om voorbeelden te checken, een proefdruk op te pikken of om een offerte door te nemen. Zien we je binnenkort?

Nutricia Ontbijt Symposium   Marnix Foyer   8:00 - 8:45

Programma	Presentator	Titel
1	Jacqueline Muts	Modifications in infant formula to optimize infant growth and body composition
2	Anne Lafeber	Nutrition, growth and morbidity in the first five years of life in moderate and late preterm infants

Rhythm Pharmaceuticals SLAM sessie

Programma	Abstract	Presentator	Titel
1	AKS2025	Rhythm Pharmaceuticals	
2	AKS2025_011	Siegnella Concincion	Building space for children's voices: The added value of participatory and creative approaches for child-centred integrated obesity care
3	AKS2025_032	Sanne Hulsmann	The many different clinical faces of hypothalamic dysfunction; not one disease
4	AKS2025_046	Dewi van Harskamp	Unraveling the Energy Imbalance in Bardet-Biedl Syndrome with Stable Isotopes
5	AKS2025_052	Wenneke van Weelden	Medication use in patients with 16p11.2 copy number variants
6	AKS2025_057	Sandra van t Padje	Emma Center for Personalized Medicine: Accelerating therapy development for rare inherited disorder
7	AKS2025_025	Sibbeliene van den Bosch	Familial hypercholesterolemia care by Dutch pediatricians-mind the gaps
8	AKS2025_039	Lisanne Vendrig	A whole-genome sequencing family-based association study to elucidate the genetics of congenital anomalies of the kidney and urinary tract
9	AKS2025_061	Jing Chen	Exploring the Impact of LxA4, RvD1, and RvE3 on Intestinal Inflammatory Response: Insights from a Human Intestinal Organoid Model
10	AKS2025_045	Nikki van der Kruk	Complement regulator CD55 deficient protein-losing enteropathy (CHAPLE disease): successful treatment with pozelimab in two sisters

Programma SLAM sessie I   Glazen Foyer   11:00 - 12:20

Programma	Abstract nummer	Presentator	Titel
1	AKS2025_001	Betty Lahr	Comparing Practices in Surgical Management of Necrotizing Enterocolitis in the Netherlands and Finland: An International Cohort Study
2	AKS2025_002	Mana Nasori	The journey of parents caring for people with rare genetic intellectual disability and challenging behaviour
3	AKS2025_003	Hannah Hoeben	Development, internal and external validation of a prediction model for discharge of preterm neonates in a level 2 setting
4	AKS2025_018	Juliet Hondtong	The development of PROMs for adolescents and adults with severe (speech)motor impairments: a prospective study
5	AKS2025_012	Yaela Schrijver	High intelligence and intelligence profile discrepancies in preterm born children: a systematic review and meta-analysis
6	AKS2025_033	Rosemijne Pigmans	Facial 3D data acquisition in critically ill children for production of personalized non-invasive ventilation masks: a feasibility study
7	AKS2025_008	Cece Kooper	Neurocognitive Clusters after Pediatric Traumatic Brain Injury
8	AKS2025_009	Marije Asbreuk	Gallbladder abnormalities and premalignant risk in Metachromatic Leukodystrophy
9	AKS2025_006	Steffie Vonk	Real-world pharmacokinetics of elexacaftor-tezacaftor-ivacaftor in children with cystic fibrosis: the SYM-CF study
10	AKS2025_013	Sterre Schoon	Prevalence of undernutrition in Children with Cancer in Low- and Middle-Income Countries: A Systematic Review

Programma SLAM sessie I   Marnix Foyer   11:00 - 12:20

Programma	Abstract nummer	Presentator	Titel
1	AKS2025_004	Nina Frerichs	Lifestyle and Eating Behavior Outcomes in Extremely Preterm Children at Age 2: Preliminary results from the Generation P study
2	AKS2025_060	Noa IJdo	Intelligence outcome in children with sickle cell disease: a systematic meta-analyses and meta-regression
3	AKS2025_017	Romy van Voorst	Impact of Vanishing White Matter on non-affected family members: qualitative interviews and quality of life study
4	AKS2025_064	Emma Baas	Hydrocortisone replacement therapy strategies across infancy in the Netherlands: a call for evidence-based guidelines
5	AKS2025_019	Arno Colenbrander	The first 1.5 year of a pediatric Transitional Care Unit in the Netherlands
6	AKS2025_059	Hildo Lantermans	Neonatal kidney/stem progenitor cells isolated from the urine of donors of various gestational ages
7	AKS2025_024	Said Bachiri	Management and outcome of neuroendocrine tumours of the appendix in children; a dutch multicenter historical cohort study - preliminary results
8	AKS2025_027	Louise Pigeaud	Drinking motives among 15-16-year-old school-going students in 16 European countries
9	AKS2025_028	Marlou Bierlaagh	The European HIT-CF project - Getting drugs to people with cystic fibrosis who carry ultra-rare CFTR mutations
10	AKS2025_029	Eda Kabak	Longitudinal analyses of sway and gait parameters in X-ALD patients with myeloneuropathy

Programma SLAM sessie II   Mary Dresselhuyszaal   14:00 - 15:20

Programma	Abstract nummer	Presentator	Titel
1	AKS2025_030	Ryan Aukes	Evaluation of newborn screening for diseases using 3-hydroxy-isovalerylcarnitine (C5-OH) as a marker: systematic review of the literature and evaluation of 17 years of C5-OH screening in the Netherlands
2	AKS2025_031	Hilde van der Staaij	Sequential prediction of major bleeding or death under two platelet transfusion strategies in thrombocytopenic preterm neonates
3	AKS2025_007	Dorinde Korteling	Patient Reported Outcomes used in Pediatric Physiotherapy: A Scoping Review
4	AKS2025_034	Molly Mascini	Prevalence of undernutrition among children with CP in Mangochi district, Malawi
5	AKS2025_035	Maaike Hogerwerf	What are the long-term gastrointestinal sequelae for patient with gastroschisis and omphalocele?
6	AKS2025_036	Ana-Sofia Abrudan	Placental pathology is associated with lower quality Fidgety Movements in preterm infants
7	AKS2025_038	Yara Dixon	Unravelling the risk: A systematic review of genetic and clinical predictors of red blood cell alloimmunization in sickle cell disease
8	AKS2025_070	Lieve Willemsen	Lifelong Care for Individuals with DSD: A Learning Healthcare Approach
9	AKS2025_047	Luna Klomp	FINEart: Spatial transcriptomic mapping of gene expression in normal human kidney development
10	AKS2025_043	Julia van der Zande	Posterior tibial nerve stimulation is feasible and safe for children with functional constipation but similar to sham stimulation: results of a single-blinded randomized controlled trial

Programma SLAM sessie II　　　　**Glazen Foyer**　　　　**14:00 - 15:20**

Programma	Abstract nummer	Presentator	Titel
1	AKS2025_042	Lisanne Smits	Predicting In-Hospital Mortality in Children in Low- and Middle-Income Countries: A Systematic Review and Meta-Analysis of Vital Signs and Anthropometric Measurements
2	AKS2025_049	Guus Vorst	Brain shrinkage may lead to skull thickening: a study in leukodystrophies and multiple sclerosis
3	AKS2025_050	Sante Berlingerio	Improving energy metabolism in cystinosis kidney cells
4	AKS2025_051	Akash Singh	Detecting pulmonary exacerbations with volatile organic compounds in exhaled breath in patients with primary ciliary dyskinesia
5	AKS2025_054	Maartje Stutvoet	Beyond the Heart: Exploring Fatigue in Children with Congenital Heart Disease
6	AKS2025_055	Anna de Geus	Is a decision aid for parents of infants with symptoms of gastroesophageal reflux (disease) effective?
7	AKS2025_056	Junyu Chen	Neonatal Kidney Stem/Progenitor cells (nKSPC) downregulate activation of human neutrophil in vitro
8	AKS2025_058	Kirsten Muller	Parental depressive and posttraumatic stress symptoms after preterm birth: the HIPPO 2 year follow-up study
9	AKS2025_065	Fabio Blom	Developing a Novel Trigger Modality for Noninvasive Ventilation in Preterm Infants Based on Transcutaneous Diaphragmatic Electromyography
10	AKS2025_005	Marloes Hoppen	Repetitive head impacts during contact sports and fluid biomarkers of neural damage: A meta-analysis

Programma SLAM sessie II   **Marnix Foyer**   **14:00 - 15:20**

Programma	Abstract nummer	Presentator	Titel
1	AKS2025_021	Esmée Vesseur	EMpower parents: Effectiveness of EMDR treatment for parental PTSD related to their child's medical condition. A randomized controlled trial
2	AKS2025_062	Dook Koch	Meningitis sequelae in Adulthood: Towards an Understanding of Residual Effects after childhood bacterial infection (MATURE)
3	AKS2025_014	Jacqueline Muts	Improving macronutrient composition in donor human milk pools by using machine learning and optimization
4	AKS2025_010	Nicole Versaevel	Consensus-Based Clinical Outcome Measures for an International Megalencephalic Leukoencephalopathy with Subcortical Cysts Network Registry
5	AKS2025_066	Selina Limmen	Shared decision making in pediatric physiotherapy: a qualitative study among adolescents, parents and pediatric physical therapists
6	AKS2025_067	Nynke Verhees	Derivation of a clinical prediction model for surfactant treatment in preterm infants with respiratory distress syndrome: a retrospective cohort study
7	AKS2025_068	Anouk Konert	Diagnostic Accuracy of Intestinal Ultrasound for Detecting Small Bowel Disease Activity in Paediatric Crohn's Disease: Preliminary Results of a Prospective Study
8	AKS2025_069	C Roest	Do multidisciplinary team meetings in the Jeroen Pithuis correlate with its own Transitional Care Core-Outcome Set as modelled by a new integrated model of health outcomes?
9	AKS2025_041	Malou Dongen	Protocol for Development of a Global Core Outcome Set for the surgical treatment of Sacrococcygeal Teratoma in children: A systematic review and International Delphi study
10	AKS2025_072	Michelle Bloem	Attitudes towards the use of complementary and alternative medicine in children with gastrointestinal symptoms, a multicenter survey study among parents and pediatricians - the ATCAM study

Ingezonden abstracts

AKS2025_001**:** Comparing Practices in Surgical Management of Necrotizing Enterocolitis in the Netherlands and Finland: An International Cohort Study

Lahr, B.E. (1, 4), van Varsseveld, O.C. (2, 4), Klerk, D.H. (1, 2, 4), Pakarinen, M.P. (3, 4), Koivusalo, A.I. (3, 4) & Hulscher, J.B.F. (2, 4)

(1) Department of Neonatology, Beatrix Children's Hospital, University Medical Center Groningen, Groningen, The Netherlands. (2) Department of Surgery, Division of Pediatric Surgery, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands. (3) Department of Pediatric Surgery, Children's Hospital, Helsinki University Hospital, University of Helsinki, Helsinki, Finland. (4) European Reference Network for Inherited and Congenital Anomalies (ERNICA)

Rationale

Surgical necrotizing enterocolitis (NEC) can result in significant morbidity and mortality. Surgical management varies in the absence of international evidence-based guidelines. We aimed to gain insight into practice variation between expert centers in the Netherlands and Finland.

Methods

Bicentric retrospective cohort study including all infants treated surgically for NEC (Bells stage IIA) in two centers in the Netherlands and Finland between 2000-2021. Main outcomes were preoperative, intraoperative and three-months postoperative characteristics.

Results

We included 191 patients (122 Dutch and 69 Finnish). Median gestational age and birth weight were lower in Finnish patients (median[min.-max.]: 25+4/7 [23+0/7-39+0/7] vs. 28+2/7 [23+6/7-41+6/7], p<0.001, and 795gr [545-4000] vs. 1103gr [420-3065], p<0.001). Indication for surgery was mostly pneumoperitoneum in Finnish patients (56.5% vs. 37.7%; p=0.02) versus clinical deterioration on conservative treatment in Dutch patients (51.6% vs. 23.2%; p<0.001). A fixed-bowel loop was also more often an indication in Finland (20.3% vs. 3.3%; p<0.001. Ostomy creation was more common in Finnish patients (92.8% vs. 53.3%; p<0.001) and primary anastomosis in Dutch patients (29.5% vs. 4.4%), p<0.001). Open-close procedures occurred in 13.9% of Dutch cases, versus 1.4% of Finnish cases (p=0.004). Three-month mortality was comparable when excluding open-close procedures (24.8% vs. 19.1%; p=0.46).

Discussion

We observed varying populations, indications for surgery and surgical approaches in NEC between the Netherlands and Finland. The occurrence of open-close procedures is tenfold higher (13.9% vs. 1.4%) in the Netherlands compared to Finland. Long-term outcomes remain to be studied. These results point towards significant practice variation and strengthen the need for European management guidelines.

AKS2025_002**:** The journey of parents caring for people with rare genetic intellectual disability and challenging behaviour

Nasori, M. (1,5,7), Oostrom, K.J. (1,7), Geukers, V.G. (3), Haverman, L. (1,5,6,7), Huisman, S.A. (2,4)

(1) Amsterdam UMC location University of Amsterdam, Emma Children's Hospital, Child and Adolescent Psychiatry & Psychosocial Care, Meibergdreef 9, Amsterdam, The Netherlands; (2) Amsterdam UMC location University of Amsterdam, Emma Children's Hospital, Department of Pediatrics, Meibergdreef 9, Amsterdam, The Netherlands; (3) Amsterdam UMC location University of Amsterdam, Emma Children's Hospital, Educational Network Woman-Child Centre, Meibergdreef 9, Amsterdam, The Netherlands; (4) Zodiak, Prinsenstichting, Kwadijkerpark 8, Purmerend, The Netherlands; (5) Amsterdam Public Health, Mental Health, Amsterdam, The Netherlands; (6) Amsterdam Public Health, Digital Health, Amsterdam, The Netherlands; (7) Amsterdam Reproduction and Development, Child Development, Amsterdam, The Netherlands

Rationale

People with rare genetic intellectual disability syndromes (RGIDS) have physical and mental health related problems, with a high risk for challenging behavior (e.g. self-injury). This requires long-term complex care involving various healthcare professionals. Parents play a key role in coordinating and interacting with these professionals. This study aimed to explore parents' experiences with care pathways, extended networks, and healthcare professionals over time.

Methods

A qualitative approach was used to explore the care pathways, extended networks and experiences. Semi-structured interviews were conducted, audio-taped, transcribed verbatim and analyzed using the Thematic Analyses approach in Maxqda. Data was collected until sufficiency was reached. Findings were visualized using Patient Journey Mapping.

Results

Among the 13 parents interviewed, most reported that their care pathway began with concerns about early development. Some felt unheard by their general practitioner or pediatrician, with the care path only progressing due to their persistence filled with referrals, testing, diagnoses and advice. Although many professionals were involved, physicians from the somatic domain dominated the care pathway, while behavioural specialists and psychiatrists were rarely consulted. This added to parents' ongoing uncertainty and frustration, as their child's challenging behaviours went unaddressed, despite their early presence. The lack of interprofessional coordination led to a desire for a single point of contact to coordinate proper care.

Discussion

Due to a lack of guidance, parents were rarely seen by behavioral specialists or psychiatrists, despite numerous consults with healthcare professionals. Parents were left to lead the care process themselves, with much of the focus placed on physical problems. This highlights the need for better collaboration and coordination between medical and behavioral professionals to ensure person-centered care.

AKS2025_003**:** Development, internal and external validation of a prediction model for discharge of preterm neonates in a level 2 setting

Hoeben, H. (1,2), Jonkman, N.H. (1), van Maurik, I.S. (3), Rausch, A. (1), van Veenendaal, N.R. (1,2), van der Schoor, S.R.D. (1,4), van Goudoever, J.B. (2), van Kempen, A.A.M.W. (1)

(1) Department of Pediatrics, Onze Lieve Vrouw Gasthuis (OLVG), Amsterdam, The Netherlands; (2) Department of Epidemiology and Data Science, Amsterdam UMC, Vrije Universiteit Amsterdam, Amsterdam, the Netherlands; (3) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; (4) Department of Neonatology, Wilhelmina Children's Hospital, Utrecht, The Netherlands

Rationale

Adequately estimating the moment of discharge for preterm infants is essential for parental readiness for transition to home after hospital admission. However, estimation tools for the level 2 neonatal setting are underreported. This study aims to a prediction model for upcoming discharge of preterm infants admitted to a level 2 neonatal ward.

Methods

A single-center retrospective cohort study was performed. Preterm infants admitted to OLVG hospital (Amsterdam, The Netherlands) for at least one week between 2016 and 2023, with a minimum postconceptional age of 33 weeks at admission, were included. Data on antenatal, perinatal, neonatal and organizational factors were gathered retrospectively. Missing data was imputed using multiple imputation chained equations. The cohort was divided in a developmental and validation set based on OLVG location. Primary outcome was defined as discharge between day 7 and 14. Two multiple logistic regression models were developed with and without time-varying covariates, respectively. The most parsimonious model was internally and externally validated.

Results

Both models showed equal performance (AUC > 0.9). Postconceptional age at admission, mode of delivery, monitor surveillance, caffeine citrate, gestational age, current weight, tube feeding, mothers milk and syndromal diagnosis were selected as predictors through backward selection. External validation of the model without time-varying covariates showed an AUC of 0.933 and calibration slope of 1.065.

Conclusion

Antenatal, perinatal and neonatal characteristics can adequately predict upcoming discharge of preterm infants in a level 2 neonatal setting. In comparison to previous research, feeding practices were of particularly high predictive value in our level 2 setting. Addition of time-varying covariates did not improve performance of the model. This model might enhance communication regarding discharge planning, aiming to improve parental discharge readiness.

AKS2025_004**:** Lifestyle and Eating Behavior Outcomes in Extremely Preterm Children at Age 2: Preliminary results from the Generation P study

N.M. Frerichs (1,2), J. van Goudoever (1), A. Kindermann (1), B. Vlieg-Boerstra (3), E. van Mil(4), H.J. Niemarkt (5), T.G.J. de Meij (1)

(1) Amsterdam UMC, University of Amsterdam, Amsterdam Gastroenterology Endocrinology Metabolism Research Institute, Department of Pediatric Gastroenterology, Emma Children's Hospital, Amsterdam UMC, Amsterdam; (2) Amsterdam UMC, University of Amsterdam, Amsterdam Reproduction and Development Research Institute, Amsterdam; (3) Department of Paediatrics, OLVG Hospital, Amsterdam, The Netherlands; (4) Department of Pediatrics, Jeroen Bosch Hospital, 's-Hertogenbosch, The Netherlands; (5) Neonatal Intensive Care Unit, Máxima Medical Centre, Veldhoven, The Netherlands.

Rationale

Extremely preterm infants face unique challenges in their development, including potential long-term impacts on eating behaviors and lifestyle patterns. Our aim was to evaluate lifestyle outcomes and eating behaviors in this population at age two.

Methods

The Generation P study aims to find early gut microbiota associations with infancy and childhood health outcomes in the first month, and at corrected ages (CA) 2 and 5,5 years in extremely preterm infants (<28 weeks gestation). Lifestyle and eating behavior outcomes were assessed at 2-years CA using parent-completed health questionnaires containing two validated tools: the Dutch Fly-Kids Questionnaire, a lifestyle screening tool, and the Dutch Montreal Childrens Hospital Feeding Scale (MCHFS), evaluating feeding behaviors and difficulties. The Fly-kids questionnaire results were compared to recent outcomes by Krijger et al. (2023).

Results

Currently, 36 infants participate in the 2-year follow-up (54%), with 30 completed questionnaires (83%). Twenty percent of infants experience feeding difficulties at CA 2, according to the MCHFS, and 10% of parents reported their infant is still (partly) reliable on tube feeding. Preliminary findings indicate a trend towards a more unhealthy lifestyle in extremely preterm infants at CA age 2 compared to a Dutch children aged 1-3 (n=201; Krijger et al., 2023). Most evident differences were observed regarding vegetables and sugar-sweetened beverages consumption, although differences were not significant.

Discussion

These preliminary findings stress that lifestyle and feeding difficulties should not be underestimated in this population, and underline the importance of early lifestyle and feeding interventions. Early risk factors and the potential role of the gut microbiota will be explored in a larger cohort.

AKS2025_005**:** Repetitive head impacts during contact sports and fluid biomarkers of neural damage: A meta-analysis

Hoppen, M.I. (1,2,3), Kamps. S. (3,4), Vijverberg E.G.B. (3,4), Daams J.G. (5), Teunissen C.E. (3,4,6), Oosterlaan, J. (2,7), Königs M. (1,2,3)

(1) Emma Neuroscience Group, Department of Pediatrics, Emma Children's Hospital, Amsterdam UMC location University of Amsterdam, Amsterdam, The Netherlands;(2) Amsterdam Reproduction and Development research institute, Amsterdam, The Netherlands; (3) Amsterdam Neuroscience, Neurodegeneration, Amsterdam, The Netherlands (4) Alzheimer Center Amsterdam, Neurology, Vrije Universiteit Amsterdam, Amsterdam UMC location VUmc, Amsterdam, The Netherlands (5) Medical Library, Amsterdam UMC Locatie AMC, Amsterdam, The Netherlands (6) Neurochemistry Laboratory, Department of Laboratory Medicine, Amsterdam Neuroscience, Amsterdam UMC, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands. (7) Emma Children's Hospital Amsterdam UMC Follow Me program, Department of Pediatrics, Emma Children's Hospital, Amsterdam UMC location University of Amsterdam, Amsterdam, The Netherlands;

Rationale

Research into acute effects of Repetitive Head Impact (RHI) on the brain using fluid biomarkers of neural damage may contribute to the identification of early pathophysiological processes and aid in risk assessment. Aim: To systematically aggregate the available evidence for acute effects of contact sport participation on fluid biomarkers reflecting neural damage, while differentiating between contact sports and individual fluid biomarkers.

Methods

MEDLINE, Embase and SPORTdiscus were searched until 18/07/2024. Studies were included that reported on fluid biomarkers of neural damage assessed in one session of contact sport participation.

Results

A total of 35 studies was included. Across blood biomarkers of neural damage and across contact sports, meta-analysis revealed statistically significant and medium-sized elevation of blood biomarkers after natural exposure to RHI during participation (k=22, n=645, d=0.642, 95%CI=.454-.829, p<.001). Subsequent meta-analyses revealed statistically significant and medium-large-sized elevations across blood biomarkers for fight sports, American football and football specifically. Meta-analysis of experimental exposure to football heading showed no significant change in blood biomarkers of neural damage (k=10, n=202, d=.071, 95%CI=-.092-.234, p=.394) and also no significant difference in change compared to a control group (k=9, heading=186, controls=163, d=.263, 95%CI=-.642-.116, p=.174).

Discussion

All but one of the included studies on natural exposure to RHI controlled for the confounding effect of exercise or change in blood volume, representing considerable risk of bias. The level of evidence regarding the effects of natural exposure to RHI is therefore downgraded to very low quality evidence for a negative effect of RHI on brain integrity. Based on moderate quality evidence, this meta-analysis provides no indication for negative effects of football heading in football on brain integrity as assessed with blood biomarkers.

AKS2025_006: Real-world pharmacokinetics of elexacaftor-tezacaftor-ivacaftor in children with cystic fibrosis: the SYM-CF study

Vonk, S.E.M. (1), Terheggen-Lagro, S.W.J. (2), Haarman, E.G. (2), Hashimoto, S. (3), Maitland – van der Zee, A.H. (3), Mathôt, R.A.A. (1), Kemper, E.M. (1,4)

(1) Amsterdam UMC location University of Amsterdam, Department of Hospital Pharmacy & Clinical Pharmacology, Meibergdreef 9, Amsterdam, The Netherlands; (2) Amsterdam UMC location University of Amsterdam, Emma Children's Hospital, Department of Pediatric Pulmonology and Allergy, Meibergdreef 9, Amsterdam, The Netherlands; (3) Amsterdam UMC location University of Amsterdam, Department of Pulmonary Medicine, Meibergdreef 9, Amsterdam, The Netherlands; (4) Amsterdam UMC location University of Amsterdam, Department of Vascular Medicine, Amsterdam, The Netherlands

Rationale

The clinical efficacy of elexacaftor-tezacaftor-ivacaftor (ETI) in children with cystic fibrosis (cwCF) is variable; some respond, while others do not or have side effects. The pharmacokinetics (PK) of ETI are poorly described in published research, particularly when it comes to children. Knowledge of the PK in this population may provide more insight into the exposure-response relationship of the drugs and its corresponding inter-patient variability (IIV). The aim of this study was to evaluate the PK of ETI in cwCF in a real-world setting.

Methods:

A prospective, observational PK study was conducted in cwCF starting with ETI. PK samples were collected at home using dried blood spots (DBS), and during regular outpatient hospital visits. Clinical efficacy and safety data were gathered and evaluated. Population PK (popPK) models were developed using nonlinear mixed-effects modelling.

Results

A total of 29 children were included in this study. Novel popPK models were developed for ETI and its main metabolites. There was significant variability in AUC of ETI within and between age groups, aligning with the references in the product information. All children had concentrations within or above the range needed for a clinical response. An exploratory exposure-response analysis found no direct relationship between AUC and sweat chloride, ppFEV1, or side effects.

Discussion

This study is the first analysis of ETI popPK in cwCF. The developed popPK models may be used to further study the response-efficacy relationship and its variability within cwCF, as a basis for more personalized dosing.

AKS2025_007: Patient Reported Outcomes used in Pediatric Physiotherapy: A Scoping Review

Korteling, D.L. (1,2,3,4), Limmen, S. (1,2,3,5), Ketelaar, M (6,7), Daams, J.G. (8), Luijten, M.A.J. (1,2,3,5), van Oers, H.A. (1,2,3,9), Bloemen, M.A.T. (10), Haverman, L. (1,2,3,11) & Engelbert, R.H.H. (12,13)

(1) Amsterdam UMC location University of Amsterdam, Emma Children's Hospital, Child and Adolescent Psychiatry & Psychosocial Care, Amsterdam, The Netherlands (2) Amsterdam Reproduction and Development, Child development, Amsterdam, The Netherlands (3) Amsterdam Public Health, Mental health, Amsterdam, The Netherlands (4) Amsterdam Public Health, Methodology, Amsterdam, The Netherlands (5) Amsterdam Public Health, Personalized Medicine, Amsterdam, The Netherlands (6) Center of Excellence for Rehabilitation Medicine, UMC Utrecht Brain Center, University Medical Center Utrecht, the Netherlands (7) De Hoogstraat Rehabilitation, Utrecht, the Netherlands (8) Amsterdam UMC location University of Amsterdam, Medical Library, Amsterdam, The Netherlands (9) Amsterdam Public Health, Quality of Care, Amsterdam, The Netherlands (10) Research Group Moving, growing and thriving together, HU University of Applied Sciences Utrecht, Utrecht, The Netherlands (11) Amsterdam Public Health, Digital health, Amsterdam, The Netherlands (12) Department of Rehabilitation Medicine, Amsterdam Movement Sciences, Amsterdam UMC, University of Amsterdam, the Netherlands (13) Centre of Expertise Urban Vitality, Faculty of Health, Amsterdam University of Applied Sciences, Amsterdam, the Netherlands

Rationale

Pediatric physiotherapists primarily rely on clinical measurements, overlooking the comprehensive perspectives of children and caregivers. Patient-reported outcome measures (PROMs), as tools for understanding patients' health perceptions, are of added value because they aid in shared decision-making. However, guidance on the use of PROMs in pediatric physiotherapy (PPT) remains limited. For effective implementation of PROMs in PPT, understanding which patient-reported outcomes (PROs) are relevant for this setting is essential. Therefore, this study aims to provide an overview of measured PROs per diagnose in PPT intervention studies.

Methods

A comprehensive systematic search was conducted in Medline, restricted to the years 2013-2023. Peer-reviewed intervention studies for children aged 4-17 years old with physical functioning problems were included when the intervention was related to PPT, rehabilitation or exercise therapy and the studies reported PROs or used PROMs (proxy/self-reported). Reports with no original data or not written in English were excluded. Study selection and data extraction was performed by two researchers independently. For extraction of PROs, researchers identified PROs directly described in the study or, if absent, extracted them from the utilized PROMs. An evidence map was created to synthesize PROs measured per diagnose.

Results

Title and abstract of 4593 articles were screened, 457 full texts were reviewed, and 172 studies met the inclusion criteria. Results show that 168 different PROMs were used to measure 40 unique PRO concepts. Most measured PROs were activities and participation and symptom status.

Discussion

Findings underline the problem of using many different PROMs to measure the same PRO concepts, making it hard to compare outcomes across studies. Therefore, the development of a standardized coreset of PRO(M)s applicable in PPT, with the ultimate goal to provide more patient-centered care, is crucial.

AKS2025_008: Neurocognitive Clusters after Pediatric Traumatic Brain Injury

Kooper, C.C. (1,2), Königs, M. (1,2,3), Steenweg, M.E. (4), Hunfeld, M. (5), Scheurer, N. (6), Schippers, H.M. (7), Peper, W. (7), Popma, A. (2,8), van Woensel, J.B.M. (2,9), Buis, D.R. (10), Bruining, H. (11,12), Engelen, M. (13), Oosterlaan, J. (2,3)

(1) Emma Neuroscience Group, Department of Pediatrics, Emma Children's Hospital, Amsterdam UMC location University of Amsterdam, Amsterdam, The Netherlands; (2) Amsterdam Reproduction and Development research institute, Amsterdam, The Netherlands; (3) Emma Children's Hospital Amsterdam UMC Follow Me program, Department of Pediatrics, Emma Children's Hospital, Amsterdam UMC location University of Amsterdam, Amsterdam, The Netherlands; (4) Department of Neurology, OLVG, Amsterdam, the Netherlands; (5) Department of Pediatric Neurology, Erasmus MC, Sophia Children's Hospital, Rotterdam, the Netherlands; (6) Department of Pediatric Neurology, Spaarne Gasthuis Hospital, Haarlem and Hoofddorp, The Netherlands; (7) Department of Neurology, St. Antonius Hospital, Utrecht and Nieuwegein, the Netherlands; (8) Child and Youth Psychiatry, Emma Children's Hospital, Amsterdam UMC location Vrije Universiteit Amsterdam & Levvel, Amsterdam, The Netherlands; (9) Pediatric Intensive Care Unit, Emma Children's Hospital, Amsterdam UMC location University of Amsterdam, Amsterdam, The Netherlands; (10) Department of Neurosurgery, Amsterdam UMC location University of Amsterdam, Amsterdam, The Netherlands; (11) N=You Centre, Emma Children's Hospital, Amsterdam UMC location Vrije Universiteit Amsterdam & Levvel, Amsterdam, The Netherlands; (12) Amsterdam Neuroscience research institute, Amsterdam, The Netherlands; (13) Amsterdam Leukodystrophy Center, Department of Pediatric Neurology, Amsterdam UMC location University of Amsterdam, Amsterdam, The Netherlands.

Rationale

Traumatic brain injury (TBI) is the leading cause of acquired disability in children. Children with TBI are at risk of persistent deficits in neurocognitive functioning that affect daily life. However, neurocognitive outcomes vary widely and this heterogeneity is poorly understood. This study aims to investigate whether the heterogeneity in neurocognitive outcome can be reduced by distinguishing distinct clusters of children, and to investigate the relation between these neurocognitive clusters and demographic, premorbid and clinical characteristics.

Methods

This study included 113 children with mild to severe TBI and 113 demographically matched neurologically healthy children. Neurocognitive functioning was assessed six months post-TBI using computerized tests. Clusters of patients with distinct neurocognitive profiles were determined using UMAP with k-means clustering on seven age-standardized neurocognitive domain scores. Resulting clusters were compared on demographic, premorbid and clinical characteristics at time of TBI treatment.

Results

The cluster algorithm detected four neurocognitive clusters with diverging outcome patterns. One cluster had good outcome, whereas three clusters had adverse outcome characterized by global deficits, visual-processing deficits, and executive functioning deficits. The clusters did not differ in clinical characteristics, but did differ in demographic and premorbid characteristics. The global deficits cluster had higher prevalence of premorbid behavior problems and a psychiatric disorder, while the good outcome cluster had higher socio-economic status than the other clusters.

Discussion

This study shows that clusters of children exist with distinct neurocognitive outcome profiles after pediatric TBI. These clusters of children demonstrate diverging severity and configuration of neurocognitive outcome and deficits, and differed in terms of premorbid functioning and socio-economic status, but not in clinical characteristics.

AKS2025_008 Figure 1. Neurocognitive Outcome Clusters in Children with TBI.
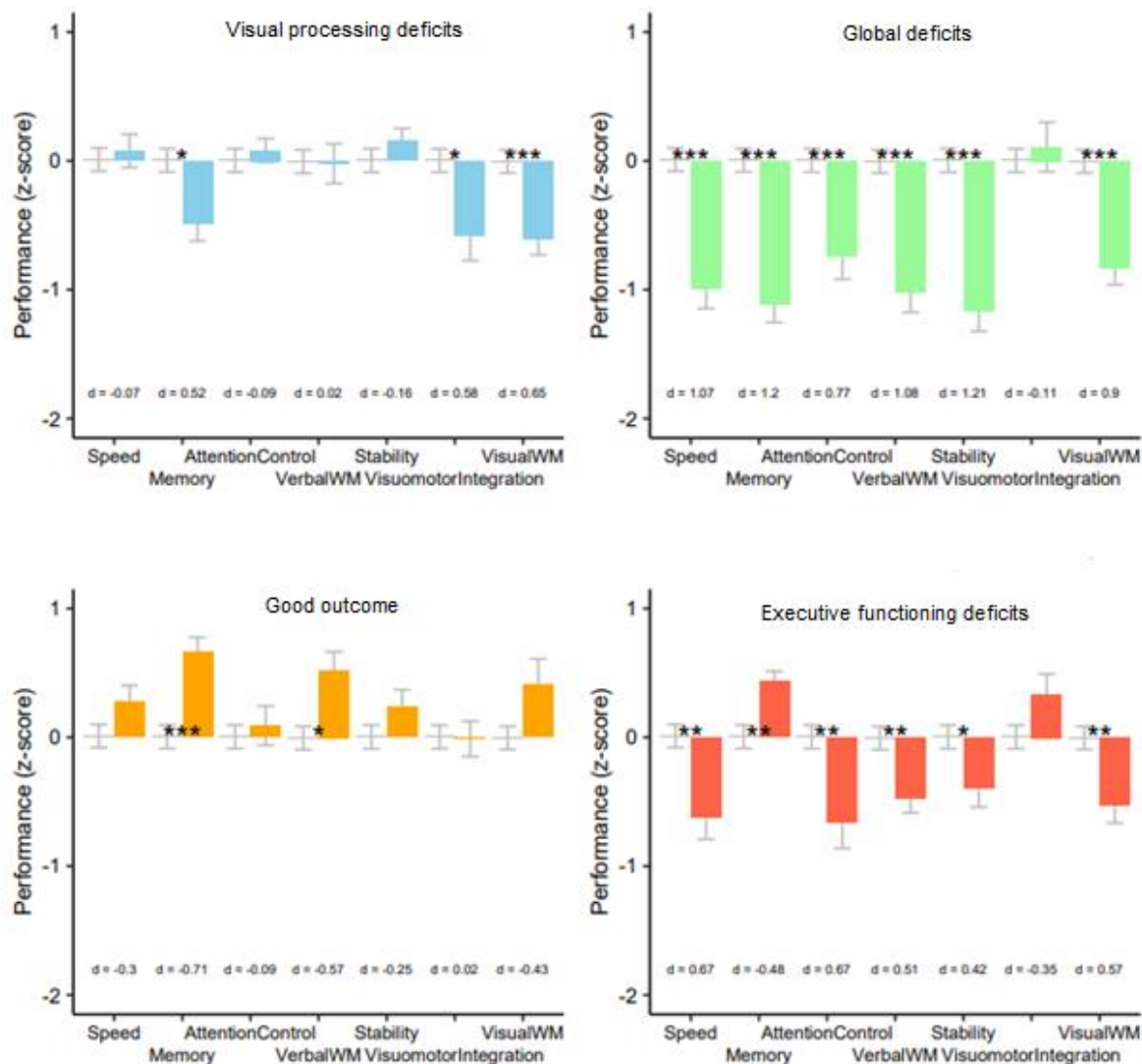
Note. Bars represent z-scores with standard error of neurocognitive performance per neurocognitive domain. Grey = neurologically healthy control children. Numbers low in the plot are effect sizes (Cohen *d*). TBI = traumatic brain injury, WM = Working Memory. False discovery rate corrected *p* < .05, **p* < .01, ***p* < .001.

AKS2025_009: Gallbladder abnormalities and premalignant risk in Metachromatic Leukodystrophy

Asbreuk, M.A.B.C. (1-3), Bugiani, M. (4, 5), Wolf, N.I. (1, 2)

(1) Department of Child Neurology, Emma's Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; (2) Amsterdam Leukodystrophy Center, Amsterdam Neuroscience, Cellular & Molecular Mechanisms, Amsterdam, The Netherlands; (3) Medicine for Society, Platform at Amsterdam UMC location, University of Amsterdam, Amsterdam, The Netherlands; (4) Department of Paediatrics/Child Neurology, VU University Medical Center, Amsterdam Neuroscience, Amsterdam, The Netherlands; (5) Department of Pathology, VU University Medical Center, Amsterdam Neuroscience, Amsterdam, The Netherlands

Rationale

Metachromatic leukodystrophy (MLD) is a rare lysosomal disorder caused by biallelic variants in ARSA, leading to arylsulfatase A deficiency and sulfatide accumulation in the central and peripheral nervous system. MLD presents as four types: late infantile (LI, ≤30mo), early juvenile (EJ, 2.5-7y), late juvenile (LJ, 8-16y) and adult (AT, ≥16y). Sulfatide accumulation also affects other organs, including the gallbladder, where abnormalities are frequent with metaplastic changes sometimes occurring at a young age. Since 2015, ultrasound screening and removal of abnormal gallbladder is recommended. This study aims to assess global adherence to screening practices and evaluate the premalignant risk of gallbladder in MLD.

Methods

The European MLD registry collects data on gallbladder involvement, including ultrasounds, gallbladder abnormalities, type of abnormality, and cholecystectomies. Additional staining for premalignant changes for Dutch patients are performed. Here we present the data for the Dutch cohort.

Results

61 Dutch patients underwent at least one ultrasound aged 0.9-53.3 (12 LI, 16 EJ, 20 LJ and 13 AT). Of these, 51 patients (83.6%) showed gallbladder involvement: stones (1), dilated bile duct (2), distension (4), polyposis (14), collapsed gallbladder (13), wall thickening (14) or sludge (9) on their first scan. 33 patients (54.1 %) had a cholecystectomy, with 27 (44.3%) after the initial ultrasound. Only 1 LI, 1 EJ, 5 LJ and 3 AT cases had a normal gallbladder. In 4 LI, 9 EJ, 9 LJ and 11 AT a cholecystectomy was performed. In 2 patients, the gallbladder had no abnormalities. From one of these patients premalignant activity was confirmed with pathology staining. Pathology staining revisions are ongoing.

Discussion

The results support the recommendation for gallbladder screening in MLD patients, as over 80% of those screened had abnormalities irrespective of age. Threshold for cholecystectomy should be low as ultrasound may be normal despite of premalignant changes.

AKS2025_010: Consensus-Based Clinical Outcome Measures for an International Megalencephalic Leukoencephalopathy with Subcortical Cysts Network Registry

Versaevel, N.R.A. (1), Sinha, J. (2), Topaloglu, P. (3), Nicita, F. (5), de Souza, P. V. S. (6), Bernard, G.(7), Fatemi, A. (8), Hamilton, E. M. C. (1) & van der Knaap, M. S. (1, 2)

(1) Department of Child Neurology, Amsterdam Leukodystrophy Center, Emma Children's Hospital, Amsterdam University Medical Center, Amsterdam Neuroscience, Amsterdam, The Netherlands; (2) Department of Integrative Neurophysiology, Center for Neurogenomics and Cognitive Research, Vrije Universiteit Amsterdam, Amsterdam Neuroscience, Amsterdam, The Netherlands. (3) Department of Pediatric Neurology, Center for Neurosciences and Research, NH Hospital, RN Tagore International Institute, Kolkata, India; (4) Istanbul Faculty of Medicine, Division of Child Neurology, Department of Neurology, Istanbul University, Istanbul, Turkey; (5) Unit of Muscular and Neurodegenerative Disorders, Bambino Gesù Children's Hospital, IRCCS, Rome, Italy; (6) Neurology and Neurosurgery, Universidade Federal de São Paulo (UNIFESP), São Paulo, SP, Brazil; (7) Departments of Neurology and Neurosurgery and Pediatrics, McGill University Department of Medical Genetics, McGill University Health Center Child Health and Human Development Program, Research Institute of the McGill University Health Center Montreal, Quebec, Canada; (8) Department of Neurology and Developmental Medicine, Kennedy Krieger Institute, Baltimore, Maryland.

Rationale

Megalencephalic Leukoencephalopathy with Subcortical Cysts (MLC) is a rare genetic disorder with an infantile onset, which is characterized by chronic brain white matter edema, leading to slow motor and cognitive decline and premature death. No curative treatment is available and management is focused on symptoms. Limited information on the disease and the absence of a registry hampers research advancements and standardization of management. The rarity of MLC necessitates an international network registry aimed at facilitating research on its natural history, preparing for clinical trials, and providing a platform for regulatory decision-making. Identifying necessary clinical outcome measures (COMs) is the first requirement in establishing the MLC network registry.

Methods

We formed an International Consortium of MLC clinical experts and established standardized COMs for the MLC registry using a modified Delphi procedure. This modified approach aimed to attain consensus among consortium members while minimizing the required rounds. We utilized current literature collected through a review, clinical trial searches, and input from the consortium members to guide the selection process.

Results

After two voting rounds and a consensus meeting the MLC consortium decided on eight performance outcomes (PerfO), eight clinician-reported outcomes (ClinRO), and six observer-reported outcomes (ObsRO). With input from MLC families, the consortium developed customized questionnaires for initial and follow-up inventories specific to MLC.

Discussion

Establishing an international MLC network registry is crucial for advancing understanding, therapy development, and care for patients with MLC. The selection of COMs and the drafting of questionnaires have been completed. The complete package is reviewed by patient advocates and experts for

discussions on balancing data completeness versus time demands on families, also considering potential patient loss during follow-up.

AKS2025_010 Table 1. Clinical outcome measures included in the MLC inventory

Performance outcomes	Domain
GMFM-88	Motor function
9HPT	Motor function
10MWT	Walking ability
SARA	Ataxia
MAS	Spasticity
CARS2-ST	Autism (screening)
MMSPE or MoCA	Cognition
Clinician-reported outcomes	**Domain**
GMFC-MLD	Gross motor function
GMFCS E&R	Gross motor function
MACS or Mini-MACS	Motor function hands & arms
ELFC-MLD	Language ability
CFCS	Communication ability
EDACS or Mini-EDACS	Eating and drinking
Observer-reported outcomes	**Domain**
HUI3, proxy	Health-related QoL & multi-domain level of functioning
PedsQL, proxy	QoL
EQ-5D-Y-5L or EQ-5D-5L, proxy	Health-related QoL
NeuroQoL	Health-related Qol in neurological disorders
VABS III, proxy	Adaptive behavior

Note. Megalencephalic leukoencephalopathy with subcortical cysts (MLC); Gross motor function measure -88 (GMFM-88); Nine hole-peg test (9HPT); 10-meter walking test (10MWT); Scale for the Assessment and Rating of Ataxia (SARA); Modified Ashworth Scale (MAS); The Childhood Autism Rating Scale, 2nd Edition (CARS2); Mini Mental State Pediatric Examination (MMSPE); Montreal Cognitive Assessment (MoCA); Gross motor function classification for MLD (GMFC-MLD); Gross Motor Function Classification System Expanded and Revised (GMFCS E&R); The Manual Ability Classification System (MACS); Expressive Language Function Classification (ELFC-MLD); Communication Function Classification System (CFCS); Eating and Drinking Ability Classification System (EDACS); Health Mark 3 utilities index proxy (HUI3); Pediatric Quality of Life Inventory (PedsQL); EuroQol 5-Dimension Youth version 5-Level (EQ-5D-Y-5L); EuroQol 5-Dimension 5-Level (EQ-5D-5L); Quality of Life in Neurological Disorders (NeuroQoL); Vineland of Adaptive Behavior Screener III (VABS III).

AKS2025_011**:** Building space for children's voices: The added value of participatory and creative approaches for child-centred integrated obesity care

Concincion, S. (1), Dedding, C. (2), Verhoeff, A. (3) & van Houtum, L.

(1) Siegnella Concincion MSc (she/her), the corresponding author is a PhD candidate at the faculty of Social and Behavioural Sciences, University of Amsterdam, and a youth health care nurse at the Youth Health Care Department (JGZ) of the Public Health Service Amsterdam (GGD), Nieuwe Achtergracht 100, 1018 WT Amsterdam, Postbus 2200, 1000 CE Amsterdam, The Netherlands. Email: sconcincion@ggd.amsterdam.nl (2) Christine Dedding PhD (she/her) is a professor in the department of Ethics, Law and Humanities (ERH), Amsterdam University Medical Centers, location VUmc, De Boelelaan 1089a, 1081 HV Amsterdam, The Netherlands. Email: c.dedding@amsterdamumc.nl (3) Arnoud Verhoeff PhD (he/him) is a professor in the faculty of Social and Behavioural Sciences, University of Amsterdam, and director of Sarphati Amsterdam, Public Health Service Amsterdam (GGD), Nieuwe Achtergracht 100, 1018 WT Amsterdam, Postbus 2200, 1000 CE Amsterdam, The Netherlands. Email: averhoeff@ggd.amsterdam.nl (4) Lieke van Houtum PhD (she/her) is a senior researcher at Sarphati Amsterdam, Public Health Service Amsterdam (GGD), Nieuwe Achtergracht 100, 1018 WT Amsterdam, Postbus 2200, 1000 CE Amsterdam, The Netherlands. Email: lvhoutum@ggd.amsterdam.nl

Rationale

Paediatric obesity is increasing across the globe. In search for solutions, it is important to engage children, as they have their own unique perspectives on what it means to be a child with obesity within their sociocultural context. Though this is increasingly acknowledged, the question remains how to meaningfully engage children in paediatric obesity care as they are often in an unequal position in relation to adults. In this study, we reflect on what can be learned from a participatory research approach to improve child-centred paediatric obesity care.

Methods

We reflect on four years of participatory research with children and care professionals to understand the mechanisms that facilitated child participation within the research process. Secondly, we reflect on how these lessons relate to care practices. We conducted qualitative content analysis on the data gathered, including interviews, observations and working sessions with children and care professionals.

Results

We identified three elements that facilitated child participation: (1) adopting a participatory attitude, (2) connecting to children's living environment and (3) doing activities together. This helped to build trusting relationships and gain in-depth understanding of what works well and why.

Discussion

Building space for children's voices is essential to comprehend the complexity of paediatric obesity and becoming more effective in communicating with children to develop and shape care in line with their needs and circumstances. Our findings underscore the significance of building communicative spaces where children's voices can be articulated at their own pace, about issues of their own choice, based on their own experiences.

https://www.sciencedirect.com/science/article/pii/S0882596324003865

AKS2025_012: High intelligence and intelligence profile discrepancies in preterm born children: a systematic review and meta-analysis

van der Windt, L. I.* MD (1,2), Schrijver, Y. N. * Bsc (1), Denswil, N. P. MSc (3), Leemhuis, A. G. MD PhD (2,4), van Wely, M. PhD (2,5), Pajkrt, E. Prof (1,2), Aarnoudse-Moens, C. S. H. PhD (2,4), van 't Hooft, J. MD PhD (1,2) *joint first author

(1) Amsterdam UMC location University of Amsterdam, Department of Obstetrics and Gynaecology, Meibergdreef 9, Amsterdam, The Netherlands (2) Amsterdam Reproduction and Development Research Institute, Amsterdam, Netherlands (3) Amsterdam UMC Location University of Amsterdam, Medical Library, Meibergdreef 9, Amsterdam, the Netherlands (4) Emma Children's Hospital, Amsterdam UMC, Department of Pediatrics, Amsterdam, The Netherlands (5) Amsterdam UMC location University of Amsterdam, Centre for Reproductive Medicine, Meibergdreef 9, Amsterdam, the Netherlands

Rationale

To determine high and above average intelligence and explore disharmonic intelligence profiles in preterm born children.

Methods

For studies before 2017, three previous systematic reviews regarding intelligence in preterm children were used. For studies after 2017, a search was conducted using Medline, PsychInfo and Embase. Studies reporting (index) intelligence quotient (IQ) scores of preterm versus term born children aged 5-18 years were included. Proportions of preterm versus term born children with above average (>1SD total IQ score) and high intelligence (>2SD) with risk ratios (RR) and 95% confidence interval (CI) were determined using random-effects model. Studies with >0.5 Standard Mean Difference between mean index IQ scores were classified as disharmonic.

Results

We included 102 studies (13773 preterm and 14496 term born children). 11.6% (95% CI 0.11-0.12) of preterm children had above average intelligence versus 26.6% (95% CI 0.26-0.27) of term children (RR 0.40, 95% CI 0.36-0.45). High intelligence was reported in 1.9% (95% CI 0.17-0.21) versus 5.5% (95% CI 0.50-0.60) respectively (OR 0.29, 95% CI: 0.23-0.37). 22 of 58 studies (37.9%) indicated disharmonic profiles in preterm children.

Conclusions

Although PTB children have overall lower intelligence outcomes compared to their TB peers, we observed above average intelligence in one tenth of PTB children. PTB children scored significantly more often high in verbal IQ compared to performance IQ, which was not observed in TB children. In at least one third of the studies disharmonic intelligence profiles were found on group level. With verbal IQ was most often identified as the highest index score. To ultimately understand the needs of PTB children, complete understanding of their intelligence profiles can give guidance to support overall academic growth and success.

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AKS2025_013**:** Prevalence of undernutrition in Children with Cancer in Low- and Middle-Income Countries: A Systematic Review

Sterre Schoon (1,2), Nthongase Makamo (3,4), Nmazuo Ozuah (4,6), Gertjan Kaspers (1,2), Elena Ladas (6), Minke Huibers (1)

(1) Princess Máxima Center for Pediatric Oncology, Utrecht, The Netherlands. (2) Amsterdam UMC, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands. (3) Baylor College of Medicine Children's Foundation, Lilongwe, Malawi. (4) Texas Children's Global Hematology-Oncology-Pediatric-Excellence (HOPE) Program, Lilongwe, Malawi. (6) Department of Pediatrics, Baylor College of Medicine, Houston, Texas, United States of America. (7) Columbia University Irving Medical Center, New York, United States of America.

Rationale

Undernutrition at diagnosis is related to increased morbidity and mortality and has been associated with treatment abandonment and overall survival in childhood cancer in lower- and middle-income countries (LMICs). To summarize and describe the impact of this global burden, this systematic review aims to outline the prevalence and factors associated with undernutrition in childhood cancer patients in LMICs.

Methods

Ovid Medline, EMBASE, Cochrane and Web of Science databases were searched in September 2024. The following key search terms were used: developing countries- defined by World bank classification, neoplasm, child, undernutrition. LMICs were classified by the World Bank data. Undernutrition was defined by the World Health Organization; and includes wasting, stunting and underweight.

Results

Total of 88 studies in 23 countries were included. The prevalence ranges from 6.3% in China to 87.5% in Malawi. Children older than 5 years tend to be more affected by undernutrition at diagnosis compared to the younger population. 57% of the studies used only weight-based indicators to assess nutritional status, 16% defined mid-upper arm circumference (MUAC), 27% used both measures. Undernutrition was associated with increased incidences of febrile neutropenia, infection, mucositis, treatment related deaths and overall mortality, as reported in 16 studies.

Discussion

Undernutrition among children with cancer in LMICs is highly prevalent, though its severity varies by region and country. Evidence is increasing that undernutrition negatively impacts clinical outcomes, leading to higher infection and toxicity rates. Significant efforts are needed to improve nutritional support across all age groups of children with cancer, extending beyond current public health approaches in LMICs.

AKS2025_014: Improving macronutrient composition in donor human milk pools by using machine learning and optimization

Muts, J. (1,2), Knevel, D. (3), den Hertog, D. (3), Wong, R.K. (4), Chan, T.C.Y. (4), van Keulen, B.J. (1,2), van Goudoever, J.B. (1,2), van den Akker, C.H.P. (2,5)

(1) Department of Pediatrics, Emma Children's Hospital. Amsterdam UMC, University of Amsterdam. Amsterdam, The Netherlands. (2) Amsterdam Reproduction & Development research institute, Amsterdam UMC, Amsterdam, The Netherlands. (3) Department of Business Analytics, Faculty of Economics and Business, University of Amsterdam, Amsterdam, The Netherlands. (4) Department of Mechanical and Industrial Engineering, University of Toronto, Toronto, Ontario, Canada. (5) Department of Neonatology, Emma Children's Hospital. Amsterdam UMC, University of Amsterdam. Amsterdam, The Netherlands.

Rationale

The macronutrient composition of donor human milk (DHM) can vary significantly due to factors such as maternal age, diet, and lactation duration. However, preterm infants require consistent macronutrient levels in DHM to support optimal growth. This study aims to stabilize the macronutrient quality of DHM by pooling milk from different donors by utilizing machine learning and optimization techniques.

Methods

The current pooling strategy at the Dutch human milk bank, which combines milk from different batches from a single donor, is compared with a new theoretical approach that pools milk batches from up to 5 donors. In current practice, the macronutrient content of each single donor pool is measured using a human milk analyzer (MIRIS) as a quality indicator. For the new prediction model, we used the following variables: body mass index, the donors diet (vegetarian or non-vegetarian), maternal age, full-term or preterm delivery, lactation stage, and volume pumped. These predictions are then used within an optimization model to create milk pools that minimise the deviations from the target macronutrient levels (1.0 g protein/100 mL and 70 kcal/100 mL).

Results

The prediction model is based on 2236 created single-donor pools from 480 donors. Random forest regression models provided the most accurate predictions of macronutrient content. The new pooling strategy using multiple donors shows reduced deviations from target values compared to the current single-donor approach (average total absolute deviation 0.402 versus 0.664).

Discussion

This study proves the potential of data-driven methods to improve operational efficiency in human milk banks, ultimately providing better nutritional support to preterm infants.

AKS2025_015: Innovative therapeutic strategies for rare genetic diseases

Warmerdam, D.O. (1), Houtkooper, R.H. (1) & van Karnebeek C.D.M. (1)

(1) Emma Center for Personalized Medicine, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands

Rationale

Innovative gene-editing strategies offer transformative potential for treating a broad spectrum of genetic diseases, though access to these therapies remains limited, particularly for rare diseases. Recently, Amsterdam UMC became the first center in the Netherlands to successfully treat patients with rare diseases using in vivo CRISPR-based gene-editing therapy. Building on this progress, our project aims to democratize access by developing a versatile gene-editing platform capable of addressing multiple genetic disorders. Using Gyrate Atrophy and Pyridoxine-Dependent Epilepsy as proof-of-concept cases, we are working to create a scalable, efficient platform adaptable to diverse rare genetic conditions. Our approach leverages patient-derived iPSC models for preclinical development and non-viral delivery methods to enhance efficiency, safety, and scalability. In doing so, we strive to make life-changing therapies more available and accessible to patients with critical unmet medical needs.

AKS2025_016: ALT is an effective screening tool for advanced MASLD in children with obesity and overweight

Anne-Sophie Stroes (1), Laura Draijer (1), Malika Chegary (2), Felix Kreier (2), Erim van Os (3), Joery de Goede (4), Venje Boonstra (5), Ilse Westerbeek (6), Saskia Bouma (7), Meeike Kusters (2), Roosje Roelants (8), Ulrich Beuers (9,11), Adriaan Holleboom (10,11), Marc Benninga (1,11), Bart Koot (1,11)

(1) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands

Rationale

Metabolic dysfunction-associated steatotic liver disease (MASLD) has a high prevalence among children with obesity. However, screening remains controversial as neither the optimal method nor risks and benefits of screening have not been established. This study aims to evaluate the effectiveness of an Alanine Aminotransferase (ALT)-based screening algorithm for advanced MASLD in children with obesity or overweight.

Methods

Children aged 8-18 years with (i) obesity or (ii) overweight and ≥1 additional risk factor seen at obesity outpatient clinics for co-morbidity screening were included. Participants were screened for MASLD using ALT and analysed in four groups based on ALT levels. Vibration-controlled transient elastography (VCTE) was performed to determine probable significant fibrosis (VCTE ≥7.4 kPa). Patients features associated with VCTE ≥7.4 kPa were assessed using logistic regression analysis. The diagnostic accuracy of ALT was compared to other non-invasive tests.

Results

Among 322 children (64% male, median age 13 years, mean BMI z-score 3.5), the prevalence of VCTE ≥7.4 kPa increased significantly with ALT elevation: 1.9% for normal ALT, 16.4% for mild ALT elevation (≥ULN: ♀ 22 IU/L, ♂ 26 IU/L), 21.3% for moderate ALT elevation (≥2ULN: ♀ 44 IU/L, ♂ 52 IU/L), and 38.9% for strong ALT elevation (≥80 IU/L) (p<0.001). Other non-invasive tests did not perform superiorly in this cohort. VCTE ≥7.4 kPa was positively associated with ALT ≥80 IU/L (OR 2.91, 95%CI: 1.25-6.74), age (OR 1.50, 95%CI 1.27-1.76), male gender (OR 2.37, 95%CI 1.04-5.40), BMI z-score (OR 3.01, 95%CI 1.62-5.61), and HOMA (OR 1.10, 95%CI 1.00-1.13).

Discussion

This study shows that ALT is an effective primary screening tool for advanced MASLD in children with (i) obesity or (ii) overweight and additional risk factors.

AKS2025_017: Impact of Vanishing White Matter on non-affected family members: qualitative interviews and quality of life study

Romy J. van Voorst (1,2), Daphne H. Schoenmakers (1,2,3), Irene van Beelen (1,2), Francesco Gavazzi (4), Adeline Vanderver (4), Geneviève Bernard (5), Ingeborg Krägeloh-Mann (6), Marjo S. van der Knaap (1,2,7)

1) Department of Pediatric Neurology, Emma Children's Hospital, Amsterdam University Medical Centre, Amsterdam, The Netherlands; Amsterdam Neuroscience, Amsterdam, The Netherlands
2) Amsterdam Leukodystrophy Center, Amsterdam Neuroscience, Cellular & Molecular Mechanisms, Amsterdam, The Netherlands
3) Department of Endocrinology and Metabolism, Platform Medicine for Society, Amsterdam UMC location University of Amsterdam, Amsterdam, The Netherlands
4) Neurology Department, Children's Hospital of Philadelphia, Philadelphia, PA, USA.
5) Departments of Neurology and Neurosurgery and Pediatrics, McGill University Department of Medical Genetics, McGill University Health Center Child Health and Human Development Program, Research Institute of the McGill University Health Center Montreal, Quebec, Canada
6) Department of Pediatric Neurology and Developmental Medicine, University Children's Hospital, Tübingen, Germany
7) Department of Functional Genomics, Center for Neurogenomics and Cognitive Research, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands

Rationale

Vanishing White matter (VWM) is one of the more prevalent leukodystrophies and is caused by biallelic pathogenic variants in any of the EIF2B15 genes. It is characterized by chronic progressive neurological deterioration and additionally stress-provoked episodes of rapid worsening, leading to severe neurological impairment and early death. There is currently no therapeutic intervention available for VWM. The impact of VWM on non-affected family members has not been investigated. A comprehensive assessment of the impact of VWM on families is required before evaluating new therapies to ensure they sufficiently address the needs of patients and their families.

Methods

his international cross-sectional study enrolled parents, partners, and non-affected siblings above the age of 12 years. We used a three-step approach to acquire both quantitative and qualitative information: 1) online administration of health-related quality of life questionnaires (quantitative, comprising The EuroQol 5 Dimensions – 5 Levels Questionnaire (EQ-5D-5L, version 1.2), EuroQol 5 Dimensions – Youth Questionnaire (EQ-5D-Y, version 2.2), Pediatric Quality of Life Family Impact Module (PedsQL™-FIM) (version 2.0), PedsQL™ Child-Adult Self Report (PedsQL™-SC) (version 4.0); 2) online administration of VWM-specific customized questionnaire (quantitative and qualitative, comprising the impact of VWM inventory questionnaire); and 3) in-depth semi-structured interview (qualitative).

Results

A total of 100 family members have been included, among which 52 mothers, 28 fathers, 14 non-affected siblings and 6 partners. Mothers (V=291, p<0.001) and partners (V=0, p<0.05) scored significantly poorer on the EQ5D Utility Index score than the general population, particularly in the Anxiety and Depression domain ([OR=0.153], p<0.000 and [OR=0.032], p<0.001, respectively). Partners also scored significantly poorer on the Visual Analogue Scale (V=0, p<0.05) than the general population.

Both fathers (t(13)=-2.49, p<0.05) and mothers (t(42)=-7.77, p<0.000) scored significantly poorer on the PedsQL summary score than the normal population. Siblings scored similar to the normal population on all domains of the PedsQL, with the lowest score on the emotional domain. Qualitative interviews revealed three main drivers of the impact of VWM: 1) lack of knowledge and communication of healthcare professionals, 2) unpredictable disease course and 3) caregiver responsibilities. Mothers reported significant impacts on their emotional well-being and dissatisfaction with their professional development. Fathers commonly reported financial strain and heightened family responsibility. Partners mentioned emotional exhaustion and difficulty in managing family responsibilities. Siblings frequently reported internal struggles, finding it challenging to express their feelings.

Discussion

Mothers and partners indicate a significant and consistent reduction in their quality of life on standardized questionnaires. Qualitative interviews revealed more in-depth details of the impact of VWM on all family members, indicating that current standardized questionnaires may not fully capture the experiences of family members of VWM patients, particularly siblings. Improved healthcare communication, symptom management resources, and support networks are essential for alleviating the impact of VWM on families. This study emphasizes the importance of tailored approaches to support family members of VWM patients and enhance their quality of life.

AKS2025_018: The development of PROMs for adolescents and adults with severe (speech)motor impairments: a prospective study

Hondtong, J.E. (1), Elsman, E.B.M. (1), Geytenbeek, J.J.M. (1), Schalet, B.D. (1), Haverman, L. (1) & Buizer, A.I. (1) (expected)

(1) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands

Rationale

People with severe (speech)motor impairments are not able to use speech, signs, or writing to produce language. This results in impaired communicative health and associated poor mental health outcomes, as well as negative long-term educational, economic, and social outcomes. Patient-reported outcome measures (PROMs) are a way to assess the self-reported health status of patients. In clinical practice, PROMs have been linked to reduced symptom severity, earlier symptom detection, and higher patient satisfaction, among other benefits. As of yet, patients with severe (speech)motor outcomes are unable to independently complete PROMs. We aim to make PROMIS PROMs relevant and accessible for adolescents and adults in this patient population.

Methods

This will be accomplished by selecting and adapting PROM items that are relevant for this population and by ensuring that they can be completed through a variety of augmentative and alternative communication (AAC) methods. Finally, large-scale psychometric testing will be done to ensure sufficient measurement properties of the adapted PROMs. PROM outcomes of the patient population will be compared to those of the general population.

Results

We hypothesise that the development of relevant PROMs with a feasible administration method will make it possible that patients with severe (speech)motor impairments can complete PROMs and benefit from the advantages that PROMs have to offer.

Discussion

Ultimately, this will result in improved patient-clinician communication, accurate measurement of patient-reported outcomes, and reduced health disparities, leading to more equitable health outcomes.

AKS2025_019: The first 1.5 year of a pediatric Transitional Care Unit in the Netherlands

Haspels, H PhD*(1), Colenbrander, A MD* (1), van de Riet, L, MD PhD (2), Berendse, K, MD PhD (3), Knoester, H MD PhD (4), Prof van Karnebeek C, MD PhD, (5) Prof van Woensel, J, MD PhD (6)

(1) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands, The Jeroen Pit Huis, Amsterdam, the Netherlands. (2) Wilhelmina Children's Hospital, Utrecht, University of Utrecht, Utrecht, the Netherlands. (3) De Kinderartsenpraktijk Amsterdam, Amsterdam, the Netherlands. (4) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands, The Jeroen Pit Huis, Amsterdam, the Netherlands. (5) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands, The Jeroen Pit Huis, Amsterdam, the Netherlands and Emma Center for Personalized Medicine, Amsterdam UMC, the Netherlands. (6) Emma Center for Personalized Medicine, Amsterdam UMC and the Jeroen Pit Huis, Amsterdam the Netherlands. All: Transitional Care Consortium, the Netherlands.

Rationale

The hospital to home (H2H) transition for children with medical complexities (CMC) is challenging. The Jeroen Pit Huis (JPH) is an innovative transitional care unit (TCU) developed to improve this transition. This study aims to provide insights into the clinical profiles and treatment goals of patients residing at the JPH in the first 18 months after opening

Methods

This retrospective descriptive cohort study enrolled families who stayed at the JPH from April 2022 to August 2023. A standardized care model was used to support families (seven phase plan). The model, based on our studies on families needs and existing literature, was developed with pediatricians, pediatric rehabilitation physicians, psychosocial workers, and researchers. The care model is goal driven and comprises seven transition phases, enabling families to be trained adequately.

Results

48 patients were admitted to the JPH during first 18 months; a complete dataset was available for 27 patients. 63% were men. Median age upon admission was 11 months (range 0-201 months). 22 patients (81%) were classified as CMC. On admission 26 patients (96%) were dependent of one or more technological devices, 7 of them could be weaned from the device during their stay. Main goals upon admission included organizing home care and training parents (62.9%), training parents (14.8%), and solely medical reasons (22.2%). The median length of stay at the JPH was 26.5 days (range; 4-176). Home care was arranged for 16 patients (59.3%). During admission, goals evolved beyond the medical domain, particularly due to unforeseen psychosocial, financial and housing issues.

Discussion

The diverse needs of families of children with CMC extend beyond the medical domain, mostly psychosocial and organizational. The seven phase plan is useful for parents and professionals to improve H2H transition in the TCU setting. Future research will focus on the effectiveness and implementation of the care model vs current practice.

AKS2025_020**:** PROM4RARE: The final core patient reported outcome set for individuals with genetic intellectual disability

van Silfhout, N.Y. (1,2), van Muilekom, M. (1), van Karnebeek, C.D. (2), Haverman, L. (1) & van Eeghen, A.M. (2,3)

(1) Amsterdam UMC location University of Amsterdam, Emma Children's Hospital, Child and Adolescent Psychiatry & Psychosocial Care, Amsterdam, The Netherlands. (2). Amsterdam UMC location University of Amsterdam, Emma Children's Hospital, Department of Pediatrics, Gastroenterology Endocrinology Metabolism, Amsterdam, The Netherlands. (3). Advisium, 's Heeren Loo, Amersfoort, The Netherlands

Rationale

To improve quality of care and research for individuals with genetic intellectual disability (GID), it is essential to measure relevant patient reported outcomes (PROs). PROs represent the patient perspective on their health. Unfortunately, various and potentially irrelevant PROs are measured for individuals with GID. Therefore, the aim of this study was to identify most relevant PROs through a Delphi survey and consensus meetings, and develop a core PRO set applicable to the whole GID population to be used in care and research.

Methods

PROs identified through a comprehensive literature review, as well as focus groups and interviews with individuals with GID, caregivers, and experts, were integrated and operationalized into a pilot generic core PRO set with an expert group. This pilot set was presented in a two-round Delphi survey with individuals with GID, caregivers, and experts. Consensus was set at 60% or more of all participant groups rating a PRO as important to include the PRO in the final core PRO set. The Delphi survey will be followed by two consensus meetings with individuals with GID, caregivers, and experts to reach consensus on the undecided PROs.

Results

Twelve individuals with GID, 21 caregivers, and 28 experts (total n = 61) participated in the first Delphi round. Twenty-nine PROs were presented to the participants. Consensus was reached on one PRO in the first round: fatigue. Results of the second Delphi round and the two consensus meetings are currently being analyzed and will be presented at the conference.

Discussion

This project seeks to address the needs of individuals with GID by identifying most relevant PROs and creating a core PRO set tailored to this population. The next step involves selecting suitable patient reported outcome measures (PROMs) to adequately measure these PROs: the core PROM set. Eventually, by implementing this core PROM set, we hope to improve quality of care and research for the complex and vulnerable population with GID.

AKS2025_021**:** EMpower parents: Effectiveness of EMDR treatment for parental PTSD related to their child's medical condition. A randomized controlled trial.

Vesseur, E.M.H. (1, 2, 3, 4), Scholten L. (1), de Roos, C. (1, 5), Haverman, L. (1, 2, 3, 4)

(1) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; (2) Amsterdam Public Health, Mental health, Amsterdam, The Netherlands; (3) Amsterdam Public Health, Digital Health, Amsterdam, The Netherlands; (4) Amsterdam Reproduction and Development, Child development, Amsterdam, The Netherlands; (5) Levvel, Academic Center for Child and Adolescent Psychiatry, Amsterdam, The Netherlands.

Rationale

Severe chronic or acute medical conditions can have a great impact on the life of children and their family members. Parents of children with a severe chronic or acute medical condition have to deal with an accumulation of stressful and potential traumatic events. This can lead to post-traumatic stress symptoms or post-traumatic stress disorder (PTSD). The first-choice evidence-based treatment for PTSD is Eye Movement Desensitization and Reprocessing (EMDR) usually offered in multiple sessions spread over weeks or months. Parents of children with a severe chronic or acute medical condition often do not receive this treatment. In a RCT with 3 study groups we will study the effect of brief EMDR treatment (offered in person or online, compared to waitlist) in reducing PTSD and comorbid symptoms for parents of children with severe chronic or acute medical conditions.

Methods

Parents of children treated in the Emma Children's hospital in Amsterdam will complete online questionnaires (Tscreen). Eligible parents ((subclinical) PTSD score on PCL-5 related to the child's illness) will be randomly assigned to: face-to-face EMDR (n=20), EMDR via EMDR Platform (n=20) and waitlist (n=20) after completion of baseline measurement. Treatment consists of 4 times 1.5-hour EMDR sessions spread over two days. Parents will complete the questionnaires at two weeks (T1), 3 months (T2) and 6 months (T3) post-treatment. Parents in the waitlist group are offered EMDR after T2. Severity of PTSD symptoms is the primary outcome. Secondary outcomes are: anxiety, depression, somatic symptoms, parental stress, child PTSD symptoms, relationship quality parent-child and parent-partner, influence of social network.

Results

First results are expected in 2026.

Discussion

If the results show that EMDR treatment is effective for parents of children with a severe chronic or acute medical condition with (subclinical) PTSD, screening and treatment of parents should be implemented in clinical practice.

AKS2025_022: A Study on the Use of Cyanoacrylate Glue for Securement of Neonatal PICCs and PIVCs: A Retrospective Analysis

van Rens, M.F.P.T. (1)

(1) Neonatal Intensive Care Unit, Radboud University Medical Center, Amalia Children's Hospital, Nijmegen, The Netherlands

Rationale

Neonates in intensive care require stable vascular access to support critical therapies, yet high complication rates, such as dislodgement, infection, and premature device failure, continue to challenge care. Both peripherally inserted central catheters (PICCs) and peripheral intravenous catheters (PIVCs) are vulnerable to these risks due to their small gauge, fragile vessels, and active neonatal patients. Traditional securement methods, often limited to transparent dressings, may not provide sufficient stability. This study evaluates the efficacy of a cyanoacrylate-based adhesive (octyl-butyl cyanoacrylate) for securement of neonatal PICCs and PIVCs, hypothesizing that it reduces complications and improves device longevity.

Methods

This retrospective observational study included data from neonates in a large neonatal intensive care unit (NICU). The sample comprised two cohorts: one group received traditional securement with semi-permeable transparent dressings, and the other group used a combined securement method involving both transparent dressing and cyanoacrylate adhesive (SecurePortIV). Data collection spanned 12 months, with each cohort observed for 6 months pre- and post-introduction of cyanoacrylate adhesive. The study's primary outcome was device failure, defined as unplanned catheter removal due to complications such as dislodgement, occlusion, phlebitis, infiltration, and infection. Data points included patient demographics, catheter type, gestational age, and procedural details. Multivariate logistic regression was used to analyze the impact of cyanoacrylate securement on complication rates.

Results

Across both PICC and PIVC cohorts, 12,160 catheters were analyzed, with approximately half secured using traditional methods and the other half with cyanoacrylate adhesive. Key findings included: Device Failure: Cyanoacrylate securement was associated with a significant reduction in device failure rates for both PICCs and PIVCs. The odds ratio for premature device failure in the cyanoacrylate group was 0.59 (p < 0.001), translating to a 41% reduction in failure rates compared to traditional securement. Infection and Complications: Infections were notably lower in the cyanoacrylate-secured group, with CLABSI rates significantly reduced in PICC lines (from 2.76/1000 catheter days in the control to 0.99/1000 in the cyanoacrylate group). Phlebitis incidence also decreased for PIVCs, and there was a marked reduction in device occlusion, infiltration, and extravasation. Dwell Time: The mean catheter dwell time increased for both PICCs and PIVCs in the cyanoacrylate group, extending average catheter use by 6 hours for PIVCs and by 2-3 days for PICCs.

Discussion

The use of cyanoacrylate adhesive as an adjunct to traditional securement methods significantly improved the outcomes of neonatal vascular access by reducing premature device failure, infection, and other complications. By stabilizing the catheter, cyanoacrylate helps mitigate risks associated with catheter movement and dressing changes, improving the overall safety and efficacy of vascular access in the NICU. The antimicrobial properties of cyanoacrylate, along with its strong adhesive bond, may contribute to its effectiveness in reducing infection rates and enhancing device longevity.

This study supports the integration of cyanoacrylate adhesives into securement protocols for neonatal vascular access, particularly in cases where device stability is critical for preventing complications. Further research should focus on the long-term benefits and potential for cyanoacrylate securement to become a standard in NICU practice.

AKS2025_023**:** T Psychological outpatient follow-up after hospitalization for adolescent acute alcohol intoxication

Pigeaud L.E.M. (1,2), de Veld L. (1), van Blitterswijk A. (3), Van der Lely N. (1,4)

(1) Department of Pediatrics, Reinier de Graaf Hospital, P.O. Box 5011, 2600 GA, Delft, The Netherlands, (2) Erasmus School of Health Policy & Management, 3062 PA Rotterdam, The Netherlands, (3) Department of medical psychology, Reinier de Graaf Hospital, P.O. Box 5011, 2600 GA, Delft, The Netherlands, (4) Faculty of Medicine and Health Science, University Antwerp, Prinsstraat 1, 2000 Antwerpen, Belgium

Rationale

Alcohol-related emergency department attendance in adolescents should be considered as a valuable opportunity to address and mitigate future alcohol consumption. Therefore, a paediatric department of a major district hospital in the Netherlands developed an outpatient preventive program targeting adolescents admitted for acute alcohol intoxication. The primary aim of this study is to evaluate how adolescent drinking patterns participating in the preventive program developed over time.

Methods

This retrospective observational study was conducted in the Reinier de Graaf hospital, Delft, the Netherlands. The outpatient preventive program consists of three main components: an initial intervention, subsequent an extended counselling session and psychological interventions. The alcohol consumption was compared at three time points: before the admission for acute alcohol intoxication(T=0), 4-6 weeks after hospital admission(T=1) and 6-12 months after the hospital admission(T=2). Moreover, sociodemographic variables, adolescent risk-taking behaviour and family and pedagogical factors were included in secondary analysis.

Results

In total, 310 patients underwent the outpatient preventive program from 2014-2022. Adolescents who experienced an alcohol intoxication hospital admittance exhibited more adolescent risk-taking behaviour compared to the Dutch average. Initially, these adolescents had significantly higher rates of alcohol consumption and drunkenness. Alcohol use decreased significantly in the month following intoxication, even below the Dutch average. Though, 6-12 months later, their alcohol consumption increased but remained statistically lower and involved less binge drinking than the Dutch average.

Discussion

The findings of this study demonstrate that a preventive program following acute alcohol intoxication contributes to the reduction of adolescent alcohol use and associated risk-taking behaviours.

AKS2025_024**:** Management and outcome of neuroendocrine tumours of the appendix in children; a dutch multicenter historical cohort study - preliminary results

Bachiri, S. (1), van Amstel, P. (1), Koppen, I.J.N. (2), Raphael, M.F. (3) Gorter, R.R. (1), Appendix NET collaborative

(1) Department of Pediatric Surgery, Emma Children's Hospital, Amsterdam UMC location University of Amsterdam, Amsterdam, The Netherlands. (2) Department of Pediatric Gastroenterology, Emma Children's Hospital, Amsterdam UMC location University of Amsterdam, Amsterdam, The Netherlands. (3) Department of Pediatric Oncology, Emma Children's Hospital, Amsterdam UMC location University of Amsterdam, Amsterdam, The Netherlands

Rationale

Recommendations on the optimal treatment strategy of appendiceal neuroendocrine tumors (NETs) are mainly based upon adult literature and subject of debate. The aim of this study is to evaluate the management and outcomes of children with appendiceal NETs in The Netherlands.

Methods

In this multicenter study, we included children (<18 years) with a histopathological confirmed appendiceal NET, diagnosed in 45 Dutch hospitals between 1990 and 2020. Primary outcomes were overall and disease free survival and disease recurrence. Telephone follow-up was performed by each participating hospital to determine survival status.

Results

We included 249 patients (66% females), with a mean age of 14.2 years (+/- 2.8). Median follow-up duration was 15.4 years(+/- 8.7). Overall and disease free survival was 100% and no disease recurrence or distant metastases were reported. Tumor size was <1cm in 156 patients (63%), 1-2cm in 59 patients (24%) and >2cm in 13 patients (5%). Lymphovascular invasion was reported in 21% of patients (8%). Radical resection of the NET was successful in 90% of the patients. In total, 90% of patients were treated with appendectomy only while 10% of the patients underwent additional surgery. Lymph node metastasis was observed in 4 of 26 patients who underwent additional surgery.

Discussion

The preliminary data demonstrate that survival rates and disease recurrence seem unifluenced by additional surgery and therefore might be avoided in most children with appendiceal NETs.

AKS2025_025**:** Familial hypercholesterolemia care by Dutch pediatricians-mind the gaps

Sibbeliene E. van den Bosch (1,2,3,4), Barbara A. Hutten (3,4), Shirin Ibrahim (3,5), Albert Wiegman (1,2,3), Jing Pang (6), Gerald F Watts (6,7) Willemijn E. Corpeleijn (1,2,3)

(1) Department of Pediatrics, Amsterdam University Medical Center, Location AMC, 1105 AZ Amsterdam, the Netherlands; (2) Amsterdam Gastroenterology Endocrinology Metabolism, Amsterdam University Medical Center, the Netherlands; (3) Amsterdam Cardiovascular Sciences, Amsterdam University Medical Center, the Netherlands; (4) Department of Epidemiology and Data Science, Amsterdam University Medical Center, location University of Amsterdam, Meibergdreef 9, Amsterdam, the Netherlands; (5) Department of Vascular Internal Medicine, Amsterdam University Medical Center, Location AMC, 1105 AZ Amsterdam, the Netherlands (6) Medical School, University of Western Australia, Perth, WA, Australia (7) Department of Cardiology, Royal Perth Hospital, Perth, WA, Australia

Rationale

Familial hypercholesterolemia (FH) leads to elevated low-density lipoprotein cholesterol levels, which increases the risk of premature atherosclerotic cardiovascular disease (ASCVD). Screening and treatment should start early in childhood to mitigate the elevated risk of ASCVD. Pediatricians play an important role in the detection and care of children with FH. In this study, we aim to explore potential gaps in FH care amongst Dutch pediatricians, in order to enhance their knowledge and awareness of detecting and treating children with FH.

Methods

An anonymous online survey, including 26 closed and semi-closed questions on FH care in children was distributed by the Dutch Association of Pediatrics via a newsletter. In addition, we requested that the pediatric departments of all Dutch hospitals in the Netherlands distribute this survey personally among their employed pediatricians. Respondents were instructed to answer the questions without any help or use of online resources.

Results

Between September 1st, 2023 and November 1st, 2023, 158 (an estimated 11% response rate) Dutch pediatricians completed the survey. They reported a median (IQR) of 15.0 (6.0-22.0) years of experience as a pediatrician, and 34 (21.5%) were working in academic hospitals. The majority (76.6%) of pediatricians correctly identified a typical FH lipid profile but 68 (43.0%) underestimated the true prevalence of FH (1:300). Underestimation and unawareness of the increased risk of FH patients for ASCVD were reported by 37.3% and 25.9% of pediatricians, respectively. Although 70.9% of the pediatricians correctly defined FH, only 67 (42.4%) selected statins and ezetimibe to treat severe hypercholesterolemia.

Discussion

The results of this study suggest significant gaps in knowledge and awareness of FH in children among Dutch pediatricians. FH care in children needs improvement through educational and training initiatives to mitigate the life-long risk of ASCVD from early life.

AKS2025_026: Transmission of Anellovirus by kidney donors and persistence in pediatric transplant recipients

Klomp, L.S. (1), Burggraaff, M.G.J.M (3), Bakker, M. (3), Molier, M. (4), Feltkamp, M.C.W. (4, 5), Van der Hoek, L. (2, 3) & Bouts, A.H.M. (1)

(1) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Department of Pediatric Nephrology, Amsterdam, The Netherlands; (2) Amsterdam Institute for Infection and Immunity, Infectious Diseases, Amsterdam, The Netherlands; (3) Amsterdam University Medical Centers, University of Amsterdam, Medical Microbiology and Infection Prevention, Laboratory of Experimental Virology, Amsterdam, The Netherlands; (4) Sanquin Research, Department of Donor Medicine Research, Amsterdam, The Netherlands; (5) Leiden University Medical Center, Department of Medical Microbiology, Leiden, The Netherlands.

Rationale

Kidney transplantation is the preferred treatment for children with end-stage kidney disease, yet it needs lifelong immunosuppressive therapy to prevent graft rejection. Balancing immunosuppression to prevent rejection while avoiding drug toxicity and opportunistic infections remains challenging, as current dosing primarily relies on plasma drug levels, which inadequately reflect individual immune status. This gap in personalized monitoring elevates risks of infection, rejection, and post-transplant lymphoproliferative disease. Improved biomarkers are needed to better assess immune function. In adult kidney transplant recipients, plasma levels of Alphatorquevirus (TTV) have shown promise as immune activity markers, with high TTV loads indicating reduced immune activity. TTV is part of the Anelloviridae. The human anellome contains not only TTV but also Betatorquevirus, and Gammatorquevirus. This study aims to assess anellome changes in children post-transplantation, hypothesizing that (1) anelloviruses may be introduced with the donor kidney, and (2) that donor anelloviruses may colonize and persist in the recipient.

Methods

Six living-donor-recipient pairs were analyzed. Recipients were studied up to 2 years post transplantation, donors only just before transplantation. DNA from serum or plasma was analyzed by qPCR and RCA, Illumina library preparation, and by SCANellome V2 to study the anellome.

Results

Three of six donors (recipient median age: 15.1 years) tested positive for anelloviruses. A donor-derived anellovirus lineage was identified in 1 recipient. This recipient had multiple bacterial and viral infections, and showed very high anelloviral DNA (>10 to the power 10 copies/mL) from start. No donor lineages were detected in the other recipients.

Discussion

We found donor anelloviruses in 1 child after kidney transplantation, suggesting a more impaired immunity in this patient. More donor/recipient pairs will be screened to explore these findings.

AKS2025_027**:** Drinking motives among 15-16-year-old school-going students in 16 European countries

Pigeaud, L.E.M. (1,2), Rossow, I.M. (3), Monshouwer, K. (4), van der Lely, N. (1,5)

(1) Department of Pediatrics, Reinier de Graaf Hospital, P.O. Box 5011, 2600 GA, Delft, The Netherlands (2) Erasmus School of Health Policy & Management, 3062 PA Rotterdam, The Netherlands (3) Norwegian Institute of Public Health, Dept. Alcohol, Tobacco and Drugs, PO Box 222 Skøyen, 0213 Oslo, Norway (4) Netherlands Institute of Mental Health and Addiction, P.O. Box 725,3500 AS Utrecht, The Netherlands (5) Faculty of Medicine and Health Science, University Antwerp, Prinsstraat 1, 2000 Antwerp, Belgium

Rationale

Investigating drinking motives among minors across various countries is crucial for understanding the broader social context of alcohol consumption. Thus, this study aimed to examine the differences and similarities in drinking motives among 15 and 16-year-old adolescents who consume alcohol across 16 European countries.

Methods

The data were obtained from the European School Survey Project on Alcohol and Other Drugs database. The analysis focused on 15 and 16-year-old school going students across 16 European countries (Denmark, Estonia, Finland, Germany, Greece, Iceland, Italy, Latvia, Lithuania, The Netherlands, Norway, Poland, Portugal, Romania, Sweden and Spain). The students were presented with a series of questions pertaining to drinking motives, aimed at elucidating the reasons behind their alcohol consumption within the past 12 months.

Results

A total of 52,141 students participated, with 75.2% reporting lifetime alcohol consumption and 65.8% reporting alcohol consumption in the past year. Among those who drank in the past year (n = 34,295), three distinct drinking motive factor groups were identified: enhancement and social motives, coping motives, and conformity motives. Enhancement and social motives were most prevalent across all countries, followed by coping motives, with conformity motives less common.

Discussion

This largest drinking motive study conducted to date, examined drinking motives among 15 and 16-year-old students across 16 European countries. There is a significant positive correlation between alcohol intoxication prevalence and mean score on enhancement and social motives at an aggregate level, which suggests a stronger presence of enhancement and social motives in cultures with a more intoxication-oriented drinking pattern.

AKS2025_028**:** The European HIT-CF project - Getting drugs to people with cystic fibrosis who carry ultra-rare CFTR mutations

Bierlaagh, M.C. (1,2), Ramalho, A.S. (3), Silva (4), Vermeulen, F. (3), Amaral, M.D. (4), Michel, S. (1), Beekman, J.M. (2), van der Ent, C.K. (1), on behalf of the entire HIT-CF consortium

(1) Dept. of Pediatric Pulmonology, Wilhelmina Children's Hospital, Utrecht, the Netherlands; (2) Regenerative Medicine Center Utrecht, University Medical Center Utrecht, Utrecht, Netherlands; (3) Univ. of Leuven, Dept. of Development and Regeneration, Leuven, Belgium; (4) BioISI-Biosystems and Integrative Sciences Institute, Faculty of Sciences, Univ. de Lisboa, Lisboa, Portugal

Rationale

Cystic fibrosis (CF) is a rare, autosomal recessive, severe multiorgan disease caused by mutations in the Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) gene. Up to 80% of people with CF (pwCF) are eligible for modulating drugs targeting the disease's root cause, yet 20% with ultra-rare mutations are often excluded from pharmaceutical development pipelines. The Human Individualized Treatment for CF (HIT-CF; www.hitcf.org) project aims to bridge this gap by developing personalized therapies using patient-derived intestinal organoids (PDIOs). PDIOs have shown high predictive reliability in assessing responses to CFTR modulators (Berkers et al., 2019). This approach is especially valuable in pediatrics, where timely, effective treatment is essential for improving young patients' quality of life and slowing disease progression.

Methods

In the first phase of the project (HIT-CF Organoid Study (NTR7520)), rectal biopsies were collected from 489 adult CF patients across 17 European countries, Israel, and the UK. These biopsies were cultured into PDIOs and tested for responses to two novel CFTR modulators: the triple combination dirocaftor (DIR)/posenacaftor (POS)/nesolicaftor (NES) and ELX-02. In vitro responses were assessed with the Forskolin-Induced Swelling (FIS) assay.

Results

Screening was technically successful in 471 PDIOs with ELX-02 (n=221) and/or DIR/POS/NES (n=380), with 130 PDIOs included in both screens. Positive responses were observed in over 50% of samples. Based on the DIR/POS/NES screen, 52 subjects were selected for the subsequent phase 2b clinical trial, which is now underway. Full screening data and patient details will be presented.

Discussion

This clinical trial aims to test the efficacy of DIR/POS/NES in pwCF with ultra-rare mutations, a group currently lacking effective treatments. It will also validate the predictive value of the FIS assay. Once validated, FIS could strengthen personalized treatment strategies for drug development and repurposing.

AKS2025_029**:** Longitudinal analyses of sway and gait parameters in X-ALD patients with myeloneuropathy

Kabak, E.G. (1), Turk, B.(2, 3), Voermans, M.M.C.(1), Smith-Fine,A.(2, 3), Keller,J.(2, 4) and Engelen,M.(1)

(1) Emma Children's Hospital, Department of Neurology and Pediatric Neurology, Amsterdam Leukodystrophy Center, Amsterdam University Medical Centers, University of Amsterdam, Amsterdam, The Netherlands (2) Kennedy Krieger Institute, Baltimore, Maryland, USA (3) Department of Neurology, Johns Hopkins School of Medicine, Baltimore, Maryland, USA (4) Department of Physical Medicine & Rehabilitation, Johns Hopkins School of Medicine, Baltimore, Maryland, USA

Rationale

Myeloneuropathy is the most frequent clinical manifestation of X-ALD. The clinical presentation is characterized by weakness in the lower extremities, increased muscle tone and abnormalities in vibration sensation, balance and walking. Disease severity and progression rates highly differ among patients. The current lack in objective outcome measures to quantify disease progression challenges prediction of prognosis and designs of clinical trials. Postural sway and gait analyses have been suggested as an alternative to the currently used disability rating scales, like the EDSS, with a high inter and intra-rater variability. A previous cross-sectional study in our cohort has shown a correlation between sway and gait parameters and disease severity. The aim of this study is to investigate the relationship of these parameters and disease progression over time.

Methods

Data were collected from adult male patients in two institutions. Sway and gait parameters were measured by accelerometers around the waist and dorsum of the feet. Falling and tripping frequency, bladder and bowel dysfunction and quality of life outcome measures were collected. Longitudinal change in variables will be evaluated and the relationship between sway and gait variables and EDSS score will be analyzed.

Results

Preliminary results of our cohort (n=56) shows a worsening of the root mean square of sway, the sway area and the path length of sway over a period of two years. Also a worsening in the toe-off angle and gait speed is seen during the follow-up period

Discussion

Although the first results preliminary results show promising results in the use of sway and gait parameters over time, the analyses of the relationship between disease progression have yet to be conducted. We aim to represent a meaningful overview after combination of the data of both centers.

AKS2025_030: Evaluation of newborn screening for diseases using 3-hydroxy-isovalerylcarnitine (C5-OH) as a marker: systematic review of the literature and evaluation of 17 years of C5-OH screening in the Netherlands

Aukes, R. (1), Albersen, M. (2), Boelen, A (2), Kluijtmans, L.A.J. (3), Visser, W.F. (4), De Vries, M. (5), Bosch, A.M. (6)

(1) Department of Pediatrics, Amsterdam Gastroenterology Endocrinology Metabolism, Amsterdam UMC, University of Amsterdam, The Netherlands. (2) Endocrine Laboratory, Department of Laboratory Medicine, Amsterdam Gastroenterology Endocrinology Metabolism, Amsterdam UMC, University of Amsterdam, The Netherlands. (3) Translational Metabolic Laboratory, Department of Human Genetics, Radboud University Medical Center, Nijmegen, The Netherlands. (4) Center for Health Protection, National Institute for Public Health and the Environment (RIVM), Bilthoven, The Netherlands.. (5) Department of Pediatrics, Division of Metabolic Disorders, Radboud University Medical Center, Nijmegen, The Netherlands. (6) Department of Pediatrics, Division of Metabolic Disorders, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands

Rationale

In 2007, the Dutch newborn screening (NBS) program was expanded to include 3-hydroxy-isovalerylcarnitine (C5-OH) as a marker to screen for three inborn errors of metabolism (IEMs): 3-methylcrotonyl-CoA carboxylase deficiency (3-MCCD), 3-hydroxy-3-methylglutaryl-CoA lyase deficiency (HMGCLD) and holocarboxylase synthetase deficiency (HLCSD). This study assesses the effectiveness of C5-OH as a NBS marker by reviewing 17 years of Dutch screening data and by providing an overview of the literature reporting different IEMs detected by an elevated C5-OH concentration, along with C5-OH concentrations associated with each condition.

Methods

We analyzed data from 1 315 861 neonates screened in the Dutch NBS program from 2007 to 2023. Screening outcomes and C5-OH concentrations were evaluated to determine the markers predictive value. Additionally, we performed a systematic review to gather data on different diseases detected by NBS programs worldwide with their C5-OH cut-off values and patients' NBS C5-OH concentrations.

Results

Of the 126 Dutch neonates referred due to an elevated C5-OH concentration, 46 cases were confirmed as true positives and no missed cases were reported, resulting in a positive predictive value of 38.3% and a negative predictive value of 100%. Importantly, there was considerable overlap between C5-OH concentrations in true and false positive cases. The systematic review showed that C5-OH concentration of patients with different IEMs were insufficiently distinctive to differentiate between these conditions.

Discussion

While C5-OH can be used to detect patients with 3-MCCD, HCLSD and HMGCLD, its value is limited by the overlap in C5-OH concentrations between affected and unaffected individuals and among patients with different diseases, some of which are not target diseases of the Dutch NBS program. This emphasizes the need for improvement of the screening criteria and potentially the use of additional markers to increase the specificity.

AKS2025_031: Sequential prediction of major bleeding or death under two platelet transfusion strategies in thrombocytopenic preterm neonates.

Van der Staaij H (1,2,3,4), Prosepe I (5), Caram-Deelder C (2), Fustolo-Gunnink SF (1, 3, 4, 5), Deschmann E (7), Dame C (8), Onland W (9, 10), Prins S (9), Cassel F (11), D'Haens EJ (12), Van Westering-Kroon E (13), Andriessen P (14, 15), Vrancken SL (16), Hulzebos CV (17), Vijlbrief DC (18), Fijnvandraat K (3, 4), Lopriore E (1), Van der Bom JG (2), Van Geloven N (5)

(1) Department of Pediatrics, Division of Neonatology, Willem-Alexander Childrens Hospital, Leiden University Medical Center, The Netherlands. (2) Department of Clinical Epidemiology, Leiden University Medical Center, The Netherlands. (3) Sanquin Research & Lab Services, Sanquin Blood Supply Foundation, Amsterdam, The Netherlands. (4) Department of Pediatric Hematology, Emma Childrens Hospital, Amsterdam University Medical Centers, Amsterdam, The Netherlands. (5) Department of Biomedical Data Sciences, Leiden University Medical Center, The Netherlands. (6) Institute for Advanced Study, University of Amsterdam, Amsterdam, The Netherlands. (7) Division of Neonatology, Department of Women's and Childrens Health, Karolinska Institutet, Stockholm, Sweden. (8) Department of Neonatology, Charit - Universitsmedizin Berlin, Berlin, Germany. (9) Department of Neonatology, Emma Childrens Hospital, Amsterdam University Medical Centers, Amsterdam, The Netherlands. (10) Amsterdam Reproduction & Development, Amsterdam, The Netherlands (11) Department of Neonatology, Isala Klinieken, Zwolle, The Netherlands. (12) Department of Neonatal and Pediatric Intensive Care, Erasmus Medical Center Sophia, Rotterdam, The Netherlands. (13) Division of Neonatology, Department of Pediatrics, MosaKids Childrens Hospital, Maastricht University Medical Center, The Netherlands. (14) Department of Neonatology, Maxima Medical Center, Veldhoven, The Netherlands. (15) Eindhoven Technical University, Applied Physics and Science Education and MedTech Innovation Center, The Netherlands. (16) Department of Neonatology, Amalia Childrens Hospital, Radboud University Medical Center, Nijmegen, The Netherlands. (17) Department of Neonatology, Beatrix Childrens hospital, University Medical Center Groningen, Groningen, The Netherlands (18) Department of Neonatology, Wilhelmina Children's Hospital, University Medical Center Utrecht, Utrecht, The Netherlands.

Rationale

In thrombocytopenic neonates, platelet count-based transfusion thresholds do not accurately distinguish neonates in whom bleeding likely could be prevented by a transfusion from those in whom transfusion may increase the risk of transfusion associated adverse events. We developed a sequential interventional prediction model to support individual transfusion decisions by predicting the risk of major bleeding or death with and without giving a prophylactic platelet transfusion.

Methods

In this international, multicenter cohort study, we included neonates with less than 34 weeks gestation with at least one platelet count less than 50 times 10 to the power of 9 per L admitted to a NICU between 2017 and 2022. The model allows prediction of major bleeding or death at any time point during the first week after the onset of severe thrombocytopenia. We assessed both shortterm (3 days) and long-term (14 days) risks after each 2hour prediction interval under two platelet transfusion strategies (Figure 1) A. no transfusion within 3 days (untreated strategy), and B. one or more transfusions within 6 hours (treated strategy). Inverse probability of artificial censoring weighting was used to counter confounding.

Results

Of 1042 included neonates, 676 (65 percent) received 1 or more platelet transfusions, and 258 (25 percent) developed major bleeding or died. We included the predictors gestational age, postnatal age, small for gestational age, necrotizing enterocolitis, sepsis, mechanical ventilation, platelet count, and

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number of previous platelet transfusions. The models counterfactual calibration and discrimination is assessed and will be validated in an external cohort.

Discussion

This prediction model is designed to support transfusion decisions in the NICU and may help neonatologists balance the harms and benefits of providing prophylactic platelet transfusions.

AKS2025_031 Figure 1.
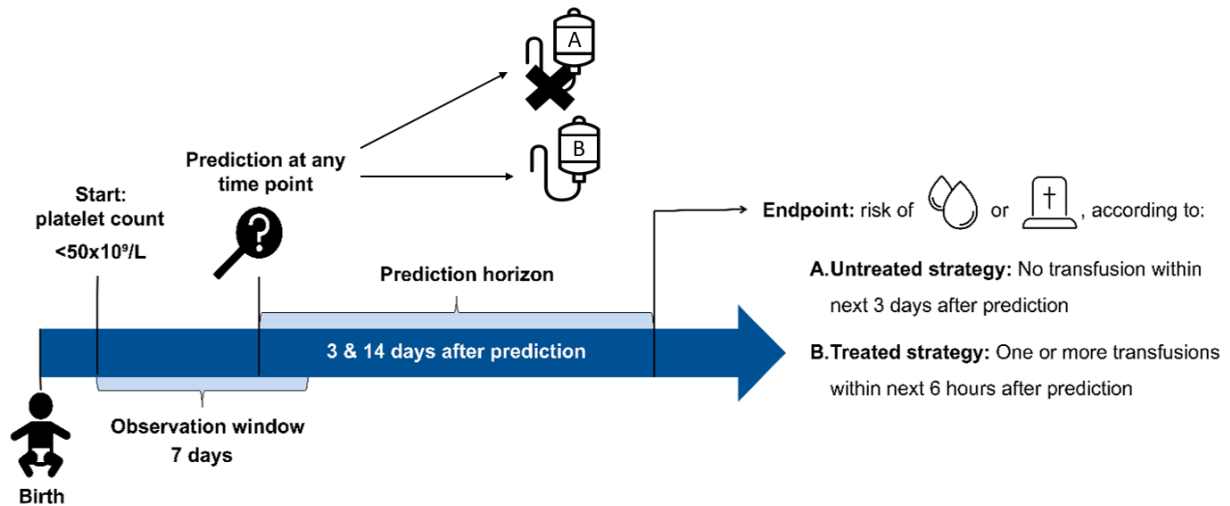
Figure 1. Graphical overview of the sequential interventional prediction model for major bleeding or death under two platelet transfusion strategies in thrombocytopenic preterm neonates.

AKS2025_032: The many different clinical faces of hypothalamic dysfunction; not one disease.

Hulsmann, S.C. (1,2), van Roessel, I.M.A.A. (1,2), Schouten-van Meeteren A.Y.N. (1), Hoving E. (1), Janssens G. (1,4), Raphael M.F. (5), Zijtregtop-Blom E.A.M. (6), de Vos-Kerkhof E. (1), Bakker, B. (1,2), Tissing W.J.E. (1,7), van Santen, H.M. (1,2)

(1) Department of Pediatric Neuro-Oncology, Princess Máxima Center, Utrecht, The Netherlands; (2) Department of Pediatric Endocrinology, Wilhelmina Children's Hospital, University Medical Center, Utrecht, The Netherlands; (3) Department of Neurosurgery, University Medical Center, Utrecht, The Netherlands; (4) Department of Radiation Oncology, University Medical Center, Utrecht, The Netherlands; (5) Department of Pediatric Oncology, Emma Children's Hospital, Academic Medical Center, Amsterdam, The Netherlands; (6) Department of Pediatric Oncology, Erasmus MC Sophia Children's Hospital, Rotterdam, The Netherlands; (7) Department of Pediatric Oncology and Hematology, University of Groningen, University Medical Center Groningen, Groningen, The Netherlands.

Rationale

Hypothalamic dysfunction (HD) following treatment for a suprasellar brain tumor in childhood may have devastating consequences, with hypothalamic syndrome (HS) as the most severe presentation of HD. Morbid obesity, and pituitary dysfunction are readily recognized as consequences of HD, however HD may also present with overweight, hypothermia, sleep- and/or behavioral problems. In our experience, symptoms of HD differ and HD as an underlying cause for weight gain or fatigue may be overlooked. Here, we aimed to systematically describe the multifaceted character of acquired HD.

Methods

Retrospective assessment of children diagnosed and treated for a suprasellar low-grade glioma (LGG), craniopharyngioma (cCP), or germ cell tumor (GCT) between 2003-2023 (n=336).

Results

In total, of 336 children, 273 (81·3%) showed signs or symptoms of HD. At diagnosis, overweight or obesity was present in 18·8% (63/336) of all patients, of whom 71·4% (45/63) with an adequate pituitary function. At follow-up, HS was present in 38·1% of patients. In patients with HS, 42 different faces of HD were observed, ranging from morbid obesity with or without pituitary dysfunction to overweight with sleep disorder, behavioral problems and/or temperature dysregulation.

Discussion

HD is not one disease, but has many different clinical faces and concerns more than hypothalamic obesity. Obesity can be caused by HD, even if the pituitary function is still intact. Recognition of the different faces of HD is important for reduction in delay of diagnosis of a suprasellar tumor as well as for more personalized management during follow-up.

AKS2025_033: Facial 3D data acquisition in critically ill children for production of personalized non-invasive ventilation masks: a feasibility study

Pigmans, R.R.W.P. (1,2), Goto, L. (3), Wientjes, R. (4), Markhorst D.G. (1), van Woensel, J.B.M. (1,2), Gaytant M.A. (5), Dijkman C.D. (6), Huysmans, T. (3) & Bem, R.A. (1,2)

(1) Paediatric Intensive Care Unit, Emma Children's Hospital, Amsterdam UMC, location AMC, University of Amsterdam, Amsterdam, the Netherlands; (2) Amsterdam Reproduction and Development Research Institute, Amsterdam UMC, University of Amsterdam, Amsterdam, the Netherlands; (3) Faculty of Industrial Design Engineering, Delft University of Technology, Delft, Netherlands; (4) Directorate of Facility Management, University Medical Center Utrecht, Utrecht University, Utrecht, the Netherlands; (5) Center of Home Mechanical Ventilation, Department of Pulmonology, University Medical Center Utrecht, Utrecht University, Utrecht, the Netherlands; (6) Department for Medical Innovation and Development, Amsterdam UMC, University of Amsterdam, Amsterdam, Noord-Holland, the Netherlands

Rationale

Mask personalization is believed to be a promising future approach to improve paediatric non-invasive ventilation (NIV) efficiency. However, there is little knowledge on the feasibility of facial anthropometric data acquisition, essential for mask modelling, in an acute clinical setting such as the paediatric intensive care unit (PICU). The aim of this study is to examine the feasibility of facial data acquisition in critically ill children using 3D scanning.

Methods

Patients receiving NIV in the PICU of the Emma Children's Hospital were eligible for study participation. Facial 3D data was acquired using a handheld scanner during moments of routine airway care with a duration of a single scan up to 30s to ensure patient safety. If unsuccessful on the first attempt, additional scans could be made. Feasibility was examined by analyzing the 3D scan success rate and quality (scan error and missing data). Any clinical deterioration in vitals was noted.

Results

38 patients (median (IQR) age: 5 (1-81) months) were included. None of the cases experienced clinical deterioration during the scanning session. In two patients scanning needed to be postponed due to agitation/moving. In 60% of the cases at least one additional scan was made after the first attempt. A median (IQR) of 0% (0-28%) frames needed to be removed during post-processing due to patient movement. The scan error score was excellent in a median (IQR) of 97% (84-100%) of the frames and acceptable in the remaining 3%. The missing data was unrepairable in 3 (8%) cases and repairable in 20 (52%).

Discussion

In this feasibility study, good quality facial 3D data applicable for mask modelling was acquired in more than 90% of the patients. The number of scanning attempts was limited, and scanning duration was short and clinically safe. We expect that handheld 3D scanning will be suitable for further development of the process of personalized NIV mask production in critically ill patients in the PICU.

AKS2025_034: Prevalence of undernutrition among children with CP in Mangochi district, Malawi

Mascini, M.M (1), van der Meijden, B. (2), Voskuijl, W. (3), Chisalunda, A. (4) & Njewa, A. (5)

(1) Emma Children's Hospital, Amsterdam UMC

Rationale

Children with cerebral palsy (CP) are vulnerable to undernutrition, impacting quality of life and prognosis but data on prevalence are limited especially in low- and middle-income countries (LMIC). This study assessed the prevalence of undernutrition and associated risk factors among children with CP in Mangochi District, Malawi.,

Methods

This cross-sectional study included children with CP (2-17 yrs) and healthy controls. Recruitment occurred in three CP clinics between February 2023 and September 2024. Both groups were assessed for height, weight and mid-upper arm circumference (MUAC), along with sociodemographic characteristics and feeding practices.

Anthropometric data were analysed using World Health Organization standards to assess prevalence of undernutrition in both groups. Undernutrition was classified as moderate (z-score < -2SD) or severe (z-score < -3SD). Risk factors were assessed and logistic regression models were used to identify predictors.,

Results

484 children were included (242 per group), with a median age of 50.3 months (IQR 56); 55% were male. All forms of undernutrition were significantly more prevalent in the CP group (p < 0.001), including severe undernutrition. Stunting affected 90% of children with CP, underweight 81% and wasting 67%, with 43% severely wasted. Among children aged 2-4 yrs, associations were identified between wasting and Gross Motor Function Classification System (GMFCS) levels III-V (p= 0.005) and absence of epilepsy (p= 0.035), showing wasting was more common in children without epilepsy. For children aged 5-17 yrs, wasting was associated with hospitalization (p= 0.025).,

Discussion

The prevalence of undernutrition is alarmingly high among children with CP in Mangochi District, Malawi. Wasting was associated with severe forms of CP while the relation with absence of epilepsy requires more investigation. Inclusive strategies are urgently needed to improve nutritional status of children with CP in LMIC.

AKS2025_035: What are the long-term gastrointestinal sequelae for patient with gastroschisis and omphalocele?

Hogerwerf, M. (1,2), van den Bunder, F.A.I.M. (1), Gorter, R.R. (1), Koot, B.G.P. (2), Koppen, I.J.N. (2), Tabbers, M.M. (2) & Derikx, J.P.M. (1)

(1) Department of Pediatric Surgery, Amsterdam Pediatric Abdominal Center, Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, The Netherlands. (2) Department of Pediatric Gastroenterology and Nutrition, Amsterdam Pediatric Abdominal Center, Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, The Netherlands

Rationale

Gastroschisis and omphalocele are congenital abdominal wall defects known for a variety of gastrointestinal (GI) complications during the neonatal period. However, their long-term GI sequelae are less well documented, but important to determine for follow-up strategies. Therefore, the aim of this study is to evaluate long-term GI sequelae for patients with gastroschisis and omphalocele and compare them to healthy controls.

All children treated for gastroschisis or omphalocele between 1997 and 2022 in Emma Children's Hospital/Amsterdam University Medical Centers were invited to complete a questionnaire, which included the PedQL™ GI-Module consisting of twelve GI Symptoms and Worry Scales. Parent proxy-reports or child self-reports were sent by mail, appropriate for the participants age. The scores were compared to a predefined healthy cohort (n=513).

In total, 43/120 respondents completed the questionnaire (35.8% response rate), of which 25 had gastroschisis (56% male, median age 9.9 years (IQR=6.2 - 16.8)), and 18 omphalocele (56% male, median age 10.5 years (IQR=6.4 - 17.1)). The mean total score on the PedQL™ GI-Module was 84.9(SD±10.9) for gastroschisis patients and 87.4(±16.6) for omphalocele patients, which did not significantly differ compared to healthy controls (88.6(±12.9), p=0.112 and p=0.765, respectively). Gastroschisis patients scored significant worser on the domains 'gas and bloating' (66.8(±22.0), p=0.001) and 'diarrhea' (84.6(±14.4), p=0.002) compared to healthy controls. No significant difference in scores on the individual scales were found between the omphalocele patients and healthy controls.

Patients with gastroschisis did experience more symptoms of gas and bloating and diarrhea than healthy controls, while no differences in GI complaints were found between patients with omphalocele and healthy controls. These findings demonstrate the importance to actively inquire about abdominal complaints during the follow-up of patients with gastroschisis.

AKS2025_035 Table 1. PedsQL™ GI Symptoms Scales and Worry Scales scores for children with a

history of gastroschisis and omphalocele, compared to healthy controls[1]

GI Symptoms Scales and Worry Scales	Items	Healthy controls (n = 513)[1] Mean (SD)	Gastroschisis (n = 25) Mean (SD)	Omphalocele (n = 18) Mean (SD)
Symptoms total score	**58**	**88.6 (±12.9)**	**84.9 (±10.9)**	**87.4** (±16.6)
Stomach Pain and Hurt	6	81.1 (±17.8)	81.4 (±18.8)	82.7 (±28.4)
Stomach discomfort when eating	5	89.6 (±16.2)	86.8 (±23.2)	91.9 (±15.7)
Food and drink limits	6	89.7 (±17.0)	93.8 (±9.3)*	90.2 (±17.4)
Trouble swallowing	3	95.6 (±10.9)	97.7 (±7.0)	89.8 (±21.7)
Heartburn and reflux	4	90.6 (±14.3)	91.8 (±12.9)	89.2 (±14.5)
Nausea and vomiting	4	91.6 (±14.7)	92.1 (±11.1)	93.1 (±10.9)
Gas and bloating	7	83.3 (±20.1)	66.8 (±22.0)**	82.3 (±19.9)
Constipation	14	86.9 (±17.6)	77.4 (±19.7)*	79.7 (±29.8)
Blood in poop	2	96.3 (±12.0)	98.5 (±5.5)	98.6 (±4.0)*
Diarrhea	7	94.3 (±11.5)	84.6 (±14.4)**	88.0 (±24.6)
Worry about going poop	5	94.2 (±12.4)	89.6 (±14.4)	86.9 (±32.3)
Worry about stomach aches	2	91.2 (±16.4)	80.0 (±25.0)*	82.6 (±33.1)

Note. Scores are out of 100. Lower scores demonstrate more gastrointestinal symptoms and lower gastrointestinal-specific HRQoL *$p < 0.05$, **$p < 0.002$ after Bonferroni correction. A Welch's correction was conducted. [1]Varni JW, Bendo CB, Denham J, Shulman RJ, Self MM, Neigut DA, et al. PedsQL Gastrointestinal Symptoms Scales and Gastrointestinal Worry Scales in pediatric patients with functional and organic gastrointestinal diseases in comparison to healthy controls. Qual Life Res. 2015;24(2):363-78

AKS2025_036: Placental pathology is associated with lower quality Fidgety Movements in preterm infants

Abrudan A.S. (1), Schoots, M.H. (2), Kooi E.M.W.(1), Gordijn S.J. (3), Kraft K.E. (1), Prins J.R.(3), Roescher A.M. (1)

(1) Division of Neonatology, Beatrix Children's Hospital, University of Groningen, University Medical Center, Groningen, the Netherlands. (2) Department of Pathology and Medical Biology, Pathology Section, University of Groningen, University Medical Center Groningen, The Netherlands. (3) Department of Obstetrics and Gynecology, University Medical Center Groningen, University of Groningen, the Netherlands.

Rationale

Preterm infants are at risk for neurodevelopmental disabilities later in life, like motor delays, cognitive impairments and cerebral palsy (CP). The placenta plays a critical role throughout pregnancy, particularly in preterm birth. Our aim is to explore the relation between placental lesions and accurate predictors of neurodevelopmental outcomes of preterm infants.

Methods

Preterm infants (<30 weeks and/or birthweight <1000g) were included with histopathological examination (according to the international Amsterdam criteria) of the placentas. We predicted the risk for future possible neurodevelopmental impairment using Prechtl's General Movement Assessment to evaluate fidgety movements (FM) at 3 months post-term. We also calculated the Motor Optimality Score-Revised (MOS-R).

Results

In total 78 infants were included. The gestational age ranged from 24.1-32.6 weeks and birth weight was between 550-1950 grams. The presence of AIUI (ascending intrauterine infection) was significantly associated with absent FMs (p=0.034). Both the presence of fetal and maternal vascular malperfusion (FVM and MVM) were associated with a MOS-R<23 [OR4.58, 95%CI [1.35, 15.55], p= 0.015; OR 2.55, 95%CI [1.02, 6.64], p=0.045).

Discussion

AIUI is associated with a higher risk of absent FMs and therefore an increased risk for CP. FVM and MVM are significantly associated with MOS-R<23, which is predictive of an elevated risk for adverse neurodevelopmental (non-CP) outcomes. This finding supports the hypothesis that impaired neurodevelopment in preterm infants already starts before birth.

AKS2025_037: A case series of pediatric patients with pathogenic variants in SLC34A1 or SLC34A3

Asiedu, B.S (1), Bakker, E den (1), Lauffer, P (2), Bökenkamp, A (1), Wijk, J.A.E. van (1) & Oosterveld, M.J.S (1)

(1) Pediatric Nephrology, Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands
(2) Human Genetics, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands

Rationale

Research into monogenic causes has identified SLC34A1 and SLC34A3 gene variants as key risk factors. This study explored patient phenotypes with these variants and the impact of phosphate supplementation.

Methods

A retrospective study was conducted among pediatric patients (<18 years) at Amsterdam UMC, excluding those with other genetic variants or secondary phosphate-calcium disorders.

Results

Eleven participants (three females) were included. Four had SLC34A1 variants (heterozygous), and seven had SLC34A3 variants (three homozygous, four heterozygous). The median age at presentation was 0.04 years for SLC34A1 and 10.7 (homozygous) or 6.9 (heterozygous) years for SLC34A3.

Before phosphate supplementation, renal ultrasounds showed medullary nephrocalcinosis in all SLC34A1 patients; one also had nephrolithiasis. Patients with homozygous SLC34A3 variants had both. In heterozygous SLC34A3 patients, ultrasound revealed medullary nephrocalcinosis in two, with one also having nephrolithiasis. Two patients showed no abnormalities. Biochemical analysis at first review at the Ped Nephrol Dept. revealed normal calcium and phosphate levels across all groups, with elevated 1,25(OH)2D levels and hypercalciuria. After phosphate supplementation, renal ultrasounds showed persistent medullary calcinosis in all patients. Only those with homozygous SLC34A3 variants continued to show nephrolithiasis, and hypercalcemia was observed only in this group. Following initiation of phosphate supplementation, a decrease in 1,25(OH)2D levels was noted.

Discussion

Patients showed normal calcium and phosphate levels, with elevated 1,25(OH)2D. Post-supplementation, medullary nephrocalcinosis persisted, 1,25-vitamin D levels decreased, and hypercalciuria remained. The absence of homozygous SLC34A1 patients and small sample sizes suggest cautious interpretation, supporting further research into monogenic risk factors for urinary stone disease.

AKS2025_038: Unravelling the risk: A systematic review of genetic and clinical predictors of red blood cell alloimmunization in sickle cell disease

Dixon, Y.D. (1), van der Torren, C.R. (2) & Fijnvandraat, C.J. (3)

(1) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; (2) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; (3) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands.

Rationale

Sickle cell disease (SCD) is a hereditary blood disorder affecting millions globally. Blood transfusions are essential in managing SCD complications, but they come with risks, such as irregular antibody formation and delayed hemolytic transfusion reactions. Although expanding blood product matching has reduced some risk, better understanding of immunization risk factors and antibody targets is crucial for improved patient outcomes. We therefore conducted a literature review on risk factors contributing to irregular antibodies post-transfusion in SCD and their targets.

Methods

This systematic review examined genetic and clinical risk factors for alloimmunization in patients with SCD. Inclusion criteria were: (1) participants with SCD who received at least one blood transfusion; (2) studies conducting isoantibody screening and/or assessing risk factors. Review articles were excluded. Each article was assessed using the JBI checklist.

Results

A total of 30 studies on alloimmunization risk factors were included. Blood group matching varied from ABO and RhD to ABO, Rh, Fya, Fyb, Jka, Jkb, Lea, Leb and MNS. Alloimmunization rates ranged from 4% to 27%, with lower rates observed in studies using extensive matching. However, African studies showed lower rates (4-6.5%) than studies conducted elsewhere despite limiting matching to ABO and RhD. Common antibodies included rhesus specific anti-E and anti-C antibodies despite Rh-matched red blood cells, which may result from genetic variations in the rhesus gene. Key clinical risk factors for increased alloimmunization included high transfusion frequency, older age, HbSS genotype, and first transfusion after age of 5.

Discussion

Extended antigen matching significantly reduces alloimmunization in SCD, though genetic considerations in rhesus matching could further help. However, securing a consistent supply of extensively matched blood remains challenging. Developing a risk calculator to estimate the individual immunization risk per transfusion, may assist in the optimal distribution of matched blood products for SCD patients.

AKS2025_039: A whole-genome sequencing family-based association study to elucidate the genetics of congenital anomalies of the kidney and urinary tract.

Vendrig, L.M. (1), Tanck, M.W.T. (2), Schreuder, M.F. (3), Feitz, W.F.J. (4), Mulder, J. (5), Renkema, K.Y. (6), Van Eerde, A.M. (6), Van der Zanden, L.F.M. (7), Groothoff, J.W. (1), Levtchenko, E.N. (1), Groen in 't Woud*, S. (8), Westland*, R. (1). *shared last authorship. On behalf of the ArtDECO study and the AGORA data- and biobank.

(1) Department of Pediatric Nephrology, Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands. (2) Department of Epidemiology and Data Science, Amsterdam UMC, Amsterdam, The Netherlands. (3) Department of Pediatric Nephrology, Amalia Children's Hospital, Radboud university medical center, Nijmegen, The Netherlands. (4) Division of Pediatric Urology, Department of Urology, Amalia Children's Hospital, Radboudumc, Nijmegen, The Netherlands. (5) Department of Pediatric Nephrology, Sophia Children's Hospital, Erasmus MC, Rotterdam, The Netherlands; Department of Pediatric Nephrology, Willem-Alexander Children's Hospital, Leiden University Medical Center, Leiden, The Netherlands. (6) Department of Clinical Genetics, University Medical Center Utrecht, Utrecht, The Netherlands. (7) Department for Health Evidence, Radboud university medical center, Nijmegen, The Netherlands. (8) Department of Human Genetics, Radboud university medical center, Nijmegen, The Netherlands.

Rationale

Congenital anomalies of the kidney and urinary tract (CAKUT) cover a spectrum of developmental defects. While 20-40% of children with CAKUT have a familial history of the disease, the molecular etiology remains largely unknown. Therefore, we aim to gain more insight into the genetic architecture of CAKUT by performing a family-based association study with whole-genome sequencing (WGS) data.

Methods

WGS was performed in 313 proband-parent trios collected in the Dutch AGORA data- and biobank. We will perform a transmission disequilibrium test in all trios, determining the transmission of alleles from heterozygous parents to their affected offspring and, as such, identifying the single nucleotide polymorphisms that are associated with CAKUT. After quality control, including sequencing coverage (depth >10) and genotype quality (>20), analyses will be performed using PLINK. The results will be further assessed through additional analyses, such as fine-mapping and functional annotation.

Results

Of the 313 included patients, 199 were male (64%). Multiple CAKUT phenotypes were observed in 191 cases (61%). The most frequently reported phenotypes were vesicoureteral reflux (47%), posterior urethral valves (24%), hydronephrosis (24%), ureteropelvic junction obstruction (20%) and duplex collecting system (16.3%). We are currently performing the analyses for this project.

Discussion

One of the main advantages of family-based association studies is that their results cannot be influenced by population stratification, as they exclusively compare the inheritance of alleles within proband-parent trios. Furthermore, it is robust against differences in environmental or genetic factors between patients, due to the fact that each trio acts as their own control. Therefore, this study explores the genetic origins of CAKUT from a unique familial perspective.

AKS2025_040: Study protocol: Fecal Microbiota Transplantation In Children with Irritable Bowel Syndrome

Oorthuys, A.O.J.

(1) Amsterdam UMC, Emma Children's Hospital, Amsterdam, Netherlands

Rationale

Irritable bowel syndrome (IBS) affects 9.8-12.8% of adults and 6.2-11.9% of children/adolescents, causing abdominal pain and altered bowel habits. IBS significantly reduces quality of life and increases healthcare costs, with higher risks for depression and anxiety. Current treatments, targeting motility and psychosocial factors, often leave patients with persistent symptoms. Recent studies suggest that gut microbiota dysbiosis may contribute to IBS, and fecal microbiota transplantation (FMT) from healthy donors has shown promise in symptom improvement. Lyophilized fecal microbiota capsules (LFMCs) offer a less invasive alternative, but their efficacy in children has not been well studied.

Methods

This double-blind, randomized, placebo-controlled trial will assess the effectiveness of LFMCs from healthy donors in reducing abdominal pain in children aged 8-18 with IBS. The study will last 8 weeks, with children randomized to receive either LFMCs or placebo capsules. After bowel lavage, patients will begin with 21 capsules, then take 2 daily capsules for the rest of the study. Primary and secondary outcomes will measure pain reduction, quality of life, mental health, and gut microbiota changes.

Results

The primary outcome is the proportion of patients with ≥30% reduction in abdominal pain intensity at 12 weeks. Secondary outcomes include symptom relief, changes in pain frequency, defecation patterns, quality of life, depression/anxiety, school absenteeism, and somatization scores. Fecal microbiota composition and metabolomics will be assessed, and adverse events monitored.

Discussion

This study will evaluate the potential of LFMCs as a less invasive treatment for IBS in children. If successful, LFMCs may provide an effective alternative for pediatric IBS patients with persistent symptoms. Additionally, microbiota and metabolomic analysis may enhance our understanding of IBS pathophysiology and the role of gut microbiota in the disease.

AKS2025_041: Protocol for Development of a Global Core Outcome Set for the surgical treatment of Sacrococcygeal Teratoma in children: A systematic review and International Delphi study

Dongen, M.C. (1), Derikx, J.P.M. (1), van Heurn, L.W.E. (1)

(1) Department of Paediatric Surgery, Emma Children's Hospital, Amsterdam UMC, University of Amsterdam

Rationale

Research on sacrococcygeal teratoma (SCT) reveals substantial heterogeneity in reported outcomes following treatment. This limits the ability to draw meaningful comparisons across studies and impedes the development of international guidelines. To address these challenges, we aim to develop a Core Outcome Set (COS) using the Delphi method to achieve consensus on key outcomes. This will help standardize outcome reporting, improve the quality of SCT research and enhance clinical care globally.

Methods

This study comprises three phases to develop a COS using the COMET criteria. First, we will conduct a systematic review to identify the outcomes that have been reported for SCT patients following surgical treatment. In the second phase, two parallel Delphi studies will be conducted: one for High-Income Countries (HICs) and one for Low- and Middle-Income Countries (LMICs/LICs), considering their differences in healthcare resources and follow-up care. An expert panel, including medical specialists and patient representatives, will prioritize the identified outcomes. In the third phase, a final consensus meeting will ratify the COS.

Expected results

The study aims to develop a globally applicable COS for SCT. This COS will include outcomes considered essential across both high- and low-resource settings.

Discussion

There is no standardized approach for evaluating treatment success and follow-up in patients with SCT. SCT research is hindered by small sample sizes, long inclusion periods, heterogeneous outcome reporting, and variations across healthcare settings, making data synthesis and meaningful conclusions challenging. The development of this COS will standardize outcome reporting in future studies, thereby improving data synthesis and overall research quality.

AKS2025_042: Predicting In-Hospital Mortality in Children in Low- and Middle-Income Countries: A Systematic Review and Meta-Analysis of Vital Signs and Anthropometric Measurements

Lisanne C.A. Smits, MD (1),* Myrthe Datema, MD (1),* Wieger Voskuijl, MD, PhD (1,2,3,) Moses M Ngari, PhD (6), Mercy Kumwenda, MMED (3,4), and Job C.J. Calis, MD, PhD

(1) Amsterdam UMC, location University of Amsterdam, Amsterdam Institute for Global Child Health, Emma Children's hospital, Meibergdreef 9, Amsterdam, The Netherlands (2) Amsterdam UMC, location University of Amsterdam, Department of Global Health, Amsterdam Institute for Global Health and Development, Meibergdreef 9, Amsterdam, The Netherlands (3) Department of Paediatrics and Child Health, Kamuzu University of Health Sciences, Blantyre, Malawi (4) Kamuzu Central Hospital, Department of Paediatrics, Lilongwe, Malawi (5) Paediatric Intensive Care, Emma Children's Hospital, Amsterdam University Medical Centres, Amsterdam, The Netherlands (6) Clinical Research Department, KEMRI-Wellcome Trust Research Programme, Kilifi, Kenya.

Rationale

In low- and middle-income countries (LMICs), child mortality rates remain substantially higher compared to high-income countries, with many deaths preventable through early recognition of deterioration. This systematic review and meta-analysis investigated predictive values of vital signs and anthropometry for paediatric in-hospital mortality in LMICs.

Methods

A search of publicly available data in PubMed and OVID Embase was conducted in November 2021 and updated in December 2023. Studies that reported on oxygen saturation; respiratory rate; heart rate; blood pressure; temperature; mid-upper arm circumference (MUAC); and/or weight-for-height (WHZ), and paediatric in-hospital mortality were included. Neonatal and PICU studies were excluded. Data was extracted by two independent authors. Forest plots presented odds ratios (OR). NewCastle Ottawa Scale assessed risk of bias.

Results

93 out of 19,106 yielded studies were included in descriptive analysis and 64 in meta-analysis, encompassing 250,864 children. Associations with in-hospital mortality were observed in hypoxaemia (OR 5.85, 95% CI 4.49-7.62), tachypnoea (OR 1.56, 95% CI 1.09-2.24), tachycardia (OR 1.68, 95% CI 1.09-2.57), bradycardia (OR 3.29, 95% CI 1.38-7.83), hypotension (OR 3.89, 95% CI 1.98-7.62), hyperthermia (OR 1.30, 95% CI 1.01-1.68), hypothermia (OR 3.87, 95% CI 3.00-4.98), low MUAC (OR 2.99, 95% CI 1.92-4.67), and low WHZ (OR 3.31, 95% CI 2.57-4.26).

Discussion

This systematic review and meta-analysis provides evidence that routine assessment of oxygen saturation, respiratory rate, heart rate, blood pressure, temperature, MUAC and WHZ in children presenting or admitted to hospitals in LMICs, are valuable tools to identify those at elevated risk of in-hospital mortality. Policymakers should prioritize providing equipment for collecting vital signs and anthropometry in LMICs to improve mortality risk assessment, leading to reduced child mortality.

AKS2054_043: Posterior tibial nerve stimulation is feasible and safe for children with functional constipation but similar to sham stimulation: results of a single-blinded randomized controlled trial

Julia M. J. van der Zande (1,2); Desiree F. Baaleman (1,2); Amina Usman (1); Kim M. Osborne (1); Marc A. Benninga (2); Raul E. Sanchez (1); Karla Vaz (1); Desale Yacob (1); Neetu Bali (1); Carlo Di Lorenzo (1); Peter L. Lu (1)

(1) Division of Gastroenterology, Hepatology, and Nutrition, Department of Pediatrics, Nationwide Children's Hospital, Columbus, OH, USA. (2) Department of Pediatric Gastroenterology and Nutrition, Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands

Rationale

We aimed to evaluate the feasibility, safety, and efficacy of posterior tibial nerve stimulation (PTNS) in children with functional constipation (FC) due to pelvic floor dyssynergia (PFD).

Methods

In a single-blinded randomized sham-controlled trial from July 2019-April 2024, we recruited children aged 8-18 with FC due to PFD. Participants received four weekly sessions of biofeedback therapy followed by 30-minute sessions of either PTNS or sham. Data collected included demographics, bowel movements per week (BM), fecal incontinence episodes per week (FI), Cleveland Clinic Constipation Score (CCCS), Fecal Incontinence Severity Index (FISI), and success response (SR: ≥3 BMs and ≥1 FI per week). Quality of life was assessed using PedsQL at baseline, the 4th session, and one and four weeks follow-up. Mixed effect linear regression models compared BM, FI, CCCS, FISI, and PedsQL over time within and between groups; mixed effect logistic regression was used for SR.

Results

We recruited 40 children and included 34 (65% male, median age 13 years, IQR 9.8-15 years) who completed four sessions. Eighteen were randomized to PTNS and 16 to sham. Baseline demographics, CCCS, FISI, PedsQL, BM, FI, and SR were similar between groups. PTNS-treated children showed improvement in CCCS at all time points, PedsQL at one week follow-up, and FI after the 2nd, 3rd sessions, and at one week follow-up. FISI and BM did not improve. SR likelihood increased at every time point compared to baseline, significantly after two sessions (Table 1). No significant differences in outcomes were found between PTNS and sham at any time point. Two patients (1 PTNS, 1 sham) had minor side effects (localized pain and nausea) resolving spontaneously without medical attention.

Discussion

PTNS is feasible and safe for children with FC due to PFD. Although improvements were observed with PTNS, they were not statistically significant to those from biofeedback therapy and sham stimulation.

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AKS2025_043 Table 1. Patient outcomes

	Baseline, mean score	After 1 session, mean change score	After 2 sessions, mean change score	After 3 sessions, mean change score	1 week follow-up, mean change score	4 weeks follow-up, mean change score
PTNS	**n=18**	**n=18**	**n=18**	**n=18**	**n=12**	**n=11**
CCCS	14.61	**-1.69****,[1]	**-2.04****,[1]	**-2.56*****	**-3.04*****	**-2.45****
FISI	18.78	0.70	0.76[1]	-1.11	-0.94	-3.43
PedsQL	68.44	-	-	1.94[1]	**5.16***,[1]	2.63
BM	6.33	-0.39	0.11	1.06	-0.21	-0.42
FI	2.00	-0.06	**-1.06***	**-0.94***	**-1.08***	-0.51
SR	8/18	10/18, OR 1.84	**14/18, OR 7.13***	13/18, OR 4.88	8/12, OR 3.32	6/11, OR 1.64
Sham	**n=16**	**n=16**	**n=16**	**n=16**	**n=8**	**n=9**
CCCS	12.94	**-1.28***,[1] (n=15)	-1.13	**-2.12****,[1]	-0.95	-1.06
FISI	19.81	0.06[1]	-1.13	-0.57[1]	1.02	-3.84
PedsQL	70.94	-	-	0.62[1]	-0.44	-1.10
BM	6.19	0.38	0.31	0.63	2.29	-0.14
FI	2.50	**-0.94***	**-1.06****	**-1.19****	-0.89	**-1.13***
SR	8/16	11/16, OR 7.86	10/16, OR 3.67	**12/16, OR 19.96***	6/8, OR 13.87	4/9, OR 0.67

CCCS: Cleveland Clinic Constipation Score; FISI: Fecal Incontinence Severity Index; BM: Bowel movement frequency per week; FI: Fecal incontinence frequency per week; SR: Successful response; OR: Odds ratio.
*denotes p<0.05, **p<0.01, ***p<0.001 compared to baseline. [1] response missing

AKS2025_044: ACU-PILOT: Acupuncture in children with functional constipation - a pilot study

Bloem, M.N. (1), Koppen, I.J.N. (1), de Lorijn, F. (1), Baaleman, D.F. (1), Vlieger, A.M. (2), Nieuwdorp, M. (3) Benninga, M.A. (1)

(1) Department of Pediatric Gastroenterology and Nutrition, Emma Children's Hospital/Academic Medical Center, Amsterdam, The Netherlands. (2) Department of Pediatrics, St. Antonius Ziekenhuis, Nieuwegein, The Netherlands. (3) Department of Internal and Vascular Medicine, Amsterdam University Medical Center, Amsterdam, Netherlands

Rationale

Functional constipation (FC) is common in children and poses a significant burden to patients, their families and healthcare systems. Pharmacological treatment mainly consists of oral osmotic laxatives. However, poor adherence to oral laxatives is a known common problem and patients often remain symptomatic despite treatment. Therefore, many parents seek help in the form of alternative medicine. Acupuncture has been shown to relieve symptoms in adults with FC. However, research on acupuncture for pediatric FC is limited.

Methods

This is a study protocol for a prospective, non-randomized, multicenter, open-label pilot study. Children (6-18 years) may participate in this study if they fulfill the Rome IV criteria for pediatric functional constipation, despite medical treatment by a physician during at least 3 months. Eighteen children will receive 8 acupuncture sessions over ten weeks. The primary aim is to assess whether acupuncture can be a feasible intervention for a larger randomized controlled trial in children with FC. Secondary endpoints include consent rate, satisfaction, personnel capacity, (serious) adverse events, reduction in symptoms and quality of life.

Results

The primary endpoint is feasibility: a future RCT using this same intervention protocol will be deemed feasible if the pilot study renders an attrition rate ≥70% (i.e. ≥70% of patients completing the pilot study while attending ≥75% of scheduled acupuncture sessions). Additional feasibility endpoints are consent rate, patient/parent satisfaction, and personnel capacity. Secondary outcomes include (serious) adverse events, reduction in symptoms according to Rome IV criteria and quality of life.

Discussion

The results will guide the design of a future RCT for pediatric FC. Currently, no standard acupuncture protocol exists for this demographic. Although published data on acupuncture's effectiveness and safety for FC patients are promising, studies are often of poor quality, and most evidence comes from Chinese studies. Publication bias may affect validity and reliability of these data. Therefore, the aim is to establish a feasible and effective protocol for pediatric FC, helping fill a significant gap in current treatment options.

AKS2025_045: Complement regulator CD55 deficient protein-losing enteropathy (CHAPLE disease): successful treatment with pozelimab in two sisters

Van der Kruk, N. (1,2,3), De Boer, E.C.W. (4,5,6), Pouw, R.B. (4,5,7), Van Limbergen, J.E. (1,2) & Kuijpers, T.W. (4,5,6,7)

(1) Department of Paediatric Gastroenterology and Nutrition, Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; (2) Tytgat Institute for Liver and Intestinal Research, Amsterdam Gastroenterology, Endocrinology Metabolism (AGEM), Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; (3) Amsterdam Reproduction and Development research institute, Amsterdam, The Netherlands; (4) Sanquin Research, and Landsteiner Laboratory, Amsterdam University Medical Centers, University of Amsterdam, Amsterdam, The Netherlands; (5) Amsterdam institute for Immunology and Infectious Diseases, Immunology, Amsterdam, The Netherlands; (6) Department of Pediatric Immunology, Rheumatology and Infectious Diseases, Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; (7) Sanquin Diagnostic Services, Amsterdam, The Netherlands.

Rationale

CD55 deficiency with Complement Hyperactivation, Angiopathic thrombosis and Protein Losing Enteropathy (CHAPLE) is a rare hereditary immune disease, driven by an overactivation of the complement system, caused by loss-of-function variants of CD55. With fewer than 100 patients diagnosed with CHAPLE worldwide, providing evidence-based care can be complex. Previous studies showed that eculizumab, a complement C5 inhibitor, was broadly effective in patients with CHAPLE disease. Recently, the FDA approved pozelimab, an anti-C5 antibody, as the first treatment for CHAPLE. This clinical case describes two sisters affected by CHAPLE disease highlighting the diagnostic process as well as their recent treatment with pozelimab, considering both clinical and immunological aspects.

Methods and results

In a Moroccan pedigree, two sisters were diagnosed with Crohn's Disease (CD) at the ages of 12, and 27. Both sisters' symptoms included recurrent edemas, abdominal pain, bloody diarrhea, nausea and vomiting, and low serum albumin levels. Treatment with diets, antibiotics, corticosteroids, immunomodulators and biologicals over multiple years had little effect. When a low IgG level was found in the younger sister, we initiated whole exome sequencing. This led to the diagnosis of CHAPLE disease in both sisters. Flow cytometry showed total absence of CD55 antigen on both patients' blood cells and reduced expression of CD55 on the mother's blood cells compared to a healthy control. A brother diagnosed with irritable bowel syndrome was genetically affected without clinical CD, demonstrating a highly variable penetrance.

Discussion

Subcutaneous weekly pozelimab was started and allowed discontinuation of all immunosuppressive medication within 3 months in both sisters. Within a month of treatment, their symptoms resolved and fecal calprotectin, plasma albumin, as well as IgG levels, normalized. They have sustained remission since and reported no related adverse events.

AKS2025_046: Unravelling the Energy Imbalance in Bardet-Biedl Syndrome with Stable Isotopes

van Harskamp D 1,2,3, Kleinendorst L 2,4,5, Vaz F 1,3, Van Haelst M 2,4,5

(1) Amsterdam UMC, Department of Laboratory Medicine, Core Facility Metabolomics, Laboratory Genetic Metabolic Disease, University of Amsterdam, Amsterdam, Netherlands. (2). Amsterdam UMC, Emma Center for Personalized Medicine, Amsterdam, Netherlands. (3). Amsterdam UMC, Amsterdam Gastroenterology, Endocrinology & Metabolism, Amsterdam,. Netherlands. (4). Amsterdam UMC, Section Clinical Genetics, Department of Human Genetics, Amsterdam, Netherlands (5). Amsterdam Reproduction and Development research institute, Amsterdam, Netherlands

Rationale

Bardet-Biedl syndrome (BBS) is a rare genetic disorder characterized by neurodevelopmental problems, renal abnormalities, vision impairment, polydactyly, and obesity. Around 70-90% of the BBS patients have obesity. This is likely due to defects in primary cilia affecting the leptin-melanocortin pathway, leading to energy imbalance and hyperphagia. While Resting Energy Expenditure (REE) has been measured in BBS, no significant difference from controls was found. REE alone, however, may not fully capture energy dynamics, especially considering physical limitations in daily energy expenditure. Total Energy Expenditure (TEE) might offer a more accurate assessment.

Methods

Our study will assess the TEE and body composition of confirmed BBS patients (children and young adults). We aim to enroll 12 participants. TEE will be measured using the doubly labeled water method, the gold standard for measuring energy expenditure in free-living conditions. This non-invasive method involves oral administration of stable isotopes and collecting saliva samples over 15 days.

Results

We expect TEE to provide a more accurate and comprehensive understanding of energy expenditure in BBS patients compared to REE and body composition alone. This study aims to clarify how physical activity and daily energy demands contribute to obesity in BBS. Additionally, we will evaluate the impact of obesity treatments, including pharmacological interventions, on TEE and body composition.

Discussion

Measuring TEE in BBS patients offers a deeper understanding of the energy imbalance contributing to obesity in this population. By capturing daily energy expenditure under natural conditions, TEE provides a more complete picture than REE. This study may also inform the evaluation of pharmacological treatments, such as anti-obesity drugs, and contribute to personalized strategies for managing genetic obesity disorders beyond BBS.

AKS2025_047: FINEart: Spatial transcriptomic mapping of gene expression in normal human kidney development

Klomp, L.S. (1), Mavrommatis, L. (2), Oliveira Acrolino, F. (1), Lantermans, H.C. (1), De Bakker, B.S. (3, 4), Hanemaaijer-van der Veer, J. (3, 4), Levtchenko, E. (1), Kuppe, C. (2, 5), & Westland, R. (1)

(1) Department of Pediatric Nephrology, Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; (2) Medical Faculty, Division of Nephrology and Clinical Immunology, RWTH Aachen University, Aachen, Germany; (3) Amsterdam Reproduction and Development research institute, Amsterdam, The Netherlands; (4) Department of Obstetrics and Gynecology, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; (5) Medical Faculty, Institute of Experimental Medicine and Systems Biology, RWTH Aachen University, Aachen, Germany.

Rationale

Congenital kidney defects (KHD) significantly contribute to childhood morbidity and mortality, underlying 40-60% of children with kidney failure. Discriminating normal from abnormal human kidney development is crucial to improve the clinical management for KHD patients. Current nephrogenesis models rely on murine studies, which differ from human development in timing, scale, and anatomical features. Gene expression signatures of (ab)normal human kidney development have remained unstudied due to unavailability of foetal kidney tissues and imperfect resolution of previous transcriptomic technologies. We aim to fill this gap by the creating of a spatially-resolved transcriptional atlas based on a rare foetal kidney cohort.

Methods

We will analyze n=15 foetuses (gestational age: 8-23 weeks) with morphologically normal kidneys using MERFISH spatial transcriptomics (Vigzen©) to establish a spatially-resolved transcriptional atlas of human nephrogenesis.

Results

We have performed a preliminary analysis of MERFISH experiments in two normal human foetal kidneys (gestational age: 21 weeks) with a test panel of 140 kidney gene probes. We were able to discriminate different mRNA signatures throughout the kidney, as well as to localize podocytes, a terminally differentiated cell type within kidney development (Figure 1).

Conclusion

This proof-of-principle study shows our ability to uncover gene expression of normal human nephrogenesis in a spatially-resolved context. Potentially, the establishment of an atlas of normal kidney development will help in discriminating differences in timing and localization of gene expression in foetuses with KHD.

AKS2025_047 Figure 1

MERFISH of human embryonic kidney tissue at 21 weeks gestation. Left: Hematoxylin-eosin stain. Right: MERFISH detects over 40 expressed genes (colored dots) and podocyte-specific genes in cortical layers (green).
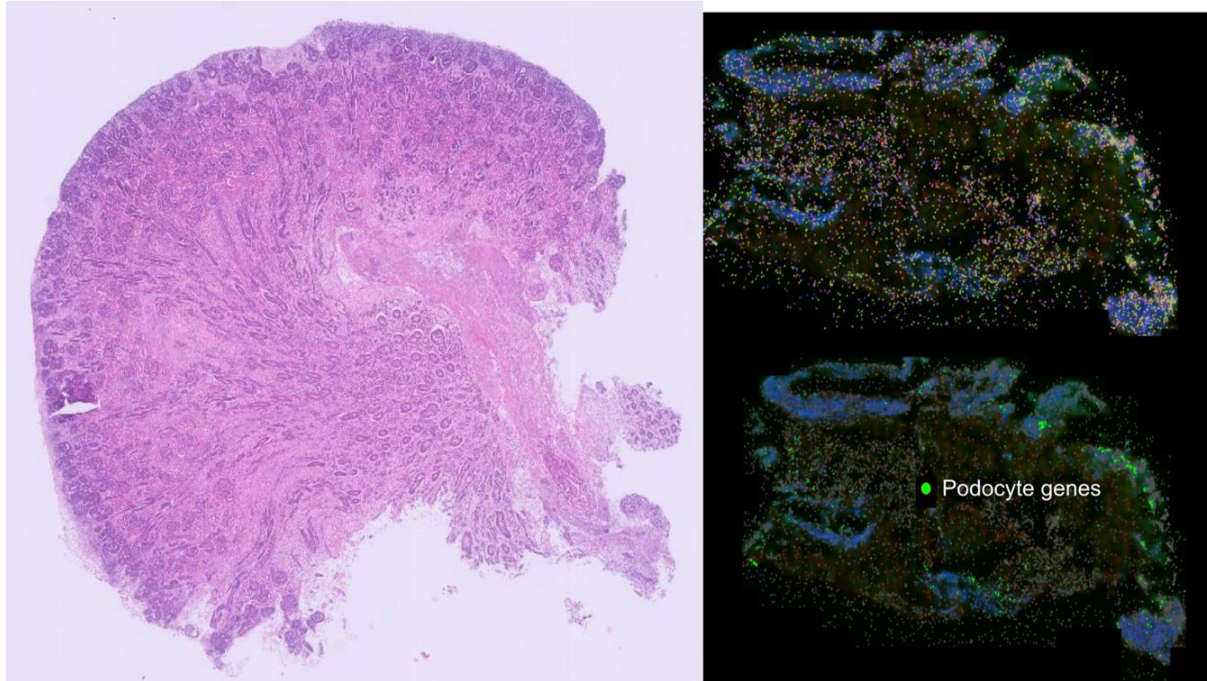
AKS2025_048: PRactice of Ventilation in Critically Ill Pediatric Patients protocol for a prospective international observational study and results of the pilot feasibility study

van Vliet, R. (1), Melger, J.W.J. (1), van Meenen, D.M.P. (1,2), Paulus, F. (1), Bem, R.A. (3), Blokpoel, R. (3), Schultz, M.J. (1, 4, 5, 6), Kneyber, M.C.J (3), for the PRoVENT-PED investigators and the PROVE network

(1) Department of Intensive care, Amsterdam University Medical Centers, Amsterdam, the Netherlands. (2). Department of Anesthesiology, Amsterdam University Medical Centers, Amsterdam, the Netherlands. (3) Department of Pediatric Intensive Care, Emma Children's Hospital, Amsterdam University Medical Centers, Amsterdam, the Netherlands. And University Medical Center Groningen, Groningen, the Netherlands (4) Mahidol-Oxford Tropical Medicine Research Unit, Bangkok, Thailand. (5). Nuffield Department of Medicine, University of Oxford, Oxford, UK (6). Department of Anesthesia, General Intensive Care and Pain Management.

Rationale

Respiratory support is the most common supportive treatment for critically ill children. Despite its lifesaving potential, it can also cause harm. Data on current practice are limited. Recently, a long-term (10 year), prospective, international, multicenter study named PRactice of VENTilation in PEDiatric patients' (PRoVENT/PED) was started, designed to investigate the epidemiology, respiratory support practices and outcomes of critically ill pediatric patients. With this embedded pilot study we aimed to determine feasibility of data collection and to interpret first data on ventilation practice.

Methods

PRoVENT-PED data will be collected biannually over a 10-year period. The specific focus of PRoVENT-PED will evolve as the study progresses, initially focusing on invasively ventilated patients. PRoVENT-PED includes patients under 18 years, admitted to a participating PICU and receiving respiratory support. The endpoints vary with the focus in each phase, but will always include a set of key device settings and ventilation parameters, and related outcomes. For this pilot study we collected data on invasively ventilated patients admitted to the PICUs of the University Medical Center Groningen and the Amsterdam University Medical Center during January, February, July and August 2023.

Results

A total of 125 patients were eligible. Median age was 8 [2 to 72] months. Most patients were intubated due to pulmonary disease. Key ventilatory settings varied among patients (Figure 1). Median duration of ventilation was 4 [2-10] days and median length of ICU stay was 5 [3-11] days. Mortality was 8%. Median time on data collection was 20 [IQR: 15 to 25] minutes per patient, and the database operated well.

Discussion

PRoVENT-PED is an adaptive global study designed to shift focus over time to address emerging topics and improve outcomes. This pilot study confirmed feasibility of data collection, informing the recruitment for this large, long-term prospective study.

Figure 1. Ring Graphs of Key Ventilatory Variabeles
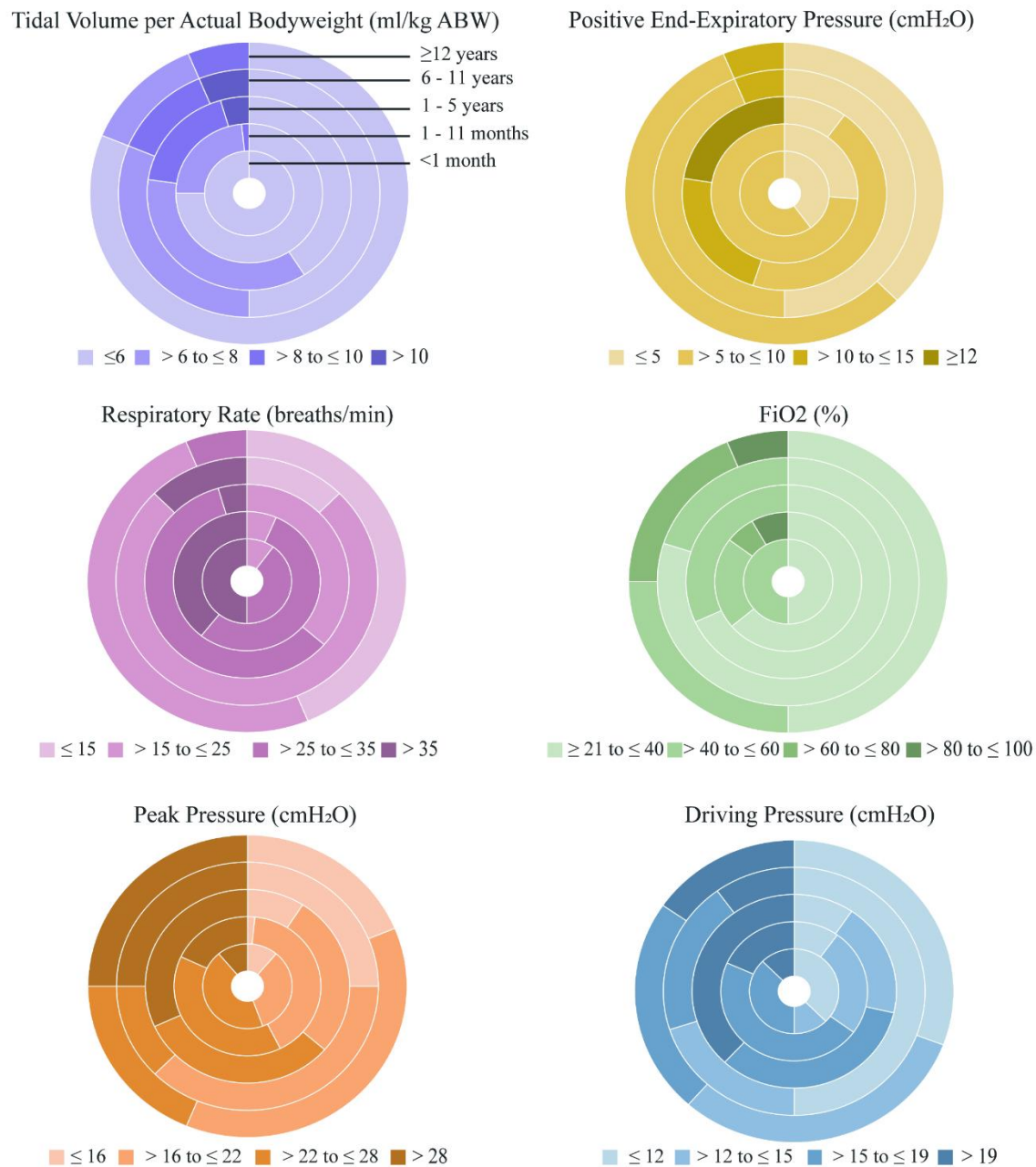
Ring graphs of key ventilator settings for the age groups. The rings are starting with the youngest age group in the inner ring and progressing outward with older age groups in the outer rings. Ventilator settings are divided in categories. The size of each segment within a ring corresponds to the proportion of patients in that age group receiving a ventilator setting category.
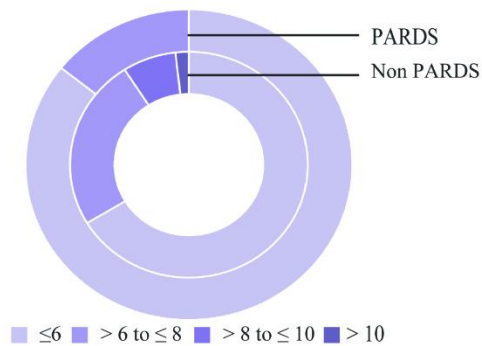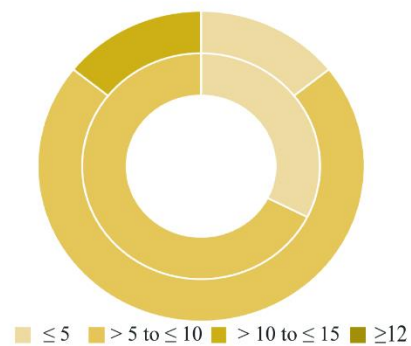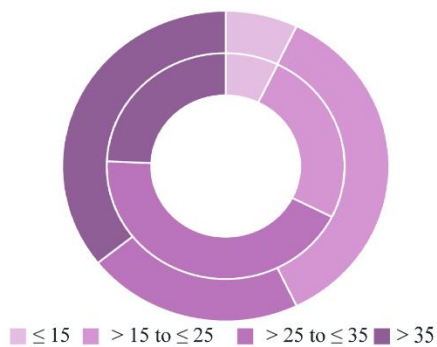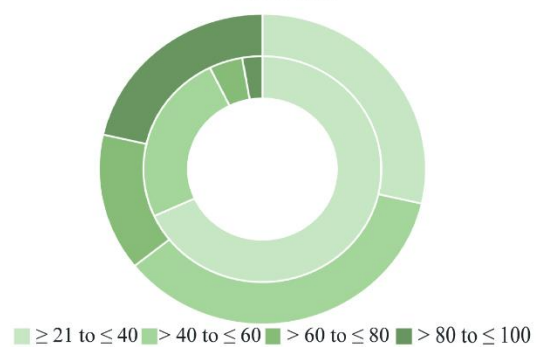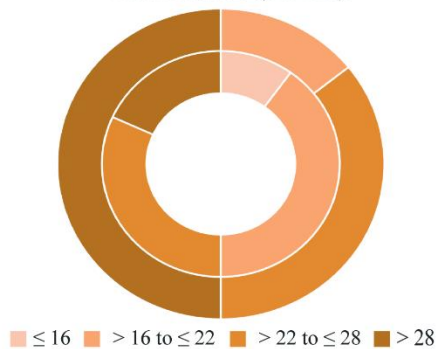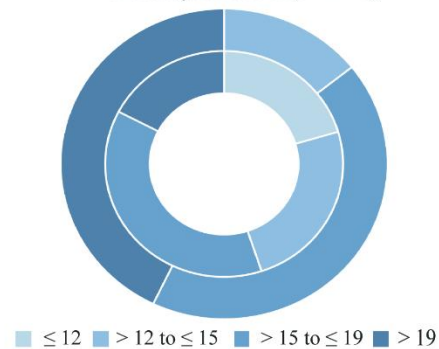
Ring graphs of key ventilator settings. The rings are starting with the non PARDS group in the inner ring and PARDS group in the outer ring. Ventilator settings are divided in categories. The size of each segment within a ring corresponds to the proportion of patients in that group receiving a ventilator setting category.

AKS2025_049: Brain shrinkage may lead to skull thickening: a study in leukodystrophies and multiple sclerosis

Vorst, G.H.J. (1), Wolf, N.I. (1), van Nederpelt, D.R. (2), Barkhof, F. (2,3) Schoonheim, M.M. (4) & Pouwels, P.J.W. (2)

(1) Dept of Child Neurology, Amsterdam Leukodystrophy Centre, Emma Children's Hospital, and Amsterdam Neuroscience, Amsterdam UMC, Vrije Universiteit, (2) Dept of Radiology and Nuclear Medicine, MS Center Amsterdam, Amsterdam Neuroscience, Amsterdam UMC, (3) UCL Queen Square Institute of Neurology and Centre for Medical Image Computing, University College London, London, UK, (4) Dept of Anatomy & Neurosciences, Amsterdam Neuroscience, MS Center Amsterdam

Rationale

Volumetric MRI assessment is widely used in neuroimaging research to study the brain in aging and neurodegenerative disorders. Intracranial volume (ICV) often serves as a normalization factor and is generally assumed to remain constant after the age of 20 years. We regularly noticed remarkably thick skulls in qualitative assessment of MRI scans in leukodystrophy patients, who often develop brain atrophy at a young age. This prompted us to quantify skull thickness in a genetic and a non-genetic brain disease, metachromatic leukodystrophy (MLD), and multiple sclerosis (MS), respectively, evaluating the effect of skull thickening on the ICV.

Methods

We retrospectively analyzed both single and longitudinal MRI scans of patients with MLD (n=32, scans=136), MS (n=102, scans=172), and controls (n=122, scans=270). 3D-T1-weighted images were used to measure ICV and to extract inner and outer skull surfaces, using additional T2 images when available. Skull bases were removed using atlas-based landmarks. The median skull thickness was determined for each scan and each subject.

Results

MLD patients showed an early, rapid ICV decrease and simultaneous skull thickening over time, with MS patients showing a similar but milder pattern. Controls showed no changes in ICV or skull thickness. In patients over 18, increased skull thickness correlated with reduced ICV in disease groups (MLD: p < 0.001; MS: p < 0.05), but not significantly in controls.

Discussion

This study provides evidence that neurodegenerative disorders are associated with skull thickening and ICV shrinkage, challenging the assumption of a stable ICV in adults and current normalization techniques in volumetrics, especially in diseases with early-onset atrophy. These findings emphasize the need to refine volumetric analysis to improve assessment and prediction of brain atrophy progression.

AKS2025_050: Improving energy metabolism in cystinosis kidney cells

Berlingerio S.P. (1,2), van Harskamp D. (1,2), van Weeghel M. (1,2), Houtkooper R. (1,2), Levtchenko E (1,2), Vaz F. (1,2), van Karnebeek C. (1,2) & Arcolino F.O.(1,2).

(1) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands (2) Emma Center for Personalized Medicine, Amsterdam University Medical Centers, Amsterdam, The Netherlands.

Rationale

Cystinosis is a rare, incurable lysosomal storage disease caused by mutations in the CTNS gene, which encodes the cystine transporter protein cystinosin. This mutation leads to cystine accumulation in lysosomes throughout the body, with kidneys among the first organs affected. Although cysteamine therapy reduces cystine accumulation, it does not reverse renal Fanconi syndrome, glomerular injury, or progression to end-stage renal disease, suggesting that additional factors beyond cystine accumulation contribute to disease progression. This study aims to elucidate metabolic abnormalities in cystinosis by examining patient-derived proximal tubular epithelial cells (PTECs) and podocytes to identify potential metabolic targets for new therapies.

Methods

We used immortalized cystinosis PTECs and podocytes, alongside healthy control cells. To assess cellular metabolism, we conducted viability assays, fluxomic metabolomic analysis with labeled tracers, and mitochondrial respiration analysis using a Seahorse XF Analyzer.

Results

Cystinosis kidney cells exhibited impaired incorporation of labeled metabolites and reduced mitochondrial respiration. Notably, podocytes showed decreased TCA cycle metabolite levels and reduced ATP production, indicating mitochondrial dysfunction.

Discussion

Our findings support exploring approved compounds to address metabolic deficits in cystinosis. Based on observed metabolic alterations, we are investigating pantothenate (Vitamin B5) as a means to enhance energy metabolism in cystinosis cells. After confirming its safety in these cells, we are currently evaluating the impact of pantothenate on cellular metabolism and mitochondrial respiration.

AKS2025_051: Detecting pulmonary exacerbations with volatile organic compounds in exhaled breath in patients with primary ciliary dyskinesia

Singh, A. (1), Israëls, J. (1), Haarman, E. (1), Altenburg, J. (1), Brinkman, P. (1), Maitland-van der Zee, A.H. (1)

(1) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands

Rationale

In patients with primary ciliary dyskinesia (PCD), pulmonary exacerbations (PEx) have a great impact on quality of life and progressive lung damage. In this interim analysis we determined if pulmonary exacerbations can be detected by the non-invasive measurement of volatile organic compounds (VOCs) in exhaled breath.

Methods

In this interim analysis of our longitudinal observational cohort of patients with PCD at the Amsterdam UMC we identified exhaled VOCs with gas chromatography-mass spectrometry. The most promising compounds to differentiate patients with and without PEx were selected. A composite model with these compounds was made and tested to determine optimal sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV).

Results

16 patients with PCD with a PEx were included and 76 patients with PCD without a PEx. Of the most promising compounds in the first analysis, three with a known relation to inflammation were selected for the final model. The compounds isoprene and acetic acid were significantly different between the two groups.

Pentane was not significantly different as an individual compound, but did have a significant contribution within the composite model in differentiating the two groups. The composite model to predict PEx with these three compounds showed a sensitivity of 73% and specificity of 75%, a positive predictive value (PPV) of 0.42 and negative predictive value of 0.92. The accuracy, according to the area under the curve, was 0.78 (95%CI 0.67-0.88).

Conclusion

Our composite model showed potential to rule out a pulmonary exacerbation, but was inaccurate in detecting a PEx in stable patients with PCD. More research needs to be conducted for clinical applicability.

ROC curve for composite model (isoprene, pentane, acetic acid))
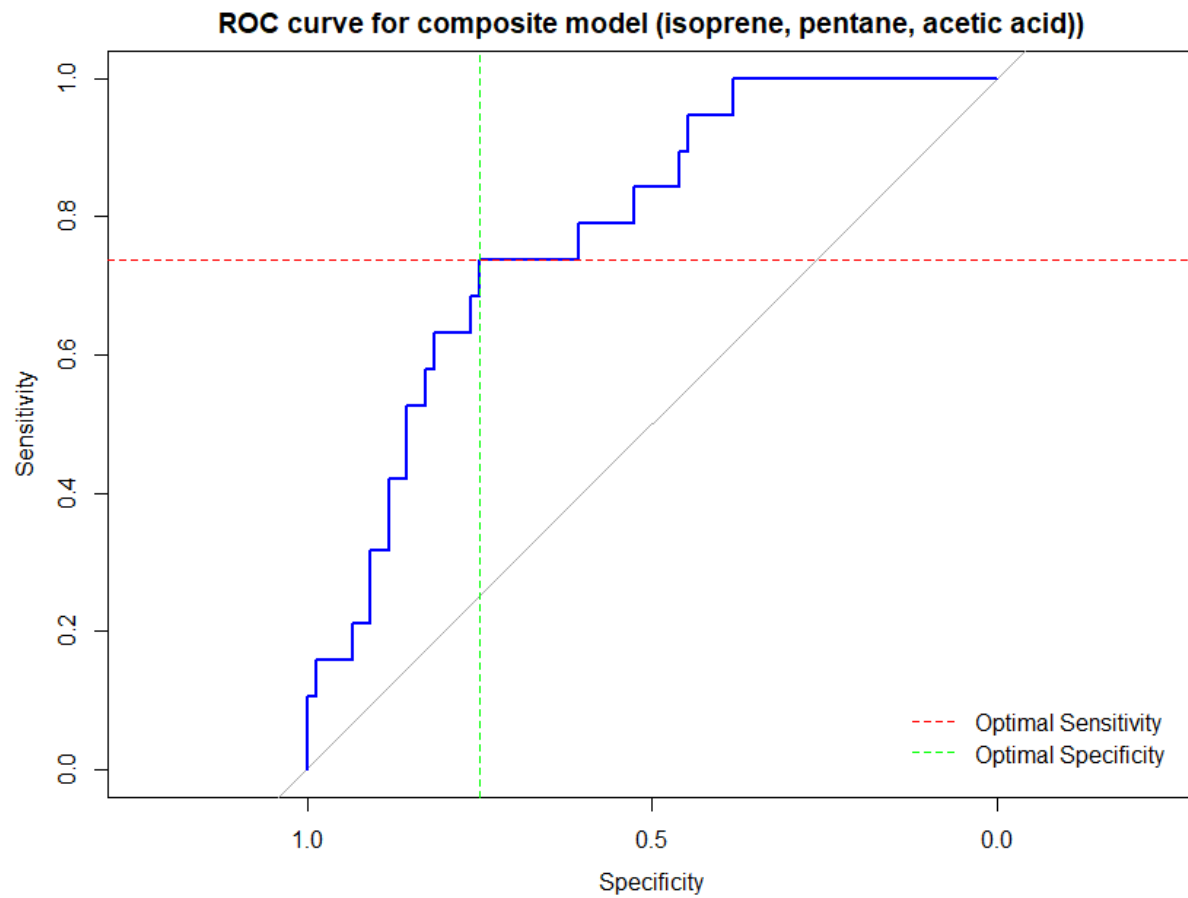
ROC curve for the composite model containing isoprene, pentane and acetic acid for detecting pulmonary exacerbations. (AUC: 0.78 (95% CI 0.67-0.88), sensitivity 73%, specificity 75%, PPV 0.42 and NPV 0.92))

AKS2025_052: Medication use in patients with 16p11.2 copy number variants

van Weelden, W (1), Kleinendorst, L (2) & van Haelst, M.M. (3)

(1, 2, 3) Department of clinical genetics, Amsterdam UMC (location AMC), Amsterdam, The Netherlands; (2, 3) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands.

Rationale

16p11.2 copy number variations (CNVs) are rare genetic disorders associated with developmental delay, particularly in language and speech, behavioral problems such as autism and epilepsy. Deletions of this region are also associated with obesity. Patients exhibit clinical variability and treatment is personalized based on individual characteristics. Parents are seeking guidance at our 16p11.2 CNV clinic at Amsterdam UMC for the appropriate medications for their children. Since little is known about this, this study aims to evaluate medication use in patients with 16p11.2 CNVs.

Methods

The study included patients of all ages with pathogenic 16p11.2 CNVs who visited the department of clinical genetics at Amsterdam UMC between 2017 and 2022. Clinical data were gathered from the medical files or medical history provided by the patient or caregiver.

Results

100 patients were included in this study with an median age of 10.7 years (range 0.6-60.5 years). 46 patients did not receive any type of medication. Medication use of four patients was unknown. 50 patients received at least one type of medication, mainly psychotropic drugs (primarily methylphenidate), anti-epileptics (e.g. levetiracetam), sleeping aids (e.g. melatonin), laxatives (e.g. macrogol) and medication for the treatment of asthma and diabetes.

Discussion

Patients with 16p11.2 CNVs use a wide range of medications, many of which are targeted at managing the associated clinical characteristics, such as ADHD, epilepsy, sleeping problems and obstipation. Clinicians should be careful with prescribing obesogenic medication to patients with 16p11.2 deletion syndrome due to the risk of developing obesity. Future research could focus on a larger cohort and investigate the effectiveness of the drug treatments. It would also be interesting to focus on the pharmacogenetics, to better understand how individuals with 16p11.2 CNVs metabolize medications, which would help optimize personalized treatment.

Horstman, B.J.D. (1), van Stam, L.E. (1), Angchaisuksuri, P. (2), Carcao, M.D. (3), Königs, C. (5), Mahlangu, J. (6), Mancuso, M.E. (7), Rezende, S.M. (8), Sidonio Jr., R.F. (9), Sivapalaratnam, S. (10), Srivastava, A. (11), Young, G. (12), Fijnvandraat, K. (1,13), Gouw, S.C.(1)

(1) Amsterdam UMC location University of Amsterdam, Department of Pediatric Hematology, Meibergdreef 9, Amsterdam, Netherlands (2) Faculty of Medicine Ramathibodi Hospital, Mahidol University, Department of Medicine, Bangkok, Thailand (3) Hospital for Sick Children, University of Toronto, Division of Hematology/Oncology, Department of Pediatrics, Toronto, Ontario, Canada (4) National Hemophilia Center, Sheba, Tel Hashomer & Thrombosis Reserach Instituite, Tel Aviv University (5) University Hospital Frankfurt, Goethe University, Department of Pediatrics and Adolescent Medicine, Clinical and Molecular Hemostasis, Frankfurt, Germany (6) Hemophilia Comprehensive Care Centre, University of the Witwatersrand and National Health Laboratory Service, Department of Molecular Medicine and Hematology, Faculty of Health Sciences, Johannesburg, South Africa (7) Center for Thrombosis and Hemorrhagic Diseases, IRCCS Humanitas Research Hospital, Humanitas University, Milan, Italy (8) Faculty of Medicine, Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil (9) Emory University and Children's Healthcare of Atlanta, Department of Pediatrics, Atlanta, Georgia, United States (10) Blizard Institute, Queen Mary University London, London, United Kingdom (11) Haematology Research Unit , St. Johns Research Institute & Department of Clinical Haematology, St. John's Medical College Hospital, Bengaluru, India (12) Children's Hospital Los Angeles, University of Southern California Keck School of Medicine, Los Angeles, California, United States (13) Sanquin Research and Landsteiner Laboratory, Department of Molecular Cellular Hemostasis, Amsterdam, Netherlands

Rationale

Previously Untreated Patients (PUPs) and Minimally Treated Patients (MTPs, i.e. <5 exposure days to Factor VIII (FVIII)) with severe haemophilia on emicizumab prophylaxis infrequently receive FVIII for bleeds or surgery. The impact of infrequent FVIII exposure on the risk of inhibitor development is unknown. Regular administration of FVIII with emicizumab is suggested to mitigate inhibitor development or achieve tolerance, though evidence is lacking. Hence, we performed a survey to obtain an overview of global practices and perspectives of haemophilia healthcare providers (HCPs) regarding regular administration of FVIII in PUPs/MTPs with severe haemophilia A (SHA) on emicizumab prophylaxis.

Method

In 2024, we performed a worldwide survey among HCPs from 1193 haemophilia treatment centres. Invitations were sent via the RedCAP database by email, followed by reminders after 3 and 6 days. Questions included the perceived risk of inhibitor development with early emicizumab use, need for additional regular FVIII infusions, and perceived parents' willingness to use FVIII with emicizumab.

Results

In total, 102 HCPs (i.e. 86% physicians and 13% nurses) from 38 countries participated. The risk of inhibitor development in PUPs/MTPs with SHA on emicizumab, compared to FVIII, was estimated to be higher by 13% of the HCPs (n=8/63), lower by 32% (n=20/63), and unknown by 14% (n=9/63). Among 57 HCPs with access to emicizumab for SHA, 53% (n=30) generally offered regular concomitant FVIII infusions for PUPs/MTPs on emicizumab prophylaxis. For HCPs who offer additional regular FVIII (n=22), about 46% of families refused this treatment option due to concerns about intravenous infusions or poor venous access.

Discussion

This survey revealed the heterogeneity in clinical perspectives and practices of haemophilia treatment worldwide regarding regular FVIII infusions besides emicizumab prophylaxis. This reflects the uncertainty on the best treatment for PUPs/MTPs with SHA.

AKS2025_054: Beyond the Heart: Exploring Fatigue in Children with Congenital Heart Disease

Stutvoet, M.D. (1), Vroegindeweij, A. (1), Nap-Van der Vlist, M.M. (1), Hoefnagels, J.W. (1), de Vos, D.R.H. (1), Weijer, L. (2), Takken, T. (3), Slieker, M.G. (2), Nijhof, S.L. (1)

(1) Department of Pediatrics, Wilhelmina Children's Hospital, University Medical Center Utrecht, Utrecht University, Utrecht, The Netherlands; (2) Department of Pediatric Cardiology, Wilhelmina Children's Hospital, University Medical Center Utrecht, Utrecht, The Netherlands; (3) Child Development & Exercise Center, Wilhelmina Children's Hospital, University Medical Center Utrecht, Utrecht, the Netherlands

Rationale

With improved survival rates in children with congenital heart disease (CHD), more children are living with chronic conditions, which leads to new challenges. Fatigue is a common and debilitating symptom in pediatric chronic disease, but remains understudied in children with CHD. This study aims to determine the prevalence of fatigue in children with CHD and identify contributing factors.

Methods

The study included 442 children of 2-18 years (median age 8.4 years, 56% male) with CHD from the PROactive cohort of the Wilhelmina Children's Hospital, Utrecht. Fatigue levels were measured using the PedsQL Multidimensional Fatigue Scale. Data on disease severity were obtained from electronic health records, while lifestyle, psychological, and social factors were assessed through Patient Reported Outcome Measurements. Missing data were handled using multiple imputations. Associations between fatigue and contributing factors were analyzed using linear regression, and a multivariable regression model was used to identify the strongest fatigue associated factors.

Results

Fatigue was prevalent in 32.8% of the participants, with 17.7% experiencing severe fatigue. Concerning disease-specific factors, lower exercise capacity and comorbidities were significantly linked to higher fatigue levels. Concerning lifestyle and psychological factors, poorer physical, social, and emotional functioning, lower self-rated health, poor sleep quality, more internalizing symptoms, and higher school absence were associated with increased fatigue. Disease-specific factors accounted for 13.2% of the variance in fatigue, while lifestyle and psychological factors explained 61.4%.

Discussion

Fatigue is a significant symptom in children with CHD, with lifestyle, psychological, and social factors having a stronger association with fatigue than disease severity. Early interventions targeting these transdiagnostic factors are essential to mitigate fatigue-related impairments.

AKS2025_055: Is a decision aid for parents of infants with symptoms of gastroesophageal reflux (disease) effective?

de Geus, A. (1), van Lennep, M. (1), van Dellen, Q.M. (2), Knottnerus, A. (3), Teklenburg-Roord, S.T.A. (4), M.A. Benninga (1), Tabbers, M.M. (1)

(1) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; (2) Department of Pediatrics, Onze Lieve Vrouw Gasthuis (OLVG), Amsterdam, The Netherlands; (3) Department of Pediatrics, Spaarne Gasthuis Hospital, Hoofddorp, The Netherlands; (4) Department of Pediatrics, Isala, Zwolle, The Netherlands

Rationale

Caregivers of infants with symptoms of gastroesophageal reflux (GER), such as excessive crying and regurgitation, often feel uncertain and seek treatment, even though treatment is usually not required. This study aimed to evaluate the effect of an online decision aid on caregivers' decision certainty and treatment preferences for infants <18 months with symptoms of gastroesophageal reflux (disease) (GERD).

Methods

Infants (<18 months) referred to pediatric outpatient clinics with GER symptoms were included from one academic and three general hospitals. The decision aid provided information on GER(D) and outlined three treatment options: lifestyle advice, thickened feeding, and acid-suppressive medications. Caregivers completed questionnaires assessing decision certainty and treatment preference before (T1a) and after (T1b) using the decision aid, and after the outpatient visit (T2). Decision certainty was assessed using the validated Decisional Conflict Scale (DCS). Results were significant at $p < 0.05$.

Results

110 participants were included (median age 4 months (IQR 2-6); 48% female; 78% general hospital). 71% (79/110) completed pre-visit questionnaires (T1a and T1b), and 48% (53/110) also completed the post-visit questionnaire (T2). Mean DCS score (scale 0-100) decreased significantly after using the decision aid, from 47.2 (SD 16.1) to 34.4 (SD 17.4) ($p < 0.001$), showing improved decision certainty. The score further decreased post-visit to 19.0 (SD 12.3) ($p < 0.001$). The proportion of caregivers preferring acid-suppressive medication decreased significantly after using the decision aid, from 46/79 (58%) to 34/79 (43%) ($p < 0.05$), and further decreased post-visit to 6/53 (11%) ($p < 0.001$).

Discussion

This study shows that a decision aid increases caregivers' decision certainty regarding treatment for their infants with GER(D) symptoms before the outpatient visit. Additionally, the decision aid reduced the number of caregivers who preferred acid-suppressive treatment.

AKS2025_056: Neonatal Kidney Stem/Progenitor cells (nKSPC) downregulate activation of human neutrophil in vitro

Chen, J. (1), Gouwy, M. (KU Leuven), Proost, P. (KU Leuven), Akalay, S. (KU Leuven), Lantermans, H.C. (1), Heuvel, L. (KU Leuven), Arcolino, F.O. (1) & Levtchenko, E. (1)

(1) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands

Rationale

Neonatal Kidney Stem/Progenitor Cells (nKSPC), a novel type of kidney progenitor cell, isolated from urine of preterm neonates, have demonstrated immunoregulatory capacity and can inhibit proliferation of T-lymphocytes in mixed lymphocyte reaction. Our group is testing nKSPC as a potential source of cell therapy in the context of kidney transplantation. Neutrophils play important roles in ischemia-reperfusion injury (IRI), a common occurrence in kidney transplantation. In this study, we examined the capacity of nKSPC to inhibit human neutrophils in vitro.

Methods

Freshly isolated neutrophils activated by TNF-α were co-cultured with nKSPC at varying ratios (10:1 to 500:1). CD16 and CD66b as markers related to neutrophil activation were measured by Fluorescence-Activated Cell Sorting (FACS). Apoptosis was analyzed by Annexin V assay in FACS. Assessing neutrophil-produced reactive oxygen species (ROS), we employed a Luminol assay under multiple stimuli (TNF- α, IL-1β, fMLF, PGN). Neutrophil chemotaxis was investigated by Boyden chamber assay.

Results

Neutrophils, stimulated by TNF-α, exhibit decreased CD16 and increased CD66b expression, indicating activation. TNF-α also induced apoptosis of neutrophils. Co-culturing with nKSPC significantly reduced TNF-α-induced neutrophil activation and apoptosis. TNF-α, IL-1β, fMLF, and PGN stimulation promoted ROS production in neutrophils, and a co-culture with nKSPC inhibited this induction. No inhibitory effect observed from nKSPC conditional medium or nKSPC-derived extracellular vesicles on TNF-α induced ROS production in neutrophils. Neutrophil chemotaxis induced by TNF-α was not inhibited by nKSPC.

Discussion

Our in vitro data show the immunomodulatory capacity of nKSPC on neutrophils with decreased activation, reduction of apoptosis and abolishing ROS production.

AKS2025_057: Emma Center for Personalized Medicine: Accelerating therapy development for rare inherited disorders

Sandra van 't Padje (1-4), Mieke van Haelst (2,3,4), Vivi Hein (8), Hilgo Bruining (4-7), Arthur Bergen (3,4), Riekelt Houtkooper (4,9), Clara van Karnebeek (1,2,4)

(1).Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands, (2). Department of Pediatrics, (3). Department of Human Genetics, (4). Emma Center for Personalized Medicine, 5. Child and Adolescent Psychiatry and Psychosocial Care, (6). N=You Neurodevelopmental Precision Center, (7). Levvel, Center for Child and Adolescent Psychiatry, (8). Department of Child Neurology 9. Laboratory Genetic Metabolic Diseases

Rationale

Individually, rare genetic diseases affect a small number of individuals. However, collectively they represent an important public health burden by impacting 8% of the EU population. Due to the small numbers, novel treatments often do not reach the patient and evidence based care is lacking. At the Emma Center for Personalized Medicine (Emma CPM), we create a central point within Amsterdam UMC for rapid (genetic) diagnosis, effective therapy and personalized care to provide optimal treatment for rare genetic disorders.

Methods

We translate innovative research results to the patient through a specialized and multidisciplinary approach according to the P4 medicine model (participation, prevention, prediction, personal). Our multidisciplinary team works from the conviction that each patient is unique and based on individual (epi)genetic symptoms and disease course, preferences, and needs. The patient and family play a key role and are partners in the process, strengthening the transdisciplinary team.

Results

In 2 years, we have gathered a transdisciplinary team including scientific and clinical expertise ranging from diagnostics, big data, artificial intelligence, model systems, therapy development and trials & evidence, care activities and education. Four (partly virtual) counters (diagnosis, therapy, care and education) are built to ensure optimal personalized treatment.

Discussion

The Emma CPM anchors the latest knowledge and technology in daily medical practice for the individual patient with a rare hereditary condition. We strive for efficient translation of research into personalized treatment and care. The Emma CPM is working on an excellent model for transdisciplinary cooperation in order to provide the right care in the right place.

AKS2025_058: Parental depressive and posttraumatic stress symptoms after preterm birth: the HIPPO 2 year follow-up study

Muller, K.S. (1), on behalf of the HIPPO 2 year follow-up study group and the HIPPO steering committee

(1) Amsterdam UMC location University of Amsterdam, Emma Children's Hospital, Child and Adolescent Psychiatry & Psychosocial Care, Amsterdam, The Netherlands.

Rationale

Preterm infants born before 32 weeks of gestation are generally admitted to a Neonatal Intensive Care Unit (NICU), where they are exposed to a tremendous amount of stress. Yet, NICU admission is not only stressful for the infant but also for their parents, affecting parental mental health. Parental mental health and child development after preterm birth are believed to influence one another over time (Muller et al., systematic review in progress).

Methods

The Happiness for the Improvement of Premature and Parental Outcome (HIPPO) study is a national multicenter prospective cohort study that examines the impact of neonatal and parental stress during NICU admission in preterm infants born before 29 weeks of gestation (N=446). In the 2 year follow-up study, we examine the long-term impact of stress on child development and parental mental health after preterm birth and how these two interact over time. At two years corrected age, children underwent standard developmental assessments, encompassing a growth and medical check-up, a neurological examination, and developmental tests on cognitive and motor development, behavior, and language development. Parents completed questionnaires on parental mental health, including the PROMIS CAT depression and PCL-5, a Parent Reported Outcome Measure for posttraumatic stress symptoms, using the KLIK PROM portal at six time points from NICU admission up until 2 years corrected age.

Results

First results of the HIPPO 2 year follow-up will be presented. Data on the PROMIS CAT depression and PCL-5 throughout time are currently being analyzed and will be presented.

Discussion

Initial results suggest elevated depression and stress levels following preterm birth and NICU admission. Future care should prioritize stress reduction in the NICU. Additionally, long-term parental outcomes should be systematically monitored. Adequate follow-up care for parents is indicated.

AKS2025_059: Neonatal kidney/stem progenitor cells isolated from the urine of donors of various gestational ages

Lantermans H.C. (1), Akalay S. (2), Kraan W. (1), Rayyan M. (2), Hermans I. (3), Nuytemans D.H.G.M. (4), Onland W. (5), van der Heuvel L. (6), Devos T. (7), Oliveira Arcolino F. (1), Levtchenko E. (1)

(1) Department of Pediatric Nephrology, Amsterdam UMC, location University of Amsterdam, Amsterdam, the Netherlands (2) Department of Development and Regeneration, KU Leuven, Leuven, Belgium (3) Neonatal Intensive Care Unit, University Hospitals Leuven, Leuven, Belgium (4) Department of Neonatology, Emma Children's Hospital, Amsterdam UMC, location University of Amsterdam, Amsterdam, The Netherlands. (5) Department of Neonatal Medicine, Amsterdam UMC, location University of Amsterdam, Amsterdam, The Netherlands (6) Department of Pediatric Nephrology, Radboud UMC, Nijmegen, the Netherlands (7) Department of Microbiology and Immunology, Laboratory of Molecular Immunology (Rega Institute), KU Leuven, Leuven, Belgium

Rationale

In the human kidney nephrogenesis halts after 36 weeks of gestational age (GA), with concurrent depletion of the SIX2+ nephron progenitor cell (NPC) pool. We have previously developed a method to isolate and expand urine derived neonatal kidney stem/progenitor cells (nKSPC) and have shown that SIX2+ nKSPCs have promising potential as cellular therapy by possibly inducing repair of damaged human kidneys. To develop nKSPCs as cellular therapy we have investigated the efficiency of nKSPC isolation and in depth characterized nKSPCs from donors of various GA.

Methods

From neonates of various GA we have determined the efficiency of nKSPC isolation, whether nKPSCs express SIX2 and if nKSPCs can differentiate towards various lineages. Single cell RNA sequencing (scRNAseq) was performed to further characterize the various nKSPCs.

Results

In total 37 urine samples were collected from donors with varying GA. Cell growth was observed in 28 samples and after subcloning this resulted in 147 cell lines of which 42 were SIX2+ (29%). Isolation of SIX2+ cells was independent of the GA and was even observed with samples from term neonates. ScRNAseq showed that SIX2+ cell clusters co-expressed podocyte markers alongside NPC markers whereas this was not observed in SIX2- clusters. SIX2+ podocyte clusters from term neonates expressed more mature podocyte markers compared to SIX2+ clusters from preterm neonates. In SIX2 negative clusters we identified lineage markers of various segments of the developing nephron.

Discussion

Our data suggests that nKPSCs originate from relatively uncommitted, nephron cell types which dedifferentiate in vitro. This results in expression of NPC markers and allows differentiation of nKSPCs towards various lineages. We are expanding these findings by analyzing more samples with scRNAseq. Lastly, we are investigating whether nKSPCs can form or enhance kidney organoids/tubuloids and whether this relates to the expression of various cell lineage markers.

AKS2025_060: Intelligence outcome in children with sickle cell disease: a systematic meta-analyses and meta-regression

Ijdo, N.K. (1,2), Rook, C.H.A. (1), Königs, M. (2,3), Eckhardt, C.L. (4), Fijnvandraat, C.J. (1,5), Oosterlaan, J. (2,3,6)

(1) Amsterdam UMC location University of Amsterdam, Emma Children's Hospital, Department of Pediatric Hematology, Meibergdreef 9, Amsterdam, The Netherlands (2) Amsterdam Reproduction and Development research institute, Amsterdam, The Netherlands (3) Amsterdam UMC location University of Amsterdam, Emma Children's Hospital, Department of Pediatrics, Follow-Me program & Emma Neuroscience Group, Meibergdreef 9, Amsterdam, The Netherlands (4) Center for Benign Hematology, Thrombosis and Hemostasis-Van Creveldkliniek, Wilhelmina Children's Hospital, University Medical Center Utrecht, Utrecht, the Netherlands (5) Sanquin Research and Landsteiner Laboratory, Department of Molecular Cellular Hemostasis, Amsterdam, Netherlands (6) Vrije Universiteit, Clinical Neuropsychology section, Amsterdam, The Netherlands

Rationale

Sickle cell disease (SCD) is the most common hereditary hemoglobinopathy affecting hemoglobin synthesis, leading to severe lifelong complications, including cerebral infarcts. SCD has shown to have detrimental effects on neurocognitive functioning. This meta-analysis and meta-regression aims to aggregate the available evidence on intelligence outcome in children with SCD and to determine risk and protective factors.

Methods

MEDLINE, Embase, and PsycINFO were searched for relevant studies until 31-01-2024.

Research articles with original data were included if they reported on children diagnosed with SCD aged ≤18 years and full-scale IQ scores obtained with any standardized measure of IQ. Effect sizes were calculated comparing SCD samples to a control group (if available) or the normative distribution (100±15).

Results

A total of 92 articles were included, published between 1963 and 2023 encompassing data on 5719 children with SCD and 914 matched controls. The results revealed a large effect size for FSIQ (d=-0.81, p<0.001), indicating that children with SCD have lower intelligence (-12 points). This finding was replicated using only studies including demographically comparable control groups (d =-0.7, p<0.001). Effect sizes for VIQ and PIQ showed similar results (d =-0.89, p <0.001; d =-0.85, p<0.001). Meta-regression analyses showed that higher fetal Hb (%) levels were associated with higher FSIQ scores (B=0.06, p<0.05). Chronic transfusion treatment (B=-0.008, p<0.005) and stroke diagnosis (B=-0.009, p=<0.01) were related to poorer FSIQ outcome. No other significant relationships were observed.

Discussion

These results indicate a large diffuse impact of SCD on intelligence outcome in children, likely impacting developmental areas tied to cognitive functioning. Future research should aim to identify protective and risk factors for intelligence outcome using a multivariate approach to identify potential targets for intervention and thereby improve outcome.

AKS2025_061: Exploring the Impact of LxA4, RvD1, and RvE3 on Intestinal Inflammatory Response: Insights from a Human Intestinal Organoid Model

Chen, J. (1,2,3) Muncan, V. (1) van den Akker, C.H.P. (2,3,4)

(1) Tytgat Institute for Liver and Intestine Research and Department of Pediatrics, Amsterdam UMC, Emma Children's Hospital, Amsterdam, the Netherlands. (2) Amsterdam Gastroenterology Endocrinology and Metabolism (AGEM) Research Institute, Amsterdam, The Netherlands. (3) Amsterdam Reproduction & Development (AR&D) Research Institute, Amsterdam, The Netherlands. (4) Department of Pediatrics and Neonatology, Amsterdam UMC, Emma Children's Hospital, University of Amsterdam, Amsterdam, The Netherlands.

Rationale

Damage to the intestinal epithelial barrier is a hallmark of inflammatory diseases such as necrotizing enterocolitis (NEC). Specialized pro-resolving mediators (SPMs), such as Lipoxin A4 (LxA4), Resolvin D1 (RvD1), and Resolvin E3 (RvE3), have been shown to resolve inflammation and promote mucosal healing. This study aimed to explore the effects of SPMs on intestinal inflammatory response in a human organoid model.

Methods

Gut organoids were established from fetal and pediatric intestines as both 3D and 2D culture. The effect of SPM cocktail was assessed on gut epithelial maturation in fetal 3D organoids and on inflammatory tone after stimulation with lipopolysaccharide (LPS) and flagellin. 2D organoid fetal and pediatric cultures were used to study the effect of SMP cocktail on epithelial barrier after a challenge with inflammatory cytokines: tumor necrosis factor alpha (TNFα) and interferon gamma (IFNγ). Additionally, a repetitive wounding and recovery assay was performed on 2D cultures to examine the protective effects of SPMs on mucosal mechanical injury. Trans epithelial resistance (TEER) measurements were used as a readout of barrier integrity.

Results

In 3D organoid cultures, SPMs had no effects on epithelial maturation, and did not modulate the inflammatory response measured by IL-8 secretion or attenuation of the expression of pro-inflammatory markers induced by LPS and/or flagellin stimulation. In 2D monolayers the effect of SPMs in restoring TEER after TNFα and IFNγ cytokine challenge was donor dependent. However, during the repetitive wounding assay, SPM pre-treatment accelerated TEER recovery and maintained barrier integrity for 10-24 hours after repeated injuries.

Discussion

Our findings suggest that SPMs have protective benefits for epithelial barrier recovery in mechanically wounded monolayers, however their ability to reverse cytokine-induced damage is limited. These results provide valuable insights into the therapeutic potential of SPMs in neonatal intestinal inflammation.

AKS2025_062: Meningitis sequelae in Adulthood: Towards an Understanding of Residual Effects after childhood bacterial infection (MATURE)

Koch, D.W. (1,2,3), van der Kuip, M. (1,2), Königs, M. (3,4), Oosterlaan, J. (3,4,5), Tutu van Furth, A.M. (1,2)

(1). Amsterdam UMC location Vrije Universiteit Amsterdam, Emma Children's Hospital, Department of Pediatric Infectious Diseases and Immunology, Boelelaan 1117, Amsterdam, The Netherlands. (2). Amsterdam institute for Immunology and Infectious diseases, Amsterdam, The Netherlands (3) Amsterdam Reproduction and Development research institute, Amsterdam, The Netherlands (4). Amsterdam UMC location University of Amsterdam, Emma Children's Hospital, Department of Pediatrics, Follow-Me program & Emma Neuroscience Group, Meibergdreef 9, Amsterdam, The Netherlands (5). Vrije Universiteit, Clinical Neuropsychology section, Amsterdam, The Netherlands

Rationale

Childhood bacterial meningitis (BM) causes a wide range of sequelae that persist throughout childhood including impaired cognition, social functioning and general health. A substantial proportion of survivors still reports impaired functional outcome in very young adulthood. However, long-term effects on daily life functioning as a full-grown adult remain unknown. The current study aims to quantify very long-term sequelae after childhood BM within a wide range of functional outcome domains, while additionally investigating the neural mechanisms underlying functional outcome, and developing innovative prognostic prediction models for very long-term sequelae using data collected during hospitalization.

Methods

This is a prospective longitudinal observational follow-up study of an existing cohort (n=1042) of childhood BM survivors, now aged 24-38 years old. Demographically matched healthy peers are recruited as controls (age, sex, parental education level). Domains of interest include (1) neurocognitive functioning (computerized neurocognitive paradigms, Wechsler Adult Intelligence Scale IV), (2) brain imaging (MRI: brain structure and connectivity, micro-structure of white matter pathways, resting-state functional activity, venography, spectroscopy), (3) behavioural and emotional functioning, (4) participation in society, (5) health related quality of life, and (6) hearing (3-6: questionnaires).

Expected Results & Discussion

Results will provide insight into the long-term burden of childhood BM, subsequently elucidating the issues to be addressed in order to improve daily life functioning of affected individuals. Simultaneously, results may underline the need for preventative measures such as vaccination. The advancement in prediction of sequelae can additionally aid in providing parents of affected children a more refined prognosis, improving parents' expectations and estimations of required external support.

AKS2025_063: Reducing time to treatment for patients with treatable errors of metabolic disease: a pilot study.

van Walree, E.S. (1,2), den Hollander, B. (2,3), Waisfisz, Q. (1), Alders, M. (1,2), van Haelst, M.M (1,2), van Karnebeek, C.D.M. (2,3)

(1) Department of Human Genetics, Amsterdam UMC, Amsterdam, the Netherlands (2) Emma Center for Personalized Medicine, Amsterdam UMC, Amsterdam, the Netherlands (3) Emma Children's Hospital, Department of Pediatrics, Amsterdam UMC, Amsterdam, the Netherlands

Rationale

An increasing number of targeted therapies are available for patients with inborn errors of metabolism (IEMs). Rapid diagnosis and treatment can alleviate, remedy and even prevent symptoms experienced by patients with IEMs. However, significant hurdles in rapid referral or treatment of patients with IEMs may exist. Recently, the publicly available IEMbase tool, which contains clinical, biochemic and genetic information on alle currently known 1.903 IEMs, was updated with therapeutic options for 287 (15.1%) of those IEMs. Our goal is to reduce the time to treatment and/or referral for patients with IEMs. We aim to meet this goal by including a statement about potential therapy in DNA test reports, when the IEMbase provides a treatment option.

Methods

Firstly, this pilot study aims to demonstrate the current follow-up of patients diagnosed with IEMs (confirmed) by a DNA test. We will study the number of treatable IEM diagnoses made in the Amsterdam UMC genome laboratory from 2019 to 2024. We will inventorize whether a patient was referred to a metabolic disease specialist from the electronic patient file, and if and when treatment was started. Secondly, after treatment options have been added to a DNA test report, we will assess the experience of physicians who requested the DNA test by sending out questionnaires. These questions include whether the patient has been seen by a metabolic disease specialist, whether the new reports have helped the physician to provide personalized care for their patients and, if so, if the reports reduced the time to treatment.

Results

Preliminary results will be available soon.

Discussion

Physicians can easily feel lost in the ever expanding field of genetic diseases. For some of those diseases, targeted treatment is now available. IEMs are at the forefront of this field. This study aims to reduce the time to treatment, which is critical to prevent irreversible damage. If this pilot study is successful, a similar approach can be implemented for other genetic diseases with therapeutic options (such as genetic eye, kidney or neuromuscular diseases).

AKS2025_064: Hydrocortisone replacement therapy strategies across infancy in the Netherlands: a call for evidence-based guidelines

Baas E.M. (1), C.S.Garita (1), J. Renes (2), A. Reedijk (2), M.J.J. Finken (1)

(1) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; (2) Dutch Growth Research Foundation, Rotterdam, The Netherlands

Rationale

Hydrocortisone replacement therapy aims to replicate physiological cortisol secretion. In adults and older children with adrenal insufficiency, hydrocortisone replacement therapy is titrated based on the assumption that the secretion of cortisol follows a diurnal pattern, with a peak in the early morning. However, until recently it was unknown at what age this early-morning peak in cortisol emerges in infants, resulting in a variety of treatment strategies. The objective of this study was to describe current practice of hydrocortisone replacement therapy strategies in infants with congenital hypopituitarism in the Netherlands.

Methods

Data in this study was derived from the National Registry of Growth Hormone Treatment in Children (LRG), containing the data of all growth hormone-treated children in the Netherlands since 1998. For this study, we selected only the data of children with a diagnosis of congenital hypopituitarism.

Results

We included 101 children with congenital hypopituitarism who were treated with hydrocortisone. 63 of them received an adult-type dosing scheme (i.e. with a higher morning dose) from the start of therapy (n=29) or following a fixed-dose scheme (n=34). An adult-type dosing scheme was introduced at a mean age of 7.1 months (IQR 0.5-9.0). In 35 children, other dosing schemes were applied.

Discussion

The paucity of data on the development of cortisol diurnal rhythmicity has left hydrocortisone replacement therapy in infants to the discretion of the treating clinician. The long-term impact of misaligned hydrocortisone replacement therapy on later metabolism remains to be explored.

AKS2025_065: Developing a Novel Trigger Modality for Noninvasive Ventilation in Preterm Infants Based on Transcutaneous Diaphragmatic Electromyography

Blom, F.A. (1), Girimonte, I. (2), Poletto, S. (3), Dellacà, R.L. (4), De Jongh, F.H.C (5), Van Kaam MD, A.H. (6), Hutten MD, G.J. (7), Van Leuteren, R.W. (8)

(1) Department of Neonatology, Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, Netherlands; (2) Amsterdam Reproduction and Development research institute, Amsterdam, the Netherlands; (3) Technologies for Respiration Laboratory, Electronics, Information and Bioengineering Department (DEIB), Politecnico di Milano, Milan, Italy (4) Faculty of Science and Technology, University of Twente, Enschede, The Netherlands

Rationale

Nasal intermittent positive pressure ventilation (nIPPV) is the most advanced non-invasive respiratory support modality for preterm infants. However, nIPPV still lacks synchronization with the patient's spontaneous breathing due to challenges in detecting inspiratory effort. Transcutaneous electromyography of the diaphragm (dEMG) is a promising technique for detecting inspiratory efforts and may provide a novel method for real-time synchronization of nIPPV. This study aimed to develop an algorithm capable of detecting inspiratory effort from real-time dEMG signals and evaluating its performance.

Methods

The algorithm for real-time detection of inspiratory triggers from dEMG data was developed and implemented on a microcontroller. To evaluate its performance, prerecorded dEMG and airway pressure data from intubated preterm infants were used. The microcontroller processed dEMG data in real-time, generating trigger timestamps that were compared to inspiration onsets from airway pressure measurements. True positives, false positives, and false negatives were identified, allowing the calculation of sensitivity, positive predictive value, and time delay.

Results

This ongoing study used prerecorded dEMG measurements of 10 patients. The median gestational age was 37.3 (IQR 33.3 to 38.4) weeks. We analyzed 168 minutes of data, including approximately 10080 breaths. The median sensitivity of the trigger algorithm was 0.71 (IQR 0.54 to 0.81), and the median positive predictive value was 0.69 (IQR 0.56 to 0.89). The time delay ranged between -220 and 150 ms.

Discussion

These interim results show that the developed algorithm can accurately detect real-time inspiratory efforts in preterm infants from transcutaneous dEMG measurements. Future steps will focus on optimizing the algorithm performance and testing it in a clinical study.

AKS2025_066: Shared decision making in pediatric physiotherapy: a qualitative study among adolescents, parents and pediatric physical therapists

Limmen, S. (1), Korteling, D.L. (1), Bloemen, M.A.T. (2), Luijten, M.A.J. (1), Ketelaar, M. (3,4), Ubbink, D.T. (5), Hillen, M.A. (6), Rameckers, E. (7), van Oers, H.A. (1), Haverman, L. (1)

(1) Amsterdam UMC location University of Amsterdam, Emma Children's Hospital, Child and Adolescent Psychiatry & Psychosocial Care, Amsterdam, The Netherlands; (2) Research group Moving, Growing and Thriving together, HU University of Applied Sciences Utrecht, the Netherlands;(3) UMC Utrecht Brain Center, University Medical Center Utrecht, the Netherlands; (4) De Hoogstraat Rehabilitation, Utrecht, Center of Excellence for Rehabilitation Medicine Utrecht, the Netherlands; (5) Amsterdam UMC, location University of Amsterdam, department of Surgery, Amsterdam, The Netherlands; (6) Amsterdam UMC, location University of Amsterdam, department of Medical Psychology, Amsterdam, The Netherlands; (7) Research School CAPHRI, department of Rehabilitation Medicine, Maastricht University, Maastricht, The Netherlands;

Rationale

Shared Decision Making (SDM) is a collaborative process between patients and clinicians in health decisions. While SDM is gaining support in pediatric care, a structured approach for its use in pediatric physiotherapy (PPT) has not been explored. This study aims to identify key considerations for applying SDM in primary PPT for children aged 4 to 18 and to identify barriers and facilitators for its implementation.

Methods

Six focus groups were conducted between June 2023 and March 2024, involving adolescents (12-18y, n=11), parents of children (4-18y, n=9) receiving PPT, and pediatric physiotherapists (n=6). To stimulate in-depth conversations, participants completed a sensitizing assignment at home prior to the focus group, encouraging reflection on decision-making during PPT. Subsequently, a qualitative survey among 46 primary pediatric physiotherapists was conducted to validate the focus group results. Inductive thematic content analysis was performed by two researchers using MaxQDA.

Preliminary results

SDM in PPT varies based on the complexity of each case: it is more comprehensive for children with complex conditions than for those with single conditions. It generally occurs in: 1) intake and goal setting; 2) tailoring the intervention plan (by discussing pros and cons for each option, the family's preferences and home possibilities); and 3) evaluation and intervention conclusion. SDM also happens in each session through informal evaluations and in customizing exercises. As children grow older/ more capable, they should have more involvement in SDM. Barriers to implementation include intervention complexity, time, financial constraints, and the capability and motivation of both patients and PPTs.

Discussion

This study offers insight into integrating SDM in PPT with the goal to enhance care by aligning the intervention with the child/caregivers' preferences and possibilities within the family context. SDM should occur throughout the entire intervention.

AKS2025_067: Derivation of a clinical prediction model for surfactant treatment in preterm infants with respiratory distress syndrome: a retrospective cohort study

Verhees, N (1), Onland, W (1), van Kaam, AHLC (1)

(1) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands

Rationale

Up to this point, it appears challenging to accurately and timely identify which preterm infants require surfactant treatment. We developed and internally validated a predictive model to identify surfactant need and support surfactant administration within 2 hours after birth in preterm infants.

Methods

Infants born before a gestational age of 30 weeks between 1 January 2016 and 31 December 2022 were included. Data on maternal and neonatal candidate predictors were collected retrospectively and complete case analysis was conducted to develop a predictive model. Multivariate logistic regression analysis was executed, including all candidate predictors, followed by backward selection based on the AIC-stopping rule. Performance was assessed with C-statistics and a calibration curve, and bootstrapping was used for internal validation and optimism correction.

Results

Data were collected for 601 infants, with 463 infants (77%) included in the model. After internal validation, the model showed satisfactory results on both discrimination and calibration accuracy, with a C-statistic of 0.80 (95% CI 0.77, 0.85). Using a threshold of 0.5, the model also showed strong performance on other evaluation metrics with a recall of 0.73 (95% CI 0.68, 0.79) and a specificity of 0.71 (95% CI 0.65, 0.77). The included predictors in the model were singleton pregnancy, caesarean delivery, completed antenatal corticosteroids, maternal pre-eclampsia, gestational age, nasal continuous distending pressiure, FiO2 during transport to the NICU, and intubation within one hour post-birth.

Discussion

A binary clinical predictive model was developed to determine surfactant need in infants born before 30 weeks of gestation, showing adequate discriminative power and calibration. This model could potentially optimize surfactant timing and lead to a substantial reduction of neonatal morbidity and mortality. However, external validation in a large multicenter cohort is needed to assess the impact of implementation in clinical practice.

AKS2025_068: Diagnostic Accuracy of Intestinal Ultrasound for Detecting Small Bowel Disease Activity in Paediatric Crohn's Disease: Preliminary Results of a Prospective Study

Konert, A.J.*, Vos, J.M.B.W.*, van Wassenaer E.A., van Schuppen J., Benninga M.A., Koot, B.G.P., on behalf of the RAINBOW group * Shared first author

Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands

Rationale

Crohn's disease (CD) is a relapsing-remitting chronic condition characterised by inflammation of the gastrointestinal tract. Diagnosis and follow-up often require invasive diagnostic procedures. Magnetic Resonance Enterography (MRE) is used for small bowel assessment, however limited availability, high cost and invasiveness remain obstacles to frequent use. Intestinal ultrasound (IUS) is a promising alternative imaging technique: it is fast, inexpensive and has a high patient tolerability. However, its accuracy for detecting proximal small bowel disease in children is unknown. This study aims to determine the diagnostic accuracy of IUS and individual IUS parameters for detecting (proximal) small bowel disease activity in paediatric CD, compared to MRE.

Methods

This is a single-centre cross-sectional study. Paediatric patients with diagnosed or suspected CD were prospectively enrolled and underwent IUS and MRE within one week. The ultrasonographers and radiologist were blinded to all clinical details and to each other's results. MRE served as reference standard. Regression analyses will be performed to assess predictors of disease activity in different small bowel segments.

Results

Forty-two patients underwent IUS and MRE. In total, 84 bowel segments were analysed, of which 24 segments had mild (n=12) to moderate-severe (n=12) disease activity on MRE. The AUROC of bowel wall thickness (BWT) for detecting moderate-severe disease was 0.78 (95% CI 0.73-0.83). A BWT >2.5 mm had a specificity of 90% and a BWT <1.7 mm had a sensitivity of 91%. Whether other IUS parameters are also predictive is currently being investigated.

Discussion

IUS is a promising non-invasive diagnostic tool for detecting (proximal) small bowel disease activity in paediatric CD. Our preliminary results suggest that a BWT >2.5 mm can be used to detect disease activity. Currently, a larger sample size is being collected to perform regression analyses and evaluate other IUS parameters.

AKS2025_068 Table 1

Table 1. Pooled data analysis of CD patients treated with anti-TNF

Outcome	Baseline BWT in mm[12]			Week 12-16 BWT in mm[1]			BWT Difference in mm[1]			BWT difference from baseline in %[1]		
All	R (n=135)	NR (n=52)		R (n=122)	NR (n=42)		R (n=122)	NR (n=42)		R (n=122)	NR (n=42)	
	6.0±1.3	6.5±1.6	p=0.030*	4.4±1.6	6.3±1.5	p<0.001*	-1.6±1.2	-0.24±1.3	p<0.001*	-26%±0.2	-2%±1.8	p<0.001*
Clinical	R (n=37)	NR (N=14)		R (n=37)	NR (N=14)		R (n=37)	NR (N=14)		R (n=37)	NR (N=14)	
	6.0±1.4	6.6±1.8	p=0.19	4.8±1.	5.8±1.9	p=0.082	-1.2±1.4	-0.9±1.7	p=0.461	-19%±25	-10%±23	p=0.263
Therapeutic[2]	R (n=29)	NR (N=9)		R (n=28)	NR (n=8)		R (n=28)	NR (n=8)		R (n=28)	NR (n=8)	
	5.8±1.5	7.1±2.4	p=0.45	4.6±1.3	6.5±1.6	p=0.001*	-1.0±1.1	-0.1±1.4	p=0.020*	-18%±19	+2%±19	p=0.011*
Endoscopic	R (n=69)	NR (N=29)		R (n=57)	NR (n=20)		R (n=57)	NR (n=20)		R (n=57)	NR (n=20)	
	6.0±1.3	6.3±1.0	p=0.39	4.1±1.6	6.6±1.1	p<0.001*	-2.1±0.9	+0.06±06	p<0.001*	-35%±18	+1%±10	p<0.001*

R=responder, NR=non-responder
[1]Presented as in mean ±SD
[2]CD related surgeries, hospitalization and/or treatment escalation

AKS2025_069: Do multidisciplinary team meetings in the Jeroen Pithuis correlate with its own Transitional Care Core-Outcome Set as modelled by a new integrated model of health outcomes?

Roest, C.J.F. (1), Geukers, V.G. (1), Haverman, L. (1), Huisman, S.A. (1) & Van Karnebeek, C.D. (1)

(1) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands

Rationale

The Jeroen Pithuis (JPH) is a transitional care unit (TCU) and part of the Amsterdam UMC. It provides interprofessional care for children with medical complexity (CMC) since 2 years. This care supports parents in their changing role from care recipient to care giver.

The JPH has developed a core-outcome set (COS) that they aim to meet. The COS can be achieved by various forms of multidisciplinary team meetings (MDTMs), such as transition-, interprofessional-, and handover meetings.

The aim of this research is to correlate the domains of the COS to those addressed during the MDTMs, using a new integrated model of health outcomes.

Methods

This will be a mixed methods study. In the first qualitative part we will record and thematically analyze both the COS and the MDTMs. The used themes are based on the integrated model of health outcomes (see Figure 1), that was born from the traditional ICF model of the WHO and the model of Wilson and Cleary. It enables a focus on both body functions and PROs by adding new domains such as health related quality of life and subcategories as mental functioning.

In the consecutive quantitative part we will identify correlations between MDTM and COS characteristics to these PRO domains.

Results

The results will gain insight in how MDTMs in a transitional care setting prepare for the COS goals. Also, misalignments with these goals will help us develop targeted trainings programs for the diverse group of caregivers of the JPH. We plan to gather data in March and April 2025.

Discussion

The results of this study are an important tool for further improvement of sustainable transitional care at the JPH (feedback loop). Also, the study will serve as a source of information for a following study on developing a faculty development program for the JPH.

AKS2025_069 Figure 1
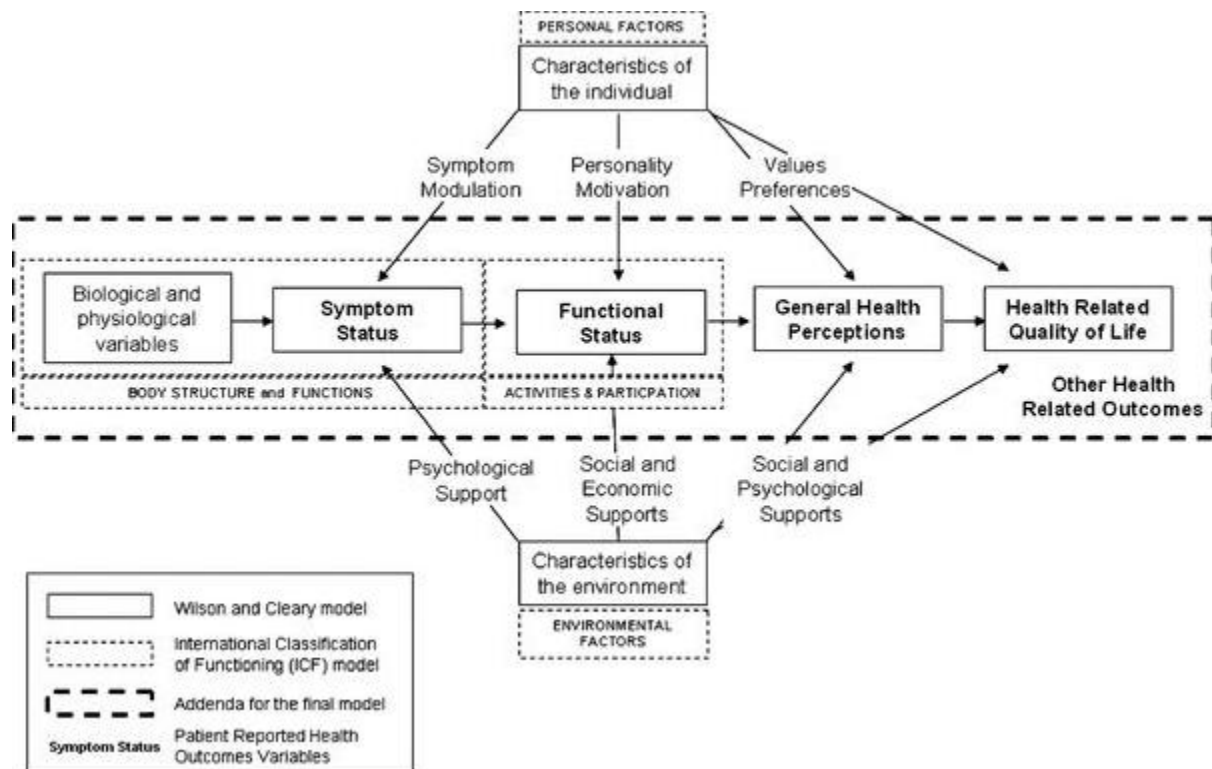
AKS2025_070: Lifelong Care for Individuals with DSD: A Learning Healthcare Approach.

Willemsen, L.A.(1,2); Hannema S.E.(1); Oosterlaan J.(1) & Den Heijer, M.(2)

(1) Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; (2) Department of Endocrinology, Amsterdam UMC, Location Vrije Universiteit Amsterdam, Amsterdam, the Netherlands.

Rationale

AmsterdamUMC is a nationally and internationally recognised center of expertise in atypical sex and gender development and delivers care to patients with differences of sex development (DSD). DSD includes a variety of medical conditions in which the development of chromosomal, gonadal or anatomical sex is atypical. Past decade knowledge on DSD has greatly evolved, but data on long-term outcomes of patients with DSD is still lacking. To fill this gap, we developed and implemented a structured, multidisciplinary outpatient programme for children and adolescents with DSD. This programme not only aims to enhance the standard of care, but also to facilitate care evaluation and scientific research to further improve patient care.

Methods

Within the programme, follow-up care is provided by a multidisciplinary team, including a (paediatric) endocrinologist, (paediatric) urologist, gynaecologist, clinical geneticist, psychologist and psychiatrist. Different care pathways were developed for four subgroups: general DSD, Turner syndrome, Klinefelter syndrome and congenital adrenal hyperplasia. Clinical data are systematically collected during the visits and made available for care evaluation and scientific research using an automated datainfrastructure.

Results

The collected data will be used to evaluate and enhance patient care using dashboards and yearly healthcare evaluations. Additionally, longitudinal data from this prospective observational cohort will enable studies on long-term outcomes of treatment approaches in patients with DSD.

Discussion

Care for patients with DSD has been a topic of debate and there is a significant need for long-term outcome data. The Follow Me programme offers structured, multidisciplinary care and data collection across the lifespan of patients with DSD. With this structured approach, we aim to enhance the standard of care and long-term outcomes for patients with DSD. Our programme provides a scalable model to enhance patient care and stimulate care innovation.

AKS2025_071: Microbially Conjugated Bile Acids as Potential Predictive Biomarkers for Dietary Therapy Outcomes in Paediatric Crohn's Disease

Van der Kruk, N. (1,2,3), de Haas, I.M. (4), Ghiboub, M. (1,2,5), de Waart, D.R. (2), Sigall Boneh, R. (2,6), de Meij, T.G.J. (1), Wine, E. (7), de Jonge, W.J. (2,8), D'Haens, G.R.A.M. (2,9), van de Graaf, S.F.J. (2), van Limbergen, J.E. (1,2)

(1) Department of Paediatric Gastroenterology and Nutrition, Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands (2) Tytgat Institute for Liver and Intestinal Research, Amsterdam Gastroenterology, Endocrinology Metabolism (AGEM), Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands (3) Amsterdam Reproduction and Development research institute, Amsterdam, The Netherlands (4) Biomedical Sciences, Faculty of Medicine, University of Amsterdam (UvA), Amsterdam, The Netherlands (5) Department of Paediatric Surgery, Emma Children's Hospital, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands. (6) Paediatric Gastroenterology and Nutrition Unit, The E. Wolfson Medical Center, Holon, Israel. (7) Department of Pediatrics, University of Alberta, Edmonton, Alberta, Canada. (8) Dept of Surgery, University clinic of Bonn, Germany (9) Department of Gastroenterology and Hepatology, Amsterdam UMC, University of Amsterdam, Amsterdam, the Netherlands.

Rationale

Crohn's disease (CD) exclusion diet with partial enteral nutrition (CDED+PEN) and exclusive enteral nutrition (EEN) effectively induce remission in mild-to-moderate paediatric CD. This has been associated with a shift in gut microbiome and metabolome. The specific mechanisms driving diet-induced remission remain unclear. Microbial biotransformation of bile acids (BAs) has gained increased attention, as three novel microbially-conjugated bile acids (MCBAs) have been found in significantly higher concentrations in CD patients. We aimed to investigate changes in these MCBAs, specifically Phenylalanocholic acid (Phe-CA), Tyrosocholic acid (Tyr-CA), and Leucocholic acid (Leu-CA), associated with dietary therapies in paediatric CD.

Methods

BAs and MCBAs concentrations at baseline (W0) and week 6 (W6) were quantified using high performance liquid chromatography in available faecal samples from 23 treatment-naive mild-to-moderate-paediatric CD patients receiving either CDED+PEN (n=12) or EEN (n=11) in a prior RCT. Clinical remission was defined as Pediatric Crohns Disease Activity Index (PDCAI) ≤10.

Results

At W6, 19/23 patients achieved remission (CDED+PEN 9/ 12, EEN 10/11). Phe-CA was detected in most samples (19/23 at W0, mean=1.609 micromolar; 12/17 at W6, mean=0.937 µM), with W6 levels showing no significant association with clinical outcomes. None of the samples contained detectable levels of Tyr-CA, while only one sample contained detectable Leu-CA. Among CDED+PEN patients, baseline Phe-CA was significantly higher in those who did not achieve remission vs. those who achieved remission at W6 ($p < 0.0001$).

Discussion

Baseline faecal Phe-CA concentration may serve as a predictive biomarker for CDED+PEN induced remission in paediatric CD. These findings underscore the potential significance of MCBAs in CD and

dietary therapies. However, validation in a larger, prospective study is necessary to elucidate the relationship among MCBAs, CD, the microbiome, and diet-induced remission.

AKS2025_072: Attitudes towards the use of complementary and alternative medicine in children with gastrointestinal symptoms, a multicenter survey study among parents and pediatricians - the ATCAM study

Bloem, M.N. (1), Baaleman, D.F. (1), Koppen, I.J.N. (1), de Lorijn, F. (1), Bijlsma, M.W. (2), Vlieger, A.M. (3), Goede J. (4), Plötz F.B. (5), Teklenburgroord S.T.A (6), Benninga, M.A. (1)

(1) Department of Pediatric Gastroenterology and Nutrition, Emma Children's Hospital/ Amsterdam University Medical Centre location AMC, Amsterdam, The Netherlands (2) Department of Pediatrics, Amsterdam University Medical Centre location AMC, Amsterdam, The Netherlands (3) Department of Pediatrics, St Antonius Hospital, Nieuwegein, the Netherlands (4) Department of Pediatrics, Spaarne Gasthuis, Haarlem/Hoofddorp, The Netherlands (5) Department of Pediatrics, Tergooi MC, Blaricum, The Netherlands (6) Department of Pediatrics, Isala Clinics, Zwolle, The Netherlands

Rationale

Disorders of gut brain interaction (DGBI) are common in children and often persist despite standard treatments. Earlier studies show that many pediatric patients and parents turn to complementary and alternative medicine (CAM), especially for chronic conditions with limited treatment options. However, research on CAM in pediatric DGBI patients is scarce. This study assessed parents' and pediatricians' experiences and attitudes toward CAM for children with gastrointestinal symptoms, factors predicting CAM use, and willingness to participate in future CAM studies on efficacy and safety.

Methods

Parents and pediatricians of children (0-18 years) with DGBI (infant colic, functional constipation, functional abdominal pain, and gastroesophageal reflux disease) from six Dutch hospitals were surveyed. DGBI diagnoses were based on Rome IV criteria. Parents reported on their child's health, medication, CAM use, reasons for CAM, and views on CAM research. Pediatricians shared their experiences and attitudes toward CAM for pediatric DGBI.

Results

A total of 623 parents (65.4%) and 73 pediatricians (76%) responded. Preliminary analysis showed that 45.4% of patients used CAM, mainly manual therapies (e.g., osteopathy; 26.6%), homeopathy (12%), and hypnotherapy (11.5%). Sixty-two percent indicated willingness in participating in future research with CAM for their symptoms, specifically acupuncture research. Among pediatricians, 96.1% had recommended CAM for DGBI, with hypnotherapy being the most common therapy for functional abdominal pain (96.0%). Excluding hypnotherapy for abdominal pain, 62.4% of pediatricians had recommended some form of CAM for any DGBI.

Conclusions

Over 45% of children with DGBI visiting pediatric clinics used CAM. Nearly two-thirds of parents indicated willingness to participate in CAM research for their child's symptoms. Given the high prevalence of CAM use and parental demand for information, pediatricians should be informed about CAM and discuss its use with families. Future research on CAM effectiveness and safety for pediatric DGBI is needed.