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Paediatrics and Child Health Technology Conference 2026

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ABSTRACT BOOKLET

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01 “Closing the Safety Communication Gap Between Clinical Care and Trial Site: Development of a Location-Aware Wearable for Paediatric Oncology Clinical Trials”

Dr Elizabeth Johnson

Montana State University, Bozeman, United States

Clinical Speciality: Cancer and Leukaemia

Innovation Category: Decentralised healthcare and self-management

BACKGROUND

Children in clinical trials may need care outside the research site. Current safety tools rely on alerts within connected electronic health records, wallet cards, provider letters, or family recall. These approaches may be outdated, overlooked, or unavailable across health systems, delaying access to trial-specific information needed for clinical decisions.

AIMS

To describe the development and testing of a location-aware wearable and integrated digital platform designed to improve safety communication outside the trial site.

METHODS

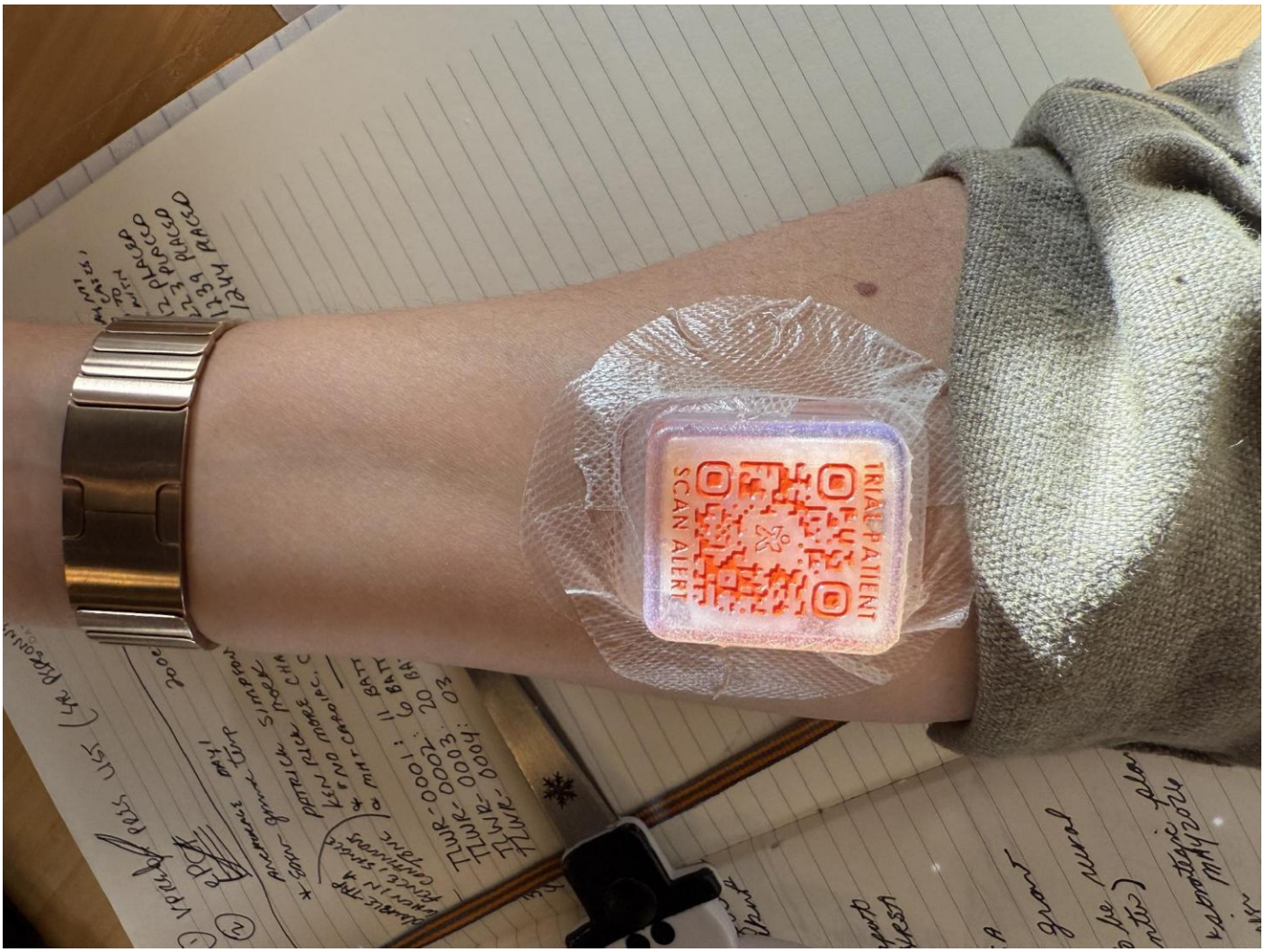
Since 2018, four prototypes have been co-designed and evaluated with patients, caregivers, and providers in simulated and live settings. Early studies examined device size, colour, labelling, and visibility. A third prototype added a QR code and sound and light alerts and was evaluated by 35 healthcare providers using eye-tracking glasses in a simulated clinical setting. The current prototype was evaluated with 46 young people with chronic conditions, caregivers, and providers. Further usability testing involved 47 older adults, and 20 geospatial field tests were completed across Alaska and Montana, United States.

RESULTS

Few providers noticed the third prototype which was wrist worn (3/35), demonstrating the need for training and integration into clinical workflows and improved body position. Children and young people supported reducing the device profile and reported high acceptance of its material, colour, and upper-chest placement. Caregivers and research teams preferred one integrated dashboard for accessing information. During field testing, the device notified a mock research investigator of a participant’s presence within a healthcare facility zone with 96% accuracy. This demonstrated its potential to prompt communication between research and clinical teams when coordination may support safe, continuous care.

DISCUSSION

Longitudinal testing has produced a working prototype ready for broader evaluation. The next step is to establish partnerships for prospective co-design and evaluation within paediatric trials, addressing comfort, assent, privacy, family communication, and alert burden.


TRIAL PATIENT
SCAN ALERT

02 “Does Forecasting Fit? Understanding the Distributed Work of Childhood Epilepsy Care and Opportunities for Technology”

Miss Jerusaa Vasikaran, Dr Lauren Thompson, Professor Kenton O'Hara, Dr Amberly Brigden

University of Bristol, Bristol, United Kingdom

Clinical Speciality: General Paediatrics

Innovation Category: Data, artificial intelligence and robotics

BACKGROUND

Epilepsy is a common neurological condition among children, with unpredictable seizures disrupting the daily lives of children and their caregivers. Seizure forecasting technology, using smartphones and wearables to collect data on seizure precipitants (triggers) and using machine learning to estimate future seizure risk, holds potential to support condition insight and management. Little is known about the potential role of seizure forecasting in paediatric care.

AIMS

This study aimed to understand how childhood epilepsy is managed across home, school, and clinical settings, the tools that support them, and opportunities and challenges for forecasting technology.

METHODS

Qualitative semi-structured interviews were conducted with children with epilepsy (aged 5-18), parents, school staff, and clinicians. Interviews explored current management practices and introduced the concept of seizure forecasting technology to understand stakeholder views. Data were analysed using reflexive thematic analysis.

RESULTS

A total of 35 participants took part: 12 children with epilepsy, 12 parents, 5 school staff, and 6 clinicians. The illness work of managing epilepsy differed across settings. Families used paper and digital tools to track and anticipate seizures, and described action taken to manage anticipated and actual seizures. Schools used documentation to guide seizure responses. Clinicians were responsible for overseeing treatment and medication changes. Families and schools envisaged forecasting fitting within their existing illness work, while clinicians saw the potential for the underlying data to support reviewing past seizures and longer-term risk trends. Key concerns included false alarms and forecast-related anxiety and some viewed understanding seizure triggers as more valuable than receiving seizure forecasts.

DISCUSSION

This is the first study to explore how seizure forecasting might fit within paediatric care networks. Trigger data and, with appropriate caveats, forecasts may support epilepsy management across stakeholders. Further work should co-design technology that meets diverse stakeholder needs, with attention to risks and unintended consequences.

03 “Is Virtual Care Safe for Children? Safety Outcomes from a Technology Enabled District General Hospital Paediatric Virtual Ward”

Dr Yanny Delgado, Dr Risa Birbal, Sister Avril Forster

Queen Elizabeth Hospital King's Lynn, Kings Lynn, United Kingdom

Clinical Speciality: General Paediatrics

Innovation Category: Other

BACKGROUND

Paediatric virtual wards (PVWs) enable selected children with acute illnesses to be managed at home through remote monitoring. While potentially reducing admissions and improving patient experience, evidence regarding their safety remains limited.

AIMS

To evaluate the safety outcomes of children managed through a district general hospital PVW and assess whether virtual care provides a safe alternative to inpatient admission.

METHODS

A retrospective service evaluation was conducted of all children admitted to the PVW between May 2024 and August 2026. Data collected included demographics, diagnosis, length of stay, escalation to hospital, emergency department (ED) attendance, readmission, adverse events, and parent feedback.

Our PVW is delivered by Advanced Clinical Practitioners with consultant supervision through digitally configured, condition-specific pathways. These incorporate bespoke symptom assessments; NPEWS aligned physiological monitoring parameters and automated escalation thresholds. Monitoring kits were tailored to clinical need replicating inpatient monitoring enhanced with digital stethoscopes, supported by a device-agnostic digital platform. Families received condition-specific traffic light safety-netting leaflets to support escalation. The service was developed in accordance with NHS Digital Clinical Risk Management Standards, supported by a signed-off Clinical Safety Case Report and ongoing technology-provider safety assurance reviews.

RESULTS

186 children were admitted to PVW, accounting for 348.5 virtual bed-days. Common conditions included bronchiolitis and asthma attacks. 51.9% were admission avoidance, while 41% were stepped down from inpatient care. The mean length of stay was 3.4 days. No unplanned ED attendances occurred. Nine children (4.8%) were readmitted. No serious adverse events, digital safety incidents, or deaths were recorded. Parent satisfaction was high, with 96% reporting they were very satisfied with their PVW admission.

DISCUSSION

PVW care provided a safe alternative to inpatient management for selected children. Low readmission rates, absence of serious adverse events, and robust digital clinical safety governance support the safe delivery of technology-enabled paediatric care at home

04 “Longitudinal co-design of a paediatric wearable medical device: involving children and families throughout product development”

Miss Jasmine Noor[1], Prof. Annegret Dahlmann-Noor[2]

[1]NIHR Moorfields BRC eye-YPAG, London, United Kingdom. [2]Myolight, London, United Kingdom

Clinical Speciality: General Paediatrics

Innovation Category: Inclusion and involvement of children, young people and families

BACKGROUND

Developing child-friendly health technologies requires more than technical innovation. Children and families should help shape products to ensure they are acceptable, usable and relevant to everyday life. We embedded patient and public involvement and engagement (PPIE) throughout the development of Myolight, an investigational wearable red-light device and companion app designed to evaluate whether repeated deep red-light exposure can slow childhood myopia progression.

AIMS

To involve children, young people (CYP) and parents as partners throughout the iterative co-design of the Myolight device, companion app, participant-facing materials and future clinical trial.

METHODS

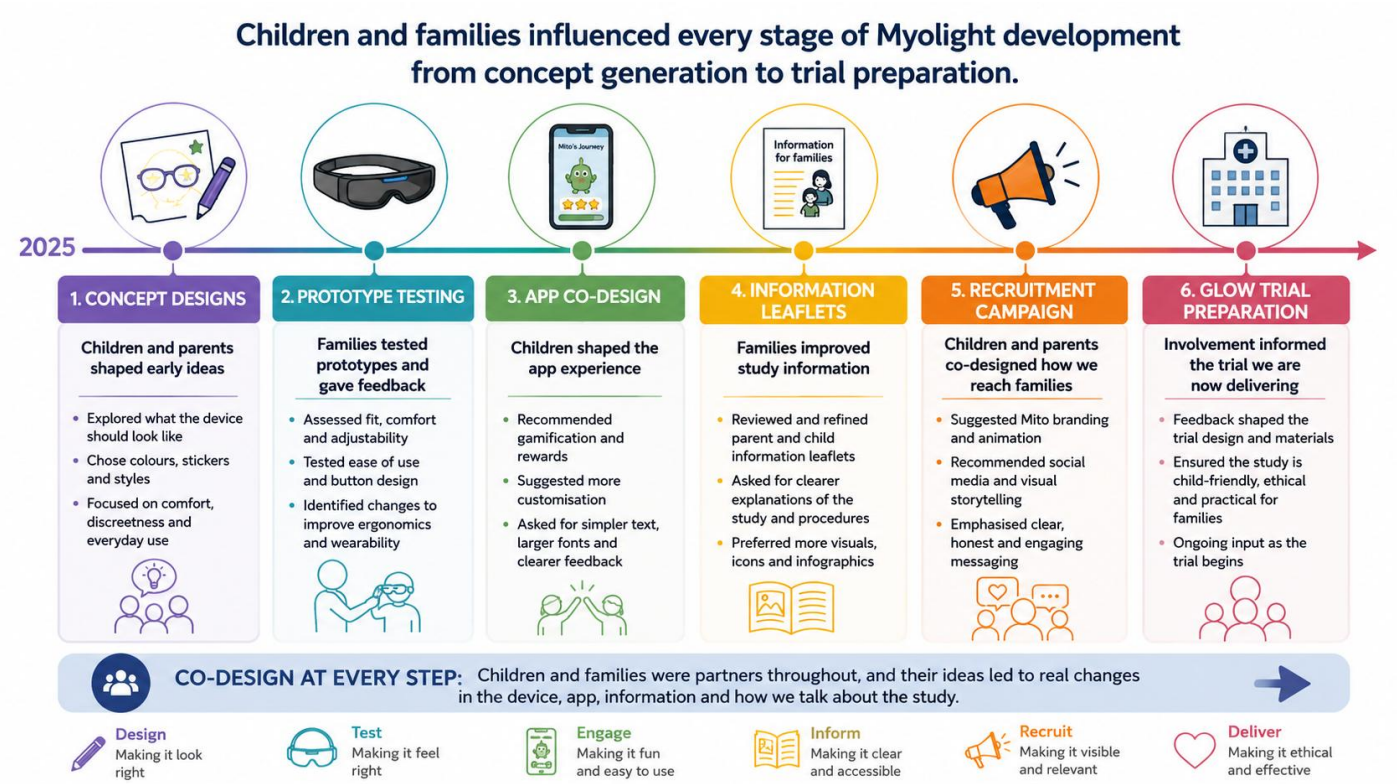
Between 2025 and 2026, CYP with myopia and their parents participated in a series of linked co-design activities through the NIHR Moorfields Biomedical Research Centre Young Persons' Advisory Group (eye-YPAG) and dedicated family workshops. Participants contributed at successive stages of product development, including concept generation, prototype evaluation, usability testing, app development, participant information materials and recruitment strategy. Feedback was captured using discussions, creative activities, questionnaires and structured impact recording using the Public Involvement Recording, Impact and Reflection Tool.

RESULTS

PPIE informed successive stages of development. Early workshops influenced industrial design, favouring comfortable, non-medical-looking devices. Prototype testing identified priorities for ergonomics and comfort. Children and parents co-designed app features, recommending greater personalisation, gamification and simplified communication to support adherence. Families also refined participant information materials and recruitment approaches, emphasising clear visual communication, consistent branding and ethically balanced messaging appropriate for a clinical trial.

DISCUSSION

Embedding CYP and families throughout successive stages of technology development enabled iterative refinement of hardware, software and trial materials before clinical evaluation. The process also highlighted practical lessons for future co-design, including the need for age-appropriate, interactive methods to sustain engagement of younger children. Longitudinal PPIE offers a practical model for developing child-centred health technologies that are acceptable to families while remaining compatible with regulatory requirements.



05 “Paediatric-Specific AI for Fracture Detection: From Common Wrist Fractures to Complex Monteggia Injuries”

Dr Miguel Garrett Fernandes, Mr Sam McKaylin, Mr Adrian Joseph OBE, Dr Kristofer Linton-Reid

Juvex.AI, London, United Kingdom

Clinical Speciality: General Paediatrics

Innovation Category: Data, artificial intelligence and robotics

BACKGROUND

Paediatric fractures are common, but interpretation of children’s X-rays is complicated by changing skeletal anatomy. Wrist fractures are among the most frequent childhood fractures, while Monteggia injuries are rarer, diagnostically difficult, and often missed. Artificial intelligence developed specifically using paediatric radiographs may therefore support both high-volume fracture detection and recognition of complex injury patterns.

AIMS

To evaluate two components of a developing paediatric fracture analysis platform: wrist fracture detection and localisation, and classification of elbow Monteggia injuries.

METHODS

We retrospectively evaluated convolutional neural networks using two paediatric datasets, GRAZPEDWRI-DX and MFXR, comprising 24,913 radiographs. A detection network (YOLO26m) was trained to identify and localise wrist fractures using patient-separated training and validation sets, including separate evaluation in children under 2 years. A classification network (ResNet) distinguished Monteggia injuries, defined as an ulna fracture with radial head dislocation, from controls including other elbow fractures. Predictions across views were combined at examination level.

RESULTS

Wrist fracture classification achieved an AUROC of 98.1±0.2%, sensitivity 93.2±0.2%, and specificity 95.4±1.2%. Localisation achieved 89.6±1.0% AP50, with similar performance across standard views. Performance was lower in children under 2 years (84.2±5.3%) than in older children (89.7±1.1%). Monteggia classification achieved an AUROC of 95.0±0.9%, compared with 90.8% reported for the strongest neural network in the original MFXR benchmark, with sensitivity 85.0±2.0% and specificity 91.2±2.2%.

DISCUSSION

Paediatric-specific neural networks performed strongly across two distinct clinical challenges, wrist fracture localisation and Monteggia injury classification, supporting the development of a broader paediatric fracture system rather than single-injury models. Lower performance in very young children highlights the need for age-specific data, while further clinical validation is now needed to establish generalisability and determine whether these models improve diagnostic performance in routine care.

06 “SipSmart: Digitising Trial of Fluids for Children in the Emergency Department”

Dr Kirsty Kilpatrick, Dr Ffion Byrne, Dr Teya Cardinal, Mr Conor Peacock

Alder Hey Children's Hospital, Liverpool, United Kingdom

Clinical Speciality: Emergency Medicine

Innovation Category: Data, artificial intelligence and robotics

BACKGROUND

Acute gastroenteritis is a leading cause of Paediatric Emergency Department presentations and hospital admissions in the UK. Children are often commenced on a paper-recorded “trial of fluids”. In a busy emergency department, this can make oral intake difficult to track consistently.

AIMS

The aim was to create a simple online platform enabling parents and carers to deliver and record a trial of fluids initiated by healthcare professionals in real time.

METHODS

A staff questionnaire explored current trial-of-fluids practice and gastroenteritis management. The Alder Hey Innovation Team developed a prototype based on the existing paper tracking system. Clinicians, nurses and parents reviewed the prototype for functionality and usability, and SipSmart was finalised following their feedback with technological support from Teknuovo. Staff set up SipSmart on the parent/carer’s device, entering the child’s weight, sip size and interval. Built-in timers and alarms prompt sips, while parents can record urine, vomit and stool output and access information on trials of fluids and gastroenteritis. A safety alert is triggered if no urine is recorded for eight hours. New Trust guidelines were developed alongside implementation.

RESULTS

SipSmart has replaced paper-based trial-of-fluids tracking in Alder Hey Paediatric Emergency Department, with positive feedback from staff and parents/carers. It has also been used in other paediatric urgent-care settings, with plans to extend its use to Hospital at Home. The platform currently receives around 20 users per day.

DISCUSSION

SipSmart provides parents and carers with a simple, real-time way to deliver and record their child’s trial of fluids. It supports engagement with their child’s care while digitising a common ED process to provide more consistent tracking and guidance.

07 “Sleep in Children with ADHD: Integrating Parent-Reported Sleep, Bedtime Behaviours and Actigraphy-Derived Sleep Outcomes”

Miss Surabhi Srivastava

University of Southampton, Southampton, United Kingdom

Clinical Speciality: ADHD and Neurodevelopmental Disorders

Innovation Category: Decentralised healthcare and self-management

BACKGROUND

Sleep difficulties are highly prevalent in children with attention-deficit/hyperactivity disorder (ADHD) and may adversely affect daytime functioning. Sleep is commonly assessed using parent/carer-reported questionnaires, which may not fully reflect objectively measured sleep. Potentially modifiable behaviours, including screen use or caffeine intake around bedtime, may also contribute to sleep difficulties. The relationship between subjective sleep difficulties, bedtime behaviours and objective sleep characteristics in children with ADHD remains incompletely understood.

AIMS

To characterise sleep difficulties in a UK sample of children with ADHD; investigate associations with modifiable sleep hygiene behaviours, including technology use; and examine concordance between parent/carer-reported and actigraphy-derived sleep duration.

METHODS

This cross-sectional observational study included parents/carers of 273 children aged 5–12 years with ADHD recruited through UK ADHD support groups. Sleep difficulties were assessed using the 26-item Omnibus Sleep Questionnaire, comprising six subscales: sleep routine, bedtime anxiety, morning tiredness, night arousal, sleep-disordered breathing and restless sleep. Selected components of the Children's Sleep Hygiene Scale assessed caffeine consumption, activities before and whilst settling to sleep and unhelpful thoughts at bedtime. Demographic characteristics were collected. Actigraphy provided objective measures including sleep onset, wake time, actual sleep time, sleep efficiency, sleep latency, sleep/wake bouts, fragmentation and activity.

RESULTS

Analyses included 273 children with ADHD. A majority demonstrated clinically elevated difficulties on the sleep routine subscale (T-score >70). Further analyses examine associations between bedtime behaviours, including screen and smartphone use, and specific sleep difficulties. Actigraphy-derived measures will characterise objective sleep patterns and enable comparison of actual sleep time with parent/carer-reported sleep duration.

DISCUSSION

Combining validated parent/carer-reported measures with detailed actigraphy may improve understanding of sleep difficulties in children with ADHD. Identifying relationships between subjective sleep, objective sleep characteristics and modifiable bedtime behaviours could support more individualised sleep assessment and interventions.

08 “The Development and roll out of a bespoke Psychometric Outcomes Platform within Paediatric Psychology”

Dr Steve Jones

Sheffield Children's Hospital, Sheffield, United Kingdom

Clinical Speciality: Mental Health

Innovation Category: Data, artificial intelligence and robotics

BACKGROUND

Paediatric Psychology services collect patient reported outcome measures (PROMS) to support clinical interventions as well as show effectiveness of the work on a service level. Traditionally, PROMS are collected via paper and take time within sessions to complete if they are even used. Current platforms on the market are expensive or embedded as part of a larger electronic patient record (EPR) system. These are therefore not appropriate for services that don’t have access to specific EPR, or for smaller services which may only have a lone clinician in a regional district hospital.

AIMS

We outlined the development of a bespoke digital platform which allows outcome measures to be delivered to patients via text message or email and returned to clinicians automatically. The platform was also designed to be scalable from a lone-clinician to a larger specialist department.

METHODS

Work has been undertaken with Aire Innovate, a Yorkshire-based software developer following a tender process. Funding has been obtained from within Paediatric Psychology as well as from NIHR HRC in Paediatrics. Over the past year the platform has been iteratively developed via close collaboration and bi-weekly meetings as elements of the platform came on-line via staging and production environments.

RESULTS

The platform went live across Paediatric Psychology in January 2026. Originally this contained the following PROMS: The Wheel (including visual rendered output), Distress Thermometer and Goal Attainment Scales. We have since added the Revised Children’s Anxiety and Depression Scale (RCADS) parent and child versions as well as a service feedback form. Since going live we have collected over 500 outcome measures.

DISCUSSION

This project demonstrated a collaboration between NHS and the Private Sector to develop a commercially viable and scalable solution to digitise and streamline the process of collecting PROMs within psychological services which is not beholden to a larger EPR.

09 "The power of standardisation – Adopting the Observations Medical Outcomes Partnership Common Data Model (OMOP CDM) to enable insights from cardiac benchmarking across multiple European paediatric centres"

Dr Lydia Briggs[1], Mr Prasiddha Khadka[1], Mr Daniel Key[1], Mr Brian van Winden[2], Mr Roger Domingo Espinos[3,4], Mr Nikolas Salonen[5], Dr Cho Ng[6], Mr Shiren Patel[1], Professor Andrew Taylor[7,8]

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Clinical Speciality: Cardiology

Innovation Category: Decentralised healthcare and self-management

BACKGROUND

Hospital electronic patient record (EPR) data is a rich source of information which has revolutionised patient care and the ability to conduct research employing reproducible analytics. However, hospitals may use different coding vocabularies to capture medical information which can make it difficult to conduct collaborative research. Through the standardisation of medical data by utilising the OMOP CDM and the use of a federated data network, it becomes possible for multiple sites to work together for the benefit of patient health.

AIMS

The Paediatric Hospitals as European drivers for multi-party computation and synthetic data generation capabilities across clinical specialities and data types (PHEMS) project involves four European paediatric hospitals with EPR data standardised to the OMOP CDM. The aim of the network is to leverage real-world data to enable cross-border collaborations. A use-case is presented to benchmark patient pathways across hospitals.

METHODS

Pertinent variables were highlighted and mapped to the OMOP CDM. Analytical code developed in R summarises and aggregates insights which can be directly compared across the partner sites. Owing to the use of federated analytics, a hospitals' raw data remains within their environment and only aggregated and minimum count suppressed results are returned and visualised in a R Shiny application.

RESULTS

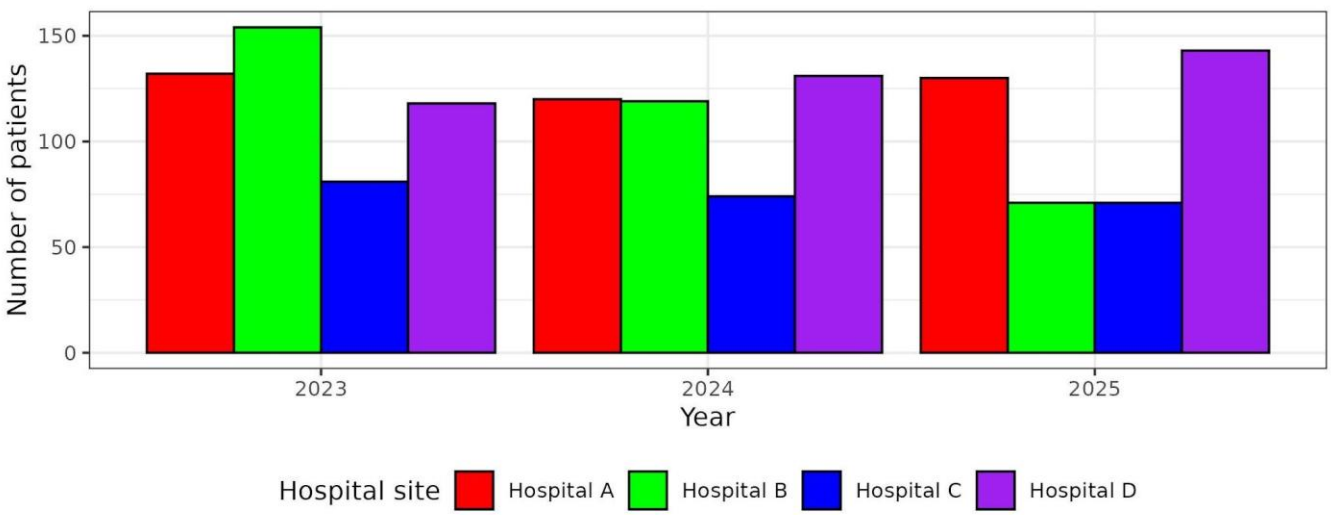
Cohorts of patients undergoing cardiac procedures were created and key patient health metrics (length of stay, post-surgical complication rate, 30-day mortality) were calculated. A sites' aggregated results are then sent to a workspace, allowing for direct comparisons between hospitals to be visualised via the RShiny dashboard.

DISCUSSION

Owing to the use of the OMOP CDM and a federated approach, the analytics codebase can be shared across the network. Results enable comparison of cardiac services and patient outcomes across Europe and encourages improvements in best practises for the benefit of patient health.

Median length of stay (days) of cardiac procedures

Cardiac operation	Hospital A	Hospital B	Hospital C
arterial switch operation	20	20	23
atrial septal defect repair	8	5	6
heart transplant	53	50	NA
vsd closure	8	9	7



10 "A National, Open-source, Digital Paediatric Early Warning Score Chart"

Dr Marcus Baw, Mr Michael Barton

Royal College of Paediatrics and Child Health, London, United Kingdom

Clinical Speciality: General Paediatrics

Innovation Category: Regulation, adoption and commercialisation

BACKGROUND

Paediatric Early Warning Score (PEWS) charts are safety-critical and clinically important, but digital PEWS charts are not consistently available nationally. Aside from the duplicated costs for health economies, per-EPR development means variable quality of implementation, time delays in development, inconsistent user interfaces and precludes independent scrutiny of safety-critical code.

AIMS

To develop and evaluate a reusable, open-source digital PEWS chart that implements national scoring and charting rules consistently, in a familiar user interface, across different EPRs.

METHODS

A vendor-agnostic WebComponent was developed using the national PEWS chart specification and scoring rules. The component derives chart age-band automatically from date of birth, calculates PEWS from raw FHIR observations, renders trends over time and supports 'clinician/carer concern' escalation criteria. Automated tests covering PEWS scoring, escalation and core logic ensure that the code cannot deviate from national specification.

RESULTS

The component provides a single reusable chart implementation that can be embedded in different EPR environments. It calculates PEWS consistently from the same source configuration, preserves escalation provenance, supports AVPU, pupil-response and sepsis-related escalation criteria, and makes non-escalating "Think sepsis" temperature warnings visible.

DISCUSSION

A vendor-neutral component enables consistent deployment across EPRs without rebuilding PEWS in every supplier product, shortens delivery, lowers integration cost and gives clinicians, safety teams and developers a ubiquitous interface to review and improve. For safety-critical clinical tools such as PEWS, transparent, open source, peer-reviewed national infrastructure provides a safer and more sustainable route to standardisation than commissioning separate implementations from each EPR supplier.

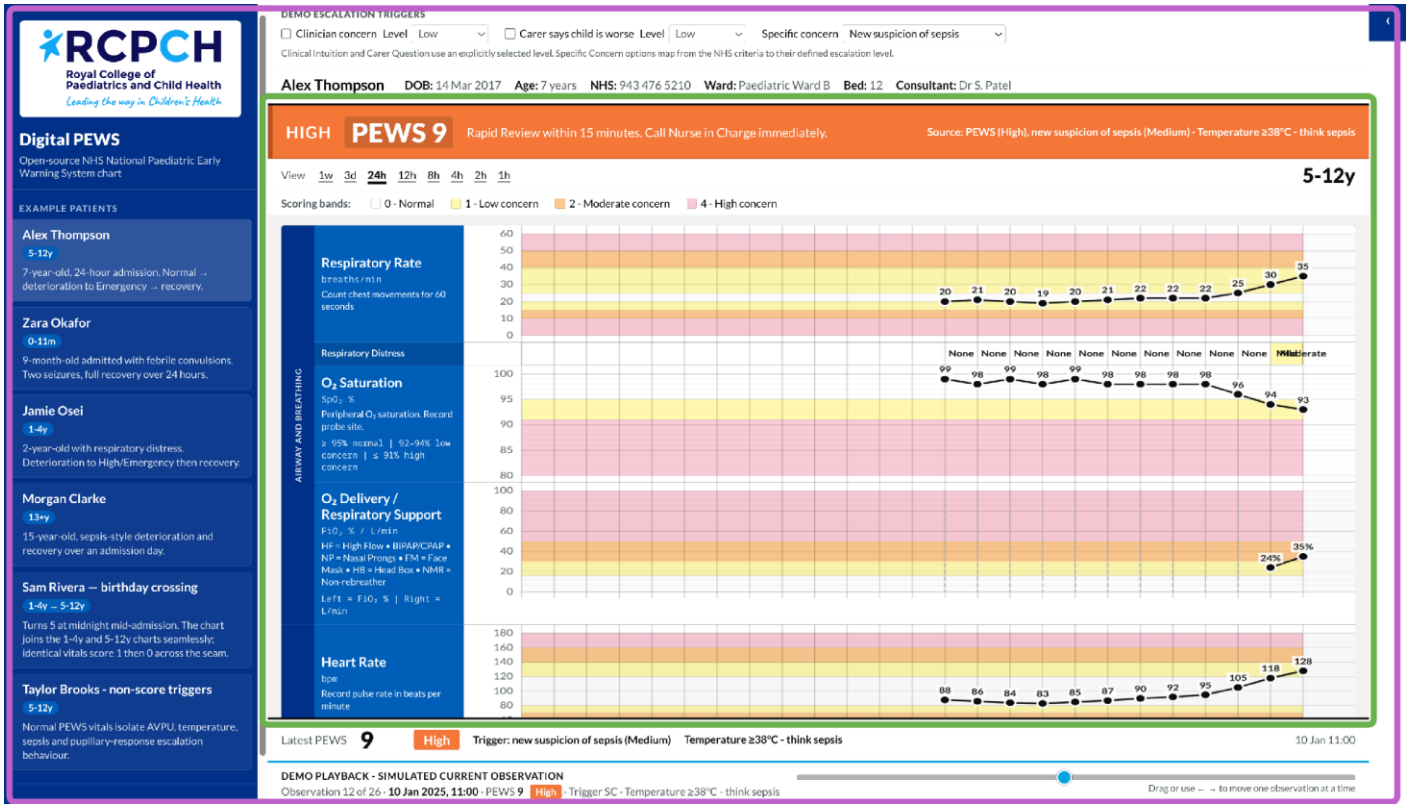


Image 1 - Demonstration showing PEWS chart WebComponent (green area) within the demo harness (purple area)

REFERENCES

Online demo https://rcpch.github.io/digital-pews/demo

Source code https://github.com/rcpch/digital-pews

11 "A QI project to roll out ambient voice technology in Community Paediatric clinics to aid clinical efficiency"

Dr Gregory Landon[1], Dr Joanne Beckmann[2]

[1]Ealing Child Development Team, Central and North West London NHS Foundation Trust, London, United Kingdom. [2]Central and North West London NHS Foundation Trust, London, United Kingdom

Clinical Speciality: Community Paediatrics

Innovation Category: Data, artificial intelligence and robotics

BACKGROUND

Administration and report writing time following autism assessments has been shown to be time consuming in UK child development centres.

Our NHS Trust had rolled out ambient voice technology (AVT) in 1 CAMHS and 1 Community Paediatrics team with initial but limited results of improvement in clinician administrative time in ADHD and specialist community paediatric nursing clinics.

AIMS

AVT pilot was rolled out in 3 other Community Paediatric teams to develop and evaluate the longer term impact of AVT on clinician administrative time, particularly autism assessment report writing time.

METHODS

Using QI methodology, 10 Community Paediatric clinicians were given AVT licences. Pre-AVT times for clinical administration, clinician and patient feedback on experience were measured, and these were repeated weekly over 12 weeks. The clinicians also participated in weekly improvement huddles with the AVT team to give feedback for dynamic changes required for the algorithm. Semi-structured focus groups were held and timesheets were collected for a further 3 months.

RESULTS

The focus group confirmed that clinicians found AVT a time-saving "support tool," but efficiency remained inconsistent with some clinicians very supportive of AVT and others sharing their challenges using it regularly. Timesheets returned in the 3 month extension demonstrated that using AVT reduced mean report writing time for autism assessments by 35-54%.

DISCUSSION

Our QI project showed that using AVT led to reductions in autism assessment report writing times, likely due to increasing clinician familiarity with the AVT technology over time, and dynamic engagement with the AVT company to improve letter engine prompts in response to clinician feedback. This has led to reducing time required for manual editing and increasing clinical efficiency in our clinics, including in specialist paediatric neurodisability clinics and autism assessment clinics.

12 “Beyond Regional Heat-Health Alerts: Indoor Heat Exposure across Paediatric Ward Locations”

Dr Chengzhi Peng[1], Mr Shizhe Huang[1], Dr Choo-yoon Yi[1], Dr Shazia Adalat[2], Dr John Richmond[3], Dr Jill Thompson[1]

[1]University of Sheffield, Sheffield, United Kingdom. [2]Guy’s and St Thomas’ NHS Foundation Trust, London, United Kingdom. [3]University of Leicester, Leicester, United Kingdom

Clinical Speciality: QI and Patient Safety

Innovation Category: Sustainability and net zero

BACKGROUND

Regional Heat-Health Alerts support hospital preparedness but do not describe temperatures in individual patient rooms. Children have limited thermoregulatory reserve and depend on ward teams to recognise and respond to local overheating. Indoor monitoring could help identify heat exposure differences and inform targeted responses.

AIMS

To quantify variation in heat exposure across paediatric wards during regional Heat-Health Alerts and assess the contribution of local monitoring.

METHODS

Twenty sensors recorded temperature and relative humidity every five minutes across two paediatric wards. Continuous monitoring covered 28 May–15 July 2026 with alert comparisons focused on three periods in June and July. All sensors provided complete five-minute records within each alert period, without gaps or duplicates. Degree-hours above 26°C combined the magnitude and duration of temperature exceedance. Exposure and humidity were compared across locations within identical alert periods. Daytime was 07:00–22:00 and night-time 22:00–07:00 BST.

RESULTS

Exposure and humidity varied markedly across 20 ward locations within each of the three alert periods (Table 1). Cumulative exposure was generally higher in the naturally ventilated ward than in the mechanically cooled ward. Figure 1 illustrates variation within and between wards using six selected locations during the June amber alert. One single-bed room remained above 26°C throughout all six alert nights, comprising 54 night-time hours; another location recorded the highest cumulative night-time exposure across 20 locations (102.4 degree-hours). Selection captured exposure extremes and persistent exceedance in the naturally ventilated ward, and contrasting temperatures in the cooled ward.

DISCUSSION

Variation in measured exposure and humidity under common regional alerts supports supplementing regional warnings with local monitoring. Persistent overnight exceedance highlights the need for overnight monitoring. Future adaptations should be evaluated for their ability to reduce indoor overheating while maintaining clinically appropriate conditions, and could inform patient-to-bed allocation based on paediatric heat vulnerability.

Table 1. Heat exposure and relative humidity across 20 ward locations

Three analysed regional Heat-Health Alert periods, June and July 2026

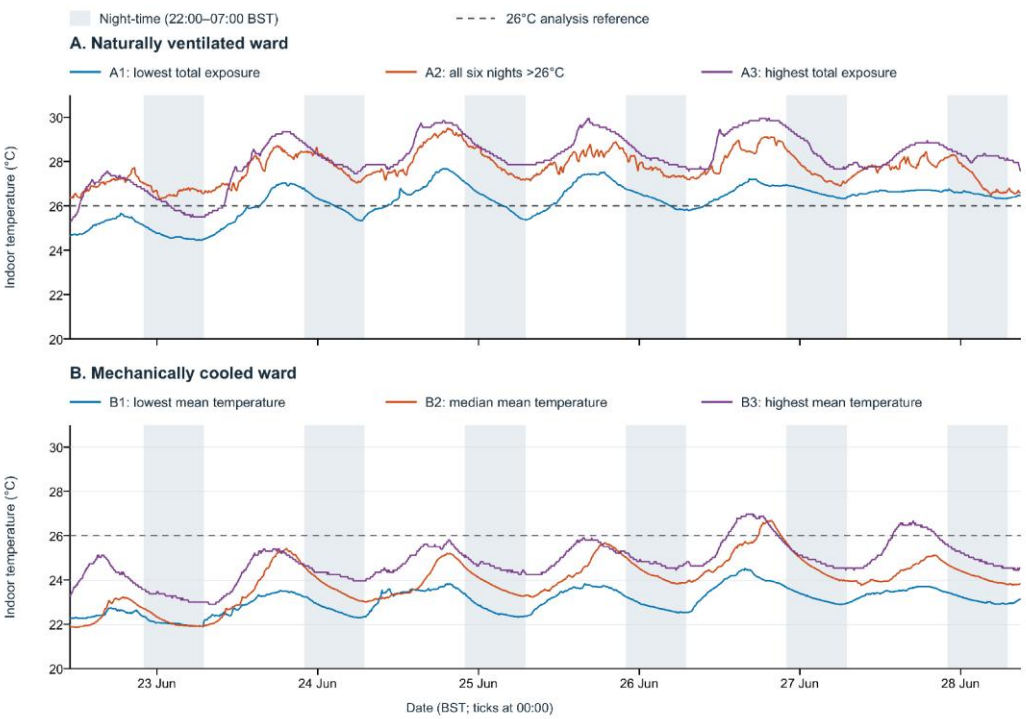
Alert period Start - end (BST)	Duration (hours) Total [day/night]	Daytime exposure above 26°C (°C·h)	Night-time exposure above 26°C (°C·h)	Location-level mean relative humidity (%)	Full-period exposure above 26°C (°C·h) Naturally ventilated (n=11) / Mechanically cooled (n=9)
June amber 22 Jun 11:00 - 28 Jun 09:00	142 [88/54]	0.0–209.0	0.0–102.4	42.9–61.9	64.9–311.5 / 0.0–7.5
July yellow 8 Jul 09:00 - 9 Jul 12:00	27 [18/9]	0.0–24.7	0.0–10.0	43.6–62.1	0.0–34.7 / 0.0–1.9
July amber 9 Jul 12:00 - 12 Jul 21:00	81 [54/27]	0.0–77.1	0.0–28.9	41.6–58.9	2.2–106.0 / 0.0–22.7

Values are minimum–maximum ranges across sensor locations. Relative humidity values are location-level means over each full alert period; n denotes sensor locations.

Daytime: 07:00–22:00; night-time: 22:00–07:00 BST. °C·h denotes cumulative degree-hours above 26°C. Alert durations differ.

Figure 1. Indoor temperature variation within and between wards

June amber alert: 22 June 11:00 - 28 June 09:00 BST, 2026 | Six selected locations



Five-minute measurements from six selected locations; identical axes. Table 1 summarises all 20 locations.

13 “Climbing the Mount Everest that is recruitment: lessons learned from co-designing with children and young people from Cerebral Palsy or Juvenile Idiopathic Arthritis populations”

Ms Ursula Ankeny

Sheffield Hallam University, Sheffield, United Kingdom

Clinical Speciality: Childhood Disability

Innovation Category: Inclusion and involvement of children, young people and families

BACKGROUND

The evidence on why Children and Young People (CYP) should be involved when developing child health technology is well-known. However, barriers persist in how to enable this involvement, notably around recruitment, particularly when developing rather than testing an innovation. This abstract discusses lessons learned from a PhD project, involving CYP with Cerebral Palsy (CP) or Juvenile Idiopathic Arthritis (JIA) in a series of co-design interactions.

AIMS

To recruit 10 CYP and their parents from each condition population for a series of 5 co-design engagements.

METHODS

Recruitment approaches involved: building relationships with clinical champions, charities, health tech research centres and wider university and hospital networks (and in some cases undertaking pre projects to build that trust), utilising pre-established networks through previous projects, distributing flyers, recruitment videos and information through these channels, shifting from in person to online format, designing thank you gifts in addition to renumeration and building in flexibility.

RESULTS

Within JIA, 5 CYP and their parents were recruited whilst within CP, 8 CYP and their parents were recruited.

DISCUSSION

Recruitment took place over a 2-year period with the numbers not reaching the intended target, despite the numerous shifts and mitigation strategies. Key learning points included the importance of the pre work in building trust such as through small projects, the organisational backbone that is required to manage the vast network that is built, the persistence that is needed to keep the ask relevant and the need to have a flexible approach. Perhaps most importantly is an awareness of how the condition will impact involvement both in terms of accessibility and beyond, such as for CYP with CP, ensuring the tools are suitable across the condition spectrum whilst for CYP with JIA, their condition flares, impacting their desire to focus on their condition.

14 “Co-production of digital health interventions for parents of acutely ill children under five: The iPoorly Project”

Dr Matthew Carey

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Clinical Speciality: Health Services for Children and Young People

Innovation Category: Inclusion and involvement of children, young people and families

BACKGROUND

Children under five are high users of urgent healthcare, frequently driven by parental uncertainty, anxiety, and forgotten post-consultation advice rather than illness severity. Grounded in over 10 years of ASK SNIFF research, the iPoorly project addresses this safety-netting gap.

AIMS

To co-produce, co-design, and evaluate a mobile digital health intervention—iPoorly—to help parents assess symptoms, care for children at home, and know when to seek help.

METHODS

Using Experience-Based Co-Design (EBCD), prototype features were co-created with parents and healthcare professionals. Content included age-specific guidance, traffic-light visual severity cues, symptom videos, and a direct 999 call link. The app was deployed on app stores for six weeks and evaluated via an embedded user survey.

RESULTS

The app achieved 603 downloads and a 60% evaluation completion rate (n=362). Usability scores reached up to 91% positive ratings. Overall, 90% of parents reported improved symptom understanding, 86% felt more confident caring for their sick child, and 61% stated the app supported decision-making during an active illness event. Visual cues reduced anxiety and provided clinical vocabulary to explain symptoms during consultations.

DISCUSSION

Providing strong proof of concept, iPoorly demonstrates that co-designed digital tools enhance parental health literacy, support home management, and enable timely escalation. This evidence lays the foundation for Call iPoorly AI—an interactive assistant for post-consultation safety netting advice developed with Cisco to transform post-consultation care pathways.

15 “Development of a "hands-free“ Doppler device for measuring and documenting the neonatal heart rate immediately after birth during a physiological transition”

Dr David Hutchon[1,2], Professor Heather Elphick[3]

[1]Hallam University, Sheffield, United Kingdom. [2]Memorial Hospital, Darlington, United Kingdom. [3]Sheffield Children’s NHS Foundation Trust, Sheffield

Clinical Speciality: Perinatal and Neonatal Paediatrics

Innovation Category: Medical devices

BACKGROUND

Foetal heart rate is routinely measured using Doppler and this can be applied to the neonate with accurate results. However, it requires an attendant to keep the transducer on the neonatal chest. We have developed a lightweight transducer which stays on the neonatal chest without attention.

The heart rate at birth is a major measure of the health of the newborn and an accurate heart rate is required to complete the mandatory one minute APGAR score. Auscultation on the precordium with a stethoscope is currently recommended but this is inaccurate, subjective and undocumented. Oximetry does not function at this stage and the ECG takes at least a minute to apply.

AIMS

To demonstrate if the modified hands-free Doppler device can provide an accurate neonatal heart rate.

METHODS

A small number of infants undergoing sleep studies were recruited. At the start of the sleep studies, after the ECG electrodes had been applied, the hands-free transducer was placed on the infants chest for up to five minutes and the Doppler heart rate documented. Heart rate readings from the Doppler were compared with gold standard measurements from ECG. The view of a parent of the comfort for their infant during the investigation was documented.

RESULTS

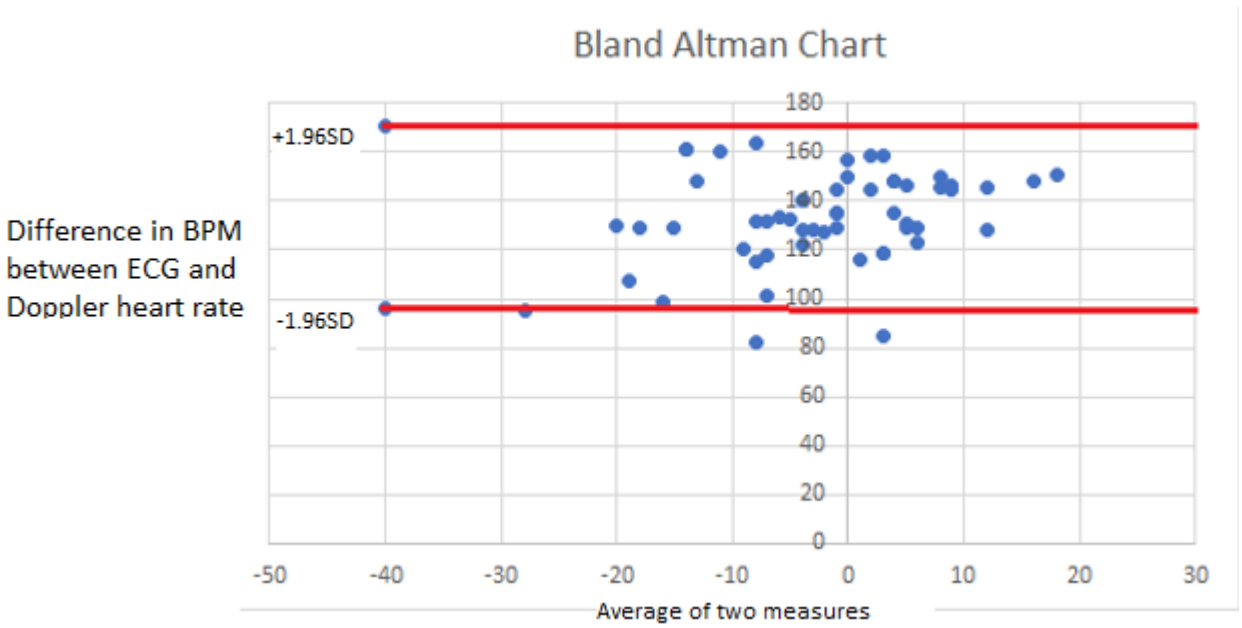
The Doppler heart rate corelated well with the ECG heart rate using a Bland Altman plot. All parents considered that their infant had not experienced any distress as a result of the Doppler device application.

DISCUSSION

Measuring the heart rate at birth is essential for assessing the health of the neonate at birth and for guiding resuscitation when this is required. Current methods have limitations and cannot be used within the sterile field at caesarean section. We demonstrate how all these limitations are potentially overcome by the hands-free doppler.



Image 1 - Hands-free modified fetal Doppler device



16 “Evaluation of the usability, acceptability, safety and impact of a mobile app (Oshn) for low mood and motivation among young people: a feasibility study”

Dr Elizabeth Camacho[1], Dr Lauren Burke[1], Dr Rachel Crick[1], Dr Carolina Estevao[2], Ms Jenny Gilchrist[3], Ms Manjul Rathee[2], Ms Gill Stead[3], Dr Jade Thai[3]

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Clinical Speciality: Mental Health

Innovation Category: Inclusion and involvement of children, young people and families

BACKGROUND

Mental health affects a growing number of children and young people in the UK, with one in five (20%) having a probable mental health disorder. This has increased pressure on NHS services which can make it difficult to access timely support. Apps can offer rapid access to mental health support, but they must be effective and safe. Oshn is a digital therapeutic app co-designed with young people. It is based on cognitive behavioural therapy, and aims to provide early support for low mood or motivation. It uses a gamified format to encourage young people to identify and engage with activities that are meaningful to them (behavioural activation) and rewards progress to boost motivation.

AIMS

To conduct a feasibility study to assess the usability, acceptability, safety, and effectiveness of Oshn.

METHODS

We recruited young people (aged 13–25) who self-identified as experiencing low mood and/or low motivation. They were given access to Oshn for 8 weeks and completed outcome measures online at baseline, 2, 4, and 8 weeks. Outcomes included the PHQ-8 (depression) and GAD-2 (anxiety).

RESULTS

207 young people completed the outcomes at baseline, of whom 178 had paired outcomes at week 2 and 175 at week 4. Preliminary results show statistically significant improvements in both depression and anxiety scores, with improvements at week 2 increasing at week 4 (see Table). By week 2, 19% of the sample had ‘no depression’, rising to 46% by week 4. By week 2, 73% of the sample had ‘no anxiety’, rising to 76% at week 4. There were no Oshn-related serious adverse events during the study.

DISCUSSION

Oshn is acceptable to young people and shows early promise in supporting improved mood. This supports Oshn's potential as a scalable, engaging tool for early intervention, and provides a strong foundation for further evaluation.

Table. Summary of PHQ-8 and GAD-2 scores

	Baseline	Week 2 (n=178)	Week 4 (n=175)
Mean PHQ-8	11.0 (95% CI 10.3-11.6)	7.6 (95% CI 6.9-8.3)	6.5 (95% CI 5.8-7.1)
Mean within person change (from baseline)	-	-3.3 (95% CI -2.8 to -3.9)	-4.5 (95% CI -5.1 to -3.8)
Mean GAD-2	3.0 (95% CI 2.8-3.2)	2.1 (95% CI 1.9-2.2)	1.9 (95% CI 1.6-2.1)
Mean within person change	-	-0.9 (95% CI -0.7 to -1.1)	-1.1 (95% CI -0.9 to -1.3)
No depression (PHQ-8: <5)	4%	19%	46%
Mild depression (PHQ-8: 5-10)	49%	61%	38%
Moderate depression (PHQ-8: 11-14)	24%	9%	10%
Moderate-to-severe depression (PHQ-8: 15-19)	23%	9%	2%
Severe depression (PHQ-8: ≥20)	n/a (protocol)	2%	4%
No anxiety (GAD-2: <3)	52%	73%	76%
Anxiety (GAD-2: ≥3)	48%	27%	24%

17 “Exploring Parents' views of symptom checker applications for children aged five years and under: perspectives of users and non-users”

Ms Sally Roberts

University of Lancashire, Preston, United Kingdom

Clinical Speciality: Health Services for Children and Young People

Innovation Category: Decentralised healthcare and self-management

BACKGROUND

Symptom checker applications are increasingly promoted as digital tools to support healthcare decision-making. Existing research has primarily examined adult users, with limited attention given to parents of young children. Parents of children aged five years and under frequently make complex decisions about childhood illness, yet little is known about their perceptions of symptom checker applications or the factors influencing their use.

AIMS

This study explored the views of parents of children aged five years and under regarding symptom checker applications, comparing the perspectives of users and non-users while identifying barriers to adoption and factors that may encourage future use.

METHODS

A predominantly quantitative cross-sectional survey, supplemented by open-ended questions, was completed by 147 parents recruited from family hubs, cafés, and libraries. The questionnaire explored awareness, current use, reasons for non-use, perceived concerns, and circumstances that might increase willingness to download and use symptom checker applications.

RESULTS

Awareness and uptake of symptom checker applications were low, with only a small proportion of participants reporting that they had downloaded one. The most common reason for non-use was a lack of awareness that these applications existed. Participants also expressed concerns regarding data protection, accuracy, reliability, and the variability of children’s symptoms, which they believed could reduce the effectiveness of digital assessments. Despite these concerns, many parents indicated they would consider using a symptom checker if it were endorsed by the NHS and recommended by a healthcare professional.

DISCUSSION

Increasing awareness is essential to improving the uptake of symptom checker applications among parents of young children. NHS endorsement, together with recommendations from healthcare professionals, may increase trust, confidence, and acceptance of these technologies. Future development should prioritise accuracy, transparency, and reassurance around data security to maximise parental engagement and support informed healthcare decision-making.

18 “Forms of engagement: exploring ways of meaningfully involving children and young people when co-designing child health technology”

Ms Ursula Ankeny

Sheffield Hallam University, Sheffield, United Kingdom

Clinical Speciality: Childhood Disability

Innovation Category: Inclusion and involvement of children, young people and families

BACKGROUND

Involving children and young people (CYP) within the co-design process is crucial to ensure the resulting innovation addresses their unique unmet needs, and yet this doesn’t always happen meaningfully. Within the literature, their involvement is often categorised as user, informant, tester or design partner, with very few truly involving them as design partners – where their insights shape and guide the research direction throughout the process from unmet need to resulting innovation.

AIMS

To design and test different tools to meaningfully involve CYP as design partners when co-designing technology for CYP with cerebral palsy or arthritis.

METHODS

Four tools were designed to be used within the co-design process. Tool 1 was the building of a condition management seascape using 3D printed icebergs and life rings to explore invisible and visible challenges and supports. Tool 2 translated tool 1 into a pirate map using invisible ink and UV torch to sense-check insights. Tool 3 was four wooden viewfinders with an engraved phrase such as “part of my condition no one sees” and attached NFC tag to build a deeper understanding of unmet need. Tool 4 was a check-in emotion tracking cone for use during a workshop.

RESULTS

Children engaged well with these tools with the playful approach building up a gradual understanding of their condition management reality. Key insights included how the tools acted as an alternative form of communication to speaking, how they held space for differing opinions and how they reduced pressure and built trust with the researcher, allowing for honest conversations about their needs.

DISCUSSION

The act of making and creating with these tangible tools created an open and more equal co-design space whereby the tools themselves acted as implements for the child to communicate their needs and desires allowing them to shape the resulting research direction.

19 “Generalisability of adult-trained CT auto-contouring models to a paediatric population”

Dr Keri Anderson, Miss Dijana Vilic

Clinical Scientific Computing, Guy's & St. Thomas’ NHS Foundation Trust, London, United Kingdom

Clinical Speciality: Cancer and Leukaemia

Innovation Category: Data, artificial intelligence and robotics

BACKGROUND & AIMS

Deep-learning auto-contouring is increasingly used to delineate organs at risk (OARs) for radiotherapy treatment planning. However, most models are developed using adult data, meaning children are largely underrepresented in the training datasets. Paediatric anatomy differs significantly from that of adults in size, proportion and developmental stage. The impact of these differences on auto-contouring performance across a range of ages has not been well characterised. In this study we evaluated the generalisability of in-house OAR auto-contouring models, trained on adult data, to a paediatric population and characterised the extent to which contour quality varied across developmental age bands.

METHODS

Auto-contouring models were developed locally within our hospital and applied, without retraining, to the publicly available Paediatric-CT-SEG collection. This dataset comprises 359 patient images, aged between 5 days and 16 years, and expert manual organ contours. Model-generated contours were compared with expert reference contours (1) by visual inspection for clinically relevant errors and (2) by calculating Dice similarity coefficients and surface distance measures. Outcomes were stratified across predefined age bands to identify whether performance deteriorated in any subgroups.

RESULTS

Age-stratified evidence of the generalisability of auto contouring models was assessed. Early findings suggest that the models generalise more reliably to older children, while performance appears to degrade in neonates and infants.

DISCUSSION

Radiotherapy forms part of treatment plans for 20-30% of children with cancer diagnoses. The use of deep-learning auto-contouring models is growing, but generalisability across ages is not well understood. Accuracy is especially important for paediatric patients since their organs are comparatively radiosensitive and susceptible to late effects of treatment. We therefore evaluated the generalisability of our adult-trained models and found that contour quality is more consistent with expert reference contours in older children. Our findings will guide the safe clinical deployment of future segmentation tools for paediatric radiotherapy.

20 "Hand Movement Tracking for Stress and Activity Monitoring in Neonatal Intensive Care"

Dr Alex Grafton, Mrs Lynn Thomson, Professor Joan Lasenby, Dr Kathryn Beardsall

University of Cambridge, Cambridge, United Kingdom

Clinical Speciality: Critical Care

Innovation Category: Medical Devices

BACKGROUND

A neonate's movements can provide important information about their health. Some movements are normal, as the baby explores their environment and develops their motor function. Others indicate stress and startle responses – splayed or tightly gripped fingers, or both hands moving away from the midline. Currently, continuous observation by staff is impossible, so we propose a camera-based solution.

AIMS

To assess the possibility of using cameras to continuously monitor hand movements, by:

- Creating computer vision algorithms for detecting hand position and shape.
- Evaluating their performance in detecting potential stress indicators.
- Assess the possibility of real-time cot-side implementation.

METHODS

Video was collected from 22 patients in neonatal intensive care, comprising RGB (colour), depth, and infra-red (night vision). Hand positions were annotated manually and labelled as 'splayed', 'normal', 'tight', or that their movement is inhibited (e.g. wrapped). Head and body outlines were also annotated. Computer vision models were trained to locate these features and classify the hands and were evaluated by average precision (location) and sensitivity/specificity/F1 score (classification) metrics.

RESULTS

In unseen data, the model achieved AP.50=0.82 when locating the hands, indicating 82% precision when requiring 50% overlap for correct detection. Splayed hands were detected at 91.5% sensitivity and 98.2% specificity (F1 score = 0.947). Tight hands were detected at 78.0% sensitivity and 96.9% specificity (F1 score = 0.857). Real-time inference of all models is possible on consumer computing hardware (e.g. MacBook Air).

DISCUSSION

These results indicate that continuous detection of hand movements is possible cot-side, without transmitting data to external computing infrastructure, addressing a monitoring gap. Future work includes translating results into stress and activity metrics. These metrics should be interpreted contextually, including clinical factors that may affect behaviour.

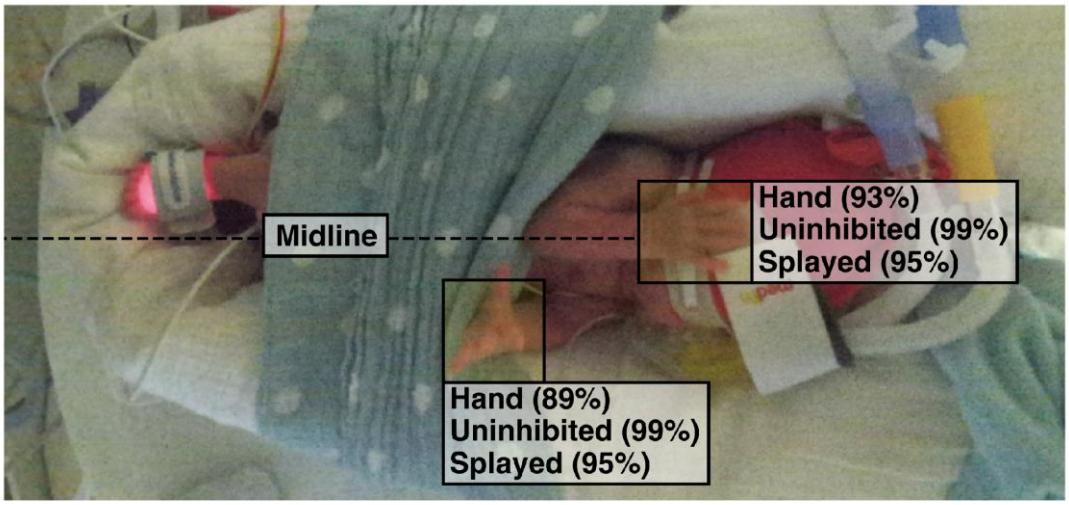

Figure 1: Example detections; hands are detected, identified as uninhibited and splayed.

Table 1: Sensitivity, Specificity, Precision, Recall, AP.50 and F1 scores as applicable for hand/hand/body localisation and hand classification. The hand shape model is either calibrated to detect any stress position or splayed and tight separately.

Localisation	Hand	Head	Body
Precision	0.874	0.992	0.984
Recall	0.792	0.964	0.978
AP.50	0.820	0.979	0.973
Hand Type	Splayed/Tight	Splayed	Tight
Sensitivity	0.833	0.915	0.780
Specificity	0.960	0.982	0.969
F1	0.888	0.947	0.857

21 “iComparasion of efficacay of Nebulized Magnesium Sulphate with intravenous Magnesium Sulphate in Children with Acute Asthma”

Dr Saima Khatoon[1,2], Dr Marium Naseer[3]

[1]THQ Hospital Hajira AJK, Hajira AJK, Pakistan. [2]Royal college of Pediatric and Child Health, London, United Kingdom. [3]AIMS, Sialkot, Pakistan

Clinical Speciality: Respiratory Medicine

Innovation Category: Inclusion and involvement of children, young people and families

BACKGROUND

Acute attacks of asthma can be life-threatening and require immediate medical attention. Intravenous magnesium sulphate has been used in children with acute asthma but nebulized magnesium sulphate has been little investigated in children.

AIMS

The objective of this study was to compare the efficacy of nebulized MgSO4 with intravenous MgSO4 in children presenting with acute moderate-severe asthma.

METHODS

A total of 148 patients aged 2 to 12 years with moderate to severe asthma based upon the Pediatric Asthma Severity (PAS) score of 8-15, were randomly divided by lottery method into 2 groups. Group-A received IV MgSO4 infusion (50mg/kg) and group-B received nebulized MgSO4 100mg diluted in 20 ml normal saline via ultrasonic nebulizer. The PAS score for asthma severity was assessed at admission and at the interval of 30, 60, 120, 240, 360 minutes. Efficacy (measured as a reduction in mean PAS score), side effects, duration of stay in PICU and hospital were recorded and compared in both groups.

RESULTS

The mean reduction in PAS score was 4.24 ± 1.39 in group A and 4.04 ± 1.14 in group B (p-value =0.33). Efficacy was 27% in group A and 14.9% in group B (p-value =0.069). Duration PICU stay in group B was less & difference was statistically significant . The duration of hospital stay in Group-A had, median of 34(IQR 52) while Group-B had median of 24(IQR 22), with statistically less hospital stay in nebulized group . Patient in the Group-A, had statistically more side effects as compared to the nebulized group.

DISCUSSION

In children presenting with acute moderate-severe asthma there was no statistical difference in the mean reduction of PAS score or the efficacy in both groups. The intravenous group, however, had significantly more side effects, longer duration of PICU and hospital stay compared to the nebulized group.

22 “Jam Up!: Digital Life Skills Support”

Dr Rachael Malthouse, Dr Marius Varga, Dr Michael Loizou

University of Plymouth, Plymouth, United Kingdom

Clinical Speciality: ADHD and Neurodevelopmental Disorders

Innovation Category: Inclusion and involvement of children, young people and families

BACKGROUND

Children aged 6–14 with diagnosed or suspected neurodevelopmental differences and additional needs often experience difficulties with everyday life skills such as dressing, toothbrushing and personal care routines. These challenges can affect independence, family wellbeing, school readiness and healthcare or support needs. Jam Up! is a co-produced digital intervention designed to support daily living skills through structured visual routines, gamification and tailored learning support for families.

AIMS

This NIHR-funded study evaluates the potential health economic value, accessibility and implementation of Jam Up!, with particular attention to digital inequality and equitable access for underserved families.

METHODS

A mixed-methods evaluation is being undertaken with families, researchers and community partners. Parent-carers will complete surveys at baseline, three weeks and six weeks, with optional qualitative interviews to explore family experience in more depth. The study will examine changes in daily routine independence, parent/carer confidence and stress, healthcare utilisation, paid/formal support use and work or study disruption. App usage data will support interpretation of engagement and exposure. Equity indicators include digital confidence, device and internet access, geography, ethnicity, language and socioeconomic factors.

RESULTS

The study will generate early evidence on the value and acceptability of Jam Up! across diverse family contexts. Earlier pilots and real-world use have shown strong acceptability and encouraging improvements in independence and family wellbeing. The current evaluation will test these findings more systematically and identify barriers to access, engagement and adoption, including digital exclusion.

DISCUSSION

Digital interventions may offer a scalable route to supporting everyday independence for children with additional needs, but access and implementation must be actively designed around family context. Findings will inform commissioners, healthcare providers, educators and community organisations about the potential role of digital life-skills support within paediatric health, education and care pathways.

23 “Lumi!: A Story-Driven Digital Health Tool for Children with Asthma”

Ms Lakshmi Akanksha Sharma Valiveti

University of Leicester, Leicester, United Kingdom

Clinical Speciality: Respiratory Medicine

Innovation Category: Medical devices

Around 1 in 11 children in the UK are diagnosed with and currently receive treatment for asthma, which remains a leading cause of emergency hospital admissions in children. Although medication and written asthma action plans are central to asthma management, opportunities remain to engage children directly in understanding their condition and developing confidence in self-management. Lumi! is a prototype digital health platform exploring a more immersive, child-centred approach to asthma education.

Existing literature on storytelling and gamification in healthcare was reviewed to identify principles informing Lumi!’s creative vision and support engagement and learning. Lumi! translates these principles into an interactive wonderland where children encounter recurring characters, explore different environments and learn about asthma through stories, adventures and interactive mysteries. Educational content is embedded within narratives rather than presented solely as conventional health information, with progress reinforced through badges and an evolving Memory Tree. Different locations serve educational or emotional purposes, including a Library, cottages and a Teddy Bear Hospital. The Library will contain multiple stories allowing children to explore asthma through different perspectives. One example, "The Wheezy Dragon", follows Oliver the Dragon as children help him recognise his symptoms, explore what happens within the airways and learn about asthma management. The Teddy Bear Hospital provides a safe environment for exploring asthma treatment. A parent-facing component presents automatically generated visual trends in symptoms, which can be shared with healthcare professionals when appropriate.

Future development will expand Lumi! through additional stories, adventures and interactive activities, alongside further symptom-tracking and parent-facing functionality. Evaluation will assess engagement and acceptability among children, parents and clinicians, alongside Lumi!’s potential to improve asthma knowledge, confidence and self-management. Lumi! aims to demonstrate how storytelling, gamification and digital technology could complement existing asthma management by placing children at the centre of their own understanding of the condition.

24 “Meeting the Requirements of Complex Medical Rotas... with a Little Bit of Magic!”

Dr James Edelman, Dr Tim Lewis

University Hospital Southampton, Southampton, United Kingdom

Clinical Speciality: General Paediatrics

Innovation Category: Other

BACKGROUND

The NHS Medical Director's 10-Year Health Plan and NHS England's 10-Point Plan to Improve Resident Doctors' Working highlight the need for improvement in areas of work scheduling, rota information, annual leave equitability, management of less-than-full-time working (LTFT) and balancing training and service provision. It is recognised that with the increase from 24.9% to 59.7% of LTFT working patterns in resident doctors since 2015, creating compliant, balanced rotas has become more complex and requires new, novel approaches. The RCPCH published recommendations in 2024 for Trusts to adopt 'electronic self rostering' to allow personalisation of paediatric rotas, but little progress made in developing standards or software support to meet these needs.

AIMS & METHODS

After evaluating available rota software and identifying that current products still do not accurately replicate the manual process of creating complex, bespoke rotas, the paediatric resident doctor rota leads at Southampton Children's Hospital (SCH) utilised Google AI Studio to develop a complex solver algorithm for rota generation, balancing resident doctor requirements for leave, work:life balance and the need for high quality training and service provision. This was built into a new product - RotaWizard.

RESULTS

RotaWizard was used to generate the rota for 42 paediatric residents at SCH (50% LTFT), encompassing 191 periods of leave, 146 weekends off requests and 60 evenings off requests over a 6 month period. Rota generation took 56 seconds and required manual alteration of 16 shifts (total 7602). Feedback from resident doctors has been positive with 100% of respondents requesting use in future placements and 86% reporting that guaranteed requested leave reduced baseline stress and improved morale.

DISCUSSION

Our pilot demonstrated an algorithm can design a complex rota taking into account individual scheduling requirements and bespoke leave requests. We would advocate the use of this style of rota management software in the future.

25 “Needs-Driven Medical Device Design in Children’s Orthopaedics”

Mr Páraic Ó Ciaruáin[1,2], Prof Damian McCormack[1,2], Dr Connor Green[1,2], Assoc Prof Eoin O'Cearbhaill[1,2], Prof Niamh Nowlan[1,2]

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Clinical Speciality: General Paediatrics

Innovation Category: Medical Devices

Children’s orthopaedic care suffers from a lack of dedicated innovation. Of the 1,925 orthopaedic devices cleared via the FDA 510(k) regulatory pathway, only 9 (0.5%) were designed for children and only 160 (8.3%) included paediatric indications [1]. Consequently, care remains shaped by individual provider experience rather than clinical consensus [2]. Needs-driven design, offers a structured approach to identify, validate, and prioritise high-impact medical device opportunities [3].

This two-stage mixed-methods study systematically captured and prioritised unmet clinical needs in paediatric orthopaedic care. Data collection involved 60-hours of direct clinical observation and semi-structured interviews with 21 paediatric orthopaedic surgeons across Ireland (n=10) and the UK (n=11). The interview guide was refined with feedback from patient partners (n=3) from the patient advocacy group OrthoKids Ireland. Qualitative insights from interviews (n=1,052) were inductively grouped into problem themes (n=59) and converted into unique unmet needs statement (n=134) following the Biodesign formulation (“A way to [solve problem] in [population] in order to [deliver outcome]”) [3]. A 4-criteria, 5-point scoring tool was designed to evaluate needs across patient impact, provider impact, treatment landscape, and challenge frequency over two clinician-led scoring stages.

Surgeons overwhelmingly agreed that significant unmet needs remain in the space (n=20, 95%). Primary problem themes included accounting for skeletal growth, including clinical evidence in practice, and hip imaging variability. Preliminary scoring highlights validated needs such as “A way to provide accurate, real-time pedicle screw trajectory confirmation in patients undergoing spinal instrumentation surgery in order to enable universal intraoperative verification of all screws and reduce the risk of cortical breach-related neurological injury”. Ongoing multi-criteria clinical scoring is currently distilling the 134 needs into a final validated shortlist.

Structured needs-driven design represents a proven route to address the paediatric device lag by focusing innovation efforts on the areas of highest clinical need and priority.

REFERENCES

In-Text Citation	Reference
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26 “Neurodiversity in PICU: Assessing Staff Confidence and Identifying Technological and Environmental Opportunities to Improve Care”

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Clinical Speciality: ADHD and Neurodevelopmental Disorders

Innovation Category: Inclusion and involvement of children, young people and families

BACKGROUND

Neurodivergent children have unique communication and sensory needs that often lead to severe overload during hospital admissions. Within the high-tech Paediatric Intensive Care Unit (PICU), meeting these needs becomes exponentially harder due to critical environmental barriers. To design better supportive technologies and smart spaces, we must understand current staff barriers and practices.

AIMS

To evaluate multi-disciplinary PICU staff confidence and perceived competence in delivering individualized care to neurodivergent patients; to systematically identify physical, environmental, and communication barriers within the intensive care setting; and to pinpoint specific opportunities where child health technologies and digital training tools can be deployed to support staff and improve patient outcomes.

METHODS

A mixed-methods service evaluation was conducted at St Mary’s Hospital PICU in London using an anonymous multidisciplinary survey. Quantitative data were analysed using descriptive statistics and Mann–Whitney U tests. Qualitative data underwent thematic analysis.

RESULTS

Thirty-three professionals responded (52% nurses, 33% doctors, 15% others); 61% had prior formal training. Staff rated care quality for neurodivergent children as lower than for neurotypical patients (median Likert score 2). Personal lived experience did not statistically improve confidence in adapting care ($p=0.11$). Thematic analysis revealed that adapting the physical PICU environment to meet sensory needs was the most frequent challenge. Staff highlighted a critical lack of modern communication aids and limited digital access to practical, bedside guidance. There was an overwhelming demand for new, targeted training tools (median Likert score 5).

DISCUSSION

The PICU is a high-stress environment that lacks the adaptive infrastructure needed for neurodivergent patients. These findings reveal a major opportunity for child health technology. We must develop smart sensory-modulating environments, digital assistive communication tools, and tailored training for the professionals working in PICU to bridge the care gap for neurodivergent children and their families in paediatric intensive care.

27 “Personalized First-Person Family Stories to support Caregivers During Transition from Paediatric-to-Adult T1D and obesity Care: A Small Language Model Fine-Tuning Approach”

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Clinical Speciality: Health Services for Children and Young People

Innovation Category: Data, artificial intelligence and robotics

BACKGROUND

Transitioning from paediatric to adult care is a stressful process for young adults with type 1 diabetes (T1D) and obesity and their caregivers, yet no digital interventions currently address this process. First-person family stories (FPFS) can resonate more deeply than conventional content, optimizing educational health messages delivery. Generative AI can personalize such content to family characteristics. Particularly, small language models (SLMs) can provide high-quality outputs while reducing dependence on large proprietary models, easing data governance, and deployment in resource-constrained settings.

AIMS

To fine-tune an SLM to generate personalized FPFS in Spanish, adapted to the Spanish context, and expressed as first-person caregiver narratives, improving upon a prompt-only baseline.

METHODS

US Caregivers of young adults (n=119) were recruited through Thrivable under inclusion criteria relevant to T1D and obesity transition, collecting demographics, validated questionnaire answers, and FPFS. Participant characteristics served as structured meta-features, with FPFS as the training target.

FPFS were adapted to the Spanish context and expanded through large language models (LLM)-based knowledge distillation, preserving always the original narrative. Gemma 4 26B-A4B was fine-tuned using low-rank adaptation (LoRA), and compared against a prompt-only baseline, using two frontiers LLMs as evaluators, with a multidimensional rubric validated by clinicians and psychologists (Figure 1).

RESULTS

The fine-tuned model outperformed the baseline for both judges, reaching near-maximum composite scores (Table 1). Across the 18 test examples, the fine-tuned model output was preferred in 15 out of 18 samples.

DISCUSSION

These results provide evidence for the potential of this approach to generate personalized FPFS while preserving contextual relevance and adapting content to the Spanish setting, improving prompt-only baseline outputs. The resulting model supports the feasibility of integrating locally deployable, personalized story generation into digital interventions for paediatric-to-adult transition. Further participatory evaluation with end users and clinical stakeholders will assess acceptability, and potential impact in practice.

Table 1. Composite scores obtained by the prompt-only baseline and fine-tuned models using the weighted rubric, as assessed by Claude Sonnet 4.6 and Gemini 3 Flash Preview (top). Number of test examples in which each arm achieved the highest average judge score across the two judges. (bottom).

Arm	Claude Sonnet 4.6	Gemini 3 Flash Preview
Prompt-only baseline	90.44	97.00
Fine-tuned	96.33	99.56

Primary baseline-vs-fine-tuned winners by average judge score

Winner	Count
Prompt-only baseline	1
Fine-tuned	15
Tie	2

Dimension	Weight
Narrative Completeness and Resolution	20%
Medical and Transition Realism	25%
Clarity, Fluency, and Emotional Coherence	15%
Lived Authenticity and Caregiver Voice	15%
Persona and Transition Alignment	15%
Supportive and Non-Didactic Tone	10%

Figure 1. Dimension composing the rubric used to evaluate the models together with their weighted contributions to the final composite score.

28 “Reducing Pre-visit anxiety, especially in neurodivergent children”

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Clinical Speciality: Mental Health

Innovation Category: Inclusion and involvement of children, young people and families

BACKGROUND

Children and families can experience anxiety when attending an unfamiliar hospital. Browser-based 360-degree virtual environments may improve familiarity, navigation and confidence before arrival.

AIMS

To explore how children and young people experienced a browser-based 360-degree hospital navigation tool and identify priorities for accessible, child-centred wayfinding.

METHODS

A Youth Forum participated in a structured co-design workshop exploring the hospital journey before arrival, entering the hospital, waiting and going home. Participants completed journey and emotional mapping, responded to written prompts, reviewed the Medisites 360 virtual map, created drawings, and designed low-fidelity prototypes of a digital helper. They explained how their concepts would work, who they would benefit and which accessibility features were important. Worksheets, drawings and written responses were analysed using qualitative thematic analysis to identify recurring needs, emotions and design priorities.

RESULTS

Participants valued realistic 360-degree imagery, videos and the opportunity to explore hospital before attending. They viewed the platform as more than a navigation tool, describing it as a confidence-building companion. Priorities included a clear start and destination, a "You Are Here" marker, step-by-step directions, landmarks, floor-change guidance and route confirmation. Anxiety and confusion were greatest before arrival and while navigating, while waiting areas were associated with boredom, noise, crowds and uncertainty. Participants recommended voice navigation, multiple languages, British Sign Language, larger text, accessible routes, human-help options and short "what to expect" information. Digital characters were welcomed, while games and rewards were considered optional.

DISCUSSION

Co-design broadened the concept from a virtual tour to a confidence-building digital companion, highlighting the importance of combining reliable navigation with accessibility, preparation and reassurance. Future work should evaluate usability, navigation success and confidence during real-world hospital visits and assess whether these design features improve children and families’ experiences, inform future digital wayfinding development, support inclusive design principles, strengthen patient-centred hospital navigation for everyone.

29 “Relationship Between Dorsiflexor Muscle Morphology and Functional Gait Deficits in Children with Unilateral Cerebral Palsy”

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Clinical Speciality: Childhood Disability

Innovation Category: Medical Devices

BACKGROUND

Dorsiflexor weakness is common in children with unilateral spastic cerebral palsy (USCP), often resulting in excessive plantarflexion during swing phase and reduced toe clearance. Alterations in tibialis anterior (TA) morphology, including reduced cross-sectional area (CSA), have been associated with impaired dorsiflexion and gait function. However, findings regarding TA size are inconsistent, with some studies reporting reduced CSA and volume in the affected limb, while Obst et al found preserved TA volume. Differences in TA border identification may contribute, with images from Obst suggesting inclusion of the toe extensor group. As TE morphology has been less explored, it is possible that while TA morphology is reduced, the toe extensor group is preserved.

AIMS

To investigate the relationship between dorsiflexor muscle morphology and functional gait deficits.

METHODS

This retrospective cohort from One Small Step Gait Laboratory (Guy's and St Thomas' Hospital) will compare TA and toe extensor (TE) morphology across affected and unaffected limbs of individuals aged 6-18 years with USCP and TD controls. Ultrasound will derive CSA, which estimates muscle volume based on the validated relationship reported by Vanmechelen et al and echogenicity as a marker of muscle quality. These measures will be examined against three-dimensional gait analysis parameters, including spatiotemporal parameters and dorsiflexion kinematics. Participants will be stratified by GMFCS levels I and II to explore whether relationships vary with severity.

HYPOTHESIS

TA CSA will be reduced and echogenicity increased in more affected limbs, with preservation of TE CSA and echogenicity. Reduced CSA and increased echogenicity are expected to be associated with functional gait impairment, including compromised spatiotemporal parameters and impaired dorsiflexion during swing phase, with these relationships more pronounced at higher GMFCS levels.

DISCUSSION

If ultrasound identifies a TA-specific structural deficit, this could provide clinically useful information to characterise dorsiflexion impairment and inform targeted rehabilitation strategies.

30 “Repetition as Meaningful Media Engagement: Parent Perspectives on Digital Media Use among Autistic Children”

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Clinical Speciality: ADHD and Neurodevelopmental Disorders

Innovation Category: Inclusion and involvement of children, young people and families

BACKGROUND

Digital media are increasingly used by autistic children, yet little is known about how repeated engagement with familiar content should inform the design of child-centred digital technologies.

AIMS

To explore how parents interpret repeated media engagement among autistic children and examine the implications of these interpretations for parent–child digital co-use and technology design.

METHODS

Semi-structured interviews were conducted with seven parents or primary caregivers of autistic children aged 2–9 years. Data were analysed using Reflexive Thematic Analysis, followed by a focused re-analysis of repeated viewing, listening, replaying, and revisiting of digital content.

RESULTS

Two overarching themes were identified. First, parents interpreted repeated media engagement in multiple ways, including as child-led choice and agency, support for learning and communication, and, in a smaller number of accounts, a possible relational or emotional signal. Second, repeated engagement shaped parent–child digital co-use in different ways. Familiar content often supported shared attention, conversation, and participation, while prolonged repetition sometimes reduced parents' willingness or ability to remain involved. Overall, repetition was understood as context-dependent rather than uniformly problematic.

DISCUSSION

These findings suggest that repeated media engagement should be understood as an interaction shaped by the child, the parent, the digital content, and the design of the technology. Rather than discouraging repetition, digital systems for autistic children may benefit from preserving familiarity and child control while supporting optional parental participation, predictable variation, and manageable transitions. These findings provide practical design considerations for child-centred digital technologies by highlighting how technology can support meaningful engagement without unnecessarily disrupting familiar and preferred patterns of use. Further research should include autistic children’s perspectives, direct observation, and evaluation of repetition-sensitive design features.

31 "Self-Supervised Learning for Clustering Physiological States and Patient Phenotypes in Life-Threatening Paediatric Traumatic Brain Injury"

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Clinical Speciality: Critical Care

Innovation Category: Data, artificial intelligence and robotics

BACKGROUND

Physiological dynamics of patients with traumatic brain injury (TBI) in paediatric intensive care units (PICU) contain important clinical information, but remain difficult to summarise using hand-crafted features. Self-supervised learning may extract these dynamics to identify physiological states and patient phenotypes.

AIMS

We aimed to discover physiological states from routinely collected clinical-grade physiology in paediatric TBI patients using self-supervised learning, and to group patients by their state progression.

METHODS

We performed a secondary analysis of the prospectively collected fully anonymised KidsBrainIT dataset (n = 204). Windows of heart rate and mean arterial blood pressure signals during the first 24 hours of PICU stay for TBI patients were encoded using a convolutional autoencoder trained with a joint contrastive and reconstruction objective. Encodings were clustered into states using a Gaussian mixture model. Patients were assigned to phenotypes using k-means based on their state progression. We evaluated states and phenotypes using silhouette scores and interpreted them using intracranial variables, including the intracranial hypertension burden and the low-frequency autoregulation index (LAx). States were compared with clusters from summary statistics and principal components of windows (PCA), and cluster agreement was assessed using the adjusted Rand index (ARI).

RESULTS

Despite using only extracranial physiology, our framework identified a state with abnormal intracranial physiology. Patients in the corresponding phenotype had a larger intracranial hypertension burden (0.2 ± 0.4) and a greater mean LAx (0.2 ± 0.3). Overall, 3 states and 3 phenotypes were identified, with improved cluster quality and different content than comparator methods. The state silhouette score was 0.21, compared to 0.06 and -0.01 for summary statistics and PCA, and the ARI versus these methods was 0.03 and 0.01.

DISCUSSION

A self-supervised framework discovered physiological states with improved quality and different content than traditional approaches. Using extracranial physiology alone, the defined phenotypes stratified intracranial physiology.

32 “Simulation based learning: a digital humanitarian tool”

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Clinical Speciality: Emergency Medicine

Innovation Category: Other

BACKGROUND

During natural and man made disasters, urgent health care is an essential pillar in the humanitarian efforts. Civilians displacement, health facilities destruction, and attacks on health workers jeopardise the effective health response. Since April 2023 an armed conflict erupted in Sudan with the largest population movements 12 millions. Babies were born on the go during civilians’ evacuations. Access to emergency units blocked, ambulances attacked, hospital invaded and medical schools occupied by armed forces.

AIMS

The academy of medical education during conflicts was created as partnership between Sudanese medical diaspora in UK and Sudanese health educators who are displaced following the war. It supported 21 public medical schools and national postgraduate institutions to integrated simulation based education principles digitally and utilise augmented reality simulation , AI and other low technology tools to enhance accredited training in emergency care which is much needed by the displaced and host communities.

METHODS

Synchronised and a synchronised virtual training was completed between 2023 and 2026 to train 550 simulation based education facilitators in different parts of the country and in neighbouring countries. 3000 learners were enrolled in a structured training program by their institutions at undergraduate and postgraduate levels using ARS and AI techniques by approved applications for free.

RESULTS

An accredited training program was established using a sound educational tool - simulation based learning - to overcome multiple challenges ranging from security, displacement, energy supply to internet connectivity. Emergency care training using 400 scenarios were offered using different platforms with a total of 150000 scenarios played over time, being monitored, discussed on weekly bases to overcome differences in local context in comparison to health care systems where these scenarios were created originally.

DISCUSSION

Simulation based learning using digital learning tools during humanitarian crises can be an effective method of education, response and psychological support to learners

33 “Survey to Assess Prevalence of insomnia in Primary School Aged Children”

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Clinical Speciality: Child and Adolescent Public Health

Innovation Category: Decentralised healthcare and self-management

BACKGROUND

Surveys from US, Australia and Germany show that 20-40% children have a sleep problem, but no data has been collected from school children in the UK. SleepCogni is a bed-side and hand-held device developed to monitor and self-manage insomnia.

AIMS

The team undertook a survey of primary schools to ascertain the prevalence of insomnia in a large UK city.

METHODS

An online survey was circulated to all 133 primary schools in Sheffield. Headteachers were contacted by Sheffield City Council and a letter provided to all parents with a link to the survey.

RESULTS

1149 responses have been received so far. Data collection is ongoing. Of this initial sample, 33% children struggle to fall asleep, 23% have chronic insomnia (sleep problem for at least 3 nights a week for at least 3 months) and 1 in 9 is regularly awake before 5am. 32% of the sample represented children with Autism or ADHD either diagnosed or suspected. Children in this sample had significantly poorer sleep than children without these conditions in terms of hours of sleep (8.5 hours vs 9.6 hours), time to fall asleep (69 mins vs 28 mins), meeting the criteria for chronic insomnia (51% vs 11%) and caregiver woken two or more nights per week (41% vs 12%). All differences $p<0.001$. Regular bedtime routines were related to earlier bedtimes and shorter time in bed before sleep onset. Use of screens rose sharply with later bedtimes and all types of sleep problem. 38% families struggling with sleep had sought help but failed to find a solution for their child.

DISCUSSION

An over-stretched NHS pathway is unable to cope with the demand from a population of primary school children with a high prevalence of sleep difficulty. A structured, data-led intervention provided by SleepCogni can fill this gap.

34 “The Wide Horizons Model: A Regional Non-Profit–Academic Partnership Co-designing Paediatric Cancer Information with Rural, Remote and Historically Under-Represented Young People”

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Clinical Speciality: Cancer and Leukaemia

Innovation Category: Inclusion and involvement of children, young people and families

BACKGROUND

Children and young people with cancer often receive care across multiple organisations. In one frontier US state, 52% travel out of state for treatment. Families must coordinate information across specialist and local services, yet available resources may not reflect rural and remote realities or changing developmental needs. This includes absence of child-life, pre-habilitation, and continuous adaptive services relative to resources in the local community setting, which negatively affects quality of life and targeted treatment outcomes.

AIMS

To establish a regional, youth- and family-led partnership and co-design accessible, developmentally responsive cancer information for use between and beyond major treatment encounters.

METHODS

This ongoing co-design initiative combines virtual and in-person listening, co-design, and feedback activities with at least 50 children, adolescents, young adults, caregivers, and community partners. De-identified participation records and qualitative notes will characterise information breakdowns, priority needs, and preferred formats. Building on visual communication work co-designed with 200 children from rural and Tribal communities, participants will iteratively shape and assess three paper-based, digital, and story-centred prototypes tailored to different developmental stages. Two advisory group convenings across an international children's advisory network site and non-profit cancer organization afforded initial priorities in prototype focus and form factor.

RESULTS

Initial development established survivor co-leadership, a regional youth advisory structure, digital infrastructure for participation, and an academic-nonprofit dissemination partnership. The co-design framework addresses needs arising outside major treatment visits, including symptom burden, mental health, family communication, and developmental milestones. Children and families defined priorities before prototype development rather than only reviewing completed materials. Exemplar versions of current prototypes will be presented.

DISCUSSION

This model positions children, young people, and families as partners in cancer information technology design. It offers a practical approach to connecting lived experience across geographically dispersed communities and developing resources that are understandable, relevant, and usable throughout treatment and survivorship.

35 “Towards a rapid, non-invasive blood test for paediatric use”

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Clinical Speciality: Haematology

Innovation Category: Medical Devices

BACKGROUND

Blood tests are one of the most common medical checks for children. They help doctors determine if a child has anaemia, an infection, or another health problem, and are also used to see whether treatment is working. But taking blood from children is often unpleasant and difficult. Many children are scared of needles, and for some, especially those who are young or have conditions such as autism, a blood test can be very stressful. For those who need frequent testing, this is an ongoing problem. In addition, these children can get scarring of the vessels.

Most GP surgeries cannot take blood from children, so families are sent to hospital clinics. This means longer journeys, longer waits, and more appointments. The process also takes a lot of staff time and NHS resources. Families sometimes wait several weeks for a test, and may need to go back again if the first sample could not be collected.

AIMS

We are developing a point-of-care handheld device for rapidly measuring blood count values without needles or lab delays and which is well-suited to primary care.

METHODS

Our prototype device works by shining light through the outer ear and imaging blood cells flowing through small vessels. By analysing how light changes as it passes through blood we aim to observe and measure red blood cells without requiring a blood sample.

RESULTS

A trial of our device in adults demonstrated proof-of-concept measurement of Haemoglobin concentration in less than 6 seconds of acquisition time, and the ability to isolate and analyse individual blood cells.

DISCUSSION

We are now adapting our device for safe and effective use on children, while continuing development of our image processing to include readout of additional blood cell parameters.



36 “Twelve-Month Glycaemic Trajectories across five Hybrid Closed-Loop Systems in Children and Young People with Type 1 Diabetes Mellitus”

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Clinical Speciality: Metabolic Disease

Innovation Category: Medical devices

BACKGROUND

Hybrid closed-loop (HCL) systems use continuous glucose data to adjust insulin delivery automatically. Overall benefits are established, but real-world patterns within individual platforms are less clear.

AIMS

To analyse 12-month, platform-specific trajectories in HbA1c and time in range (TIR) across five HCL systems used in paediatric diabetes care.

METHODS

A secondary analysis of a multicentre retrospective cohort of 264 children and young people aged up to 18 years with Type 1 Diabetes and at least 12 months of HCL use. HbA1c and TIR (3.9-10.0 mmol/L) were examined at baseline and 3, 6, 9 and 12 months; TIR was also assessed at 2 weeks. Follow-up values were compared with baseline within each platform using paired t-tests.

RESULTS

At 12 months, mean HbA1c was lower on all platforms, with significant reductions for Omnipod 5 (-11.8 mmol/mol; $p<0.001$), Medtronic 780G (-5.0; $p=0.0388$), Tandem t Control-IQ (-12.1; $p=0.0089$) and CamAPS FX/Ypsomed (-12.3; $p=0.0067$). The change with Medtronic 670G was not significant (-2.3; $p=0.5025$). TIR increased significantly with Omnipod 5 (+8.58 percentage points; $p<0.001$) and Medtronic 670G (+15.53; $p=0.0152$). TIR changes with Medtronic 780G (+4.75; $p=0.4462$), Control-IQ (-3.05; $p=0.6804$) and CamAPS FX/Ypsomed (+3.36; $p=0.1834$) were not significant. Table 1 and Figure 1 show endpoint values and trajectories.

DISCUSSION

Platform-specific trajectories demonstrated meaningful glycaemic improvements across HCL technologies in routine paediatric care, while showing that response patterns vary by device and outcome. These findings highlight the value of personalised platform selection, structured follow-up and targeted optimisation after initiation. This real-world evidence provides a strong foundation for larger adjusted studies examining how device characteristics and patient factors can maximise sustained benefit.

12-month glycaemic change across HCL Systems

HCL System	HbA1c at baseline (mmol/mol)	HbA1c at 12 months (mmol/mol)	Change in HbA1c	TIR at baseline (%)	TIR at 12 months (%)	Change in TIR
Omnipod 5	68.8	57.0	-11.8 (p<0.001)	52.79	61.37	+8.58 (p<0.001)
Medtronic 780G	65.8	60.8	-5.0 (p=0.0388)	57.60	62.35	+4.75 (p=0.4462)
Tandem t:slim Control-IQ	68.3	56.2	-12.1 (p=0.0089)	56.73	53.68	-3.05 (p=0.6804)
CamAPS FX with Ypsomed	65.0	52.7	-12.3 (p=0.0067)	69.24	72.60	+3.36 (p=0.1834)
Medtronic 670G	58.9	56.6	-2.3 (p=0.5025)	40.33	55.86	+15.53 (p=0.0152)

Table 1: Table outlining the endpoint means and paired comparisons with each HCL systems baseline.

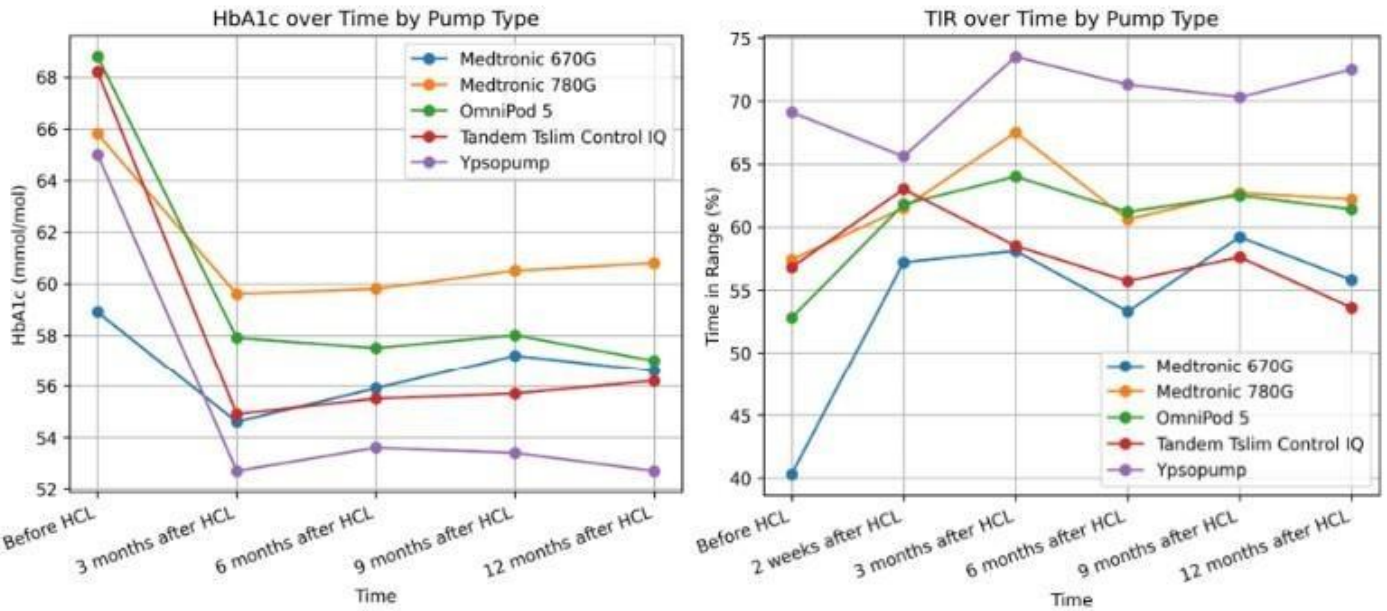

Figure 1: Graph showing trajectories of HbA1c and TIR over time from baseline to 12 months of HCL usage by device type

37 “Use of Artificial Intelligence in Paediatric Practice: A Survey of NHS Paediatric Doctors in Wales”

Dr Mayank Pahuja[1], MRS Suhani K Pahuja[2], Dr Saurabh S Patwardhan[3]

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Clinical Speciality: General Paediatrics

Innovation Category: Data, artificial intelligence and robotics

BACKGROUND

Artificial intelligence (AI) is increasingly used in healthcare and medical education. In paediatrics, AI offers potential benefits including rapid information retrieval and support with educational and professional tasks, but raises concerns regarding reliability, confidentiality and professional accountability.

AIMS

To explore how doctors working in paediatrics in Wales use AI, its perceived benefits and risks, and attitudes towards its future role in paediatric practice.

METHODS

An anonymous online survey was distributed to NHS doctors working in paediatrics in Wales. Questions explored AI awareness and use, professional applications, verification practices, perceived risks and future impact. Responses were analysed descriptively.

RESULTS

Thirty-two doctors responded, including resident doctors (trainees and non-trainees) and consultants. Twenty-six (81.3%) had used AI professionally. Among AI users, common applications included finding clinical information (53.8%), teaching (38.5%), portfolio/reflection (34.6%), referral or clinic letters (34.6%), understanding clinical concepts (30.8%), presentations (30.8%) and exam preparation (30.8%) (Table 1). Ten respondents had used AI in relation to a specific patient or clinical case. Established guidance remained the preferred first source for clinical information. Among respondents answering the verification question, 26/30 (86.7%) always or usually verified AI-generated information before professional use. Key concerns included over-reliance (75.0%), incorrect or fabricated information (71.9%), bias (65.6%) and patient confidentiality/data protection (56.3%) (Figure 1). Nineteen (59.4%) anticipated a positive impact on paediatric medicine over the next five years.

DISCUSSION

AI is already widely used by paediatric doctors in Wales, particularly for information retrieval, education and professional tasks. However, concerns regarding reliability, over-reliance, bias and confidentiality remain. Paediatric-specific guidance and training may support safe, critical and professionally accountable AI use. Wider publicity of the RCPCH digital health platform and consideration of AI within the Progress+ curriculum may be valuable.

Table 1. Professional uses of AI among respondents who had used AI for work (n=26)

Professional use of AI	n	%
Finding clinical information	14	53.8
Teaching	10	38.5
Portfolio / reflective writing	9	34.6
Referral or clinic letters	9	34.6
Exam preparation	8	30.8
Presentations	8	30.8
Understanding clinical concepts	8	30.8
Summarising research/articles	7	26.9
Understanding or summarising guidelines	6	23.1
Writing or improving clinical documentation	6	23.1
Audit / Quality Improvement	5	19.2
Generating differential diagnoses	4	15.4
Supporting clinical reasoning	3	11.5
Administrative tasks	2	7.7
Research	2	7.7
Data analysis / coding	1	3.8

Respondents could select more than one option; percentages therefore do not total 100%.

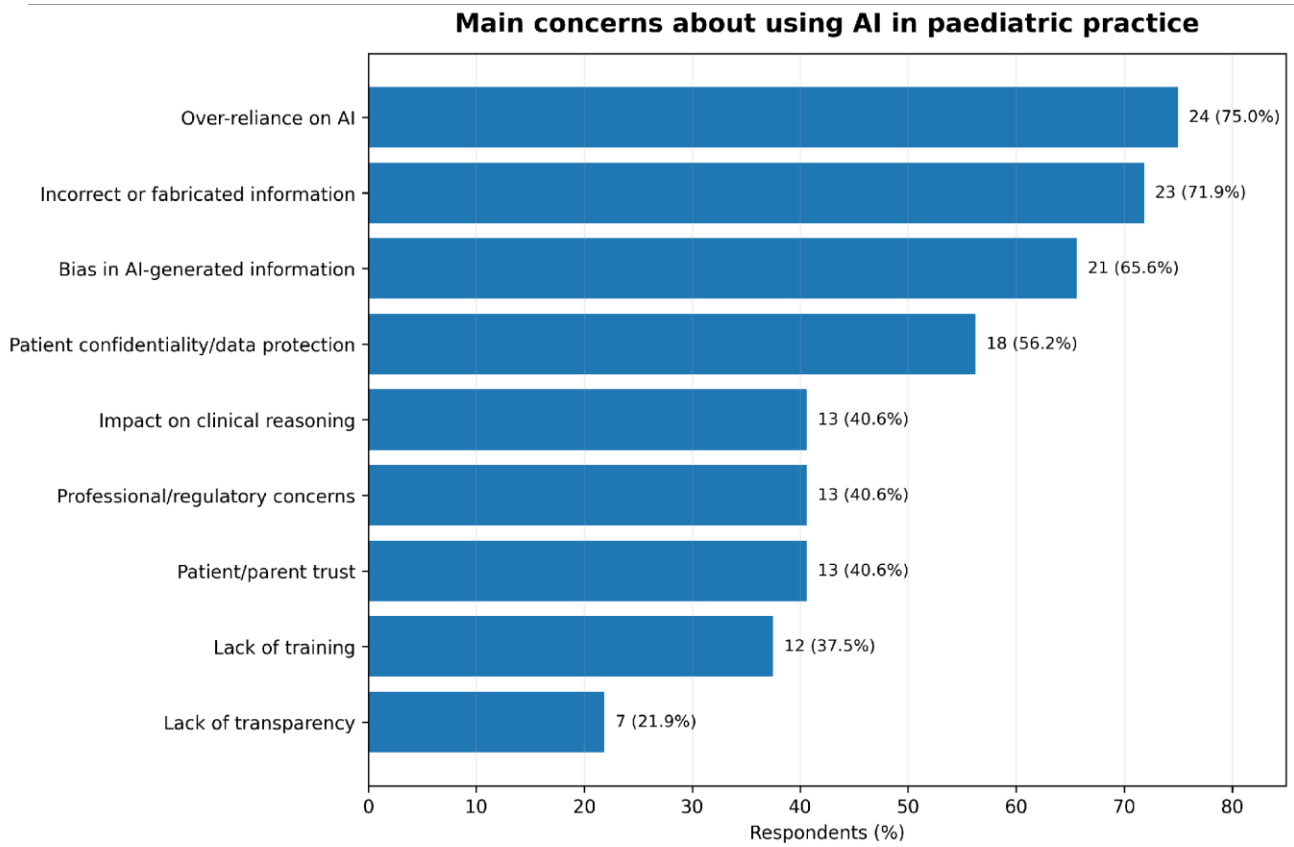

Figure 1. Main concerns reported by all respondents (n=32). Multiple responses were permitted.



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