

**NIHR** | Children and Young People  
MedTech Co-operative

# FIVE YEAR IMPACT REPORT

JANUARY 2018 - DECEMBER 2023



The National Institute for Health and Care Research Children and Young People MedTech Co-operative (NIHR CYP MedTech) launched on 01 January 2018 and is one of the 11 NIHR MedTech and In Vitro Diagnostics Co-operatives.

From 01 April 2024, NIHR CYP MedTech will become the NIHR HealthTech Research Centre in Paediatrics and Child Health.

# CONTENTS

04	FOREWORD
06	OUR IMPACT IN NUMBERS
08	REALISING HEALTHIER FUTURES
10	CLINICAL EXPERTISE
12	NO HEALTH TECHNOLOGY FOR US, WITHOUT US
16	WORKING IN PARTNERSHIP
22	NETWORKING FOR SUCCESS
26	SUPPORTING EARLY CAREER RESEARCHERS
28	CHILD HEALTH TECHNOLOGY CONFERENCE
30	PIONEERING THE FUTURE OF PAEDIATRIC HEALTH INNOVATION
32	THE NATIONAL CENTRE FOR CHILD HEALTH TECHNOLOGY
34	MEET THE TEAM
37	GET IN TOUCH

# FOREWORD

---



**Investing in the wellbeing and development of children and young people is an investment in our collective future. As we navigate the complexities of the modern world, it has become increasingly evident that the health and welfare of our youth are paramount to creating a thriving society.**

In this era of rapid technological progress, harnessing the power of innovation to improve child health is not just important—it's imperative. Child health technology can and will revolutionise healthcare delivery, diagnosis, treatment, and preventive measures for our youngest and most vulnerable population.

Over the past five years, the NIHR Children and Young People MedTech Co-operative has made tremendous progress in the rapidly expanding field of child health technology. From groundbreaking research to innovative

solutions and through the development of the most advanced technologies, we have witnessed remarkable achievements that have positively impacted on the children and young people we look after. These advances serve as a testament to the dedication and ingenuity of individuals and organisations committed to enhancing the wellbeing of children in the UK and worldwide.

As we look to the future, the NIHR HealthTech Research Centre in Paediatrics and Child Health and the National Centre for Child Health Technology provide even greater opportunities for innovation that will place the technologies that we develop in to the hands of those most in need. These centres represent the vanguard of paediatric healthcare, poised to lead the way in harnessing the power of technology to improve the lives of children and young people.

Through pioneering research, collaborative partnerships, and a steadfast commitment to excellence, these centres are primed to drive transformative change in child health. By leveraging cutting-edge technologies, such as artificial intelligence, digital health platforms, and medical devices, we can revolutionise how we diagnose, treat, and prevent illnesses and conditions in children and young people. By bringing together experts from diverse fields, including medicine, engineering, data science, and beyond, we can catalyse innovation and tackle complex challenges with creativity and ingenuity.

Central to our mission is establishing a robust global child health technology

community—a network of innovators, researchers, healthcare professionals, and advocates united in our commitment to advancing paediatric healthcare. Together, we can exchange knowledge, share best practices, and accelerate the development and adoption of transformative technologies that prioritise the needs of children and young people.

I extend my heartfelt gratitude to all those who have contributed to the field of child health technology. Whether through research, advocacy, or direct support, your dedication is instrumental in making our vision a reality. Together, let us continue to strive towards a future where every child can thrive and reach their full potential.

Thank you to the entire team and all those creating and supporting child health technology. Your efforts are shaping the future of paediatric healthcare and ensuring a brighter tomorrow for generations to come.

A stylized, handwritten signature in black ink, appearing to read 'Paul Dimitri'.

**Professor Paul Dimitri**  
*Clinical Director, NIHR Children and Young People MedTech Co-operative*

# OUR IMPACT IN NUMBERS

## LEADERS IN CHILD HEALTH TECHNOLOGY



**£22 million**  
secured for the  
**World's First**  
National Centre  
for Child Health  
Technology



**UK's First**  
Child Health  
Technology  
Conference



**UK's First**  
Robotics in  
Paediatrics and  
Child Health  
Showcase

## ENGAGEMENT AND DISSEMINATION



**68**  
conference  
and event  
presentations



showcased at  
**60**  
events



**44**  
peer-reviewed  
papers published



**3403**  
followers on  
social media



**162**  
newsletters  
published



**4**  
websites launched

## PROJECTS AND COLLABORATIONS



**£17.1 million**  
leveraged in  
funding



**85**  
funding  
applications  
submitted



**104**  
collaboration  
requests received



**163**  
events and  
interviews with  
children, young  
people, and  
families



**13**  
projects with other  
NIHR MedTech  
Co-operatives



**13**  
PhD students  
and early career  
researchers hosted



**£27 million**  
generated by  
industry partners  
after our support

Worked with **139** SMEs and  
**44** global companies

**180**  
projects

**56%**  
included an  
industry partner



# REALISING HEALTHIER FUTURES

## AN INTRODUCTION FROM OUR PROGRAMME MANAGER



**Our journey began 10 years ago with a pioneering approach to elevating healthcare innovation specifically for improving children and young people’s health. We recognised the incredible opportunity to make interventions that safeguard health across the entire lifespan and an opportunity to create sustainable health and healthcare for the next century.**

What we achieve in paediatric innovation impacts throughout generations: healthier children, enabled by effective health technologies, result in better long-term health and wellbeing for both individuals and the wider population. By preventing and rapidly addressing health conditions in childhood we can significantly reduce the burden of disease experienced across a lifetime. Healthier children and better management of children with acute and chronic conditions improves educational

opportunities and positively impacts on the nation’s wealth and prosperity.

In 2014, we launched the Technology and Innovation Transforming Child Health (TITCH) Network, which focused on cross-sector collaboration as the driver to progress children’s health technologies. The TITCH Network brought together industry experts, academics, healthcare professionals, funders, regulators, and most importantly children, young people and their families to advance paediatric care through innovations tailored to the unmet needs of children and young people. The TITCH Network stimulated a collective effort to cultivate paediatric health technology research, directed research funding towards major gaps in healthcare, and accelerated the translation of discoveries into clear benefits for children and young people.

This foundation was critical in driving the launch of the NIHR Children and Young People MedTech Co-operative (NIHR CYP MedTech) in 2018 as a national initiative to scale cutting-edge innovations across

paediatric health services. NIHR CYP MedTech prioritises innovations that align with our seven key themes. By targeting childhood diseases and long-term conditions with the greatest needs, we have made a dramatic improvement on the health and wellbeing of children and young people in the UK and beyond.

We are now poised to launch the next phase of our journey: the NIHR HealthTech Research Centre (HRC) in Paediatrics and Child Health. As the only HRC focused on paediatrics and child health, we will concentrate on driving commercialisation, adoption, and real-world implementation of innovations developed specifically for the needs of children and young people.

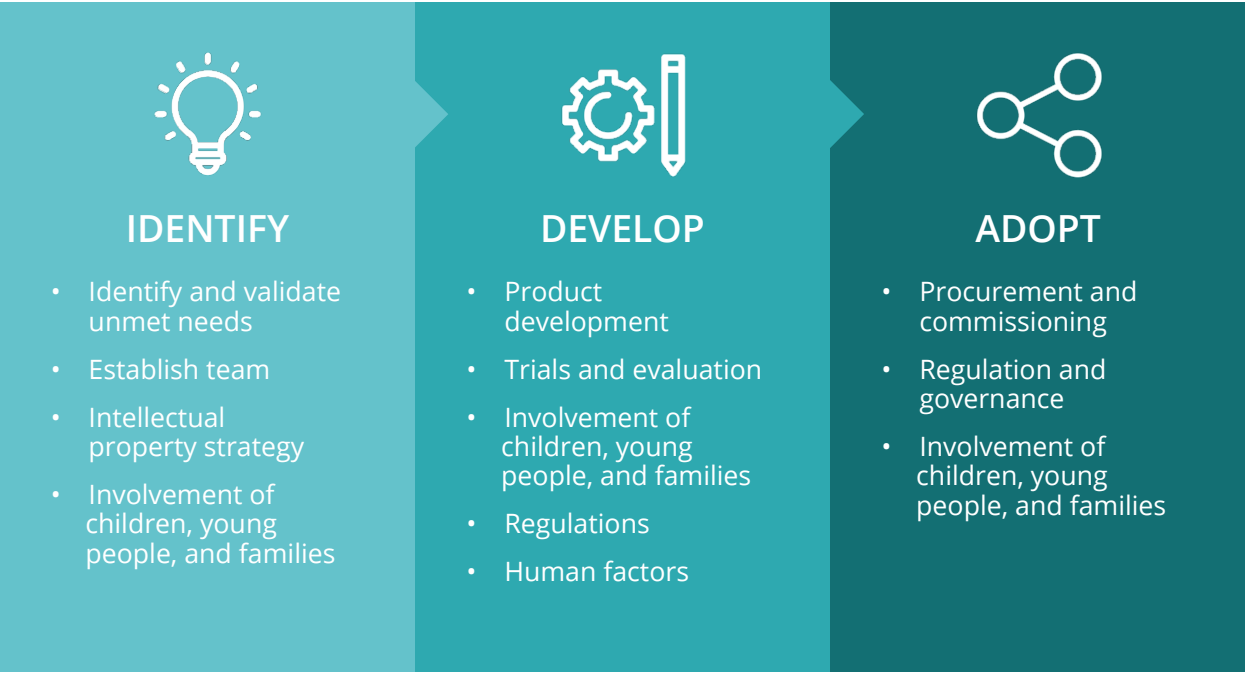
Key themes in the HRC will address pivotal areas of the early life course,

including neonatal care, rare childhood diseases, and the transition to adult healthcare. Cross-cutting themes will also interlink physical and mental health, while championing the integration of artificial intelligence (AI) into paediatric technologies.

Future generations deserve the opportunity for healthy, high-quality lives; the benefits of improving children’s health through technology are immeasurable. We are committed to transforming the health and wellbeing of children and young people, while ensuring they remain at the centre of innovation.

*Nathaniel Mills*  
*Programme Manager,*  
*NIHR CYP MedTech*

## OUR INNOVATION PATHWAY



# CLINICAL EXPERTISE

**NIHR CYP MedTech is committed to transforming child and adolescent health through technology and innovation. To achieve this, we focus on clinical areas where we believe technology would be of great benefit to children, young people, their families, and NHS clinical services.**

Our team specialises in the development of health technologies across six clinical themes. The transition from paediatric to adult healthcare is our seventh, cross-cutting theme.

Each theme is led by national and international experts at NHS Trusts across England who bring their highly specialised knowledge and experience to each project. Theme leads work

collaboratively with multidisciplinary partners at every step of the innovation pathway, including the identification and validation of unmet needs, product development and evaluation, and the adoption of new innovations into the NHS.

In addition to our seven key themes, we have recently expanded our remit to include mental health as both a cross-cutting theme and a focus for specific technology development.

Across the last five years, our themes have made incredible progress in their respective areas, and have catalysed the development of many novel technologies and innovations that aim to improve the health and wellbeing of children, young people, and their families.

## OUR THEMES

CANCER	TRANSITION	MENTAL HEALTH
EPILEPSY, MUSCLE, AND MOVEMENT DISORDERS		
NEONATAL TECHNOLOGIES		
RARE DISEASES		
RESPIRATORY, SLEEP, AND VENTILATION		
SURGICAL TECHNOLOGIES		



*Professor Heather Elphick*  
Respiratory, Sleep, and Ventilation Theme Lead



*Dr Nicki Barker*  
Respiratory, Sleep, and Ventilation Deputy Theme Lead

“NIHR CYP MedTech’s support has been invaluable, particularly as technological advances have mirrored the rapid growth and expansion in respiratory, sleep, and ventilation (RSV) clinical areas.

“Project successes have included custom-made ventilation masks using 3D printing, validation of technologies for sleep apnoea in the home, development of technologies to diagnose conditions involving complex breathlessness, using hyperpolarised MRI to better understand respiratory conditions, the integration of educational video resources into asthma reviews, and novel technologies for insomnia.

“The future impact of these projects includes less frequent hospitalisation, improved adherence to ventilatory support, empowerment of young people to self-manage their asthma while transitioning to adult care, and overall improved wellbeing for children and their carers.”



*Professor Don Sharkey*  
Neonatal Technologies Theme Lead

“Being part of a national team has provided a unique opportunity to connect with new researchers in the neonatal technology space and to support and guide novel ideas that could enhance neonatal care in the future.

“Importantly, it has provided an infrastructure and resource to grow early career medtech researchers on their early steps to independence and future aspirations to be leaders in this critically important area of neonatal care.”



# NO HEALTH TECHNOLOGY FOR US, WITHOUT US

**Ensuring the voices of children, young people, and their families remain at the centre of innovation is one of the founding principles of NIHR CYP MedTech.**

**What is PPIE?**

Our work in Patient and Public Involvement and Engagement (PPIE) is fundamental to putting this principle into practice. For us, PPIE is not an optional add-on to seek feedback from families at one stage of a project, but instead is woven into each stage of the innovation process. From identification and validation of unmet needs to developing a research protocol, giving constructive guidance throughout the design and development of new technologies, and prototyping, testing and evaluating innovations in practice, the children,

families, and public we work with have invaluable insight and lived experience. By fostering and maintaining meaningful collaborations with children, young people, and families, the technologies we create are more likely to be impactful, contextually appropriate, accepted, and sustainable.

The importance of PPIE has become increasingly recognised within the healthcare research and innovation landscape over the past decade. PPIE is now seen as a fundamental requirement in the majority of funding calls and is becoming increasingly featured as core training in education and professional development. Indeed, over the last five years, the NIHR CYP MedTech team have been increasingly asked to advise on and manage PPIE in many projects, and even deliver bespoke in-person and online training in PPIE and co-design.



## CASE STUDY YOUTH FORUM PANEL DISCUSSION IN THE THIRD CHILD HEALTH TECHNOLOGY CONFERENCE

We aim to involve children and young people across the NIHR CYP MedTech portfolio, and our Child Health Technology (CHT) conference is no exception.

As part of CHT2023, we worked with the Sheffield Children's Youth Forum to deliver a panel discussion on the topic of, "Experiences and advice from young people involved in health research". During this session, four young people shared their thoughts on how to meaningfully involve them, and other young people, in health research.

As well as providing vouchers to compensate the young people

for their time, the panelists also received certificates and letters of recommendation, as well as free tickets to the CHT conference.

Whilst PPIE is often centred on individual projects, it is clear that events also provide opportunities to empower young people to be heard as well as for young people to inspire and guide best practice.



**A rights-based approach**

Our PPIE Executive Lead, Jen Preston, is involved in world-leading developments that highlight the ethical importance of conducting meaningful PPIE. Jen's work with UNICEF takes a rights-based approach to PPIE, where, in accordance with Article 12 of the United Nations Convention on the Rights of the Child, children have a human right to express themselves freely, to be listened to, and to have a say in their own healthcare, as well as in shaping the future of healthcare research.

Jen's expertise and leadership has been invaluable in establishing NIHR CYP MedTech as a centre of excellence for PPIE. As well as establishing new collaborations across Europe, Jen also manages the NIHR Generation R

Network of Young Person's Advisory Groups (YPAGs) across the UK. By being embedded in, and learning from, these networks, our team is well placed to advise our collaborators and colleagues in academia, industry, and healthcare in how to effectively and respectfully involve children and young people in their research.

**New challenges and opportunities**

Much of our PPIE activity during the first few years of NIHR CYP MedTech took place in person, often bringing together professionals and families to better understand the unmet needs and potential solutions in a given context. We have been proud to collaborate with our colleagues at Lab4Living (Sheffield Hallam University, UK) with expertise in co-design, drawing on the strengths of



## CASE STUDY

### PPIE SHAPING THE WHITE ROSE UNIVERSITY CONSORTIUM SCOPING REVIEW

The White Rose University Consortium is a partnership between the Universities of Leeds, Sheffield, and York. To better understand the preferences of children, young people, and their families surrounding health technologies, the consortium conducted a scoping review. NIHR CYP MedTech led the PPIE aspect of the review.

A PPIE group of 12 young people based across England was established, with PPIE activities taking place online. The PPIE group was considered equal to the academic team throughout the review. Initial activities focused on co-developing the principles

and branding of the project, which became known as Tech-Y.

To support meaningful involvement, PPIE activities were designed to teach young people about academic research, writing, and critical thinking. The young people also helped to shape the scope of the review, analyse the findings, as well as to write and review the final paper (with those who wished being named as co-authors).



## CASE STUDY

### CO-DESIGNING A CHATBOT FOR YOUNG PEOPLE WITH TYPE 1 DIABETES MELLITUS

NIHR CYP MedTech led a successful grant application to develop a chatbot to help young people self-manage their type 1 diabetes mellitus (T1DM) as they move from paediatric to adult healthcare.

Throughout the project, young people were involved in iterative co-design sessions, which informed the content, appearance, and functionality of the chatbot. Using an iterative process ensured that young people's needs were incorporated at every stage of development. A separate Expert User Group was also established to guide the team and improve the user experience of the chatbot.

After the development, a six-week feasibility trial was conducted across four NHS paediatric centres, allowing co-design participants to test the final prototype.

In an effort to ensure equality, diversity, and inclusion throughout this project, the team also worked closely with Thrive by Design, a multidisciplinary team of specialists in inclusive co-design.



creative approaches to foster creative, constructive collaboration across hierarchies and disciplines.

However, during the COVID-19 pandemic, an adaptable approach to PPIE was needed. We therefore developed skills in using new tools and methods, including online whiteboards for collaborative working, and developing new forms of 'workshops' via videocalls. Many of these new tools and skills have enabled us to extend our reach across the country and can facilitate the engagement of families who may otherwise be excluded.

#### **Equality, diversity, and inclusion**

While the significant shift towards digital ways of working can be liberating for some, we must also be mindful of

issues of digital exclusion, both in how we collaboratively design new health technologies and within the technologies themselves. It has been important for us to dedicate resources to addressing equality, diversity, and inclusion across our portfolio, by working with inclusion experts, such as Thrive by Design (UK), and through shared learning events with the NIHR MedTech and In Vitro Diagnostics Co-operatives PPIE Network.

Moving forwards, we will be considering how we can help tackle digital inequalities through initiatives such as the Minimum Digital Living Standard (MDLS) for households with children covering all four UK nations and through collaboration with our host institution, Sheffield Children's NHS Foundation Trust.





# WORKING IN PARTNERSHIP



**Strong partnerships with key collaborators are essential to the development of innovative and effective health technologies that meet the needs of children, young people, their families, and the NHS.**

Health technology development has historically been localised and fragmented, with a limited understanding of the benefits of developing bespoke technology for children and young people. Ensuring that project teams are equipped with the necessary skills and experience and have a clear, shared vision is therefore essential for developing effective technologies at scale.

NIHR CYP MedTech has extensive networks across healthcare, academia,

and industry, and therefore our team has played a critical role in establishing many collaborations and partnerships between stakeholders.

NIHR CYP MedTech’s collaborative approach has provided a strong foundation for future partnerships in the new NIHR HealthTech Research Centre in Paediatrics and Child Health that will enable us to accelerate child health technology products to market.

Critically, NIHR CYP MedTech’s ethos is to ensure that children, young people, and their families are involved at every step of the innovation pathway. We therefore advocate that all project teams should include patient representatives to ensure the voices of children and young people are heard.

# CATALYSING INNOVATION: PROOF OF CONCEPT PROJECTS



**20**  
projects  
funded



**£216,000**  
allocated

**A core strength of NIHR CYP MedTech is the ability to identify major gaps in paediatric care in need of technology-based solutions.**

Our team has accelerated the development of novel innovations through our targeted proof of concept (POC) funding programme. This

seed funding prioritises early stage prototyping and feasibility testing, often focusing on cutting-edge technologies where no clear commercial pathway exists. Our POC process, guided by the expertise of our theme leads, therefore allows us to explore bold new ideas despite uncertainty about market potential.

POC funding can propel promising innovations through the innovation pathway by rapidly progressing early ideas into evidence-backed prototypes. This expedites the data required for larger grants and development programmes.

NIHR CYP MedTech commits £40,000 annually to fund technologies that align with our clinical themes and have the potential to transform the health and wellbeing of children, young people, and their families.





# PROOF OF CONCEPT CASE STUDIES

## WIRELESS RESUSCITATION DEVICE FOR HIGH-RISK NEWBORNS



### UNMET NEED

A recent global survey of leading paediatric and neonatal resuscitation experts highlighted the need to develop technologies for the delivery room in order to improve healthcare delivery outcomes and neonatal survival in intensive care settings.

### PROJECT

This project aimed to design and collect pilot data for an advanced neonatal resuscitation vital signs monitoring system. Following the successful pilot study, this project has leveraged over £1 million in NIHR funding and published a paper about “The critical role of technologies in neonatal care” in December 2023.

### PARTNERS

- University of Nottingham
- SurePulse Medical Ltd

## AUGMENTED REALITY TO SUPPORT MENTAL HEALTH SERVICES



### UNMET NEED

Young people who visit outpatient mental health clinics are often anxious about their visit and may not attend. Xploro is a digital platform that provides engaging, personalised information to reduce anxiety about upcoming hospital visits in 7-14 year olds. However, it is unknown if this platform could be adapted for an older audience.

### PROJECT

This project is taking a co-design approach to identify how the Xploro app needs to change to be suitable for adolescents who use, or have used, mental health outpatient services. To date, the team have been successful in engaging stakeholders across the mental health services community.

### PARTNERS

- Xploro®
- Birmingham Women’s and Children’s NHS Foundation Trust
- NIHR Devices for Dignity MedTech Co-operative

## MENTAL HEALTH SUPPORT FOR PARENTS OF NEWBORNS ON A NEONATAL UNIT



### UNMET NEED

Parents with a newborn admitted to the neonatal unit experience significantly higher rates of mental health difficulties. There is an unmet need for evidence-based psychological support specifically for those with an infant in the neonatal unit as this experience poses a unique set of challenges for parents.

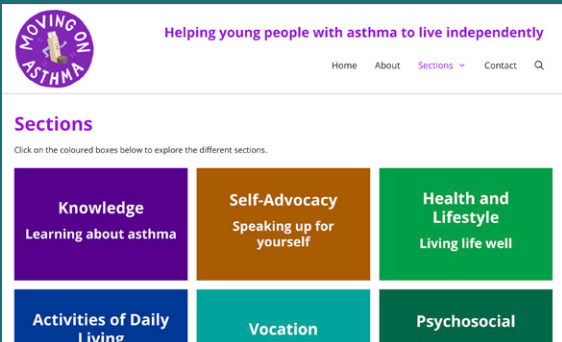
### PROJECT

This project aimed to develop the existing maternal support app, Canopie, and tailor it for parents with a newborn in the neonatal unit using a compassion-based approach. The team has successfully expanded existing mental health support for parents by creating new content in the app, including short exercises, animations, and voice overs, with the help of parents with lived experiences.

### PARTNERS

- East Midlands, North West and Yorkshire & Humber Neonatal Operational Delivery Network
- Canopie

## DIGITAL LEARNING TO SUPPORT ASTHMA SELF-MANAGEMENT



### UNMET NEED

One in 11 children and young people in the UK are living with asthma. Self-management is fundamental for effective asthma control. However, fewer than 50% of children and young people with asthma take their medications as regularly as prescribed. This highlights the need for an easily accessible online educational resource.

### PROJECT

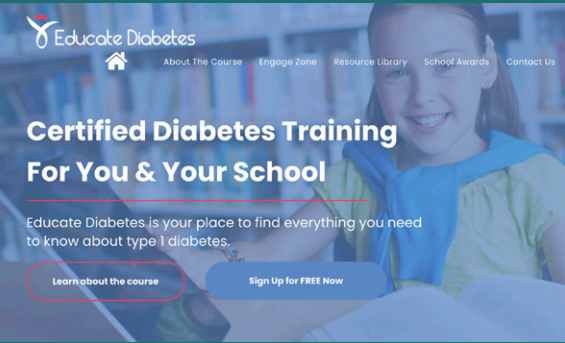
During this project, a bespoke tool was developed that provided access to a user-friendly learning platform that aimed to improve children and young people’s self-management skills. Following the success of this project, the resources have been integrated into an existing self-management app called Digital Health Passport, which is supported by NHS England.

### PARTNERS

- Tiny Medical Apps
- Sheffield Children’s NHS Foundation Trust



# DIGITAL LEARNING IN SCHOOLS FOR TYPE 1 DIABETES



## UNMET NEED

It is important for school staff to understand how to keep children with type 1 diabetes safe. For example, knowing how to manage insulin injections in emergency situations. Creating an understanding school environment is also important to destigmatise type 1 diabetes and support children’s mental health. However, the current training available is often not engaging, which may impact efficacy.

## PROJECT

“Educate Diabetes” is an e-learning platform comprising 10 modules of key information suitable for beginners, an interactive webinar with the Leicester School Diabetes Team, and a quiz to certify users. To date, the team have reached over 500 users on the platform, established partnerships with Diabetes UK to extend reach, and joined the StartUp Health Type 1 Diabetes Moonshot Fellowship community.

## PARTNERS

- HEAL.med CIC (Deapp - The Diabetes Education App)
- University Hospitals of Leicester NHS Trust

# SUPPORT FOR SIBLINGS OF NEWBORNS ON A NEONATAL UNIT



## UNMET NEED

Having a newborn sibling admitted to the neonatal unit can be a distressing time for a child. Older siblings often feel isolated, scared, and unsure, and it can be difficult for parents to explain what is happening and answer tricky questions.

## PROJECT

Nell and the Neonatal Unit is an app that aims to provide emotional and educational support to children who have a new sibling in the neonatal unit. For this project, the team has collaborated with parents and their children to create additional educational, age-appropriate support for children, including digital games, animations, and stories, as well as co-developing an additional story arc for the app.

## PARTNERS

- Child Health Innovations
- Thames Valley and Wessex Neonatal Operational Delivery Network
- Supporting Sick Newborn and Their Parents

# PHYSIOTHERAPY TOOLBOX FOR JUVENILE IDIOPATHIC ARTHRITIS



## UNMET NEED

Juvenile Idiopathic Arthritis (JIA) affects approximately 15,000 children and young people in the UK. It causes chronic joint pain and stiffness, making everyday activities difficult. Although some products exist to help manage JIA, most have not been designed with children and young people and are therefore patronising or do not address their unique needs.

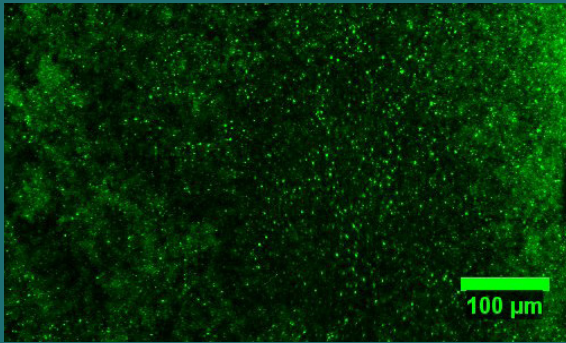
## PROJECT

The JIA Toolbox, co-designed with patients, addresses four key needs: managing pain, physiotherapy, communication, and symptom tracking. A proof of concept study showed that eight out of 10 children found the prototypes beneficial. The team are now conducting a feasibility study with 25 children over three months to gather further evidence and secure funding for a pilot study.

## PARTNERS

- Sheffield Hallam University
- Sheffield Children’s NHS Foundation Trust

# ANTI-MICROBIAL PROPERTIES OF POLYMER-COATED MEDICAL DEVICES



## UNMET NEED

Late-onset infections (LOI) are a leading cause of death and illness in premature babies and they are often acquired in hospital from life-supporting medical devices. Reducing the risk of LOI is crucial to minimising complications and improving life expectancy.

## PROJECT

In order to reduce the risk of LOI, this project aimed to test new coatings for common neonatal medical devices that resist bacterial colonization without the need for antibiotics. The promising data from this project was presented at Neonatal Society Conference this year and has been pivotal in several grant and fellowship applications.

## PARTNERS

- University of Nottingham
- Draeger



# NETWORKING FOR SUCCESS

Over the past five years, NIHR CYP MedTech has been instrumental in establishing new and partnering with existing strategic networks, all working towards the same goal of transforming child health through innovation.

In 2014, the national Technology Innovation Transforming Child Health (TITCH) Network was established to bring together experts from diverse sectors to address common problems in paediatrics. The TITCH Network is currently comprised of over 50 experts who are dedicated to transforming child health through technology and

innovation. The network aims to identify and validate unmet needs as well as facilitate multidisciplinary collaborations to develop effective technological solutions. To date, the TITCH Network has successfully identified over 100 unmet needs and leveraged over £9 million in grant funding.

Due to the success of the TITCH Network, we have utilised a similar approach across several different initiatives, including the Starworks Innovation Network, and have partnered with the Children's Hospital Alliance to deliver innovation at scale across the NHS.



**Starworks is a young people's prosthetic research collaboration which brings children and their families together with key opinion leaders from the NHS, industry, clinical academia, and leading national research centres with expertise in child prosthetics.**

NIHR Devices 4 Dignity MedTech Co-operative received an initial £750,000 from the UK Department of Health in 2016 to launch Starworks. The Paediatric Programme Manager for both Devices 4 Dignity and NIHR CYP MedTech led the Starworks programme and therefore both MICs have been involved in supporting this initiative.

Our collaboration aims to increase research across the system in order to accelerate the translation of new

inventions and developments in child prosthetics into everyday use.

Since 2016, the network has grown from strength to strength. Our first years focused on identifying unmet needs from multiple stakeholder perspectives, followed by launching our first proof of concept funding call to address these needs. Many of the 10 projects supported by Starworks funding went on to secure follow-on funding, patent their innovation, and develop new collaborations.

We continue to work closely with families through our Starworks Ambassador programme as well as our partners in the LimbPower charity, ensuring the voices of children and young people remain at the centre of innovation in child prosthetics.



The Children's Hospital Alliance (CHA) started in 2016 as a voluntary collaboration of 11 NHS trusts: the standalone children's hospitals and tertiary NHS trusts with large specialist children's services.

The CHA aims to amplify the voice of the children's trusts at a national level and to catalyse innovation at scale in a way that no trust can do alone.

NIHR CYP MedTech contributes to the CHA collaboration through their

Innovation Network, which shares learning and provides support to member trusts. NIHR CYP MedTech also hosts a project manager who works directly with the CHA.

Two of the CHA's recent achievements have been Alder Hey's Was Not Brought pilot programme and supporting Sophie's Legacy.

## WAS NOT BROUGHT AI TOOL



**Every year, children and young people in England are not brought to more than a million hospital appointments. This is often because parents/carers believe that their child no longer needs the appointment or they simply forget. But in some cases,**

**poverty and other disadvantages prevent children, young people, and their families from accessing healthcare.**

To address this, Alder Hey NHS Foundation Trust developed an artificial intelligence (AI) tool that uses 42 commonly available data points to identify which children are at the highest risk of missing their outpatient appointment.

Five different health inequality focused interventions, such as free transport or clinic appointments in schools, were subsequently implemented to reduce the 'was not brought' (WNB) rate among children at highest risk of missing their appointments.

Using the AI tool and associated interventions to reduce the WNB rate was highly successful; during a two-month period, over 4000 appointments were saved across 10 NHS trusts. The AI tool has now been successfully embedded in nine out of the 10 trusts across England.

## REALISING SOPHIE'S LEGACY



**Sophie was diagnosed with cancer in September 2020 but sadly died aged 10 in September 2021. Sophie's Legacy was set up to implement the changes in paediatric care that Sophie was passionate about. The provision of meals for parents/carers of children in hospital was a key priority for Sophie.**

In England, two million children (19%) live in low-income families. Rising housing, energy, and food costs are putting more people in the difficult position of deciding between heating their homes and eating.

Parents/carers have limited food options while their child is in hospital. They frequently rely on hospital outlets with inflated retail prices, often resulting

in additional financial pressure and skipping meals for days at a time.

A pilot scheme was set up through the CHA that aimed to rapidly assess various approaches to reduce financial pressures and improve the wellbeing of parents/carers. Nine NHS trusts were each given £10,000 to offer free or subsidised meals for resident parents/carers during their child's hospital stay.

*"This is a brilliant idea! As a single parent with a low income, being in hospital for an extended stay can be tough. I'm so grateful for these meals. They have taken the financial strain away from us whilst we stay here. We can't thank the team enough."*

The pilot scheme was a success and had a clear positive impact on the wellbeing of parents/carers. Importantly however, concerns were raised during the pilot about the long-term sustainability of the initiative. It was realised that the scheme cannot be a one-size-fits-all due to the variety of ward environments, catering equipment, and contracts.

# SUPPORTING EARLY CAREER RESEARCHERS

**Our work to support early career researchers in child health innovation is key to developing a skilled and sustainable workforce of the future. Working with researchers at the forefront of this field also enriches the NIHR CYP MedTech network and ensures we can be responsive to the emerging challenges of today.**

We have been fortunate to work with early career researchers from a range of backgrounds and have hosted placements for doctoral and post-doctoral students from across the

world. We have provided guidance in areas of regulation and ethics, supported the development of research protocols and funding applications, and facilitated collaborations across our networks. In particular, we have developed an international reputation for delivering bespoke training to early career researchers in patient and public involvement and co-design with children, young people, and their families in the context of child health technology.

In parallel to this, our outreach work with secondary schools, undergraduate students, and masters students has also helped to highlight child health technology development as an important and growing career path for the next generation of innovators.



**DR FIONA SOTIR**  
RESEARCH FELLOW,  
UNIVERSITY OF SHEFFIELD, UK

Fiona is a paediatric dentist whose doctoral study aims to develop a Cognitive Behavioural Therapy based resource to support children with needle fear. Fiona received two years of supervision and training in co-design from our team, leading to the successful completion of a feasibility study.



**DR JÚLIA MARTÍN BADIA**  
POST-DOCTORAL RESEARCHER,  
UNIVERSITY OF BARCELONA, SPAIN

Júlia joined us to further her research in Applied Ethics, exploring the use of artificial intelligence and robotic technologies to empower adolescents. During her placement, Júlia delivered seminars to clinical teams, connected with experts in robotics and co-design, and worked with our team to develop her research for engaging families.

# NIHR GREAT ORMOND STREET HOSPITAL BIOMEDICAL RESEARCH CENTRE PHD PROGRAMME

**NIHR CYP MedTech is collaborating with Great Ormond Street Hospital (GOSH), Sheffield Children's NHS Foundation Trust, and the Insigneo Institute at the University of Sheffield to support four non-clinical PhD studentships that aim to drive digital change in clinical pathways.**

The PhDs are funded by the NIHR GOSH Biomedical Research Centre. PhD topics were identified via a two-stage process:

1. 13 clinical teams across the country submitted a project proposal.
2. Three multidisciplinary workshops were facilitated to discuss unmet needs and the potential impact of each project.

The final four PhD topics are:

- Novel devices and integrated data platforms for **sleep disordered breathing**;
- Developing virtual reality for **paediatric neurorehabilitation**;
- Using digital technologies in **paediatric preoperative care**, specifically in preoperative excess weight clinics; and
- Intelligent **monitoring of O2 saturation** to reduce A&E attendance.

The PhDs will start in 2024 and run for three years.





# CHILD HEALTH TECHNOLOGY CONFERENCE

**NIHR CYP MedTech founded and launched the UK's first Child Health Technology (CHT) conference. The conference brings together experts from academia, industry, and healthcare to share cutting-edge research and best practice.**

Our ambition is to create a global child health technology community, uniting colleagues around the world who share the common goal of developing the most advanced healthcare for children and young people through innovation and technology.

Since the inaugural conference in 2021, we have hosted two further virtual conferences. To date, the CHT conferences have featured inspirational talks and sessions from key opinion

leaders based in Kenya, Israel, Singapore, Australia, New Zealand, the USA, South Africa, Switzerland, and more.

The conference is used as a platform to discuss the most pressing issues facing child health innovation, including environmental sustainability, equality and diversity, ethics and digital rights, and patient involvement. Critically, the conference keeps children, young people, and their families at the centre and ensures that their voices are heard and represented throughout.

As we look towards future conferences, we aim to continue growing the global child health technology community to ultimately give all children and young people around the world the best start in life.



**cht  
2023**

Gold Sponsor

**MERCK**

Partner



Innovate UK

Silver Sponsor



Clinical Research Network  
Yorkshire and Humber

Bronze Sponsors



Sheffield Hallam  
University

Health  
Research  
Institute



**3**  
virtual  
conferences



**170**  
speakers



**607**  
delegates



**21**  
sponsors



**33**  
countries



**100%**  
rated CHT as  
excellent or  
good



**100%**  
would  
recommend  
CHT to a  
colleague



**100%**  
rated CHT as  
good value

**"A great conference, by far the most professionally-presented virtual conference I have attended."**

**"Excellent event with a good range of speakers."**

*CHT Conference Delegates*

**"It was a fantastic opportunity to learn about many exciting developments in the child health innovation space."**

**"We really enjoyed collaborating on this conference and look forward to working with you again next year."**

*CHT Conference Sponsors*

# PIONEERING THE FUTURE OF PAEDIATRIC HEALTH INNOVATION

**As we look to the future, we are delighted that £3 million in funding has been awarded by the NIHR to launch the NIHR HealthTech Research Centre (HRC) in Paediatrics and Child Health.**

This programme will be a significant expansion of our national presence to progress innovations addressing unmet child and maternal health needs. We will focus our efforts on evaluation, commercialisation, adoption, and dissemination of technologies designed and developed specifically for children and young people.

Several key themes will concentrate on

fundamental aspects of early life and child development, including maternal and neonatal care, rare childhood diseases, and the transition from paediatric to adult healthcare. Cross-cutting themes will focus on the interplay between physical and mental health as well as how artificial intelligence (AI) can be integrated into child health technologies.

Our team will collaborate with world-leading child health institutions, including Great Ormond Street Hospital, Cambridge Children’s Hospital, Sheffield Children’s Hospital, and Birmingham Women’s and Children’s Hospital, in addition to expert university partners based in Cambridge, Nottingham, Liverpool, and Sheffield.

By unifying expertise across healthcare, academia, industry, children, young people, and their families, the HRC will pioneer the future of healthcare innovation for babies, children, and young people. State-of-the-art facilities and infrastructure will enable technology conceptualisation, prototyping, testing, and translation into clinical practice and home use at a scale not previously possible.

Sheffield’s growing innovation ecosystem is now home to the TITCH Network, the NIHR HRC in Paediatrics and Child Health, and the upcoming National Centre for Child Health Technology. This makes it the ideal place to lead the transformation of paediatric technology both nationally and globally. We are

poised to become the world leader in advancing innovations for children and young people for generations to come.

*The NIHR have awarded £42 million to 14 centres across England that will strive to improve healthcare by developing medical devices, diagnostics and digital technologies. Each HRC has a separate focus.*

*The new HRCs launch on 01 April 2024 and will replace the NIHR MedTech and In Vitro Diagnostic Co-operatives (MICs).*

*The NIHR HRC in Paediatrics and Child Health will be hosted by Sheffield Children’s NHS Foundation Trust.*



## OUR THEMES ACROSS THE EARLY LIFE COURSE: BIRTH TO 25 YEARS

EARLY LIFE	MIND-BODY INTEGRATION	CHILD HEALTH AI NETWORK
LONG-TERM CONDITIONS IN CHILDHOOD		
TRANSITION		



# THE NATIONAL CENTRE FOR CHILD HEALTH TECHNOLOGY



**The National Centre for Child Health Technology (NCCHT) will be a world-class facility, led by Sheffield Children's NHS Foundation Trust, aiming to create healthier futures through technology and innovation.**

The NCCHT will address the biggest challenges facing paediatrics today: obesity, mental health conditions, cancer, long-term physical health conditions, health inequalities, and disabilities.

Academics, engineers, designers, digital health experts, healthcare professionals, children, young people, and their families will work together in a unique ecosystem to design, innovate, and implement

novel technologies to improve children's health. The centre will also deliver excellent, state-of-the-art, patient care.

Critically, the centre will be more than just a building; the NCCHT will be part of a global child health technology network that is dedicated to improving the health and wellbeing of children and young people through technology and innovation.

The centre will be based on the Sheffield Olympic Legacy Park, a world-class campus dedicated to innovation, education, health and wellbeing, and excellence in nutrition and elite sport.

To accelerate the development and adoption of novel technologies for



*Professor Paul Dimitri*  
*NIHR CYP MedTech*  
*Clinical Director*

**“** This is a historic milestone positioning Sheffield at the cutting edge of paediatric research and innovation worldwide.

**“**Children are 25% of the population and 100% of the future. They will be the leaders, parents, and workforce of tomorrow and the people who drive change.”

**“**Together, the HealthTech Research Centre in Paediatrics and Child Health and the National Centre for Child Health Technology will pioneer the health technologies of tomorrow, delivering dramatic improvements in NHS and international healthcare that benefit generations to come.

**“**We aim to create a lasting legacy for children's health.”

paediatrics and child health, the centre will have the latest equipment and facilities, including:

- Specialist gait and movement labs;
- An immersive reality and robotics suite;
- An advanced telecommunications centre to deliver care where it is most needed and wanted;
- Simulated hospital and home environments for testing technologies in a real-world setting;
- A business development centre to support knowledge transfer and build on expertise; and
- Clinic spaces.

The centre has received £22m funding from the UK Government Levelling Up Fund, the South Yorkshire Mayoral Combined Authority, Sheffield Children's NHS Foundation Trust, and The Children's Hospital Charity.

Building work is beginning in 2024, with the centre due to open in late 2025.

The NCCHT has been cited by multi-national industry partners as a global first. It is set to create a step-change in how we support the health and healthcare of children and young people, creating better lives for future generations



# MEET THE TEAM

NIHR CYP MedTech’s achievements would not have been possible without our dedicated core team, the specialist knowledge of our clinical theme leads, and expert guidance from our steering group.

Our multidisciplinary team works hard to support the development of child health technology and turn ideas into reality.

Find out more about the NIHR CYP MedTech team below.

## CORE TEAM



**PROFESSOR PAUL DIMITRI**  
DIRECTOR  
2018 - Present



**NATHANIEL MILLS**  
PROGRAMME MANAGER  
2018 - Present



**DR PHILIPPA HOWSLEY**  
SENIOR PROJECT MANAGER  
2018 - Present



**DR GEMMA WHEELER**  
PROJECT MANAGER  
2020 - Present



**JACOB BRANCHFLOWER**  
PROJECT MANAGER  
2021 - Present



**JESS MCNEILL**  
PROJECT MANAGER  
2022 - Present



**KIM ORWIN**  
PROJECT MANAGER  
2022 - Present



**DR CLARE BARTLETT**  
PROJECT MANAGER  
2018 - 2022



**TOM HODGKINSON**  
PROJECT MANAGER  
2019 - 2020



**ABIGAIL NEEDHAM**  
BUSINESS DEVELOPMENT MANAGER  
2019 - 2021

## THEME LEADS



**PROFESSOR QUENTIN CAMPBELL-HEWSON**  
CANCER THEME LEAD



**DR GAIL HALLIDAY**  
CANCER THEME LEAD



**PROFESSOR HELEN CROSS**  
EPILEPSY, MUSCLE, AND MOVEMENT DISORDERS THEME LEAD



**PROFESSOR DON SHARKEY**  
NEONATAL TECHNOLOGIES THEME LEAD



**DR LARISSA KERECUK**  
RARE DISEASES THEME LEAD



**PROFESSOR HEATHER ELPHICK**  
RESPIRATORY, SLEEP, AND VENTILATION THEME LEAD



**DR NICKI BARKER**  
RESPIRATORY, SLEEP, AND VENTILATION DEPUTY THEME LEAD



**MR IAIN HENNESSEY**  
SURGICAL TECHNOLOGIES THEME LEAD



**DR HELENA GLEESON**  
TRANSITION THEME LEAD



**DR PRIYA NARULA**  
TRANSITION THEME LEAD



## STEERING GROUP

**PROFESSOR NICK BISHOP**  
PROFESSOR OF PAEDIATRIC BONE  
DISEASE, UNIVERSITY OF SHEFFIELD

**DAVID COLE**  
CO-FOUNDER, THINKING OF OSCAR

**DR JACKIE CORNISH**  
NATIONAL CLINICAL DIRECTOR FOR  
CHILDREN, YOUNG PEOPLE, AND  
TRANSITION TO ADULTHOOD,  
NHS ENGLAND

**PROFESSOR PAUL DIMITRI**  
DIRECTOR, NIHR CYP MEDTECH

**PROFESSOR ANNE GREENOUGH**  
PROFESSOR OF NEONATOLOGY AND  
CLINICAL RESPIRATORY PHYSIOLOGY,  
KING'S COLLEGE LONDON

**MIKE KENNY**  
ASSOCIATE COMMERCIAL DIRECTOR,  
INNOVATION AGENCY

**PROFESSOR SIMON KENNY OBE**  
NATIONAL CLINICAL DIRECTOR FOR  
CHILDREN AND YOUNG PEOPLE,  
NHS ENGLAND

**PROFESSOR JEREMY KIRK**  
CLINICAL DIRECTOR, NIHR CLINICAL  
RESEARCH NETWORK (WEST MIDLANDS)

**KAREN LIVINGSTONE**  
CEO, BEDFORDSHIRE AND HERTFORDSHIRE  
LOCAL MEDICAL COMMITTEE

**NICOLE MCGLENNON**  
MANAGING DIRECTOR, HEALTH  
INNOVATION EAST MIDLANDS

**LIZ MEAR**  
CEO, THE INNOVATION AGENCY,  
HEALTH INNOVATION NORTH WEST COAST

**NATHANIEL MILLS**  
PROGRAMME MANAGER, NIHR CYP  
MEDTECH

**JENNIFER PRESTON**  
PPIE EXECUTIVE LEAD, NIHR CYP MEDTECH

**RICHARD STUBBS**  
CEO, HEALTH INNOVATION YORKSHIRE  
AND HUMBER

**PROFESSOR MEHDI TAVAKOLI**  
KNOWLEDGE TRANSFER MANAGER  
ON NHS INFRASTRUCTURE, MEDICAL  
TECHNOLOGY, AND THERAPIES,  
INNOVATE UK

**PROFESSOR WENDY TINDALE**  
DIRECTOR, NIHR DEVICES 4 DIGNITY  
MEDTECH CO-OPERATIVE

**NEVILLE YOUNG**  
DIRECTOR OF ENTERPRISE AND  
INNOVATION, HEALTH INNOVATION  
YORKSHIRE AND HUMBER

## GET IN TOUCH



### WEBSITE

[cypmedtech.nihr.ac.uk](http://cypmedtech.nihr.ac.uk)



### SOCIAL MEDIA

**NIHR HRC in Paediatrics  
and Child Health**  
[@NIHRChildrenHRC](https://twitter.com/NIHRChildrenHRC)



### EMAIL

[hrc-children@nihr.ac.uk](mailto:hrc-children@nihr.ac.uk)

**TITCH Network**  
[@TITCHinnovate](https://twitter.com/TITCHinnovate)

**Child Health Technology  
Conference**  
[@chtconference](https://twitter.com/chtconference)







**NIHR** | Children and Young People  
MedTech Co-operative

2023 © NIHR Children and Young People MedTech Co-operative