



 **Infant**

*Maternal & Child Health
Research Centre*

Our research has saved lives, with your help we can save more.

The birth of a baby is a wonderful occasion, but too often babies are born too soon or very sick and mothers can suffer severe complications. Three-quarters of newborn deaths, and nearly all maternal deaths are preventable with high quality care.

INFANT is Ireland's first translational research centre focused entirely on pregnancy, birth and early childhood. Founded in 2013, INFANT has grown rapidly and made numerous scientific breakthroughs that have a significant impact in mitigating many of the complications that arise during this normally happy time.

A Global Mission

INFANT has a local impact and global reach, answering the international need for research and innovation to improve healthcare outcomes for mothers and children.

Ireland, with the highest birth rate in the EU, is an ideal place to attract and consolidate international experts, enabling researchers to make a marked impact on mothers and babies. INFANT, co-located in one of Europe's busiest maternity hospitals, works collaboratively with organisations across the globe. INFANT has international reach and our research is based in the clinical front line enabling clinicians and research teams to identify, respond and deliver solutions to unmet needs at the bed-side. INFANT will make a significant contribution to global health challenges and specifically will help address the United Nations Sustainable Development Goals.



Key Challenges INFANT is addressing

Every day, around the world, 350,000 babies are born – that's over 130 million worldwide every year. Most are healthy but all will be shaped by the critical perinatal period, their time as a developing baby in the womb, by their birth and first 28 days of life. The growth and development of these infants will be further shaped in a fundamental way by their first 100 days and first 1000 days. The journey from pregnancy through the early life window leaves an imprint that shapes health and well-being for decades.

Challenges of pregnancy and birth



Complications can affect any pregnancy- as many as 1 in 5 pregnancies can be lost or develop serious complications such as preeclampsia, spontaneous pre-term birth, fetal growth restriction or hypoxic brain injury that threaten the mother or baby's life and long term health and wellbeing.

300,000 mums die every year from these complications and 2.6 million stillbirths occur each year, 50% of which happen after labour begins.

Challenges of the newborn period



13 million babies a year are born early and 2.6 million babies die in the first 28 days of life, caused by prematurity, complications of birth and severe infection.

Over 1 million babies suffer neonatal encephalopathy (brain injury at birth) every year causing nearly 300,000 deaths, almost 250,000 infants surviving with moderate/severe disability and under 200,000 living with mild impairment.

Challenges of early life and childhood



In addition to complications arising directly from birth, other problems that commonly arise during early childhood include Atopic Dermatitis and neurodevelopmental and behavioural disorders. (AD) and related conditions (eczema, allergy, asthma and rhinitis i.e. hay fever) can affect up to 20% of children (~up to 380M children worldwide) and are triggered in early life. Other neurodevelopmental disorders such as autism, now estimated to affect 1 in 100 children can also present in the first year of life where early diagnosis and intervention is essential.

All of these challenges represent a massive global burden of disease and pose a significant burden on health-care resources and patients' quality of life. They have been historically neglected in terms of research investment and the development of effective solutions.

 **Infant can change this through its research to improve health and prevent poor outcomes.**

AI powered Seizure Detection Algorithm for new-born babies.

INFANT has developed an algorithm that detects seizures in newborns and alerts the healthcare team that the baby may need assistance.

The aim is to deliver a cot-side tool that will help medical staff interpret Electroencephalograms (EEG) and be available 24/7. This enables staff to treat seizures promptly, thereby improving the long-term outcomes for children who have had a difficult start in life. It has been tested in eight centres across Europe and will be commercialised in 2019.

Tara Lee's Story

Tara Lee Harte is one of the many children who have benefitted from the algorithm. Tara Lee had a difficult delivery and it was clear when she was born that the situation was critical. Thanks to the assistance of our seizure detection algorithm in interpreting the EEG, the medical team could tell she needed urgent treatment and reacted accordingly. Tara Lee has since made a full recovery and she is now a thriving toddler.



Research Impact

INFANT has grown rapidly since its launch in 2013 from a small group of founders, to a multi-disciplinary team of 100. Since then more than 3,500 babies and 4,000 mothers have taken part in our onsite studies. We translate innovations from bench to bed-side with over 30 industry partners and academic collaborations in more than 30 countries.

INFANT has developed **many world-first scientific breakthroughs** which are enabling clinicians to work quicker to diagnose both mothers and babies when they are in need of urgent care. Some of our key discoveries include:

Pregnancy

INFANT has developed the **world's first early predictive biomarkers for** preeclampsia. Affecting 5% of first-time mothers, preeclampsia is one of the most common complications of pregnancy and is a leading cause of maternal and infant illness and death. This breakthrough has contributed to an early screening test which could substantially alter poor outcomes by identifying at risk mums earlier.

Newborns

INFANT has discovered and validated the first biomarkers to detect brain injury in newborn babies of which there are ~ 1 million cases a year. Seizures and brain injury can have severe lifelong developmental consequences but these breakthroughs will allow early detection and intervention which can significantly mitigate against the worst outcomes.

Children

INFANT researchers, in collaboration with international colleagues have helped in the development of a new front line therapy for peanut allergy. This is by far the most common food allergy, which is now estimated at over 1% of the population in the developed world and the single cause of most food allergy deaths.

This new treatment can successfully reduce sensitivity to peanuts, offering a real lifeline to those affected.



Ambitious Next Steps

With your support, INFANT will become a leading Institute of Maternal and Child Health of international renown. We will tackle the many challenges and complications of pregnancy, birth, early life and childhood. We will continue to create ground-breaking discoveries and translate those into innovative tests, treatments and solutions that will positively impact mothers, newborn and children's health outcomes internationally.

Investing in the future

Your financial support can transform outcomes for mothers, babies and children by enabling us to invest in the future.



People

Transformational change requires transformational leaders. Through philanthropic support we will attract leaders of today and develop future leaders of tomorrow, across three strands:

Leaders: Attracting strategic academics who are experts in their field. INFANT will shape the future and deliver excellence in research-informed healthcare through Endowed Chairs and Professorships, in areas such as Obstetrics, Reproductive Biology, Neonatology, Neurology, Paediatrics, Engineering and Nutrition.

Rising Stars: Supporting the next wave of talent and research excellence through research fellowships in relevant clinical, scientific and engineering disciplines.

Students & Scholars: Providing PhD scholarships enabling emerging talent with high potential to innovate and inspire into the future.



Ideas

Innovation Fund: Investing in this fund is a powerful way to support our research for mothers and babies. This fund will enable INFANT to respond to perinatal research challenges, pioneer new models for innovation, act quickly on strategic initiatives and bridge funding gaps as they may arise.



Infrastructure

Support for state of the art infrastructure and cutting-edge facilities will enable our research capacity to be sustained and renewed into the future.



“Thanks to the generosity of our many donors, we have opened a dedicated Paediatrics Clinical Academic Unit and funded a Chair in Neonatology.

With your support we can shape the future of INFANT, enabling us to continue our ground-breaking research for women and children and funding solutions for those that need them most.”

Professor Geraldine Boylan,
*INFANT Founding Director,
Professor of Neonatal Physiology
at University College Cork*

For more information on how to support INFANT,
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