



## CLINICAL EVALUATION STUDY



NeuroBell was founded as a UCC spinout in 2023. NeuroBell has secured €2.1 million in seed funding and established partnerships in the U.S., including with Parkview Health. Their mission is to make brain monitoring more accessible for the most vulnerable newborns experiencing seizures through scalable, AI-powered technology.

The NeuroBell team began developing the science and technology which underpins the company in 2015. CEO Dr. Mark O'Sullivan and CSO Dr. Alison O'Shea completed their PhD and Postdoctoral Research at the INFANT Research Centre at University College Cork (UCC), where they focused on developing novel technologies to improve the accuracy and availability of neonatal brain monitoring systems. Supported by an Enterprise Ireland Commercialisation Fund in 2021, Colm Murphy joined as CTO, bringing experience from the electronics and medical device industries.



NeuroBell team  
Dr Mark O'Sullivan, CEO  
Colm Murphy, CTO  
Dr. Alison O'Shea, CSO

## About Health Innovation Hub Ireland

Health Innovation Hub Ireland (HIHI) was established by the Department of Business, Enterprise and Innovation and the Department of Health and is supported by Enterprise Ireland (EI) and the Health Service Executive (HSE) to drive collaboration between the health service and enterprise. We offer companies the opportunity for pilot and clinical evaluation studies and we provide the health service access to innovative products, services and devices that they may not otherwise be exposed to.

HIHI is built on the recognition that collaboration with enterprise can benefit patient care, patient pathways

and outcomes. We assess all concepts for healthcare innovation from those on the frontline – from clinician to porter. We encourage healthcare professionals to get in touch with HIHI if they have an idea or solution to how something in your job might work better.



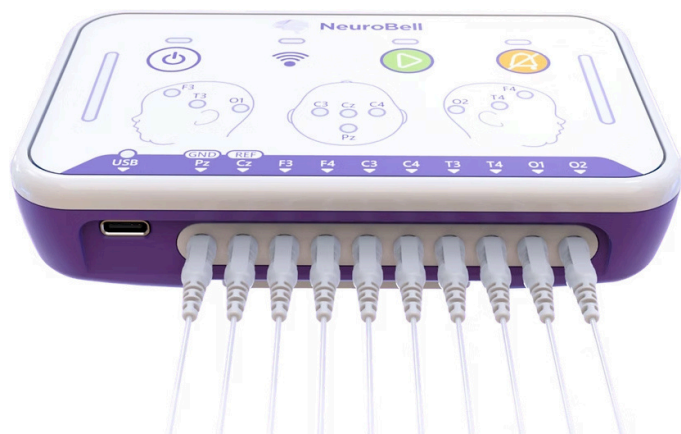
## The Healthcare Challenge

Neonatal seizures are the most common neurological emergency in newborns, often occurring silently and going undetected by clinical observation alone. Continuous EEG (cEEG), the gold standard for diagnosis, requires costly infrastructure and round-the-clock specialist interpretation. These

resources are often unavailable in many neonatal intensive care units (NICUs), especially outside tertiary centres. This results in delayed treatment, prolonged seizures, and potential long-term developmental impacts. The need for a portable, user-friendly, and clinically validated EEG solution is critical to bridge this gap.



# The Healthcare Solution



NeuroBell is developing a compact, wireless EEG monitor with automated, AI-powered seizure detection for bedside use in the NICU. The device features an 8-channel EEG system compliant with neonatal standards, rapid setup via a two-button interface, and Wi-Fi-enabled data streaming for remote expert review.

By providing immediate seizure alerts and cloud-based EEG access, NeuroBell supports timely decision-making in both high-resource and resource-limited settings. The solution is designed for ease-of-use by non-specialist staff and seamless integration with hospital systems.

## HIHI Role

Health Innovation Hub Ireland supported NeuroBell through a structured evaluation process focused on usability, integration, and clinical relevance. Over a series of interviews and focus groups across Cork University Hospital, Galway University Hospital, and the Rotunda Hospital, HIHI facilitated engagement with neonatal consultants, paediatric neurologists, NICU nurses, clinical physiologists, and biomedical engineers. HIHI collected extensive feedback on device ergonomics, infection control, software interface, integration with hospital IT systems, and workflow impact. The project culminated in a detailed report with strategic recommendations to guide NeuroBell's final design iteration and regulatory preparation.



## Outcome Report

The HIHI evaluation confirmed NeuroBell's clinical necessity and strong user interest. Key findings included:

- Strong endorsement of automated seizure alerts and AI decision support, particularly in units lacking 24/7 neurology coverage.
- Need for improved EEG electrode placement and simplified user interface.
- Nurses and consultants highlighted the importance of bedside trace visibility for clinical decision-making and communication with families.
- Integration with electronic medical records (EMR), automated reporting features, and compliance with infection control standards were identified as critical for adoption.
- Suggestions to include educational materials, customisable alerts, and annotation tools further enhanced the product roadmap.

Clinicians emphasised the potential for NeuroBell to democratise access to EEG monitoring, especially in smaller hospitals and during neonatal transport. HIHI's recommendations have directly informed NeuroBell's device refinement and pre-market strategy, positioning the company to deliver a transformative solution in neonatal care.

## Testimonials

*"We've added two new design inputs into our design traceability that are linked directly to feedback from HIHI in what I'm calling formative human factors. We're including the HIHI report as part of our formative human factors [evaluation]."*

*"The significant impact for me in terms of the value provided by HIHI was the business needs which [means] we've now built a better product and the regulatory needs which [means] now we have evidence that there has been human factors and user inputs that have informed the design prior to us getting to a design freeze."*

Dr. Mark O'Sullivan,  
NeuroBell Co-founder