

Developing a Collaborative Research Network to Accelerate the Understanding and Treatment of the Rare Disease Congenital Hyperinsulinism

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Objectives

To report on the formation of the Hyperinsulinism (HI) Collaborative Research Network (CRN), to present our prioritized research agenda, and to report on progress.

Background

- Congenital Hyperinsulinism International (CHI) is a U.S. based globally-focused nonprofit organization focused on improving the lives of patients and families living with HI.
- Despite many advances in the care of patients with HI, long-term neurologic outcomes have not significantly improved, highlighting the need for CHI's goals for robust and rapidly translatable research.
- We describe the development of a CRN of HI patients, caregivers, and experts to drive sustainable research excellence that leads to faster and more accurate diagnosis, drives new evidence-based treatments and cures, standardizes clinical guidelines, and facilitates increased and improved access to care.

Methods

CHI applied for and received funding to launch an HI CRN from the Chan Zuckerberg Initiative in 2020.

CHI invited a total of 60 academic and industry researchers, clinicians, and expert patient advocates from 19 countries to join the CRN.

Clinical expertise included endocrinology, genetics, radiology, nursing, and other related disciplines.

Participants worked in groups over two years in virtual meetings to identify gaps in knowledge and resources in 7 key areas:

- genetics,
- diagnostics,
- glucose monitoring,
- medication and surgical management,
- care-guidelines and centers of excellence,
- nomenclature, and
- clinical trials/industry engagement.

Results

The HI CRN outlined and defined >360 individual deficits in information in various aspects of HI. Through deliberation of current evidence and patient needs, a prioritized research agenda was identified in five key areas:

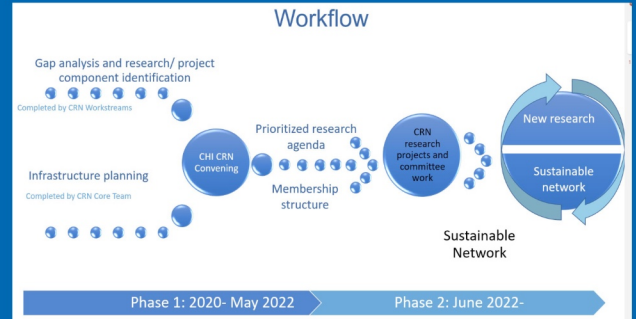
- (1) investigation of the natural history of HI,
- (2) development/adoption of a newborn HI screening approach,
- (3) investigation of specific causes of hypoglycemia related neurological injury,
- (4) development of continually evolving global care guidelines, and
- (5) development of an expert group advising on clinical trials for regulatory approval of novel and repurposed therapeutic options for HI.

The summated and synthesized interactions within sub-groups and whole group in the CRN has led to strategic workplans for five key working groups, an in-person meeting of participants in these groups, and inspired peer reviewed publications.

Results



Mission: Create a hyperinsulinism collaborative research network that puts patients at the center of a strategy that leads to faster and more accurate diagnosis, drives new evidence-based treatments and cures, standardizes clinical guidelines, and facilitates increased and improved access.



2023 Major Project Goals

Glucose as a Vital Sign	Natural History Study	Newborn Screening	Care Guidelines
Increase awareness and timely diagnosis of HI	Develop a robust registry that collects physician, patient-reported, and real-world data to provide a foundation for HI natural history	Diagnose all babies with congenital hyperinsulinism in a timely manner	Create and disseminate continually evolving global care guidelines

Conclusions

The HI CRN has identified key areas of information deficit by successfully integrating clinicians, industry partners, and patient representatives to enhance research perspectives and lay the foundations for sustainable HI research tailored for patient need.

The HI CRN will continue to develop and refine research and advocacy strategies to improve understanding and treatment of HI through meaningful ongoing international collaboration.

CRN Members

Australia: Children's Health Queensland- Louise Conwell; **Austria:** Irene Promussas; **Brazil:** Ribeirão Preto Medical School- Raphael Del Roio Liberatore Jr; **Canada:** Michael Ferguson; **Children's Hospital Health Sciences Centre Winnipeg-** Seth Marks; **China:** Nanjing Institute of Advanced Biotechnology and Life Science- Changhong Li; **Denmark:** Hans Christian Andersen Children's Hospital- Henrik Christesen; **France:** Necker University Hospital- Jean Baptiste Arnoux; **Georgia:** M. Iashvili Children's Central Hospital- Nino Kheladze; **Germany:** Ulrike Seyfarth; **Charité – Universitätsmedizin-** Oliver Blankenstein; **University Children's Hospital Duesseldorf-** Sebastian Kummer; **Thomas Meissner;** **University of Magdeburg-** Susann Empting, Klaus Mohnike; **Israel:** Hadassah Hebrew University Medical Center- David Gillis, David Zangen; **Portugal:** Sandra Melo; **Spain:** Cristina Pindado; **United Arab Emirates:** Carla Germanos; **United Kingdom:** Sir Al Aynsley-Green; Janet Lee; **Alder Hey Children's Hospital-** Senthil Senniappan; **Great Ormond Street Hospital-** Antonia Dastamani; Clare Gilbert; Kate Morgan; **Royal Manchester Children's Hospital-** Indi Banerjee, Karen Cosgrove, Maria Salomon Estebanez, Chris Worth; **University of Exeter Medical School-** Sarah Flanagan; **William Harvey Research-Pratik Shah;** **United States:** Sheila Bose; Leo Folsom; Winnie Segal; Lora Van Arsdell; **Children's Hospital of Philadelphia-** Amanda Ackermann, Tricia Bhatti, Diva D. De León, Jennifer Kalish, Katherine Lord, Heather McKnight, Elizabeth Rosenfeld, Charles Stanley, Lisa States; **Children's Hospital of Pittsburg-** Mark Sperling; **Cincinnati Children's Hospital Medical Center-** Mansa Krishnamurthy; **CHI-** Tai Pasquini, Julie Raskin, Jennifer Schmitt; **Cook Children's Hospital-** Paul Thornton, Lisa Truong; **Oregon Health & Science University-** Show-Ling Shyng; **Penn State-** Jeffrey Kaiser; **UCLA/Mattel Children's Hospital –** Erin Okawa; **Yale University Medical School-** Stu Weinzimer; **Industry Participants:** Crinetics Pharmaceuticals, Eiger Biopharmaceuticals, Hanmi Pharmaceuticals, Rezolute, Zealand Pharma