





Research Report

December 2024



A JOURNEY INTO PEDIATRIC ENDOCRINOLOGY

As accessing diagnostic testing is challenging, particularly in rural and remote regions, this project piloted using dried blood spot cards, similar to those used in newborn screening, for A1c measurement.

Dr. Daphne Yau's journey into pediatric endocrinology began during residency when she encountered a particularly challenging case of hypoglycemia. This case revealed an HNF4A variant linked to both congenital hyperinsulinism (CHI) and Maturity Onset of Diabetes in the Young, sparking Dr. Yau's interest in CHI.

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CONTENT

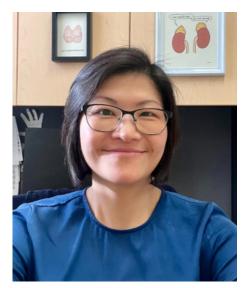
BE WHAT THE WORLD NEEDS

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A journey into Pediatric Endocrinology

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Dr. Daphne Yau

After a pediatric endocrine fellowship at McGill University, Dr. Yau spent a research fellowship year at the Children's Hospital of Philadelphia, utilizing a rat model to investigate the mechanisms underlying postnatal maturation of glucose-stimulated insulin secretion, with the aim of improving our understanding of transient hyperinsulinism. She went on to pursue a CHI fellowship at Royal Manchester Children's Hospital, part of the Northern Congenital Hyperinsulinism Service, providing care to children with hyperinsulinism across the northern UK, including Scotland, Wales and Northern Ireland, with collaborative links to Great Ormond Street Hospital and the University of Exeter.

Dr. Yau joined the Division of Pediatric Endocrinology & Diabetes at the University of Saskatchewan in November 2019 and has continued to engage in hyperinsulinism research. Treatment options for severe hyperinsulinism are currently limited by both efficacy and side effects, and several novel therapies are in clinical trials including RZ358, a monoclonal antibody that allosterically binds the insulin receptor and has demonstrated >50% reduction in hypoglycemia in phase 2 trials. Saskatoon is one of two Canadian sites in this international multi-site RCT, and Dr. Yau is the Canadian Scientific Officer and site PI for this trial. Recruitment closed at the end

of November

Looking towards the Canadian landscape for CHI, Dr. Yau is collaborating with Dr. Chelsey Grimbly, a Pediatric Endocrinologist at the University of Alberta, to perform a QI analysis of 18F-DOPA PET imaging in pediatric CHI. This specific type of nuclear imaging is key to diagnosing focal CHI, a subtype of CHI that is potentially curable by limited resection, unlike other forms of CHI, without the downstream risks of diabetes mellitus and exocrine insufficiency associated with near-total pancreatectomy. However, as only two sites (Edmonton and Vancouver) perform this type of scan in Canada, and due to the challenges and risks of interprovincial transport of a child with hypoglycemia, ensuring appropriate patient referrals is key and will be the focus of this project. Dr. Magdalena Koziak, one of the Regina-based PGY-4 residents, is part of the project team and will be starting her pediatric endocrine fellowship in Edmonton next year.

Dr. Yau also led a community-based project, "Hemoglobin A1c measurement via dried blood spot in youth at-risk for Type 2 diabetes in Saskatchewan", which provided health education and diabetes screening opportunities for at-risk youth in Onion Lake Cree Nation. Furthermore, as accessing diagnostic testing is challenging, particularly in rural and remote regions, this project piloted using dried

blood spot cards, similar to those used in newborn screening, for A1c measurement.

After presenting the project idea to the Onion Lake Health Ethics Board, the initiative gained support, leading to the signing of a Memorandum of Agreement. The USask team collaborated with Onion Lake Health

professionals, community study leads, dietitian Alicia

Oliver, and diabetes nurse educator Tanya Conacher. Their involvement was critical to engaging key community stakeholders, including the Eagleview Middle School principal, Deb Ramsay, Eagleview teachers, and Community Health Representatives. With their support, the community advertised the project and consent forms were distributed to interested families.

The academic team was also introduced to Director of Education Fred Dillon, resulting in an invitation to their school orientation in August of 2023. This was an invaluable opportunity to meet with Onion Lake Health Board members, teachers and school staff, and tour the Onion Lake Health Centre and surrounding community. This period allowed for crucial knowledge exchange, clarifying expectations, and aligning the project's goals with community needs.

The health education opportunities were provided to grade eight students through a dedicated day of interactive learning activities such as Jeopardy, friendship soup jar-making, and Q&A sessions with diabetes educators and elders at Eagleview School in October 2023. The following week, the opportunity to be screened for diabetes using the dried blood spot method was offered, and information on



Diabetes Research Team at Eagleview Middle School on Oct 11, 2023 during the diabetes screening day

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Elder Howard Whitstone speaking to students, teachers, and diabetes research team on Oct 4, 2023 at the Health Education Day at Eagleview Middle School.

risk factors such as personal and family history was also gathered.

From this group, albeit a small sample size, more than one in five students screened positive for diabetes or pre-diabetes. Although a family history of Type 2 diabetes was more likely in those screening positive, there were no clear distinguishing features between the groups. At a results-sharing session with the Onion Lake community in June 2024, the study team recommended developing a clear process to screen youth for diabetes to facilitate earlier detection and aim to reduce future risk of diabetesrelated complications. Even youth who screened negative would benefit from ongoing screening to detect diabetes as early as possible. Overall, it was felt that Onion Lake's participation in this study could be an example to other communities that would benefit from easier access to screening.

Dr. Yau exemplifies USask's commitment to boundless collaboration, courageous curiosity and inspired communities. Her collaborative research

efforts encompass local partnerships with Indigenous communities and colleagues at the University of Saskatchewan, as well as international engagement in global clinical trials and cross-country collaborations. Her desire to learn is apparent in her trainee journey, where she carried important experiences and skills to Saskatoon. This year, she is taking on a new pediatric resident research director role. In this role she is set to inspire the next generation of physician-researchers. We look forward to what's next in Dr. Yau's continued research success!

To learn more about this project check out the Diabetes Screening in Youth at Onion Lake | University of Saskatchewan. Dr. Yau and her team also created a community report, one pager, and a Dried Blood Spot test animation video for participants.

Dr. Yau would like to thank the following funders of the Dried Blood Spot Testing study:

Jim Pattison Children's Hospital Foundation SK-NEIHR

Dr. Yau would like to thank her collaborators:

Dr. Chelsey Grimbly, Pediatric Endocrinologist, University of Alberta

Onion Lake Cree Nation - Health Team

Congenital Hyperinsulinism International Collaborative Research Network https://congenitalhi.org/chi-collaborative-research-network/#

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We acknowledge that we live and work on Treaty 6 Territory and the Homeland of the Métis. We pay our respect to the First Nations and Métis ancestors of this place and reaffirm our relationship with one another.

Our Partners



The Jim Pattison Children's Hospital provides strong support for child health research in Saskatchewan. The recent \$50 million donation from Jim Pattison allows for a steady stream of revenue to help meet research and programming needs for generations to come. Groundbreaking opportunities for pediatric researchers in Saskatchewan are on the horizon!



The Children's Health Research Trust Fund (CHRTF) was established in 1983 to help raise funds to support child health research at the University of Saskatchewan. As all donated funds are endowed, the CHRTF has continued to grow to become an important part in helping advance research in the Department of Pediatrics. For further information about the CHRTF and to donate: donate.usask.ca/online/chrtf.php

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Addition to Research



The Department of Pediatrics would like to introduce the newest edition the their research support team, Miss Daislyn Vidal. Daislyn joins us from Ontario where she

previously obtained her Master's of Science in Applied Health Sciences at Brock University. Her interest in research first sparked during her time volunteering at a local hospital in Ontario for a research study that was being done based on Pain, Agitation and Delirium patients in the Critical Care unit. From there she sought out research opportunities in her academics including her undergraduate honors thesis in Neurobiology and her master thesis which was centered around the role of a specific phospholipid during muscle overloading in mouse models. Her most recent role she worked as a Clinical Research Coordinator at the Population Health Research

Institute for almost two years where she helped with various aspects such as patients recruitment, the coordination of study visits, data and sample collection, research project office work and many other aspects of different studies concerning the prevalence of non-communicable diseases and conditions such as diabetes and cardiovascular illnesses in pregnant women and children.

Daislyn is excited to join the Department of Pediatrics. She joined the department on October 1st 2024 as the Clinical Research Coordinator and RareKids-CAN Clinical Navigator. The first half of the role will fill a research coordinator position which will support faculty in the Department of Pediatrics. The other half of my role, the Clinical Trial Navigator (CTN) position will play a critical role in ensuring that RareKids-CAN is able to build child/family-centric research, clinical trials, and education capabilities with a focus on rare diseases by liaising with local investigators/study teams from the pediatrics department to initiate a timely, and efficient study start-up for rare

disease pediatric clinical trials. RareKids-CAN is a Pediatric Rare Disease Clinical Trials and Treatment Network that supports national and international clinical trials. These clinical trials help to make new discoveries and catalyzes treatments for children, young adults and adolescents in Canada that they would have had to travel to other countries for. RareKids-CAN is funded by a 5-year CIHR grant and is hosted by the Maternal Infant Child and Youth Research Network (MICYRN) which is a federal notfor-profit, charitable organization founded to create more avenues for high-quality applied health research.

As Daislyn reflects on her new role she is excited to jump into pediatric research. She sees this as an exciting field of research since it has massive potential to make new and impactful discoveries that could help improve the health of the younger generation who will ultimately be the next generation of adults. Welcome Daislyn!

Awards

June to September 2024



Congratulations to Dr. Krista Baerg who received the King Charles III Coronation Medal! The medals were awarded during the Federation of Medical Women of Canada's (FMWC) 100th anniversary AGM and Gala in September. The medal recognizes individuals who have made a significant contribution to Canada. FMWC is one of the organizations across Canada approved to be involved in the medal program. The nomination highlighted her advocacy in pediatric pain management and her work on physician resources for breastfeeding within the Saskatchewan Health Authority.

Pictured: Dr. Krista Baerg (left) and Dr. Alanna Danilkewich, a retired family physician and medical educator in the Department of Family Medicine.

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Awards (continued)

Dr. Nita Chauhan



Congratulations to Dr. Nita Chauhan who is a co-applicant on the funded CIHR Spring Project Grant: <u>Facial photogrammetry to</u> <u>predict obstructive sleep apnea in</u> <u>a diverse paediatric population</u>

Principal investigator(s): Narang, Indra

Co-investigator(s): Au, Chun Ting; Buchanan, Francine; Chauhan, Nita; Fishman, Haley; Kendzerska, Tetyana; Li, Albert; Lui, Ronald Lok Ming; McLaren-Barnett, Anya T; St Laurent, Aaron; Xiao, Lena J

Dr. Paul D'Alessandro



Congratulations to Dr. Paul D'Alessandro for recently securing a \$200,000 grant from Canadian Partnership Again Cancer. Saskatchewan Oncofertility Algorithm (SOFA): Designing an Inclusive Pathway for Pediatric, Adolescent, and Young Adult Patients

Principal investigator(s): Dr. Paul D'Alessandro

Co-investigator(s): Dr. Mita Manna

Dr. Daphne Yau and Dr. Wendie Marks





Congratulations to Drs. Daphne Yau and Wendie Marks for being selected to participate in the American Pediatric Society - Society for Pediatric Research Journeys Program for 2024-2025. The Journeys program will feature eight one-hour virtual sessions designed to encourage and support promising early-career investigators in pediatrics by offering inspiring career path stories, career development, mentoring, feedback on research, and networking with experienced Cohort Leaders and peers in academic medicine.



In the news

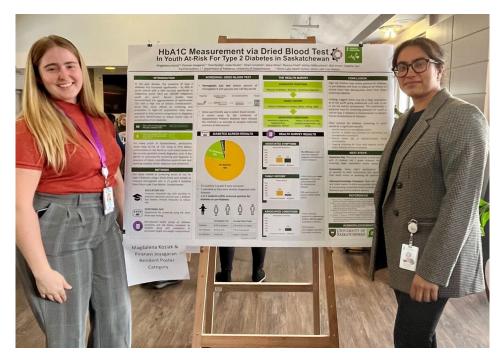
Dr. Darryl Adamko was quoted in a recent *Globe and Mail* article:

RSV shot will be offered widely in Ontario and Quebec, but not in Western provinces

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Trainee Spotlight

Dr. Magdelena Koziak and Dr. Piranavi Jeyagaran

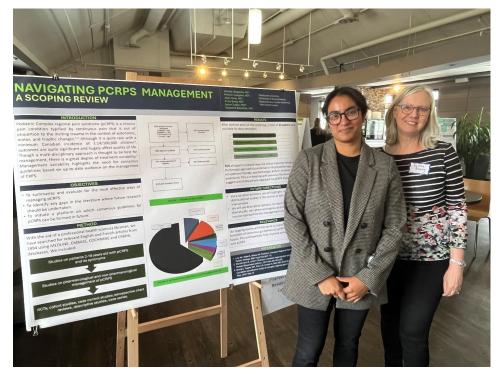


This issue we have two amazing trainees to highlight! Dr. Magdelena Koziak is currently a Pediatric Resident in her fourth year at the University of Saskatchewan - Regina Site. Prior to joining her pediatric residency in Saskatchewan, she completed her medical degree from the University of Alberta. Dr. Piranavi Jeyagaran is currently a Pediatric Resident in her third year at the University of Saskatchewan - Saskatoon Site. Prior to joining USask she received her medical degree from St. James School of Medicine in the Caribbean. Both Drs. Koziak and Jeyagaran contributed to the Dried Blood Spot Test study in Onion Lake. Dr. Koziak had the opportunity to join the team in Onion Lake on the education day where she led an interactive learning session on type 2 diabetes for the grade 8 classes. Her enthusiasm and encouragement helped foster a lively atmosphere, allowing the kids to share their understanding of the disease. The day was filled with laughter, smiles, and excitement.

Dr. Jeyagaran had the opportunity to join the screening day in Onion Lake where she assisted participants with the health survey, addressing any questions they had. She also supported data collection and analysis. Both doctors were vital members of the team and contributed to the development of various knowledge translation tools, including one-pagers on the risks of type 2 diabetes, the final report, and promotional materials for upcoming the events.

They presented their research at the 2023 Child Health Research Trainee Day and placed 2nd in the Resident – Poster Category (poster on the following page).

Dr. Koziak is currently supporting the 18F DOPA PET QI Project as she prepares to start her pediatric endocrine fellowship in Edmonton next year. Dr. Jeyagaran also supported other research projects in pediatrics including a scoping review on Pediatric Complex Regional Pain Syndrome (CRPS) with Dr. Krista Baerg and colleagues from Dalhousie within the Pediatric/Anesthesiology Department. Dr. Jeyagaran hopes to pursue future research that is community based from a global health perspective (which includes communities within our own backyard in Canada). We look forward to seeing what is next for Dr. Koziak and Dr. Jeyagaran as they navigate next steps in their promising medical careers!



Dr. Piranavi Jeyagaran (left) and Dr. Kriasta Baerg (Professor, General Pediatrics)

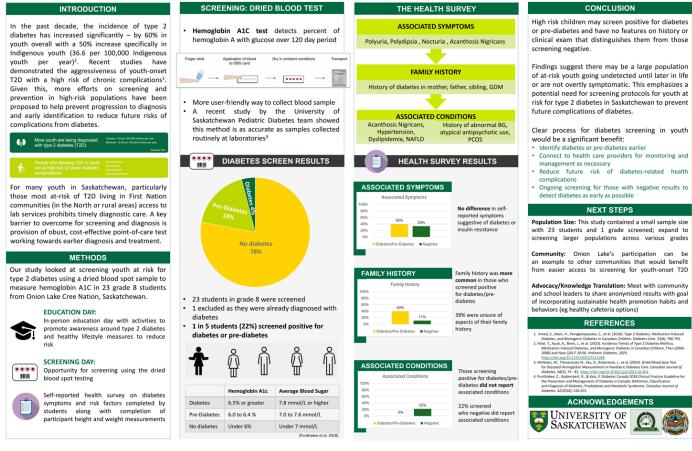
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Trainee Spotlight (continued)

HbA1C Measurement via Dried Blood Test In Youth At-Risk For Type 2 Diabetes in Saskatchewan

Magdalena Koziak*¹, Piranavi Jeyagaran*¹, Tova Dyvbig¹, Linda Kessler¹, Tanya Conacher², Alicia Oliver², Reanna Chief², Ashley DeBusschere², Nail Imran¹, Daphne Yau¹

*Co-First Authors I ¹ Department of Pediatrics, University of Saskatchewan ² Onion Lake Health Centre, Onion Lake Cree Nation



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In the news

Dr. Mahli Brindamour was highlighted in a recent CBC News article:

Sask. doctor makes unusual house call while volunteering in southern Africa - Doctors Mahli Brindamour and Ryan Meili say trip will improve their tuberculosis care in northern Sask.

Trainee Spotlight (continued)

NAVIGATING PCRPS MANAGEMENT A SCOPING REVIEW

Adedeji Ologbenla, MD¹; Piranavi Jeyagaran, MD²; Allen Finley, MD¹; Krista Baerg, MD²; Susan Tupper, PhD³; Stephanie Blackman, MA⁴;

¹Dalhousie University, ²University of Saskatchewan, ³Saskatchewan Health Authority, , ⁴IWK Health Centre

INTRODUCTION

Pediatric Complex regional pain syndrome (pCRPS) is a chronic pain condition typified by continuous pain that is out of proportion to the inciting trauma in the context of autonomic, motor, and trophic changes. ^{1,2} Although it is quite rare with a minimum Canadian incidence of 1.14/100,000 children³, outcomes are quite significant and hugely affect quality of life. Though a multi-disciplinary approach is thought to be best for management, there is a great degree of treatment variability. ³ Management variability highlights the need for consensus guidelines based on up-to-date evidence on the management of CRPS

OBJECTIVES

- To summarise and evaluate for the most effective ways of managing pCRPS
- To identify any gaps in the literature where future research should be undertaken.
- To initiate a platform on which consensus guidelines for pCRPS can be formed in future.

METHOD

With the aid of a professional health sciences librarian, we have searched for relevant English and French articles from 1994 using MEDLINE, EMBASE, COCHRANE and CINAHL databases. We included:

Studies on patients 2-18 years old with pCRPS and its synonyms

Studies on pharmacological and non-pharmacological management of pCRPS

RCTs, cohort studies, case control studies, retrospective chart reviews, descriptive studies, case series.

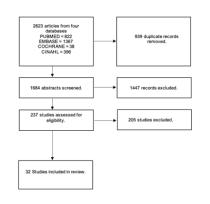
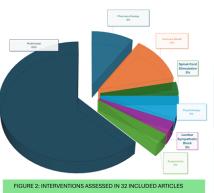
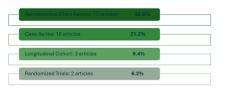


FIGURE 1: PRISMA FLOW CHART



RESULTS

After abstract and full-text screening, a total of **32 papers** were available for data extraction:



76% of papers reviewed required either intensive rehab or multimodal approach (a combination of physiotherapy, occupational therapy, psychotherapy, and/or invasive procedure). This is in keeping with previous literature that suggest a multidisciplinary approach to pCRPS management.

FUTURE DIRECTIONS

- Via a narrative summary, we will highlight the nature and distribution of studies in the review as well as range of interventions.
- We will use descriptive statistics to report findings thematically: non-pharmacological, pharmacological, and invasive approach to the management of pCRPS.

RELEVANCE

Our scoping review will help serve as a platform to enable the formation of consensus guidelines on pCRPS management in future. This will hopefully help improve outcomes for patients with pCRPS.

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Publications - June to September 2024

Neufeld KM, Moaf P, Quilter M, et al. Evaluation of depressive and anxiety symptoms in childhood-onset systemic lupus erythematosus: Frequency, course, and associated risk factors. Lupus. 2024;33(8):874-885. doi:10.1177/09612033241254170

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Roumeliotis N, Carwana M, Charland K, Trudeau O, Benigeri M, Diop M, Agostino H, Zinszer K, Amsdr I, Forgeot d'Arc B, Côté S, Basta NE, Fontela P, Gantt S, Klassen TP, Quach C, Doan Q; Pediatric Outcomes Improvement Through Coordination of Research Networks (POPCORN) Investigators (Dr. Rupeena Purewal & Dr. Ahmed Mater). Pandemic Stringency Measures and Hospital Admissions for Eating Disorders. JAMA Pediatr. 2024 Sep 1;178(9):879-887. doi: 10.1001/jamapediatrics.2024.2044. PMID: 38976259; PMCID: PMC11231909.

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Fitzpatrick T, Yamoah P, Lacuesta G, Sadarangani M, Cook V, Pourshahnazari P, Kalicinsky C, Upton JEM, Cameron SB, Zaborniak K, Kanani A, Lam G, Burton C, Constantinescu C, Pernica JM, Abdurrahman Z, Betschel S, Drolet JP, De Serres G, Quach C, Des Roches A, Chapdelaine H, Salvadori MI, Carignan A, McConnell A, Pham-Huy A, Buchan CA, Cowan J, Hildebrand K, Top KA; Special Immunization Clinic Network investigators. Revaccination outcomes among adolescents and adults with suspected hypersensitivity reactions following COVID-19 vaccination: A Canadian immunization research network study. Vaccine. 2024 Oct 24;42(24):126078. doi: 10.1016/j. vaccine.2024.06.045. Epub 2024 Jun 22. PMID: 38910092.

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Check out the <u>Department of Pediatrics new Google</u> <u>Scholar Page</u>. Here you can find publications from all faculty and trainees from the department

Coming Events

January 9: <u>Department of Pediatrics Journal Club</u> - Resident Journal Club - Drs. Kara Place; Patrick

Seitzinger - Infectious Diseases Genetics/Metabolics

January 16: <u>Pediatric Grand Rounds</u> - Dr. Gillian Mandich - **Happiness Research**

January 30: Pediatric Grand Rounds - Dr. Gina Martin

February 5: Cheer Webinar Series: Reimagining Indigenous Research Ethics in Canada: Charting a New

Course

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