

# Department of Pediatrics Research Report



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The health care team for the Social Pediatrics program were awarded the 2013 Children's Champion Child and Youth Friendly Saskatoon Award.

## Pediatric School Health

Dr. Maryam Mehtar



## Image of Interest

3D angiogram acquired in the cardiac catheterization laboratory demonstrating left bronchial compression between the left pulmonary artery and a stented coarctation of the aorta in a pediatric patient. 3D angiography methods are currently being developed and are gaining use in the assessment and management of complex congenital heart disease. Efforts are underway to bring this technology to the Pediatric Cardiac Catheterization Laboratory being built in the Children's Hospital of Saskatchewan. Local expertise exists with Dr. Charissa Pockett having trained in pediatric interventional cardiology at the Rady Children's Hospital in San Diego where 3D angiography is currently used on a regular basis. With the addition of specialized software to the cardiac catheterization laboratory being built and cath lab staff training, this technology would be accessible to the children of Saskatchewan for both clinical and research purposes.

Submitted by Dr. Charissa Pockett, Pediatric Cardiologist, Department of Pediatrics, University of Saskatchewan.

Children and youth develop in an environment of relationships. They are more likely to succeed in school and in life when they feel safe, are valued and are connected with caring,



committed adults. These adults are able to buffer stress and so aid in mitigating the ill health effects of stressful environments and experiences that are significant and chronic, both within the home and within those relationships that extend beyond the home.

Within impoverished communities, the role of adults beyond that of family becomes increasingly important, considering the adverse and traumatic experiences within communities suffered by individuals and families who are affected by inequities. The unrelenting stress associated with poverty is cumulative and contributes significantly to the increased risks of developmental, physical, and mental health problems.

Children and youth identified with serious developmental, behavioural, and emotional problems benefit from supports and services that are provided by multiple systems within the community. Schools are

then essential partners in a comprehensive, cross-systems coordinated model for health services. Organizations representing a community's identity, culture, values, and voice should be included within this model of care. Healthcare services must incorporate and build on the strengths of individuals and families rather and be culturally respectful.

The Department of Pediatrics within the College of Medicine is privileged to work in partnership with the Greater Saskatoon Catholic School Division and the Saskatoon Tribal Council to address the paucity in specialized pediatric health care services within Saskatoon's core neighbourhoods. The school-based clinics in Saskatoon provide access to in-school pediatric consultation for families; access to mental health professionals - registered psychologist, clinical social worker, outreach worker and a psychiatrist; optometric services; and a respiratory therapist.

The majority of referrals are initiated through schools, with an increasing number of referrals being initiated by families. We have addressed some of the barriers articulated by families and patients, such as challenges in transportation and referral processes such as prefilled paperwork that must be completed and returned prior to appointments being granted.

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# Congratulations to the CHAMPS Research Team

Congratulations to the CHAMPS (Children's Health Heart Camp in Saskatchewan) research team on their numerous presentations made in 2015-2016.

1. Erlandson, M.C., Runalls S., Wright, K., Kakadekar, A., Pharis, S., Pockett, C., Tomczak, C.R. Bone density and estimated strength at the radius and tibia in children with congenital heart defects. Presented at the North American Society of Pediatric Exercise Medicine Conference, August 2016.

2. Runalls, S., Tomczak, C.R., Wright, C., Kakadekar, A., Pharis, S., Pockett, C., Erlandson, M.C. Body composition and physical activity levels of children with congenital heart defects. Presented at the Department of Pediatrics Child Health Trainee Research Day March 24th, 2016.

3. Wright, K.D., Oliver, A., Erlandson, M.C., Tomczak, C. 2016. Health anxiety and associated constructs in children and adolescents with congenital heart defects. Presented at World Congress of Behavioural and Cognitive Therapies, June 2016.

4. Fries, J., Erlandson, M.C., Hogeweide, E., Fusnik, S., Haykowsky,

M.J., Runalls, S., Kakadekar, A., Pharis, S., Pockett, C., Wright, K., Tomczak, C.R., 2016. Reduced aerobic fitness despite healthy body composition in physically active children with congenital heart disease. *Medicine and Science in Sports and Exercise*. 48(Suppl 1) 5: 1015.

5. Fusnik, S., Stickland, M.K., Hogeweide, E., Fries, J., Haykowsky, M.J., Runalls, S., Kakadekar, A., Pharis, S., Pockett, C., Wright, K., Erlandson, M.C., Tomczak, C.R. 2016. Arterial stiffness in physically active children with congenital heart disease and low aerobic fitness. *Medicine and Science in Sports and Exercise*. 48(Suppl 1) 5: 197.

6. Tomczak, C.R., Fusnik, S., Hogeweide, L., Haykowsky, M.J., Stickland, M.K., Runalls, S., Kakadekar, A., Pharis, S., Pockett, C., Erlandson, M.C. 2015. Muscle metaboreflex regulation of arterial blood pressure in children with congenital heart defects. *Circulation*. 133(Suppl 1): AP040

7. Hogeweide, R., Fusnik, S., Fries, J., Haykowsky, M.J., Stickland, M.K., Runalls, S., Kakadekar, A., Pharis, S., Pockett, C., Erlandson, M.C., Tomczak, C.R. 2015. Impaired control of heart rate at rest and slower post-exercise heart rate kinetics in children with congenital heart defects. *Circulation*. 133(Suppl 1): AP041

## Featured Child Health Researcher

### Dr. Tracie Risling

Dr. Tracie Risling is an Assistant Professor in the College of Nursing at the University of Saskatchewan. In addition to her faculty appointment, which began in 2010, Dr. Risling maintained a casual practice as a pediatric nurse at Royal University Hospital until this fall, and her program of research is grounded by this practice experience.



Dr. Risling is exploring the intersection of health informatics and patient oriented research through study on patient-centered technologies. This is a dynamic field as technology continues to rapidly permeate and shape healthcare delivery protocols and systems. Dr. Risling began her work in health informatics with study and publication on the application of social media in various aspects of healthcare and professional communication, including a social media assessment tool for family practitioners.

Her current program of research has two technology foci. The first is examining the role of technology in supporting adolescent patients with chronic inflammatory bowel disease (IBD) as they transition from pediatric to adult care providers. Canada has a high rate of

childhood IBD diagnosis and research on healthcare transition (HCT) has demonstrated a greater need for support during this crucial time in a patient's development. In partnership with pediatric and adult experts in IBD, including physicians, clinical nurses, and academics from Alberta, Manitoba, and Saskatchewan, Dr. Risling is leading a multi-project investigation of the transition needs of these patients, and the practitioners that serve them. This research is informed, and supported through a community partnership with the Saskatoon Chapter of Crohn's and Colitis Canada. The planned development of technological solutions to support improved patient and care outcomes for HCT includes a mobile web-based application that will offer both adolescents with IBD, and their caregivers, a unique support mechanism as they engage in key transition activities.

In addition to this work in HCT, Dr. Risling is conducting research on the use of patient portals in Saskatchewan. In collaboration with eHealth Saskatchewan and the pilot delivery of the Citizen Health Information Portal or CHIP, Dr. Risling is exploring the influence of technology on patient empowerment and engagement. Patient portals that are tethered to electronic health record data, as in the CHIP project, provide an electronic means of access to personal health information through a secure web site or portal. Research on how these technologies can deliver increasingly individualized care

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### Our Partners: Saskatoon Tribal Council

The Department of Pediatrics is privileged to work in partnership with the Saskatoon Tribal Council (STC), Health and Family Services, to address the paucity in specialized Pediatric health care services within Saskatoon's core neighbourhoods. STC was a founding partner in the establishment of the St. Mary's Wellness and Education Centre - including the opening of St. Mary's Pediatric Clinic and associated programs. STC's mandate includes working to improve health outcomes and access for First Nations families and working with communities to achieve optimum health and well-being.



### Clinical Investigator Program (CIP) for Residents

The CIP at the University of Saskatchewan is available to residents enrolled in a Royal College accredited residency program who have interest and potential for a career as a clinician investigator or clinician scientist. CIP offers two streams: A Graduate stream for participants enrolled in a graduate (M.Sc. or Ph.D.) program, and a Postdoctoral Stream for residents who already hold a Ph.D. and are interested in undertaking a structured research program. For further information about CIP, please contact Dr. Alan Rosenberg, [alan.rosenberg@usask.ca](mailto:alan.rosenberg@usask.ca).



# Utilization of PRISM in Pediatric Interfacility Transport

## Anastasia Zello



Pediatric transport medicine has grown into a specialized discipline since its inception 20 years ago. Despite these advancements, a validated tool that assesses severity of illness during transport has not been developed. Severity of illness scoring is necessary for decision-making regarding pediatric patient disposition as well as for outcome evaluations in clinical transport practice and for transport research. The Pediatric Risk of Mortality (PRISM) score is the severity of illness score commonly used in the PICU and for transport services in North America. Though validated in the pediatric intensive care unit (PICU), the PRISM tool has not been validated for the transport setting.

To our knowledge, the impact of utilizing the PRISM tool during transport to make predictions about hospital disposition, length of stay (LOS), and how the timing of the scoring impacts its value has

not been explored in a clinical study.

We retrospectively collected 12 months (2015-2016) of PRISM data scored at two separate times for pediatric inter-facility transports done by our provincial transport team. Time 0 (T0) was the time of the initial call and Time 1 (T1) was when the team arrived to the patient. We compared T0 and T1 to determine if the score changed and how the two times related to hospital disposition and LOS.

There were 169 of 373 patients (45.3%) with a score of 0 at the time of initial call. Among these, 160 (94.7%) had no change in PRISM between T0 and T1; however, the results called to question the PRISM tool's ability to determine disposition because despite the low-risk scores (0), 59.2% were subsequently admitted to PICU, step-down, or observation units.

Because zero scores were predominant in the data, a comparison was done between subjects scoring zero (minimal risk) and those above zero. This demonstrated that PRISM scored at T0 may be slightly better at predicting level of care ( $p < 0.0001$  vs. 0.004). However, for LOS, PRISM assessed at the site appears to be a slightly stronger

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## Coming Events

**DEC**  
**THU**  
**1**  
Morbidity and Mortality  
Drs. Vicki Cattell and Tanya Holt  
Pediatric Grand Rounds  
11am-12pm  
East Lecture Theatre RUH

**DEC**  
**THU**  
**8**  
Sickle Cell Disease: A Hemoglobinopathy Diagnosed and Cured with Greater Frequency in Western Canada  
Dr. Greg Guilcher  
Pediatric Grand Rounds  
11am-12pm  
East Lecture Theatre RUH

**THU**  
**THU**  
**15**  
Holiday Rounds  
Dr. Morgan Hewitt  
Pediatric Grand Rounds  
11am-12pm  
East Lecture Theatre RUH

**JAN**  
**THU**  
**5**  
TBA  
Dr. Melissa Denis  
Pediatric Grand Rounds  
11am-12pm  
East Lecture Theatre RUH

**JAN**  
**THU**  
**12**  
TBA  
Dr. Dawn Danielson  
Pediatric Grand Rounds  
11am-12pm  
East Lecture Theatre RUH

**JAN**  
**THU**  
**19**  
TBA  
Dr. Mahli Brindamour  
Pediatric Grand Rounds  
11am-12pm  
East Lecture Theatre RUH

**JAN**  
**THU**  
**26**  
The Value of EEG Monitoring in PICU  
Drs. Salah Almubarak and Greg Hansen  
Pediatric Grand Rounds  
11am-12pm  
East Lecture Theatre RUH

**MAR**  
**THU**  
**23**  
Child Health Research Trainee Day  
Details TBA

## Recent Publications & Presentations from U of S Child Health Researchers

- Cervantes MP, Palomino JM, Anzar M, Mapletoft RJ, Adams GP. In vivo and in vitro maturation of oocytes collected from superstimulated wood bison (*Bison bison* *athabasca*) during the anovulatory and ovulatory seasons. *Anim Reprod Sci.* 2016;173:87-96.
- Dart AB, Zappitelli M, Sood MM, Alexander RT, Arora S, Erickson RL, Kroeker K, Soo A, Manns BJ, Samuel SM. Variation in estimated glomerular filtration rate at dialysis initiation in children. *Pediatr Nephrol.* 2016; Epub ahead of print.
- Froehlich Chow A, Leis A, Humbert L, Muhajarine N, Engler-Stringer R. Healthy Start - Départ Santé: A pilot study of a multilevel intervention to increase physical activity, fundamental movement skills and healthy eating in rural childcare centres. *Can J Public Health.* 2016;107:e312-e318.
- Hurtubise JL, Marks WN, Davies DA, Catton JK, Baker GB, Howland JG. MK-801-induced impairments on the trial-unique, delayed nonmatching-to-location task in rats: effects of acute sodium nitroprusside. *Psychopharmacology (Berl).* 2016. Epub ahead of print.
- Janzen B, Karunanayake C, Rennie D, Pickett W, Lawson J, Kirychuk S, Hagel L, Senthilselvan A, Koehncke N, Dosman J, Pahwa P, Saskatchewan Rural Health Study Team. Gender differences in the association of individual and contextual exposures with lung function in a rural Canadian population. *Lung.* 2016. Epub ahead of print.
- Novakovic P, Harding JC, Ladinig A, Al-Dissi AN, MacPhee DJ, Detmer SE. Relationships of CD163 and CD169 positive cell numbers in the endometrium and fetal placenta with type 2 PRRSV RNA concentration in fetal thymus. *Vet Res.* 2016 Aug 5;47:76.
- Nutrition Working Group, O'Connor DL, Blake J, Bell R, Bowen A, Callum J, Fenton S, Gray-Donald K, Rossiter M, Adamo K, Brett K, Khatri N, Robinson N, Tumback L, Cheung A. Canadian consensus on female nutrition: Adolescence, reproduction, menopause, and beyond. *J Obstet Gynaecol Can.* 2016;38:508-554.
- Silva S, Baxter-Jones A, Maia J. Fat mass centile charts for Brazilian children and adolescents and the identification of the roles of socioeconomic status and physical fitness on fat mass development. *Int J Environ Res Public Health.* 2016;13:151.
- Toews K, Cummings JA, Zagrodny JL. Mother blame and the just world theory in child sexual abuse cases. *J Interpers Violence.* 2016. Epub ahead of print.
- Widger K, Davies D, Rapoport A, Vadeboncoeur C, Liben S, Sarpal A, Stenekes S, Cyr C, Daoust L, Grégoire MC, Robertson M, Hodgson-Viden H, Laflamme J, Siden H, Pediatric palliative care in Canada in 2012: A cross-sectional descriptive study. *CMAJ.* 2016;4:E562-E568.

For families whose lived realities consist of experiences such as frequent moves with subsequent interrupted and changing contact information and/or limited transportation (as one example), a consequence of factors such as income and housing inequality, the current policies and processes for accessing healthcare services are daunting.

Areas of potential research include the identification of short-term and long-term measures for determining the effects of interventions or actions that reflect the community's interests; the further development of scientific design principles for generating and documenting both practice- and research-based evidence from our models of care; and the development of strategies that reduce risk factors and that enhance protective factors to promote resiliency in children and youth. In considering research, we must maintain the involvement of our partners and the communities in which we practice from the start to completion of any research projects. Furthermore, sustained benefit reflecting the needs of the community must transcend the data gathering, assessment, and completion of any research project. As we have done from the inception of pediatric school-based health care services, consideration and consensus from the partners is essential in developing any research initiatives.

*Dr. Maryam Mehtar is an Assistant Professor in the Division of Social Pediatrics and Pediatric School-Based Health, and Residency Program Director, Department of Pediatrics, University of Saskatchewan.*

## Research Project Opportunities

**“Relationship of ESR and CRP with inflammatory cytokine biomarkers”**

Study format: Database analysis

Contact: Dr. Alan Rosenberg, alan.rosenberg@usask.ca

**Canadian Paediatric Surveillance Program (CPSP)**

\$3000 Research Grant for Pediatric Residents to enable a one-time CPSP survey. Deadline March 1, 2017

Contact: Erin Prosser-Loose, erin.loose@usask.ca

## YOUR OPINION PLEASE!

We would appreciate your opinion about the Department of Pediatrics Research Report and suggestions for future editions.

Please complete a brief survey at:  
<https://www.surveymonkey.com/s/NQVV6SB>.  
 Thank you!

## contact us

For more information about The Department of Pediatrics Research, SPRING, or to contribute content to The Department of Pediatrics Research Report, please contact:

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**Next submission deadline is January 13th, 2017!**

Online version of the newsletter:  
[www.medicine.usask.ca/pediatrics/research/newsletter](http://www.medicine.usask.ca/pediatrics/research/newsletter)



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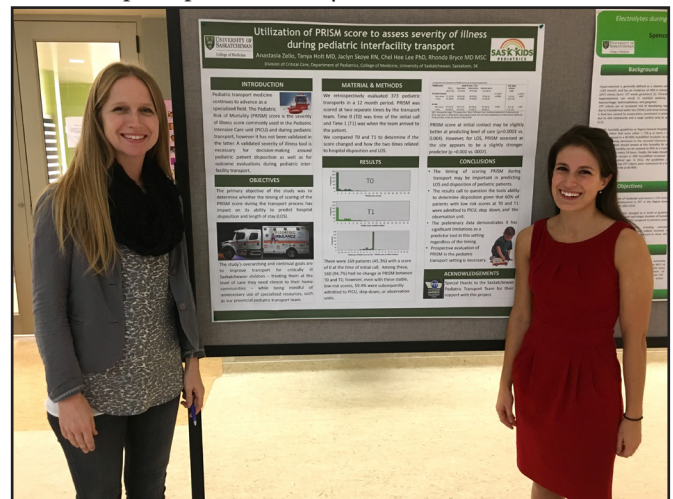
and support for patients, including the influence of this access to information on engagement, activation, and empowerment is still in its infancy. Through her portal work, Dr. Risling is investigating how these technologies can further support the voice of the patient, and/or family caregivers, in directing and managing care. Patient portals may cause a significant shift in the patient-provider dynamic and ongoing research is needed to maximize the benefits of this technological evolution for both parties. Portal technology also has the potential to dramatically improve patient engagement and associated outcomes in acute, outpatient, and community settings, and Dr. Risling is currently pursuing the expansion of her work in this area.

*Dr. Tracie Risling is an Assistant Professor in the College of Nursing*

## PRISM

predictor ( $p < 0.001$  vs.  $0.007$ ). Therefore, the timing of scoring PRISM during transport may be important in predicting LOS and disposition, but overall neither T0 nor T1 is better.

Our preliminary data demonstrates that, regardless of timing, PRISM has significant limitations as a predictor tool in the transport setting. This may affect pediatric patients' access to appropriate level of care and, consequently, safety. Modification and validation of the PRISM, if used in the pediatric transport setting, is necessary. This study exposes the potential need for the development of a new pediatric transport specific severity of illness tool.



*Anastasia Zello was the recipient of Dean's Summer Research Project funding through The College of Medicine, with Dr. Tanya Holt as her supervisor. The program is intended to foster a spark and ignite a passion for research in our medical students, facilitating an understanding of the vital role research plays in today's health care.*

Supervisor: Dr. Tanya Holt – Pediatric Critical Care  
 Student Researcher: Anastasia Zello – MD Candidate 2018  
 Jaelyn Skoye – RN, Pediatric Transport Team  
 Rhonda Bryce – MD, MSC, Statistical Analyst  
 Chel Hee Lee – PhD, Statistical Analyst

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 partner in helping advance research in the Department of Pediatrics. For further information about the CHRTF: <http://www.medicine.usask.ca/pediatrics/research/CHRTF>. To **Donate** to the CHRTF: <http://give.usask.ca/online/chrtf.php>

