



# BUILDING TOGETHER

Recognizing Our Collective Strengths

Department of Pediatrics 2013-14 Annual Report





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All persons profiled in this Annual Report have agreed  
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Department of Pediatrics 2013-14 Annual Report

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## DIVISIONAL REPORTS



## SERVICES/ PROGRAMS



## Our mission:

The Department of Pediatrics is committed to optimizing the health and well-being of all children, youth and families in the communities we serve. In a safe, compassionate environment, we will deliver excellence and innovation in clinical care, research, education and advocacy through leadership and partnerships with patients, families, health and academic communities and society.

## Our vision:

To provide seamless connected care while being recognized for innovation in education and research—locally, nationally and internationally.

## Acknowledgements

Dr. Duffy and the Department of Pediatrics are grateful to **Lindsay Armstrong** (Communications Assistant, Department of Pediatrics) for facilitating the creation of this report and to **nineSixteen Creative Inc.** for their creativity in putting it together.



## A Message from the Chair/Chief

It is my very great pleasure to introduce the 2013–2014 Department of Pediatrics Annual Report. This report represents a new venture for us since, this year, we have elected to produce a printed document and we are very pleased with the result. We will continue to use this as a forum to celebrate our ongoing successes in the years to come, as well as an opportunity to specifically recognize some of our faculty members. The current report reflects the exemplary commitment and dedication of our faculty members in ensuring that we delivered excellence in patient care, teaching, research and advocacy during the past academic year. I would like to acknowledge all of our department members who have contributed enormously to what has been a phenomenally successful year!

With the addition of several new faculty members, our department continues to grow, such that we now have an important critical mass in almost all clinical areas—but with some areas still requiring some additional expansion. We had 225 faculty members in total in 2013/2014, when one includes all of our CHEO-based faculty (153 were CHEO-based), members of the Department of Genetics, PhD scientists at CHEO RI who are within our department, and those community-based pediatricians with CHEO and uOttawa appointments. In line with our academic focus, we have managed to convert most clinical services to full academic divisions, and it is anticipated that this work should be completed for the entire department over the next academic year.

Our major focus is to deliver exemplary care to the population of children and youth whom we serve. We do so through the enormous commitment of all of our faculty members, whether it be in the front line of acute or chronic care in our emergency department, our intensive care units (NICU and PICU), on the inpatient wards, in the ambulatory setting or in the community. In fact, CHEO inpatient units were ranked number 1 in Ontario for patient satisfaction for all pediatric centres in 2013.



## A Message from the Chair/Chief

This is in large part due to the amazing clinical care provided by our department's clinicians. We are also happy to see an expansion in certain clinical areas with funding having been secured for the complex care and neonatal transport programs.

In addition to its very strong commitment to our clinical mission, our department continues to make outstanding academic contributions. We place a very high value on teaching and make significant contributions at all levels, as is well illustrated in this report. We contributed close to 60,000 trainee days over the course of the past academic year (undergraduate and postgraduate) and made enormous contributions to the Faculty of Medicine Undergraduate Curriculum. Our department has also been highly successful in the acquisition of research funding, with many successful grant applications received, and our clinician investigators and scientists continue to be leaders in a wide array of areas. This has led to many high-impact publications, and to important leadership nationally and internationally. Also, and most importantly, it has led to a significant impact in patient care.

We have striven to ensure that all of our faculty's contributions are recognized and have very actively pursued this through the nomination of faculty members for awards. We have had numerous successful award recipients this past year, especially from the Canadian Pediatric Society, from whom we received 6 of the 11 awards available for outstanding contributions to child and youth health through excellence in pediatric health promotion, research and advocacy. Our department was instrumental in initiating a new promotions facilitation process, ultimately adopted by the Faculty of Medicine. Through this process, our department has had a significant increase in its success rate in the promotions process, and this reached 100% this past academic year. We anticipate that this should help an increasing number of department members to succeed in this endeavour into the future.

We have also contributed significantly to specific CHEO projects. This past year, department members, alongside CHEO staff, have been thoroughly engaged in the implementation of CHEOworks and Epic—CHEO's main backbone initiatives. This particular commitment is highlighted in this report.

We are in the beginning stages of our strategic planning process to take stock of where we currently stand, and are in the throes of defining the direction we would like to take for the next 4–5 years. As we do so, we will continue to provide exemplary care to our region while continuing to integrate education and research into all that we undertake to do. Please join us in reflecting on and recognizing our accomplishments throughout the past year and learning a little bit more about some of our faculty members.

Sincerely,

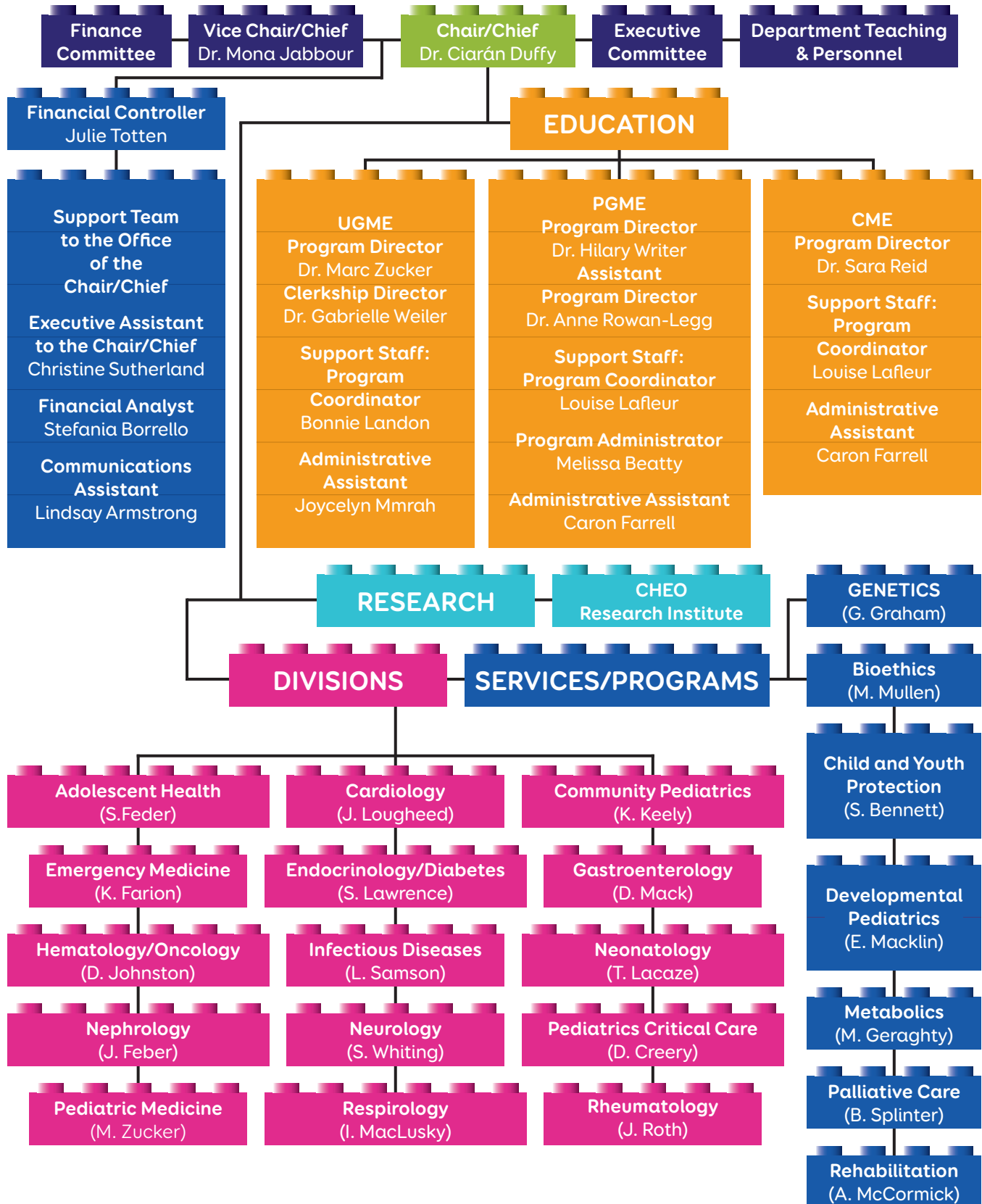
A handwritten signature in blue ink, reading "Ciarán Duffy". The signature is fluid and cursive, with the first name "Ciarán" and the last name "Duffy" clearly distinguishable.

**Ciarán M. Duffy** MB, BCh, MSc, FRCPC, FRCPI

Professor and Chairman, Department of Pediatrics, University of Ottawa  
Chief of Pediatrics, Children's Hospital of Eastern Ontario (CHEO)

# Department of Pediatrics

Faculty of Medicine, University of Ottawa  
Children's Hospital of Eastern Ontario



# Department Committees in Action

## Executive Committee

The Executive Committee provides input to the Chair/Chief on various initiatives, and is advisory. It makes contributions on faculty recognition, decisions regarding academic leave, and also provides input regarding departmental retreats. The Committee also acts as a sounding board for discussion on departmental issues as they arise. Standing committee members include the Chair/Chief, who chairs this committee, and the Vice Chair/Chief. An additional 3-4 other members are selected by the Chair/Chief and have a term of two years, renewable. This committee meets every six weeks.



### Committee Members (2013/14 Academic Year)

- Dr. Ciarán Duffy (Committee Chair)
- Dr. Mona Jabbour
- Dr. Martin Osmond
- Dr. Sharon Whiting
- Dr. Jim King
- Dr. Marc Zucker



## DTPC Committee

The Department Teaching & Personnel Committee (DTPC) primarily functions as the Department's promotions committee. The Committee identifies candidates for academic promotion and facilitates the promotions process for the selected candidates. The DTPC also provides advice and direction to candidates not selected to go forward for promotion in the particular cycle under review. Committee members are a mixture of Associate and Full Professors and are appointed for a term of two years, renewable once. This committee meets monthly.



### Committee Members (2013/14 Academic Year)

- Dr. Ciarán Duffy – Full Professor (Committee Chair)
- Dr. Janusz Feber – Full Professor
- Dr. Michael Geraghty – Full Professor
- Dr. Martin Holcik – Full Professor
- Dr. Tom Kovesi – Full Professor
- Dr. Mona Jabbour – Associate Professor
- Dr. Lindy Samson – Associate Professor
- Dr. Nicole Le Saux – Associate Professor

### Finance Committee

Functioning in an advisory capacity to the Chair/Chief, the Finance Committee oversees department finances to ensure fiscal responsibility. The Committee is comprised of a Committee Chair, voted in by the membership and 6 faculty members, all of whom are voting members. The Chair/Chief of the Department sits on this committee as a non-voting member. Members are voted-in by the Department for a two year term, renewable once. The Department has long been supported by Lyn Neron (Beaucaire), our former Finance Director who retired in December 2013 after almost 20 years. As we said goodbye to Lyn, we were excited to welcome Julie Totten to the Department of Pediatrics as our new Financial Controller.



Left to right: Dr. Joe Reisman, Dr. Ciarán Duffy, Dr. Janice Barkey, Dr. Gregory Moore, Dr. Ian MacLusky, Dr. Ken Farion, Dr. Anna Theresa Lobos, Dr. JoAnn Harrold, Dr. Mona Jabbour.

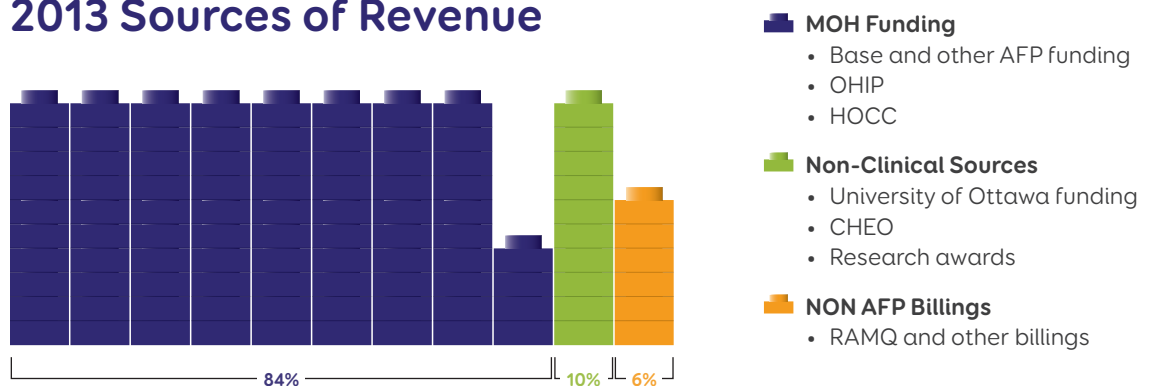
#### Committee Members (2013/14 Academic Year)

- Dr. Mona Jabbour (Committee Chair)
- Dr. Ken Farion
- Dr. Jane Loughheed
- Dr. Gregory Moore
- Dr. Anna-Theresa Lobos
- Dr. Ian MacLusky
- Dr. Ciarán Duffy (non-voting)

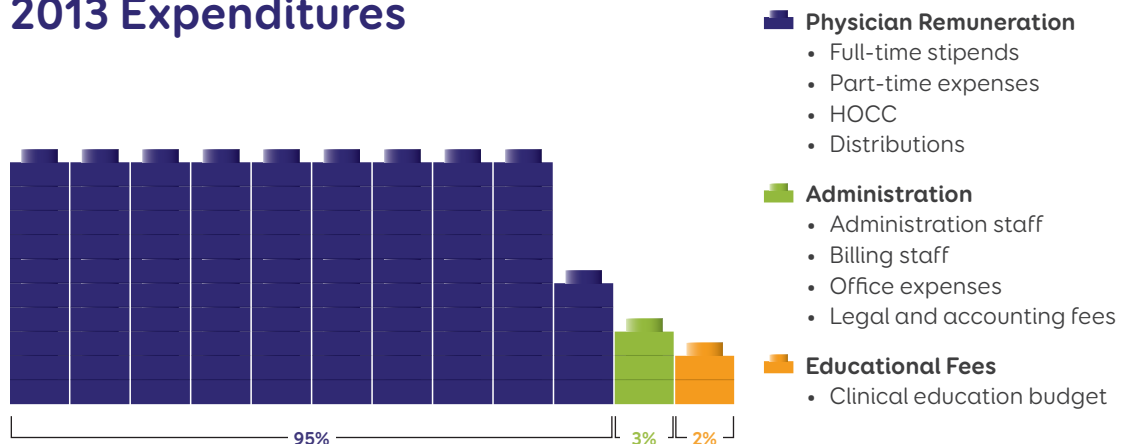
# Financials

The Department's finances were in a healthy position, as depicted below, in 2013/2014. Approximately 90% of our revenues came from funds acquired through clinical activity or through the academic contribution to our Alternative Funding Plan (AFP). The remaining 10% came from academic sources such as the Faculty of Medicine, University of Ottawa, salary awards, or from other institutions such as CHEO. 95% of these acquired funds were distributed to members in the form of remuneration stipends, while 5% were expended on administrative costs related to the running of the Department's operations, including the cost of our educational endeavours.

## 2013 Sources of Revenue



## 2013 Expenditures





# Reflecting on Our Success

## Highlights, Awards and Recognition

Dr. **Danielle Grenier** was the 2014 recipient of the Ross Award, the most prestigious award of the Canadian Pediatric Society (CPS), for her outstanding contribution to Child Health, and enormous contribution to the CPS over the entirety of her career. Unfortunately, Danielle passed away a few short months after receiving this award.

**CHEO Inpatient Units** were ranked number 1 in Ontario for patient satisfaction for all pediatric centres. This is in large part due to the amazing clinical care provided by our department's clinicians.

Dr. **Chuck Hui** had a great year. He received the CAPHC award for the winning poster in the System Innovation category. He also was selected to receive the CPS Member Recognition Award and he was the recipient of the Popham Fellowship. He will be based at the World Health Organization in Geneva, Switzerland, while he pursues a fellowship in Children's Migrant Health during 2014/2015.

Dr. **Sarah Lawrence** received the CPS Michel Weber Education Award. This award recognizes a CPS member whose work in medical and/or inter-professional education has had a significant and positive impact on learners in child and youth health. Dr. Lawrence, along with others across Canada, received the Noni MacDonald Award for their article, "Canadian Pediatric Endocrine Group extension to WHO growth charts: Why bother?" published in *Paediatrics & Child Health*. The article highlights complementary growth curves based on the 2010 WHO Growth Charts for Canada, as prepared by the Canadian Pediatric Endocrinology Group and has positively affected pediatric medicine.

Dr. **Alex MacKenzie** received the CPS Career Research Award. This award recognizes the career of an outstanding and accomplished researcher working on an aspect of pediatric research in Canada. Dr. MacKenzie and Dr. **Kym Boycott**, were jointly honoured with the CORD (Canadian Organization for Rare Disorders) Rarity Scientific Award for 2014. This award is presented to a distinguished researcher whose career represents a unique blend of scientific excellence and support of the patient community.

Dr. **Kusum Menon** won the Outstanding Investigator Award from CHEORI, while Dr. **Nick Barrowman** was the Outstanding Research Mentor.

Dr. **Jean-Philippe Chaput** from HALO was awarded the *International Journal of Obesity (IJO)* New Faculty Award for Population Science and Public Health Research.

Dr. **Rob Screatton** was named Canadian Diabetes Association Young Scientist of the Year. This award recognizes research conducted in the field of diabetes on the basis of original scientific contributions. His work has been published in *Science Signaling*, *Nature Cell Biology*, as well as invited commentaries in *Nature Immunology*.

Dr. **Kristi Adamo** was a recipient of The W. Garfield Weston Foundation Award. Dr. **Martin Holcik** is the co-investigator of their project entitled, “The effects of obesity on placental gene expression and fetal growth.” The objective is to explore maternal gene expression patterns in the placenta in pregnancies complicated by obesity.

Dr. **Marc Zucker** was awarded the Faculty of Medicine ‘Prix de l’éducateur – Compétence « être humain », volet francophone’ for promoting the health and well-being of physicians and physicians in training.

Dr. **Gina Neto** received the CPS Anna Jarvis Pediatric Emergency Medicine Teaching Award, which recognizes individuals in the field of pediatric emergency medicine who have been identified as an exceptional educator at all levels.

Dr. **Jim King** received the CPS Certificate of Merit Award, which recognizes members who have made exceptional contributions to the health of children and youth at a regional level.

Dr. **Asif Doja**’s team, for their study entitled “Enhancing physical activity in children with tics and Tourette syndrome: impact on tic severity and quality of life”, and Dr. **Robert Klaassen**’s team, for their study entitled “Expanding the self-administered pediatric bleeding questionnaire (Self-PBQ): assessment and cognitive debriefing in 7-12 year old children”, were the 2013 award recipients for the Marjorie Goodrich Fellowship in Biomedical Research.

# Funding Success

## CHAMO AHSC AFP Innovation Awards:

Dr. **Michael Geraghty** has chaired the CHAMO Innovation Committee for the past 5 years and stepped down in August 2013. Under Dr. Geraghty's direction, we had much success with the program with many of these projects presented at the Innovation Showcase in Toronto. Dr. **Kusum Menon** has now taken on the role as Chair.

### Recipients for 2013/2014 were:

Dr. **David Creery** - The CHEO Morbidity and Mortality Conference (MMC) Improvement Project. Phase 1: Exploring the Current State of MMC Processes at CHEO (\$97,814).

Dr. **Sherri Katz** - Obstructive Sleep Apnea and Hypertension in Children with Chronic Kidney Disease (\$99,041.84).

Dr. **Thierry Lacaze** - Early Onset Neonatal Sepsis Detection: Development of Molecular Testing Methods using Newborn Screening Ontario Blood Spots and Archived Neonatal Sepsis Samples (\$43,083).

Dr. **Lillian Lai** - What is the Impact of eConsultation in a Pediatric Specialty Referral Process? (\$67,200).

Dr. **Ahmed Nasr** - Determining Trauma Quality Indicators in Pediatrics to Improve Outcomes (\$26,081).

Dr. **Sarah Sawyer** - Molecular Profiling to Impact the Management of pre-B All: A Pilot Study (\$96,058.00).

## Other Major Funding Awards

Dr. **Pat Longmuir** was awarded \$129,967 from the Ministry of Tourism, Culture and Sport for her study entitled "Putting Physical Literacy within REACH (Recreation, Education, Allied Health, Coaching, and Healthcare)".

Dr. **Bernard Thébaud** was awarded a CIHR Operating Grant worth \$153,000 per year for 5 years in support of his project entitled "Therapeutic potential of stem cells in lung injury".

Dr. **Eric Benchimol** was awarded a CIHR Operating grant worth \$120,000 for 2 years entitled "Reporting of studies Conducted using Observational Routinely-collected Data (RECORD)".



Dr. **Stephanie Redpath** is a co-investigator on a successful CIHR Partnerships for Health System Improvement grant (\$524,643 over 3 years) entitled “Improving quality of care during transport of sick neonates: A national collaborative partnership for outcome improvement and system enhancement”.

Dr. **Mark Tremblay** and team were awarded \$95,000 from the Lawson Foundation to conduct two systematic reviews examining the relationship between time spent outdoors and amount of physical activity and physical competence in children aged 3–12 years.

Drs. **Lindy Samson** and **Jason Brophy**, with others, received \$1,975,000 over 5 years from CIHR and the Canadian Foundation for AIDS Research in support of their project entitled “Pediatrics HIV infection: exploring determinants of a functional cure”.

Dr. **Robert Korneluk**: Combined IAP antagonism and immunotherapy for cancer treatment, funded by CIHR, \$794,885.

Dr. **Kusum Menon**: Steroid Use in Pediatric Fluid and Vasoactive Infusion Dependent Shock, funded by CIHR, \$597,372.

Dr. **Amy Plint**: How safe are our pediatric emergency departments? A national prospective cohort study, funded by CIHR, \$1,129,365.

Dr. **Dennis Bulman** is one of the genomics co-leaders of a large multicenter grant recently funded by the Ontario Brain Institute.

Dr. **Leanne Ward** and CHEO team members Drs. Jinhui Ma, **Hugh McMillan**, MaryAnn Matzinger, and Nazih Shenouda were awarded a Physician Services Incorporated (PSI) Foundation grant for \$170,000 to conduct a prospective observational study to identify the incidence, prevalence and risk factors associated with spine and long bone fractures in children and young adults with Duchenne Muscular Dystrophy.

Dr. **Eric Benchimol** is a co-investigator on a successful CIHR Team Grant competition: Health Challenges in Chronic Inflammation Initiative. The team’s proposal, entitled “NADPH oxidase function in the pathogenesis of paediatric IBD and JIA”, has been awarded \$2.5 million over 5 years.

### Papers of Impact

Dr. **Dave Dymant** was the lead author of a study in the *American Journal of Human Genetics* entitled, “Mutations in PIK3R1 Cause SHORT Syndrome”.

Dr. **Tom Kovesi** co-authored a commentary entitled “Remediating buildings damaged by dampness and mould for preventing or reducing respiratory tract symptoms, infections and asthma”. This was published in *Evidence-based Child Health*.

Dr. **Bernard Thébaud** and team published their study entitled “Hypoxia Inducible Factors Promote Alveolar Development and Regeneration” in the *American Journal of Respiratory Cell and Molecular Biology*.

Drs. **Alexandra Ahmet, Leanne Ward** and team co-authored a review that was published in the *Allergy Asthma & Clinical Immunology Journal* entitled “A practical guide to the monitoring and management of the complications of systemic corticosteroid therapy”.

Drs. **Kym Boycott, Alex MacKenzie** and **Dennis Bulman** co-authored a review in *Nature Reviews Genetics* entitled “Rare-disease genetics in the era of next-generation sequencing: discovery to translation”. This journal has an impact factor of 41.

Drs. **Tobey Audcent, Heather MacDonnell** and **Katherine Moreau**’s publication entitled “Development and Evaluation of Global Child Health Educational Modules” was published in *Pediatrics*.

Dr. **Thierry Lacaze** and team published a study entitled “Value of a single C-reactive protein measurement at 18 h of age” in *Archives of Disease in Childhood: Fetal and Neonatal Edition*.

Dr. **Katherine Moreau** published a national study entitled “A Survey of Program Evaluation Practices in Family-Centered Pediatrics rehabilitation Settings” in *Evaluation and Program Planning*.

Dr. **Robert Gow** and colleagues from HALO published in *Circulation: Arrhythmia and Electrophysiology by the American Heart Association*. Their study was titled “Activity intensity during free-living activities in children and adolescents with inherited arrhythmia syndromes: assessment by combined accelerometer and heart rate monitor”.

Working with collaborators from the Office of the Chief Coroner of Ontario, SickKids and London Health Sciences Centre, Dr. **Robert Gow** published in *Heart Rhythm* a study entitled “Sudden cardiac death in children and adolescents aged 1 to 19 years of age”.

Dr. **Gail Graham** contributed to a study published in *The Journal of Biological Chemistry* entitled “New Hyperekplexia Mutations Provide Insight into Glycine Receptor Assembly, Trafficking, and Activation Mechanisms”.

Drs. **Denise Harrison** and **Nick Barrowman** co-authored a study recently published in *Pain Research and Management* entitled “Establishing intra- and inter-rater agreement of the Face, Legs, Activity, Cry, Consolability (FLACC) scale for evaluating pain in toddlers during immunization”.

Dr. **Michael Geraghty** co-authored a study published in the *Journal of Lipid Research* entitled “A blood test for cerebrotendinous xanthomatosis with potential for disease detection in newborns”.

Dr. **Mark Norris** was the lead author of an empirical article entitled “Exploring Avoidant/Restrictive Food Intake Disorder (ARFID) in Eating Disordered Patients: A Descriptive Study”, published in the *International Journal of Eating Disorders*.

Dr. **Rob Screaton**’s team grabbed the cover story of *Science Signaling* with their research entitled “ROMO1 Is an Essential Redox-Dependent Regulator of Mitochondrial Dynamics.”

Dr. **JoAnn Harrold** and team (including members from BORN and the CRU) recently published a study entitled “Examining the Effects of a Targeted Noise Reduction Program in a Neonatal Intensive Care Unit” in *Archives of Disease in Childhood—Fetal and Neonatal Edition*.

Dr. **Khaled El Eman** and team had a paper published entitled “Policy recommendations for addressing privacy challenges associated with cell-based research and interventions”.

Drs. **Sarah Nikkel** and **Christine Armour** published an article entitled “Five things to know about noninvasive prenatal testing from cell-free DNA” in the *Canadian Medical Association Journal*.

Dr. **Kym Boycott**’s lab published their study entitled “Denovo germline and postzygotic mutations in AKT3, PIK3R2 and PIK3CA cause a spectrum of related megalencephaly syndromes”.

Dr. **Janusz Feber** and team published an article entitled “Autonomic Nervous System Dysregulation in Pediatric Hypertension” in *Current Hypertension Reports*.

Drs. **Lindy Samson** and **Jason Brophy** co-authored a study entitled “Early Initiation of Combination Antiretroviral Therapy in HIV-1-Infected Newborn Infants can Achieve Sustained Virologic Suppression with Low Frequency of CD4+ T-cells carrying HIV in Peripheral Blood”, published in *Clinical Infectious Diseases*.

## Changes in Personnel– Faculty Departures and New Arrivals

### Departures

- Dr. **Karen Mandel**, Division of Hematology/Oncology, left the department at the end of August to return to Toronto.
- Dr. **Steve Noseworthy**, Division of Emergency Medicine, left the department at the end of August to further pursue his career in BC.

### Arrivals

- Dr. **Nisha Thampi** joined the Department of Pediatrics, Division of Infectious Diseases, with a focus on Infection Prevention and Control.
- Dr. **Waleed Alqurashi** became a full-time member of DPA in the Division of Emergency Medicine.
- Dr. **Mélissa Langevin** became a full-time member of DPA in the Division of Emergency Medicine.
- Dr. **Karine Khatchadourian** joined the Division of Endocrinology for a 2-year period.
- Dr. **Matthew Lines** became a full-time member of the DPA in Metabolic Services.

### Faculty Promotions

- Dr. **Dennis Bulman** to Full Professor
- Dr. **Margaret Lawson** to Full Professor
- Dr. **Sonny Dhanani** to Associate Professor
- Dr. **Joanne Harrold** to Associate Professor
- Dr. **Sarah Nikkel** to Associate Professor
- Dr. **Roger Zemek** to Associate Professor

## Resident Achievements

Dr. **Katie Huth** won Best Resident Presentation at the 26th Annual National Pediatric Resident and Fellow Research Competition for her manuscript entitled “A prospective Cohort Study of Educational and Nursing Interventions to Improve Influenza Vaccination Rates in Pediatric IBD”. Co-investigators include Drs. **Eric Benchimol**, Mary Aglipay and **David Mack**. Since the inception of this competition in 1990, there has never been a winner in the Fellow section from CHEO and it’s been since 1997 that a resident from CHEO was selected for the best research submission and presentation for the country.

- 2014 Francis Boulva Award Recipient: Dr. **Stephanie Van Zanten**
- 2014 Resident Award for Medical Expert: Dr. **Michelle Long**
- 2014 Resident Award for Communicator: Dr. **Katie Huth**
- 2014 Resident Award for Scholar: Dr. **Andrea Pisesky**
- 2014 Resident Award for Collaborator: Dr. **Lopamudra Das**
- 2014 Resident Award for Manager: Dr. **Ashraf Kharrat**
- 2014 Dr. Dolly Singh Teaching Award: Dr. **Katie Huth**
- 2014 Health Advocate: Dr. **Jessica Dunn** (PGY4)
- 2014 Professionalism: Dr. **Elizabeth Esselmont** (PGY3)
- Special Recognition Award for Nomination in Several Core Competencies of the CanMED roles: Dr. **Katie Huth**



# Department of Pediatrics

## Contributions to CHEO Initiatives

Here, we highlight two major CHEO-based developments that have taken off over the past year in attempts to improve the process and documentation within clinical care delivery. These initiatives could not have proceeded successfully without a significant contribution from all of the members of our department. **CHEOworks** and **Epic** are initiatives that were put in place by CHEO to create a culture where everyone is continuously improving the way we work to deliver excellent patient care. Members of the Department of Pediatrics, alongside CHEO staff, have been thoroughly engaged in the implementation process of CHEOworks and Epic.

### CHEOworks

During the CHEOworks rollout on the pediatrics wards and in the emergency department, process improvement tools helped to examine current practices and generate sustainable solutions to everyday issues.

CHEOworks has implemented huddles on each ward. Huddles are dedicated 15-minute touch points to allow teams to address small opportunities for improvement. This is done through 'tickets' placed on the 'Huddle Board'. Tickets are prioritized based on the amount of effort and the overall impact that they will have. Huddles are an opportunity to review and prioritize these tickets and also various metrics from the unit's scorecard (key performance indicators). They also serve to review any larger projects (A3s) that the unit is taking on to tackle. CHEOworks has also implemented an exercise called Value Stream Mapping (VSM). An energetic, multidisciplinary group of CHEO front-line staff and physicians teamed up to examine how patients flow through a few key areas of CHEO, with a goal of learning where the system, and resulting patient/family experience, could be improved. A key deliverable is a shared understanding of what each team member's roles are, in addition to seeing the many ways that the patient's journey is impeded by waiting, rework and uncoordinated efforts between team members and external stakeholders. From there, opportunities are grouped into appropriate improvement projects with an end-state envisioned for more efficient and safer care in the future.

One of the most notable changes in the past year in the pediatric wards has been the rounding process. A multidisciplinary working group was formed to develop clear roles and expectations, to define the responsibilities of everyone on the team, allowing for standardization and increasing the efficiency of patient-centered rounds.

CHEOworks was rolled out across all pediatric wards and will continue to have a positive impact on patient care into the future.

## Epic

Epic is an electronic health record system that allows physicians and other health care providers to improve the patient experience and provide better connected care.

Epic holds all patient information in one place and provides a seamless flow of timely, up-to-date information as a patient moves through the hospital. So far, it has only been rolled out in certain ambulatory clinics.

### How has Epic affected our physicians in the areas where it has been implemented?

- **Exceptional patient experience:** Parents can be easily and actively involved in their child's care. Epic makes patient registration easier, more intuitive and more efficient. It improves patient safety and also gives patients the tools they need to manage their healthcare experience with controlled access to medical records, test results and upcoming appointments.
- **Connected Care:** Epic stores all patient information in one place, making it easier for every clinician involved in that patient's care to retrieve the latest information.
- **Evidence-driven improvement:** Epic provides quick, timely and analytical information on data and trends—providing insight within and across departments to identify issues and opportunities.
- **Responsible stewards:** Epic makes it easier for users to schedule appointments and manage schedules; reducing transcription costs, duplicate orders and unnecessary tests. It helps improve workflow, work queues and patient follow-ups.

These two backbone initiatives have been adopted by our department and our clinicians have been very engaged in the process. Two important leaders from our department who have been major contributors to these process improvements are Dr. **Ken Farion** (CHEOworks) and Dr. **Jim King** (Epic).

### Advocacy

The Department of Pediatrics makes considerable contributions in the broad area of advocacy. This is emphasized by considerable efforts in not only the clinical and academic domains which are alluded to throughout the divisional reports that follow but also in the social, political and global period. Dr. **Lindy Samson** has been a strong advocate for refugees with her attempts to ensure that the ability of refugee children to access much needed care in Canada was maintained. She also led an important initiative for the provision of appropriate housing to those of lesser means. Dr. **Sue Bennett** was a strong contributor to the push to ensure that 'The Rights of the Child', as furnished by the World Health Organization were accepted broadly. Dr. **Heather McDonnell** and several others have made and continue to make important contributions in the broad domain of international global health. Their collective contributions will be an important focus of a future edition of the Annual Report.



# CLINICAL CARE



## Clinical Care

Our clinicians are dedicated to the delivery of outstanding clinical care, achieved very broadly throughout CHEO and beyond. This enormous commitment can easily be overlooked, as our faculty members must also make a large contribution to the academic mission of the department. However, it is clinical care that is the main focus of the department with all department members making a very large commitment in this area (>80% of department members spend >70% of their time in clinical activities) and they do an amazing job.

In the 2013-14 academic year, there were 6,000 hospital admissions, 225,000 ambulatory care visits and 72,000 emergency department visits. It is evident that there is a large breadth of clinical activity in all sub-specialties. Our physicians make a substantive contribution to the well-being and care of the children in our community and beyond. Some specific examples include our Complex Care and Neonatal Transport Programs, which acquired specifically-designated provincial funding for their operation.

The notion of 'Complex Care' as a distinct entity has evolved over many years. Recently specific provincial funding has been acquired to support this distinct and indeed complex form of care delivery. The focus of complex care is on those patients, a proportion of whom are technology-dependent, and often suffer both physical and cognitive impairment, and have significant inter-disciplinary needs. The program led by Dr. **Nathalie Major-Cook** is supported by three additional pediatricians, together with several nurse practitioners and a co-ordinator. The program focuses on the top 1% of children in terms of overall complexity. Children admitted to the program are followed for a defined period of time and ultimately returned for care to their primary care physician once coordinated care has been established for them. In 2013/2014 almost 100 children were managed within the program.

The Neonatal Transport Program is led by Dr. **Stephanie Redpath**. The program was established to enhance the co-ordination of the care of newborns in the region requiring high level neonatal intensive care. Babies born in outlying areas, requiring specialized care are transported via a CHEO-based dedicated team including nurse practitioners, respiratory therapists and a neonatology fellow. This funding will permit an overall expansion of the program and better coordinated care for these sick neonates.

While we have many outstanding clinicians contributing to our clinical mission, here we introduce you to four of them.





A Conversation with  
**Dr. Tom Kovesi**

Dr. Tom Kovesi is not a “morning person”. Every day, he wakes up at the last minute possible so he doesn’t lose a wink of sleep. After 20 years, Dr. Kovesi’s morning routine remains the same: he reads half of a medical article while shaving (he gets through 3 articles/week this way), and gets a quick snapshot of the daily news from 7:30am to 7:35am before he leaves for work.

“I only have a coffee after I get to CHEO. I feel like it is wasted on me first thing in the morning, so it is best for me to wait for the caffeine to kick in.”

Dr. Kovesi was born and raised in Ottawa and became familiar with CHEO even before it officially opened. His parents took him on a tour at CHEO’s first open house to encourage him to pursue a career in medicine. He was particularly fascinated by “the incredibly high-tech radiology area” but was unclear about his future career path.

“I wanted to be a paleontologist because I loved dinosaurs and still do. I have a colossal rock collection in my basement and I have the best collection of dinosaur ties at CHEO. There aren’t many kids who know more about dinosaurs than I do!”

When Dr. Kovesi was a teenager, his uncle encouraged him to pursue a career in medical research. He didn’t know very much about it but after exploring his options, he fell in love with medicine.

Dr. Kovesi joined the Department of Pediatrics in 1992 as an intensivist and as the first respirologist at CHEO. He is the Director of the Pediatric Pulmonary Function Laboratory, and Education Coordinator for the

“The best part of my day is being with the patients. I love kids. I spend as much time playing with the kids as I can get away with ...”

Division of Respiriology. He has served as Co-Director of the Pediatric Cystic Fibrosis Clinic, and as chief of the Respiriology Service (before it became a Division). Dr. Kovesi is Anglophone Co-chair for Respiratory Block for the first-year medical students at the University of Ottawa (Unit 1), has been Chair of the Pediatric Respiriology Examination Board at the Royal College of Physicians and Surgeons of Canada since 2011, and is Chair of the Ontario Thoracic Society.

“I really enjoy working as a respirologist. Every day is different and the majority of my time is spent in the clinic. The best part of my day is being with the patients. I love kids. I spend as much time playing with the kids as I can get away with and I also give a lot of ‘great’ fashion advice to the teenagers!”

With Dr. Kovesi’s busy schedule, work-life balance is still a challenge he has yet to master. He enjoys the level of independence he receives as a physician at CHEO and within the Department of Pediatrics and also credits his wife, Nicolette (a physician herself) for ensuring that he is home for dinner every night at 6:30pm—no excuses. Much of the evening time is spent chatting about their busy day and Skyping with their three daughters: Andrea, Michelle and Caroline, who





have all moved away from home to pursue higher education. Dr. Kovesi also loves learning history through his collection of over 80,000 stamps—a hobby which helps him relax after a long stressful day. He also loves travel (a great way to get more stamps), downhill skiing and cycling.

As much as Dr. Kovesi loves being in the clinic, he enjoys research and teaching. His involvement in housing and air quality research in Nunavut is one of his proudest career accomplishments and he strongly believes in inspiring the future minds of medicine to ensure excellence in patient care at CHEO and in the community.

"I think mentorship, teaching and demonstrating professionalism is really important. I always try to teach the residents to be really precise. Don't guess, find the facts. Get the old charts, get a detailed history from the family and come up with a logical, evidence-based plan to deliver the best diagnosis and patient care possible."





A Conversation with

**Dr. Radha Jetty**

Dr. Radha Jetty was born and raised in Montreal by hardworking parents who emigrated from India. They taught her about their strong ancestral heritage and culture and encouraged her to take advantage of every opportunity that life had to offer in Canada. So it's no surprise that while enrolling her in her native Indian language classes they would also make her speak in French every time they went to the grocery store. This shaped her identity as a proud, grounded and independent Indo-Canadian woman. While Dr. Jetty's career choice was a combination of intellectual curiosity and a desire to help the less fortunate at a very young age, the wise words of her parents played an important role in her decision to pursue a career in medicine.

Dr. Jetty joined the Department of Pediatrics in 2007. She initially took the first year to gain immense experience while locuming in academic and community practices across the country. In 2008, Dr. Jetty became Nunavut's first full-time pediatrician. In 2012, she returned to Ottawa as a consultant pediatrician in the Division of General Pediatrics and as the physician lead for Inuit child health at CHEO. She still works part-time at the Qikiqtani General Hospital in Iqaluit and runs outreach

pediatric clinics in a smaller community of Nunavut. In addition to running her own general pediatrics clinic, Dr. Jetty is a supervisor for the fourth year resident longitudinal clinic where she finds the experience humbling, helping to guide the residents in becoming skilled and autonomous clinicians.

After gaining several years of experience working in Nunavut as a pediatrician, Dr. Jetty started a CHEO Inuit child health outreach clinic in Ottawa, which has been very successful in delivering excellent resources and care for the local Inuit population.

"Being able to provide services in a culturally-safe and community-based family health team environment is an ideal way to serve the community."

While Dr. Jetty wears many hats in her professional career, she ensures she balances the logical and analytical left-brain physician with the creative and intuitive right-brain artist. She spends her spare time training and performing as a professional Indian classical dancer in Ottawa. She also practices yoga, and connects with nature—all of which keep her grounded.

"Wild dreams sometimes made me wonder whether I could pursue a full-time career as a professional Indian dancer or a yoga master. However I will reserve the former as a side career and the latter as a really good retirement plan!"

Dr. Jetty loves the diversity of her job as she experiences a mix of inpatient and outpatient medicine, tertiary and community hospital, urban and remote areas, undergraduate and post graduate teaching at the hospital

"Being able to provide services in a culturally-safe and community-based family health team environment is an ideal way to serve the community."





and university as well as program development and advocacy work on national committees including the Canadian Pediatric Society and Health Canada.

"I feel so privileged to work so intimately with children and their families as I help them navigate through some of their most difficult times. Advocating for a child's right to good health by working to improve the delivery of health services, especially for the Inuit community, is an honour that I treasure."





A Conversation with

**Dr. Mark Norris**



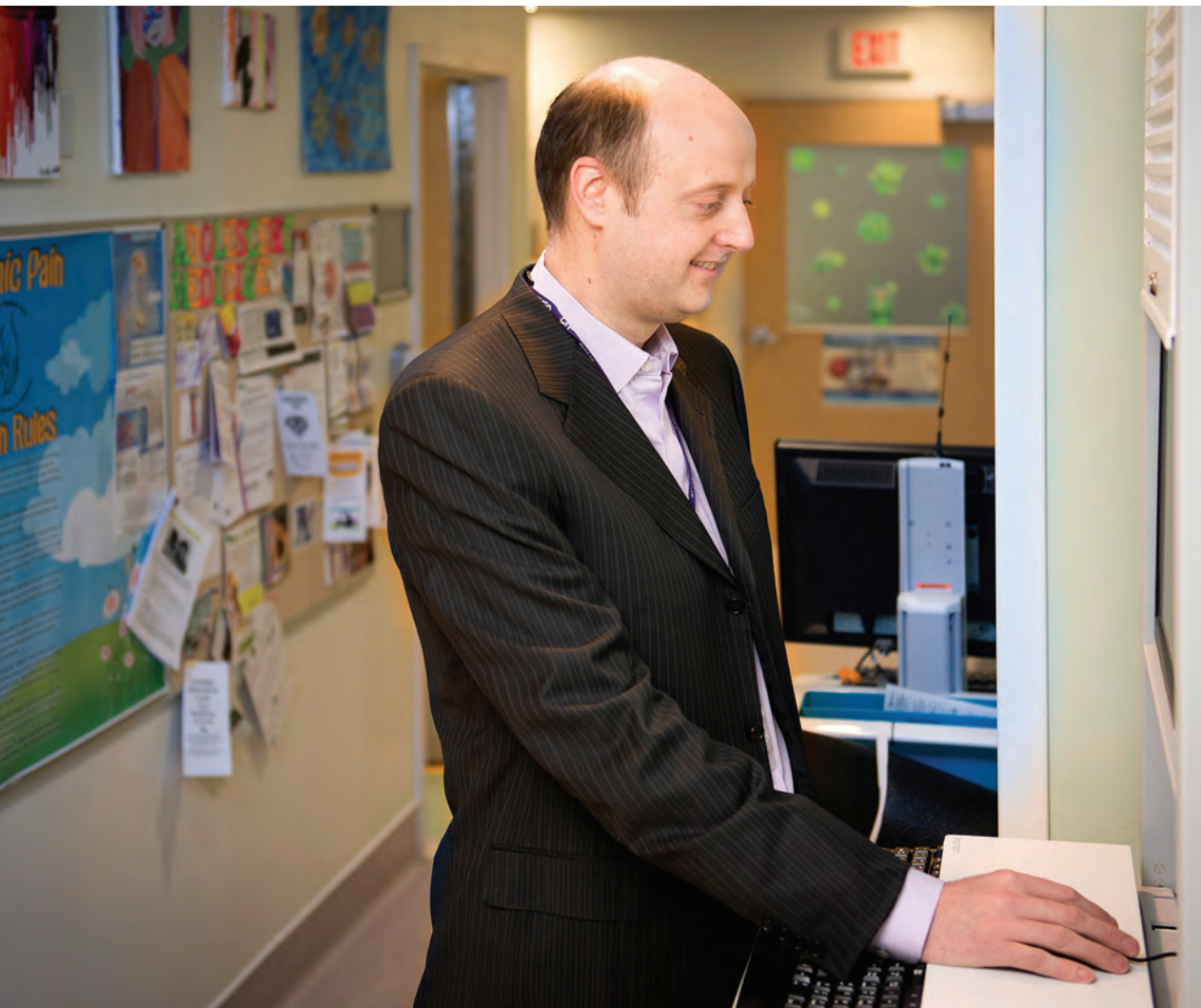
## Clinical Care

Outside of being a husband, father, physician and advocate, Dr. Mark Norris doesn't have much free time to spare. For him, the best way to relax is to spend quality time with his wife and three young children: Rhiana, Rohan and Kieran.

"I enjoy music and I love watching my kids dance. We 'boogie' regularly in the living room pre-bedtime. Outside of that, I love to discover different culinary delights, cook and socialize with friends. I also try and find time to get some exercise—I love to swim and bike."

Dr. Norris was born and raised in St. John's, Newfoundland where he grew up with a great group of friends and wore a suit for a uniform every day to attend an all-boys school until he reached high school. He completed his undergrad degree and Honours at Memorial University in Biochemistry. This was his first introduction to medicine and research.

"There's no magical story here—for me, medicine felt like the most natural thing to do. I knew I wanted to pursue a career that would challenge me."



There are no physicians in my family—my mother was an OR nurse so I grew up with some appreciation of what the lifestyle and level of commitment involved. I chose medicine because I felt like it was an area where I could make a positive impact in someone's life."

Dr. Norris joined the Department of Pediatrics in 2005 as a physician in the Division of Adolescent Health. His primary clinical focus is the Eating Disorder Program at CHEO, where he works closely with the inpatient, day hospital and outpatient programs. Although he wasn't always certain which pediatric subspecialty he wanted to pursue, a helpful observation from his colleague in his third year of residency helped confirm his interest in adolescent health.

"While working a shift together in the emergency department, it was pointed out to me by Dr. Mona Jabbour that I seemed to enjoy working with complex adolescent patients. She was the first to ask me if I would ever consider adolescent medicine as a career choice—to be honest I knew very little about it. Years later, I am very happy. Adolescent medicine is an art more than a science and it relies heavily on my ability as a communicator and manager. I find it very satisfying to help get patients through those tough moments and I really enjoy the scholarly aspect of my job as well."

In addition to Dr. Norris' clinical work, he devotes a large amount of time to research and scholarly activities. He is currently working on Canadian data sets that will provide more information on eating disorders in terms of what we know about prevalence and insight into

what is not being captured. Furthermore, Dr. Norris enjoys being a mentor for trainees during his clinics and believes one of the most important things he has learned has nothing to do with the scholarly aspects of life, but rather helping trainees navigate through life in general.

"There's no magical story here—for me, medicine felt like the most natural thing to do. I knew I wanted to pursue a career that would challenge me. [...] I chose medicine because I felt like it was an area where I could make a positive impact in someone's life."

"Dealing with stress, time management and the importance of choosing something that you really find challenging and enjoyable as a profession are all key things to have a good handle on. I've always felt tremendously supported working within the Department of Pediatrics, even as a resident. I think that was one of the driving factors that led me back to CHEO after my fellowship. I've had some great mentorship throughout my career which has allowed me to excel as a physician. CHEO continues to have a very personal feel and is certainly an environment that I am very proud to be a part of."





A Conversation with

**Dr. Allan Shefrin**



Dr. Allan Shefrin was born and raised in Winnipeg and now calls Ottawa home. For him, his wife Stephanie and their 18-month-old daughter, Livia, Ottawa is the perfect balance between big city excitement and small city comfort.

Dr. Shefrin always knew he wanted two things in his career: he wanted to help people, and explore the world of science—a career in medicine seemed to be the perfect fit. His grandparents and parents emphasized the value of hard work and taking responsibility for his future. His close-knit family felt it was important to be active in the community whether it be volunteering with a youth group, with the local hockey association or working at summer camps. These experiences laid the foundation for a bright future, and volunteering in an emergency department throughout high school and university confirmed his desire to pursue a career in medicine.

Dr. Shefrin joined the Department of Pediatrics in 2010 as an emergency physician and became the division lead for Point-of-Care Ultrasound in 2013. Previous to that, he added a year to his pediatric emergency medicine fellowship where he spent time with the University of California-Davis Emergency Ultrasound fellowship as well as the Vancouver General Hospital and Royal Columbian Hospital adult trauma programs learning point of care ultrasound. By bringing this technology to the bedside at CHEO, physicians are able to enhance patient care, increase patient safety and decrease the time to diagnosis and definitive therapy. The physicians are able to see inside the patient—see their pneumonia,

identify a skull fracture, recognize intra-abdominal hemorrhage in trauma and visualize procedures that were previously carried out blindly. As the leader of the CHEO program, Dr. Shefrin has developed a curriculum for fellows and staff, leads educational initiatives and ensures a robust quality assurance and improvement program. Nationally and internationally, Dr. Shefrin is a key member of a task force working to streamline point of care ultrasound training in pediatric emergency medicine and develop standardized competency assessments.

Dr. Shefrin is thankful that he has been given the time, resources and full support of Dr. Ken Farion, the Emergency Medicine Division Chief and the Department of Pediatrics, which has enabled him to grow the ultrasound program early in his career.

“I am who I am today  
because of the teachers  
I had in medical school,  
residency and fellowship.  
[...] My mentors have  
shaped who I am and  
I strive to be able to  
do the same for others.”

“The pediatric emergency department is an exciting place to work. Any time, any day something crazy can happen so you always have to be ready. Every shift I am challenged to make a novel diagnosis or help families through challenging situations. The ER is a fertile teaching ground for residents



and medical students and this is a role I thoroughly enjoy.”

Outside of work, Dr. Shefrin is a family man. He enjoys every minute he spends with his family. Walking his dog, Benny, grounds him when the stresses of life build up. With shift work, weekends aren’t always time off, nor are weeknights. Planning time off is key—maximizing family time, playing hockey, and passionately discussing sports with friends are but a few things he’s incorporated into his daily lifestyle. While some would argue that Dr. Shefrin is most passionate about the Green Bay Packers or the Ottawa Senators, his true passion is helping people and making our community better.

“I am who I am today because of the teachers I had in medical school, residency and fellowship. Residents and Medical students are the future of our specialty. It is our responsibility to provide the best possible learning environment and to cultivate the next generation. My mentors have shaped who I am and I strive to be able to do the same for others.”



# MEDICAL EDUCATION





# Medical Education

Department of Pediatrics faculty are deeply committed to teaching and education of learners at all levels, with delivery of a significant number of teaching programs, innovations and research in medical education. There are in excess of 60,000 education days at CHEO annually. Our department provided clinical education to over 640 undergraduate medical students at the University of Ottawa, and many elective students from other schools. The Pediatrics residency program has grown substantially and successfully, as have the additional 10 Subspecialty Pediatrics programs in our department. The CME program continues to run increasingly successful courses and Pediatric Grand Rounds, as well as an expanded Pediatric Outreach program.

## Undergraduate Medical Education (UGME)

### Key Highlights:

In March 2014, the council on Medical Student Education in Pediatrics (COMSEP) annual international meeting was hosted in Ottawa by the Pediatric Undergraduate Program Directors of Canada (PUPDOC).

Dr. **Tom Kovesi** (Respirology) received the Department of Pediatrics excellence in Undergraduate Medical Education award. The Department hosts an awards evening every year which continues to be a highlight event.

The Undergraduate Medical Education program continues to provide a high number of elective placements for medical students at CHEO despite increasing numbers of trainees. This past year 160 electives were offered.

Academic awards for the pediatrics clerkship:

- Highest academic standing in the Pediatric Clerkship: **Bradley Sarak**
- Outstanding Clinical Performance in Pediatrics: **Patricia Froese** (Francophone stream); **Jillian Ritsma** and **Theresa Robertson** (shared award, Anglophone stream).

Members of the PGME committee have been involved in creating and launching CANUC-peds, a national pediatrics curriculum for medical students. Work has begun on aligning and streamlining the objectives of the pediatric clerkship at the University of Ottawa with the CANUC-peds national curriculum.

## Postgraduate Medical Education (PGME)

### Key Highlights:

100% of the graduating general pediatrics residents were successful in their Royal College Certification Examinations.

**Melissa Beatty** assumed the position of Program Administrator and Dr. **Anne Rowan-Legg** assumed the position of Associate Program Director for the Pediatrics Residency Program. Both have proven to be outstanding resources in their respective positions.

Dr. **Katie Huth** presented her original research on Barriers to Influenza Vaccination in patients with Inflammatory Bowel Disease at the annual National Resident Research Conference in Winnipeg, winning the national competition.

Multi-source feedback was incorporated for all pediatrics residents as an additional assessment tool of all CanMeds competencies.

New curricula were developed and implemented, each with significant resident involvement in their development: longitudinal advocacy, clinical skills, i-PASS handover.

## Continuing Medical Education (CME)

### Key Highlights:

The 38th Annual Pediatric Refresher Course held at the Ottawa Convention Centre in October 2013 hosted 225 attendees and yielded very strong evaluations with 80% of attendees rating the conference as excellent.

A new combined Departments of Diagnostic Imaging and Pediatrics course, **Clinical-Radiological Approach in Pediatric Imaging: How do we do it? An Update for Pediatricians and Family Physicians** was very well received and will be continued biannually.

The Department of Pediatrics hosted 12 national and international visiting speakers for Pediatric Grand Rounds, presenting on a wide variety of topics and bringing their expertise to CHEO.

The annual Karsh Visiting Professorship hosted Dr. John Toussaint, Founder and CEO, Thedacare Center for Health Care Value, Wisconsin. Dr. Toussaint is one of the foremost figures in the adoption of Lean principles in healthcare.

The Department of Pediatrics Grand Rounds is now offered via the Ontario Telemedicine Network Webcasting Centre and may be enjoyed live or as archived sessions.



### Leadership and support roles in education:

#### UGME:

- Dr. **Marc Zucker**: Program Director
- Dr. **Gabrielle Weiler**: Clerkship Director
- Dr. **Megan Harrison**: Clerkship Director
- Bonnie Landon: Program Coordinator
- Joycelyn Mmrah: Administrative Assistant

#### PGME:

- Dr. **Hilary Writer**: Program Director
- Dr. **Anne Rowan-Legg**: Assistant Program Director
- Melissa Beatty: Program Administrator
- Louise Lafleur: Program Coordinator
- Hannah Burke: Scheduling Coordinator
- Caron Farrell: Administrative Assistant

#### CME:

- Dr. **Sarah Reid**: Program Director
- Louise Lafleur: Program Coordinator
- Caron Farrell: Administrative Assistant



Medical Education support team (left to right): Caron Farrell, Louise Lafleur, Joycelyn Mmrah, Bonnie Landon, Zachary Iachetta (replacing Hannah Burke on maternity leave).

## Medical Education Research

To promote and expand the capacity of medical education research at CHEO, the **Pediatric Education Research Group (PERG)** was created in 2013/2014 through the attainment of a Research Capacity Building Award from the CHEO Research Institute. Under the leadership of Dr. **Asif Doja**, this group includes a full-time research coordinator who supports a wide range of innovative education-based projects. Over the past academic year, medical education researchers who are associated with this group and the Department of Pediatrics have published over **20 peer-reviewed articles**.

### Key Highlights:

Drs. **Tobey Audcent**, **Mona Jabbour**, **Jim King**, **Sarah Lawrence**, **Katherine Moreau**, and **Hilary Writer** along with other members from the iLearn-Peds Advisory board were awarded the 2013 International E-Learning Association Award, Academic Division. iLearn Peds provides an online, experiential, case-based learning approach for trainees to immerse themselves in a model clinical environment.

Drs. **Catherine Pound**, **Katherine Moreau**, and **Amy Plint** obtained \$24,590 from the CIHR Planning Grant to develop, implement, and evaluate a breastfeeding curriculum for pediatric residency programs.

Dr. Katie Huth (pediatric resident) under the supervision of Drs. **Asif Doja**, **David Creery**, **Kristy Parker** and **Katherine Baldwin** obtained \$11,320 to explore the impact of a structured handover initiative at CHEO.

SickKids Foundation and Royal Bank of Canada Grant: Dr. **Asif Doja** collaborated with researchers from the University of Calgary to obtain \$114,000, the SickKids Foundation and Royal Bank of Canada grant, to develop a residency educational initiative aimed at improving the assessment and treatment of aggression in children with disruptive behaviour disorders.

*Pediatrics* publication: Drs. **Tobey Audcent**, **Heather MacDonnell**, and **Katherine Moreau** in collaboration with an expert group in global child health published an article on the development and evaluation of global child health education modules.

**Local Recognition:** At AIME Day 2014 Dr. **Katherine Moreau** won Best Presentation for her talk entitled, *Introducing the PARENTS: A new tool for involving parents in the assessment of medical residents*, Drs. **Gregory Moore**, **Thierry Daboval**, and **Emanuela Ferretti** won Best Poster for their work entitled, *The Development of a knowledge test for a neonatal ethics teaching programme*, and Dr. Robertson (PGY-1 Family Medicine), under the supervision of Dr. **Moreau**, won Best New Investigator for her project entitled, *An exploration of fourth year medical students' perspectives on clerkship clinical assessments*.





# The Journey of a Resident

Dr. Katie Huth Reflects  
on Her Experience at CHEO

Growing up in Orangeville, Ontario, a small town north of Toronto, it wasn't always clear to Dr. Katie Huth that she wanted to pursue a career in medicine. During high school, Dr. Huth had a friend who was frequently hospitalized and wheelchair-bound with an unclear diagnosis. "I was frustrated that I couldn't understand what was happening to him, or help to figure it out."

Dr. Huth pursued an undergraduate degree in Arts and Sciences because she was interested in other areas such as physics and philosophy, but kept gravitating back to medicine. During medical school at McMaster University, Dr. Huth spent elective time in the emergency department at CHEO and absolutely loved it. "The staff members were supportive and interested in teaching, and the residents were clearly proud of their program and seemed to be a close-knit group." Fascinated by CHEO's connection with the Northern population, Dr. Huth chose to pursue her residency training in Ottawa.

"It was the best decision I could have made. Our program directors are huge advocates for our residency experience, I've had incredible mentorship, and the nurses, respiratory therapists and other allied health members have made a huge contribution to my learning about how to be a good physician." Dr. Huth says the most valuable support network has been from the resident group itself.

"To be able to talk about challenging clinical encounters and teach each other over the years has been so encouraging."

Dr. Huth is in her fourth and final year, recently completing her term as



Co-Chief Resident. "It has been fascinating gaining insight into the workings of different committees in the hospital and to have the opportunity to advocate for the resident group. Working in a team with a great co-chief and chief schedulers has made it that much more enjoyable."

Through her residency rotations, there have been aspects of every subspecialty that she has really enjoyed; keeping her centered in General Pediatrics. She became interested in medical education, especially in how we teach communication skills and the impact on patient care. In the fall, Dr. Huth will pursue a Master's in Medical Education at Harvard University, in addition to doing clinical locums in Ottawa and Iqaluit.

"I am so proud to have been a part of the CHEO group. I speak positively about this training experience wherever I go! The best feeling is seeing a patient and family that you remember as a junior, and realizing that they remember you, and finding out how they've been... to think that you may have had a small impact in their care is totally uplifting."





A Conversation with

**Dr. Anne Rowan-Legg**



Dr. Anne Rowan-Legg became interested in medicine through a role she had as a canoe trip guide for many years. She took youth and adults with numerous physical and mental health issues on expeditions to challenge themselves and foster a sense of accomplishment. Many came from urban settings and were living in poverty, and it was her first introduction to the social determinants of health.

"I learned a lot from my job working as a wilderness guide with different populations, but mostly a real appreciation for what was required for someone to be truly healthy and well. Guiding involves a lot of teaching, working with individuals in challenging situations, and facilitating groups. I wanted to incorporate all of these skills and values in a career, and I feel very fortunate to have found that in medicine."

Dr. Rowan-Legg joined the department in 2009 as a general pediatrician and has since then assumed the role of Assistant Program Director for the Pediatric Postgraduate Residency Program. This role involves mentoring and counselling residents, as well as designing curriculum and evaluation frameworks for the resident training program. Dr. Rowan-Legg is Chair of the Evaluations Committee for the Pediatric Program, where OSCEs and written exams are coordinated, and individual resident learning plans are developed. As a member of the Division of Pediatric Medicine, Dr. Rowan-Legg also has the opportunity to work with medical students and residents at all stages, teaching and supervising in a number of settings such as the inpatient ward, clinics and lecture theatres. In addition

to her roles at CHEO, Dr. Rowan-Legg established an outreach consulting pediatric practice in the community of Renfrew to see children and youth from the Ottawa Valley in consultation. She travels to the Renfrew Hospital twice a month, and enjoys exposing senior residents to that clinic.

"I really enjoy interacting with the residents, thinking about how, what and why we teach residents, to best prepare them for practice and provide counsel at an interesting and exciting time in their careers."

Nominated by her undergraduate and postgraduate trainees, Dr. Rowan-Legg was awarded the University of Ottawa's André-Péloquin Memorial Award for Excellence in Clinical Medical Education—one of her biggest career accomplishments thus far. Teaching is a passion for Dr. Rowan-Legg, so this award was particularly meaningful.

Throughout her career, her colleagues have always provided good mentorship and support and the Department of Pediatrics has offered opportunities in assuming new roles and responsibility such as leadership training experiences,

"I really enjoy interacting with the residents, thinking about how, what and why we teach residents, to best prepare them for practice and provide counsel at an interesting and exciting time in their careers."



which have been very important for her professional development. Dr. Rowan-Legg is an Ottawa native and returned 6 years ago to work at CHEO. She came back to find a changed city with a great community of old friends and family where she enjoys many physical outdoor activities. Currently, Dr. Rowan-Legg is part of a Masters Swim group and takes full advantage of being so close to the Gatineau Park where she enjoys cycling and cross-country skiing. Along with being a great athlete, Dr. Rowan-Legg also enjoys exploring her creative side by drawing and playing guitar. She enjoys being back in her hometown where she can continue her career as an excellent mentor, physician and colleague.

"I've worked as a general pediatrician in smaller communities and now at an academic tertiary centre in Ottawa. I feel fortunate to be able to have such variety in my practice and work with medical trainees, problem-solve on the inpatient ward, care for children and families on a long-term basis and provide consultation to other health care providers. I really enjoy the opportunity for diverse practice, seeing patients, teaching trainees, and being able to engage in advocacy work within CHEO and the community".





A Conversation with

**Dr. Anna-Theresa Lobos**



## Medical Education

Dr. Anna-Theresa Lobos joined the Department of Pediatrics in the Division of Pediatric Critical Care in 2007. She is the Program Director for Critical Care, the Medical Director for the SPOT Team and the lead for simulation. Dr. Lobos is involved in all levels of medical education and interdisciplinary education. Along with Dr. Writer, Dr. Lobos runs the mock-code program for the pediatric residents and teaches physician skills development, LINK block, lectures and case based learning for the undergraduate program.

“Working as the critical care Program Director is extremely rewarding as our fellows are dedicated, passionate and focused. I also enjoy teaching other practicing physicians through medical outreach and courses such as the ABC and 3Rs course. Teaching nurses and respiratory therapists through our SPOT Education program is one of my favourite roles in medical education. Enhancing their ability to recognize and respond to acutely ill children is worthwhile and gratifying as I know we are making a real and significant change to patient care.”

Over the years, the Department of Pediatrics has hired more physicians and intensivists. These additions have enabled Dr. Lobos to increase her academic work and take on new and exciting challenges, which also means more responsibility. Dr. Lobos has managed to balance her busy academic contributions and clinical responsibilities to enjoy time with her husband, Jason, and two little boys, Samuel and Joseph.

“The way that we make our busy lives work now is through a lot of cooperation, compromise and through the amazing support of our childrens’ caregiver, Laylene. I think any full-time working

parent of small children would agree that it is a big challenge to find time for your own interests and hobbies outside of work and family. As the boys get a little older, I am trying to find ways to get back to some of the activities I enjoy doing on my own and also figuring out how to incorporate the kids. Both Jason and I love to ski, and we are excited that Sam is now skiing and we can’t wait to get Joe on the slopes!”

“Regardless of what I am doing, the best part of my work day is when I feel like I am making a real, measurable contribution to improving health care for patients.”

Dr. Lobos’ love for skiing comes honestly. Both of her parents are avid skiers. She grew up in London Ontario in a loving family with supportive parents who always put their family first, and also gave her the gift of travel—including yearly ski trips across North America. As PhD chemists and entrepreneurs, Dr. Lobos’ parents taught her and her brother the value of hard work and education, and always encouraged them to pursue their passions—even when Dr. Lobos dreamed of being an actress at 4 years old.

“My dad was very practical and told me that being an actress involved too much risk and a lack of job security. While he always encouraged me to follow my passions, he also advised me to do something that would allow me to ‘hang out my own shingle’.”





When Dr. Lobos was 8 years old, her little brother had heart surgery to repair a congenital defect. It was going through that powerful experience with her family that led to her interest in medicine. From then on, Dr. Lobos knew medicine and pediatrics was what she wanted to do and didn't deviate—it became her passion and also something that allowed her to "hang out her own shingle".

"My days at CHEO are very different. Some days I work in the PICU or on the SPOT Team. Other days, I am teaching in the simulation lab, at the University of Ottawa or focusing on my research. Regardless of what I am doing, the best part of my work day is when I feel like I am making a real, measurable contribution to improving health care for patients."





# RESEARCH



# Research

The Department of Pediatrics actively supports research. Our research is broad but with a very significant focus on clinical research and an important core of basic science research. Altogether, our multi-disciplinary teams of physicians conduct ground-breaking discoveries that seek to improve patient outcomes. Our work is recognized locally, nationally and internationally and has far-reaching impact. Here we describe some of our work and acknowledge and recognize some of our key researchers.

## A Snapshot of our Research

### Understanding Crohn's Disease and Ulcerative Colitis

Canada has amongst the highest rates of Inflammatory Bowel Disease (IBD) in the world, increasing in children by 50% since 1994. The Inflammatory Bowel Disease Centre was created by a multi-disciplinary team of experts including physicians, nurses, dietitians and social workers to provide patient care and family support to children diagnosed with Crohn's disease and Ulcerative colitis. The IBD Centre also has an active research component with Drs. **David Mack** and **Eric Benchimol** that includes translational research, clinical research, epidemiological research, and health services research to improve how the health system treats patients with IBD. The research is not only helping patients locally here in Ottawa but is of national and international scope. These research initiatives will aid in the development of best practices, develop new understanding of the disease and the natural history of IBD all with the vision to deliver excellent patient care.

### Identifying the Genetic Cause of Rare Discoveries

Drs. **Alex MacKenzie** and **Kym Boycott**'s research is focused on rare inherited diseases by identifying the genetic mutations that cause them. Drs. **Boycott** and **Mackenzie** currently hold a grant for a large-scale project called "CARE for RARE." This project brings together patients, clinicians, and researchers from across Canada and all over the world. The goal of this project is to first identify the genetic cause of rare diseases (providing patients with a diagnosis), then to develop therapies for a subset of these diseases. Over the last year, Drs. **Boycott** and **MacKenzie** have recruited close to 1,000 patients and family members and have identified the genetic mutation responsible for over 50 rare diseases, providing significant insight into new areas of human biology.



## Improving Patient Flow and Outcomes in the Emergency Department

Head injuries are a common diagnosis amongst children and youth with over 900 concussion cases presented in the CHEO emergency department (ED) every year. In order to help educate parents, teachers and other allied health professionals, Dr. **Roger Zemek** and his team developed the concussion guidelines, the first of their kind, to recognize the signs of concussion in children and youth and how to best treat it. In line with Dr. **Zemek's** research, Dr. **Martin Osmond** developed the diagnostic prediction rules. His research focuses on improving patient care and efficiency of CT scan use in order to limit cost and radiation exposure in children with minor head injury. While Drs. **Zemek** and **Osmond** are making headway, ensuring safe and efficient patient care, Dr. **Amy Plint's** research addresses the gap in our knowledge about safety and provides important information on the frequency, severity and preventability of adverse events occurring among children in the emergency department. Canadian data suggests that about 8% of adults admitted to hospital experience unintended harm from the health care provided during their hospital stay. The emergency department is recognized as a high-risk environment for adverse events but most patient safety research is not specific to the emergency department. Patient safety is an internationally recognized health care priority and the research conducted by Drs. **Zemek**, **Osmond** and **Plint** will help improve the safety and efficiency of emergency department care at CHEO for all children and youth.

## New Diagnostic and Treatment Options, and Longitudinal Outcomes in Children's Musculoskeletal Health

Dr. **Leanne Ward's** research program is dedicated to the study of pediatric bone disorders, including osteoporosis and osteonecrosis due to chronic illness, osteogenesis imperfecta as well as inherited and acquired forms of rickets. Dr. **Ward** is the principal investigator of a CIHR-funded, pan-Canadian research initiative called the STOPP (Steroid-associated osteoporosis in the pediatric population) study, a six-year natural history study that has elucidated the frequency, characteristics and predictors of vertebral fractures as a manifestation of osteoporosis in children with leukemia, rheumatic disorders and nephrotic syndrome. After years studying the natural history and mechanisms of osteoporosis in various disorders, Dr. **Ward's** research program is now studying various therapies to treat children with osteoporosis, osteonecrosis and rickets, including zoledronic acid, denosumab, odanacatib and anti-FGF23 antibody.

Dr. **Johannes Roth** is currently conducting several studies using MSK ultrasonography in the pediatric age group. Musculoskeletal ultrasound (MSUS) has significant potential in the assessment of disease activity and structural damage in childhood arthritis. In order to assess pathology, the ultrasonographic characteristics of joints in healthy children need to be defined first. At this point, very limited data is available

## Research

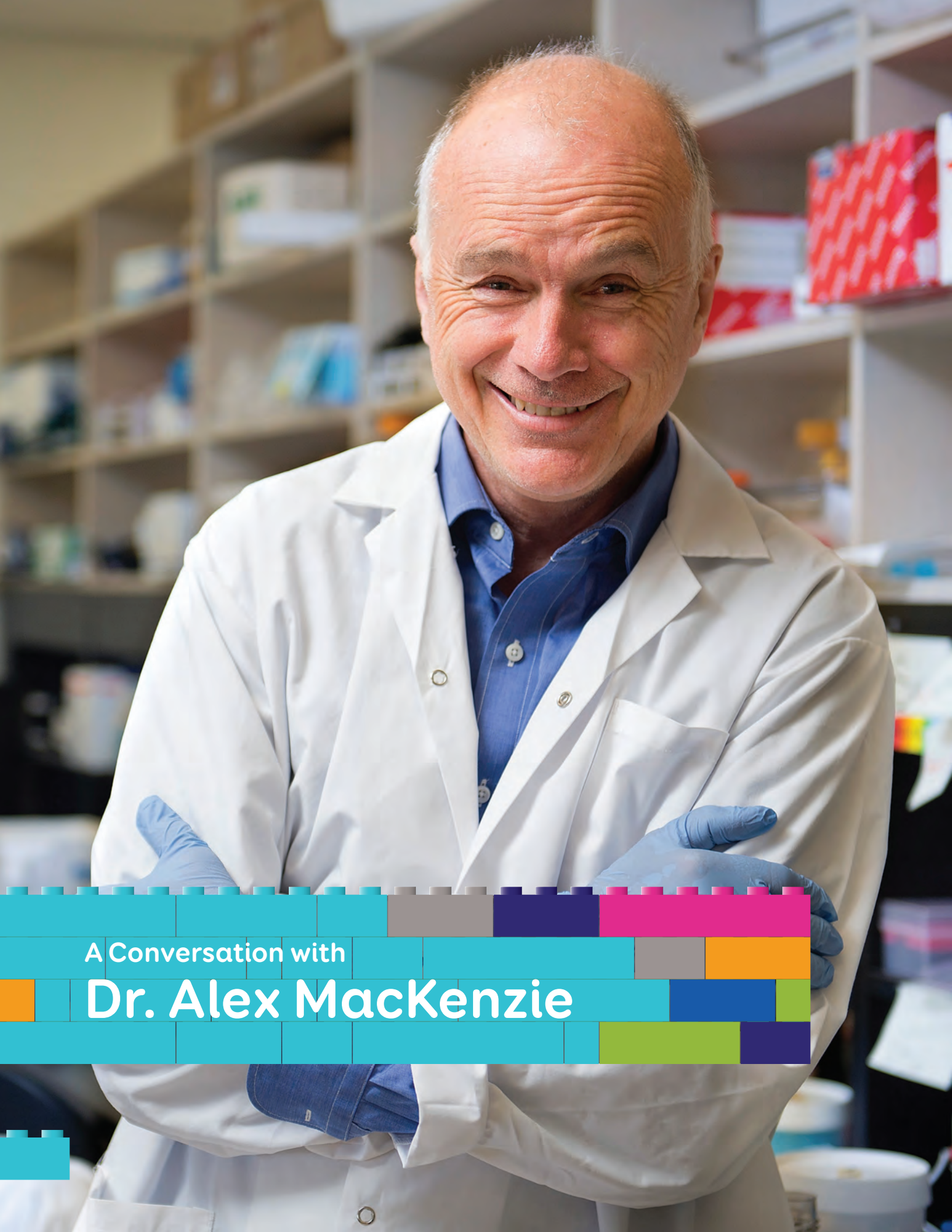
on the normal joint. The aim of Dr. **Roth**'s work is to acquire detailed US data on all relevant joints across the pediatric age range. Data collection on a large cohort of healthy children has been completed and analysis of the data is ongoing. Dr. **Roth** is leading an international working group to develop standard definitions and outcome measures for the pediatric joint using ultrasonography.

Dr. **Ciarán Duffy** is leading two large national outcome studies on children and youth with Juvenile Idiopathic Arthritis (JIA)—Research on Arthritis in Canadian Children, Emphasizing Outcomes (ReACCh Out) and Linking Exercise, Activity, and Pathophysiology in Childhood Arthritis: A Canadian Collaborative Team (The LEAP Study). Both studies are funded by CIHR, with total funding exceeding \$4 million. The ReACCh Out Study has now finished but a very robust dataset of 1,100 patients with data collected over 7 years has been established. Several important papers have been published from this dataset describing outcomes for this group of patients and much work still remains to be done with this dataset. The LEAP Study aims to uncover the factors, specific to children with JIA, that affect their ability to participate in physical activities and the barriers to such participation. The major goal is to develop new evidence that will support the need for, and promotion of, increased levels of physical activity in children with JIA with the ultimate objective of improving their overall health and well-being.

The following scientists are located at CHEO RI and all have primary academic appointments in the Department of Pediatrics. Each scientist plays a large role in teaching and in the development of research programs at CHEO. To view their complete contributions, please visit the Children's Hospital of Eastern Ontario Research Institute website ([www.cheori.org](http://www.cheori.org)).

- Dr. **Kristi Adamo**  
Senior Scientist, HALO Research Group
- Dr. **Nick Barrowman**  
Senior Statistician, Clinical Research Unit
- Dr. **Jean-Philippe Chaput**  
Associate Scientist, HALO Research Group
- Dr. **Khaled El-Eman**  
Senior Scientist, Electronic Health Information and Privacy
- Dr. **Gary Goldfield**  
Senior Scientist, Halo Research Group
- Dr. **Martin Holcik**  
Senior Scientist, Director, Molecular Biomedicine Program

- Dr. **Robert Korneluk**  
Senior Scientist, Director, Apoptosis Research Centre (ARC)
- Dr. **Patricia Longmuir**  
Scientist, HALO Research Group
- Dr. **Katherine Moreau**  
Scientist, Medical Education and Program Evaluation
- Dr. **Robert Screatton**  
Senior Scientist, Apoptosis Research Centre
- Dr. **David Stojdl**  
Senior Scientist, Apoptosis Research Centre
- Dr. **Karine Toupin April**  
Scientist, Chronic Conditions and Rheumatology
- Dr. **Mark Tremblay**  
Senior Scientist, Director, Healthy Active Living and Obesity Research



A Conversation with

**Dr. Alex MacKenzie**



At the young age of 16, Dr. Alex MacKenzie was working in Gatineau, building a cottage and acting as an au pair for his employer's delightful 3-year old son, Sebastian. While walking along the Wakefield train tracks with Sebastian, Dr. MacKenzie realized that he would be the happiest in his life looking after children. Right there—in that moment—he committed to becoming a pediatrician.

Dr. MacKenzie's family was not particularly medical or scientific. His father was a respected print journalist and his mother admittedly a chemistry major but caromed off into teaching and then early child education. Dr. MacKenzie's three children, Duncan, Malcolm and Charlotte are all pursuing biomedical degrees—so—the apple fell somewhat closer to the tree this time around.

Dr. MacKenzie joined the Department of Pediatrics in 1990 as a pediatric endocrinologist with a special interest in research. He knew that his research would one day focus on rare inherited diseases, all because of one little girl named Alicia, whom he cared for as a resident in the Intensive Care Unit. Alicia had Spinal Muscular Atrophy, a serious inherited paralyzing disease that was not well known at the time, and this sparked Dr. MacKenzie's interest. When he started his laboratory he thought back to Alicia and decided to concentrate his efforts on the Spinal Muscular Atrophy gene.

"Somehow I always wanted to know why things were as they were so I was drawn to medicine. I then quickly realized it would be research-based medicine."

From 2000 to 2010, Dr. MacKenzie served as the CEO and Scientific Director of the Children's Hospital of Eastern Ontario (CHEO) Research Institute as well as Vice President of Research for CHEO. Surrounded by an incredibly capable group of physicians and scientists, Dr. MacKenzie was the lead in a period of growth for research and rare gene disorders.

"There are now a dozen young women and men working in my laboratory developing both an understanding of, and hopefully therapies for, pediatrics. My job is to talk and brainstorm their research projects with them. I have incredibly stimulating colleagues who make me focus, work harder at what I do and raise my game ... especially Dr. Kym Boycott!"

"Human interaction is my oxygen. I think this is true for many of us at CHEO, especially when working towards a common goal."

Drs. MacKenzie and Boycott are leading a large scale research project focused on bringing together clinical medicine with basic science. More specifically, their team studies rare inherited diseases by identifying the genetic mutations that cause them. Drs. Boycott and MacKenzie currently hold a grant for a large-scale project called "CARE for RARE". This project brings together patients, clinicians, and researchers from across Canada and all over the world.

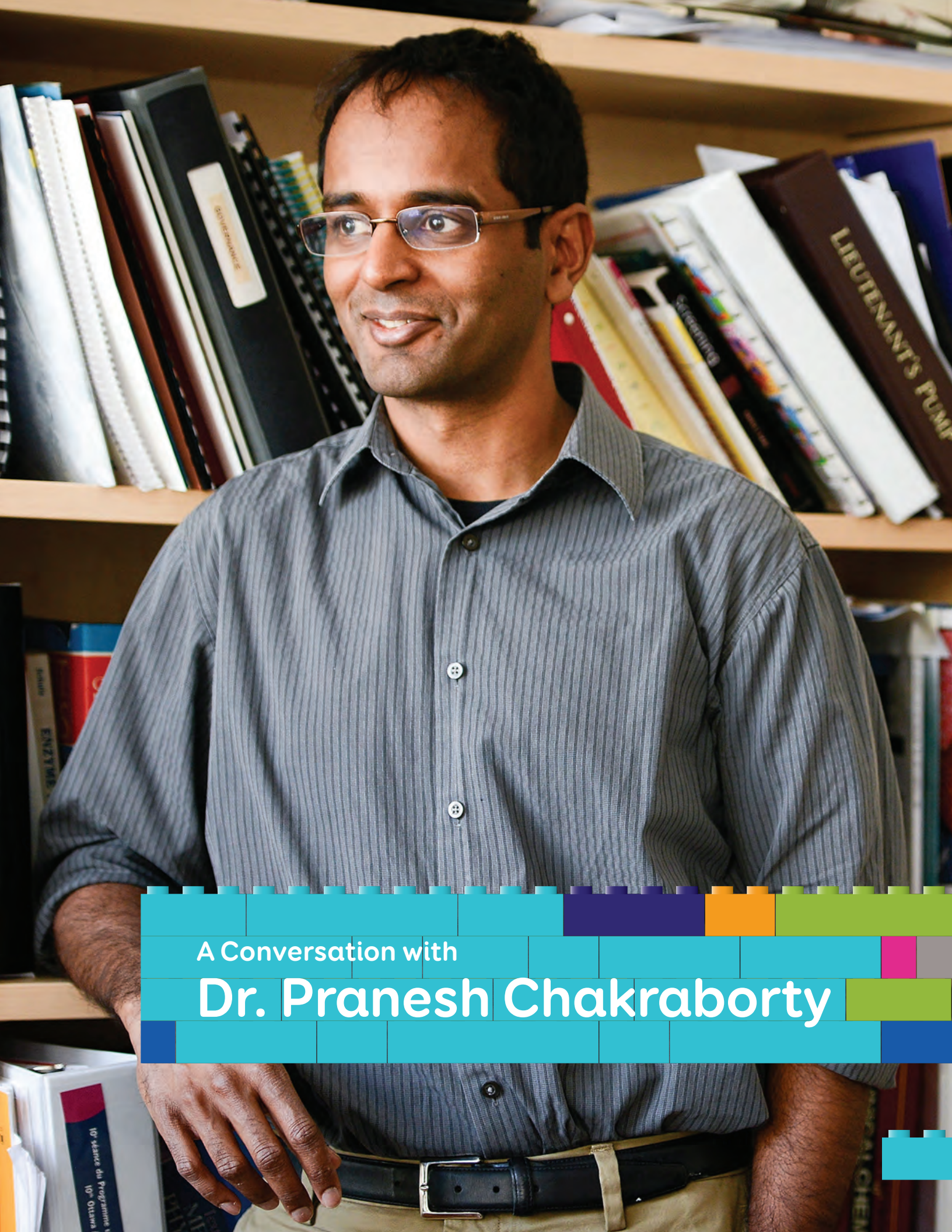


Dr. Mackenzie is known for his depth of knowledge, mentorship and fantastic sense of humor as he would often start his diabetic clinics demanding a joke from his patients and exchanging them until it was time to “get on with the program”.

“Human interaction is my oxygen. I think this is true for many of us at CHEO, especially when working towards a common goal. It is critical for a top notch

hospital to really give the best care possible. You want not all but a healthy proportion of your personnel to be curious individuals asking why things are a certain way. These are going to be the individuals who push things forward.”





A Conversation with

**Dr. Pranesh Chakraborty**



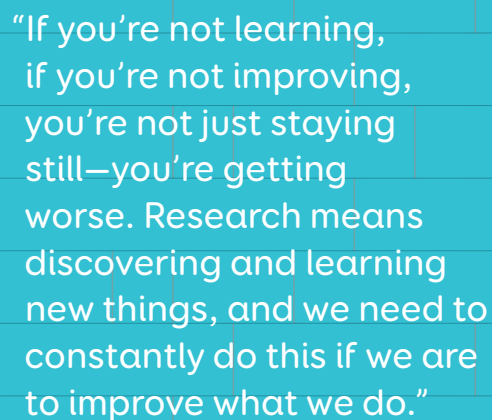
When a job in the Division of Metabolics opened up at CHEO in 2002, Dr. Pranesh Chakraborty jumped at the opportunity to work in Ottawa, even though he had originally planned on pursuing a post-doctoral fellowship in Adelaide, Australia. Since he was raised in Montreal, Dr. Chakraborty was familiar with the city and knew that Ottawa was where he wanted to build a life and one day raise a family. Now, he has a constant revolving door of caregivers and grandparents coming and going while he and his wife Sara take care of their two children, Jaya and Aetaan and his mother, Chandana. Not only does Dr. Chakraborty enjoy a “full house”, but also a good hockey game.

“I share Ottawa Senators season tickets with a growing group of friends—I only get to a couple of games a year now, but when I first bought these with my residency friend (Vince Grant, now in Calgary), we used to go to ALL the games. I’m looking forward to that time again.”

Dr. Chakraborty joined the Department of Pediatrics in 2003 and has three designations: He identifies primarily as a pediatrician, focusing on child health, he has a Royal College certification in Medical Biochemistry, a laboratory medicine specialty, and finally, he is a biochemical geneticist.

Dr. Chakraborty led the expansion of Ontario’s newborn screening program along with Dr. Michael Geraghty, resulting in the establishment of Newborn Screening Ontario (NSO) at CHEO in 2005, and now serves as NSO’s Executive Director. NSO employs over 40 people and is an internationally recognized leader in Newborn Screening for rare diseases. All 145,000 babies

born annually in Ontario have a sample sent to CHEO’s state of the art lab to be tested for 29 target diseases, the majority of which are inborn errors of metabolism. Dr. Chakraborty was also instrumental in the founding of the Better Outcomes Registry and Network (BORN Ontario) at CHEO in 2009, and continues to contribute to its development as its Medical Director. Among other activities, BORN operates Ontario’s Maternal and Child Health prescribed registry, with the mandate to collect, use, and disclose health information to facilitate care to women and children in Ontario.



“If you’re not learning,  
if you’re not improving,  
you’re not just staying  
still—you’re getting  
worse. Research means  
discovering and learning  
new things, and we need to  
constantly do this if we are  
to improve what we do.”

“While the work I do may seem disconnected, I see very few boundaries between various parts of my work. I am very drawn to the concept of the ‘Learning Health System’ which proposes to embed research in practice and vice versa. If I go and seek collaborations around my specialty of inborn errors of metabolism, these end up being very broad and include people who might self-identify as biochemists, epidemiologists, clinicians, public health practitioners, health policy researchers, economists and engineers.



I always find that the people I end up working with generally share the view that the boundaries are more artificial than real.”

While Dr. Chakraborty’s work is extremely varied, he feels that it is all tied together by a focus on child health and inborn errors of metabolism and he is grateful to CHEO and the Department of Pediatrics for providing him with a “professional home”.

“Being a member of the Department of Pediatrics is extremely important to me as part of my professional identity and the collegiality it provides. It has given me the opportunity to do all the things I value professionally.”

Dr. Chakraborty’s interest in many different areas is likely how he ended up combining all things he loves in his professional career.

“I was always interested in biochemistry, chemistry and engineering. I originally planned to do a PhD in biochemistry and/or biophysics but always had a draw to more tangible, societally relevant applications of knowledge, which is why I was interested in engineering first

and medicine later. I’m glad I ended up in medicine. My work in laboratory medicine and newborn screening has allowed me to continue to pursue my interests in engineering/system design, biochemistry and basic science.”

After finishing his BSc in Biochemistry with a minor in Political Science, Dr. Chakraborty was planning to attend graduate school to pursue a PhD in biochemistry or biophysics. While in the process of making these decisions, one of his family members had a seizure and he found himself at the hospital with many unanswered questions. Right then and there, Dr. Chakraborty made his decision to become a physician, eventually focusing on medical research. That decision proved to be the beginning of a very successful career.

“If you’re not learning, if you’re not improving, you’re not just staying still—you’re getting worse. Research means discovering and learning new things, and we need to constantly do this if we are to improve what we do. My work is fun, it is important to me, and is an integral part of my daily life.”





A Conversation with

**Dr. Amy Plint**



On an average morning, at the crack of dawn, Dr. Amy Plint gets her morning workout done before waking up her two young daughters, Molly and Edelawit, while her husband is in the kitchen making pancakes and pretending to be the butler from Downton Abbey. Her oldest daughter eats microwaved bacon yet again for breakfast and the youngest spills her maple syrup for her pancakes all over the floor. Dr. Plint then tries to figure out what to put in lunches that isn't "boring", and finally gets to the shower to clean up after her exercise. She spends 15 minutes doing her daughter's hair, hunts for the water bottle that has somehow escaped from her kid's backpack, and then realizes her youngest doesn't have her backpack just before they get in the car. She drops her kids off at school, chats with their teachers for a few minutes and then finally, drives to work.

As is the case for all physicians, work-life balance is tricky to achieve, especially with a young family.

"If I have a shift in the emergency department (most of which are evenings), I try not to spend all day working in my office and then do the shift in the evening. As I have gotten older, I try to build some "post-shift" recovery time into my work-week. Much of my academic commitment is research related and thus fairly self-driven. I work from home two days a week and this allows me to trade off school drop-offs and pick-ups [for her children] with my husband. The flexibility within the department is great for a young family."

Dr. Plint's early career path started as a clinician teacher. She came to CHEO in 1995 to complete the final year of her pediatric emergency fellowship and then

joined the Department of Pediatrics as staff in July 1996. After 7 years at CHEO, Dr. Plint was awarded a CHEO Research Institute junior investigator salary which put her on the path of protected time for research. This award was combined with further new salary support as Research Director for the Emergency Department, which allowed her time to pursue a Master's in Epidemiology and seek external salary support and larger grants. Drs. Carrol Pitters (her Division Chief at the time), Alex MacKenzie and Joe Reisman were extremely supportive in many ways.

The guidance Dr. Plint received from many supportive faculty members in the early stage of her career has been very helpful in building her strong research role; interestingly, this was not a path she had always been set on taking.

"I work from home two days a week and this allows me to trade off school drop-offs and pick-ups with my husband. The flexibility within the department is great for a young family."

"During high school I became interested in being a scientist and pursued this path during my undergraduate degree in biology, working in labs throughout the university. I started a PhD in molecular biology and realized a few months into my program that my heart wasn't in it. I found that I really needed more meaningful interactions with people on a day-to-day basis. I realized that I really wanted to be a physician and thus I applied to medical school—the rest is history."



Dr. Plint is currently a member of the Emergency Medicine Research Group at CHEO, a University of Ottawa Tier II Research Chair in Pediatric Emergency Medicine, and chair of Pediatric Emergency Research Canada (PERC). Her current research focuses on the gap in our knowledge about patient safety and provides important information on the frequency, severity and preventability of adverse events occurring among children in the emergency department. This information helps to improve the safety of the CHEO emergency department, as well as care for all Canadian children.

"I am so proud of two things in my career. The first is the successful, supportive, and cohesive team we have built in Pediatric Emergency Medicine Research at CHEO—a team composed of investigators, research coordinators, research nurses, research assistants and research volunteers. The second is the success of Pediatric Emergency Research Canada (PERC) (a national network of 15 children's hospitals and multi-disciplinary researchers) and the high impact, clinically meaningful research our network has created, research that truly changes care for children in the emergency department."





# DIVISIONAL REPORTS



In this section, we have provided a synopsis of clinical, educational and research activities for each division within the Department of Pediatrics. A full divisional report will be available on the University of Ottawa, Department of Pediatrics website.

## Adolescent Health

Adolescent Health is predicated on a collaborative, developmentally-based approach that seeks to engage youth in optimizing their global health outcomes. Interventions are undertaken with the individual, the family and the community and focus on treatment as well as prevention. Adolescent Health works synergistically with partners within CHEO and in the community.

The division included 3 full-time physicians, and 1 part-time physician, for a total of 3.5 full-time equivalents (FTE) in 2013/2014. It is expected that this will expand to 4.0 FTE in 2014/2015 with the recruitment of an additional fully trained adolescent health physician. Each physician provides equal inpatient clinical coverage as well as contributing to outpatient clinical services where there is a variety of different clinics. The division also provides comprehensive medical care to patients undergoing treatment in the Eating Disorder Day Treatment Program. In addition to this significant clinical focus, the division has an important academic mandate.

### Faculty

- Dr. Stephen Feder - Assistant Professor (Division Chief)
- Dr. Megan Harrison - Assistant Professor
- Dr. Mark Norris - Associate Professor
- Dr. Kristy Parker - Assistant Professor (0.5 FTE)

### Clinical Care and Patient Advocacy

The division takes a broad-based approach to care delivery and focuses on the global health of the youth it sees. There are a number of clinical programs that focus predominantly on three main areas - Mental Health (eating disorders, ARFID, adjustment disorders, school performance); Sexuality (birth control, safe sex, sexual orientation, gender diversity, teen pregnancy, young mothers); and Complex Chronic Illness (provides a consultation service to many clinical areas whose patients with chronic diseases frequently exhibit coping difficulties).

The Eating Disorder Program is the main fulcrum of inpatient activity, with a provincially funded program, to which 53 patients were admitted a total of 64 times for up to 5–6 weeks at a time during 2013/2014. There is also an Eating Disorder Day Program that saw 1,200 patient visits. These programs are run in collaboration with Mental Health. In addition, there were 10–12 MD ½-day clinics weekly that saw close to 3,000 patient visits, including general adolescent health clinics, eating disorder clinics, gender diversity clinics, as well as outreach clinics. CHEO is currently building on its association with the St. Mary's Adolescent Health Outreach Clinic and broadening care to high risk pregnant and parenting adolescents. This work is being done in collaboration with The Ottawa Hospital.

The division advocates for youth in several domains—within the youth's family, within their schools, with other health services, and at times politically. It seeks out and responds to gaps in the availability of and accessibility to services.

## Educational Activities

While there is no specific training program in Adolescent Health, the contributions of the division to education were substantial in 2013/2014 and included all levels—Undergraduate, Postgraduate and Continuing Medical Education. The division provided clinical rotations to 22 students and 15 residents (including those visiting from other institutions), and all gained important clinical experience in both the inpatient and ambulatory components of the rotation.

The division also provided several hours of lectures in the undergraduate curriculum in case-based learning and pre-clerkship seminars with additional contributions in academic protected time for residents in pediatrics, psychiatry and community medicine. There were also a significant number of hours contributed to resident STACERs and OSCEs. The total contribution for the division in all of these areas was close to 100 hours, not including time in direct clinical supervision, or in teaching preparation. Dr. Harrison contributed as the coordinator for the rotators in addition to a substantial contribution to specific teaching.

## Key Invited Lectures

### Dr. Stephen Feder

- Moving From Disorder to Diversity: Supporting Gender Independent Kids through Research and Community. Toronto, ON (2013).
- Depression in Teens: 62nd Annual Refresher Course for Family Physicians. Ottawa, ON (2014).
- Transgender Youth: Ottawa Carleton District School Board. Ottawa, ON (2013).
- How to avoid getting fed up when working with eating disorders: Royal Ottawa Hospital. Ottawa, ON (2013).

## Adolescent Health

- Gender Identify Disorder: Educational Sessions for Eating Disorders Day Treatment Program. Ottawa, ON (2014).

### Dr. Megan Harrison

- Menstrual Mishaps and Contraception Confusion: Managing menstrual abnormalities and contraception choices in adolescents: Canadian Paediatric Society Annual Conference. Edmonton, AB (2013).
- Media, Body Image and Eating Disorders in Adolescents: Pediatric & Adolescent Gynecology National Videoconference Rounds: Children's Hospital of Eastern Ontario. Ottawa, ON (2014).
- Empowering Parents, Panel Discussion: The Annual Paediatric Refresher Course. Ottawa, ON (2013).
- Mental Health Issues in Teenagers: 11th Annual Pediatric Medicine Update. Ottawa, ON (2014).
- Engaging Adolescent Patients in Family Practice: Dr. Kujavsky's Family Practice CME Group. Ottawa, ON (2013).
- Body Image in Adolescent Pregnancy: Youville Centre. Ottawa, ON (2013).
- Dying to be Thin: Nepean Family Health Organization. Ottawa, ON (2014).

### Dr. Mark Norris

- Social Networking Impact on Adolescents: Annual Pediatric Medicine Update Conference. Ottawa, ON (2014).
- High Risk Behavior in Teens: Academy Medicine Ottawa Clinical Full Day. Ottawa, ON (2014).

## Research Activities—Research Projects and Funding

The division has a significant research focus with all members contributing in this area. Research areas include—eating disorders, gender diversity, adolescent pregnancy and parenting, and vulnerable youth. Two grants were acquired, there were 9 peer-reviewed publications and 1 book chapter.

### Research Funding

Examining the effectiveness of an online psycho-education intervention for the management of child and adolescent eating disorders: An Ontario multi-site initiative.

**Mach-Gaensslen Foundation—Norris ML**, Spettigue W, Henderson K, Maras D. \$90,000.

Teen Pregnancy and Parenting in the Media. **Trainee Grant CHEO Research Institute—Worth K, Harrison ME** (supervisor). 2013 Apr, \$2,500.



## Peer-reviewed Publications

**Norris ML, Robinson A**, Nicole Obeid, **Harrison ME**, Spettigue W and Henderson K. Exploring avoidant/restrictive food intake disorder in eating disordered patients: A descriptive study. 2014 Jul; **47**(5):495–9.

**Norris ML, Robinson A**, Obeid N, Spettigue W, Henderson KA. Exploring Avoidant/Restrictive Food Intake Disorder: A Descriptive Study. *International Journal of Eating Disorders*. 2014 Jul; **47**(5):495–9.

Mitchell N, **Norris ML**. Rectal Prolapse Associated with Anorexia Nervosa: A Case Report and Review of the Literature. *J Eat Disord*. 2013, 1:39 (CPA).

**Norris ML**, Strike M, Pinhas L, Gomez R, Elliott A, Ferguson P, Gusella J. The Canadian Eating Disorder Program Survey—Exploring Intensive Treatment Programs for Youth with Eating Disorders. *Canadian Journal Child & Adolescent Psychiatry*. 2013 Nov; **22**(4):310–6 (PA).

**Harrison ME**, Obeid N, Fu MC, **Norris ML**. Growth curves in short supply: a descriptive study of the availability and utility of growth curve data in adolescents with eating disorders. *BMC Fam Pract*. 2013 Sep 8; **14**(1):134 (CPA).

Pinhas L, McVey G, Walker KS, **Norris ML**, Katzman D, Collier S. Trading health for a healthy weight: the uncharted side of healthy weights initiatives. *Eat Disord*. 2013 Mar; **21**(2):109–16.

Obeid N, Henderson KA, Tasca GA, Lyons JS, **Norris ML**, Spettigue W. Growth trajectories of maintenance variables related to refractory eating disorders in youth. *Psychother Res*. 2013; **23**(3):265–76.

Obeid N, Buchholz A, Boerner K, Henderson KA, **Norris ML**. Self-esteem and social anxiety in an adolescent female eating disorder population: Age and diagnostic effects. *Eating Disorders: Journal of Treatment and Prevention*. 2013 Mar; **21**(2):140–53.

## Book Chapters

**Norris ML**, ApSimon M, **Harrison ME**, Obeid N, Henderson K, Spettigue W. “An Examination of Medical and Psychological Morbidity in Adolescent Males with Eating Disorders”, in *Current Findings on Males with Eating Disorders*. L. Cohn & R. Lemberg, Eds. Taylor & Francis, 2013.

### Administration and Other Contributions

Division members contributed to a considerable number of committees locally and to several bodies nationally and internationally, with particular contributions to the Canadian Pediatric Society (Dr Harrison) and the International Academy of Eating Disorders (Dr Norris). Dr Feder contributed to several local and regional committees. Dr Harrison made a significant contribution to a number of educational committees at CHEO and uOttawa.

In 2014, Dr Norris was seconded by the Ministry of Health and Long-term Planning, Ontario and the Provincial Network of Eating Disorders, Ontario, to undertake a clinical review of eating disorder services across the province.

# Cardiology

The Division of Cardiology provides clinical care to patients with complex cardiac needs in the region served. There were 6 Cardiologists who offered a full range of specialized services for infants, children and adolescents in 2013/2014. Each physician has a dedicated focus in a specific area(s) of pediatric cardiology, including non-invasive imaging, electrophysiology, fetal cardiology and cardiac catheterization. Division members collaborate closely with our provincial partner, the Hospital for Sick Children in Toronto, including holding weekly case conference rounds.

## Faculty

- Dr. Jane Lougheed – Assistant Professor (Division Chief)
- Dr. Letizia Gardin – Assistant Professor
- Dr. Rob Gow – Full Professor
- Dr. Lillian Lai – Assistant Professor
- Dr. Suzie Lee – Assistant Professor
- Dr. Derek Wong – Assistant Professor

## Clinical Care and Patient Advocacy

The Division has a variety of clinics for inpatient and outpatient care, including the Cardiac Catheterization Laboratory. Information not readily available via other testing can be obtained in this way, aiding in the diagnosis and treatment of congenital heart disease. Interventions can also be performed in this manner, including the closing of holes in the heart, expanding narrowed vessels and valves and opening new passages within the heart, which once would have required surgery.

Outpatient services provided by the Division of Cardiology include the following clinics:

- Consulting Pediatric Cardiology Clinic
- Arrhythmia Clinic
- Pacemaker Clinic
- Neuromuscular Cardiac and Heart Function Clinic
- Hypertrophic Cardiomyopathy Clinic
- Fetal Cardiology Clinic

The division also conducts cardiology outreach clinics to Iqaluit, Nunavut twice per year. Children with suspected and known heart disease from the communities of Nunavut can receive full cardiac evaluations during these clinics, often saving them a trip to Ottawa.



### Educational Activities

The Division contributes to education in a very broad way and this was substantial at all levels in 2013/2014. A highlight of our division is the Pediatric Cardiology Subspecialty Residency Training Program. It continues to receive full accreditation. The program provides graduated responsibility for patient care and a well-coordinated balance of time for learning the clinical and technical skills necessary to practice as a pediatric cardiologist. Our specialized training continues to be a desired training program for residents wanting to specialize in pediatric cardiology.

Division members also contributed to Journal Club Rounds, CVS Rounds, Echocardiography Educational Sessions and Adult Congenital Rounds. Dr. Loughheed taught specialized fetal echo training, Dr. Wong participated in the Canadian Cardiovascular Society Trainee Review Program, Dr. Lee made significant contributions to OSCE's and Dr. Gardin was involved in pathology teaching for Pediatric Cardiology Residents. These contributions are just a few amongst many others within the Department of Cardiology. Collectively, the division contributed in excess of 300 hours of face time teaching.

### Key Invited Lectures

#### Dr. Robert Gow

- Update on Biventricular Pacing in children and congenital heart disease: 6th Annual National EP Rounds Webinar, Canadian Heart Rhythm Society. Montebello, QC (2013).
- Challenges in device management: Out of the box settings are inappropriate for children: Asia Pacific Heart Rhythm Society. Hong Kong, China (2013).

### Research Activities–Research Projects and Funding

The division has a dedicated cardiologist with a specific focus in developing and implementing research projects (Dr. Robert Gow). In addition, the department has a close link with the CHEO Research Institute. The division had a total of 11 peer-reviewed publications in 2013.

Current areas of study include:

- Heritable arrhythmia
- Heart function
- Advanced echo imaging

## Research Funding

PCS2 Study: Novel Approaches to the prediction, diagnosis and treatment of cardiac late effects in survivors of childhood cancer, **CIHR Funding, CHEO Sub-award funding CHEO**—Nathan P (PI), Mandel K, **Lougheed J**, 2013, \$134,137.

Prevention of vitamin D deficiency after congenital heart disease surgery: a dose evaluation trial, **HSFC funding—McNally D** (PI), **Lougheed J** (collaborator), 2013–2015, \$138,000.

“What is the impact of eConsultation in a Pediatric Specialty Referral Process?” **AHSC AFP Innovation Fund—Lai L** (PI), **Keely E, Liddy C**, 2014–2016, \$67,200.

LIFE and Health for Young Children with Congenital Heart Defects (Learning, inclusion, Friends and Emotional and Physical Health)—**Heart and Stroke Foundation of Canada—Longmuir P** (PI), **Lee S** (collaborator) 2013–2016 \$254,244.00.

## Peer-Reviewed Publications

Kantor PF, **Lougheed J**, Dancea A, McGillion M, Barbosa N, Chan C, Dillenburg R, Atallah J, Bucholz H, Chant-Gambacort C, Conway J, **Gardin L**, George K, Greenway S, Human DG, Jeewa A, Price JF, Ross RD, Roche SL, Ryerson L, Soni R, Wilson J, Wong K. Presentation, Diagnosis and Medical Management of Heart Failure in Children: Canadian Cardiovascular Society Guidelines. *Can J Cardiol*. 2013 Dec 29; **(12)**:1535–1552.

Fung A, Manlhiot C, Naik S, Rosenberg H, Smythe J, **Lougheed J**, Mondal T, Chitayat D, McCrindle B, Mital S. Impact of prenatal risk factors on congenital heart disease in the current era. *J Am Heart Assoc*. 2013.

Roberts JD, Herkert JC, Rutberg J, **Nikkel SM**, Wiesfeld ACP, Dooijes D, **Gow RM**, vanTintelen JP, Gollob MH: Detection of genomic deletions of PKP2 in arrhythmogenic right ventricular cardiomyopathy. *Clin Genet*. 2013; **83**:452–456.

Somani R, Krahn AD, Healey JS, Chauhan VS, Birnie DH, Champagne J, Sanatani S, Angaran P, **Gow RM**, Chakrabarti S, Gerull B, Yee R, Skanes AC, Gula LJ, Leong-Sit P, Klein GJ, Gollob MH, Talajic M, Gardner M, Simpson CS. Procainamide infusion in the evaluation of unexplained cardiac arrest: From the Cardiac Arrest Survivors with Preserved Ejection Fraction Registry (CASPER). *Heart Rhythm*. 2014 Jun; **11**(6):1047–54.

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## Administration and Other Contributions

All division members contributed to a very large number of committees locally, both at CHEO and at the University of Ottawa, and to a very significant number of organizations nationally and internationally.

Dr. Loughheed contributed in her role as Division Chief; as Chair, Pediatric Cardiology at the Royal College of Physicians and Surgeons Examination Committee; as a member of the Pediatric Heart Failure Group and as a member of the Provincial Committee on Pediatric Echocardiography (PEPP-C).

Dr. Gow contributed as the Medical Director for the Cardiac Surgery Program; as the Director for the Arrhythmia and Inherited Arrhythmia Service and as a member of the Ontario Ministry of Health, Cardiac Death Advisory Committee.

Dr. Wong contributed as the Program Director of the Pediatric Cardiology Fellowship Program; as the Physician Lead for EPIC and as the Chair of the Pediatric Cardiology Scholarly Oversight Committee.

Dr. Lee contributed as the pediatric cardiology lead for undergraduate medicine, University of Ottawa as well as the Head of the Cardiac Catheterization Lab.

Dr. Gardin contributed as a member of the Faculty Council of the University of Ottawa and as a member of the Postgraduate Education Committee for Pediatric Cardiology.



# Community Pediatrics

The members of the Division of Community Pediatrics provide care to babies, children and youth in the Ottawa/Gatineau region. Community office practice scope includes subspecialty consultation, general pediatric consultation, primary care of complex patients and primary care of well babies, children and youth. There are community office practices associated with community hospitals, however, most are located in private offices. Each community pediatrician self-determines their type and scope of practice.

## Faculty

There are 77 active community pediatricians in the Ottawa/Gatineau region. Below is a list of community pediatricians who are faculty members of the Department of Pediatrics.

- Dr. Kathryn Keely – Lecturer (Division Chief)
- Dr. Barry Adams – Associate Professor
- Dr. Manna Adegbite – Lecturer
- Dr. Sahar Al-Bakkal – Lecturer
- Dr. Gurumukh Batra – Assistant Professor
- Dr. Rodney Bergh – Lecturer
- Dr. Jean-Luc Bigras – Lecturer
- Dr. Zave Chad – Associate Professor
- Dr. Luc Charette – Associate Professor
- Dr. Harmeet Chawla – Assistant Professor
- Dr. Nick Dust – Assistant Professor
- Dr. André Engel – Lecturer
- Dr. Elham Farhadi – Lecturer
- Dr. Mahassen Ghobrial – Lecturer
- Dr. Kristian Goulet – Lecturer
- Dr. Stephen Grodinsky – Lecturer
- Dr. Anthony Ham Pong – Assistant Professor
- Dr. Simon Hotte – Assistant Professor
- Dr. Pein-Pein Huang – Assistant Professor
- Dr. David Huot – Lecturer
- Dr. Joanna Jablonska – Lecturer
- Dr. Mathew Joseph – Lecturer
- Dr. Manfred Lapner – Lecturer
- Dr. Sujatha Lena – Assistant Professor
- Dr. Eileen McBride – Assistant Professor
- Dr. James McConville
- Dr. Janina Milanska – Lecturer
- Dr. Susan Morgan – Lecturer
- Dr. Julie Nault – Assistant Professor
- Dr. Fionnuala O’Kelly – Lecturer
- Dr. Derek Rajakumar – Lecturer
- Dr. Michael Richler – Lecturer
- Dr. Sumeet Sadana – Lecturer
- Dr. Michael Saginur – Lecturer
- Dr. Aarathi Sambasivan – Assistant Professor
- Dr. Jane Schuler – Lecturer
- Dr. Robin Williams – Assistant Professor
- Dr. Norman Wolfish – Full Professor
- Dr. Eddy Wong – Lecturer

### Clinical Care and Patient Advocacy

Community Pediatrics includes newborn care at The Ottawa Hospital (TOH), Civic and General Campuses, as well as the Queensway Carleton and Montfort hospitals. Community pediatricians provide in-house call in the special care nursery at TOH, and other on-call services are provided in palliative care (Roger's House) and hematology/oncology at CHEO. Community pediatricians also work in subspecialty clinics at CHEO such as hematology, respirology, allergy, cystic fibrosis, neurology and neuro-oncology and provide consultations which have been triaged from subspecialty clinics as well as the Division of General Pediatrics. Subspecialty trained pediatricians also work in the community in the areas of adolescent medicine, clinical immunology and allergy, hematology, nephrology, neurology and concussion management.

Community pediatricians advocate for their patients during daily interactions with families, other health care providers, hospitals, schools, social agencies and countless other ways. Members of the division also travel to third world countries to provide volunteer medical services for children and youth.

There should be seamless care for complicated patients who are seen often at CHEO but live in our community. This requires cooperation and communication between CHEO physicians and the community physicians. The complex patient care initiative, coordinated by Dr. Nathalie Major-Cook, has been very helpful with this. There has been a relatively recent increase in numbers of both community and CHEO physicians and ongoing efforts are needed to optimize communication between physicians.

### Educational Activities

Continuing Medical Education (CME) is an ongoing activity for members of the Division of Community Pediatrics. These activities include the Pediatric Refresher Course, evening CME sessions, an Annual ADHD symposium, journal club, attendance at the Canadian Pediatric Society (CPS) annual meeting and refresher courses. These were conducted monthly throughout the year in 2013/2014.

Community pediatricians provide teaching to nurse practitioners, medical students and pediatric residents in an office setting. This is an essential component to the education of these future professionals.

### Research Activities—Research Projects and Funding

There is no organized research coordinated by the Division of Community Pediatrics. Research is done by individual practitioners and our patients are subjects in a variety of studies coordinated by CHEO. Dr. Van Stralen has been the lead researcher in several important studies in ADHD.

The Community Pediatric sections of the Canadian Pediatric Society and the Ontario Medical Association may provide future research opportunities.

## Administration and Other Contributions

Many key positions are held by members of the Division of Community Pediatrics.

These include:

- Royal College of Physicians and Surgeons of Canada examiners
- Key roles in the development of the current exam process
- Licentiate of the Medical Council of Canada (LMCC) examiners
- Ontario Medical Association (OMA)—Vice Chair of the Pediatric section, working actively in negotiations of our OHIP fee schedule, past chair of the OMA
- CPSO—peer assessors, Committee members





# Emergency Medicine

The Division of Emergency Medicine provides clinical expertise, academic excellence and leadership to the Emergency Department at the Children's Hospital of Eastern Ontario (CHEO). CHEO delivers specialized emergency services to over 70,000 children and youth annually from Eastern Ontario, Western Quebec, parts of Northern Ontario and Nunavut.

CHEO's Emergency Department treats the diverse needs of children, youth and their families with acute illness, injury or crisis in a dynamic and efficient manner. We are a compassionate, multidisciplinary team, leading in education and innovative healthcare. Our team members include 27 pediatric emergency medicine specialists (many with the new RCPSC PEM certification), along with several part time physicians who have core training in pediatric emergency medicine, pediatrics, family medicine or emergency medicine. There are an additional 15 physicians who contribute shifts in the ED.

While we have a major commitment to excellence in clinical care delivery, we also have a strong academic mandate with an equal emphasis on teaching and research. Our researchers lead cutting edge research that is practice changing.

## Faculty

### Full-Time Physicians

- Dr. Ken Farion – Associate Professor (Medical Director and Chief, Emergency; Medical Director, Quality and Systems Improvement)
- Dr. Fuad Alnaji – Assistant Professor (0.5 FTE PEM, 0.5 FTE PICU)
- Dr. Waleed Alqurashi – Assistant Professor
- Dr. Rick Gerein – Assistant Professor
- Dr. Stuart Harman – Assistant Professor
- Dr. Mona Jabbour – Associate Professor – (Vice Chair/Chief, Department of Pediatrics)
- Dr. Raagini Jain – Assistant Professor (0.8 FTE)
- Dr. Anna Karwowska – Assistant Professor (Co-Director, ED Education, 0.7 FTE)
- Dr. Mélissa Langevin – Assistant Professor
- Dr. Anita Lau – Assistant Professor
- Dr. Curtis Lavoie – Assistant Professor (0.6 FTE)
- Dr. Andrea Losier – Assistant Professor (0.75 FTE)
- Dr. Geneviève Moineau – Associate Professor (0.25 FTE)
- Dr. Gina Neto – Assistant Professor (Associate Medical Director)

- Dr. Martin Osmond – Full Professor  
(CEO & Scientific Director, CHEO RI; VP Research, CHEO)
- Dr. Michael Pierse – Assistant Professor
- Dr. Carrol Pitters – Associate Professor (Chief of Staff)
- Dr. Amy Plint – Associate Professor
- Dr. Sarah Reid – Assistant Professor  
(0.75 FTE – Director, Continuing Medical Education)
- Dr. Allan Shefrin – Assistant Professor
- Dr. Ron Tam – Assistant Professor
- Dr. Sandy Tse – Assistant Professor  
(0.8 FTE – Co-Director, ED Education; Program Director, PEM Residency)
- Dr. Chandra Vaidyanathan – Assistant Professor (0.75 FTE)
- Dr. Roger Zemek – Associate Professor (Director, ED Research)
- Dr. Dayna Bell – Assistant Professor (0.8 FTE)
- Dr. Rebecca Fisher – Lecturer (0.8 FTE)
- Dr. Michael Taylor – Lecturer (0.8 FTE)

### Part-Time Physicians

- Dr. Sarah Addleman – CCFP (EM)
- Dr. Tobey Audcent – Pediatrics
- Dr. Steven Bellemare – Pediatrics
- Dr. Paul Bowie – Pediatrics
- Dr. Michele Brill-Edwards – Pediatrics
- Dr. Wade Brockway – CCFP
- Dr. Emily Conway – CCFP (EM)
- Dr. Jeff Hovey – CCFP
- Dr. Mary Johnston – CCFP(EM)
- Dr. Wendy Lambert – CCFP
- Dr. Cindy Macloghlin – CCFP(EM)
- Dr. Geneviève Moineau (moved to PT effective June 2013)
- Dr. Michael Montague – CCFP
- Dr. Aviva Stewart – CCFP(Anaesthesia)
- Dr. Nik Ristoski – Pediatric EM

### Clinical Care and Patient Advocacy

To respond to the extremely varied needs of over 70,000 patients per year with an average of over 1,300 per week, CHEO's Emergency Department is staffed 24 hours a day by pediatric emergency medicine specialists. There are a total of 8 MDs x 8 hour shifts daily. These staff physicians are complemented by experienced pediatric emergency nurses, who are supported by nurse practitioners, crisis intervention workers, child life specialists, patient service clerks and patient service assistants. Services also include the Regional Pediatric Trauma Program and Regional Pediatric Sexual Assault Program.

The Emergency Department is comprised of a number of specialized areas, including Trauma and Resuscitation, Acute Zone, Ambulatory Zone, Mental Health and Procedure Rooms. Our Division has an active point of care ultrasound program with a dedicated ultrasound machine in the department.

Our clinical programs extend beyond our walls. The department receives referral calls and advice calls each day where our specialists help stabilize and manage acutely ill and injured patients before they arrive at CHEO.

Our department also has an active outreach program that delivers training and information to community hospital emergency departments in our area. This includes sharing our clinical care pathways, order sets and patient information sheets so that CHEO-level care can be provided to patients at their local hospital. Recently, the outreach program has expanded to include simulation-based training opportunities in partnership with our Regional Pediatric Trauma Program.

### Educational Activities

Training in the subspecialty consists of program fulfilling the Royal College Subspecialty Committee requirements. This includes a core 13 rotation blocks in the Pediatric Emergency Medicine Department and 2 blocks of research. Other rotations include pediatric orthopedics, plastic surgery, anesthesia, PICU, radiology/ultrasound EMS, adult emergency, EMS and toxicology.

In this high volume centre, PEM residents are given the opportunity to assess and manage patients presenting with a myriad of problems and to learn the importance of department flow and other administrative skills. They are given priority to manage patients presenting in extremis or following a trauma in the resuscitation room. Our residents are encouraged to become the primary physician caring for the patient under the supervision of the staff. Residents are also strongly encouraged to do a wide variety of procedures, initially under appropriate supervision, and gradually with increasing independence with a goal of becoming capable and competent consultants in Pediatric Emergency Medicine.



Division members also contributed to the supervision and teaching of 166 3rd year students, doing 4 clinical shifts and 2 teaching shifts over a 2-week rotation, 17 elective students (11 4th year students, 6 visiting clinical clerks from other Canadian schools, 4 Canadians studying abroad), averaging 4 shifts/week for 4 weeks as well as simulation training (weekly), Skills Stations (every 6 weeks, 8 sessions/year) and 293 residents, with each resident presenting for 12-16 shifts per block.

Rotating residents and students are exposed to all aspects of pediatric emergency care and learn hands on under the direct supervision of PEM staff physicians. The group contributes in a very substantial way to the teaching of rotators. Additionally, there are designated teaching shifts which permit direct one on one teaching by staff physicians.

Staff physicians also contribute substantially to didactic and other classroom teaching including PALS courses and simulation. The total contribution for the group in this way exceeds 1,500 hours per year.

### Key Invited Lectures

#### Dr. Ken Farion

- From Data to Decisions at All Levels: ED Patient Tracking, Dashboards and Balanced Scorecards Promoting Effective Patient Flow, Masters of Health Systems Science: University of Ottawa. Ottawa, ON (2013).
- Working Together: Challenges and Opportunities: Facilitated Workshop, Ottawa Police Service, CHEO Mental Health and CHEO Emergency Department. Ottawa, ON (2013).
- Lean Quality Improvement in Canadian Health Care: Masters of Health Administration, University of Ottawa. Ottawa, ON (2013).

#### Dr. Rick Gerein

- Pediatric Mock Code Trauma Skill Station: Eastern Ontario Regional Trauma Conference. Ottawa, ON (2013).
- Pediatric C-spine, National Capital Conference on Emergency Medicine. Ottawa, ON (2013)

#### Dr. Mona Jabbour

- Innovations in Emergency and Critical Care: Panel presentation, Ministry of Health Innovation Fund Showcase. Toronto, ON (2013).
- Pediatric-Emergency Department Asthma Clinical Pathway (P-EDACP): Seminar presentation, Better Breathing Conference, Ontario Lung Association. Toronto ON (2013).

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### Dr. Anna Karwowska

- An Approach to Child Abuse Trauma: Eastern Ontario Regional Trauma Conference. Ottawa, ON (2013)

### Dr. Geneviève Moineau

- What Makes a Good Clinical Clerk? Are We Doing It?: Dalhousie Conference on Transitions in Medical Education. Halifax, NS (2013).
- Future of Medical Education in Canada Invitational Symposium on Clinical Teachers: Canadian Conference on Medical Education. Québec City, QC (2013).
- Gallagher E., Moineau G. Supporting our Clinical Teachers: Help us Find the Way Forward, Canadian Conference on Medical Education. Québec City, QC (2013).
- Aligning Accreditation along the Medical Education Continuum for Excellence in Residency Training, AMEE 2013. Prague, Czech Republic (2013).
- LCME/CACMS Accreditation Visit Preparation Session: AAMC. Philadelphia, PA (2013).
- Fostering Medical Leadership for the Future of Medical Education in Canada Workshop, Family Medicine Forum. Vancouver, BC (2013).

### Dr. Martin Osmond

- Predicting and Preventing Post-concussive Problems in Pediatrics Study: International Initiative for Traumatic Brain Injury Research Meeting. Vancouver, BC (2013).

### Dr. Michael Pierse

- What's new in Pediatric Acute Care—Little Adults or Giant Babies?: Practical Evidence for Informed Practice Conference (Alberta College of Family Physicians). Edmonton, AB (2013).
- Screening the Screen Time—Will what my child sees and plays lead him to jail?: Practical Evidence for Informed Practice Conference (Alberta College of Family Physicians), Edmonton, AB (2013).
- Trust Me—I Read These: Top 10 Practice Changing Articles of 2012, National Capital Conference on Emergency Medicine. Ottawa ON (2013).

### Dr. Allan Shefrin

- Pediatric Trauma Simulation Instructor, Eastern Ontario Regional Trauma Conference. Ottawa. ON (2013).

**Dr. Sandy Tse**

- What Works in Residency Education: Poster Presentation Facilitator and Judge, International Conference on Residency Education (ICRE). Calgary, AB (2013)

**Research Activities—Research Projects and Funding**

The Emergency Department Research Group supports the research initiatives of the division at CHEO and through involvement in national and international multicenter trials. Significant collaborations with other CHEO and University of Ottawa researchers also exist to advance a broad range of research questions.

Research areas include, but are not limited to:

- Pediatric respiratory illnesses (Asthma, Bronchiolitis, Croup)
- Concussion and minor head injury
- Youth mental health
- Patient safety
- Wound and injury management, injury prevention
- Point-of-care Ultrasound
- Anaphylaxis and allergic reaction management
- Simulation
- Pain management/reduction
- Medical education and knowledge translation of evidence for community providers
- Health systems and operational improvement research

There has been considerable success with the acquisition of funding to support research with many large grants as depicted below. The group also contributed to 19 publications in 2013.

**Research Funding**

Impact of Emergency Department probiotic treatment for pediatric gastroenteritis: Randomized controlled trial, **CIHR**—Freedman S, **Farion K**, Goeree R, Gorelick M, Gouin S, D Johnson, D Schnadower, S Schuh, P Sherman, A Willan. 2012–2016, \$2,231,298.

Predicting Persistent Postconcussive Problems in Pediatrics (5P), **CIHR Team Grant/Ontario Neurotrauma Foundation**—Zemek R, Osmond M, Johnson D, Plint A, Anderson P, Barlow K, Barrowman N, Boutis K, DeMatteo C, **Farion K**, Freedman S, Gagnon I, Gravel J, Hoshizaki B, Keightley M, Klassen T, Meeuwisse W, Meehan W, Mikrogianakis A, Vassilyadi M. 2013–2018, \$1,273,705.

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Persistent Postconcussive Symptoms in Children: A Clinical Prediction Rule Derivation Study, **CIHR—Zemek R, Osmond M**, Barlow K, **Barrowman N, Farion K**, Gagnon I, Gravel J, Meehan W, Meeuwisse W, Mikrogianakis A. 2013–17, \$1,114,530.

Evaluation of a Waiting Room Educational Initiative, **CHEO—Reid S, Neto G, Tse S, Farion K**, Marvizi A, Smith L. 2013, \$9,000.

Adverse Events in the Pediatric Emergency Department: A Prospective Cohort Study, **AHSC Innovation Fund (CHEO), Ontario Ministry of Health—Plint A, Farion K, Neto G, Creery D, Barrowman N**, Calder L, Matlow A, Stang A, Newton M, Klassen T, Johnson D. 2012–14, \$89,704.68.

Prognosticators of post-concussion syndrome following pediatric minor traumatic head injury: A prospective observational study, **Academic Health Science Centres Alternate Funding Plan (AHSC AFP Innovation Fund)—Zemek R, Osmond M, Farion K, Vassilyadi M**, Correll R, **Barrowman N**. 2011–13, \$50,811.99.

Brief Group Intervention for Adolescents and with Mild to Moderate Suicidal Ideation and their Caregivers: Pilot for a Novel Treatment Approach, **AHSC AFP Innovation Fund—Gray C, Kennedy C, Cloutier P., Cappelli M, Jabbour M, Zemek R, Reid S**. 2013–2014, \$73,831.20.

Best strategies for implementation of clinical pathways in emergency department settings, **CIHR—Johnson D, McNaughton-Filion L, Paprica A, Shafr M, Coyle D, Curran J, Ducharme F, Grimshaw J, Guttman A, Klassen T, Loughheed D, Jabbour M**, Newton M, Rotter T, Scott S, Taljaard M. 2012–2016, \$609,820.

Developing an Internet Based Program for Anxious Youth who visit the Emergency Department for Mental Health Care: A Strategy to Increase Access to Post-crisis Care, **CIHR—Newton AS, Jabbour M**, Baxter P, Carandang C, Curtis S, Fitzpatrick E, Johnson D, Joyce A, Ohinmaa A, Rosychuk R, Young M. 2012–2015, \$331,715.

Enhancement of pediatric curriculum using a teaching file, **Ministry of Health and Long Term Care (MOHLTC)—King WJ, Jabbour M, Lawrence SE**. 2011–13, \$330,000.

Understanding Discharge Instructions for Children and Caregivers in the Transition from Pediatric Emergency Care, **CIHR-NSHRF Regional Partnership Program Operating Grant—Curran J, Grimshaw J, McGrath P, Chorney J, MacPhee S, Burns E, Plint A, Jabbour M, Zemek R**, Taljaard M, Klassen T, Newton A, Wright B, Johnson D, Sawyer S, Sinclair D, Wren P, Mackay R. 2013–16, \$435,804.

Closing the loop in pediatric emergency care: A narrative review of best practice for providing discharge instructions to caregivers in the emergency department, **CIHR—Curran J, Hartling L, MacPhee S, Petrie D, Jabbour M**, Boliver D, Newton A, **Plint A, Zemek R**, Chorney J, Murphy A, Campbell S. 2013–14, \$99,339.



Building Capacity in Mental Health Services for Children and Youth in Pediatric and General Emergency Departments, **RBC Foundation and CHEO Foundation—Capelli M, Osmond MH**. 2009–2014, \$250,000.

Guidelines for the Management of Pediatric Concussion/Mild Traumatic Brain Injury and Persistent Symptoms, **Ontario Neurotrauma Foundation—Zemek R, Osmond M, et al**. 2013–2014, \$88,398.

Canadian Child Health Clinician Scientist Program (CCHCSP), **CIHR—Rosenblum N, Osmond MH**. 2009–2015, \$1,625,000.

Ontario Child Health SUPPORT Unit, **CIHR—Osmond MH, MacArthur C**. 2013–2018, \$2,750,000.

Canadian Bronchiolitis Epinephrine Steroid Trial (CanBEST) 2013 Follow-up Study, **The Lung Association, Alberta & NWT, National Grant Review—Johnson D, Mandhane P, Plint A, Dewey D**. 2013–2014, \$30,000.

A randomized clinical trial of oral analgesics utilization for childhood musculoskeletal injuries (The OUCH Trial), **CIHR—LeMay S, Drendel A, Gouin S, Masse B, McGrath P, Parent S, Plint A**. 2013–16, \$584,860.

How Safe are Children's Pain Medications? A Systematic Review of the Safety Profile of Commonly Used Medications for Acute Pain, **CIHR—Hartling L, Ali S, Drendel A, Johnson D, McGrath P, Stang A, Klassen T, Allain D, Plint A**. 2013–14, \$99,990.

Salter-Harris I Fracture of the distal fibula: Clinical suspicion versus reality, **Physician Services Incorporated—Boutis K, Shuch S, Narayanan U, Babyn P, Stimec J, Stephens D, Plint A, Miller E, Brison R**. 2012–2014, \$169,870.

Characteristics of children requiring early unplanned admission to the pediatric intensive care unit: A retrospective case-cohort study, **CHEO Research Institute—Krpmotic K, Lobos AT, Plint A, Momoli F**. 2011–2013, \$24,054.

Inhaled magnesium in refractory pediatric acute asthma, **Thrasher Foundation—Schuh S, Zemek R, Freedman S, Beer D, Willan A, Guimont C, Plint A, Black K, Thompson G, Ducharme F, Johnson D, Coate A**. 2011–13, \$500,920.

Canadian Assessment of Tomography for Childhood Head Injury (CATCH) community ED Chart Review—Minor Head Injury and CT Scan Rates in the Pediatric Population, **CIHR—Osmond M, Curran J, Grimshaw J, Klassen T, Taljaard M, Reid S, Porter R, Doan Q, Mater A, Stempien J**. 2006–2013, \$3,917,244.

Translating Emergency Knowledge for Kids (TREKK), **Networks of Centres of Excellence Knowledge Mobilization—Klassen T, Beer D, Black K, Curtis S, Doan Q, Freedman S, Gouin S, Guimont C, Hartling L, Jabbour M, Johnson D, Jones S, Joubert G, Mater A, Porter R, Reid S, Scott S, Stang A**. 2012–2016, \$1,599,184.

## Emergency Medicine

Magnesium Nebulization Utilization in Management of Pediatric Asthma - MagNUM PA Trial, **CIHR Operating Grant**—Schuh S, **Zemek R**, **Plint A**, Johnson D, Freedman S, Thompson G, Ducharme F, Gravel J, Klassen T, Curtis S, Beer D, Black K, Coates A, Willan A. 2013–2018, \$2,137,058.

Generating innovation through the use of common data: Improving the diagnosis and treatment of pediatric and adolescent mild traumatic brain injury in Canada, **CIHR Team Grant**—Gagnon I, Beauchamp M, Christie B, DeMatteo C, Fait P, Friedman D, Hung R, Juncker D, Keightley M, Marcoux J, McFadyen B, Mok E, Mrazik M, Pelland L, Ptito A, Singh S, Sirois K, Stroman P, Swaine B, Taneja C, Tator C, Zabjek K, **Zemek R**. 2013–18, \$1,366,895.

PLAY GAME: Post-concussion syndrome affecting Youth: GABAergic effects of melatonin, **CIHR Team Grant**—Barlow K, Betuzzi C, Dewey D, Brooks B, Crawford S, Johnson D, Kirk V, Kirton A, MacMaster F, Mikrogianakis A, Nettel-Aguirre A, **Zemek R**, 2013–18, \$758,064.

Determinants of oral corticosteroid responsiveness in wheezing asthmatic youth (DOORWAY), **CIHR**—Ducharme F, **Zemek R**, Chalut D, Johnson D, Quach-Thanh C, Gravel J, Krajinovic K, Guertin M, **Laberge S**, Guimont C, Lemiere C. 2010–13, \$1,899,256.

## Peer-Reviewed Publications

**Zemek R**, Clarkin C, **Farion K**, **Vassilyadi M**, **Barrowman N**, Anderson P, et al. Parental anxiety at initial acute presentation is not associated with prolonged symptoms following pediatric concussion. *Academic Emergency Medicine*. 2013; 20:1041–1049.

**Farion KJ**, Wilk S, Michalowski W, O'Sullivan D, Sayyad-Shirabad J. Comparing predictions made by a prediction model, clinical score, and physicians: Pediatric asthma exacerbations in the emergency department. *Applied Clinical Informatics*. 2013; 4:376–391.

**Zemek R**, **Osmond M**, **Barrowman N** for **PERC Concussion Team**. Predicting and Preventing Postconcussive Problems in Pediatrics (5P) Study: protocol for a prospective multicenter clinical prediction rule derivation study in children with concussion. *BMJ Open*. Aug 2013; **3**(8) pii: e003550

Wilk S, Michalowski W, O'Sullivan D, **Farion K**, Sayyad Shirabad J, Kuziemy C, Kukawka B. "A Task-based Support Architecture for Developing Point-of-Care Clinical Decision Support Systems for the Emergency Department." *Methods of Information in Medicine*. 2013; **52**(1):18–32.

Wilk S, Michalowski W, Michalowski M, **Farion K**, Hainegra Hing M. "Mitigation of adverse interactions in pairs of clinical practice guidelines using constraint logic programming." *Journal of Biomedical Informatics*. 2013; 46:341–53.

**Harman S, Zemek R**, Duncan MJ, Ying Y, Petrich W. Efficacy of pain control with topical lidocaine-epinephrine-tetracaine during laceration repair with tissue adhesive in children: a randomized controlled trial, *CMAJ*. 2013 Sep 17; **185**(13):E629-34.

**Jabbour M**, Curran J, Scott SD, Guttman A, Thomas R, Ducharme FM, Loughheed MD, McNaughton-Filion LM, Newton A, Shafir M, Paprica A, Klassen TK, Taljaard M, Grimshaw J, Johnson D. Best strategies to implement clinical pathways in an emergency department setting; study protocol for a cluster randomized controlled trial. *Implementation Science*. 2013; 8:55.

**Jain R**, Petrillo-Albarano T, Parks WJ, Linzer JF, Stockwell JA. Efficacy and Safety of Deep Sedation for Cardiac MRI in Children by Non-Anesthesiologists. *Pediatric Radiology*. 2013; **43**(5):605-11.

Dalziel SR, Thompson JMD, Macias CG, Fernandes RM, Johnson DW, Waisman Y, Cheng N, Acworth J, Chamberlain JM, **Osmond MH, Plint A**, Valerio P, Black KJL, Fitzpatrick E, Newton AS, Kuppermann N, Klassen TP, for the PERN H1N1 working group. Predictors of severe H1N1 infection in children presenting within Pediatric Emergency Research Networks (PERN): retrospective case-control study. *BMJ*. 2013; 347:f4836.

Vaillancourt C, Kasaboski A, Charette M, Islam R, **Osmond M**, Wells GA, Stiell IG, Brehaut JC, Grimshaw JM. Barriers and Facilitators to CPR Training and Performing CPR in an Older Population Most Likely to Witness Cardiac Arrest: A National Survey. *Resuscitation*. 2013 Dec; **84**(12):1747-1752.

Stang AS, Wingert AS, Hartling L, **Plint A**. Adverse events related to emergency department care: a systematic review. *PLoS One*. 2013; **8**(9):e74214.

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**Reid S**. All I want for Christmas is amoxicillin. *Can Fam Physician*. 2013; **59**(12):1261-1262.

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## Emergency Medicine

Harman S, **Zemek R** (supervisor), Duncan MJ, Ying Y, Petrcich W. The GLUE trial (Gluing Lacerations Utilizing Epinephrine): a randomized, controlled trial pre-treating lacerations for tissue adhesive repair with topical LET. *CMAJ*. 2013; **185**(13):E629-E634.

**Zemek RL, Farion KJ**, Sampson M, McGahern C. Prognosticators of persistent symptoms following pediatric concussion: a systematic review. *JAMA Pediatr*. 2013; **167**(3):259-65.

## Book Chapters

Kollek D, **Karwowska A, Neto G**, Sandvik H, Lyons S, Spivey J, Lehman T, Salvadori M, Grant V, Rosen B, Disaster Preparedness for Healthcare Facilities. In Daniel Kollek ed. Chapter 13, Pediatrics in Disasters, People's Publishing House. 2013.

## Administration and Other Contributions

All division members contributed to a very large number of committees locally, both at CHEO and at the University of Ottawa, and to a very significant number of organizations nationally and internationally.

Dr. Farion contributed as Division Chief; as the Medical Director, Quality & Systems Improvement, CHEO; as a member of the Medical Advisory Committee, as Chair of the Ottawa ePCR Working Group, Champlain LHIN as well as the Co-Chair for the CHEOworks Steering Committee.

Dr. Jabbour contributed as the Vice-Chief Chair/Chief of the Department of Pediatrics; as the Chair of the Finance Committee; as the Vice-Chair, Education, Department of Pediatrics, University of Ottawa as well as the Vice-Chair, Children's Hospital Academic Medical Organization (CHAMO)

Dr. Osmond contributed as the Chief Executive Officer and Scientific Director of the CHEO Research Institute; as the Vice President, Research, CHEO; as the Chair of the Senior Management Advisory Committee, CHEO RI; as a member of the Department of Pediatrics Executive Committee as well as a member of the Board of Directors, Research Canada.

Dr. Pitters contributed as the Chief of Staff/Chief Medical Officer, CHEO; as a member of the Board of Directors, CHEO Research Institute; as a member of the Practice and Education Committee, Council of Academic Hospitals of Ontario as well as a member of the Ontario Medical Association Medicine Forum.

Dr. Alnaji contributed as a member of the Point of Care Ultrasound Committee; as a member of the PICU Postgraduate Education Committee as well as an ORNGE Pediatric Transport Medicine Physician.



Dr. Alqurashi contributed as a member of the ER Simulation Sub-Committee.

Dr. Bell contributed as a member of the ER Simulation Sub-Committee.

Dr. Dolansky contributed as a member of the ER Simulation Sub-Committee and as a member of the Pediatric Emergency Medicine Education Committee.

Dr. Gerein contributed as the Director of the ED Simulation Program; as the Medical Director for Pediatric Advanced Life Support (PALS) courses, CHEO as well as the Co-Director for the Undergraduate Teaching Shift Program.

Dr. Harman contributed as a member of the ER Simulation Sub-Committee.

Dr. Jain contributed as a member of the Pediatric Emergency Education Committee as well as the ER Simulation Sub-Committee.

Dr. Karwowska contributed as a member of the Pediatric Emergency Education Committee; as the Chair of the Pediatric Emergency Medicine Examination Board, RCPSC as well as a member of the Pediatric Disaster Working Group, Centre of Excellence in Emergency Preparedness.

Dr. Langevin contributed as a member of the ER Simulation Sub-Committee as well as the Simulation Curriculum Co-Director for the Global Emergency Care Collaborative, Uganda

Dr. Lau contributed as the Pediatric Emergency Medicine Education Committee as well as the Co-Director (site) for the Canadian Hospital Injury Reporting and Prevention Program (CHIROP), Public Health Agency.

Dr. Lavoie contributed as the Chair of the Emergency Department Green Team.

Dr. Losier contributed as a member of the Infection Prevention and Control Committee Emergency Department Hand Hygiene Oversight team as well as a member of the Emergency Procedural Pain Committee.

Dr. Moineau contributed as a member of the Clinical Teachers Collaborative Committee; as the President and CEO of the Association of Faculties of Medicine of Canada and as the Secretary to Committee on Accreditation of Canadian Medical Schools (CACMS) and the committee on Accreditation of Continuing Medical Education (CACME).

## Emergency Medicine

Dr. Neto contributed as a member of the Division of Emergency Medicine Executive Committee; as a corresponding member of the Pediatrics Specialty Committee, Royal College of Physicians and Surgeons of Canada as well as the Ontario Health Plan for Influenza Pandemic Pediatric working group.

Dr. Noseworthy contributed as the Chair of the ED Simulation Sub-Committee, as the Chair of the Pediatrics Trauma Program Committee as well as a member of the Ontario Trauma Advisory Committee.

Dr. Pierse contributed as a member of the ER Simulation Sub-Committee as well as the Coordinator for the Pediatric Emergency Medicine Journal Club.

Dr. Plint contributed as a member of the CHEOnext Committee; as the Chair of Pediatric Emergency Medicine Research Canada (PERC) and as a member of the Board of Directors, TREKK (Translating Emergency Knowledge for Kids).

Dr. Reid contributed as the Chair for the Continuing Medical Education Committee, as the Co-Chair of the CHEO Emergency Department Outreach Program and as the Medical Director Lead for the ED Outreach Initiative, Champlain LHIN.

Dr. Shefrin contributed as a member of the Point of Care Ultrasound Committee; as a member of the Canadian Pediatric Emergency Point of Care Ultrasound Task Force, PEM PoCUS Canada as well as the Point of Care Ultrasound Committee, Royal College of Physicians and Surgeons of Canada.

Dr. Tam contributed as a member of the CaRMS Selection Committee; as the Associate Medical Director for the Regional Paramedic Program for Eastern Ontario as well as a Pediatric Consultant, ORNGE.

Dr. Taylor contributed as a member of the ER Simulation Sub-Committee.

Dr. Tse contributes as the Chair of the Pediatric Emergency Medicine Education Committee; as an examiner for the Emergency Medicine National Review Course, Royal College of Physicians and Surgeons of Canada; as well as being a member of the Pediatric Emergency Medicine Subspecialty Committee, Royal College of Physicians and Surgeons of Canada.

Dr. Vaidyanathan contributed as a member of the Medical Audit and Tissue Committee.

Dr. Zemek contributed as a member of the CHEO Research Ethics Board; as a member of the Pediatric Emergency Research Canada Executive Committee as well as the Chair of the Pediatric Concussion Guideline Development, Ontario Neurotrauma Foundation.

# Endocrinology & Metabolism

The Division of Endocrinology and Metabolism provides comprehensive, evidence-based, family-centred, care through an interdisciplinary team approach for children and youth with diabetes and other endocrine disorders. We also focus on educating and empowering patients, parents and the community to be active participants in the achievement of optimal health outcomes. Furthermore, we educate health care professionals in pediatric endocrinology and diabetes and train future leaders in the field. We are at the forefront of research in pediatric endocrinology and diabetes and enable translation of this research into improved clinical care. To deliver on this mission in 2013/2014, we had a total of 8 full-time and 4 part-time physicians. Three members of this group—Drs. Lawson, MacKenzie and Ward—had a major commitment to research and thus undertook a reduced clinical component.

## Faculty

### Full-Time Physicians

- Dr. Sarah Lawrence – Associate Professor (Division Chief)
- Dr. Alexandra Ahmet – Assistant Professor (Training Program Director)
- Dr. Ellen Goldbloom – Assistant Professor
- Dr. Stasia Hadjiyannakis – Assistant Professor
- Dr. Karine Khatchadourian – Assistant Professor
- Dr. Margaret Lawson – Full Professor
- Dr. Alex MacKenzie – Full Professor
- Dr. Leanne Ward – Associate Professor
- Dr. Caroline Zuijdewijk – Assistant Professor

### Part-Time physicians

- Dr. Radmila Jovanovic – Lecturer
- Dr. Frank Rauch – Associate Professor
- Dr. David Saleh – Associate Professor

## Clinical Care and Patient Advocacy

Clinical care is delivered at CHEO, for the most part, although there are also some outreach clinics. There is a relatively small inpatient component to clinical care with almost 300 inpatient consultations in 2013/2014. The major clinical focus is in the ambulatory area where there were close to 7,000 patient visits in 23 MD 1/2-day clinics/week in 2013/2014. Clinics comprise a mixture of general endocrinology,

## Endocrinology & Metabolism

diabetes (Type 1 and Type 2), bone health, obesity, neuro-oncology and diversity (transgender). Insulin pump with a continuous glucose-monitoring program is in place with a 24/7 hotline available.

Outreach clinics have been conducted in North Bay/Pembroke but this was on hold since a change in provincial funding structure. A further outreach clinic has continued focused on Pediatric Weight Management in Deep River

Members of the Division are strong patient advocates and have a number of important initiatives to enhance patient outcomes and also undertake significant volunteer work in national agencies to promote patient well-being.

- Nagpur Partnership: Partnership between CHEO and Diabetes Clinic in Nagpur India for underprivileged Children. Visited Clinic and Patients to determine needs August 2010. Fundraising/collaborative research—in progress (Ahmet, Zuijdwijk).
- Canadian Diabetes Association—Camp Banting, Diabetes Expo (Lawrence, Hadjiyannakis, Zuijdwijk).
- Diabetes Hope Foundation—Scholarship Program (Lawson, with participation from all physicians in Diabetes Clinic).
- Juvenile Diabetes Research Foundation—participation in JDRF Walk and support of other fundraising and educational activities.
- Diabetes in schools (Lawrence).
- Turner Syndrome Society—local support group and provincial Family Conference (Ahmet).
- Medical consultant (volunteer), The Children's Bridge, non-profit facilitators for international adoption, Ottawa (Lawson).
- Chair, Insulin Pumps and Supplies for Children Professional Advisory Committee, Ontario Ministry of Health and Long-term Care (Lawson).
- Ontario Advisory Committee: Gender Independent Children's Project (Lawson)
- Advisor to Canadian Diabetes Association National Office of Public Policy and Government Relations regarding Canada Revenue Agency's Disability Tax Credit and Children with Type 1 Diabetes (Lawson).
- Transgender Health Community of Practice Committee, Centretown Community Health Centre (Lawson).
- Chair, International Pediatric Bone Health in DMD Working Group to Establish Family Information Sheets for Bone Health in Pediatric DMD (Ward).



## Educational Activities

Education is a major component of the academic work of the division and occurs at all levels including undergraduate, postgraduate and CME. All members of the division contribute in a substantive way. There is also a very active clinical and research Royal College Training Program in Pediatric Endocrinology. The division contributed to education in a very broad way and this was substantial at all levels in 2013/2014. There clinical rotations for 30 students and 20 residents, including those from other institutions. This opportunity afforded rotators a very complete exposure to clinical pediatric endocrinology and diabetes, including specific exposure to blood glucose monitoring and insulin dosage adjustment, but also to bone health and obesity. There were also 4 endocrinology specialty residents (including 1 research fellow) and 5 rotating adult endocrinology residents. A specific educational curriculum was designed for these trainees that included all of the areas of expertise available including general endocrinology, diabetes, bone health and obesity.

Division members also contributed in a substantial way to case-based learning, pre-clerkship seminars and to residents' protected teaching time. This large contribution to teaching exceeded a total of 500 hours of classroom time, not including time in direct clinical supervision, or in teaching preparation. Significant contributions were also made to OSCEs and to the CaRMS matching process.

A unique opportunity for medical students is the chance to attend Diabetes Camp for up to 2 weeks in August.

## Key Invited Lectures

There was an extensive list of Invited Lectures in 2013 and a sample of these is provided below.

### Dr. Alexandra Ahmet

- Disorders of the Adrenal Gland: Lecturer for the Corporate Nursing Education Day, CHEO. Ottawa, ON (2014).
- Disorders of Growth: Annual Update in Endocrinology and Diabetes. Ottawa, ON (2013).
- Disorders of the Adrenal Gland: Lecturer for the Corporate Nursing Education Day. (2013).
- AAXIS Slide Deck: Addressing Adrenal Suppression with Inhaled Steroid. Chair of committee for development of accredited slide deck to educate Canadian physicians Focus on Adrenal Suppression. 2009 Aug-present.

### Dr. Stasia Hadjiyannakis

- The 5 As of Pediatric Obesity Management (60 minutes): Pediatric Grand Rounds, CHEO. Ottawa, ON (2013).
- The 5 As of Pediatric Obesity Management (30 minutes): 9th Annual Update in Endocrinology and Diabetes. Ottawa, ON (2013).
- The REALities of Childhood Obesity, Striking a Balance (1 hour): Ottawa Chapter Diabetes Educator Sector. Ottawa, ON. (2013).
- The 5 As of Pediatric Obesity Management: 6 hour workshop, 3rd National Obesity Summit. Vancouver, BC (2013).

### Dr. Sarah Lawrence

- A growing concern: Approaching growth assessment in an era of growth chart choice. Workshop presentation with Elizabeth Cummings, Canadian Pediatric Society Meeting. Montreal, QC (2014).
- Hitting the Highs in Diabetes Management: Current recommendations and future prospects. Symposium with Christine Richardson, RN, Canadian Pediatric Society Meeting. Montreal, QC (2014).
- CPEG extension of weight for age: Why bother? Pediatric Grand Rounds, Université de Sherbrooke. QC (2014).
- CPEG extension of weight for age: Why bother?—Visiting Speaker, Grand Rounds, Hospital for Sick Children. Toronto, ON (2014).
- Monitoring Growth in Children: Which Charts to Use?—Ian Goldberg Memorial Lecture, Winnipeg Children's Hospital. Winnipeg, MB (2013).

### Dr. Margaret Lawson

- CGM and the Artificial Pancreas Project: Annual General Meeting of JDRF Canada, Diabetes Research Update (2014).
- A Competency-Based Approach to Delivering, Teaching, and Evaluating Shared Decision Making in Pediatrics: North American Pediatric Academic Societies Annual Meeting, Co-Leader to Workshop. Vancouver, BC (2014).
- Development of a Decision Support Research Agenda: Invited Workshop, CHEO, Western University. London, ON (2014).
- The Role of Decision Aids in the Consenting Process for Clinical Research: Endocrinology Grand Rounds, Western University. London, ON (2014).
- Effectiveness of CGM in Type 1 Diabetes – Does Timing of Initiation Affect Adherence and Outcome? Endocrinology Grand Rounds, Western University. London, ON (2014).

- Panel Discussion on Creative Alternatives for Patient-Centered Care—Innovation Fund Showcase 2013: From Innovation to Practice. Toronto, ON (2013).

### **Dr. Leanne Ward**

- Bone Fragility in Children with Steroid-treated Diseases: Invited Symposium, Pediatric Academic Sciences Annual Meeting. Vancouver, BC (2014).
- Invited advisor to the European Society for Paediatric Endocrinology (ESPE) consensus statement conference. Birmingham, UK (2014).
- Diagnosis and Management of Osteoporosis in Children with Chronic Illness: Invited Symposium, Annual Meeting of the Canadian Pediatric Endocrine Group. Montreal, QC (2014).
- Osteoporosis in Glucocorticoid-treated Children: Lessons from the STOPP Study. Pediatric Grand Rounds as part of a Visiting Professor Day, Stollery Children's Hospital, Department of Pediatrics, University of Alberta. Edmonton, AB (2014).
- The Use of Oral Bisphosphonates in Osteoporosis Imperfecta: Invited Speaker, Osteogenesis Imperfecta Foundation Annual Scientific Meeting. Baltimore, MD (2013).
- Osteoporosis in Children with Glucocorticoid-Treated Illnesses: Lessons from the STOPP Study - Visiting Professor Lecture, Department of Pediatrics, Hamilton Health Sciences, McMaster University. Hamilton, ON (2013).
- The Epidemiology and Mechanisms of Osteoporosis in Children with Glucocorticoid-Treated Diseases: Invited Presentation to the Bone Imaging Research Group, University of Saskatchewan. Saskatoon, SK (2013).
- Osteoporosis in Children: Faculty Speaker at the European Society for Pediatric Endocrinology "Summer School". Lake Maggiore, Italy (2013).
- Osteoporosis in Children with Chronic Illnesses. Plenary Speaker, The Endocrine Society Annual Meeting. San Francisco, USA (2013).
- Update on Pediatric Bone Health. Pediatric Grand Rounds, Alberta Children's Hospital. Calgary, AB (2013).
- An Update on Pediatric Bone Health: Keynote Speaker, Annual PEARL (Pediatric Endocrinology) Conference, British Columbia Children's and Women's Hospital. Vancouver, BC (2013).

### **Dr. Caroline Zijldwijk**

- Type 1 Diabetes in 2013—Practice Changer: The 38th Annual Pediatric Refresher Course, CHEO. Ottawa, ON (2013).

### Research Activities—Research Projects and Funding

The Division has a very active research program with all faculty members contributing. The major areas of research activity include but are not limited to Type 1 Diabetes, Adrenal Suppression, Pediatric Bone Health, Obesity, Decision Support and Medical Education. The division members collectively acquired (or held) 30 grants, totaling \$18.2 million in 2013/2014 (and associated years), with the major areas of funding being in Diabetes, Bone Health and Obesity. There were a total of 53 published abstracts with presentations at several national and international meetings. There were also 53 peer-reviewed publications and 6 book chapters in 2013.

#### Research Funding

The following summarizes the major funding areas:

Pediatric Bone Health/STOPP (Ward) \$3.8 million; Type 1 Diabetes (Lawson) \$11.1 million.

Decision Support (Lawson) \$197,179; Endocrine Dysfunction in Pediatric Critical Illness (Lawson) \$899,372; Obesity (Hadjiyannakis) \$161,253; Adrenal Suppression (Ahmet/Goldbloom) \$996,640.

Education (Lawrence) \$380,000; General Endocrinology (all) \$340,000.

The following is a sample of some of the grants acquired. All acquired grants are included in the full division report.

National surveillance for adrenal suppression in the Canadian pediatric population (data analysis and interpretation), Canadian Paediatric Surveillance Program, **Physicians' Services Incorporated Foundation (PSI)**—Principal Investigators: **Goldbloom EB, Ahmet A.** 2011–2014, \$27,500.

A New Clinical Staging Tool for Pediatrics Obesity: Association with Cardiorespiratory Fitness and Quality of Life in Youth with Obesity, **CHAMO Innovation Fund—Hadjiyannakis S** (PI), Buchholz A, Baldwin K, Clark L, Rutherford J, Adamo K, Belanger K, Sharma A, Ball G, Mohipp C, Matzinger M, Momoli F. 2013–2014, \$64,358.73.

Do Sugar Sweetened Beverages Cause Adverse Health Outcomes in Children? A systematic review, **CIHR knowledge Synthesis Grant**—Moher D (PI), Sharma AM (PI), Tremblay (PI), Bjerre L, Hutton B, **Pound C**, Dobush O, Myers E, Shrier I, **Gow R**, Ohara K, Willows N, **Hadjiyannakis S**, Paprica A, Ziegler P. 2013 (one year), \$96,895.



Eli Lilly Canada Inc. GeNeSIS Study: The Genetics and Neuroendocrinology of Short Stature International Study—Blum W (PI), **Lawrence SE** (site PI). 1999–ongoing, \$50,000 annually based on enrolment.

PDF: A Digital Teaching File to Complement Clinical Experience in pediatrics, **University of Ottawa PGME, Faculty of Medicine—Jabbour M** (PI), **King WJ** (PI), **Lawrence SE**. 2011–2013, \$330,000.

Steroid Use in Pediatric Fluid and/or Vasoactive Infusion Dependent Shock (The STRIPES Study), **Canadian Institutes of Health Research (CIHR)—Lawson ML** (Co-Investigator), 2014–2016, \$597,372.

Establishment as a JDRF CCTN Clinical Centre for Type 1 Diabetes Research, **JDRF Canadian Clinical Trials Network (JDRF CCTN)—Lawson ML** (PI), 2011–2015, \$660,000.

Simultaneous vs. Delayed Initiation of Continuous Glucose Monitoring in Children and Adolescents with Type 1 Diabetes Starting Insulin Pump Therapy: a Multicentre RCT, **JDRF Canadian Clinical Trials Network (JDRF CCTN)—Lawson ML** (PI), Clarkson C, Kirsch S, Mahmud F, McAssey K. 2010–2015, \$5,382,240.

Multicentre Randomized Controlled Trial of Structured Transition on Diabetes Care Management Compared to Standard Diabetes Care in Adolescents and Young Adults with Type 1 Diabetes, **JDRF Canadian Clinical Trials Network (JDRF CCTN)—Site Co-Principal Investigators: Lawson ML, Goldbloom E**. 2012–2015, \$423,735.

Trial to Reduce Insulin-dependent Diabetes in the Genetically at Risk, **Canadian Institutes of Health Research (CIHR)—Principal Investigator: Dupre J** (PI), Mahon J, Dosch H-M, Fraser W, **Lawson ML** (Deputy PI since 2010). 2009–2017, \$4,100,000 TRIGR.

Implementation and Evaluation of a Pediatric Hospital-Based Family Decision Service, **Canadian Institutes of Health Research (CIHR) Operating Grant—Lawson ML** (PI), Elliott-Miller P (Co-PI, Knowledge User), Kryworuchko J, Dunn S, LeBlanc A. 2012–2014, \$197,579.

Steroid-induced Osteoporosis in the Pediatric Population—Canadian Incidence Study 2 (STOPP 2, renewal of the original March 2003 grant), **Canadian Institutes of Health Research operating Grant—Ward LM** (PI), Co-Investigators consist of 60 members of the “STOPP Consortium” from tertiary children’s hospitals from coast to coast.

**\*\*#1 Ranking through the Clinical Investigation B Panel (score 4.75/5.0)**, 2009–2013, \$1,211,836.

Muscle-Bone interactions in Canadians: a national, population-based study, **Canadian Institutes of Health Research (CIHR) Team Grant—Rauch F** (PI), **Ward LM** (PI), Adachi JD, Ma J, Weiler HA, Wong AKO. 2010–2022, \$1,334,440 [with support from Statistics Canada (\$5,700,000)].

Bone Fragility in Boys with Duchenne Muscular Dystrophy, **Physicians' Services Incorporated Foundation (PSI)—Ward LM** (PI), Campbell P, Craven BC, Jaremko J, Ma J, McAdam L, McMillan H, Moher D, Perkins T, Rauch F, Rudnicki M. Collaborators: Babyn P, Matzinger M, Shenouda N, Siminoski K. 2014–2016, \$170,000.

The effect of limited and strategic blood glucose monitoring on metabolic control in an Indian type 1 diabetes clinic, **International Diabetes Federation Life for a Child Program funding—Zuijdwijk C** (PI), **Ahmet A**, Pendsey S, Ron J, Chalkhore S, Ogle G. 2013–present, \$27,840.

### Peer-Reviewed Publications

**Goldbloom E, Ahmet A**, Abish S, Benseler S, Cummings E, Huynh H, Mokashi A, Ugnat A-M, Watson W. Adrenal Suppression—Final Report. *2012 Results Canadian Paediatric Surveillance Program*. 2013; 18–20.

Liu D, **Ahmet A, Ward L**, Krishnamoorthy P, Mandelcorn ED, Leigh R, Brown JP, Cohen A, Kim H. A Practical Guide to the Monitoring and Management of the Complications of Systemic Corticosteroid Therapy. *Allergy, Asthma & Clinical Immunology*. 2013; 9:13.

Spaic T, Mahon JL, Haramiak I, Byers N, Evans K, Robinson T, **Lawson ML**, Malcolm J, **Goldbloom EB**, Clarson CL; JDRF Canadian Clinical Trial CCTN1102 Study Group. Multicentre randomized controlled trial of structured transition on diabetes care management compared to standard diabetes care in adolescents and young adults with type 1 diabetes (Transition Trial). *BMC Pediatrics*. 2013 Oct 9; 13:163.

**Goldbloom EB, Ahmet A** (Principal Investigators), Abish S, Benseler S, Cummings E, Huynh H, Mokashi A, Ugnat A-M, Watson W (Co-Investigators). Adrenal Suppression—Final Report. *2012 Results Canadian Paediatric Surveillance Program*. 2013 Mar; 18–20.

Belanger k, Breithaupt P, Ferraro ZM, **Barrowman N**, Rutherford J, **Hadjiyannakis S**, Colley RC, Adamo KB. Do Obese Children Perceive Submaximal and Maximal Exertion Differently? *Clin Med Insights Pediatr*. 2013 Sep 8; 7:35–40.

Goldfield GS, Saunders TJ, Kenny GP, **Hadjiyannakis S**, Phillips P, Alberga AS, Tremblay MS, Sigal RJ. Screen Viewing and Diabetes Risk Factors in Overweight and obese Adolescents. *Am J Prev Med*. 2013 Apr; **44**(4Suppl4):S364–70.

**Lawrence SE**, Cummings EA, Chanoine JP, Metzger DL, Palmert M, Sharma A, Rodd C for the Canadian Pediatric Endocrine Group. Canadian Pediatric Endocrine Group extension to WHO growth charts. Why bother? *Pediatr Child Health*. 2013; **18**(6):295–7.

Trevena LJ, Zikmund-Fischer BJ, Edwards A, Gaissmaier W, Galesic M, Han PKJ, King J, **Lawson ML**, Linder SK, Lipkus I, Ozanne E, Peters E, Timmermans D, Woloshin S. Presenting Quantitative Information about Decision Outcomes: A Risk Communication Primer for Decision Aid Developers. *BMC Medical Informatics and Decision Making*. 2013; **13**(Suppl 2):S7.

Spaic T, Mahon J, Hramiak I, Byers N, Evans K, Robinson, T, **Lawson ML**, Malcolm J, **Goldbloom E**, Clarson C. Multicentre Randomized Controlled Trial of Structured Transition on Diabetes Care Management Compared to Standard Diabetes Care in Adolescents and Young Adults with Type 1 Diabetes (Transition Trial). *BMC Pediatrics*. 2013; 13:163.

Phan V, Blydt-Hansen T, Feber J, Alos N, Arora S, Atkinson S, Bell L, Clarson C, Couch R, Cummings E A, Filler G, Grant, RM, Grimmer J, Hebert D, Lentle B, Matzinger M, Midgley J, Pinsk M, Rodd C, Shenouda N, Stein R, Stephure D, Taback S, Williams K, Rauch F, Siminoski K, **Ward LM** and the Canadian STOPP Consortium. Skeletal findings in the first 12 months following initiation of glucocorticoid therapy for pediatric nephrotic syndrome. Accepted to *Osteoporosis International*. 2014; **25**(2):627-37.

Shiff NJ, Brant R, Guzman J, Cabral DA, Huber AM, Miettunen PM, **Roth J**, Scuccimarri R, Alos N, Atkinson SA, Collet JP, Couch R, Cummings EA, Dent PB, Ellsworth J, Hay J, Houghton K, **Jurencak R**, Lang B, Larche M, LeBlanc C, Oen K, Rodd C, Saint-Cyr C, Stein R, Stephure D, Taback S, Rauch F, **Ward LM** and the Canadian STOPP Consortium. Glucocorticoid-related changes in body mass index among children and adolescents with rheumatic disease. *Arthritis Care & Research*. 2013; **65**(1):113-121.

Siminoski K, Lee K-C, Abish S, Alos N, Bell L, Blydt-Hansen T, Couch R, Cummings EA, Ellsworth J, **Feber J**, Fernandez CV, Halton J, Huber AM, Israels S, **Jurencak R**, Lang B, Laverdière C, LeBlanc C, Lewis V, Midgley J, Miettunen PM, Oen K, Phan V, Pinsk M, Rauch F, Rodd C, **Roth J**, Saint-Cyr C, Scuccimarri R, Stephure D, Taback S, Wilson B, **Ward LM** and the Canadian STOPP Consortium. The development of bone mineral lateralization in the arms. *Osteoporosis International*. 2013; **24**(3): 999-1006.

Liu D, **Ahmet A**, **Ward LM**, Krishnamoorthy P, Mandelcorn ED, Leigh R, Brown J, Cohen A, Kim H. A practical guide to the monitoring and management of the complications of systemic corticosteroid therapy. *Allergy Asthma & Clinical Immunology Journal*. 2013; 9:30.

**Ward LM** and Rauch F. Invited Commentary. Do children with OI need oral bisphosphonates? *The Lancet*. 2013; **382**(9902):1388-1389.

Nour M and **Ward LM**. Infantile Malignant Osteopetrosis. *Journal of Pediatrics*. 2013; 163:1230-1230.e1.

**Zuijdewijk CS**, Cuerden M, Mahmud FH. Social Determinants of Health on Glycemic Control in Pediatric Type 1 Diabetes. *J Pediatr*. 2013; 162:730-5.

**Zuijdewijk CS**, Feber J, Murnaghan O, Nakhla M. Detection of Hypertension and Prehypertension in Pediatric Type 1 Diabetes with the Use of a Simple Blood Pressure Table. *Paediatr Child Health*. 2013; **18**(9):461-464.

## Endocrinology & Metabolism

Malhotra N, **Khatchadourian K**, Metzger D, Lam JM. Pimples in pre-puberty: A 5-year-old with an unusual cause of facial comedones. *J Paediatr Child Health*. 2013; **18**(2):91-93.

### Book Chapters

**Ward LM**, Mughal Z, and Bachrach L. Invited book chapter. Osteoporosis in childhood and adolescence. In 'Osteoporosis, Fourth Edition' edited by Drs. Marcus, Feldman, Nelson and Rosen, Elsevier, 2013.

## Administration and Other Contributions

All division members contributed to a very large number of committees locally, both at CHEO and at the University of Ottawa, and to a very significant number of organizations nationally and internationally.

Dr. Lawrence contributed as the Division Chief; as the Co-Chair of the Champlain Pediatric Diabetes Expert Committee, Champlain LHIN; as a member of the Newborn-Child Sub-Committee of the Provincial Maternal-Child Screening Committee; as the Chair, Scientific Program Committee, Canadian Pediatric Endocrine Group as well as the Lead for CPEG Growth Charts Working Group, Canadian Pediatric Endocrine.

Dr. Ahmet contributed as the Training Program Director; as the Chair, RPC of the Pediatric Endocrinology and Metabolism Program, University of Ottawa as well as a member of Adult Endocrine Resident Selection Committee.

Dr. Goldbloom contributed as the EPIC—Program Physician Lead for Division of Endocrinology and Metabolism.

Dr. Hadjiyannakis contributed as the Medical Director for CHEO's Centre for Healthy Active Living; as the Chair of Advisory Board for CHEO's Centre for Healthy Active Living and as a member of the Ontario Bariatric Network Advisory Board.

Dr. Lawson contributed as the Director for JDRF CCTN Clinical Centre for Type 1 Diabetes Research, CHEO Research; as the Medical Director for Family Decision Services, CHEO; as a member of the International Executive Committee, Trial to Reduce IDDM in the Genetically at Risk (TRIGR) as well as a Deputy Principal Investigator for TRIGR Canada.

Dr. Ward contributed as the Director for Pediatric Bone Health Clinical and Research Programs, CHEO; as a member of the International Society for Clinical Densitometry Pediatric Task Force.

Dr. Zijdwijk contributed as a member of the Point of Care Testing Committee at CHEO as well as the EPIC—Co-Physician Lead .

Dr. Khatchadourian contributed to the development of pre-printed orders for Medical Day Unit.



# Gastroenterology, Hepatology & Nutrition

The Division of Gastroenterology, Hepatology and Nutrition provides all care through the Children's Hospital of Eastern Ontario (CHEO). Since 2001, the division has grown to 5 physicians (5.0 FTE) offering a range of clinical care, education and research activities. There is significant expertise and broad scope of care provided by the members of the division, with all aspects of pediatric gastroenterology covered, including hepatology. The focus is on tertiary/quaternary care and there is also a particular focus on inflammatory bowel disease (IBD). There is a major commitment to teaching at all levels and there is also a very strong commitment to research.

One of the highlights from the past year was involvement in a Youth Gut Together evening for the families with Inflammatory Bowel Disease that was hosted by the Ottawa community-based 3C Foundation in partnership with the CHEO IBD Centre.

## Faculty

- Dr. David Mack – Full Professor (Division Chief)
- Dr. Janice Barkey – Assistant Professor
- Dr. Eric Benchimol – Assistant Professor
- Dr. Margaret Boland – Associate Professor
- Dr. Carolina Jimenez – Assistant Professor

## Clinical Care and Patient Advocacy

The main areas of focus include GI Disorders (luminal disease, exocrine pancreatic disease, foregut disorders); Liver Disease; Disorders of Nutrition; and Diagnostic Endoscopy.

Special clinical areas include Inflammatory Bowel Disease, Post Liver Transplant Clinics, Eosinophilic Esophagitis, Breath Hydrogen Testing for dietary carbohydrate intolerances, pH/Impedance testing and Capsule endoscopy. There is also a combined clinic with Respiriology for patients with Cystic Fibrosis.

There is a busy inpatient service where there were 322 admissions and 262 consultations in 2013/2014. There is also a very busy ambulatory service with a focus on consultations where there were 1,292 consultations and an additional 1,841 follow-up visits, seen in 12.5 MD ½-day clinics/week in 2013/2014. The clinics include the CHEO Inflammatory Bowel Disease Centre, which currently follows over 300 patients with IBD and the Eosinophilic Esophagitis Clinic which follows 200 patients.

There was also a large number of procedures—897 endoscopies, 357 breath hydrogen tests, and 13 pH impedance studies, as well as 32 TeleHealth sessions.

## Educational Activities

Division members contribute enormously to all levels of education including undergraduate, postgraduate and CME. In addition, a considerable amount of time is spent in the supervision of research trainees including residents, as well as masters and doctoral students. Drs Mack and Benchimol contributed significantly in the latter area which included a total of 6 research trainees in 2013/2014.

Rotations for both medical students and residents are available and trainees are involved in both outpatient and inpatient clinical care during these rotations. Trainees also have the opportunity to observe specialized procedures including gastrointestinal endoscopy, pH/Impedance studies and breath hydrogen testing. A total of 22 students and 24 residents undertook rotations during 2013/2014.

Considerable contributions are provided to the undergraduate curriculum, to academic ½ days for residents, to OSCEs and the CaRMs process. Overall, the division contributed in excess of 400 hours of direct teaching time, not including teaching in the context of clinical care. Many lectures were delivered by the group, a sample of which are included below.

### Key Invited Lectures

#### Dr. Janice Barkey

- Plenary Session Presentations: Constipation: Diagnosis & Management, GERD: Diagnosis & Management - CHEO 38th Annual Pediatric Refresher Course, Ottawa, ON (2013).

#### Dr. Eric Benchimol

- Lessons Learned from Research Using Health Administrative Data: CHEO RI-ICES Half-Day Symposium. Ottawa, ON (2013).
- Improving Transparency of Research Using Routinely-Collected Health Data: ICES/Sunnybrook Health Sciences Centre Clinical Evaluative Clinical Sciences Rounds. Toronto, ON (2013).
- Social Media for Research: Opportunities for Collaboration and Knowledge Translation: Division of Gastroenterology, Hepatology & Nutrition Clinical Teaching Rounds, The Hospital for Sick Children. Toronto, ON (2013).
- The Changing Epidemiology of Pediatric Inflammatory Bowel Disease: Clues to the Environmental Role in IBD Etiology - Division of Gastroenterology, Hepatology & Nutrition Research Seminar, The Hospital for Sick Children. Toronto, ON (2013).
- Safety and Efficacy of Immunizations in Children with IBD: Canadian Digestive Diseases Week (workshop). Toronto, ON (2014).

- The Changing Epidemiology of IBD: Clues to the Environmental Role in IBD Etiology —Israel IBD Research Network: The Epidemiology of IBD and Large Administrative Databases, Shaare Zedek Medical Center. Jerusalem, Israel (2013).
- Israel IBD Research Network: The Epidemiology of IBD and Large Administrative Databases, Shaare Zedek Medical Center, Jerusalem, Israel. Chronic Disease Surveillance Using Health Administrative Data: Perils and Pitfalls. (2013).

### **Dr. Margaret Boland**

- Carbohydrate induced Diarrhea in Children, Pediatric Grand Rounds, CHEO. Ottawa, ON (2013).

### **Dr. Carolina Jimenez**

- Pediatric Liver Disease Symposium moderator at the Digestive Diseases Week. Orlando, FL (2013).
- Autoimmune Hepatitis: The Canadian Experience: CHEO. Ottawa, ON (2013).
- Autoimmune Hepatitis: The Canadian Experience: Pediatric Grand Rounds, Invited Speaker, IWK. Halifax, NS. (2013).

### **Dr. David Mack**

- “Imaging of the Small Bowel in Inflammatory Bowel Disease”: Pediatric Grand Rounds, CHEO. Ottawa, ON (2013).
- Colitogenic Bacteria Reside at the Luminal Mucosal Interface in IBD: IBD-Liver Forum. Ottawa, ON (2013).
- Inflammatory Bowel Disease in Children and Adolescents: Xinhua Hospital, Jiao Tong University. Shanghai, China (2013).
- Virtual IBD: NASPGHAN Annual Meeting. Chicago, IL (2013).
- The Microbiota at the Mucosal Luminal Interface: lessons from Children with Inflammatory Bowel Disease - 10th International Conference of the Society for Integrative Oncology. Vancouver, BC (2013).

## Research Activities—Research Projects and Funding

Current studies include multi-centre, multi-investigator as well as CHEO-driven research endeavours, funded through a number of sources. These sources include: Genome Canada partnered with the Ontario Government and the Canadian Institutes of Health Research; the CHILD Foundation; the National Institutes of Health; the Crohn's and Colitis Foundation of America; Canadian Institutes of Health Research; American College of Gastroenterology; 3C Foundation; Crohn's and Colitis Canada; Janssen; Pediatric Liver Foundation; and local donors such as parents, local businesses and the Snowflake Ball.

Our growing collaborations include those with researchers from basic science departments at the University of Ottawa, Institute for Clinical Evaluative Sciences (ICES) as well as national and international colleagues. All are important to us to enhance our commitment to expansion of research and care in Ottawa.

Specific areas of research include, but are not limited to:

- Inflammatory Bowel Disease
- Adrenal axis monitoring in patients with eosinophilic esophagitis
- Studies of Ontario's health administrative database (ICES)
- Cystic Fibrosis in infants and children
- Pediatric liver disease-related research

### Research Funding

Canadian Children Inflammatory Bowel Disease Network: A Joint Partnership of CIHR and the C.H.I.L.D. Foundation, **CHILD/CIHR—Mack D** (Co-PI and Deputy Director), 2013–2018, \$5,000,000.

The Microbiota at the Intestinal Mucosa-Immune Interface: a Gateway for Personalized Health, **Genome Canada/Genome Ontario/CIHR—Stintzi A** (Co-Pi), **Mack D** (Co-PI), 2013–2017, \$2,900,000.

Predicting Response to Standardized Pediatric Colitis Therapy: The PROTECT Study, **Grant Institution: NIDDK U01 DK095745-01 (Grant 10969548)—Hyams A** (PI), **Mack D** (Site PI), 2012–2017, \$10,433,231.

The Gut Microbiota in Pediatric Inflammatory Bowel Diseases, **CIHR—Stintzi A** (Co-Pi), **Mack D** (Co-PI), 2010–2016, \$362,250.

Assessing the Pre-clinical Utility of Epigenetic Markers in the Diagnostic and Prognosis of Crohn's disease in Children, **CCFC—Amre D** (PI), **Mack D** (Co-Applicant), 2012–2015, \$299,350.



Gene-environment Microbe (GEM) Study-A Multi-disciplinary Human Study on the Genetic, Environmental and Microbial Interactions that cause Inflammatory Bowel Disease (IBD), **CCFC**—Croitoru K (PI), **Mack D** (Site Investigator), 2008–2017, \$5,600,000.

Inflammatory Bowel Disease in Immigrants to Canada and their Children: Epidemiology and access to Specialist Care, **CHAMO**—**Benchimol E** (PI), **Mack D** (Co-Investigator), 2012–2013, \$57,485.

The Ontario Crohn's and Colitis Cohort: Epidemiology and Diagnostic Lag of Inflammatory Bowel Disease in Ontario, Canada, **American College of Gastroenterology Junior Faculty Development Grant**—**Benchimol E** (PI), **Mack D** (Co-Investigator), 2011–2013, \$150,000.

Reporting of studies Conducted using Observational Routinely-collected Data (RECORD), **Canadian Institutes of Health Research (CIHR)**—**Benchimol E** (PI), 2013–2015, \$120,000.

The Canadian Children Inflammatory Bowel Disease Network, **CIHR/C.H.I.L.D. Foundation**—**Benchimol E** (PI for Health Services Research), Griffiths A (Nominated Principal Applicant), 2013–2018, \$4,933,700.

Developing the REporting of studies Conducted using Observational Routinely-collected Data (RECORD) statement, **Swiss National Science Foundation International Cooperation Grant**—**Benchimol E** (Co-PI), von Elm E (PA), 2013, 17,000 (= CAD\$18,342).

The Rural/Urban Divide in Inflammatory Bowel Disease: Assessing Incidence, Outcomes and Access to Care in Canada, **Janssen Future Leaders in IBD Grant**—**Benchimol E** (PI), 2013–2014, \$75,000.

Inflammatory Bowel Disease in Immigrants to Canada and their Children: Epidemiology and Access to Specialist Care, **Children's Hospital Academic Medical Organization and Ontario Ministry of Health and Long-Term Care Academic Health Sciences Centres AFP**—**Benchimol E** (PI), 2012, 2014, \$57,485.

**CHEO Gastroenterology & Hepatology Research Unit (CHEO-GHRU)**, CHEO RI Clinical Research Capacity-Building Award—**Benchimol E** (PI), 2011–2014, \$120,000.

A Multi-Center Randomized Controlled Trial Evaluating the Impact of Regular Telephone Contact with an Inflammatory Bowel Disease (IBD) Registered Nurse (RN) during Transition from Pediatric to Adult Care, **Crohn's and Colitis Foundation of Canada**—Nguyen G (PI), **Benchimol E** (Co-Investigator), 2013–2015, \$221,272.

Enhanced CARE for RARE Genetic Diseases in Canada, **Genome Canada Large-Scale Applied Research Project Competition**—**Boycott K** (PI), **MacKenzie A** (PI), **Benchimol E** (Collaborator), 2013–2017, \$11,853,890.

## Peer-Reviewed Publications

Zeisler B, Lerer T, Markowitz J, **Mack D**, Griffiths A, Bousvaros A, Keljo D, Rosh J, Evans J, Kappleman M, Otley A, Kay M, Grossman A, Saeed S, Carvalho R, Oliva-Hemker M, Faubian W, Sudel B, Pfefferkorn M, Ashai-Khan F, LeLeiko N, Hyams J. Outcome following aminosalicylate therapy in children newly diagnosed with ulcerative colitis. *J Pediatr Gastroenterol Nutr*. 2013; 56:12-18.

Bertinato J, Randall Simpson J, Sherrard L, Taylor J, Plouffe LJ, Van Dyke D, Geleynse M, Dam YY, Murphy P, Knee C, Vresk L, Holland N, Quach H, **Mack DR**, Cooper M, L'Abbé MR, and Hayward S. Zinc supplementation did not alter sensitive biomarkers of copper status in healthy boys. *J Nutr*. 2013; 143:284-289.

Sheridan J, **Mack DR**, Amre DK, Israel DM, Cherkasov A, Li H, Grimard G, Steiner TS. A non-synonymous coding variant (L616F) in the TLR5 gene is potentially associated with Crohn's disease and influences responses to bacterial flagellin. *PLoS One*. 2013 Apr 11; **8**(4):e61326.

Marcil V, **Mack DR**, Kumar V, Faure C, Carlson CS, Beaulieu P, Israel D, Krupoves A, Costea I, Lambrette P, Grimard G, Dong J, Seidman EG, Amre DK, Levy E. Association between the PTPN2 gene and Crohn's disease: Dissection of potential causal variants. *Inflammatory Bowel Diseases*. 2013; 19:1149-1155.

Langan S, **Benchimol EI**, Guttman A, Moher D, Petersen I, Smeeth L, Sorensen HT, Stanley F, von Elm E. Setting the RECORD straight: developing a guideline for Reporting of studies Conducted using Observational Routinely collected Data (editorial). *Clinical Epidemiology*. 2013; 5:29-31. **C**.

**Jimenez-Rivera C**, Jolin-Dahel KS, Fortinsky KJ, Gozdyra P, **Benchimol EI**. International incidence and outcomes of biliary atresia : A systematic review of population-based studies. *Journal of Pediatric Gastroenterology and Nutrition*. 2013; **56**(4):344-354. **SRI**.

Aujnarain A, **Mack DR**, **Benchimol EI**. The role of the environment in the development of pediatric inflammatory bowel disease. *Current Gastroenterology Reports*. 2013; **15**(6):326. **SRI**.

**Benchimol EI**, Hawken S, Kwong JC, Wilson K. Safety and utilization of influenza immunization in children with inflammatory bowel disease. *Pediatrics*. 2013; **131**(6):e1811-e1820. **PA**.

**Benchimol EI**, Langan S, Guttman A, on behalf of the RECORD Steering Committee. Call to RECORD: the need for complete reporting of research using routinely collected health data (commentary). *Journal of Clinical Epidemiology*. 2013; **66**(7):703-705. **PA**.

Khanna R, Sattin BD, Afif W, **Benchimol EI**, Bernard E-J, Bitton A, Bressler B, Fedorak RN, Ghosh S, Greenberg GR, Marshall JK, Panaccione R, Seidman EG, Silverberg MS, Steinhart AH, Sy R, Van Assche G, Walters TD, Sandborn WJ, Feagan BG. Review article: a clinician's guide for therapeutic drug monitoring of infliximab in inflammatory bowel disease. *Alimentary Pharmacology and Therapeutics*. 2013; **38**(5):447-459. **C**.

Ducharme R, **Benchimol EI**, Deeks SL, Hawken S, Fergusson D, Wilson K. Validation of diagnostic codes for intussusception and quantification of childhood intussusception incidence in Ontario, Canada: A population-based study. *Journal of Pediatrics*. 2013; **163**(4):1073-1079, e3. **Corr/Co-SRI**.

**Benchimol EI**, Cook SF, Erichsen R, Long MD, Bernstein CN, Wong J, Carroll CF, Frøsvlev T, Sampson T, Kappelman MD. International variation in medication prescription rates among elderly patients with inflammatory bowel disease. *Journal of Crohn's and Colitis*. 2013; **7**(11):878-889. **PA**.

Quach P, Nguyen GC, **Benchimol EI**. Quality improvement in pediatric inflammatory bowel disease: moving forward to improve outcomes. *World Journal of Gastroenterology*. 2013; **19**(38):6367-6374. **SRI**.

Kumar V, **Mack DR**, Marcil V, Israel D, Krupoves A, Costea I, Lambrette P, Grimard G, Dong J, Seidman EG, Amre DK, Levy E. Genome-wide association signal at the 12q12 locus for Crohn's disease may represent associations with the MUC19 gene. *Inflammatory Bowel Diseases*. 2013; **19**:1254-1259.

Wine E, **Mack DR**, Hyams J, Otley AR, Markowitz J, Crandall WV, Leleiko N, Muise AM, Griffiths AM, Tuner D. Interleukin-6 is associated with steroid resistance and reflects disease activity in severe pediatric ulcerative colitis. *J Crohn's Colitis*. 2013; **7**:916-922.

Aujnarain A, **Mack DR**, **Benchimol EI**. The role of the environment in the development of pediatric inflammatory bowel disease. *Current Gastroenterology Reports*. 2013; **15**:326-337. (PMID 23640032).

**Jimenez-Rivera C**, **Benchimol EI**. Letter to the Editor. Author's response to: Systematic review of biliary atresia services: a case for medium-sized centres? *JPGN*. 2013 Sept; **57**(3):e19-e20.

Jolin-Dahel K, **Ferretti E**, Montiveros C, Grenon R, **Barrowman N**, **Jimenez-Rivera C**. Parenteral nutrition-Induced Cholestasis: Where Does the Problem Lie? *Gastroenterology Research and Practice*. 2013 Nov; Article ID 163632, 6 pages.

**Jimenez-Rivera C**, Gupta A, **Feberova J**, de Nanassy JA, **Boland MP**. Successful Treatment of Neonatal Hemochromatosis as Gestational Alloimmune Liver Disease with Intravenous Immunoglobulin. Accepted for publication in *Journal of Neonatal-Perinatal Medicine*. In Press.

### Book Chapters

**Mack DR.** Chapter 29. Probiotic Therapy. In Pediatric Inflammatory Bowel Disease, 2nd Edition. Mamula P, Markowitz JE, Baldassano. Eds. Springer. 2013; pp313–323.

### Administration and Other Contributions

All division members contributed to a very large number of committees locally, both at CHEO and at uOttawa, and to a very significant number of organizations nationally and internationally.

Dr. Mack contributed as Division Chief; as the Pediatric Lead for the Clinical Affairs Committee, Canadian Association of Gastroenterology; as member of the NASPGHAN Awards Committee; as the Deputy Director of CIDsCaNN Network and as a member of the Medical Advisory Board: 3C Foundation.

Dr. Benchimol contributed as a member of the CHEO Research Institute Science Committee; as the Chair of the NASPGHAN Technology Committee as well as a member of the Epidemiology/Environmental Factors Working Group, Crohn's and Colitis.

Dr. Jimenez contributed as a member of the NASPGHAN Hepatology Committee; as a member of the steering committee for the Canadian Biliary Atresia Registry as well as the Director of Liver Services at CHEO.

Dr. Boland contributed as the Chair of the Pharmacy and Therapeutics Committee, CHEO and as the Pediatric Student Rotation Coordinator for the Division of Gastroenterology.

Dr. Barkey contributed as the Pediatric Resident Rotation Supervisor for the Division of Gastroenterology; as the Pediatric Gastroenterology, Hepatology & Nutrition Examiner for the Royal College of Physicians and Surgeons of Canada as well as the Director of Esophageal Disorders & pH Impedance Studies



# Hematology/Oncology

The Division of Hematology/Oncology provides state of the art, effective treatment for children with blood and cancer disorders at the Children's Hospital of Eastern Ontario (CHEO) in a new outpatient clinic and recently refreshed inpatient unit.

In 2013/2014, there were 7 full-time faculty as well as 3 part-time and casual physicians who assisted staff physicians in specialty clinics.

## Faculty

### Full-Time Physicians

- Dr. Donna Johnston – Associate Professor (Division Chief)
- Dr. Mylene Bassal – Assistant Professor (0.9 FTE)
- Dr. Jacqueline Halton – Full Professor
- Dr. Robert Klaassen – Associate Professor
- Dr. Karen Mandel – Assistant Professor
- Dr. Raveena Ramphal – Associate Professor
- Dr. Ewurabena Simpson – Assistant Professor

### Part-Time Physicians

- Dr. Elaine Leung – Assistant Professor (0.2 FTE, Hematology/Pathology)
- Dr. Eileen McBride – Assistant Professor (0.2 FTE)

## Clinical Care and Patient Advocacy

The Division saw a total of approximately 10,000 visits in 2013/2014 (6,883 outpatient and 2,947 inpatient visits). The hematology/oncology inpatient unit, 4 North, was closed for 3 months over the summer for a “refresh”. It was a challenging 3 months but manageable and resulted in increased patient and staff satisfaction.

CHEO is one of 8 Canadian institutions selected to be part of the C17 Developmental Therapeutics Group. Participation in this group allows CHEO patients with relapsed malignancies access to phase one drug trials with novel agents. Within the hematology realm, there are phase one and two studies with novel oral anticoagulants that CHEO is participating in.

## Hematology/Oncology

The multidisciplinary members of the Division of Hematology/Oncology participate in a variety of advocacy programs:

- Oncology Aftercare and Survivorship Programs
- Hemoglobinopathy Program
- Interlink Nursing
- Oncology and Hematology Camps
- Candlelighters Childhood and Cancer Support Programs
- Leucan organization

The division is very proud of the passion, leadership and personal commitment demonstrated by the members in their participation in these initiatives.

## Educational Activities

The Division of Hematology/Oncology continues to support and mentor a highly-achieving and sought-after subspecialty residency training program. The core program introduces the resident to the discipline of hematology/oncology. The training is clinical and laboratory based for 24 months. In the third year, the focus is on research and/or further formalized training in an area of focus in pediatric hematology/oncology.

Division members also contributed to lectures, mentorship, physician skills development, Journal Clubs and examinations.

There were also a large number of rotations from students and residents in pediatrics.

## Key Invited Lectures

### Dr. Jacqueline Halton

- Canadian Regulatory Affairs: Children's Oncology Group. USA (2013).

### Dr. Donna Johnston

- December, Neuro-Oncology Case Oriented Rounds: Pediatric Grand Rounds, CHEO. Ottawa, ON (2013).
- Hot Topics - Histiocytosis: Chemotherapy Update Course. Toronto, ON (2013).
- Case Based Toxicities: Chemotherapy Update Course. Toronto, ON (2013).
- Palliative Care and Quality of Life Breakout Sessions: Children's Oncology Group. USA (2013).

**Dr. Robert Klaassen**

- New Massive Bleeding and Blood Product Transfusion Guidelines: Pediatric Grand Rounds, University of Ottawa. Ottawa, ON (2013).
- Red Blood Cell Disorders Antibodies Database: The case for a sickle cell disease registry: CBS/ORBCoN Spring Symposium, Toronto, ON (2013).
- Health Services and Outcomes Research: Guidelines and Practice Gaps, Survivorship and Quality of Life: 55th American Society of Hematology Annual Meeting. New Orleans (2013).
- Quality of Life: ITP Consortium of North America Meeting. New Orleans, USA (2013).
- ICON1: ITP Consortium of North America Meeting. Miami, Florida (2013).

**Dr. Raveena Ramphal**

- Pediatric renal tumors, liver tumors and sarcomas: University Hospital. Kingston, Jamaica (2013).

**Dr. Ewurabena Simpson**

- Proposal for the Development of a Canadian Hemoglobinopathy Registry: Canadian Hemoglobinopathy Group Annual Meeting. Vancouver, Canada (2013).



### Research Activities—Research Projects and Funding

The Division is actively involved in clinical research and all are members of the Children's Oncology Group (international). In 2013, there were a total of 29 peer-reviewed publications. The division is involved in research which includes, but is not limited to:

- Children's Oncology Group and other pediatric oncology
- Supportive care in pediatric hematology and oncology
- Late effects in pediatric oncology
- Pediatric thrombosis
- Pediatric bleeding disorder
- Hemoglobinopathies in pediatric patients

### Research Funding

The following includes a representative sample of grants. There were several additional grants not included here.

Defining Treatment-Related Mortality in Pediatric Cancer, **POGO Open Operating Grant—Johnston D** (Co-Investigator), 2013–present, \$99,380.

MK0869-134, A Multi-centre, Open-label, 5-Part Study to Evaluate the Pharmacokinetics, Safety and Tolerability of Aprepitant and Fosaprepitant Dimeglumine in Pediatric Patients Receiving Emetogenic Chemotherapy, **Merck—Johnston D** (Site Investigator), 2012–2014, \$168,032.

Phase I Dose Finding Study for Melatonin in Pediatric Oncology Patients with Relapsed Solid Tumors, **C17 Research Network—Johnston D** (PI), 2011–present, \$190,926.

Development and testing of a multidimensional electronic pain diary for youths with cancer, **C17 Research Network—Johnston D** (Co-Investigator), 2010–present, \$199,929.

A Randomized Controlled Multicenter Non-Inferiority Trial of Twice Daily Low Dose Dexamethasone versus High Dose Dexamethasone for Symptom Control in Children with a Brain Tumour Undergoing Cranial or Craniospinal Radiation, **C17 Research Network—Johnston D** (Co-Investigator), 2010–2013, \$119,997.

Cultural adaptation, evaluation of the psychometric properties of the psychosocial assessment tool (PAT 2.0) and feasibility of its use with families and children newly diagnosed with cancer in Ontario, **POGO—Johnston D** (Co-Investigator), 2009–2013, \$109,300.



Development of the P-SCS: The Pediatric Supportive Care Scale, **C17 Research Network—Johnston D** (Co-Investigator), 2009–present, \$118,374.

Management and health outcomes in adolescents who develop malignancies: chart review project, **Cancer Care Ontario—Johnston D** (Co-Investigator), 2009–present, \$100,000.

Molecular Profiling to Impact the Management of pre-B All: A Pilot Study, **AHSC AFP Innovation Fund—Halton J** (Co-Investigator), 2013–present, \$96,058.

Applying biomarkers to long term effects of childhood/adolescent cancer treatment, **CIHR—Halton J** (Site PI), 2011–2016, \$4,300,000.

Central venous line dysfunction as a predictor of thromboembolism in children with cancer, C17 Research Network—**Halton J** (Co-Investigator), 2011–2019, \$222,586.

Tolerability and safety of dabigatran etexilate capsules in children, Boehringer Ingelheim (Canada) Ltd./Ltee—**Halton J** (Co-ordinating Investigator), 2010–present, \$49,000.

Steroid associated osteoporosis in the pediatric population–Canadian Study-2 (STOPP-CIS-2), **CIHR—Halton J** (Co-Investigator), 2009–2013, \$1,211,836.

Validation of a Myelodysplasia-Specific Measure of Quality of Life, **Canadian Cancer Society—Klaassen R** (Principal Applicant), 2013–present, \$179,000.

Generation and Validation of the Self-PBQ (Self-Administered Pediatric Bleeding Questionnaire), C17 Research Network—**Klaassen R** (Co-Investigator), 2013–present, \$186,000.

Bone Marrow Failure-causing Alleles in Canada and Genotype-Phenotype Correlation, **C17 Research Network—Klaassen R** (Co-Investigator) 2012–present, \$200,000.

“What factors are important for understanding QOL of children with cancer?”, **C17 Research Network—Klaassen R** (Co-Applicant), 2011–2013, \$156,093.

Quality of Life Instrument for Idiopathic Thrombocytopenic Purpura (“KIT”), **AMGEN—Klaassen R** (Co-Applicant), 2010–present, \$223,000 US.

Novel approaches to the prediction, diagnosis and treatment of cardiac late effects in survivors of childhood cancer, **CIHR—Bassal M** (Site Investigator), 2013–present, \$581,960.

The transition to meaningful activity for childhood cancer survivors: understanding the role of SAVTI (Successful Academic and Vocational Transition Initiative), b.r.a.i.n. Child and Ontario, **Ministry of Education—Bassal M** (Site Principal Investigator), 2013–present, \$40,705.

## Hematology/Oncology

Molecular profiling to impact the management of pre-B ALL: a pilot study, **CHEO RI—Bassal M** (Co-Applicant), 2013–present, \$96,058.

Teens Taking Charge: development and usability testing of an online self-management and transitional care program for youth with cancer, **CIHR—Ramphal R** (Collaborator), 2011–present, \$200,000.

The impact of genotype on plasma and cerebral spinal fluid pharmacokinetics of celecoxib in children, **CHEO RI—Ramphal R** (Site Investigator), 2009–present, \$30,000.

DISH—Data Information System for Hemoglobinopathies: An electronic system for improving health outcomes, **CHEO RI—Simpson E** (PI), 2013–present, \$5000.

Novel approaches to the prediction, diagnosis and treatment of cardiac late effects in survivors of childhood cancer, **CIHR—Mandel K** (Co-Investigator), 2011–present, \$581,960.

The transition to meaningful activity for childhood cancer survivors: understanding the role of SAVTI (Successful Academic and Vocational Transition Initiative), **b.r.a.i.n. Child and Ontario Ministry of Education—Mandel K** (Site PI), 2011–2013, \$40,705.

Comparison of Whole-Body Diffusion Weighted Imaging to PET/CT at baseline and follow up in children and adolescents with lymphoma: A pilot study, **POGO Seed Funding Grant—Mandel K** (Co-Applicant), 2011–2013, \$14,615.

Development and implementation of an adult aftercare screening tool, **PCOI—Pediatric Oncology Group of Ontario—Mandel K** (Collaborator), 2011–present, \$140,000.

## Peer-Reviewed Publications

Cyr J, **Johnston DL**. Accuracy of physical examination versus ultrasound in the detection of hepatosplenomegaly at diagnosis of pediatric leukemia. *Journal of Hematologic Malignancies*. 2013; 3:24–27.

Tran TH, Mitchell D, Dix D, Cellot S, Ethier MC, Gillmeister B, Hitzler J, Lewis V, Yanofsky R, **Johnston DL**, Portwine C, Price V, Zelcer S, Silva M, Michon B, Bowes L, Stobart K, Brossard J, Beyene J, Sung L. Infections in Children with Down Syndrome and Acute Myeloid Leukemia: A Report from the Canadian Infections in AML Research Group. *Infectious Agents and Cancer*. 2013 Dec 2; **8**(1):47.

**Johnston DL**, Nagarajan R, Caparas M, Schulte F, Cullen P, Aplenc R, Sung L. Reasons for Non-Completion of Health Related Quality of Life Evaluations in Pediatric Acute Myeloid Leukemia: A Report from the Children's Oncology Group. *PLoS One*. 2013; **8**:e74589.

Coenen E, Zwaan C, Reinhardt D, Harrison C, Haas OA, de Haas V, Mihal B, De Moerloose B, Jeison M, Rubnitz J, Tomizawa D, **Johnston D**, Alonzo T, Hasle H, Auvrignon A, Dworzak M, Pession A, van der Velden V, Swansbury J, Wong KF, Terui K, Savasan S, Winstanley M, Vaitekeviciene G, Zimmermann M, Pieters R, van den Heuvel-Eibrink MM. Pediatric acute myeloid leukemia with t(8;16)(p11;p13): a distinct clinical and biological entity. A collaborative study by the International-Berlin-Frankfurt-Munster AML-study group. *Blood*. 2013; 122:2704–2713.

Price V, Portwine C, Zelcer S, Ethier MC, Gillmeister B, Silva M, Schindera C, Yanofsky R, Mitchell D, **Johnston DL**, Lewis V, Dix D, Cellot S, Michon B, Bowes L, Stobart K, Brossard J, Beyene J, Sung L. Clostridium difficile infection in pediatric acute myeloid leukemia: From the Canadian infections in acute myeloid leukemia research group. *Pediatric Infectious Diseases*. 2013; 32:610–613.

Cellot S, **Johnston D**, Dix D, Ethier MC, Gillmeister B, Mitchell D, Yanofsky R, Lewis V, Portwine C, Price V, Zelcer S, Silva M, Bowes L, Michon B, Stobart K, Brossard J, Beyene J, Sung L. Infections in pediatric acute promyelocytic leukemia: from the Canadian infections in acute myeloid leukemia research group. *BMC Cancer*. 2013; 13:276.

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## Book Chapters

Appendix II. Common Products Used to Manage Bleeding and Clotting. **Simpson E**, Liebman, M. In *SickKids Handbook for Pediatric Thrombosis and Hemostasis*. Eds. Blanchette VS, Breakey VR, Revel-Vilk S.

### Administration and Other Contributions

All division members contributed to a very large number of committees locally, both at CHEO and at the University of Ottawa, and to a very significant number of organizations nationally and internationally.

Dr. Johnston contributed in her role as Division Chief; as the Director of the Neuro-Oncology Program; as the Associate Editor, Journal of Hematological Malignancies and well as the Chair for the Royal College of Physicians and Surgeons of Canada, Examination Committee for Pediatric Hematology/Oncology.

Dr. Halton contributed as Medical Director of Ambulatory Care Service, CHEO; as the Senior Medical Officer, Canadian Regulatory Affairs, Children's Oncology Group (USA) as well as a member of the Canadian Childhood Cancer Surveillance and Control Program Management Committee (CCCSCP).

Dr. Klaassen contributed as the Pediatric Hematology Physician Representative, Canadian Blood Service; as Chair of the Governance and Nominating Committee, CanHaem Group as well as the Chair of the QOL committee of the ITP consortium of North America (ICON)

Dr. Bassal contributed as the physician lead for the Oncology Transition Program and as a member of the Children's Oncology Group.

Dr. Mandel contributed as a member of the Camp Trillium Board of Directors and as a member of the Network of Expert Reviewers, Canadian Cancer Society.

Dr. Ramphal contributed as a member of the Study Committee, International Pleuropulmonary Blastoma Registry Treatment Protocol, Children's Hospitals and Clinics Of Minnesota; as the Chair of the "Adolescents and Young Adults with Cancer: Addressing the needs of a 'lost tribe'" Subcommittee and as a member of the Research Steering Committee, Pediatric Oncology Group of Ontario.

Dr. Simpson contributed as the Physician Lead for the Hematology Transition Program and as a member of the Pediatric Hematology/Oncology Fellowship Committee, CHEO.

# Infectious Diseases

The Division of Infectious Diseases (ID) provides consultations and ongoing care to infants, children and youth with infections, who are admitted to medical, surgical, critical care and neonatal intensive care units. Given our diverse population and the types of clinical programs at our hospital, our practice includes the care of children with infections related to primary and acquired immunodeficiencies, immunosuppressant therapies and global travel, in addition to routine childhood infections requiring secondary and tertiary care. There were 7 faculty members for a total of 6.0 FTE; however, Dr Brophy had an academic leave in 2013, supported by the Clinton Foundation to study HIV infection in Vietnam.

## Faculty

- Dr. Lindy Samson – Associate Professor (Division Chief)
- Dr. Chuck Hui – Associate Professor
- Dr. Jason Brophy – Assistant Professor
- Dr. Robert Slinger – Associate Professor (0.2 FTE)
- Dr. Nicole Le Saux – Associate Professor
- Dr. Anne Pham-Huy – Assistant Professor (0.8 FTE)
- Dr. Nisha Thampi – Assistant Professor

## Clinical Care and Patient Advocacy

The main emphasis of our clinical care is our inpatient consultation service, however we have specialized outpatient clinics in HIV, primary immunodeficiencies, TB and International adoption.

Clinically, we have seen an increase in the complexity of patients we see specifically around the needs of children with complicated infections and those with primary immune deficiencies. Our inpatient consultation numbers and total number of ambulatory clinic visits have remained relatively unchanged. In 2013, the total inpatient consults was 600, which translated into an average of 310 patient days per month while the total number of clinic visits was 2,207.

At present, one physician is designated to cover the inpatient service at any given time, taking evening call from Monday to Thursday during those weeks. During periods where patient intensity or acuity is increased or when there are significant hospital or community infectious diseases outbreaks, we have an assigned back-up person who helps with the inpatient service or with infection control/outbreak management issues. Despite having a subspecialty resident in our program, there are still several months of the year, when there are no house-staff on service. We provide telephone consultation to primary care physicians and specialists in the

## Infectious Diseases

region, Nunavut and Western Quebec. Divisional members also provide consultation services to public health units in Ottawa, Eastern Ontario and Western Quebec and work collaboratively with hospital, regional and provincial partners to develop and implement protocols for emerging pathogens.

The Interdisciplinary HIV program provides comprehensive care to children and youth living with HIV, prenatal and perinatal consultation for approximately 25 pregnant women living with HIV and their infants each year, assessment and long term follow-up of HIV exposed, uninfected infants of which approximately 230 are presently being followed.

The Division of Infectious Diseases advocates for:

- Refugee Health
- Housing and Health
- Poverty and Child/Youth Health
- Immunization Awareness and Uptake
- Antimicrobial Stewardship
- HIV

## Educational Activities

The Division of Infectious Diseases successfully implemented an antimicrobial stewardship program in the PICU during 2013. This was sponsored by the hospital as part of a Council of Academic Hospitals of Ontario ARTIC initiative. Each day an Infectious Diseases division member and designated pharmacist reviewed antimicrobial utilization of all children in the PICU with the PICU team.

Division members contributed countless hours to the supervision and teaching of medical students and residents during ID rotations and clinics at CHEO as well as the participation in Academic Half Day and OSCE's.

In addition, there is a subspecialty Training Program in Pediatric Infectious Diseases, which had 1 fellow in 2013/2014.

## Key Invited Lectures

### Dr. Jason Brophy

- Vietnam National Pediatrics Conference—Option B+ for Prevention of Mother to Child Transmission of HIV, and Transition of HIV+ Youth from Pediatric to Adult Care: What are the Challenges. Hanoi, Vietnam (2013).
- National Hospital for Tropical Disease Infectious Diseases Rounds—Update on HIV Cure Research. Hanoi, Vietnam (2013).



- National Hospital for Tropical Disease Infectious Diseases Rounds—Transition of HIV + Youth from Pediatric to Adult Care. Hanoi, Vietnam (2013).
- Vietnam Authority of HIV/AIDS Control, 5th National Scientific Conference on HIV/AIDS—Update on HIV Cure Research. Hanoi, Vietnam (2013).
- Special Invited IHPREG Lecture, 3rd Annual IHPREG (Interdisciplinary HIV Pregnancy Research Group) Conference—Love in the Time of HIV: Youth Sexual and Reproductive Health in the Context of HIV. Toronto, ON (2014).
- Invited Speaker, Ottawa Fertility Clinic—HIV, Pregnancy and Fertility—2014 Update. Ottawa, ON (2014).
- Invited Speaker, Ontario HIV Clinics Education Day—Transition of Youth from Pediatric to Adult Care: What Are the Challenges? Toronto, ON (2014).

#### **Dr. Charles Hui**

- “Caring for Kids New to Canada—Knowledge Mobilization to Improve Health Care for Immigrants and Refugees”: Canadian Association of Paediatric Health Centres webinar (2013).
- “Shoo Flu, go away—An Influenza Update”: 38th Annual Ottawa Pediatric Refresher Course. Ottawa, ON (2013).

#### **Dr. Nicole Le Saux**

- Management of Community acquired pneumonia—it just got easier! 38th Annual Pediatric Refresher course. Ottawa, ON (2013).
- New Concepts for Suspecting and Diagnosis Eye Infections: Queen’s University Department of Ophthalmology Grand Rounds. Kingston, ON (2013).
- Immunization Competencies Education Program (ICEP)—Canadian course—CPS.
- Adverse Events Following Immunization—12:50 to 13:35—Saturday, May 24, 2014, Westin Hotel—Ottawa, Ontario.
- Sharing the Experience in Pneumococcal Disease prevention Summit: Dubai, United Arab Emirates (3 talks).
- From Problem to Solution: Antimicrobial stewardship in combating antimicrobial Resistance, Jan 24, 2014.
- Pneumonia in Childhood: Diagnosis and Treatment, Jan 25, 2014.
- Clinical Case study: Pneumonia, Jan 25, 2014.
- City Wide Infectious Diseases Research in Progress Rounds: Focus on Vaccines and Antimicrobials, The Ottawa Hospital. Ottawa, ON (2014).

### Dr. Lindy Samson

- Faculty Workshop on Teaching and Evaluating the Health Advocate Role: University of Ottawa. Ottawa, ON (May 2014).
- Immunization Update: Pediatric Refresher Course, University of Ottawa, Department of Pediatrics. Ottawa, ON (2013).
- Perinatal HIV Infection: From Prevention to Possible Cure—Northern Ontario Pediatrics Conference 2013. Northern Ontario School of Medicine. Sudbury, ON (2013).
- What's Infectious in 2013: Immunizations and Beyond—Northern Ontario Pediatrics Conference 2013. Northern Ontario School of Medicine. Sudbury, ON (2013).
- Perinatal HIV Exposure and Infant Feeding Recommendations: How best can we support women living with HIV and their infants - Provincial Women and HIV/AIDS Initiative. Ministry of Health and Longterm Care Webinar (2013).

## Research Activities—Research Projects and Funding

The research unit saw growth in numbers of projects, successful grants and peer-reviewed publications and collaborations. There were 16 peer-reviewed publications in 2013.

The Division of Infectious Diseases IDEas Research Unit (IDEas RU) runs a cohesive and strategic research program with the support of the CHEO Research Institute (RI). The unit conducts studies emphasizing knowledge generation and translation focusing on, but not limited to pediatric infection prevention and control, antimicrobial stewardship, perinatal HIV infection, novel diagnostic tests, immunizations and respiratory infections in children.

Specific IDEas RU Themes are:

- Vaccination/Immunizations
- Primary and acquired immunodeficiencies/HIV
- Molecular diagnostics
- Health care associated infections
- New Canadians (immigrants, refugees, internationally adopted)
- Evidence-based health advocacy

## Research Funding

Assessing the impact of HIV/AIDS services on vulnerable groups in South Eastern Malawi: Women of child bearing age, children and older adults, **CIHR—Sodhi S (PI), Brophy J (co-investigator)**, 2013, \$100,000.

Improving the Transition Process for HIV-infected Adolescents in Canada, **CIHR Planning Grant, National funding—Brophy J (nominated PI), Samson L, Clark M (co-applicants)**, 2013, \$25,000.

Pediatric HIV Infection: Exploring Determinants of a Functional Cure, **CIHR Team Grant: Canadian Initiative for HIV Cure Research—Soudeyns H (PI), Brophy J (principal knowledge user), Samson L (principal applicant)**, 2013, \$1,722,150.

Residents as Leaders (RaLS): Evaluating program process, outcomes and impact, Medical Innovation Project—**2013 Department of Medicine, University of Ottawa—Co-PI: Samson L and Karpinski J**, 2013, \$4,975.

Impact of rotavirus immunization on acute gastroenteritis in Ontario, **Public Health Ontario—Le Saux N, et al.**, 2013.

Enhancing Early Postpartum Care for Mothers Living with HIV Across Ontario: Operationalizing Findings from the HIV Mothering Study, **CIHR Operating Grant: Knowledge to Action—Samson L, Brophy J, et al.**, 2013.

## Peer-Reviewed Publications

Blitz S, Baxter J, Raboud J, Walmsley S, Rachlis A, Smaill F, Ferenczy A, Coutlée F, Hankins C, Money D. for the Canadian HIV Women's HIV Study Group (**Drs. Samson L and Brophy J—study site Investigators**). Evaluation of HIV and HAART on the natural history of HPV infection and cervical cytopathology in HIV-positive and high risk HIV-negative women. *Journal of infectious Diseases*. 2013 May; **208**(3):454-462.

Hawkes M, Sivasivugha E, Ngigi S, Masumbuko C, **Brophy J**, & Kibendelwa Z. (2013). HIV and Religion in the Congo: A Mixed-Methods Study. *Current HIV Research*. **11**(3):246-253.

Carter A, Bourgeois S, O'Brien N, Abelsohn K, Tharao W, Greene S, et al (on behalf of CHIWOS Research Team, including **Brophy J**). (2013). Women-specific HIV/AIDS services: identifying and defining the components of holistic service delivery for women living with HIV/AIDS. *Journal of the International AIDS Society*. **16**(1), p. 17433.

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German G, Wang B, Bernard K, Stewart N, Chan F, Pacheco A, Wiebe D, Burdz T, **Slinger R**. *Staphylococcus Lugdunensis*: Low Prevalence and Clinical Significance in A Pediatric Microbiology Laboratory. *Pediatric Infectious Disease Journal*. 2013; **32**(1):87–89.

**Hui CPS** and Barozzino T. Caring for Kids New to Canada. *Paediatr Child Health*. 2013 Apr; **18**(4):179–180.

Barozzino T, **Hui CPS**. Caring for Kids New to Canada: Part II. *Paediatr Child Health*. 2013 Aug; **18**(7):349–50.

**Hui CPS**. Acute otitis externa. Canadian Paediatric Society. *Paediatr Child Health*. 2013; **18**(2):96–98.

Barrozino T and **Hui CPS** editors. Caring for Kids New to Canada/Les soins aux enfants neo-canadiens [Internet]. 1st ed. *Canadian Paediatric Society*. 2013.

Paes B, Mitchell I, Li A, Harimoto, T., Lanctôt KL and the CARESS Investigators. Respiratory related- hospitalizations following prophylaxis in the Canadian registry for palivizumab (2005–2012). *Clinical and Developmental Immunology*. Volume 2013:1–15. (**Dr. C. Hui**—CARESS investigator)

**Audcent T, MacDonnell H, Samson L**, Brenner J. Global child health education in Canadian paediatric residency programs. *Education for Health*. 2013 Aug; **26**(2):73–77.



## Administration and Other Contributions

Dr. Samson contributed as Division Chief; as a member of the Infectious Diseases Training Program Committee, University of Ottawa, Regional/LHIN & Provincial; as the Co-Chair of the Ontario Health Pandemic Influenza Plan Paediatric Working Group, MOHLTC; as the Co-Chair of the Canadian Perinatal HIV Surveillance Program: Steering Committee and as a member of the Executive Committee for the Canadian Paediatric/Perinatal AIDS Research Group.

Dr. Brophy contributed as a member of the National Committee to Advise on Tropical Medicine and Travel (CATMAT); as a CAIRE liaison representative for the National Advisory Committee on Immunization; as the Chair of the Canadian Paediatric and Perinatal AIDS Research Group (CPARG) and as a liaison member of the U.S. Department of Health & Human Services Panel on Pediatric Anti-retroviral Therapy and Management Guidelines Committee.

Dr. Hui contributed as a liaison member of the Canadian Paediatrics Society Infectious Diseases and Immunization Committee; as a member of the Royal College of Physicians and Surgeons, Infectious Diseases Subspecialty Committee as well as a member of Tropical Medicine and Travel (CATMAT).

Dr. Le Saux contributed as the Medical Director of the Infection Prevention and Control Program at CHEO; as the Chair of the Antimicrobial Stewardship committee; as an AMMI representative for Choose Wisely Canada and as a member of the Canadian Pediatric Society and Immunization Committee.

Dr. Pham-Huy contributed as a member of the Committee on Newborn Screening for Severe Combined Immunodeficiency (SCID) in Ontario; as a member of the National Advisory Committee on Immunization (NACI); as a liaison representation for the Association of Medical Microbiology and Infectious Diseases (AMMI) and as a liaison representative for the Canadian Association for Immunization Education and Research (CAIRE)

Dr. Slinger contributed as the Chair of the Microbiology Training Program Committee, University of Ottawa; as member of the Infectious Diseases Training Program Committee, University of Ottawa and as a member of the Medical Microbiology Nucleus Committee, RCPSC.



# Neonatology

The Division of Neonatology is primarily located at 2 sites—the Children’s Hospital of Eastern Ontario (CHEO) and The Ottawa Hospital General Campus. These are Level 3 units. In 2013/2014, there were 13 full-time staff neonatologists providing care at these units. During this time, there were 3,500 deliveries at The Ottawa Hospital, General Campus. Many of these were associated with high-risk pregnancies including those detected with fetal abnormalities in utero and mothers with significant medical problems, pregnancy-induced problems, or premature labour. The division also runs an Antenatal Program and Neonatal Follow up Program. In addition, there is a specific Neonatal Transport Program that transports sick neonates from the region to the Perinatal Centre.

While the division has a major commitment to clinical care, there is also a significant academic mandate. There is a strong educational component with a specific training program in Neonatology. There is also significant research activity. The division’s mission is to deliver regionally integrated state of the art care for newborns and their families and to strive for academic excellence in support of clinical service and teaching roles within the University of Ottawa.

Neonatal care is also provided at The Ottawa Hospital Civic Campus in a Level 2C unit. The two main physicians who provide care there report to the Department of Obstetrics and Gynaecology, with one cross appointed to the Department of Pediatrics (Dr. Merchant). These 3 units combined represent the Regional Perinatal Centre for Eastern Ontario and provide care to a total of 1,200 infants per year. The remainder of this report, however, will focus on the contributions from the Level 3 units at CHEO and TOH General, only.

## Faculty

### CHEO and TOH General Campus

#### Full-Time Physicians

- Dr. Thierry Lacaze – Full Professor (Division Chief)
- Dr. JoAnn Harrold – Associate Professor (Site Chief, CHEO and TOH General)
- Dr. Sarah L. Lawrence – Assistant Professor (Training Program Director)
- Dr. Thierry Daboval – Associate Professor
- Dr. Brigitte Lemyre – Associate Professor
- Dr. Nicole Rouvinez-Bouali – Assistant Professor
- Dr. Emanuela Ferretti – Associate Professor
- Dr. Erika Bariciak – Assistant Professor
- Dr. Gregory Moore – Assistant Professor

- Dr. Nadya Ben Fadel – Assistant Professor
- Dr. Stephanie Redpath – Assistant Professor
- Dr. Bernard Thébaud – Full Professor
- Dr. Jana Feberova – Assistant Professor

#### **Part-Time Physicians**

- Dr. Megan Doherty
- Dr. Sarah Waterston
- Dr. Tobey Audcent – Assistant Professor
- Dr. Harmeet Chawla – Assistant Professor
- Dr. Louise Murray – Assistant Professor
- Dr. Kristy Parker – Assistant Professor
- Dr. Anindita Tjahjadi – Assistant Professor
- Dr. Kirk Leifso

### **TOH Civic Campus**

#### **Full-Time Physicians**

- Dr. Pradeep Merchant – Assistant Professor (Site Chief)
- Dr. Jan Kotarba

#### **Part-Time Physicians**

- Dr. Aftab Sharif
- Dr. Elise Decotret
- Dr. Sunita Nayar-Kingswell
- Dr. Rosanna Tirado
- Dr. Irina Kirstman
- Dr. Elham Farhadi – Lecturer
- Dr. Sarah Waterston
- Dr. Manna Adegbite – Lecturer

# Clinical Care and Patient Advocacy

## NICU Care

The NICUs are directed by Dr Harold. State of the art NICU practices are delivered to approximately 40 patients every day in the two units at CHEO and TOH (General Campus). High volume and acuity translate into routine exposure to interventions such as high frequency oscillatory ventilation, nitric oxide, and cooling for hypoxic-ischemic encephalopathy (HIE). The catchment area for the region is approximately 15,000 deliveries per year (not including Western Quebec). The CHEO Neonatal Transport Program transports approximately 250 newborns annually with various conditions such as sepsis, respiratory distress, and complex congenital malformations. The busy surgical/cardiac NICU at CHEO provides care to a wide range of pre and postoperative surgical neonates - general thoracic and abdominal surgery; ENT; neurosurgery; cardiac catheterization and surgery.

## Neonatal Follow-up Clinic

The Neonatal Follow-up Clinic occurs at CHEO and is staffed by 6 physicians (3 neonatologists and 3 general pediatricians). It is directed by Dr Daboval. This clinic follows all infants born < 1,250 grams and infants with other risk factors. A total of 500 patient visits occurred in 3 MD ½-day clinics per week in 2013/2014. Infants are seen every 6 months up to 18 months and again at four years of age. They are screened for motor, cognitive, visual and hearing impairments with early referral to developmental and other specialists as necessary.

## Antenatal Clinic

The Ottawa Hospital, General Campus currently runs an antenatal consultation clinic every week for high risk pregnancies. The clinic provides counselling, education and support to couples and formulates postnatal management plans that take into account the multidisciplinary needs of the infants. Hospitalized high risk women are also counselled at the time of their admission and on a regular basis until delivery.

## Educational Activities

Members of the Division of Neonatology are involved in all aspects of teaching—undergraduate, postgraduate, including the Neonatology Training Program and CME.

Elective students work with a multidisciplinary team including an attending neonatologist, neonatal fellows, pediatric residents, nurses, a dietician, pharmacist and social worker. Students assist in the complex care of premature infants as well as full-term infants with issues such as perinatal asphyxia, jaundice, neonatal sepsis, congenital heart disease or major congenital malformations requiring surgical repair. They have opportunities to attend high-risk deliveries of preterm and term infants



and may also get a chance to attend a Neonatal Follow up Clinic at CHEO. In addition, the student has the opportunity to participate in the Neonatal Transport Program.

Rotations are available for residents from within the General Pediatrics Training Program and also from other programs and other institutions. There were 25 residents who rotated in 2013/2014. Residents participate fully in all clinical and educational activities of the division.

There is also a specific Training Program in Neonatology that is directed by Dr. Lawrence. There were 9 fellows in this program in 2013/2014. Fellows participate fully in all clinical activities, in the education of students and residents and to engage in research. They also have the opportunity to participate on several committees. The division can also support fellows in pursuing research opportunities in multiple fields including bronchopulmonary dysplasia, metabolic and genetic disorders, perinatal ethics, HIE and stem cell therapy. A research mentor is assigned to facilitate successful completion of this work.

## Key Invited Lectures

### Dr. Erika Bariciak

- Invited Speaker Canadian Association of Neonatal Nurses (CANN) Annual Meeting. Montreal, QC (2013).
- Invited Speaker Champlain Maternal and Neonatal Regional Program (CMNRP) 3rd Annual Conference. Ottawa, ON (2013).

### Dr. Nadya Ben Fadel

- Islamic Practice Surrounding Death: NICU nursing Bereavement Education Day, CHEO. Ottawa, ON (2013).
- Annual Resident Retreat - Invited speaker. Teaching and learning in residency. Calabogie, ON (2013).

### Dr. Thierry Daboval

- Communication with parents before the birth of an extremely premature infant: Applying theory to practice—Canadian Pediatric Society Annual Conference. Montreal, QC (2013).
- Teaching Ethics in Perinatal Medicine Residency. MedConference—Student's session. Florham Park, NJ (2013).
- Besoins développementaux des grands prématurés : Une autre perspective. Hôpital de Gatineau. Département de pédiatrie. Gatineau, QC (2013).

### Dr. Emanuela Ferretti

- Antenatal Consultation at limit of viability”: Multidisciplinary Ethic Workshop University of Ottawa. Ottawa, ON (2014).
- Following the Patient: The Key to Medical Care - Invited lecturer at The MedConference. NJ, USA (2013).
- « L’hypothermie contrôlée: prise en charge de l’encéphalopathie hypoxo-ischémique chez le nouveau-né » : Annual Visit of CMNRP at the Montfort Hospital. Ottawa, ON (2013).
- Unexpected Malformation at Birth: Multidisciplinary Ethic Workshop, University of Ottawa. Ottawa, ON (2013).
- Antenatal Consultation at the limit of viability: Multidisciplinary Ethic Workshop, University of Ottawa. Ottawa, ON (2014).

### Dr. Sarah Lawrence

- Invited Speaker at Risk Management Conference. Ottawa, ON (2014).

### Dr. Brigitte Lemyre

- Neonatal hypoglycemia: Pediatric Refresher. Ottawa, ON (2014).
- Respiratory distress and Neonatal abstinence syndrome: CMNRP visit. Hawkesbury, ON (2014).

### Dr. Gregory Moore

- Outcomes of Infants Born Extremely Premature – Champlain Maternal Newborn Regional Program, Annual Maternal Newborn Conference, Ottawa, (2014).
- Extremely Premature Infants—CHEO, Pediatric Grand Rounds. Ottawa, ON (2014).

### Dr. Bernard Thébaud

- Therapeutic potential of cell therapies for neonatal lung injury: Invited lecture, Cook General BioTechnology. Indianapolis, IN (2013).
- Lung development, injury and repair: Pediatric Seminar Series, University of Rochester. Rochester, NY (2013).
- Mesenchymal stromal cells and lung disease: culprit or savior? Seminar, Meakins-Christie Laboratories, McGill University. Montreal, QC (2013).
- Mesenchymal stem cell-derived therapies in bronchopulmonary dysplasia: Miami Neonatology 2013. Miami, FL (2013).

- Axonal guidance cues in lung development, injury and repair. Miami Neonatology 2013. Miami, FL (2013).
- To serve and protect: mesenchymal stromal cells in neonatal lung diseases. Pediatric Grand Rounds, Vermont Children's Hospital. Burlington (2013).
- Session chair & moderator, 6th International Conference on Neonatal and Childhood Pulmonary Vascular Disease. San Francisco, CA (2013).
- Therapeutic Potential of Stem and Lung Progenitor Cells to Prevent or Regenerate Lung Injury: Canadian Society for Transfusion Medicine CSTM/CBS/Héma-Québec Joint Conference 2013. Edmonton, AB (2013).
- Neonatal lung diseases: The 4th Shanghai Neonatal Forum. Shanghai, China (2013).
- How to make the lung grow: One Day on Neonatal Lung. Ancona (2013).
- Stem cell-based therapies for chronic lung disease of prematurity: it's in the cord. Jerry Elliot Memorial Lecturer, 34th Western Conference on Perinatal Research, American Academy of Pediatrics Section on Perinatal Pediatrics. Indian Wells, CA (2013).



### Research Activities–Research Projects and Funding

The research activities of the division are quite diverse with a predominant focus on clinical research although there is a major laboratory based aspect in the work of Dr Thébaud that is focused on stem cell research. The main areas of research include the following

- Neonatal Outcomes in relation to Maternal Morbidity; Extremely Premature Deliveries
- Neonatal Pain; Developmentally sensitive care in the NICU
- Neonatal Sepsis, Necrotizing Enterocolitis, Retinopathy of Prematurity
- Surfactant; Non-invasive Ventilation; Systematic Reviews; RCTs
- Lung development, Injury and Repair; Stem Cells; Cell-based Therapies; Lung Angiogenesis; Lung Hypoplasia and Pulmonary Hypertension
- Medical Education; Simulation
- Bioethics; Limits of Viability and Counselling; Decision Aids; Decision Coaching.
- Echography; Point of Care Ultrasound
- Health Service Delivery; Neonatal Transport

Members of the division were highly successful in the acquisition of funding, a summary of which is depicted below. There were a large number of presentations at scientific meetings locally, nationally and internationally. There were in excess of 50 peer-reviewed publications, a portion of which are included below.

### Research Funding

Best ABCs: Benefits and Effectiveness of Support Offered Through a Breastfeeding Clinic: A Randomized Controlled Trial. **Ministry of Health and Long Term Care, KT Grant**—PI: **Lacaze-Masmonteil T**. Co-PI: Walker M, Pound C, et al. 2014–2015, \$420,000.

Quality Infant Care Consortium (QulCC). **CHEO RI Clinical Research Capacity Building Award**—PI: **Lacaze-Masmonteil T**. Co-applicants: **Bariciak E, Chakraborty P, Cowan K, Daboval T, Ferretti E, Harrison D, Harrold J, Lemyre B, Moore G**. 2011–2015, \$140,000.

Maternal Omega-3 supplementation to reduce Bronchopulmonary Dysplasia (BPD) in very preterm infants: A randomized controlled Trial. **CIHR, RCT**—PI: Marc I. Co-PI: **Lacaze-Masmonteil T**, Lavoie P et al. 2014–2019 \$2,626,763.

Epidemiology, Risk Factors, and Characterization of Neonatal Visits to Ontario Emergency Departments – database. **Physicians' Services Incorporated (PSI)**—Co-PI: **Harrold J, Zemek R**. Co-applicants: Lacaze T, Sprague A, **Barrowman N, Moreau K**. 2013–2014, \$41,000.



Epidemiology, Risk factors, and Characterization of Neonatal Visits to Ontario Emergency Departments. **AHSC AFP Innovation Fund**—PI: **Harrold, J.** Co-applicants: **Zemek R, Lacaze-Masmonteil T, Moreau K, Sprague A, Barrowman N, Fell D, Langevin M.** 2013–2014, \$89,912.47.

Canadian Oxygen Trial (COT). **Canadian Institutes of Health Research (CIHR), NCT 00637169**—PI: Schmidt B. Co-applicants: Asztalos E, Roberts R, Whyte R, Bairam A, Chui A, Clarke M-C, **Harrold J**, Kumar M, Moddemann D, Peliowski A, Rabi J, Roukema H, Sauve R, Seshia M, Shah P. 2006–2014 (extended), \$3,884,860.

Quality Infant Care Consortium (QuICC). **CHEO RI Clinical Research Capacity Building Award**—PI: **Lacaze-Masmonteil T.** Co-applicants: **Bariciak E, Chakraborty P, Cowan K, Daboval T, Ferretti E, Harrison D, Harrold J, Lemyre B, Moore G.** 2011–2014, \$120,000 for 3 years.

A randomized, controlled, partially double-blinded, Phase 3, multi-center trial to determine if Curosurf reduces the duration of mechanical ventilation in infants 24+0 to 29+6 weeks gestational age. **CHAMO Academic Health Science Centers Innovation Fund**—PI: **Lemyre B.** 2012–2014, \$85,049.

Renin and aldosterone levels in the preterm neonate at risk of hypertension. **PSI Foundation, operating grant**—PI: **Bariciak E.** Co-applicants: **Lemyre D, Weiler G, Kent A.** 2011–2014, \$51,080.

Study of a Neonatal Intensive Care Unit Parent Decision Support Tool. **Phillips Medical Grant**—Co PIs: Frize M, **Bariciak E.** 2010–2014, \$480,000.00/yr.

Estimation of Obstetrical Outcomes Using Pattern Classification. **NSERC**—Co PIs: Frize M, **Bariciak E.** 2010–2015, \$125,000.

Quality appraisal, implementability assessment and pilot test of a novel guideline on perinatal care at the limit of viability. **CHEO Research Growth Award**—PI: **Moore G.** Co-applicants: **Lemyre B, Daboval T, Dunn S, Jones G.** 2014, \$29,999.55.

Rôle des interactions cellulaires avec la matrice dans la physiopathologie de l'épithélium intestinal humain. **Team Grant Program, FRN# CTP82942**—PI: Beaulieu JF. Co-I: **Ferretti E**, CIHR Team on the Digestive Epithelium. 2007–2014, \$4,311,562.

Multiple Courses of Antenatal Corticosteroids for preterm Birth Study: 5 years follow-up (MACS-5). ClinicalTrials.gov NCT00187382 **CIHR**—PI: Murphy K. Co-I: **Ferretti E.** 2007–2015, \$3,585,161.

Does an early booster session improve performance and retention of skills in neonatal resuscitation compared to a later booster: a simulation based randomized controlled trial. **TOHAMO Innovation Fund**—Co-PIs: Boet S, Nambyiah P. Co-applicants: Bould D, **Moore G**, Everett T, Abdulla K. 2013–2016, \$57,797.

## Neonatology

A randomized controlled trial: suprapubic aspiration versus urinary catheterization in the neonatal intensive care unit. **PSI Foundation Health Research Grant—** Co-PIs: Agarushi R, **Moore G**. Co-applicants: **Bariciak E**, Brophy J, Momoli F. 2012–2014, \$52,000 for 2 years.

The Development, Implementation, and Evaluation of Web-Based Learning Module: How to Interpret Neonatal Cranial Ultrasound. **Educational Initiative in Residency Education Grant, PGME Office, University of Ottawa—**PI: **Ben Fadel N**. 2013, \$16,000.

Improving quality of care during transport of sick neonates: A national collaborative partnership for outcome improvement and system enhancement. **CIHR Partnerships for Health System Improvement grant—**PI: Lee K-S, Co-Investigator: Redpath S. 2013, \$524,643 over 3 years.

Therapeutic potential of stem cells in lung injury. **CIHR Operating Grant—**PI: **Thébaud B**. 2013–2018, \$769,855.

Pre-clinical optimization of umbilical cord-derived perivascular cells for neonatal lung injury. **Stem Cell Network—**PI: **Thébaud B**. 2013–2014, \$96,772.

Experimental therapies to prevent pulmonary hypertension and promote lung vascular growth in congenital diaphragmatic hernia. **CIHR Operating Grant—**PI: **Thébaud B**. 2012–2015, \$308,444.

Role of angiogenesis during lung development, injury and repair. **CIHR Operating Grant (Renewal)—**PI: **Thébaud B**. 2009–2014, \$749,995.

## Peer-Reviewed Publications

**Harrold J**, Ali S, Oleszczuk M, **Lacaze-Masmonteil T**, Hartling L. Corticosteroids for the prevention of bronchopulmonary dysplasia in preterm infants: an overview of Cochrane reviews. *Evidence-Based Child Health: a Cochrane Review Journal*. 2013; 8:2063–75.

McNeil DA, Siever J, Tough S, Yee W, Rose MS, **Lacaze-Masmonteil T**. Hospital readmission of late preterm or term infants is not a factor influencing duration of predominant breastfeeding. *Arch Dis Child Fetal Neonatal Ed*. 2013; 98:F145–50.

Ali S, Hirschfeld AF, Mayer ML, Fortuno ES 3rd, Corbett N, Kaplan M, Wang S, Schneiderman J, Fjell CD, Yan J, Akhabir L, Aminuddin F, Marr N, **Lacaze-Masmonteil T**, Hegele RG, Becker A, Chan-Yeung M, Hancock RE, Kollmann TR, Daley D, Sandford AJ, Lavoie PM, Turvey SE. Functional genetic variation in NFKBIA and susceptibility to childhood asthma, bronchiolitis, and bronchopulmonary dysplasia. *J Immunol*. 2013;190:3949–58.

**Lacaze-Masmonteil T**, Leis A, Lauriol E, Normandeau J, Moreau D, Bouchard L, Vaillancourt C. Perception of the linguistic and cultural context minority on the lived experiences of pregnancy. *Can J Public Health*. 2013; 104:S65-70.

Sprague A, Dunn S, Fell D, **Harrold J**, Walker M, Kelly S, Smith G. Measuring Quality in Maternal-Newborn Care: Developing a Clinical Dashboard. *JOGC*. 2013 Jan; **35**(1):29-38.

Dunn S, Sprague A, Fell D, Dy J, **Harrold J**, Lamontagne B, Walker M. The Use of a Quality Indicator to Reduce Elective Repeat Cesarean Section For Low-Risk Women Before 39 Weeks Gestation: The Eastern Ontario Experience. *JOGC*. 2013 Apr; **35**(4):306-16.

Schmidt B, Whyte RK, Asztalos EV, Moddemann D, Poets C, Rabi Y, Solimano A, Roberts RS, Canadian Oxygen Trial (COT) Group. Effects of targeting higher vs. lower arterial oxygen saturations on death or disability in extremely preterm infants: a randomized clinical trial. *JAMA*. 2013 May 22; **309**(20):2111-20. (**Harrold J** named collaborator)

Ward T, Spencer W, Davis L, **Harrold J**, **Mack D**, Altosaar I. Ingested soluble CD14 from milk is transferred intact into the blood of newborn rats. *Pediatric Research*. 2013 Nov.

**Harrold J**, Ali S, Oleszczuk M, **Lacaze-Masmonteil T**, Hartling L. Corticosteroids for the prevention or treatment of bronchopulmonary dysplasia (BPD) in preterm infants: an overview of Cochrane reviews. *Evid.-Based Child Health*. 2013 Nov; 8:2063-2075.

Wang D, Aubertin C, **Barrowman N**, **Moreau K**, Dunn S, **Harrold J**. Examining the Effects of a Targeted Noise Reduction Program in a Neonatal Intensive Care Unit. *Arch Dis Child Fetal Neonatal Ed*. 2013 Dec.

**Moore G**, **Lemyre B**, **Barrowman N**, **Daboval T**. Neurodevelopmental outcomes of 22-25 wks GA infants at  $\geq 2$  years: a meta-analysis. *JAMA Pediatrics*. 2013; **167**(10):967-74

Kirpalani H, Millar D, **Lemyre B**, Yoder BA, Chiu A, Roberts RS. A trial to compare non-invasive ventilation strategies in preterm infants. *NEJM* 2013 Aug 15; **369**(7):611-20.

**Moore G**, Binepal N, **Lemyre B**, **Daboval T**, Leduc S, Dunn S. Systematic Review and Appraisal of International Guidelines on Perinatal Care at the Limit of Viability. *PIRPC // UROP*. 2013-14. <http://hdl.handle.net/10393/30864>.

Molgat-Seon Y, **Daboval Y**, Chou S, Jay O. Accidental overheating of a newborn under an infant radiant warmer: a lesson for future use. *Journal of Perinatology*. 2013; 33:738-739.

**Daboval T**, **Moore G**, **Ferretti E**. How we teach ethics during a Canadian Neonatal Perinatal Medicine residency: An interactive experience. *Medical Teacher*. 2013; **35**(3):194-200.

**Moore G, Binopal N, Lemyre B, Daboval T, Leduc S, Dunn S.** Systematic review and appraisal of international guidelines on Perinatal Care at the Limit of Viability. *PIRPC//UROP*. 2013-14. <http://hdl.handle.net/10393/30864>.

Perron N, Tremblay E, **Ferretti E**, Babakissa C, Seidman EG, Levy E, Ménard D, Beaulieu JF. Deleterious effects of indomethacin in the mid-gestation human intestine. *Genomics*. 2013; **101**(3):171-177.

**Daboval T, Moore G, Ferretti E.** Ethics education during a Canadian Neonatal Perinatal Medicine residency: An interactive experience. *Medical Teacher*. 2013; **35**(3):194-200.

Aszlatos EV, Murphy KE, Hannah ME et al for the MACS Collaborative Group (Including **Ferretti E**). Multiple Courses of Antenatal Corticosteroids for Preterm Birth Study: outcomes in Children at 5 Years of Age (MACS-5). *JAMA Pediatr*. 2013; **167**(12):1102-1110.

Jolin-Dahel K, **Ferretti E**, Montiveros C, Grenon R, Barrowman N, Jimenez-Rivera C. Parenteral Nutrition in Neonates: Where Lays the problem? *Gastroenterology Research and Practice*. 2013; Vol. 2013, Article ID 163632, 6 pages.

Frize M, **Bariciak E**, Gilchrist J. PPADS: Physician-PARENT Decision-Support for Neonatal Intensive Care. *Stud Health Technol Inform*. 2013; 192:23-7.

Frize M, **Bariciak E**, Gilchrist J. PPADS: Physician-PARENT Decision-Support for Neonatal Intensive Care. Proceedings of the 14th World Congress on Medical and Health Informatics (Medinfo) Meeting in Copenhagen, Denmark, 2013 Aug 20-23; 192:23-27.

Frize M, Nur R, **Bariciak E**, Herry C. Infrared Imaging and Classification of Neonates with Necrotising Enterocolitis. World Congress on Medical Physics and Biomedical Engineering, Beijing, China, IFMBE Proceedings. 2013; 39:1309-1312.

**Daboval T, Moore GP, Rohde K, Moreau K, Ferretti E.** Teaching ethics in Neonatal-Perinatal Medicine: What is happening in Canada? *Paediatrics and Child Health*. 2014; **19**(1):e6-e10.

**Moore GP, Lemyre B, Barrowman N, Daboval T.** Neurodevelopmental outcomes at 4-8 years of children born at 22-25 weeks gestational age: a meta-analysis. *JAMA Pediatrics*. 2013; **167**(10):967-74

**Moore GP, Roberts H, Maharajh G, Lai L.** Incomplete double aortic arch and window patent ductus arteriosus in CHARGE syndrome patient: a case report and review of the literature. *J Med Cases*. 2013; **4**(5):333-339.  
(<http://www.journalmc.org/index.php/JMC/article/view/1047>)



Vadivel A, Alphonse RS, Collins JJ, van Haaften T, O'Reilly M, Eaton F, **Thébaud B**. The axonal guidance cue Semaphorin 3C contributes to alveolar growth and repair. *PLoS One*. 2013 Jun 20; **8**(6):e67225.

Pierro M, Ionescu L, Montemurro T, Vadivel A, Weissmann G, Oudit G, Emery D, Bodiga S, Eaton F, Péault B, Mosca F, Lazzari L, **Thébaud B**. Short-term, long-term and paracrine effect of human umbilical cord-derived stem cells in lung injury prevention and repair in experimental bronchopulmonary dysplasia. *Thorax*. 2013 May; **68**(5):475–84.

O'Reilly M, **Thébaud B**. The promise of stem cells in bronchopulmonary dysplasia. *Sem Perinatol*. 2013 Apr; **37**(2):79–84.

O'Reilly M, **Thébaud B**. Using cell-based strategies to break the link between bronchopulmonary dysplasia and the development of chronic lung disease in later life. *Pulm Med*. 2013; 2013:874161.

## Administration and Other Contributions

All division members contributed to a very large number of committees locally, both at CHEO and at the University of Ottawa, and to a very significant number of organizations nationally and internationally.

Dr. Lacaze-Masmonteil contributed as the Division Chief; as the Scientific Director of the Clinical Research Unit at CHEO RI; as the Regional Director, Newborn (Champlain Region) as well as the Program Director, Knowledge to Practice, CHEO RI.

Dr. Harrold contributed as the Medical Director for the CHEO Neonatal Transport Team; as a member of the Canadian Association of Paediatric Health Centres—Transport Systems Practitioner Profile Working Group, CAPHC, Canada, as well as the Site Chief, Neonatology at CHEO.

Dr. Lemyre contributed as a member of the Neonatal Care Committee, the Perinatal Care Committee and the Quality Assurance Committee at The Ottawa Hospital as well as the Neonatology Site Chief at The Ottawa Hospital, General Campus.

Dr. Lawrence contributed as the Program Director for the Neonatal/Perinatal Medicine Fellowship Program (University of Ottawa); as the Neonatal Morbidity and Mortality Rounds Coordinator as well as a member of the CMNRP Family Advisory Committee.

Dr. Daboval contributed as the Medical Director of the Neonatal Follow-up Clinic.

Dr. Bariciak contributed as the CHEO Neonatal Mortality Rounds Coordinator and as a member of the Department of Pediatrics Postgraduate and Undergraduate Medical Education Committees

## Neonatology

Dr. Moore contributed as a member of the Department of Pediatrics Finance Committee; as a member of the Residency Training Committee, University of Ottawa Neonatal-Perinatal Medicine Program and as the Interim Program Director, University of Ottawa Neonatal-Perinatal Medicine Program.

Dr. Redpath contributed as the Medical Director of Neonatal Transport; as a member of the CNTN Steering Committee; as a member of the Maternal Child Transport Advisory Committee; as a member of the Neonatal-Perinatal Medicine Residency Training Committee as well as a member of the CaRMS IMG Selection Committee.

Dr. Thébaud contributed as a member of the Steering Committee for Lung Disease, International Society for Cellular Therapy; as a member of the Institute Advisory Board, CIHR Institute of Circulatory and Respiratory Health and as a Grant reviewer, National Institutes of Health.

Dr. Feberova contributed as a member of the PCMCH (The Provincial Council for Maternal and Child Health) Neonatal Follow-up Clinic workgroup, and has contributed to the REDCap NICU guidelines maintenance and updates.

# Nephrology

The Division of Nephrology provides comprehensive care to children and youth with various types of kidney diseases. We are committed to providing excellent, up-to-date, multidisciplinary care for children with acute and chronic kidney diseases and arterial hypertension. In 2013/2014, there were 4 full-time and 2 part-time physicians who provided clinical care and services to nephrology patients at CHEO. Our main area of focus is comprehensive care of children with acute and chronic kidney disease involving conservative medical therapy, renal replacement therapy (hemodialysis, peritoneal dialysis, plasma exchange) and follow-up post kidney transplantation.

## Faculty

### Full-Time Physicians

- Dr. Janusz Feber – Full Professor (Division Chief)
- Dr. Jennifer Vethamuthu – Assistant Professor
- Dr. Gabrielle Weiler – Assistant Professor (0.8 FTE)
- Dr. Pavel Geier – Associate Professor

### Part-Time Physicians

- Dr. Vassant Dabee – Assistant Professor
- Dr. Anne Tsampalieros – Assistant Professor

## Clinical Care and Patient Advocacy

The Division of Nephrology manages all common congenital and acquired kidney diseases in children and youth through a wide range of programs. We provide a full range of renal replacement therapy with the exception of kidney transplantation surgery, although we do provide follow-up care for post-kidney transplantation children.

This past year, we completed 2,748 outpatient visits (1,763 patients) and 129 inpatient consult visits. In addition, we performed 796 hemodialysis sessions (6 chronic patients), plus 19 acute hemodialysis sessions (4 acute patients) and 23 peritoneal dialysis sessions (1 patient). Further to Nephrology specific care, we also care for children with primary and secondary arterial hypertension. There were an additional 253 24 h BP monitoring sessions (155 patients).

The division is committed to advocating for individual patients with kidney disease and/or arterial hypertension as part of our routine clinical work. The division has become a strong advocate for an improved transitioning process to adult care. In order to facilitate transitioning of our patients to our adult colleagues, a Nephrology Transitioning Task Force (Dr. Vethamuthu, Dr. Weiler) has been created.

We strive to educate our patients and their families in order to maintain cohesiveness with the entire process of their care, while ensuring their active involvement.

## Educational Activities

The division provided clinical rotations to 19 students and 17 residents in 2013/2014. The clinical service consists of both ambulatory and inpatient components with several new consultations per week in each area. This provides residents with the opportunity to be exposed to the full spectrum of renal disease in children up to 18 years of age.

The division also has a subspecialty Training Program in Pediatric Nephrology, which admitted 2 fellows in 2013/2014. This program is currently led by Dr. Jennifer Vethamuthu.

Throughout the residency program, tutorials are provided in basic science as well as comprehensive reviews of various pediatric nephrology topics being undertaken.

The resident is expected to take part in critical reviews of the literature and present various topics at rounds and at journal clubs. There is also the opportunity for the fellow to attend biopsy rounds and conjoint rounds with urology and radiology, along with the opportunity to attend rounds at The Ottawa Hospital, Riverside campus.

Faculty members of the Division of Nephrology contribute greatly to the teachings of all medical students and residents. This includes Grand Rounds, Resident Research day participation (judge), lectures and involvement in the pediatric OSCE's. A total of in excess of 200 hours of direct teaching time was provided in 2013/2014, not including teaching in the context of clinical care.

## Key Invited Lectures

### Dr. Janusz Feber

- Changes in Pediatrics in the last 20 years—a nephrologist view: 10th Slovak pediatric congress with international participation. Bratislava, Slovakia (2013).

### Dr. Anne Tsampalieros

- 38th Annual Pediatric Refresher Course (Approach to Hematuria & Proteinuria). Ottawa, ON (2013).

### Dr. Gabrielle Weiler

- 2 vessel cord & antenatal hydronephrosis: 12th Annual Pediatric Medicine Update. Ottawa ON (2014).
- Ear pits & antenatal hydronephrosis—screening snappers: 25th Annual Pediatrics Refresher Course. Ottawa, ON (2013).



## Research Activities—Research Projects and Funding

The research activities of the division are focused on bone disease, arterial hypertension and complications of post kidney transplant. The division published 14 manuscripts in peer review journals in 2013. We have also actively participated at international conferences with more than 5 oral/poster presentations. Members of our division are active members of editorial boards of international journals in the field of pediatric nephrology and are sought after as peer reviewers for major pediatric journals. We continue to participate in national and international multi-centre studies and enroll patients into international registries such as the North American Pediatric Renal Trials and Collaborative Studies (NAPRTCS) database. Our team members are actively involved in several regional and hospital affiliated committees.

Specific areas of research include, but are not limited to:

- Bone disease in children with nephrotic syndrome.
- Post kidney transplantation as well as the complications surrounding chronic kidney disease and arterial hypertension.
- Vesicoureteral reflux (VUR).
- Anemia in chronic kidney disease (CKD) and studies of renal transplantation.
- Developing teaching modules on peritoneal dialysis for the trainees.
- Research training focus on Health Educators' Scholar program (HESP).

### Research Funding

STeroid Induced Osteoporosis in Pediatric Population (STOPP), **CIHR grant**, Extension of the "STeroid induced Osteoporosis in the Pediatric Population—Canadian Incidence Study (STOPP) to allow for 4 more years of follow-up. **Ward L** (PI), **Feber J** (co-investigator and lead consultant for nephrology). 2009, \$1,211,835

RENAL HIT study—Renin and Aldosterone Levels in the Preterm Neonate At Risk for Hypertension), **PSI (Physician Services Incorporated)—Bariciak E** (PI), **Weiler G**. 2013–2015, \$51,000.

Implementation and Evaluation of a Pediatric Hospital-Based Family Decision Service, **CIHR Operating Grant—Lawson M** (PI), **Feber J** (Co-Investigator). 2012–2014, \$197,579.

Reticulocyte Hemoglobin Equivalent (RetHe) and assessment of iron deficiency in pediatric CKD patients, **PALM Academic Enrichment Fund—\$1000** for 1 year, **Tsampalieros A** (PI), **Feber J** (co-PI). 2012–2013, \$1000.

Obstructive Sleep Apnea and Hypertension in Children with Chronic Kidney Disease, **CHAMO Innovation Fund—Tsampalieros A, Feber J**. 2013–2015, \$99,041.84.

Ontario Graduate Studies Scholarship, **Tsampalieros A**. 2014–2015, \$15,000.

## Peer-Reviewed Publications

Samuel S, Morgan CJ, Bitzan M, Mammen C, Dart AB, Manns BJ, Alexander RT, Erickson RL, Grisaru S, Wade AW, Blydt-Hansen T, **Feber J**, Arora S, Licht C, Zappitelli M. Substantial practice variation exists in the management of childhood nephrotic syndrome. *Pediatr Nephrol*. 2013; 28:2289–2298.

Zuijdwijk C, **Feber J**, Murnaghan O, Nakhla M. Detection of hypertension and prehypertension in paediatric patients with type 1 diabetes using a simple blood pressure table. *Paediatr Child Health*. 2013; 18:461–464.

Niemirska A, Litwin M, **Feber J**, Jurkiewicz E. Blood pressure rhythmicity and visceral fat in children with hypertension. *Hypertension*. 2013;62:782–788.

Zuijdwijk C, **Feber J**, Murnaghan O, Nakhla M. Detection of hypertension and prehypertension in paediatric patients with type 1 diabetes using a simple blood pressure table. *Paediatric Child Health*. 2013; 18:461–464.

Phan V, Blydt-Hansen T, **Feber J**, Alos N, Arora S, Atkinson S, Bell L, Clarson C, Couch R, Cummings EA, Filler G, Grant RM, Grimmer J, Hebert D, Lentle B, Ma J, Matzinger M, Midgley J, Pinsk M, Rodd C, Shenouda N, Stein R, Stephure D, Taback S, Williams K, Rauch F, Siminoski K, Ward LM, **the Canadian STOPP Consortium**. Skeletal findings in the first 12 months following initiation of glucocorticoid therapy for pediatric nephrotic syndrome. *Osteoporos Int*. 2013; 1–11.

Suláková T, **Feber J**. Should mean arterial pressure be included in the definition of ambulatory hypertension in children? *Pediatr Nephrol*. 2013; 28:1105–1112.

Siminoski K, Lee K-C, Abish S, Alos N, Bell L, Blydt-Hansen T, Couch R, Cummings EA, Ellsworth J, **Feber J**, Fernandez CV, Halton J, Huber AM, Israels S, **Jurencak R**, Lang B, Laverdière C, LeBlanc C, Lewis V, Midgley J, Miettunen PM, Oen K, Phan V, Pinsk M, Rauch F, Rodd C, **Roth J**, Saint-Cyr C, Scuccimarri R, Stephure D, Taback S, Wilson B, Ward LM, Canadian STOPP Consortium National Pediatric Bone Health Working Group. The development of bone mineral lateralization in the arms. *Osteoporos Int*. 2013; 24:999–1006.

Cameron J-CF, Kennedy D, **Feber J**, Wong E, **Geier P**, Vaillancourt R. Pretreatment of infant formula with sodium polystyrene sulfonate: focus on optimal amount and contact time. *Paediatr Drugs*. 2013; 15:43–48.

Spatenka J, Janda J, Krolupper J, Dusek J, **Feber J**, Burkert J, Mixa V, Seeman T. 30 let programu transplantace ledvin v Motole (30 years of kidney transplantation in children and adolescents in Czech Republic. *Postgradualni medicina*. 2013; 15:59–63.

**Geier P, Feber J**. New aspects of diagnosing and treating urinary tract infections in infants and toddlers. *Pediatric pro Praxi*. 2013; 14: 296–297.

**Tsampalieros A**, Griffin L, Terpstra AM, Kalkwarf HJ, Shults J, Foster BJ, Zemel BS, Foerster DL, Leonard MB. "Changes in DXA and Quantitative CT Measures of Musculoskeletal Outcomes Following Pediatric Renal Transplantation" *Am J Transplant*. 2014 Jan; **14**(1):124-32.

**Tsampalieros A**, Lam CK, Spencer JC, Thayu M, Shults J, Zemel BS, Herskovitz RM, Baldassano RN, Leonard MB. "Long-Term Inflammation and Glucocorticoid Therapy Impair Skeletal Modeling During Growth in Childhood Crohn Disease." *J Clin Endocrinol Metab*. 2013 Aug; **98**(8):3438-45.

Cameron JC, Kennedy D, **Feber J**, Wong E, **Geier P**, Vaillancourt R. Pretreatment of infant formula with sodium polystyrene sulfonate: focus on optimal amount and contact time. *Paediatr Drugs*. 2013; 15:43-48.

**Geier P**, **Feber J**. New aspects of diagnosing and treating urinary tract infections in infants and toddlers. *Pediatr. Praxi*. 2013; 14:296-297.

## Administration and Other Contributions

Dr. Feber contributed as the Division Chief; as a member of the Champlain LHIN Regional Renal Program Steering Committee (Dialysis activity in Eastern Ontario); as a member of the Canadian Childhood Nephrotic Syndrome Project (CHILDNEPH) Advisory Committee as well as a member of the Canadian Hypertension Education Program (CHEP) – Pediatric Committee for Canadian guidelines on the diagnosis and treatment of children with hypertension.

Dr. Geier contributed as the Nephrology physician lead for EPIC at CHEO.

Dr. Weiler contributed as a member of the CaRMS IMG Selection Committee; as a member of the CSN Education Committee and well as a member of the Undergraduate Medical Education Committee (responsible for the pediatric ambulatory rotation).

Dr. Vethamuthu contributed as the Program Director for Pediatric Nephrology; as a Accreditation Committee member (one of two physician leads) and as a member of the Royal College of Physicians and Surgeons Exam Board for Nephrology.



## Neurology

The Division of Neurology provides neurological care for the children of our region, with a focus on general neurology but with specialized clinics in epilepsy, sleep, white matter disorders, movement disorders, neuromuscular disorders and Rett syndrome.

There is a Royal College accredited program in Pediatric Neurology and the division is also involved in education for pediatric, adult neurology and rehabilitation residents.

We have an active research program with ongoing engagement with research networks nationally and internationally and strive to bring evidence-based care to our patients.

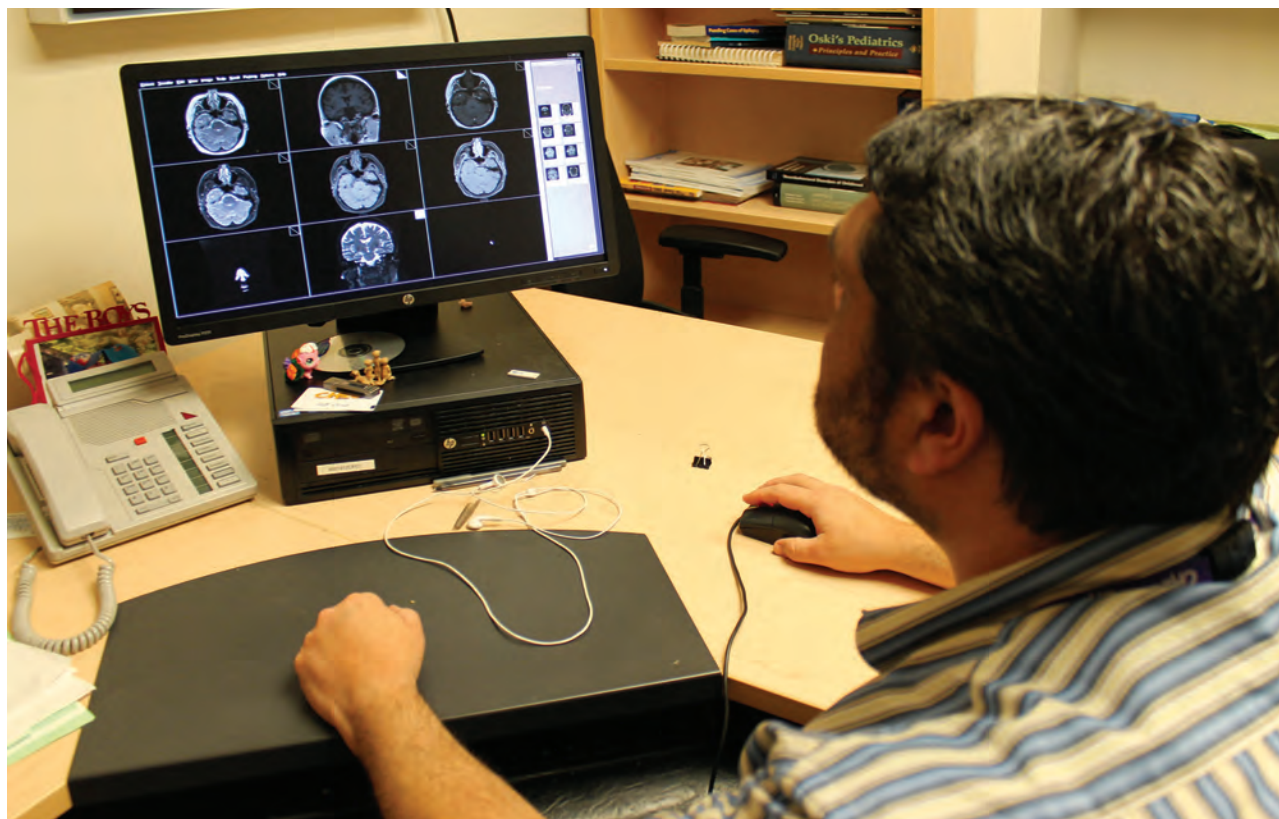
### Faculty

- Dr. Sharon Whiting – Associate Professor (Division Chief)
- Dr. Asif Doja – Assistant Professor
- Dr. Hugh McMillan – Assistant Professor (Training Program Director)
- Dr. Daniela Pohl – Associate Professor
- Dr. Erick Sell – Assistant Professor
- Dr. Sunita Venkateswaran – Assistant Professor
- Dr. Peter Humphreys – Full Professor (0.4 FTE)
- Dr. Daniel Keene – Associate Professor (0.1 FTE)

### Clinical Care and Patient Advocacy

The division provides in-patient and outpatient consultation services to children with general neurological complaints and with complex neurological disorders. State-of-the-art diagnostic measures and management are provided for patients presenting with developmental delay, epilepsy, movement disorders, cerebral palsy, neuromuscular diseases, stroke, demyelinating disorders, neurogenetic and neurometabolic disorders and fetal neurology. There were over 400 consultations and direct neurology admissions on the inpatient CTUs, and over 4,500 ambulatory visits in 2013/2014. There are usually 23 MD ½ day clinics per week. In addition, there is an epilepsy monitoring unit with several admissions per year. Also, there are several laboratory procedures requiring reporting including EEG, EMG and nerve evoked potentials. These procedures and reporting include many hours per week of MD input. There were in excess of 500 such procedures in 2013/2014.

Division members engage in a number of areas of advocacy. Dr. Whiting, is involved in advocacy for epilepsy at a national and international level. Dr. Sell frequently lectures to the Ontario lay epilepsy organizations. Dr. Doja is involved with the Tourette society. Dr. McMillan works with the Muscular Dystrophy Association and Dr. Humphreys works closely with the Rett Society.



## Educational Activities

The Division of Neurology Residency Program has very strong links with the Adult Neurology Residency Training Program (at The Ottawa Hospital, Civic and General campuses), The University of Ottawa Eye Institute (neuroophthalmology) as well as the Ottawa Children's Treatment Center (OCTC) (developmental pediatrics). Our centre also offers Residents the unique opportunity to participate in subspecialty clinics in Nunavut (Qikiqtani General Hospital) and care for patients in the Rett syndrome clinic. Residents have the opportunity to complete community neurology rotations if interested. In 2013/2014, there were 2 residents in the program.

Neurology residents and fellows receive a balanced exposure to pediatric neurology inpatient, outpatient and emergency room consults, and are expected to run one half-day, longitudinal clinic each week in order to understand the evolution of neurological disease in children and adolescents over time.



## Neurology

Mandatory clinical rotations include:

- EEG/epilepsy,
- Neuropathology,
- Neuro-ophthamology,
- Neuromuscular/EMG,
- Research,
- Pediatric neurology ward junior consultant,
- Headache preceptorship (with community neurologist),
- Neuroradiology
- Pediatric neurology ward senior consultant.
- Elective

The division also contributed to education in a very broad way and this was substantial at all levels in 2013/2014. The division provided clinical rotations to 14 students and 22 residents, including those from other institutions. This opportunity afforded rotators a very complete exposure to clinical pediatric neurology, including procedures, and an important exposure to point of care MSK US. Rotators also received the opportunity for hands on teaching of the pediatric neurology examination.

Division members also contributed to case-based learning, pre-clerkship seminars and to residents' protected teaching time. This time commitment was quite considerable in 2013/2014 with all faculty members contributing to both undergraduate and postgraduate education. This enormous contribution to teaching exceeded a total of 300 hours of classroom time, not including time in direct clinical supervision, or in teaching preparation. Significant contributions were also made to OSCEs and to the CaRMS matching process.

## Research Activities—Research Projects and Funding

The division has an active program of clinical research in epilepsy, neuromuscular disease, Rett's syndrome, demyelinating disease and movement disorders. We additionally have close links to the neurogenetics program at CHEO and to the basic scientists at the CHEO Research Institute. There is also active research in medical education.

The division also participates in a large number of international, multicentre studies focusing on—novel treatments for epilepsy; quality of life in epilepsy; the causes and treatment of pediatric stroke; pediatric demyelinating disease and MS; therapy in Duchenne muscular dystrophy; Outcomes in Guillain-Barre syndrome.

## Research Funding

Use of the Ketogenic Diet as a Treatment for Children with Epilepsy and Its Impact on Health Service Utilization in Ontario, **Ontario Brain Institute—Whiting S.** 2012–2013, \$37,700.30.

Provincial strategy for Epilepsy Ontario Brain Institute Neuropsychological outcome and epilepsy related quality of life in children with Encephalopathy associated with Electrical Status Epilepticus of Sleep (ESES)—Ramachandran R (PI), **Whiting S.** 2013, \$50,000.

Safety and efficacy of outpatient initiation of the ketogenic diet: increasing accessibility and reducing wait times in the Province of Ontario—Ramachandran R (PI), **Whiting S.** 2013, \$50,000.

Whole Body Vibration Therapy (WBVT) in Boys with Duchenne Muscular Dystrophy, **CHEO Research Institute—McMillan HJ (PI), Ward L.** 2013, \$30,000.

Stacking Exercises Attenuate the Decline in Forced Vital Capacity and Sick Time (STEADFAST), **Jesse's Journey—Katz S, McMillan HJ.** 2013, \$299,996.

Prospective Study of the Clinical Epidemiology, Pathobiology and Neuroimaging Features of Canadian Children with Clinically Isolated Demyelinating Syndrome, **Multiple Sclerosis Scientific Research Foundation—Pohl D.** 2004–ongoing, \$51,719.

Development, Implementation and Dissemination of a Standardized Approach to the Care of Paediatric Multiple Sclerosis: A National Consensus Guideline of Management Strategies including Treatment of Acute Relapses, Immunomodulation and Escalation Therapy to Increase Patient Safety and Prevent Early-Onset Neurological Disability, **CIHR—Pohl D.** 2012–ongoing, \$199,080.

Enhanced physical activity in children with epilepsy: Developing evidence of impacts on health, functioning, psychosocial well-being and quality of life, **CHAMO/CHEO RI—Pohl D.** 2012–ongoing, \$71,488.

Phase 2: The Clinical-Demographic, Epidemiology, Pathobiology, Neuroimaging Features and Outcome of Acute Demyelination in Canadian Children". **Pohl D.** 2013–ongoing.

Assessment and treatment of aggression in children with disruptive behaviour disorders: Development of an educational curriculum for residency education, **Sick Kids Foundation and Royal Bank Canada—Pringsheim T, Gorman D, Doja A, Cooke L, Millette J.** 2013–2016, \$114,000.

## Peer-Reviewed Publications

**McMillan HJ,** Michaud J. Limb girdle muscular dystrophy type 2I mimicking juvenile polymyositis. *Can J Neurol Sci.* 2013; **40**(6):875–77.

**Dyment DA, Sell E**, Vanstone MR, Smith AC, Garandeau D, Garcia V, Carpentier S, Le Trionnaire E, Sabourdy F, Beaulieu C, Schwartzentruber JA, **McMillan HJ, FORGE Canada Consortium**, Majewski J, **Bulman DE**, Levade T, **Boycott KM**. Evidence for clinical, genetic and biochemical variability in spinal muscular atrophy with progressive myoclonic epilepsy. *Clinical Genetics*. 2014 Dec; **86**(6):558-63.

Korngut L, Campbell C, Johnston M, Bernstead T, Genge A, **Mackenzie A, McCormick A**, Biggar D, Bourque P, Briemberg H, O'Connell C, Dojeiji S, Dooley J, Grant I, Hogan G, Johnston W, Katzberg H, Mah JK, McAdam L, **McMillan HJ**, Melanson M, Selby K, Shoesmith C, Smith G, Venance SL, Wee J, on behalf of CNDR Investigator network. The CNDR: Collaborating to Translate New Therapies for Canadians. *Can J Neurol Sci*. 2013 Sept; **40**(5):698-704.

Marcadier JL, Smith AM, **Pohl D**, Schwartzentruber J, **Al-Dirbashi OY**, Majewski J, Ferdinandusse S, Wanders RJ, **Bulman DE, Boycott KM, Chakraborty P, Geraghty MT**. Mutations in ALDH6A1 encoding methylmalonate semialdehyde dehydrogenase are associated with dysmyelination and transient methylmalonic aciduria. *Orphanet J Rare Dis*. 2013 Jul 9; **8**(1):98.

Tenembaum SN, Banwell B, Pohl D, Krupp LB, Boyko A, Meinel M, Lehr L, Rocak S, Cantogno EV, Moraga MS, Ghezzi A; REPLAY Study Group. Subcutaneous interferon Beta-1a in pediatric multiple sclerosis: a retrospective study. *J Child Neurol*. 2013 Jul; **28**(7):849-56.

Van Haren K, Tomooka BH, Kidd BA, Banwell B, Bar-Or A, Chitnis T, Tenembaum SN, **Pohl D**, Rostasy K, Dale RC, O'Connor KC, Hafler DA, Steinman L, Robinson WH. Serum autoantibodies to myelin peptides distinguish acute disseminated encephalomyelitis from relapsing- remitting multiple sclerosis. *Mult Scler*. 2013 Nov; **19**(13):1726-33.

Dyment D, **Sell E**, Vanstone M, Smith A, Garandeau D, Garcia V, Carpentier S, Le Trionnaire E, Sabourdy F, Beaulieu C, Schwartzentruber J, **McMillan H**; FORGE Canada Consortium, Majewski J, **Bulman D**, Levade T, **Boycott K**. "Evidence for clinical, genetic and biochemical variability in spinal muscular atrophy with progressive myoclonic epilepsy" *Clin Genet*. 2014 Dec; **86**(6):558-63.

Yoon G, Baskin B, Tarnopolsky M, Boycott KM, Geraghty MT, Sell E, Goobie S, Meschino W, Banwell B, Ray PN. Autosomal recessive hereditary spastic paraplegia-clinical and genetic characteristics of a well-defined cohort. *Neurogenetics*. 2013 Nov; **14**(3-4):181-8.

Orr, dos Santos MP, Jurencak R, Michaud J, Miller E, **Doja A**. Central Nervous System Venulitis Presenting as Migraine. *Headache*. 2014 Mar; **54**(3):541-4.

Sampson M, Horsley T, **Doja A**. A Bibliometric Analysis of Evaluative Medical Education Studies: Characteristics and Indexing Accuracy. *Acad Med*. 2013 Mar; **88**(3):421-7.

Jeptha Davenport W, Pringsheim T, Gorman D, **Doja A**. Robbie's Quick Adventure (Illustrated book for children and youth with Tourette Syndrome).

Peery HE, Day GS, **Doja A**, Xia C, Fritzler MJ, Foster WG. Anti-NMDA receptor encephalitis in children: the disorder, its diagnosis, and treatment in Handbook of Clinical Neurology 112 (3rd Series): *Pediatric Neurology, Part II*. 2013; Elsevier, Amsterdam. 2013; 112:1229–33.

**Venkateswaran S**, Banwell B. Clinical Trials in Pediatric MS: Challenges to Overcome. *Journal of Clinical Investigation*. 2013 Jan.

## Administration and Other Contributions

All division members contributed to committees locally, both at CHEO and at uOttawa, and to a number of organizations nationally and internationally.

Dr. Whiting contributed as Division Chief; as the President of the Canadian League Against Epilepsy; as the President of the Canadian Association for Child Neurologists as well as a member of the Expert Panel Provincial Strategy for Epilepsy care in Ontario.

Dr. McMillan contributed as the Program Director for the Pediatric Neurology Residency Training Program; as the Chairperson for the Canadian Pediatric Neuromuscular Group and as a member of the Muscular Dystrophy of Canada, Medical and Scientific Advisory Committee.

Dr. Pohl contributed as a member of the Regional Research and Training Centre of the EndMS Program as well as a Steering Committee Member & Chair of the Clinical Subcommittee of the International Pediatric Multiple Sclerosis Study Group (IPMSSG).

Dr. Sell contributed to PGME in the Division of Neurology; as the Representative for Paediatrics on Faculty of Medicine Council University of Ottawa and as a member of the Certification Committee, University of Ottawa.

Dr. Doja contributed as a Canadian Association of Child Neurology representative; as a member of the Fellowship Committee, Academy for Innovation in Medical Education (AIME), University of Ottawa and as a Peer Assessor for the College of Physicians and Surgeons of Ontario

Dr. Venkateswaran contributed as the Physician Lead for EPIC, Division of Neurology and as a member of the Pediatric Neurology Post-Graduate Medical Education Committee.

Dr. Humphreys contributed as the Chairman of the Ottawa Children's Treatment Center (OCTC) Board Quality and Safety Committee.



## Pediatric Critical Care

The Pediatric Critical Care Unit (PICU) provides intensive care for a wide range of complex, rapidly changing medical, surgical and traumatic disorders occurring in pediatric patients aged 18 years and under. In 2013/2014, PICU physician staffing grew to eight intensivists (6.6 total FTE).

Areas of subspecialty expertise include congenital heart disease, cardiovascular surgery, respiratory failure, neurosurgery, immunodeficiencies, hematologic and oncologic emergencies, sepsis, and multi-organ system dysfunction.

### Faculty

- Dr. David Creery – Associate Professor (Division Chief)
- Dr. Sonny Dhanani – Associate Professor
- Dr. Anna-Theresa Lobos – Assistant Professor (Training Program Director)
- Dr. Kusum Menon – Associate Professor
- Dr. Dayre McNally – Assistant Professor
- Dr. Hilary Writer – Assistant Professor (0.5 FTE as Program Director for Pediatrics)
- Dr. Fuad Alnaji – Assistant Professor (0.7 FTE)
- Dr. David Rosen (0.5 FTE)

### Clinical Care and Patient Advocacy

The CHEO PICU provides care to critically ill and technologically-dependent infants, children and youth in Eastern Ontario, Western Quebec and the Baffin Region of Nunavut. We serve a mixed medical, surgical, cardiovascular surgical and trauma population. We provide physician coverage to the CHEO Medical Emergency Team (the SPOT team) and provide support to referring physicians through the Extramural Critical Care Response Team service. We also provide continuous renal replacement therapy (CCRT) and extracorporeal membrane oxygenation (ECMO) therapy. In 2013/2014, we cared for 603 patients.

Our division includes an 8-bed Pediatric Intensive Care Unit (PICU), and a 2-bed overflow which are state-of-the-art critical care units designed to meet the needs of our patients and families.



## Educational Activities

The Pediatric Critical Care Program is an accredited training program of Royal College of Physicians and Surgeons of Canada. Our goal is to prepare our fellows to assume leadership roles in pediatric critical care in academic institutions.

Trainees are mentored and trained full-time by the multidisciplinary faculty of the Division of Pediatric Critical Care Medicine. The 2-year training program includes at least 13 critical care rotations and mandatory rotations in palliative care, anesthesia and cardiology. Our program also supports a mandatory one-month elective in a critical care unit that performs transplantation. Protected academic time is scheduled to meet Royal College objectives. This includes “boot camp” education days, morbidity/mortality rounds, communication workshops, subspecialty fellow retreats, simulation activities and many more. Over the two year training period, residents will be exposed to the core concepts of Critical Care Medicine. All trainees are encouraged to participate in clinical conferences, multidisciplinary rounds and weekly meetings of other subspecialty services (e.g. cardiology, cardiovascular surgery).

Faculty members of the division contribute greatly to the teachings of all medical students and residents. This includes lectures, Journal Clubs, workshops and contributions to the OSCE's.

In 2013/2014, there were clinical rotations provided to 7 medical students and 39 residents. In addition, there are 2 pediatric intensive care fellows.

All faculty members contributed to all levels of education—undergraduate, postgraduate and CME. Dr Lobos led the training program and also the Simulation Education Program. Considerable time was spent contributing to the undergraduate curriculum, to resident academic ½ day, to PALS teaching and to simulation. In all there were in excess of 500 hours of direct teaching time, not including teaching time in the context of clinical care. Many lectures were given and a sample is included below.

### Key Invited Lectures

#### Dr. Fuad Alnaji

- National Capital Conference on Emergency Medicine (NCCEM) Ottawa ON (2013)

#### Dr. David Creery

- The Role of the Coroner in Ontario: St. Pius X High School, Grade 12 Law (2 presentations). Ottawa, ON (2013)

## Pediatric Critical Care

### Dr. Sonny Dhanani

- “Global definitions of death”, Whistler Critical Care Congress, Whistler, February 2013
- “Donation in Ontario”,
  - a. North York General Hospital Grand Rounds, Toronto, May 2013.
  - b. Cambridge Memorial Hospital Medical Grand Rounds, Cambridge, April 2013.
  - c. Stratford General Hospital Grand Rounds, Stratford, April 2013.
  - d. Brantford General Hospital Grand Rounds, Brantford, February 2013.
  - e. Organ and Tissue Donation and Transplantation for System Improvement: Ontario Hospital Association. Toronto, ON (2013).
- When is dead, dead?—Ottawa Hospital Research Institute, Clinical Epidemiology Rounds. Ottawa, ON (2013).

### Dr. Anna-Theresa Lobos

- Feasibility and validity evidence using a simulation-based OSCE to assess readiness for independent practice in Pediatric Critical Care trainees; Briseida Mema, Hospital for Sick Children; Yoon Soo Park, University of Illinois at Chicago; Anna-Theresa Lobos, University of Ottawa; Hilary Writer, University of Ottawa; Afrothite Kotsakis, Hospital for Sick Children, Ottawa Conference. (2014).
- Any Place, Any Pace Pediatric Acute Care: An Online Mock Code Curriculum, Kathleen Huth: University of Ottawa; Kristina Krmpotic, University of Ottawa; Anna-Theresa Lobos, University of Ottawa; Hilary Writer, University of Ottawa, Ottawa Conference. (2014).

### Dr. Dayre McNally

- Anaphylaxis: Westboro School. (2014)
- Validating the accuracy of diagnostic codes within the health administrative data (HAD) at ICES for hospitalized RSV in young children: CHEO SAGE. Ottawa ON (2013).
- HICCUPS: Hypovitaminosis-D in Critically Ill Children: Understanding Pathways and Solutions: Canadian Critical Care Trials Group Scientific, Quebec City, QC (2013).
- The relationship between vitamin d status and adrenal insufficiency in critically ill children: CHEO Research Day. Ottawa, ON (2013).

**Dr. Kusum Menon**

- Multi-centre review on the use of steroids in shock: CHEO Research Day. Ottawa, ON (2013).
- STRIPES research program: CCCTG. Montreal, QC (2014)
- Adrenal Insufficiency in Pediatric Critical Illness: Pediatric Endocrine Group. Quebec City, QB (2013).
- Mechanism of actions of steroids in shock. Calgary, Alberta (2013)
- Randomized controlled trial on Steroids in Pediatric Shock: CCCTG. Lake Louise, AB (2014).
- Epidemiology of steroid use: World Congress of Pediatric Intensive Care. Istanbul, Turkey (2014).

## Research Activities–Research Projects and Funding

The PICU research group is a multi-disciplinary research group that was formed in order to facilitate many types of research that affected the care of critically ill children. This has included the full spectrum of research from basic science work to knowledge translation aimed at improving the care of critically ill children.

The PICU has a strong research program with a number of faculty involved in ongoing research projects. The diversity of the group leads to a wide variety of research interests.

Areas of research include, but are not limited to:

- Steroid in Critical Illness
- Vitamin D
- Quality and Patient Safety
- Outreach Team and SPOT
- Simulation
- Children with Heart Disease
- Transport
- Ethics and
- Organ Donation

### Research Funding

Development of a Comprehensive Cost Model in the Pediatric Intensive Care Unit, **CHEO RI Research Growth Award Competition—Menon K, Creery D**, Khallaf L, Viola M, Acharya A, Fitzgibbons C, O'Hearn K. 2014, \$29,231.07.

The CHEO Morbidity and Mortality Conference (MMC) Improvement Project. Phase 1: Exploring the Current State of MMC Processes at CHEO, **AHSC Innovation Fund—Creery D**, Dhanani S, McNally D, Samson L, Pitters C, Wrong T. 2013, \$97,814.

Canadian National Transplant Research Program, training Program, **CIHR Program Grant in Transplantation—Dhanani S**. 2013, \$3,570,000.

Determination of Death after Cardiac Arrest: Multicenter Observational Study, **CIHR Canadian National Transplant Research Network Grant—Dhanani S** (PI). 2013, \$780,000 (as part of CIHR Program Grant in Transplantation \$13.85 million).

Emergency Department Factors Associated with Early Unplanned Admission to the pediatric Intensive Care Unit, **Children's Hospital of Eastern Ontario Research Institute—Lobos AT** (PI). 2011–2015, \$24,054.

PICU Patient Flow Model, **CHEO RI—Menon K** (PI). 2014–2016, \$26,733.

Clinical Research Capacity Building Award, **CHEO RI—Menon K** (PI). 2014–2017, \$120,000.

Steroid Use in Pediatric Fluid and Vasoactive Infusion Dependent Shock (STRIPES), **CIHR—Menon K** (PI). 2014–2017, \$597,372.

Clinical outcomes and predictors of pituitary disorders in patients with moderate and severe Traumatic Brain Injury: the PIT-TBI prospective multicenter pilot cohort study, **CIHR—Lauzier F** (PI), **Menon K** (Co-Investigator). 2014–2017, \$278,469.

Preventing vitamin D deficiency after CHD surgery: A dose evaluation study, **Heart and Stroke—McNally D** (PI), **Menon K** (Co-Investigator). 2013–2015, \$138,000.

Age of Blood in Children in Pediatric Intensive Care Units (ABC-PICU), **CIHR—Tucci M** (PI), **Menon K** (Co-Investigator). 2013–2016, \$1,530,430.

Factors that Influence the length of mechanical ventilation in post-operative cardiac surgery patients, **CHEO RI—Sampaio T** (PI), **Menon K** (Co-Investigator). 2012–2013, \$2500.

Steroid Use in Pediatric Fluid and/or Vasoactive Infusion Dependent Shock (The STRIPES Study), **PSI Foundation—Menon K** (PI). 2012–2014, \$164,000.

Systematic Reviews and Randomized Clinical Trials in Pediatric Critical Care: A Scoping Review, **CIHR—Duffet M** (PI), **Menon K** (Co-Investigator). 2012–2013, \$48,233.

Physical Therapy and Acute Rehabilitation in Critically Ill Children—A multi-centre retrospective study, **CIHR**—Choong K (PI), **Menon K** (Co-Investigator). 2011–2013, \$169,962.

A comprehensive chart review to identify all CHEO hospital admissions for RSV-related acute respiratory and apnea illness, **CHEO Research Institute, Summer Studentship—McNally D** (PI). 2014, \$5,200.

PICU Research Unit: Clinical Research Capacity Building Award, **CHEO RI—McNally D** (Co-Investigator). 2014–2017, \$40,000 (per year).

Validation of the diagnostic and outcome-related codes for severe RSV within Ontario's Health Administrative Data housed at ICES, **CHEO RI—McNally D** (PI). 2014–2015, \$10,000.

Steroid Use in Pediatric Fluid and Vasoactive Infusion Dependent Shock (STRIPES): Multicentre pilot randomized controlled trial, **Canadian Institutes of Health Research (CIHR)—Menon K** (PI), **McNally D** (Co-Investigator). 2014–2016, \$597,372.

Safety of Efficacy of vitamin D Rapid Restoration Dosing Regimens: A systematic review and potential meta-analysis, **Faculty of Graduate Studies, University of Ottawa—McNally D** (PI). 2013–2014, \$500.

Defining and Classifying Significant Events During Pediatric Transport: A Consensus Meeting, **CHEO Research Institute, Resident Grant—Gunz A** (PI), **McNally D** (mentor). 2013–2014, \$2,000.

Lumbar puncture proficiency. Does a simulation program and interactive training session improve pediatric resident procedural competency and decrease anxiety? University of Ottawa Educational Initiatives in Residency Education Fund—**McMillan H, Moreau K, Writer H, Eady K, Sell E, Lobos A, Doja A**. 2014, \$14,600.

Formal, Informal or Hidden Curriculum: What Type of Interprofessional Education is Being Delivered in the Delivery Room? **Academy for Innovation in Medical Education Grant—Doja A**, Posner G, Sutherland S, **Writer H**, Bould D. 2011, \$8,230.

Exploring the Hidden Curriculum: Qualitative Analysis of Trainee and Staff Perceptions of Medical Training, **University of Ottawa Academy for Innovation in Medical Education Grant—Writer H, Doja A**, Bould D, Sutherland S. 2010, \$8,520.



### Peer-Reviewed Publications

Gries CJ, White DB, Truog RD, DuBois J, Cosio CC, **Dhanani S**, Chan KM, Corris P, Dark J, Fulda G, Glazier AK, Higgins R, Love R, Mason DP, Nakagawa TA, Shapiro R, Shemie SD, Tracy MF, Travaline JM, Valapour M, West L, Zaas D, and Halpern SD. "An Official American Thoracic Society/International Society for Heart and Lung Transplantation/Society of Critical Care Medicine/Association of Organ and Procurement Organizations/United Network of Organ Sharing Statement: Ethical and Policy Considerations in Organ Donation after Circulatory Determination of Death", *American Journal of Respiratory and Critical Care Medicine*. 2013; **188**(1):103-109. (impact factor 11.04).

**Lobos AT**, Fernandes R, Willams K, Ramsay C. Reassessments of patients discharged from the Pediatric Intensive Care Unit: Description of a MET Follow-up Program.

Krmpotic K, **Lobos AT**. Clinical Profile of Children Requiring Early Unplanned Admission to the PICU. *Hospital Pediatrics*. 2013 July; **3**(3):212-218.

Duffett M, Choong K, Hartling L, **Menon K**, Thabane L, Cook DJ. Randomized controlled trials in pediatric critical care: a scoping review. *Crit Care*. 2013 Oct 29; **17**(5).

**Menon K**. Use of hydrocortisone for refractory shock in children. *Crit Care Med*. Oct 2013; **41**(10).

Thomas M, **Menon K**. Consenting to pediatric critical care research: Understanding the perspective of parents. *Dynamics*. 2013; **24**(3):18-25.

**McNally D**, **Menon K**, Lawson M, Balderashi O, **Chakraborty P**, Ramsay T, Doherty D. The relationship between vitamin D status and adrenal insufficiency in critically ill children. *J Clin Endocrinol Metab*. 2013 May; **98**(5):E877-81.

**McNally D**, **Menon K**, **Chakraborty P**, Doherty D. Impact of Anesthesia and Surgery for Congenital Heart Disease on the Vitamin D Status of Infants and Children: A Prospective Longitudinal Study. *Anesthesiology* 2013 Jul; **119**(1):71-80.

**Menon K**, Ward R. A Study of Consent for Participation in a Non-Therapeutic Study in the Pediatric Intensive Care Population. *J Med Ethics*. 2014 Feb; **40**(2):123-6.

**Menon K**, **McNally D**, Choong K, Sampson M. A Systematic Review of Steroids in Pediatric Shock. *Pediatr Crit Care Med*. 2013 June; **14**(5):474-480.

**Menon K**, **McNally D**, Choong K, **Lawson M**, Ward R, Ramsay T, Wong H. A Survey of Physician Practices and Beliefs on the Use of Steroids in Pediatric Shock. *Pediatr Crit Care Med*. 2013 Jun; **14**(5):462-6.

**McNally JD**. "Vitamin D as a modifiable risk factor in critical illness: questions and answers provided by observational studies", *J Pediatr (Rio J)*. 2013; **90**(2):99-101.

**McNally JD**, Sampson M, Matheson LA, Hutton B, Little J. "Vitamin D receptor (VDR) polymorphisms and severe RSV bronchiolitis: A systematic review and meta-analysis", *Pediatric Pulmonology*. 2014 Aug; **49**(8):790-9.

**McNally JD, Menon K**. "Vitamin D deficiency in surgical congenital heart disease: prevalence and relevance", *Translational Pediatrics*. **2**(3):99-101.

**Menon K, McNally D**, Choong K, Sampson M. "A systematic review and meta-analysis on the effect of steroids in pediatric shock" *Pediatric Critical Care Med*. 2013; **14**(5):474-80.

**McNally JD**, Doherty DR, **Lawson ML**, **Al-Dirbashi OY**, **Chakraborty P**, Ramsay T, **Menon K**. "The relationship between vitamin d status and adrenal insufficiency in critically ill children", *The Journal of clinical endocrinology and Metabolism*. 2013; **98**(5):E877-81.

**Menon K, McNally JD**, Choong K, Ward RE, **Lawson ML**, Ramsay T, Wong HR. "A Survey of Stated Physician Practices and Beliefs on the Use of Steroids in Pediatric Fluid and/or Vasoactive Infusion-Dependent Shock." *Pediatric Critical Care Medicine*. 2013, **14**(5):462-6 PubMed ID: 23628832

**McNally JD, Menon K, Chakraborty P**, Fisher L, Williams KA, Al-Dirbashi OY, Girolamo T, Maharajh G, Doherty DR. "Impact of Anesthesia and Surgery for Congenital Heart Disease on the Vitamin D Status of Infants and Children: A Prospective Longitudinal Study" *Anesthesiology*. 2013; **14**(5):462-6.

**McNally JD, Menon K**. "Vitamin D deficiency in surgical congenital heart disease: prevalence and relevance" *Translational Pediatrics*. 2013; **2**(3):99-101.

**Rosen HD**, Cravero JP. Research on emergence agitation in children. *Can Journal of Anesth*. 2013; **60**:822-823.

## Administration and Other Contributions

All division members contributed to a very large number of committees locally, both at CHEO and at uOttawa, and to a very significant number of organizations nationally and internationally.

Dr. Creery contributed as the Division Chief; as the Medical Director of Patient Safety, CHEO; as the Co-Chair of CHEO's Infection Prevention and Control Committee and as a member of the Electronic Health Records Steering Committee.

Dr. Dhanani contributed as the CHEO PICU Morbidity & Mortality Coordinator; as a Co-Lead for the Canadian National Transplant Research Program and as a member of the Canadian Blood Services Organ and Tissue donation and transplantation expert advisory council.

## Pediatric Critical Care

Dr. Lobos contributed as the Medical Director, Simulation; as the Critical Care Response Team Medical Director as well as the Chair of the CHEO Critical Care Response Team (SPOT Team) Advisory Committee.

Dr. Menon contributed as the Chair of the CHAMO Innovation Fund Committee; as a member of the CCCTG Education Committee and as the Virtual Chair for the CIHR foundation grant competition.

Dr. Writer contributed as the Program Director of the Postgraduate Medical Education Program; as the Education Co-Lead for the Ontario Pediatric Critical Care Response Team as well as a member of the Canadian Pediatric Program Directors Research Group.

# Pediatric Medicine

The Division of Pediatric Medicine focuses on the delivery of care to children with acute care needs who are hospitalized with general pediatric conditions. The division also provides care to children with complex conditions in both the inpatient and ambulatory setting. In 2013/2014, the division was comprised of 18 full-time members, plus an additional five physicians who made a small but very significant contribution (Total FTE was 14). While most of the activity of these physicians is directed to Pediatric Medicine, many make substantive contributions to other divisions of the Department of Pediatrics. Despite a very strong commitment to clinical care, the division members also make a strong academic contribution, particularly in the area of education.

The mission of the division is to provide comprehensive, interdisciplinary general pediatric health care, education, research and advocacy for the well-being of all children and youth.

## Faculty

### Full-Time Physicians

- Dr. Marc Zucker - Assistant Professor (Acting, Division Chief)
- Dr. Mary Pothos - Associate Professor
- Dr. Jim King - Associate Professor  
(0.5 FTE Pediatric Medicine; 0.5 FTE Informatics/Electronic Records)
- Dr. Heather MacDonnell - Assistant Professor  
(0.8 FTE Pediatric Medicine; 0.2 FTE Global Health)
- Dr. Nathalie Major-Cook - Assistant Professor  
(1.0 FTE Complex Care)
- Dr. Asha Nair - Assistant Professor  
(0.5 FTE Pediatric Medicine; 0.5 FTE Developmental Pediatrics)
- Dr. Linda Hillier - Assistant Professor  
(0.5 Pediatric Medicine; 0.5 Respiriology)
- Dr. Catherine Pound - Assistant Professor (0.8 FTE)
- Dr. Anne Rowan-Legg - Assistant Professor  
(0.8 Pediatric Medicine; 0.2 Assistant Program Director)
- Dr. Alyson Shaw - Assistant Professor (0.75 FTE)
- Dr. Michelle Ward - Assistant Professor  
(0.2 FTE Pediatric Medicine; 0.7 Child & Youth Protection)
- Dr. Kheirie Issa - Assistant Professor (1.0 FTE Complex Care)
- Dr. Robert LaBerge - Assistant Professor

## Pediatric Medicine

- Dr. Katherine Baldwin - Assistant Professor (0.5 FTE Pediatric Medicine; 0.5 FTE Obesity Program)
- Dr. Tobey Audcent - Assistant Professor (FTE 0.8)
- Dr. Radha Jetty - Assistant Professor (FTE 0.8)
- Dr. Kristy Parker - Assistant Professor (0.75 Pediatric Medicine; 0.25 Adolescent Health)
- Dr. Anindita Tjahjadi - Assistant Professor

### Part-Time Physicians:

- Dr. Megan Harrison - Assistant Professor
- Dr. Alex MacKenzie - Full Professor
- Dr. Mark Norris - Associate Professor
- Dr. Nicolce Ristoski - Lecturer
- Dr. Kelly Vanier - Lecturer

## Clinical Care and Patient Advocacy

One of the primary responsibilities of the Division of Pediatric Medicine is to provide coverage for the Clinical Teaching Units (CTU) at CHEO. The service was run as either a two-team or three-team system over the course of 2013/2014 with 15–25 patients on each team at any given time; thus providing care to almost 2,500 admitted patients (including consultations) in 2013/2014. Teams consist of a staff physician as the Main Responsible Physician, residents and medical students.

Our division is dedicated to providing the best in both inpatient and outpatient comprehensive pediatric care to a range of clinical areas, with a focus on vulnerable populations including:

- General Pediatrics
- Children with complex care needs
- Down syndrome and other syndromes
- Childhood development
- Literacy
- Aboriginal health
- International adoption
- Global health

This care is provided on the CTUs and in Ambulatory Clinics. The latter contributed approximately 2,500 visits in 2013/2014 in an average of 15 MD ½-day clinics per week. There is also a specific Complex Medical Care Team which is directed by Dr. Major Cook, and contributed to by Dr. Issa. They provided inpatient coverage



for the management of these children. This will expand to the ambulatory setting due to the acquisition of specific funding to support this program and a pilot project was completed successfully in 2013/2014. Given the success of the pilot project, expansion is being sought to increase total patients enrolled as well as to increase outpatient coverage of this patient population.

This past year, the Division of Pediatric Medicine provided outreach clinical services to the Renfrew region with Dr. Rowan Legg providing two to three days per month of outpatient general pediatrics clinics.

There was considerable contribution to care of First Nations and Inuit populations with several physicians from the group contributing to this activity—Drs. Jetty, Audcent, and Tjahjadi with several weeks of time spent in different Northern areas.

## Educational Activities

This past year, the members of the division provided substantial amounts of time to both didactic and clinical teaching in both undergraduate and postgraduate medical education, as well as considerable contribution to CME. Several members also hold important leadership roles in the Department and in the Faculty of Medicine. Dr. Zucker is the Director of Undergraduate Education for the Department of Pediatrics and Dr Rowan Legg is Assistant Training Program Director for the Training Program in General Pediatrics.

There was a very large number of trainees who rotated during 2013/2014, a total of 527 trainees in all. This included rotations of almost 200 medical students and over 300 resident rotations, including rotators from other institutions. There were also 2 General Academic Pediatric Medicine Fellows. While the majority of trainee rotations was on the inpatient CTUs, some rotators had the opportunity to spend time in the ambulatory area. Trainees were exposed to all common pediatric conditions as well as an eclectic mixture of rare clinical entities.

Educational outreach is also a theme for this division. The division continues to coordinate and teach in the telemedicine outreach program for trainees as well as medical staff in surrounding communities including the eastern region of Nunavut.

The overall contribution of the group to education was considerable in 2013/2014 and exceeded 1,000 hours, not including time spent teaching in the context of clinical care. Some key presentations are captured on the following page.

## Key Invited Lectures

### Dr. Katherine Baldwin

- Pediatric Obesity Management : Pediatric Telehealth Rounds: Videoconferenced interactive lecture for health professionals in Nunavut, Pediatric Housestaff at CHEO, Community Health Centers, and Community Hospitals and their partners in and bordering Eastern Ontario (2013).

### Dr. Kheirie Issa

- Abdominal Surgical Cases—Pediatric Telehealth Rounds: Videoconferenced interactive lecture for health professionals in Nunavut, Pediatric Housestaff at CHEO, Community Health Centers, and Community Hospitals and their partners in and bordering Eastern Ontario (2013).

### Dr. Radha Jetty

- A Dash of Salt—Evidence for Hypertonic Saline in Bronchiolitis Management: Federal Pharmacy & Therapeutics Committee, First Nations and Inuit Health Branch, Health Canada. Ottawa, ON (2013).

### Dr. Jim King

- Recent Advances in Medical Technology: Canadian Medical and Biological Engineering Conference (CMBEC). Ottawa, ON (2013).
- Launching an Epic EMR at the Children's Hospital of Eastern Ontario: Digital Transformation in Health (DTIH) Seminar, University of Ottawa. Ottawa, ON (2013).
- Systems Medicine: Technology and the Evolution of Healthcare: Pediatric Grand Rounds, CHEO. Ottawa, ON (2013).

### Dr. Heather MacDonnell

- Program Directors' Perspective on Global Health Elective Requirements in Canadian Pediatric Residency Programs: Canadian Pediatric Program Directors' Meeting, Canadian Pediatric Society Annual Meeting. Edmonton, AB (2013).
- New Postgraduate Medical Education Policy on Resident Global Health Electives: Founder, Organizer and Moderator. Ottawa, ON (2013).
- Travelling with Children: Pediatric Telehealth Rounds: Videoconferenced interactive lecture for health professionals in Nunavut, Pediatric Housestaff at CHEO, Community Health Centers, and Community Hospitals and their partners in and bordering Eastern Ontario (2013).

### Dr. Nathalie Major-Cook

- The Champlain Complex Care Program: Webinar, Management of Medically Complex Children through the Continuum of Care CoP (Community of Practice), Canadian Association of Pediatric Health Centres (CAPHC) (2013).
- The Champlain Complex Care Initiative: Provincial Council for Maternal and Child Health Symposium on Advancing Integrated Complex Care for Children with Medical Complexity. Toronto, ON (2013).
- Complex Care Program: Department of Pediatrics Annual Retreat. Ottawa, ON (2013).

- Complex Care—Next Steps: Integration of Complex Medical Care Program—Presentation for Community Pediatricians (2013).

#### **Dr. Asha Nair**

- Managing Feeding Challenges—An Interprofessional Approach: Annual Pediatric Refresher Course, Ottawa Convention Centre. Ottawa, ON (2013).
- Cerebral Palsy: Diagnosis, Outcomes and Resources: Neonatal Fellow Seminar, CHEO. Ottawa, ON (2013).

#### **Dr. Mary Pothos**

- Health Supervision Guidelines for Children with Down Syndrome: Canadian Down Syndrome Society Annual Conference. Winnipeg, MB (2013).

#### **Dr. Anne Rowan-Legg**

- Off-Label Medication Use in Pediatrics for Study on Prescription Pharmaceuticals in Canada: Invited Witness, Canadian Senate Social Affairs, Science and Technology Committee. Ottawa, ON (2013).
- Clinical Practice Guideline Update: Annual Pediatric Refresher Course. Ottawa, ON (2013).
- General Pediatrics: 10th Annual Canadian Pediatric Review Program. Hamilton, ON (2013).
- Panel Presenter, Military Families Matter: Building Awareness, Competency and Community, Military Families Initiative, Vanier Institute of the Family. Cornwall, ON (2013).

#### **Dr. Alyson Shaw**

- What Pediatric Residents Need to Know—and Do—About Early Literacy: Academic Half Day, University of British Columbia, Department of Pediatrics, British Columbia Children's Hospital. Vancouver, BC (2013).

#### **Dr. Marc Zucker**

- Interesting Articles of 2013: Annual Pediatric Refresher Course. Ottawa, ON (2013).
- Overview of Failure to Thrive : Pediatric Telehealth Rounds: Videoconferenced interactive lecture for health professionals in Nunavut, Pediatric Housestaff at CHEO, Community Health Centers, and Community Hospitals and their partners in and bordering Eastern Ontario (2013).
- Interesting Cases in Bronchiolitis: Respiratory Syncytial Virus (RSV) Annual Update. Ottawa, ON (2013).

### Research Activities—Research Projects and Funding

All members of the Division of Pediatric Medicine participate in scholarly activities. Areas of particular interest include medical informatics and information technologies, global health, growth and development, literacy, child maltreatment, Down syndrome, complex care, and breastfeeding. Many division members have participated in and/or presented scholarly work at a national and international level.

The Division acquired a large number of grants particularly through Drs. King and Pound and contributed a total of 15 publications.

#### Research Funding

##### Dr. Jim King

Consumer Health Solutions: MyChart Demonstration Project, **Canada Health Infoway—King J** (Clinical Lead). 2013–present, \$800,000.

Development and Evaluation of Clinical Information Decision Support (DECIDeS), **Bell Canada—King J** (PI). 2006–present, >\$1,500,000.

System Adoption and the Use of Wireless Alerting Technology by Healthcare Providers, **Ontario MOH Innovation Fund—King J** (PI). 2010–present, \$38,000.

Digital Teaching File: Development and Evaluation, **Ontario Ministry of Health and University of Ottawa—King J** (Co-PI). 2011–Present, \$300,000.

Pediatric Medical Inpatient Checklist, **Ontario MOH Most Responsible Physician Quality Improvement Project—King J** (Co-Investigator). 2011–Present, \$74,000.

Epidemiological Surveillance of Complementary and Alternative Medicine Use in Children and Youth: Towards the Establishment of Priorities in the Evaluation of Natural Health Products, **Hospital for Sick Children Foundation—King J** (Co-Investigator). 2006–2014, \$50,000.

Interprofessional Teams and the Use of Electronic Charting Systems, Academic Health Council—**Champlain Region SIRE Fund—King J** (Co-Investigator). 2009–Present, \$10,000.

EMR and Integration: Ambulatory EMR and HIS Connect. Canada Health Infoway Benefits Evaluation, **Canada Health Infoway—King J** (Clinical Lead). 2012–Present, \$2,800,000.

##### Dr. Nathalie Major-Cook

Coordination of Care of Children with Special Health Care Needs. Pilot project with CCAC, OCTC, Coordinated Access and CHEO.

Exploring the impact of establishing a clinic with access to a case manager and MRP (most responsible physician). The CHEO Research Institute is involved with data collection and analysis of financial impact on the institution, utilization impact of medical services and patient-family satisfaction. **Funded by Champlain LIHN and CHEO.** 2013 Apr–2014 Mar and 2012 Apr–2013 Mar, \$180,000/fiscal year.

#### Dr. Catherine Pound

CHEO RI Medical Education Research Capacity Building Award 2013–2016. Founding member of the Pediatric Education Research Group (PERG), **Capacity Building Award given by the CHEO Research Institute to support medical education research—Doja A, Writer H, Pound CM, Vadeboncoeur C, Bould D, Ben Fadel N, Lobos AT, Audcent T, Jabbour M.** 2013–2016, \$30,000.

A Randomized Controlled Trial: BEST ABCs: Benefits and Effectiveness of Support Offered Through a Breastfeeding Clinic Study, **Ministry of Health and Long Term Care—Lacaze-Masmonteil T** (PI), Walker M, Rennicks-White R, Dunn S, Tawagi G, Millar D, Yasseen A, **Pound CM.** 2013–2014, \$420,000.

Do Sugar-Sweetened Beverages Cause Adverse Health Outcomes in Children? A Systematic Review, **CIHR Knowledge Synthesis Grant—Stevens A, Haveml C, Ansari M, Myers E, Ziegler P, Hutton B, Sharma A, Bjerre L, Fenton S, Gow R, Hadjiyannakis S, O'Hara K, Pound CM, Salweski E, Shrier I, Willows N, Moher D, Tremblay M.** 2013–2014, \$96,895.

A Study of the Impact of Continuing Professional Development Activities on Physicians' Knowledge, Motivation and Ability to Address Challenges with Exclusive Breastfeeding Practices, **AIME Education Research Grant—Pound CM** (PI), Lindsay E, **Plint A, Moreau K.** 2011–2013, \$19,074.

The Impact of Implementing a Nursing-Driven Clinical Pathway for Inpatient Management of Children Admitted to a Tertiary Care Centre with a Diagnosis of Asthma, A Randomized Controlled Trial, **CHAMO Innovation Fund—Pound CM** (Co- PI), Gelt V, **Kovesi T**, Correll R, Williams K, Rohde K, Sumner A, **Zemek R**, Coyle D, Mulholland B. 2011–2015, \$56,983.17.

Assessment of Beliefs, Attitudes and Knowledge of a Subset of Canadian Physicians with Respect to Breastfeeding, **CHEO Research Institute Internal Grant—Pound CM** (PI), **Plint AC**, Williams K, Clifford T. 2010–2013, \$23,957.58.

The Impact of a Breastfeeding Support Intervention on Breastfeeding Duration in Jaundiced Infants Admitted to a Tertiary Care Centre Hospital. A Randomized Controlled Trial, **The Physicians' Services Incorporated (PSI) Foundation—Pound CM** (PI), **Plint AC**, Correll R, **Barrowman N, Moreau K, Farion K.** 2009–2013, \$96,000.



### Dr. Anne Rowan-Legg

Instituting a Checklist on the Pediatric Inpatient Medical Unit, **Ministry of Health—Rowan-Legg A** (PI). 2011–present, \$98,000.

### Peer-Reviewed Publications

**Nikkel SM, Major-Cook N, King WJ**. Growth and Development in Thanatophoric Dysplasia—An Update 25 Years Later. *Clinical Case Report*. 2013; 1:75–78.

Valji R, Adams A, Dagenais S, Clifford T, Baydala L, **King WJ**, Vohra S. Complementary and Alternative Medicine: A Survey of Its Use in Pediatric Oncology. *Evidence-Based Complementary and Alternative Medicine*. 2013; 2013:527163.

**Ward M, King WJ**, Bennett S. From Bruises to Brain Injury: The Physician's Role in the Assessment of Inflicted Traumatic Head Injury. *Paediatrics and Child Health*. 2013; 18:423–424.

Adams D, Dagenais S, Clifford T, Baydala L, **King WJ**, Hervas-Malo M, Moher D, Vohra S. Complementary and Alternative Medicine Use by Pediatric Specialty Outpatients. *Pediatrics* 2013; **131**(2):225–232.

**Audcent TA, MacDonnell HM, Moreau KA**, Hawkes M, Sauvé LJ, Crockett M, Fisher JA, Goldfarb DM, Hunter AJ, McCarthy AE, Pernica JM, Liu J, Luong TN, Sandhu AK, Rashed S, Levy A, Brenner JL. Development and Evaluation of Global Child Health Educational Modules. *Pediatrics*. 2013 Dec; **132**(6):e1570–6.

Wiseman DH, May A, Jolles S, Connor P, Powell C, Heeney MM, Giardina PJ, **Klaassen RJ, Chakraborty P, Geraghty MT, Major-Cook N**, Kannengiesser C, Thuret I, Thompson AA, Marques L, Hughes S, Bottomley SS, Fleming MD, Wynn RF. A Novel Syndrome of Congenital Sideroblastic Anemia, B Cell Immunodeficiency, Periodic Fevers and Developmental Delay. *Blood*. 2013; **122**(1):112–23.

Cameron JC, Vaillancourt R, **Major-Cook N, Boland M, Zucker M**, Lariviere D. Clinical Recovery of Chronic Intestinal Pseudo-Obstruction with Cisapride in a Complex Pediatric Patient. *American Journal of Hospice & Palliative Medicine*. 2013; **30**(4):403–405.

Sampson M, Cumber J, Li C, **Pound CM**, Fuller A, Harrison D. A Systematic Review of Methods for Studying Consumer Health YouTube Videos with Implications for Systematic Reviews. *Peer J*. 2013; 1:e147.

**Rowan-Legg A**. Oral Health Care for Children—A Call for Action. *Paediatrics and Child Health*. 2013; **18**(1):37–43.

Salman MS, Lee EJ, **Tjahjedi A**, Chodirker BN. The Epidemiology of Intermittent and Chronic Ataxia in Children in Manitoba, Canada. *Dev Med Child Neurol*. 2013 Apr; **55**(4): 341–7.

Cameron JC, Vaillancourt R, **Major-Cook N, Boland M, Zucker M**, Lariviere D. Clinical Recovery of Chronic Intestinal Pseudo-Obstruction with Cisapride in a Complex Pediatric Patient. *American Journal of Hospice & Palliative Medicine*. 2013; **30**(4):403–405.

## Book Chapters

iLearn Peds, in Jabbour M, Lawrence S, **King WJ** (eds): Digital Pediatric Learning Curriculum 2013.

## Administration and Other Contributions

All division members contributed to a large number of committees locally, both at CHEO and at uOttawa, and to a number of organizations nationally and internationally.

Dr. Zucker contributed as the acting Division Chief; as the Director of Pediatric Undergraduate Medical Education; as a member of the Council on Medical Student Education in Pediatrics (COMSEP); as a member of the Canadian Medical Association and as the Physician Lead for the Division of Pediatric Medicine, CHEOworks Lean Initiative.

Dr. Baldwin contributed as a member of the Pediatric OSCE Collaboration of Canada (POCC); as a member of the CaRMS Selection Committee, Pediatric Residency Training Program and as the PGME OSCE Coordinator.

Dr. Hillier contributed as a member of the Council on Medical Student Education in Pediatrics (COMSEP); as a member of the Pediatric Undergraduate Program Directors of Canada (PUPDOC) and as a member of the CaRMS Selection Committee, Pediatric Residency Training Program.

Dr. Issa contributed as a member of the working group committee for the Champlain Complex Care Program.

Dr. Jetty contributed as a member of the CPS First Nations, Inuit & Metis Health Committee; as the Physician Lead for the Qikiqtani Child & Youth Health Committee (QCYHC) and as a member of the Child and Adolescent Needs and Strengths (CANS) Adaptation of the CANS Tool into a Screening Tool for Clinics with Vulnerable Children Working Group.

Dr. King contributed as the Medical Director for Informatics; as a member of the Executive Advisory Committee; as a member of the Society for Hospital Medicine and serves as Co-Chair for both the Records of Personal Health Information Committee (ROPHC) and the Electronic Health Records (EHR) Steering Committees.

## Pediatric Medicine

Dr. LaBerge contributed as the Director for the Basic Clinical Training Program for Rotating Residents, Inpatient Clinical Teaching Units - CHEO; as a Member for the CaRMS Selection Committee, Pediatric Residency Training Program as well as the Physician Lead for the Division of Pediatric Medicine, Epic (EMR) System.

Dr. MacDonnell contributed as the Director of Global Child Health; as a member of the Joint Council on International Children's Services as well as the Chair for the CaRMS Selection Committee, International Medical Graduate Pediatric Residency Training Program.

Dr. Major-Cook contributed as the Co-Chair for Management of Medically Complex Children through the Continuum of Care CoP (Community of Practice), Canadian Association of Pediatric Health Centres (CAPHC); as the Medical Director for the Champlain Complex Care Program and as a member of the Provincial Council for Maternal and Child Health (PCMCH).

Dr. Nair contributed as a member of the Neonatal-Perinatal Residency Training Committee; as a member of the Clerkship/Pediatric Undergraduate Medical Education Committee as well as a Coordinator for the PALS/Lectures, Pediatric Clerkship.

Dr. Parker contributed as a member of the CaRMS Selection Committee, Pediatric Residency Training Program and as a member of the STACER Subcommittee, Postgraduate Medical Education.

Dr. Pothos contributed as a member of the Down Syndrome Medical Interest Group (DSMIG) (USA); as a member of the Medical Advisory for Canadian Down Syndrome Society (CDSS) (Canada); as the Education Director for the Division of Pediatric Medicine and as the Medical Director for the Down Syndrome Service.

Dr. Pound contributed as a member of the Breastfeeding Promotion Committee, Champlain Maternal Newborn Regional Program; as the Program Coordinator for the Enhanced Skills of Family Practice (ESFP) - Pediatrics Program and as the Founder and Chair of the Resident Scholarly Activity Guidance and Evaluation Committee (SAGE)

Dr. Rowan-Legg contributed as an invited member of the Canadian Pediatric Society and Public Health Agency of Canada, Healthy Active Living Project Advisory Group; as the Chair of the Canadian Pediatric Program Directors' OSCE Vetting Committee as well as the Assistant Program Director for Pediatric Postgraduate Program, University of Ottawa.

Dr. Shaw contributed as an elected member of the Alpha Omega Alpha Honor Medical Society; as a member of the Williams Syndrome Association; as the Chair of the Ottawa Children's Literature Roundtable and as the Physician Lead for the Pediatric Medicine Outpatient Consultation Clinic.

Dr. Tjahjadi contributed as a member of the Gorgas Clinical Tropical Medicine Course Alumni; as a member of the Academy of Medicine, Ottawa and as a member of the Nunavut Rounds - Advisory Committee to Qikiqtani Child & Youth Health Committee.

# Respirology

The Division of Respirology is focused on the promotion and improvement of children's respiratory health using best evidence-based practice, and through medical education and research. It is primarily concerned with the care of patients with complex, chronic or rare respiratory illness as well as the more severe spectrum of common respiratory diseases.

The division included four full-time respirologists, 4.0 FTE, in 2013/2014, as well as an academic general paediatrician, 0.5 FTE, and was additionally supported by five part-time community pediatricians. The latter group assisted in clinics at CHEO in the areas of general respiratory medicine, cystic fibrosis and allergy. While the division contributes in broad ways to children with respiratory problems, it has a specific focus on cystic fibrosis, asthma, ventilator-dependent children and sleep disordered breathing. The division is supported by a large multi-disciplinary team, including respiratory therapists and also runs the respiratory function laboratory. In addition to this large clinical commitment, the division also makes a strong academic contribution.

## Faculty

### Full-Time Physicians

- Dr. Ian MacLusky – Associate Professor (Division Chief)
- Dr. Sherri Katz – Assistant Professor
- Dr. Tom Kovesi – Full Professor
- Dr. Joe Reisman – Full Professor
- Dr. Linda Hillier – Assistant Professor (General Pediatrics, 0.5 FTE)

### Part-Time Physicians

- Dr. Sue Morgan
- Dr. Anthony Ham Pong
- Dr. Luc Charette
- Dr. Katherine Keely
- Dr. Simon Hotte

### Clinical Care and Patient Advocacy

While the division will provide necessary care for any child with a respiratory illness, its main mandate is the care of patients with complex, chronic, or rare respiratory illness, or patients with more common respiratory disease (such as asthma) but at the more severe end of the spectrum. Specific areas of focus include severe asthma, cystic fibrosis, sleep-disordered breathing (obstructive sleep apnea/central hypoventilation), bronchopulmonary dysplasia, tracheoesophageal fistula, and neuromuscular disease (both respiratory rehabilitation and secondary hypoventilation). The division also provides care to an increasing number of children requiring home mechanical ventilator support, both non-invasive (BiPAP) or invasively via a tracheostomy. Dr. Kovesi also has specific interest with Aboriginal lung health, with regular visits to Nunavut, as part of his ongoing clinical research efforts.

The division provides a significant inpatient component that saw 350 patients in consultation on the inpatient wards in 2013/2014, with an additional 100 patients admitted to the Respirology Service, the latter being predominantly patients with cystic fibrosis, but with increasing numbers of patients admitted with complex respiratory care problems, including those who are ventilator dependent.

The major component of clinical care delivery was in the outpatient setting, where in excess of 3,000 visits occurred in 2013/2014 in 17 MD ½-day clinics, including some multi-disciplinary specialty clinics. Special clinics occur in the areas alluded to above. While the vast majority of patients were seen by the 4.5 FTE Full-Time faculty, the group of part-time physicians made a very significant contribution in attempting to keep the waiting list for clinic appointments at a manageable level.

### Additional Diagnostic Programs

- Pulmonary Function Laboratory: 3,000 studies were performed in 2013/2014, and were reported by Drs. Kovesi and Reisman.
- Sleep Laboratory: 400 overnight sleep studies were conducted in 2013/2014, and were reported by Drs. Katz and MacLusky. With the establishment of the new dedicated sleep laboratory the division is now also able to perform daytime Multiple Sleep Latency Tests.
- Exercise Laboratory: 30 Cardiopulmonary exercise tests and exercise-induced bronchospasm challenges were performed in a separate, specialized laboratory, interpreted by Dr. Kovesi.
- Members of the Division performed approximately 40–50 diagnostic bronchoscopies. Flexible bronchoscopies are performed in the pediatric intensive care unit or the operating room on all ages, from premature infants to adolescents.



The division maintains strong advocacy for children and their families with chronic and complex diseases, especially for children with Cystic Fibrosis, and through Dr. Kovesi's work in Nunavut. There is also an important web site for children with Tracheo-Esophageal Fistula.

Web site The Federation of Esophageal Atresia and Tracheo-Esophageal Fistula Support Groups E.V. Esophageal Atresia/Tracheoesophageal Fistula; "Tell me About Esophageal Atresia." URL: <http://we-are-eat.org/tell-me-about-esophageal-atresia/>

## Educational Activities

While the division does not have a specific specialty training program in pediatric respirology, it contributes to education in a very broad way and this was substantial in 2013/2014. Dr. Kovesi is director of the education program for the division. The division provided clinical rotations to 15 students (including observers) and 16 residents, including those from other institutions. Rotations were primarily outpatient based to give the maximum exposure to all clinical aspects. There were also rotations of fellows from the Adult Sleep Program and Academic Pediatrics with a specific focus on pediatric sleep disorders. Rotators had the opportunity to be engaged in a broad array of clinical exposures and also had the opportunity to avail of significant classroom activity.

Division members contributed to all aspects of the undergraduate curriculum, including case-based learning, specific lectures in various units, and involvement in clerkship teaching. Dr Kovesi leads the undergraduate respirology curriculum. There was also significant teaching in postgraduate curricula through protected teaching time. Several members participated in OSCEs and contributed to the CaRMS process. In all close to 200 hours of classroom teaching was contributed.

Dr Katz provided research rotations to nine trainees and provided important mentorship for projects that they undertook.

There were also significant contributions to CME with key invited lectures noted below.

## Key Invited Lectures

### Dr. Sherri Katz

- Respiratory Assessment and Management in Pediatric Neuromuscular Disease. Session Speaker, Pediatric Neurology Resident Educational Retreat. Montebello, QC (2013).
- Respiratory Assessment and Management in Pediatric Neuromuscular Disease, CPAP & BIPAP, Targeted Respiratory Exam. Academic Half-Day, Janeway Hospital. Newfoundland (2013).

## Respirology

- Lung Volume Recruitment in Neuromuscular Disease. Concurrent Session Speaker. Canadian Respiratory Conference. Calgary, AB (2014).
- Paediatric to Adult Transition. Session Speaker and Break-out Session Leader. Understanding Prolonged & Long-Term Mechanical Ventilation Workshop, Toronto, ON (2014).
- Lung Volume Recruitment in Neuromuscular Disease, Pediatric Neuromuscular Unit Special Workshop, Thames Valley Children's Centre. London, ON (2014).
- Don't Forget the Kids! Things Worth Knowing if You Treat Kids, or People Who Used to be Kids. Session Chair. Ontario Thoracic Society Pediatric Session, Better Breathing Conference. Toronto, ON (2014).
- Lung Volume Recruitment in Neuromuscular Disease. Concurrent Session Speaker. Canadian Respiratory Conference. Quebec City, QC (2013).
- The A to Z-z-z's of Obstructive Sleep Apnea in Children. Grand Rounds, Janeway Hospital, Newfoundland, Canada (2013).
- OSA Treatment in Children. Session Speaker. Sick Kids Pediatric Sleep Symposium. Toronto, ON (2013).
- Nocturnal Non-invasive Ventilation in Neuromuscular Disease. Concurrent Session Speaker. American College of Chest Physicians Annual Meeting. Chicago, IL, USA (2013).

### Dr. Tom Kovesi

- "Asthma Panel Discussion," and "Asthma in First Nations Children," National Asthma Education Conference. Banff, AB (2013).
- Long-term Complications of Tracheoesophageal Fistula," and "Lung Disease Research in Inuit Infants," Division of Pediatrics, Hadassah Medical Center, Mt. Scopus Campus. Jerusalem, Israel (2013).
- Asthma Update," CHEO Annual Refresher Course. Ottawa, ON (2013).
- Asthma Panel Discussion," and "Asthma in First Nations Children," National Asthma Education Conference. Banff, AB (2013).
- Asthma in the Trenches," Family Medicine Residency Program, Elizabeth Bruyere Hospital. Ottawa, ON (2013).
- Webinar on "Respiratory Disease in First Nations and Inuit Children," Primary Care Nurses, Sioux Lookout First Nations Health Authority (2013).



## Research Activities—Research Projects and Funding

Members of the Division of Respirology are involved in three specific areas of research.

- The impact environment plays on aboriginal health
- Respiratory consequences of neuromotor disease, specifically in attempting to prevent or delay progression of the respiratory disease
- Health outcomes research such as the development of systems and yardsticks to measure the impact of changes in health care provision.

### Research Funding

Long-term Cardio-Respiratory Outcomes of Pre-term Infants: A Workshop to Guide Development of a Canadian Study, **CIHR Planning Grant—Katz SL** (nominated PI). 2014, \$24,975.

Obstructive Sleep Apnea and Hypertension in Children with Chronic Kidney Disease, **Academic Health Science Centre Alternate Funding Plan Innovation Fund—Katz SL** (PI). 2014–2016, \$99,041.84.

Pediatric Long-Term Non-invasive Ventilation Support in Alberta: a 10-year Experience Exportable across Canada, **Funded by Deloitte Clinical Research Fellowship Fund—Castro M** (PI), Bendiak G, **Katz SL**, MacLean J, Gilmour S. 2014, \$70,000.

## Respirology

Sleep Problems in At Risk Kids (SPARK), **CHEO Research Institute—Katz SL** (PI). 2011–2014, \$120,000.

Understanding Long-Term Mechanical Ventilation in Canada: A Programmatic Approach, **CIHR—Rose L** (Principal Applicant), **Katz SL** (Co-Applicant). 2011–2014, \$520,537.

Paediatric Home Long-Term Mechanical Ventilation: Healthcare Costs and Utilization, **CRHP—Nonoyama M, Katz SL**. 2012–2013, \$15,248.

Paediatric Home Long-Term Mechanical Ventilation: Healthcare Costs and Utilization, **Ontario Respiratory Care Society—Nonoyama M, Katz SL**. 2012–2013, \$15,000.

Healthcare Costs and Utilization of Long-Term Users of Mechanical Ventilation in the Home, **The Lung Association National Grant Review/Grant-In-Aid—PI's: Rose L, Nonoyama M, Katz SL**. 2012–2013, \$49,326.

Better Nights/Better Days: Improving Psychosocial Health Outcomes in Children with Behavioural Insomnia, **CIHR—Corkum P** (PI), **Katz SL** (Major Collaborator). 2010–2015, \$1,998,967, (over 5 years).

Does Treating Obstructive Sleep Apnea in Obese Canadian Youth Improve Blood Sugar Control? A Multi Centre Prospective Cohort Study, **CIHR—Katz SL** (PI), Constantin E. 2010–2013, \$199,673.

Intrapleural DNase and Tissue Plasminogen Activator in Pediatric Empyema (DTPA trial), **CIHR and Physicians Services Incorporated—Cohen E** (PI), **MacLusky I** (Co-Investigator). 2012–2014, \$180,000.

The Medical Home of Children and Youth in Canada, **CIHR—Guttman A** (PI), **Reisman J** (Co-Investigator). 2010–2013, \$94,402.

## Peer-Reviewed Publications

**Katz SL, McKim D, Hoey L, Barrowman N, Kherani T, Kovesi T, MacLusky I, Mah JK.** Respiratory management strategies for Duchenne muscular dystrophy: practice variation amongst Canadian sub-specialists. *Pediatr Pulmonol*. 2013 Jan; **48**(1):59–66.

**Liira H, Kovesi T.** Commentaries on 'Remediating buildings damaged by dampness and mould for preventing or reducing respiratory tract symptoms, infections and asthma'. *Evid Based Child Health*. 2013 May; **8**(3):1001–3.

**Kovesi T.** Long-term respiratory complications of congenital esophageal atresia with or without tracheoesophageal fistula: an update. *Dis Esophagus*. 2013 May–Jun; **26**(4):413.

**Katz SL, McKim D, Hoey L, Barrowman N, Kherani T, Kovesi T, MacLusky I, Mah JK.** Respiratory management strategies for Duchenne muscular dystrophy: practice variation amongst Canadian sub-specialists. *Pediatr Pulmonol.* 2013 Jan; **48**(1):59-66.

**Evans J, Skomro R, Driver H, Graham B, Mayers I, McRae L, Reisman J, Rusu C, To T, Fleetham J.** Sleep Apnea Rapid Response Survey, Sleep Laboratory Test Referrals in Canada. *Can Resp J.* 2014 Jan/Feb; **21**(1).e4 (online article).

Folman R, Grenier D, Birken C, Campisi P, Do MT, Forte V, **Maclusky I**, McCrindle BW, Narang I, Witmans M. Obesity hypoventilation syndrome: A different beast. *Paediatr Child Health.* 2013 Jan; **18**(1):36.

**Amin R, Sayal P, Syed F, Chaves A, Moraes TJ, MacLusky I.** Pediatric long-term home mechanical ventilation: twenty years of follow-up from one Canadian center. *Pediatr Pulmonol.* 2014 Aug; **49**(8):816-24.

**Nugent Z, Oliveira V, Maclusky I, Amaral J, Connolly B, Yang CL.** Bronchial artery-pulmonary artery malformation as a cause of cryptogenic hemoptysis. *Pediatr Pulmonol.* 2013 Sep; **48**(9):930-3.

**Katz SL, McKim D, Hoey L, Barrowman N, Kherani T, Kovesi T, MacLusky I, Mah JK.** Respiratory management strategies for Duchenne muscular dystrophy: practice variation amongst Canadian sub-specialists. *Pediatr Pulmonol.* 2013 Jan; **48**(1):59-66.

## Administration and Other Contributions

All members of the division contributed to a large number of committees locally and nationally.

Dr. MacLusky carried out administrative functions as the Division Chief; was a Member of the American Thoracic Society Standards of Practice Committee on Pediatric Home Ventilation; on the Ontario Public Drug Programs (Ministry of Health) respiratory syncytial virus (RSV) prophylaxis program for high risk infants; was a Member, Equity, Diversity and Gender Committee, University of Ottawa.

Dr. Kovesi was Chief Examiner, Royal College of Physicians and Surgeons of Canada, Pediatric Respirology; and was Chair, Ontario Thoracic Society.

Dr. Katz was Canadian Thoracic Society, Chair Pediatric Assembly Executive, Canadian Thoracic Society; Expert Reviewer, Canadian Agency for Drugs and Technologies in Health (CADTH); Chair, Respirology Cross Canada Rounds Committee (CCR); Chair, Research Committee, Canadian Pediatric Sleep Network.

Dr. Reisman was a member of Health Canada, Public Health Agency of Canada, Chronic Respiratory Diseases Advisory Committee; and Co-Chair, Asthma Committee, Ontario Lung Association.





# Rheumatology

The Division of Rheumatology provides state of the art clinical care to children with rheumatic symptoms and those diagnosed with rheumatologic diseases. The philosophy of care is to help children with these problems reach their full potential. Family-centred care is delivered through a team approach, with an emphasis on scholarship in education and research.

There were four rheumatologists for a total of 3.1 FTE in 2013/2014, three of whom contribute to the inpatient clinical service and on call, while all contribute to care in the ambulatory setting. The bulk of the clinical care occurs in the ambulatory setting. There is a strong focus on inflammatory arthritides, on Juvenile Idiopathic Arthritis (JIA) in particular, and on connective tissue diseases including systemic lupus erythematosus (SLE) and juvenile dermatomyositis (JDM), as well as vasculitides. Care is strongly supplemented by a multidisciplinary team and the availability of high-level expertise in point of care musculoskeletal ultrasound. The division also has a very strong academic mandate.

## Faculty

- Dr. Johannes Roth – Associate Professor (Division Chief)
- Dr. Roman Jurencak – Assistant Professor
- Dr. Karen Watanabe Duffy – Associate Professor (0.8 FTE)
- Dr. Ciarán Duffy – Full Professor (Department Chair/Chief, 0.3 FTE)

## Clinical Care and Patient Advocacy

The inpatient component of the clinical service is small but generally sees patients who are quite ill. The clinical consultation service typically sees 1–3 patients per week. Patients admitted are frequently hospitalized for a minimum of 1–2 weeks. There were a total of 75 inpatients including patients seen as new patients and patients admitted with pre-existing rheumatologic diseases in 2013/2014.

The predominant clinical focus is in the ambulatory setting which essentially comprises three elements – Ambulatory Clinics, where there were almost 2,000 visits in 2013/2014, with patients seen in 10 MD ½-day clinics; Medical Day Unit Patients (For IV infusions and/or joint injections) where 250 patient visits occurred; and MSK Ultrasound, for which there 350 studies completed. Clinical care was supported by a very strong multi-disciplinary team comprised of nursing, physiotherapy and social work. Weekly team meetings are a very important component of clinical care delivery.

Patient advocacy is primarily directed to ensuring that patients have access to all available treatments and, in particular, to the availability of biologic agents which are very expensive. This requires strong relationships with pharmaceutical partners who contribute substantially to supporting clinical care delivery.

## Educational Activities

While the division does not have a specific specialty training program in pediatric rheumatology, it contributes to education in a very broad way and this was substantial at all levels in 2013/2014. The division provided clinical rotations to 10 students and 15 residents, including those from other institutions, most notably from Queen's University. This opportunity afforded rotators a very complete exposure to clinical pediatric rheumatology, including procedures, and an important exposure to point of care MSK US. Rotators also received the opportunity for hands on MSK teaching at the bedside.

Division members also contributed to case-based learning, pre-clerkship seminars and to residents' protected teaching time. Dr Jurencak contributed to undergraduate education through his role as an education scholar and Dr Watanabe Duffy made a substantial contribution through her role as a McGill Osler Fellow, and also through her sessions on MSK examination. Dr Roth undertook considerable teaching of MSK US, locally, nationally and internationally, while Dr Duffy ran monthly Professor Rounds. This enormous contribution to teaching exceeded a total of 300 hours of classroom time, not including time in direct clinical supervision, or in teaching preparation. Significant contributions were also made to OSCEs and to the CaRMS matching process.

## Key Invited Lectures

### Dr. Ciarán Duffy

- Reaching Out and Leaping Forward for Juvenile Idiopathic Arthritis: CHEO Pediatric Grand Rounds Ottawa, ON (2013).
- The Canadian Network Experience: British Society for Pediatric and Adolescent Rheumatology Annual Conference, Keynote Address. Dublin, Ireland (2013).
- Kids Get Arthritis, Too: Ottawa Women's Canadian Club. Ottawa, ON (2013).

### Dr. Roman Jurencak

- Takayasu's Arteritis: Eastern Ontario Rheumatology Annual Meeting. Montebello, QC (2013).
- Update on Hemaphagocytic Lymphohistiocytosis and Macrophage Activation Syndrome: CHEO Pediatric Grand Rounds. Ottawa, ON (2013).
- Approach to a Child with Suspected Rheumatic Disorder: 11th Annual Pediatric Medicine Update. Ottawa, ON (2013).
- Clinical Utility of Autoantibody Testing in Pediatric Rheumatic Disorders: Kingston General Hospital and Queen's University. Kingston, ON (2013).

## Rheumatology

- Telephone Consultation Usage in Pediatric Rheumatology—Clinical Considerations in Optimizing Nursing Resources: ACR/ARHP Annual Meeting. San Diego, CA (2013).

### Dr. Johannes Roth

- Pediatric Ultrasonography: Canadian Rheumatology Association Annual Conference. Ottawa, ON, (2013).
- Pediatric Rheumatology Update: National Review Course. Toronto, ON (2013).
- Musculoskeletal Presentations of Lysosomal Storage Disorders: Pediatric Grand Rounds. Oakville, ON (2013).
- Musculoskeletal Presentations of Lysosomal Storage Disorders (in French): Rheumatology Rounds Quebec City, QC (2013).
- Arthritis Idiopathica Juvenile (In Spanish): Telehealth Network Presentation. Mexico (2013).
- Standardization of Pediatric Ultrasonography: American College of Rheumatology Annual Conference San Diego CA (2013).
- Vertebral Fractures in the 3 Year Period Following Steroid Initiation Among Children with Chronic Illness: American College of Rheumatology Meeting. San Diego, CA (2013).

## Research Activities—Research Projects and Funding

The Division has a very active and productive research program, with studies conducted in a variety of areas. These studies are funded by both federal and provincial organizations, including The Canadian Institutes of Health Research (CIHR) and The Canadian Initiative for Outcomes in Rheumatology Care (CIORA), as well as through pharmaceutical partnerships, with considerable acquisition of funding. The studies are multidisciplinary in nature with collaboration locally, nationally and internationally, resulting in several presentations at national and international meetings, as well as several publications, annually. The division contributed to the publication of 16 peer-reviewed papers and 1 book chapter in 2013.

Specific areas of research include, but are not limited to:

- Longitudinal Outcomes in JIA
- Exercise and Physical Activity in JIA
- Incidence and Outcomes in JIA-associated Uveitis
- Transition of Youth with Rheumatic Diseases to Adult Care
- Validation of MSK ultrasound in Children with JIA
- Clinical Trials of Biologic Agents in Children with JIA
- Evaluation of Subcutaneous Methotrexate in JIA
- Outcomes in Systemic Vasculitides

## Research Funding

Linking Exercise, Physical Activity and Pathophysiology in Childhood Arthritis: A Canadian Collaborative Team, **CIHR Team Grant—Duffy C** (Nominated PI), **Roth J** (Co-PI), **Watanabe Duffy K, Jurencak R** (among 40 Collaborators nationally). 2010–2015, \$2,500,000.

Steroid-induced Osteoporosis in the Pediatric Population—Canadian Incidence Study 2, **CIHR Team Grant—Ward L** (PI), **Roth J, Jurencak R** (Co-Investigators). 2009–2013, \$1,200,000.

Biologically Based Outcome Predictors in Juvenile Idiopathic Arthritis, **CIHR and Canadian Arthritis Network—Rosenberg A** (PI), **Roth J, Duffy C** (Co-Investigators). 2009–2013, \$1,000,000 (\$15,000 locally).

An Internet-Based Self-Management Program for Adolescents with Arthritis: A Randomized Controlled Trial, **CIHR—Stinson J** (PI), **Duffy C** (Co-Investigator). 2011–2014, \$442,140 (\$45,000 locally).

What Matters the Most for Parents, Patients and Clinicians in Predicting the Course of Juvenile Idiopathic Arthritis? **CIORA—Guzman J** (PI), **Duffy C, Jurencak R** (Co-Investigators). 2012–2013, \$54,366.

A randomized placebo-controlled trial to evaluate the efficacy and safety of Tocilizumab for patients with poly JIA, **Hoffmann La Roche—Roth J** (Site Investigator), **Jurencak J, Duffy C, Watanabe Duffy K** (Collaborators). 2010–2013, \$45,000.

A phase IV study to evaluate decreased dose frequency in patients with systemic juvenile idiopathic arthritis (sJIA) who experience laboratory abnormalities during treatment with Tocilizumab. **Hoffmann La Roche—Roth J** (Site Investigator), **Jurencak J, Duffy C, Watanabe Duffy K** (Collaborators). 2012–2013, \$40,000.

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A phase Ib, open-label, multicenter study to investigate the pharmacokinetics, pharmacodynamics and safety of Tocilizumab following subcutaneous administration to patients with polyarticular-course juvenile idiopathic arthritis, **Hoffmann La Roche—Roth J** (Site Investigator), **Jurencak J, Duffy C, Watanabe Duffy K** (Collaborators). 2012–2013, \$43,000.

A phase Ib, open-label, multicenter study to investigate the pharmacokinetics, pharmacodynamics and safety of Tocilizumab following subcutaneous administration to patients with systemic juvenile idiopathic arthritis, **Hoffmann La Roche—Roth J** (Site Investigator), **Jurencak J, Duffy C, Watanabe Duffy K** (Collaborators). 2012–2013, \$96,000.

Ultrasound findings of finger, wrist and knee joints in mucopolysaccharidosis Type I. **Genzyme—J Roth** (PI). 2013–2014, \$55,000.

## Peer-Reviewed Publications

Tsang AC, **Roth J**, Gottlieb C. Tocilizumab for Severe Chronic Anterior Uveitis Associated with Juvenile Idiopathic Arthritis in a Pediatric Patient. *Ocul Immunol Inflamm*. 2014; 2:155–7.

Matheson LA, Duffy S, Maroof A, Gibbons R, **Duffy CM, Roth J**. Intra- and inter-rater reliability of jumping mechanography muscle function assessments. *JMNI*. 2013; 13:4:480–6.

Iagnocco A, Naredo E, Wakefield R, Bruyn GA, Collado P, Jousse-Joulin S, Finzel S, Ohrndorf S, Delle Sedie A, Backhaus M, Berner-Hammer H, Gandjbakhch F, Kaeley G, Loeuille D, Moller I, Terslev L, Aegerter P, Aydin S, Balint PV, Filippucci E, Mandl P, Pineda C, **Roth J**, Magni-Manzoni S, Tzaribachev N, Schmidt WA, Conaghan PG, D'Agostino MA. Responsiveness in Rheumatoid Arthritis. A Report from the OMERACT 11 Ultrasound Workshop. *JRheum*. 2014; 41:Suppl2:379–82.

Magni-Manzoni S, Collado P, Jousse-Joulin S, D'Agostino MA, Naredo E, Muratore V, Merli P, **Roth J**. Current state of musculoskeletal ultrasound in pediatric rheumatology practice: results of a survey among the international pediatric rheumatology networks. *Rheumatology*. 2014; 53:Suppl3:491–6.

Shiff N, Brant R, Guzman J, Cabral D, Huber A, Miettunen P, **Roth J**, Scuccimarri R, Alos N, Atkinson S, Collet JP, Couch R, Cummings E, Dent P, Ellsworth J, Hay J, Houghton K, **Jurencak R**, Lang B, Larche M, LeBlanc C, Rodd C, St. Cyr C, Stein R, Stephure D, Taback S, Rauch F, Ward LM and **the Canadian STOPP Consortium**. Glucocorticoid-Related Changes in Body Mass Index among Children and Adolescents with Rheumatic Disease. *Arthritis Care Res*. 2013; 65:Suppl1:113–21.



Siminoski K, Lee K-C, Abish S, Alos N, Bell L, Blydt-Hansen T, Couch R, Cummings A, Ellsworth J, Feber J, Fernandez CV, Halton J, Huber AM, Israels S, **Jurencak R**, Lang B, Laverdiere C, LeBlanc C, Lewis V, Midgley J, Miettunen PM, Oen K, Phan V, Pinsk M, Rauch F, Rodd C, **Roth J**, Saint-Cyr C, Scuccimarri R, Stephure D, Taback S, Wilson B, Ward LM and **the Canadian STOPP Consortium**. The development of bone mineral lateralization in the arms. *Osteoporos Int*. 2013; 24:999-1006.

Shiff N, Brant R, Guzman J, Cabral D, Huber A, Miettunen P, **Roth J**, Scuccimarri R, Alos N, Atkinson S, Collet JP, Couch R, Cummings E, Dent P, Ellsworth J, Hay J, Houghton K, **Jurencak R**, Lang B, Larche M, LeBlanc C, Rodd C, St. Cyr C, Stein R, Stephure D, Taback S, Rauch F, Ward LM and **the Canadian STOPP Consortium**. Glucocorticoid-Related Changes in Body Mass Index among Children and Adolescents with Rheumatic Disease. *Arthritis Care Res*. 2013; 65:Suppl1:113-21.

Siminoski K, Lee K-C, Abish S, Alos N, Bell L, Blydt-Hansen T, Couch R, Cummings A, Ellsworth J, Feber J, Fernandez CV, Halton J, Huber AM, Israels S, **Jurencak R**, Lang B, Laverdiere C, LeBlanc C, Lewis V, Midgley J, Miettunen PM, Oen K, Phan V, Pinsk M, Rauch F, Rodd C, **Roth J**, Saint-Cyr C, Scuccimarri R, Stephure D, Taback S, Wilson B, Ward LM and **the Canadian STOPP Consortium**. The development of bone mineral lateralization in the arms. *Osteoporos Int*. 2013; 24:999-1006.

Orr SL, dos Santos MP, **Jurencak R**, Michaud J, Miller E, Doja A. Central Nervous System Venulitis Presenting as Migraine. Headache: *The Journal of Head and Face Pain*. 2014; 54:Suppl3:541-4.

Shiff N, Brant R, Guzman J, Cabral D, Huber A, Miettunen P, **Roth J**, Scuccimarri R, Alos N, Atkinson S, Collet JP, Couch R, Cummings E, Dent P, Ellsworth J, Hay J, Houghton K, **Jurencak R**, Lang B, Larche M, LeBlanc C, Rodd C, St. Cyr C, Stein R, Stephure D, Taback S, Rauch F, Ward LM and **the Canadian STOPP Consortium**. Glucocorticoid-Related Changes in Body Mass Index among Children and Adolescents with Rheumatic Disease. *Arthritis Care Res*. 2013; 65:Suppl1:113-121.

Siminoski K, Lee K-C, Abish S, Alos N, Bell L, Blydt-Hansen T, Couch R, Cummings A, Ellsworth J, Feber J, Fernandez CV, Halton J, Huber AM, Israels S, **Jurencak R**, Lang B, Laverdiere C, LeBlanc C, Lewis V, Midgley J, Miettunen PM, Oen K, Phan V, Pinsk M, Rauch F, Rodd C, **Roth J**, Saint-Cyr C, Scuccimarri R, Stephure D, Taback S, Wilson B, Ward LM and **the Canadian STOPP Consortium**. The development of bone mineral lateralization in the arms. *Osteoporos Int*. 2013; 24:999-1006.

Daneman D, Kellner J, Bernstein M, Dow K, Dugas MA, **Duffy CM**, Eddy A, Filler G, Frappier J-Y, Gilmour C, Givelichian L, Huang L, Rockman-Greenberg C, Shevell M, Vardy C, Walti H, Orrbine E., Williams M. Social paediatrics: From 'Lip Service' to the Health and Well-Being of Canada's Children and Youth. *Paediatr Child Health*. 2013; 18:Suppl7:351-352.

Bernatsky S, Clarke A, Labreque J, von Scheven E, Schanberg L, Silverman E, Brunner H, Haines K, Cron R, O'Neil K, Oen K, Rosenberg A, **Duffy CM**, Joseph L, Lee J, Kale M, Turnbull E and Ramsey-Golman R. Cancer Risk in Childhood-Onset

System Lupus. *Arthritis Res Ther*. 2013; 15:Suppl6:R198.

Cavallo S, Majnemer A, **Duffy CM**, Feldman DE. Involvement in Leisure Activities Among Children and Youth with Juvenile Idiopathic Arthritis. *Arthritis Rheum*. 2013; 65 Suppl10:2210

Stinson J, Ahola Kohut S, Spiegel L, White M, Gill N, Colbourne G, Sigurdson S, **Watanabe Duffy K**, Tucker L, Stringer E, Hazel B, Hochman J, Reiss J, Kaufman M. A systematic review of transition readiness and transfer satisfaction measures for adolescents with chronic illness. *Int Journ Adol Medicine and Health*. 2014; **26**(2):159-74.

Filler G, Givelichian L, Walti H, Piedboeuf B; **Pediatric Chairs of Canada**. Rising part-time work in the pediatric work force in Canada. *J Pediatr*. 2013 Aug; **163**(2):312-313.e2.

### Book Chapters

Matheson L, Duffy CM: Assessment of Pediatric Rheumatic Disease. In Oxford Textbook of Rheumatology, Fourth Edition, Watts, Conaghan, Denton, Foster, Isaacs, Müller-Ladner (eds), Oxford, 2013 pp.

## Administration and Other Contributions

All division members contributed to a very large number of committees locally, both at CHEO and at uOttawa, and to a very significant number of organizations nationally and internationally.

Dr. Roth contributed in his role as Division Chief, and as Director and Vice-President, Canadian Rheumatology Ultrasound Society; as Chair, Pediatric Imaging Group, American College of Rheumatology; as Head, Pediatric Musculoskeletal Ultrasound International Consortium; and on the Editorial Board of the Journal of Musculoskeletal and Neuronal Interactions.

Dr. Jurencak contributed as a member of the Rheumatology Training Program, to the selection process for medical student admissions, and as a member of various national bodies.

Dr. Watanabe Duffy contributed to the Epic template development for pediatric rheumatology at CHEO, to the CaRMs selection process, as a member of the Education Committee, Pediatric Section, Canadian Rheumatology Association, and as a member of various national bodies.

Dr. Duffy contributed in his role as Chair/Chief of Pediatrics and chaired or was a member of many committees locally and nationally, including his role as a member of the Pediatric Chairs of Canada. In addition, he led several research initiatives nationally including his role as President of Canadian Alliance of Pediatric Rheumatology Investigators (CAPRI) and was also a senior member of the Editorial Board of the Journal of Pediatric Rheumatology.



# SERVICES/ PROGRAMS

In this section, we have provided a synopsis of clinical, educational and research activities for each service and program within the Department of Pediatrics. A full report will be available on the University of Ottawa, Department of Pediatrics website.

## Bioethics

A Bioethics service in the Department of Pediatrics is provided by one practitioner at less than 1.0 FTE. However, this extends to a full-time position through partnership with CHEO, the University of Ottawa, Faculty of Medicine and Roger's House.

Any person directly involved in a patient's care can request ethics consultation, including patients and family, nurses, physicians, social workers and other health care professionals. The ethicist meets with the person or persons making the request and usually ascertains at this stage whether the concern is an "ethics" question. The patient chart and relevant literature are reviewed and discussions planned. Any consultation, discussion and recommendations are documented in the patient record.

## Faculty

- Dr. Michelle Mullen – Associate Professor (Division Chief, 0.6 FTE)

## Clinical Care and Patient Advocacy

Ethics consultation is supported by the services of a full-time ethicist. When Dr. Michelle Mullen is consulted, an initial 'triage' discussion takes place and multidisciplinary clinical ethics patient meetings are organized as needed. In this way, all the pertinent expertise such as health care providers, faith, cultural and community supports can be drawn upon to help move decisions forward.

This approach differs from traditional ethics consultation and clinical ethics committees in that it is highly flexible in providing the precise expertise required to achieve the best answers and provide 'just in time' support to patients, families and the health care team. It is also an inclusive and transparent process.

A clinical ethics case conference approach to clinical consultation is a cornerstone of the ethics program and a model for other centres; a streamlined team approach to issues of policy and ethics is available.

Special clinical areas and frequent issues relate to withdrawal/limiting life sustaining treatment, demands for treatment, treatment refusal, Substitute Decisions/Capacity and resource allocation.

Clinical ethics at CHEO has shown very markedly the complex issues arising from the provision of best care to our Qikiqtani regional patients and their families, especially the impact of medical fostering. This impact extends beyond the patient and their family, affecting local communities and the population at large. CHEO has undertaken a review process of the Qikiqtani regional program, and the challenges of medical fostering are within the mandate.

## Educational Activities

Bioethics contributions to undergraduate training in 2013/14 included: Introductory Bioethics; LINK (transition unit from medical school to in-hospital training during the undergraduate career); lecturer and moderator of Bioethics Interest Group.

A two-year, six-part comprehensive pediatric bioethics curriculum is available for postgraduate training. The curriculum consists of:

- Best interests / approaches to clinical pediatric ethics
- Withdrawal of treatment / refusal of treatment
- Demands for treatment / futility / resource allocation
- Ability / Disability: the geneticized society?
- Parents / Patients / Privacy and the 'right' to know
- Issues at the end of life/transplantation

The Bioethics Service offered postgraduates three Academic Half Days in 2013/2014. Other activities included:

- Divisional bioethics activities such as annual city-wide Endocrine Fellows Bioethics Debate and pediatrics intensive care unit (PICU) fellows ethics case analyses.
- Electives were available for interested postgraduate trainees. These are tailored to the specific clinical and research domains of the learner and his/her specialty and are an adjunct to preparation for the Royal College of Physicians and Surgeons examinations.



### Key Invited Lectures

#### Dr. Michelle Mullen

- “A Narrative Model for Informed Consent with Youth”: UNESCO Chairs in Bioethics Annual Meeting. Naples Italy (2013)
- “Moral Distress and Advocacy in Paediatric Palliative Care in Environment of Diminishing Resources”:
- Challenge Panel, Canadian Palliative and Hospice Care Annual Meeting. Ottawa, ON (2013)

### Research Activities–Research Projects and Funding

Bioethics research has been funded at CHEO by various agencies: Canadian Institutes of Health Research (CIHR), Genome Canada and the Ontario HIV Treatment Network. Such research is collaborative and has included partners from Epidemiology, Cardiology, Genetics, Surgery and Infectious Diseases.

Empirical methodologies, both quantitative and qualitative may be employed (descriptive ethics). Ethics analyses and policy recommendations are made (normative ethics) within the context of ethics concepts of Best Interests, Justice and Critical Theory.

Independently, CHEO investigators from Critical Care units have also developed funded Bioethics research projects.

Main areas of research include:

- Ethical issues in genetic testing
- Empirical research in bioethics and health policy with a focus on genetics, informed decision-making and health care outcomes and policy
- Outcomes of genetics services programs
- Ethical decision-making for youth
- Resource allocation

### Administration and Other Contributions

Dr. Mullen has contributed as the Chief of Bioethics, as the Chair of the CHEO Policy & Ethics Response (Team PERT); as the Roger’s House bioethicist as well as the Faculty of Medicine Ethics Advisor, among many other contributions and committee roles.

# Child & Youth Protection Program

The Child and Youth Protection Program (CYPP) at CHEO provides leadership within the hospital and community in assessing children and youth for suspected maltreatment (abuse and/or neglect). Our major emphasis is the provision of specialized medical services to children, youth and families where there is a question of abuse or neglect. While the program's services are based at CHEO, the program works in collaboration with several regional partners including the Children's Aid Society (CAS).

2013/2014 has been a very exciting and successful year for CYPP. We have implemented the recommendations from the 2011 internal review, established 24/7 consultation services, and implemented twice weekly child protection clinics. With our continued work in research, education and advocacy, and with strengthened community partnerships, we are poised to become a Division within the Department of Pediatrics. This change is imminent.

CYPP's mission aligns with CHEO's and Department of Pediatrics vision, NACHRI's (North American Children's Hospital's and Related Institutions) "Defining the Children's Hospital Role in Child Maltreatment" and the United Nations Convention on the Rights of the Child.

## Faculty

- Dr. Sue Bennett – Full Professor (Director)
- Dr. Michelle Ward – Assistant Professor (0.7 FTE CYP; 0.2 FTE Pediatric Medicine)
- Dr. Louise Murray – Assistant Professor (0.5 FTE CYP; 0.2 Neonatal Follow Up)
- Dr. Leigh Fraser-Roberts – Assistant Professor (0.25 CYP; 0.5 Neonatal Follow Up/Newborn Nursery)
- Dr. Anna Karwowska – Assistant Professor (0.25 CYP; 0.5 ED)

## Clinical Care and Patient Advocacy

CYPP provides both an inpatient and outpatient clinical service, as well as consultations to the Emergency Department (ED).

Inpatient care is comprised of the consultation and co-ordination for hospital cases of suspected abuse and/or neglect.

Outpatient care comprises ambulatory clinics, consultations in the ED and the CYPP Review Committee.

CYPP Clinics occur twice weekly and entail the medical assessment of children and youth with non-acute concerns for child maltreatment including cases of physical

## Child & Youth Protection Program

abuse and neglect. General pediatric, developmental and behavioural issues faced by these patients are also addressed. This is a new initiative which started in September 2013 in collaboration with CAS-Ottawa. The clinic is staffed by two pediatricians, a registered nurse and a child protection worker.

Medical assessment for pre-pubertal children with suspected sexual abuse/assault in a specialized outpatient service (in collaboration with the CHEO Emergency Department Sexual Abuse Service). CYPP pediatrician clinical consultation in 2013 covered 24/7 consultation shared between 3–4 pediatricians.

The CYPP Review Committee is a hospital-based multi-disciplinary team comprised of representatives of key hospital and community services. It meets weekly. The team reviews all cases of children and youth who are reported by the hospital to a child welfare authority for suspected abuse or neglect. The team also reviews cases of children and youth brought to the hospital by parents and others where a report of suspected abuse or neglect has already been made to the child welfare authority. The charts of the siblings of the primary case(s) are also reviewed.

Cases are reviewed in a timely manner. Case review includes the provision of expert opinion related to: the medical, psychosocial and risk aspects of the child's current life circumstances; formulation of a formal conclusion; recommendations for further medical and psychosocial management within the hospital and community; and placement of Child and Youth Protection Alerts on children deemed to be at ongoing risk on the hospital's Child and Youth Protection Alert System.

Occasionally CYPP physicians are required to provide evidence in the court system. There were 10 such occurrences in 2013/2014.

CYPP also provides advocacy for a number of causes. Dr Bennett was a member, Global Reference Group to the United Nations Convention on the Rights of the Child Committee for Accountability to child well-being & child rights (GRGA). She was also engaged in an accountability consultation and capacity building day for the UN Committee on the Rights of the Child in Annecy, France, January 2014. She also contributed to a very large number of other advocacy initiatives. She was nominated for the (7 member) Independent Global Expert Review Group for the UN Commission on Information and Accountability (CoIA) for Women's and Children's Health (by uOttawa President & Director Global Health Policy, International Development Research Centre, Ottawa).

## Educational Activities

The program provided clinical rotations to 19 students and 13 residents in 2013/2014. We offer two-week selectives to University of Ottawa Faculty of Medicine students and two- to four-week electives to visiting medical students if space is available. Medical students work on the consultation service, participate in outpatient clinics, attend multidisciplinary review committee meetings and are exposed to the sexual

assault program. Opportunities for learning occur in all clinical settings and students and residents are exposed to all aspects. Dr Murray supervised and coordinated trainee rotations.

The Child and Youth Protective Program contributed to education in a very broad way this past year. Members were involved in all aspects of student and resident learning opportunities which include structured teaching cases and peer review. Additional opportunities for trainees included meeting with other professionals involved in child welfare and court proceedings; other combined rounds or teleconference sessions; and community multi-agency meetings. The group also contributed to the CaRMs process, OSCEs and academic ½-days.

### Key Invited Lectures

#### Dr. Sue Bennett

- “Child Rights approach to Child Protection: UN General Comment 13 and its implementation: Co-presentation with former Chair of UN CRC Committee, International Summer Course on the Rights of the Child, Moncton University. New Brunswick (2013).
- “Overview of Child Maltreatment”: Hospital de Ninos Ricardo Gutierrez. Buenos Aires, Argentina (2013).
- “A Child Rights Approach to Child Protection”: Program of Social Sciences and Health of FLASCO (Latin American School of Social Sciences). Buenos Aires, Argentina (2013).
- “Physical Discipline of Children” Presentation in a workshop to infuse a child rights approach into child protection: Launching a new era. Eighth Annual Conference on Differential Response: A catalyst for change in Child Welfare: Kempe Centre for the Prevention & Treatment of Child Abuse & Neglect. Colorado (2013).
- “Accountability to the world’s children: the case for child rights and well-being indicators”, presentation and panel member: Closing Plenary at Third Global Congress for Consensus in Pediatrics & Child Health. Bangkok, Thailand (2014).
- “Accountability and development of Indicators for the UN Convention on the Rights of the Child”: Co Advisor to Ministry of Social Services, Government of Thailand (organized & hosted by UNICEF Thailand) (2014).
- Introduction to Child Maltreatment”: Medical Students at Patan Academy of Health Sciences. Kathmandu, Nepal (2014).
- “Caregiver Facilitated Illness in a Child”: Canadian Pediatric Surveillance Program (CPSP) (a joint project of PHAC and CPS) November 2013 and March 2014.

## Child & Youth Protection Program

- “Child Protection & the RAISE Nepal Project”: Half Day Symposium hosted by CHUM (Centre Hospitalier de L’Université de Montreal), Department of Medicine & Spiritual Care. Montreal, QC (2014).
- The Changing Face of Child Maltreatment, Implications for Practitioners. Speakers: Dr. Sue Bennett, Dr. Michelle Ward, Dr. Louise Murray, Dr. Anna Karwowska, Leigh-Ann Salway November. Pediatric Grand Rounds, CHEO. Ottawa, ON (2013).

### Dr Anna Karwowska

- “An Approach to Child Abuse Trauma”: Eastern Ontario Regional Trauma Conference. (2013).
- The Changing Face of Child Maltreatment: Pediatric Grand Rounds, CHEO. Ottawa, ON (2013).
- Office of the Chief Coroner’s Multidisciplinary Death Investigation Rounds: Team Investigation in the Death of Children. Speakers: Louise McNaughton-Filion (Chief Coroner), Anna Karwowska (CHEO), Michelle Ward (CHEO), David Creery (CHEO), Dion Pearce (CAS), Marc Andre Guy (Ottawa Police Service). Ottawa, ON (2013).

### Dr Louise Murray

- 4th Canadian Symposium on Advanced Practices for Child Abuse Pediatricians. Toronto, ON (2013).
- Presentation: Medical assessment of bruising in suspected child maltreatment. Presenters: Drs. Anne Niec, Louise Murray, Michelle Ward
- Presentation: Assessment of Abdominal Trauma. Presenters: JB Baird, L Chauvin-Kimoff, J MacPherson. CL Murray
- The Changing Face of Child Maltreatment, Speakers: Dr. Susan Bennett, Dr. Michelle Ward, Dr. Louise Murray, Dr. Anna Karwowska, Leigh-Ann Salway: Pediatric Grand Rounds, CHEO. Ottawa, ON (2013).

### Dr. Michelle Ward

- Medical assessment of bruising in suspected child maltreatment cases. Presenters: Drs. Anne Niec, Louise Murray, Michelle Ward. Presentation: Head Injuries. Presenters: Drs. Michelle Shouldice, Emma Cory, Michelle Ward. Talk by M. Ward: Head injury opinions: What role do seizures, CPR, hypoxia and sinus venous thrombosis play in retinal and intracranial findings?
- Office of the Chief Coroner’s Multidisciplinary Death Investigation Rounds: Team Investigation in the Death of Children. Speakers: Louise McNaughton-Filion (Chief Coroner), Anna Karwowska (CHEO), Michelle Ward (CHEO), David Creery (CHEO), Dion Pearce (CAS), Marc Andre Guy (Ottawa Police Service). Ottawa, ON (2014).



- The Changing Face of Child Maltreatment: Pediatric Grand Rounds, CHEO. Ottawa, ON (2013).
- “Shaken Baby Syndrome”: At the intersection of medicine, media and the law—Pediatric Grand Rounds, CHEO. Ottawa, ON (2014).
- “Medical Neglect: A Practical CHEO Approach to Identification and Management”—Invited Presentation for Hematology Service, CHEO. Ottawa, ON (2013).
- Common office pediatrics: current evidence and practical solutions—Family Medicine Resident Academic Half-day. Ottawa, ON (2013).
- Fractures and Child Maltreatment: A Primer for Orthopedics Residents: Orthopedic Residents’ Academic Half Day Presentation (2013).

## Research Activities—Research Projects and Funding

CYPP faculty are actively involved in a range of research and had 4 publications in 2013/2014. The following areas were addressed:

- Child maltreatment including head injuries, bruises and abdominal injuries
- Social pediatrics
- Child wellbeing, development, and protection
- Health of children involved with the child welfare system
- Medico-legal opinion formulation
- Child rights
- Advocacy
- Global health

## Peer-Reviewed Publications

**Ward MGK, King WJ, Bennett S.** From Bruises to Brain Injury: The physician’s role in the assessment of inflicted head injury. *Paediatrics & Child Health*. 2013 Oct; **18**(8):423–4.

**Bennett S.** Member WHO Expert Advisory Group for Project on Preventing Violations Against Children with Mental & Intellectual Disabilities in Institutional Settings. Contributor to WHO policy document: Children with Mental and Intellectual Disabilities: Ending violations and institutionalizing and promoting rights and community living.

**Ward MGK, Ornstein A, Niec A, Murray L.** The Medical Assessment of Bruising in Suspected Child Maltreatment Cases: A Clinical Perspective, Canadian Paediatric Society Child and Youth Maltreatment Section, *Paediatr Child Health*. 2013; **18**(8):433–7.

**Ward MGK, King WJ, Bennett S.** From Bruises to Brain Injury: The Physician's Role in the Assessment of Inflicted Traumatic Head Injury, Canadian Pediatric Surveillance Program Highlights, *Paediatr Child Health*. 2013; **18**(8):423-4.

## Administration and Other Contributions

All division members contributed to a number of committees locally, both at CHEO and at the University of Ottawa and to a number of organizations nationally and internationally.

Dr. Bennett contributed as the Director of the Child and Youth Protect; as the Chair of the CHEO-community Liaison Executive Committee and as a member and CHEO representative, Ottawa Community Steering Committee for development of Advocacy Centre in Ottawa. She is also a Member & CHEO representative on Community Taskforce to develop the Ottawa Community response and investigation protocol for child abuse & neglect in Ottawa, 2004-2014.

Dr. Ward contributed as the Chair for the Department of Pediatrics Working Group on Vulnerable Populations; Member of the American Academy of Pediatrics Section on Child Abuse and Neglect; Executive Member, Canadian Pediatric Society Child & Youth Maltreatment Section (Secretary-Treasurer); Member, Working Group, Proposal for RCPSC specialist certification of child abuse pediatrics; Member, Planning Committee, 4th Canadian Symposium on Advanced Practices in Child Abuse Pediatrics; Chair, Working group, Canadian Advanced Practice in Child Maltreatment Group, Medical Evaluation of Bruises; as well as a number of other committees.

Dr. Murray contributed as a CPS Child and Youth Maltreatment Section Executive-Member at large; as a member of the Canadian Advanced Practice in Child Maltreatment working group; as a member of the CPS Child and Youth Section Executive and as a Resident Education Supervisor at CHEO.

Dr. Anna Karwowska contributed as a member of the Pediatric Disaster Working Group, Centre of Excellence in Emergency Preparedness as well as a member of the Pediatric Emergency Medicine Education Committee.

# Developmental Pediatrics

Developmental Pediatrics involves the assessment and treatment of children whose development is not progressing as expected. The pediatricians working in the Division of Development Pediatrics see patients both at the Ottawa Children's Treatment Centre (OCTC) and at CHEO. At the OCTC, we work with a variety of allied health professionals to assess and manage the care of children with Autism Spectrum Disorders, Developmental Delay, and Physical Disabilities including Cerebral Palsy.

The Division serves children from the Baffin area and hosts telephone/teleconference sessions with school personnel, CAS, and community therapy providers.

## Faculty

### Full-Time Physicians

- Dr. Beth Macklin – Assistant Professor (Chief and Medical Director of OCTC)
- Dr. Jonathan Ponesse – Assistant Professor

### Part-Time Physicians

- Dr. Asha Nair – Assistant Professor

## Clinical Care and Patient Advocacy

The pediatricians in the Developmental Pediatrics program are involved in diagnosing and providing ongoing care for children with difficulties related to autism spectrum disorders, global developmental delay, intellectual disability and disorders of movement including Cerebral Palsy. Our role includes determining the extent, nature and etiology of the developmental difficulties as well as planning for educational, medical and therapy services. The children usually have complex medical, physical, cognitive, behavioural and psychosocial needs and long term care is common.

We participate in multidisciplinary diagnostic and follow up clinics at CHEO and at the OCTC. At diagnostic clinics, we may be joined by psychologists and social workers. When dealing with problems related to feeding and growth, we may work with a dietician or occupational therapist. Outside of clinic times we also collaborate with educators, speech and language pathologists, physiotherapists and other physicians to help ensure comprehensive and coordinated care for the children and families.

Developmental Pediatrics is primarily an outpatient service. We consult to inpatients upon request but full assessments are done once the children are well enough to attend an outpatient clinic.

## Developmental Pediatrics

The division continues to advocate for curriculum modifications for children with disabilities, increased respite services for patients, and supporting community physicians in caring for children with disabilities.

## Educational Activities

The division provided clinical rotations to 3 students and 20 residents this past year. All pediatric, pediatric neurology and genetics residents from the University of Ottawa spend one month studying developmental pediatrics under the supervision of the developmental pediatricians. Senior pediatric residents often choose to return for further training in their final year. Residents from the psychiatry program spend up to 6 months on a developmental pediatric rotation.

During a developmental pediatric rotation, residents have the opportunity to learn to diagnose autism and global developmental delay and to identify and manage the various medical, behavioural and psychosocial problems that are associated with these conditions.

Division members also contributed to several didactic sessions, lectures, OSCES and Resident Academic Half Day.

## Key Invited Lectures

### Dr. Asha Nair

- Feeding Difficulties in the Preschool Age Child: Pediatric Refresher Day. Ottawa, ON (2013).

## Research Activities–Research Projects and Funding

The Ottawa Children's Treatment Centre staff is often involved in multicenter trials relating to children with physical and developmental disabilities. The largest project currently underway focuses on the study of hemiplegic Cerebral Palsy.

Division members are involved in the following areas of study:

- Neurology of Autism Spectrum Disorders
- Feeding difficulties in the Down Syndrome population
- Use of genetic microarray testing by Developmental Pediatricians
- Medical ethics

## Administration and Other Contributions

All division members contributed to some committees locally, both at CHEO and at the University of Ottawa, and to the Canadian Pediatric Society.

Dr. Macklin contributed in her role as Division Chief; as the Director of Medical Services, OCTC; as a member of the Curriculum Committee for the Canadian Pediatric Society: Developmental Section and as a member of the Ontario Association of Children's Rehabilitation Centres (physician group).

Dr. Ponesse contributed in his role as a division representative for the EPIC roll-out at CHEO and as a member of the Research Advisory and Ethics Boards at the OCTC.

Dr. Nair contributed as the Developmental Pediatric elective and rotation coordinator for Undergraduate and Postgraduate training; as a member of the Pediatric Ontario Neurodevelopmental Network as well as a member of the Canadian Pediatric Society: Developmental Section, CME Committee.







# Genetics

The Regional Genetics Program at the Children's Hospital of Eastern Ontario provides diagnostic counselling and therapeutic services to individuals and families dealing with genetic conditions. We serve a population of approximately 1.2 million in Eastern Ontario, Western Quebec, Nunavut and parts of Northern Ontario. Our Program includes a Director, 7 full-time and 3 part-time MD physicians, 5 clinical laboratory scientists, 13 MSc Certified Genetic Counsellors, 11 administrative and clerical personnel and a large number of technicians and technologists distributed throughout our three laboratories. We also offer select biochemical, cytogenetic, and molecular genetic laboratory services to the larger population of Ontario, as well as clinical outreach services to several Genetics clinics in Northern Ontario. Our mandate is to provide clinical and laboratory services through all stages of life (preconception, prenatal, pediatric and adult).

## Faculty

- Dr. Gail Graham - Associate Professor (Chief)
- Dr. Judith Allanson - Full Professor (retired from clinical service)
- Dr. Christine Armour - Assistant Professor
- Dr. Kym Boycott - Associate Professor
- Dr. David Dymment - Assistant Professor
- Ms. Christina Honeywell - Assistant Professor
- Dr. Alasdair Hunter - Adjunct Professor (retired from clinical service)
- Dr. Sarah Nikkel - Associate Professor
- Dr. Julie Richer - Assistant Professor
- Dr. Sarah Sawyer - Assistant Professor

## Clinical Care and Patient Advocacy

The clinical service is comprehensive and centralized, providing diagnosis and counselling related to general genetics, dysmorphism and syndrome recognition, prenatal genetics, adult genetics, cancer genetics, cardiogenetics, inherited connective tissue disorders, ocular genetics, skeletal dysplasias and neurogenetics.

Medical Geneticists and Genetic Counsellors see patients referred with a variety of prenatal and general genetics indications. These include expectant women diagnosed with fetal ultrasound abnormalities; children, youth or adults with developmental delay or intellectual disability, dysmorphism and/or congenital anomalies and individuals of any age with a variety of other presentations that suggest a genetic condition, including a hereditary cancer predisposition.

## Educational Activities

We are committed to excellence in the teaching and mentoring of residents and fellows. Our regional program hosts the University of Ottawa's five-year Royal College of Physicians and Surgeons of Canada postgraduate training program in Medical Genetics. We are proud of our perfect accreditation record with the RCPSC and the Canadian College of Medical Geneticists (CCMG). The high faculty to resident ratio facilitates individual counselling regarding career options at all stages of the five-year program.

## Research Activities

The Regional Genetics Program has a large and very active research program that touches all aspects of genetics care. Areas of research include but are not limited to:

- Finding of rare disease genes
- Describing new genetic conditions
- Finding new ways to test for genetic conditions
- Finding new clinical or laboratory characteristics of genetic conditions
- Learning about the impact of genetic conditions on patients and families
- Finding the best way to provide genetic counselling to patients and families

We are the hub of internationally recognized rare disease gene finding initiatives, FORGE and Care for Rare, created and led by award-winning clinician-investigator Dr. Kym Boycott, who also holds a uOttawa Faculty of Medicine Research Chair. Our clinicians, scientists and researchers collaborate to rapidly translate the latest genetic technologies and discoveries into benefits for our patients. In 2013 and 2014, our Department of Pediatrics faculty published 94 book chapters and peer-reviewed articles, delivered 30 invited talks and held 13 grants totaling almost 19 million dollars. Our clinicians and researchers regularly present their work at major national and international genetics meetings and regularly serve as reviewers for a large number of national and international journals.

Please visit the Children's Hospital of Eastern Ontario Research Institute ([www.cheori.org](http://www.cheori.org)) for more information about research funding and publications.

### Administration and Other Contributions

All of our members contributed to a very large number of committees and initiatives locally, both at CHEO and at uOttawa, provincially, nationally and internationally. Our contributions in this realm are too numerous to list, but many of our Faculty held national or international leadership positions:

Dr. Graham served on the Board of Directors of the Canadian College of Medical Geneticists, as Vice-President in 2013 and as President in 2014. She testified at a Senate hearing in support of Bill S-201 (protection against genetic discrimination) and played a key role in the first Canadian legal challenge of the validity of gene patents. She served on the RCPSC Specialty Committee in Medical Genetics, as the CMA Specialist Forum Representative for the CCMG and on the Medical Advisory Board of the Canadian Hemochromatosis Society.

Dr. Allanson co-led Genetics Education Canada Knowledge Organization (GEC-KO).

Dr. Armour chaired the CCMG Clinical Practice Committee.

Dr. Boycott served as Co-Chair of the International Rare Disease Research Consortium (IRDiRC) Diagnostics Committee, External Advisory Board Member of the Great Ormond Street Hospital/University College London Biomedical Research Centre, and member of the Global Alliance Clinical Expert Working Group on Genome Sequencing. She served as a member of the Scientific Advisory Board, Orphanet Canada, a member of the Research Management Committee, National Centre of Excellence, NeuroDevNet and a member of the Institute Advisory Board for the CIHR Institute of Genetics.

Dr. Nikkel sat on the Medical Genetics RCPSC Examinations Committee and on the Medical Advisory Board, Little People of America.

Dr. Richer Chaired the CCMG Ethics and Public Policy Committee and played a key role in the first Canadian legal challenge of the validity of gene patents. She also served on the RCPSC Specialty Committee in Medical Genetics.

# Metabolics

The Metabolics Program consists of the Metabolics Clinic as well as the Newborn Screening Retrieval Centre. We provide diagnostic and treatment services to children and adults with inborn errors of metabolism (IEM). The program had 3 physicians, 2 scientists, a dietician and some social worker support.

## Faculty

- Dr. Michael Geraghty - Full Professor (Division Chief)
- Dr. Osama Aldirbashi - Assistant Professor (Clinical Scientist)
- Dr. Dennis Bulman - Professor (Clinical scientist)
- Dr. Pranesh Chakraborty - Associate Professor
- Dr. Matthew Lines - Assistant Professor

## Clinical Care and Patient Advocacy

The Metabolics Clinical Program sees patients for a range of metabolic conditions. There are seven half-day clinics per week as well as walk-in availability for urgent cases. Approximately 1,000 patients are seen per year.

The Newborn Screening Retrieval Center locates and facilitates the diagnosis of screen positive babies within the Champlain Local Health Integration Network (LHIN) as well as northern and western areas of Ontario. Approximately 200 babies are retrieved and seen every year through this program.

## Educational Activities

The Metabolics Program is accredited for training in Biochemical Genetics, both laboratory and clinical, by the Canadian College of Medical Geneticists (CCMG). The CCMG program is a fellowship consisting of one to two years training leading to eligibility for examination and accreditation by the CCMG.

Additionally, both the Metabolics Clinical Program and Newborn Screening Ontario (NSO) provide teaching and training to students, residents, fellows and outside trainees through electives and formal didactic courses such as Academic Half Days and Grand Rounds.

Division members also contributed to lectures, Metabolics weekly teaching rounds, Pediatric Grand Rounds as well as the teaching and supervision of medical students, residents, fellows and genetics counselors.

### Key Invited Lectures

#### Dr. Osama Al-Dirbashi

- Methylcitrate analysis improves newborn screening for propionic and methylmalonic acidemias: The 2013 Newborn and Childhood Screening Symposium. Ottawa, ON (2013).
- Chemical derivatization techniques for the diagnosis of inborn errors of metabolism: University of Ottawa Chemistry Department. Ottawa, ON (2014).
- Newborn Screening Ontario (NSO) overview of 2013: The 2014 Joint Garrod and Canadian Newborn and Child Screening Symposium. Ottawa, ON, (2014).
- Overview of Newborn Screening in Ontario: Children's Hospital of Eastern Ontario—Genetics Academic Half-day. Ottawa, ON (2014).
- Newborn Screening for Severe Combined Immune Deficiencies: University of Ottawa Pathology and Laboratory Medicine Grand Rounds. Ottawa, ON, (2014).
- Review of Peroxisomal Disorders: Children's Hospital of Eastern Ontario—Genetics Academic Half-day. Ottawa, ON (2013).
- Congenital Disorders of Glycosylation; An Overview: The 12th Asian and Oceanian Congress on Child Neurology. Riyadh, Saudi Arabia (2013).
- Expanding Newborn Screening: The 12th Asian and Oceanian Congress on Child Neurology. Riyadh, Saudi Arabia (2013).

#### Dr. Dennis Bulman

- What we are learning from an ultra-rare disease: New genes and new pathways for Myoclonus Dystonia: Department of Biochemistry, University of Ottawa. Ottawa, ON (2014).
- Newborn Screening in the Genomic Era: Rendez-vous Génome Québec 2013. McGill. Montréal, QC (2013).
- The expanding therapeutic challenge: Insight from Canada's investigation of 100 undiagnosed rare disease: INFRAFRONTIER IMPC-IKMC Meeting, CNR Headquarters. Rome, Italy (2013).

#### Dr. Pranesh Chakraborty

- "Newborn Screening for Severe Combined Immune Deficiencies": Department of Pathology and Laboratory Medicine Grand Rounds, University of Ottawa. Ottawa, ON (2014).
- "The narrowing gap between screening and diagnosis": Canadian Newborn and Child Screening Symposium. Ottawa, On (2014).



- “Screening for Treatable Rare Diseases: Where are we now and where are we heading”: McGill University Pediatric Grand Rounds, Montreal, QC (2014).
- “The Canadian Inherited Metabolic Diseases Research Network: A Pan-Canadian, Practice-Based Research Network for Inborn Errors of Metabolism”: Canadian Society for Epidemiology and Biostatistics Biennial Conference. Newfoundland and Labrador, St. John’s (2013).
- Newborn screening: Finding children with rare disease during their “window of opportunity”: World Orphan Drug Congress. Brussels, Belgium (2014).

#### **Dr. Michael Geraghty**

- “Newborn Screening in Ontario: adding to the menu. The case for Severe Combined Immune Deficiencies”—Pediatric Grand Rounds, CHEO. Ottawa, ON (2013).

#### **Dr. Matthew Lines**

- Mitochondrial Diseases: Neurology Half-Day. Ottawa, ON (2013).
- “What’s New in Mitochondrial Diseases?”: Genetic Education Rounds. Ottawa, ON (2014).

## **Research Activities—Research Projects and Funding**

The Division has a very active and productive research program, with studies conducted in a variety of areas and over 40 publications. Members of the Division of Metabolics are involved in the following research areas:

- The molecular and pathophysiological basis of rare diseases especially with regards to inborn errors of metabolism. Many of the Metabolics Program publications relate to the description of novel metabolic disorders, expanding the phenotype of known disorders and finding the genes responsible for metabolic diseases.
- Long term outcomes of the management and treatment of inborn errors of metabolism through a national consortium to examine patient outcomes, experiences and costs of treating inborn errors of metabolism.
- Application of technology including Next Generation Sequencing (NGS) to screening and diagnosis of inborn errors of metabolism such as development of novel mass spectrometry assays

### Research Funding

Newborn screening for Glutaric Aciduria (GA1) in the Oji Cree community, **AFP Innovation Fund—Geraghty M** (PI) and team. 2010, \$27,285.

A Microfluidic Quantitative PCR Multiplex Approach to DNA Based New Born Screening: A novel approach that will allow the expansion of Ontario's Newborn Screening program, **AHSC AFP Innovation Fund—Geraghty M**. 2010, \$66,850.

An integrated mitochondrial diagnostics platform combining next-generation sequencing with respiratory studies in patient cells, **MitoCanada Foundation Award—Lines M** (PI), **Chakraborty P**. 2014, \$31,813.

Pilot study of minimally-invasive percutaneous needle muscle biopsy for enhance diagnosis of mitochondrial diseases, **CHEO RI Research Growth Award—M Lines** (PI), **P Chakraborty**. 2014, \$27,629.

Early Onset Neonatal Sepsis Detection: Development of Molecular Testing Methods using Newborn Screening Ontario Blood Spots and Archived Neonatal Sepsis Samples, **CHAMO Innovation Fund—Lacaze T** (PI), **Chakraborty P**. 2013, \$43,083.

A shared understanding? Attitudes and experiences of stakeholders to newborn screening consent practices and implications for policy and practice, **CIHR—Wilson B** (PI), **Chakraborty P**. 2013, \$271,733.

Patient- and family-oriented outcomes for inborn errors of metabolism: the perspective of patient advocacy and support groups, **RDF Microgrant—Potter B** (PI), **Chakraborty P**. 2013, \$3,439.

An integrated mitochondrial diagnostics platform combining next-generation sequencing with respiratory studies in patient cells, **MitoCanada Foundation—Lines MA, Bulman D, Holcik M, Chakraborty P, Rupar T, Harper ME**. 2014, \$31,813.

Enhanced Metabolite Profiling by Tandem MS with Chemical Derivatization for Newborn Screening, **Spark Grant—Co-applicant, Ontario Institute for Genomics, Aldirbashi O**. 2012–2013 \$50,000.

Proposal to use Newborn Dried Blood Spot Testing to Enhance Ontario's Infant Hearing, **Ministry of Children and Youth Services—Bulman DE** (PI) + 4 co-applicants. 2013–2014, Equipment \$450,000 + Operating \$190,000.

A New Gene and a Novel Pathway Leading to Myoclonus Dystonia, **Dystonia Medical Research Foundation (USA)—Bulman DE** (PI), Grimes DA, Lang AE, Klein C. 2014–2016, \$80,000.

Enhanced CARE for RARE Genetic Diseases in Canada, **Genome Canada—Bulman D** (co-applicant), **Boycott KM, MacKenzie A** (co-PIs). 2013–2017, \$11,778,890.

## Peer-Reviewed Publications

DT, Rankin J, Crawford TO, **Geraghty MT**, Pomeroy SL, Crowley WF Jr, Wang Jabs E, Hunter DG, Chew S, Balasubramanian R, Chan WM, Kang PB, Andrews C, Webb BD, MacKinnon SE, Oystreck Grant PE, Engle EC. "A novel syndrome caused by the E410K amino acid substitution in the neuronal  $\beta$ -tubulin isotype 3." *Brain*. 2013; **136**(2):522–35.

McDonnell LM, Mirzaa GM, Alcantara D, Schwartzentruber J, Carter MT, Lee LJ, Clericuzio CL, Graham JM Jr, Morris-Rosendahl DJ, Polster T, Acsadi, G, Townshend S, Williams S, Halbert A, Isidor B, David A, Smyser CD, Paciorkowski AR, Willing M, Woulfe J, Das S, Beaulieu CL, Marcadier J; FORGE Canada Consortium, **Geraghty MT**, Frey BJ, Majewski J, **Bulman DE**, Dobyns WB, O'Driscoll M, **Boycott KM**. "Microcephaly-Capillary Malformation Syndrome: A Novel RASopathy Caused by Mutations in the Deubiquitinating Enzyme STAMBP" *Nature Genetics*. 2013; **45**(5):556–62.

**Armour C**, Brebner A, Watkins D, **Geraghty MT**, Chan A, Rosenblatt D. "Good clinical outcome in an atypical cblF patient identified by expanded newborn screening." *Pediatrics*. 2013; ePub. **132**(1):e257–61.

Wiseman DH, May A, Jolles S, Connor P, Powell C, Heeney MM, Giardina PJ, **Klaassen RJ**, **Chakraborty P**, **Geraghty MT**, **Major-Cook N**, Kannengiesser C, Thuret I, Thompson AA, Marques L, Hughes S, Bottomley SS, Fleming MD, Wynn RF. "A novel syndrome of congenital sideroblastic anemia, B cell immunodeficiency, periodic fevers and developmental delay." *Blood*. 2013; **122**(1):112–123.

Yoon G, Baskin B, Tarnopolsky M, **Boycott KM**, **Geraghty MT**, **Sell E**, Goobie S, Meschino W, Banwell B, Ray PN. "Autosomal recessive hereditary spastic paraplegia—clinical and genetic characteristics of a well-defined cohort." *Neurogenetics*. 2013 Nov; **14**(3–4):181–8.

**Lines M**, Rupar T, Baskin B, Ray P, Grynspan D, Michaud J, **Geraghty MT**. "Infantile Sialic acid storage disease: Two unrelated Inuit cases homozygous for a common novel SLC17A5 mutation. *JIMD*. 2014; 12:79–84.

Marcadier JL, Smith AM, Pohl D, Schwartzentruber J, **Al-Dirbashi OY**, Majewski J, Ferdinandusse S, Wanders RJ, **Bulman DE**, **Boycott KM**, **Chakraborty P**, **Geraghty MT**. "Mutations in ALDH6A1 encoding methylmalonic semialdehyde dehydrogenase are associated with dysmyelination and transient methylmalonic aciduria." *Orphanet J Rare Disease*. 2013; **8**(1):98.

Nikkel SM, Huang L, Lachman R, Beaulieu CL, Schwartzentruber J, FORGE Canada Consortium, Majewski J, **Geraghty MT**, **Boycott KM**. "Whole-exome sequencing expands the phenotype of Hunter syndrome." *Clin Genet*. 2014 Aug; **86**(2):172–6.

**McMillan HJ**, Schwartzentruber J, Smith A, **Lee S**, **Chakraborty P**, **Bulman DE**, Beaulieu CL, Majewski J, **Boycott KM**, **Geraghty MT**. "Compound heterozygous mutations in glycyl-tRNA synthetase are a proposed cause of systemic mitochondrial disease", *BMC Med Genet*. 2014 Mar 26; 15:36.

Durie D, Hatzoglou M, **Chakraborty P**, **Holcik M**. "HuR controls mitochondrial morphology through the regulation of BclXL translation." *Translation*. 2013; 1:1-8.

Wilson K, Hawken S, Ducharme R, Potter BK, Little J, **Thébaud B**, **Chakraborty P**. "Metabolomics of prematurity: Analysis of patterns of amino acids, enzymes and endocrine markers by categories of gestational age." *Pediatr Res*. 2014 Feb; **75**(2):367-73.

Hayeems RZ, Miller FA, Carroll JC, Little J, Allanson J, Bytautas JP, **Chakraborty P**, Wilson BJ. "Primary care role in expanded newborn screening: After the heel prick test." *Can Fam Physician*. 2013; 59:861-8.

Marcadier JL, Smith AM, **Pohl D**, Schwartzentruber J, **Al-Dirbashi OY**, Majewski J, Ferdinandusse S, Wanders RJ, **Bulman DE**, **Boycott KM**, **Chakraborty P**, **Geraghty MT**. "Mutations in ALDH6A1 encoding methylmalonate semialdehyde dehydrogenase are associated with dysmyelination and transient methylmalonic aciduria." *Orphanet J Rare Dis*. 2013; 8:98.

Banugaria SG, Prater SN, Patel TT, Dearmey SM, Milleson C, Sheets KB, Bali DS, Rehder CW, Raiman JA, Wang RA, Labarthe F, Charrow J, Harmatz P, **Chakraborty P**, Rosenberg AS, Kishnani PS. "Algorithm for the Early Diagnosis and Treatment of Patients with Cross Reactive Immunologic Material-Negative Classic Infantile Pompe Disease: A Step towards Improving the Efficacy of ERT." *PLoS One*. 2013; 8:e67052

Wiseman DH, May A, Jolles S, Connor P, Powell C, Heeney MM, Giardina PJ, **Klaassen RJ**, **Chakraborty P**, **Geraghty MT**, **Major-Cook N**, Kannengiesser C, Thuret I, Thompson AA, Marques L, Hughes S, Bottomley SS, Fleming MD, Wynn RF, "A novel syndrome of congenital sideroblastic anemia, B cell immunodeficiency, periodic fevers and developmental delay (SIFD)". *Blood*. 2013 122:112-23

**McNally JD**, Doherty DR, **Lawson ML**, **Al-Dirbashi OY**, **Chakraborty P**, Ramsay T, **Menon K**. "The Relationship Between Vitamin D Status and Adrenal Insufficiency in Critically Ill Children." *J Clin Endocrinol Metab*. 2013; M98:E877-81

**Moore GP**, **Lines MA**, **Geraghty MT**, de Nanassy J, **Kovesi T**. "Novel mutation in ABCA3 resulting in fatal congenital surfactant deficiency in two siblings." *Am J Respir Crit Care Med*. 2014 Mar 15; **189**(6):750-2. PMID: 24628317

**Lines MA**, Jobling R, Brady L, Marshall CR, Scherer SW, Rodriguez AR, Lee L, Lang AE, Mestre TA, Wanders RJ, Ferdinandusse S, Tarnopolsky MA. "Peroxisomal D-bifunctional protein deficiency: three adults diagnosed by whole-exome sequencing." *Neurology*. 2014 Mar 18; **82**(11):963-8.

**Lines MA**, Hewson S, Halliday W, Sabatini PJ, Stockley T, Dipchand AI, Bowdin S, Siriwardena K. "Danon Disease Due to a Novel LAMP2 Microduplication." *JIMD Rep*. 2014; 14:11-6.

**Lines MA**, Rupar CA, Rip JW, Baskin B, Ray PN, Hegele RA, Grynspan D, Michaud J, **Geraghty MT**. "Infantile Sialic Acid Storage Disease: Two Unrelated Inuit Cases Homozygous for a Common Novel SLC17A5 Mutation." *JIMD Rep*. 2014; 12:79-84. doi: 10.1007/8904\_2013\_247. Epub 2013 Jul 31. PMID: 23900835.

Marcadier JL, Smith AM, **Pohl D**, Schwartzentruber J, **Al-Dirbashi OY**, Majewski J, Ferdinandusse S, Wanders RJ, **Bulman DE**, **Boycott KM**, **Chakraborty P**, **Geraghty MT**. "Mutations in ALDH6A1 encoding methylmalonate semialdehyde dehydrogenase are associated with dysmyelination and transient methylmalonic aciduria." *Orphanet J Rare Dis*. 2013; 8:98.

**McNally JD**, **Menon K**, **Chakraborty P**, Fisher L, Williams KA, **Al-Dirbashi OY**, Girolamo T, Maharajh G, Doherty DR. "Impact of anesthesia and surgery for congenital heart disease on the vitamin d status of infants and children: a prospective longitudinal study." *Anesthesiology* 2013; 119:71-80.

**McNally JD**, Doherty DR, **Lawson ML**, **Al-Dirbashi OY**, **Chakraborty P**, Ramsay T, **Menon K**. The relationship between vitamin D status and adrenal insufficiency in critically ill children. *Clin Endocrinol Metab*. 2013; 98:E877-81.

## Administration and Other Contributions

Dr. Geraghty contributed as Chief of the Division of Metabolics; as the Chair of the MOHLTC Newborn and Childhood Screening subcommittee; as well as the Chair of the CCMG Biochemical Genetics Committee

Dr. Chakraborty contributed as the Chair of the Canadian College of Medical Geneticists: Metabolic Diseases Committee; as the Chair of the Ontario Maternal-Child Screening Committee; as well as being a member of the Executive for the Garrod Association.

Dr. Lines contributed as a member of the Organizing and Scientific Committee for the 2014 Joint Garrod and Canadian Newborn & Child Screening Symposium.

Dr. Al-Dirbashi contributed as member of the Severe Combined Immunodeficiency Newborn Screening Planning and Implementation Committee; as a member of the editorial board to review articles submitted for Chromatography Research International; and as the Chair of the Organizing and Scientific Committee for the 2014 Joint Garrod and Canadian Newborn & Child Screening Symposium.

Dr. Bulman contributed as a member of the Editorial Board for ISRN Neurology; as the Curator of Leiden Open Variation Database (LOVD) for the genes SRCAP and EFTUD2; as well as a member for the Scientific Organizing Committee for the CCMG Annual Meeting.





# Palliative Care

The Palliative Care Program provides consultative and clinical services to children with life-limiting illnesses and progressive decline in health status. The palliative care team works closely with other CHEO services and community partners, including Roger's House, the pediatric hospice, located on the grounds of CHEO.

## Faculty

- Dr. Christina Vadeboncoeur – Assistant Professor

## Clinical Care and Patient Advocacy

Dr. Vadeboncoeur works 1 week on service out of 3–4 weeks. There are approximately 120–130 children followed by the palliative care team at any one time and usually 6–8 children are admitted to Roger's House for respite, pain and symptom management, transition home from hospital or end of life care. There are 6–8 patients followed in hospital, including 2–4 new consults per week (outpatient consults for respite, in hospital consults for support, in hospital consults for pain and symptom management including weaning of sedation and opioids).

There is ongoing advocacy for individual patients who are all considered vulnerable. The children we follow are all medically fragile, many are undergoing acute and chronic decline and the impact to family functioning is substantial. As a team, we are always advocates who look at the whole patient and family in relation to their social circumstances and strive to provide child and family focused care that best meets their needs during changing medical circumstances.

## Educational Activities

Dr. Vadeboncoeur is the designated person who coordinates all medical student, resident and fellow rotations in the program. This includes mandatory electives for fellows in PICU, pediatric hematology/oncology, pain medicine as well as electives adult palliative medicine (will become mandatory as of July 2016), family medicine and pain medicine.

### **Palliative Care Learner schedule 2013–2014**

- 2 Pediatric Palliative Care subspecialty residents (1 block and 2 blocks respectively)
- 3 Hematology/Oncology subspecialty residents (1 block each)
- 2 PICU subspecialty residents (1 block each)
- 2 NICU subspecialty residents (1 block each)
- 4 Pediatric PGY4 residents (1 block each)
- 2 Family Medicine PGY3 (1 block each)
- 2 Medical Students (2 weeks each)

## Key Invited Lectures

### Dr. Christina Vadeboncoeur

- Pediatric palliative care in crisis: The moral distress of providing care in an environment of diminishing resources.
- Moderator: Challenge Issues Panels: Pediatrics. Integrating Hospice Palliative Care into Healthcare: Moving Forward, Canadian Hospice Palliative Care Conference. Ottawa, ON (2013).

## Research Activities

### Research Funding

Resident Principle Investigator: Dr. Laura Wheaton

Senior Supervisor and Co-Principle Investigator: **Dr. Christina Vadeboncoeur**

Co-Investigators: Dr. Katherine Moreau, Dr. Kristina Krmpotic

Pediatric Pain Management Education: The Design, Implementation and Evaluation of Online Modules about Pediatric Pain: **Educational Initiatives in Resident Education Grant**—Wheaton L (Resident PI), **Vadeboncoeur C** (Senior Supervisor and Co-Principle Investigator), **Moreau K**, Krmpotic K. 2013–2014, \$17,127.

PedPalASCNet: A Network for Accessible, Sustainable, and Collaborative Research in Pediatric Palliative Care, **CIHR Network Catalyst—Palliative and End Of Life Care**—Siden H (PI), Cadell AS, Davies DE, Davies EM, Gregoire M-C, Harlos MS, Liben S, MacDonald ME, Rapoport A, Spicer S, Steele RG, Straatman LP, **Vadeboncoeur CM**. \$375,328.

## Administration and Other Contributions

Dr. Vadeboncoeur contributed as a Coordinator for the Department of Pediatrics Resident OSCE examinations; as a member of the Pediatric Intensive Care Unit Residency Program Committee and as a member of the Canadian Pediatric OSCE Collaboration, among many other contributions and committee roles.

# Rehabilitation Services

Comprehensive and nationally renowned inter-professional rehabilitation is provided at CHEO and The Ottawa Children's Treatment Center (OCTC). Dr. Anna McCormick is one of four physicians in Canada who is dual certified in pediatrics and physical medicine as well as rehabilitation. She provides medical leadership to a strong rehabilitation team and has been highly engaged in education, research and administration.

## Faculty

- Dr. Anna McCormick – Associate Professor

## Clinical Care and Patient Advocacy

There is one dual certified pediatric/physical medicine and rehabilitation specialist (Dr. Anna McCormick) and one adult trained physical medicine and rehabilitation specialist (Dr. Nancy Dudek) providing medical rehabilitation care.

Dr. McCormick provides 24/7 coverage for patients with newly acquired physical and cognitive deficits from acquired brain injuries, strokes, spinal cord injuries and complex multi-trauma that require inpatient rehabilitation admissions. This service provides goal-directed, family focused, inter- professional care with a focus on maximizing function and successful transition to home, school and community.

Consultative inpatient service is also available for patients who have acute medical needs provided by another service within the hospital or when therapeutic guidance is required but an inpatient stay may not be required.

Typically 2-4 complex inpatients are followed by the rehabilitation team though numbers can reach as high as 8-10. Lengths of stay vary but tend to range from 1-3 months.

The majority of clinical care is in the ambulatory setting. Dr. McCormick provides care in 6 outpatient care clinics:

1. Neuromuscular Clinic: providing multidisciplinary care to individuals with muscle and peripheral nerve disorders (e.g. Duchenne Muscular Dystrophy, spinal muscular atrophy, Charot Marie Tooth).
2. Spina Bifida/ Spinal Cord Clinic : facilitating multidisciplinary care for individuals with myelomeningocele, tethered cord and acquired spinal cord injuries.
3. General Rehabilitation/Acquired Brain Injury : allowing follow-up on patients that have had prolonged rehabilitation inpatient stays to maximize physical, cognitive and behavioral function.
4. General Assessment Clinic (Ottawa Children's Treatment Center): provision of life span care for individuals with childhood acquired disabilities (primary diagnosis: Cerebral Palsy).

5. Botulinum Toxin Injection Clinic (Ottawa Children's Treatment Center): provision of assessment of individuals with hypertonia with consideration of treatment options such as bracing, therapeutic exercise, casting and botulinum toxin injections.
6. Adult Cerebral Palsy Clinic (The Ottawa Rehabilitation Center) providing transitional support for individuals with Cerebral Palsy transitioning to adult care.

Dr. Dudek, a nationally renowned specialist in amputee care, provides inpatient consultation, outpatient clinic support and transition to adult care for individuals with limb amputations.

## Educational Activities

### Fellowship Development

Dr. McCormick has collaborated with the Glenrose Rehabilitation Hospital in Edmonton, Alberta, to develop the Pediatric Rehabilitation Fellowship Curriculum. In 2013, the second fellow graduated from this program. This year long fellowship was organized, teaching provided upward of 30 hours of case based learning, learning objectives evaluation and final assessment for completion of certificate completed. This fellow is currently employed as a pediatric physiatrist in Québec City where there was very limited service and no subspecialist in this area before.

Following this positive experience, we applied for and ascertained funding for our next fellow who will join us from the pediatric program at the IWK Health Centre in Halifax year 2015-16.

Other educational endeavors include:

- Royal College Examiner: examiner in the specialty of Physical Medicine and Rehabilitation (provision of Pediatric Rehabilitation Expertise).
- Resident teaching: providing 3 compulsory, 3 month rotations in pediatric rehabilitation. Each rotation includes weekly formal teaching sessions covering the breadth of Pediatric Rehabilitation.
- Resident teaching: providing one month rotation and clinic experience for pediatric neurology residents Developmental Pediatrics Rotation (Neuromuscular, Spina Bifida and Cerebral Palsy clinics).
- Resident research project supervision: one resident being supervised over a four-year period.
- Resident mentorship: 3 current residents wishing to pursue a career in pediatric rehabilitation.
- Medical student: electives and clinic supervision.

### Key Invited Lectures

#### Dr. Anna McCormick

The Canadian Botulinum Toxin Conference: Case presentation workshop lead.  
Montreal, QC (2014).

Go Boldly - E- Rehabilitation: Using multimodal web-based home programs,  
the way of the future? Grand Rounds, The Ottawa Rehabilitation Center.  
Ottawa, ON (2014).

Treatment of Spasticity: Neurology Grand Rounds, CHEO. Ottawa, ON (2014).

### Research Activities

#### Research Funding

A randomized Double-Blind, Placebo-Controlled, Phase 3 Trial of Tadalafil for  
Duchenne Muscular Dystrophy—**Eli-Lilli Grant—McMillan H (PI), McCormick A.**  
2013-2015, \$172,185

Duchenne Muscular Dystrophy: Double-Blind Randomized Trial to Find Optimum  
Steroid Regimen—**National Institute of Health (NIH)—McMillan H (PI), McCormick A.**  
2013-2018, \$2,420 start-up + per-patient allocation.

Childhood Hemiplegic Cerebral Palsy Integrated Neuroscience Discovery Network  
"CP-NET Phase 2"—**Ontario Brain Institute—Fehlings D (PI), McCormick A, Young N,**  
Rosenbaum P, deVeber G, Scherer S, Menon R. 2013-2017, \$1,942,709.

Childhood Hemiplegic Cerebral Palsy Integrated Neuroscience Discovery Network  
"CP- Net"—**Ontario Brain Institute—Fehlings D, McCormick A, Young N,**  
Rosenbaum P, deVeber G, Scherer S, Menon R. 2011-2013, \$1,996,992.51.

The Canadian Neuromuscular Disease Registry—**The Marigold Foundation—**  
Korngut L, **McCormick A, McMillan H, Dojeiji S, Bourque P.** 2010-2013,  
\$5,000 start-up; \$6,000 per year for data entry.

#### Peer-Reviewed Publications:

Youth and Young Adults with Spina Bifida: Their Utilization of Physician and Hospital  
Services. Anselmo L, **McCormick A, Mukherjee S, Young N.**  
*Archives of Physical Medicine and Rehabilitation.* 2013.



## Administration and Other Contributions

Dr. McCormick serves as:

- **President of Medical Staff**—leading quarterly meetings to update staff on hospital-wide activities including activities of the Hospital Board of Directors.
- **Medical Director of Rehabilitation**—representing the rehabilitation service at the Medical Advisory Committee (MAC).
- **Medical Advisory Committee representative at the Professional Advisory Committee**—Updating health professionals on significant physician activities at the MAC.
- **EPIC subject matter expert**—to develop templates and initiate use of EPIC in Rehabilitation outpatient clinic.











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