LETTER FROM THE LEADERS

The VISION of the Pain Centre is to be the leading international pediatric centre in pain prevention and management.

The MISSION is to prevent and minimize pain for all children in a family-centered care environment by fostering collaboration, excellence, integrity and innovation between inter-professional teams that integrate high quality clinical care, education and research.

Dear Reviewers,

We would like to welcome you to Toronto for the purpose of reviewing the Centre for Pain Management, Research and Education (Pain Centre) at The Hospital for Sick Children (SickKids). We have developed the attached dossier to highlight our accomplishments, goals and initiatives and future direction, and importantly to demonstrate our significant impact.

We look forward to meeting with you in April, and will take pleasure in introducing you to many members of the Pain Centre who are integral to our past, present and future success, and who are passionate about preventing and minimizing pain for children.

Many thanks, in advance, for taking the time to review the dossier and for travelling to Toronto for the review.

Regards,

Dr. Fiona Campbell, BSc, MD, FRCA (Centre Co-Director)
Dr. Bonnie Stevens, RN, PhD, FCAHS (Centre Co-Director)
Suzanne McGovern, MSc, PMP (Pain Centre Manager)
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EXECUTIVE SUMMARY

During the past five years, we have assembled a passionate group of pediatric pain clinicians, researchers and educators who have been successful in meeting goals and objectives and making our Mission and Vision a reality. Some of our key achievements include the following:

- Significant increases in pain assessment practices, and decreases in moderate to severe pain intensity in hospitalized children
- Improvements in Inpatient Patient/ Parent Satisfaction scores
- Development and implementation of a hospital wide Quality Improvement Plan for pain (QIP-Pain)
- Research funding of $>15M
- Attraction of >40 trainees at all levels and in all areas of science
- Successful launch of Seed Grant and Knowledge Translation (KT) Competitions
- Introduction of Novel Educational strategies including Webinars, Online Pediatric Pain Curriculum, Cross Talks, Biannual Pain Conference and Pain Education Days for Children and Families

We have also created strategies integrating these achievements highlighted in initiatives such as the Pain Centre Blueprint for Pain and ChildKind Certification. In 2014, we undertook the Pain Centre Strategic Planning Retreat, to engage members and determine our main goals for the next five years (2015-2020), which are consistent with the SickKids hospital goals and objectives.

- Enhance membership to further advance our Strategic Plan
- Identify and target unit specific and patient specific factors contributing to moderate-to-severe pain as outlined in the QIP-Pain
- Address pain prevention and pain management in ambulatory settings
- Foster links with basic, clinical and implementation science researchers
- Identify and leverage partnerships and initiatives – partnering with other SickKids and External Centres, professional, pediatric and pain associations, government agencies and international organizations and entities
- Develop new KT strategies for implementing knowledge locally and globally
- Collaborate further with the SickKids Foundation to ensure financial stability for the Centre

Our accomplishments and future objectives both signify the considerable impact of the Pain Centre at individual (e.g. child and family), health care professional, institutional and global levels. For example, clinical, research and educational initiatives have greatly impacted clinical outcomes (e.g. decreased pain intensity), professional practices (e.g. improved pain assessment and management) and institutional outcomes (e.g. patient and parent satisfaction).

We will remain committed to our Mission and Vision and ensure the highest quality of clinical care as supported through integrated research, KT, QIP and educational initiatives. Our goal is to continue to be a global leader in child health while fostering the best for our children and families. We will be exemplary ambassadors in achieving the SickKids Vision of ‘Healthier Children: A Better World’.
Pain is one of the most common, debilitating and perplexing symptoms experienced by children of all ages, and is frequently undermanaged. Key pain statistics are included in Appendix B.

Hospitalized children undergo **6.7 painful** procedures per day with less than a third receiving pain management strategies (Stevens, 2011)

**77%** of hospitalized children at SickKids experience some form of pain due to their illness, injury or treatment (Taylor, 2008)

**1 in 4 children** have recurring or chronic pain, of whom **5%** have severe impact on health related quality of life including poor sleep, anxiety and depression (King, 2011)

Total costs of pain to health care to the economy in Canada exceed **$60 billion** (CPS, 2013)

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**INTRODUCTION**

Pain is a priority issue at The Hospital for Sick Children (SickKids). This status is reflected in the SickKids strategic plan, Avenues to Excellence, 2010-2015 (Appendix A) that highlights quality improvement initiatives, research and knowledge translation (KT) priorities, and clinical and educational endeavours. Prevention and management of pain is paramount and involves a wide range of health care professionals from medicine, nursing, psychology, pharmacy, childlife, respiratory therapy, and rehabilitation services. The aim of the SickKids Centre for Pain Management, Research and Education (Pain Centre) is to ensure safe and effective pain practice and to provide leadership for local and global pediatric pain initiatives. The overarching goal, reflected within the Mission and Vision, is to achieve an organizational culture of “zero tolerance” for pain and suffering through integrating pain management, research and education initiatives.

**Children’s Report of Pain**
Children report that pain is one of the worst aspects of hospitalization. In addition to physical and psychological consequences, pain can lead to longer hospital stays, compromised immune function, and can influence future health outcomes including the development of chronic pain.

**Pain at SickKids – a Historical Perspective**
In the 1980s, under the leadership of the late David Fear, the first hospital wide pain committee was established. Subsequently the Acute and Chronic Pain Services were established in 1992 and 1998 respectively. In 2008, the Pain Centre was launched as the seventh integrated education, research and clinical Centre at SickKids.

**Evolution of Centres at SickKids**
Over the past decade, SickKids Centres have been established to promote the integration of care, research and learning related to specific clinical priorities in child health. Within these Centres, scientists, clinicians and educators have come together with a common goal, a strong vision and identified strengths to build, expand or sustain excellence in patient care.
## OBJECTIVES AND STRATEGIES 2008–2014

<table>
<thead>
<tr>
<th>Objective</th>
<th>Strategies</th>
</tr>
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</table>
| **Clinical Pain Management**     | • Updated and implemented evidence informed pain policies and clinical practice guidelines  
|                                  | • Implemented the Quality Improvement Plan for pain (QIP-pain)             |
|                                  | • Monitored and improved NRCC-Picker inpatient satisfaction scores          |
| **Pain Research**                | • Increased research funding totals                                        |
|                                  | • Developed novel cross-cutting research interventions and Knowledge Translation (KT) initiatives |
|                                  | • Increased research capacity                                               |
|                                  | • Supported seed grants and KT research projects, through funded competition|
| **Pain Education**               | • Increased Health care professional and trainee education                  |
|                                  | (Online Pediatric Pain Curriculum, Biannual Conference, Pain Awareness Week) |
|                                  | • Promoted more education for Children and families (websites, pain education days) |
|                                  | • Facilitated educational collaborations with external partners (Crosstalks, Scientific meetings, Webinars, Interprofessional Pain Curriculum) |
| **Integrated Pain Centre Activities** | • Produced the Blueprint for Pain                                                |
|                                  | • Applied for and achieved ChildKind International Certification            |
|                                  | • Completed the CIHR Team in Children’s Pain                                |

Table 1. Pain Centre Objectives and Strategies (2008-2014)

## GOVERNANCE

Drs. Bonnie Stevens and Fiona Campbell are Co-Directors of the Pain Centre. This leadership is representative of the two departments sponsoring the Pain Centre; Nursing, and Anaesthesia and Pain Medicine. The governance structure has evolved to best reflect the strategic priorities and objectives of the Pain Centre as they align with the strategic directions of the hospital. Recently we have restructured the Organizational Structure to streamline efforts and improve functionality.
The Co-Directors report to the Executive Sponsor and are supported by the Executive Committee, comprised of leaders and pain experts who are responsible for strategic direction and priority setting. Four Standing Committees (Clinical Practice/ Quality Improvement (QI), Research/ KT, Education, and Membership/Partnership), address specific strategies for improving pain outcomes for children. The Co-Directors are supported by an operations group including the Pain Centre Manager and administrative support. We are in the process of developing an Advisory Board to include the Chief of Anaesthesia and Pain Medicine, an Associate Chief in Nursing, a senior researcher, a Director from another SickKids Centre, and a child or parent advocate. The Advisory Board will provide high level advice to the Executive Committee. Executive Committee and Advisory Board members are listed in Appendix C.

Figure 1. Pain Centre Organizational Structure

**MEMBERSHIP AND PARTNERSHIP**

**Membership**

Currently, there are approximately 50 members engaged in the organizational structure from (i) the clinical Departments of Anaesthesia and Pain Medicine, Nursing, Psychology, Pharmacy, Dentistry, ChildLife and Rehabilitation Services, (ii) the Learning Institute and (iii) Child Health Evaluative Sciences and Neurosciences and Mental Health in the Research Institute. All SickKids health care professionals who have an interest in pain practice, education and research are eligible for membership in the Pain Centre. There are approximately 75 clinical staff
(including members of the acute and chronic pain teams, point of contact nurses, and unit and quality improvement leaders), 25 educators and researchers who are members of the Pain Centre. In addition, there are approximately 40 trainees from undergraduates to postdoctoral fellows and research associates.

**Partnership**

Over the past 5 years we have built internal partnerships at SickKids with the Research and Learning Institutes, other Centres (e.g. Garron Family Cancer Centre, Centre for Brain and Mental Health) and other professional groups (e.g. Quality Leaders). We have developed collaborations with academic institutions (e.g. The University of Toronto Centre for the Study of Pain (UTCSP), professional organizations (e.g. Registered Nurses Association of Ontario Best Practice Spotlight Organization [RNAO BPSO]) and government (e.g. Ontario Ministry of Health and Long Term Care (MOHLTC). We have also fostered global partnerships to enhance research and educational endeavours (Table 2).

<table>
<thead>
<tr>
<th>Global Partnerships</th>
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</thead>
<tbody>
<tr>
<td>Canadian Institute of Health and Research (CIHR), Pain in Child Health (PICH) STIHR</td>
</tr>
<tr>
<td>Canadian Association for Child Health Centres (CAPHC)</td>
</tr>
<tr>
<td>The Canadian Pain Society (CPS)</td>
</tr>
<tr>
<td>ChildKind International</td>
</tr>
<tr>
<td>International Association for the Study of Pain (IASP), Pediatric Pain Interest Group</td>
</tr>
</tbody>
</table>

Table 2. Global Partnerships

**CLINICAL – PAIN MANAGEMENT**

**Policies and Practice Guidelines**

The aim of quality pain practice is to prevent and minimize pain. Under the direction of Lori Palozzi, Lorraine Bird and Dr. Fiona Campbell, the Pain Matters Task Force (predates current Clinical Committee) made significant progress in developing important Policies and Clinical Practice Guidelines (GPG). Two of these overarching documents guide pain practice at SickKids; the Pain Assessment Policy (PAP) and Pain Management (CPG) which align with RNAO BPSO Guideline Recommendations. By ensuring timely pain assessment using the PAP, and preventing and minimizing pain by utilizing interventions outlined in the CPG, we have had significant impact on clinical pain outcomes for children, and child and family satisfaction, across hospital settings. Our initial target has been the inpatient population. There is, however, strong participation from the Emergency Department on our Clinical Committee. As there are no data on pain practices or outcomes in the ~50 ambulatory clinics providing 222,000 appointments per year, Lori Palozzi and Fiona Campbell have undertaken a needs assessment to
benchmark procedural pain practices across this sector to identify knowledge and practice gaps, and inform the development and implementation of a comprehensive KT strategy and process improvements to prevent and minimize procedural pain in children attending outpatient appointments.

**Quality Improvement Plan for Pain (QIP-Pain)**

Satisfaction, as measured by the NRCC Picker Survey, is a high level metric for quality at SickKids. Given the priority indicator status afforded to pain and optimizing pain outcomes, the Pain Centre developed a pain specific Quality Improvement Plan (QIP-Pain) with goal centred stretch targets. Implementation of the QIP-Pain (Winter 2013) was a result of strong collaboration by the Centre leadership, and engagement of many staff and quality leaders on all inpatient units. This QI initiative has drawn on the research, clinical and education expertise provided by Centre Leads.

QIP-Pain is comprised of 3 KT strategies: (a) Monitoring and feedback/process improvements (See example **Appendix D**), (b) Reminders, and (c) Skills development. The monitoring and feedback/process improvement strategy has evolved into a robust program of quarterly audits of pain practice outcomes in accordance with PAP, the Pain Management CPG, and clinical outcomes (pain intensity), with customized feedback to unit champions. We have met our target of 100% completion of audits on all inpatient units since the inception of QIP-Pain. Building on earlier audits (2004, 2007, 2012) there has been significant positive impact on pain assessment and management practices (Figure 2) that appear to parallel improvements in reduced prevalence of moderate to severe pain (Figure 3). We will explore patient and unit factors that contribute to moderate to severe pain to assist units in developing moderating strategies with a focus on pain prevention and reduction.

![Graph 1](image1.png)

*Figure 2. Percentages of inpatient units documenting pain assessment and interventions for moderate to severe pain.*

![Graph 2](image2.png)

*Figure 3. Proportion of inpatients experiencing at least one episode of moderate to severe pain.*
Since the launch of the QIP-Pain, the percentage of patients and families who have responded favourably to pain-related questions on the NRCC-Picker Inpatient Satisfaction Questionnaire has increased from 78% (2008-2012) to 83% (2013/2014) (Figure 4), exceeding our target of 80%.

Figure 4. NRCC Picker Satisfaction Scores

**Clinical Innovations**

*MyPOP App (Stinson and Campbell)*

The “My Post-Operative Pain” (MyPoP) smartphone application focuses on promoting pain self-management in children and adolescents with acute post-operative pain. Having undertaken a qualitative needs assessment, we are currently working on both the tracking functions of the app, and the formulation of pain treatment algorithms as a standardized clinical decision support system. By improving post-operative pain management for children and youth after surgery, we hope to minimize impact on health-related quality of life and potentially reduce the risk for development of chronic pain.

*Intensive Pain Rehabilitation Program (Chronic Pain Program at SickKids and Holland Bloorview Kids Rehabilitation Hospital)*

This collaborative initiative will focus on the development and implementation of an intensive 2-week inpatient, followed by a 2-week day patient program for the most seriously affected children with chronic pain, and their families who previously had to go to the US for programs costing ~$70K per patient.
RESEARCH AND KNOWLEDGE TRANSLATION

Research Productivity

Research initiatives align with the CIHR Knowledge to Action framework and provide (a) avenues to new discovery and (b) strategies to move research results into the next stage of the research process or practice arena. Within the RI, pain is prioritized as a key area in the Child Health Evaluation Sciences (CHES) and Neuroscience and Mental Health Programs. From 2010 to 2015, a representative 6 SickKids pain researchers have secured sustained funding of over $15 million from external funders during the past 5 years (Appendix E) and have significant scholarly outputs and trainees (Table 3). Research profiles from these leading individual pain researchers show the extensive breadth of research on pain that is happening at SickKids (Appendix F). In addition to these individual accomplishments, the Pain Centre is taking steps to connect researchers from various research pillars and disciplines and to develop cross-cutting initiatives to better integrate research, clinical practice and education. Examples of successful initiatives include the Seed Grant Competitions and KT activities.

<table>
<thead>
<tr>
<th>Total value pediatric pain grants as PI, CoPI, CoI ($)</th>
<th>Total # of first/senior author publications</th>
<th>Number of invited national and international presentations</th>
<th>Total # of pain trainees supervised</th>
<th>Total # patents/intellectual properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>15,173,345</td>
<td>200</td>
<td>202</td>
<td>105</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 3. Research Productivity from Pain Researchers (2010-2015)

Seed Grant and KT Competitions

The Pain Centre launched the first seed grant competition in 2013. With $100,000 raised in dedicated seed grant funding, we were able to launch a second seed grant competition in 2014. A collaboration between the Pain Centre and the Garron Family Cancer Centre to provide partnered funding was further able to support 2 seed grants in the 2014 competition. Approximately $80,000 was distributed through the 2 grant competitions, which attracted 3 and 6 applications respectively. These competitions provide data to support future research funding applications and capacity building of the next generation of basic science, clinical and KT researchers thus strengthening the potential for the impact of research on practice.
### Pain Centre Seed Grant Winners

<table>
<thead>
<tr>
<th>Year</th>
<th>Winner</th>
<th>Project Title</th>
<th>Grant Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Dr. Danielle Ruskin</td>
<td><em>Examining the Feasibility of a Mindfulness Based Group Intervention for Adolescents with Chronic Pain.</em> Awarded 5K.</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>Dr. Lisa Isaac</td>
<td><em>A Pilot Study of Lidocaine Infusions for the management of Chronic Pain in Children.</em> Awarded 25K.</td>
<td></td>
</tr>
</tbody>
</table>

### Pain and Garron Family Cancer Centre Seed Grant winners

<table>
<thead>
<tr>
<th>Year</th>
<th>Winner</th>
<th>Project Title</th>
<th>Grant Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Dr. Jennifer Stinson</td>
<td><em>Using a Humanoid Robot to Reduce Procedural Pain and Distress in Children with Cancer: A Pilot Randomized Controlled Trial.</em> Awarded 25K.</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>Dr. James Drake</td>
<td><em>Magnetic Resonance-guided high intensity focused ultrasound for palliation of painful skeletal metastases in children.</em> Awarded 25K.</td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Seed Grant and KT Awardees

### Knowledge Translation

#### CIHR Team in Children’s Pain

Dr. Bonnie Stevens led the CIHR Team in Children’s Pain from 2006-2013. During this period, the Pediatric Pain Research Network was created and baseline data from over 4000 children from 8 pediatric hospitals across Canada were collected. The team then undertook a large scale trial to determine the effectiveness of a multidimensional KT strategy and the impact of context on process and clinical outcomes. The results of this study demonstrated significant improvements in pain assessment and management, and the reduction in the proportion of children with moderate to severe pain for children in the intervention units. Sustainability of these findings is now being explored with the development of online toolboxes for easier implementation both in Canada and abroad. This research is being funded locally by Dr Stevens CIHR 2014 Knowledge Translation Award and internationally by Grand Challenges Canada. This research directly impacted the development of the QIP-Pain initiative at SickKids where the key outcomes focused on clinical child health outcomes, healthcare professional pain practices and satisfaction of patients and parents regarding pain-related care.
**Research Innovations**

*Canadian Association of Paediatric Health Centres (CAPHC) Pain Community of Practice (Yamada)*

Members of the Pain Centre have partnered with the Canadian Association of Pediatric Health Centres (CAPHC) to (a) establish a National Paediatric Practice Guideline Collaborative using a Community of Practice to develop a repository of national Paediatric Practice Guidelines for Acute Procedural Pain on the CAPHC Knowledge Exchange Network (KEN); (b) create strategies for sharing resources and (c) provide 'best practice' standards impacting clinical practice, education, and research at the local and global levels.

*Healthcare Mobile Apps (Stinson & Jibb)*

Dr. Stinson and her PhD student Lindsay Jibb are developing and testing the *PainSquad+* pain management smartphone app for pain management in adolescents with cancer. They have developed a prototype app, a clinical map detailing *PainSquad+* will help adolescents in pain and conducted usability testing. They anticipate that once developed and tested for effectiveness, *PainSquad+* will positively impact pain treatment and ultimately quality of life in adolescents with cancer.

**EDUCATION**

**Health Care Professionals And Trainees**

**Pain Awareness Week**

Pain Awareness Week is an annual internationally celebrated event held in November. Themes for each year align with those of IASP. We aim to incorporate educational activities for both health care providers, patients and their families. Members of the Pain Centre are invited to provide educational opportunities in the form of Lunch and Learns Seminars. In 2014, a broad representation of approximately 80 health care providers within the institution attended these well-received sessions. Approximately 40 children and families participated in interactive and engaging events such as the ‘Mini Coping Clinics’ during which ChildLife Specialists teach children and their parents about pain management in a child friendly environment.

**Bi-Annual Pain Conference**

Since 2010 we have hosted 3 themed Interprofessional Pain Conferences to coincide with Pain Awareness Week. These have been attended by over 300 health-care providers across Canada and internationally and have provided an excellent cross-disciplinary forum for pain prevention and management topics. Our most recent Conference- was held in the new Peter Gilgan Centre for Research and Learning at SickKids and was a sold out event. *(Appendix G)*.
Educational Cross Collaborations with Other Centres

The Pain Centre successfully initiated and held the first cross-centre cross-talk seminar on January 6, 2014 titled – *Pain in the Vulnerable Brain* - with participation from the Centre for Brain and Mental Health as well as the University of Toronto Centre for the Study of Pain (UTCSP). Cutting edge imaging techniques were discussed by Drs. Jason Lerch, Steven Miller and Karen Davis (from UTCSP) to further understanding the neurological correlates behind pediatric pain in human and animal models. We were successful in drawing ~180 attendees.

Children And Families

AboutKidsHealth

Collaborations with *AboutKidsHealth* have resulted in a Pain Resource Centre (developed and edited by Campbell and Stevens) containing online educational materials for children and families in many languages. The resource contains a kids-only section with interactive educational videos about pain. This web site [http://www.aboutkidsshealth.ca/En/ResourceCentres/Pain/Pages/default.aspx](http://www.aboutkidsshealth.ca/En/ResourceCentres/Pain/Pages/default.aspx) has significant global reach and has had 97,000+ sessions between 2010-2014.

Pain Centre Video

The *Pain Centre Video* describes the impact of pediatric pain in children and highlights the leadership role of SickKids through clinical, research and educational initiatives. Since its launch in 2013, the video has had over 2000 views and is central for many of our interactive educational events.

Chronic Pain Program Website

The Chronic Pain Clinic Website provides information about (a) chronic pain evaluation and treatment, and (b) SickKids’ Chronic Pain Program, a specialized service for children and adolescents with chronic pain. The interprofessional team provides family-centred care and offer treatments and therapies based on the best evidence.

Pain Education Days

These educational events, typically held on a weekend, are for children and families to raise awareness about pain, provide tools to enhance pain self-management, and generate a forum where children have an opportunity to meet others with similar pain related health issues for peer
to peer support. There have been 2 of these days for children from the Chronic Pain Clinic, and 5 related to pain and Sickle Cell Disease.

Educational Initiatives in Collaboration with External Partners

UTCSP Annual Scientific Meetings

For the past 2 years, UTCSP has held their Annual Scientific Meetings in collaboration with the Pain Centre at SickKids. In 2014, the meeting was attended by approximately 60 regular and trainee members. The keynote speaker was Dr. Ian Gilron (Combination pharmacotherapy for pain), Presentations were also made by clinical and basic scientists (David Lam, Aileen Davis, and Simon Beggs) and the 2014 UTCSP Trainee Travel Award recipients. In 2015, the meeting was attended by approximately 55 regular and trainee members. The keynote speaker was Dr. Mark Ware (The use of cannabinoids in pain management), with presentations by clinical and basic scientists (Drs. Mike Salter, Hance Clarke, and Andrea Furlan). The UTCSP Scholarship recipients (2014-2015) gave brief presentations on their research.

National Webinar Series with CAPHC and CIHR Team in Children’s Pain

The Pain Centre in collaboration with the CIHR Team in Children’s Pain (Stevens PI 2006-2013) cohosted 7 global webinars from 2010 – 2015 through the Knowledge Exchange Network at the CAPHC. Over 1700 clinicians from different health care professions, administrators, and the broader scientific community across Canada and abroad registered. Details of webinar topics and speakers and included in Appendix H.

Qatar Interprofessional Pain Curriculum

This pediatric educational outreach initiative, including broad input from Pain Centre membership, was led Dr. Guy Petroz from the Department of Anesthesia and Pain Medicine, and developed in collaboration with SickKids International. Six interprofessional educational modules were developed and delivered over 2 years to more than 500 healthcare professionals, with the ultimate aim of empowering health care professionals to improve pain practices for children and youth in Doha hospitals. The curriculum was often delivered in concert with Pain Awareness Week, and coincided twice with major International Pain Conferences (including plenary presentations by Campbell, Stevens and Petroz).

Grand Challenges Canada Infant Pain Toolbox Research

Dr. Bonnie Stevens, Dr. Isaac Odame and international collaborators from Ghana received a 2 two year pilot project from Grand Challenges Canada, Saving Brains “A Toolkit to Minimize Pain in Infants”. This project included the development of a paper-based flip chart KT strategy to increase knowledge and support health care professional practice change for clinicians and a 4 module educational strategy for health care practitioners and trainees. The Toolkit is currently being implemented in 1 NICU in Ghana training approximately 100 health care professionals and, if successful, will be scaled up to other hospital units and educational institutions.
All of the educational initiatives targeting both health care professionals, and children and families have potential for broad impact. Significant numbers of individuals have participated both in individual educational activities as well as across initiatives. These educational outreach strategies serve as potent KT intervention with the potential to improve practice and clinical outcomes, generate new avenues of discovery, and narrow the research to practice gap.

**Education Innovations**

*Pediatric Pain Curriculum (Stinson, Stevens, Campbell)*

The development of the international educational initiative, Online Pediatric Pain Curriculum (OPPC), has been an important collaborative project led by the Pain Centre with key external stakeholders including the International Association for the Study of Pan (IASP), The Canadian Pain Society (CPS), Pain in Child Health (PICH) CIHR Strategic Training in Health Research initiative and the US based, Mayday Fund. The goal is to provide a broad education platform, for health care providers to learn about pain within clinical, basic science, and ethical themes. These independent and interchangeable modules will serve as the core curriculum for pain at SickKids and globally online from the Pain Centre website for external use. We will officially launch these modules to a global audience via the Pain Centre website in 2015 (*Appendix I*).

*Pain in Child Health (PICH) (Stevens, Stinson, Pillai Riddell)*

PICH has been a CIHR funded Strategic Training in Health Research initiative since 2002 (CoPIs – Stevens, Stinson, Pillai Riddell). As this source of funding is completed in 2015, we are taking steps to integrate PICH into the SickKids Pain Centre. This integration will not only continue the strong support for building research capacity for trainees, but will also broaden health care professional opportunities at SickKids and across the country.

**INTEGRATED PAIN CENTRE AND KNOWLEDGE TRANSLATION ACTIVITIES**

**Blueprint for Pain**

The Blueprint for Pain was a major initiative of the Pain Centre. The goal was to outline the infrastructure to integrate and enhance performance in clinical practice, research, and education to achieve operational and service excellence. The Blueprint raises awareness about pain and its consequences, promotes pain education and research, emphasizes the importance of pain prevention, and aims to improve pain assessment and management practices while reducing disparities in pain processes and outcomes across the hospital. The Blueprint document was
widely distributed via paper and e-format in April 2014 and will be updated every other year. The Blueprint is included without its appendices (Appendix J).

**ChildKind International Certification**

The Pain Centre successfully hosted the ChildKind International Certification Committee (November 2013) and successfully completed the certification requirements. This certification demonstrates successfully meeting 4 key principles representing institutional commitment to addressing pediatric pain, namely the evidence of institutional support and integration of clinical practice, educational and QI initiatives. SickKids is the first Canadian hospital to receive this status ChildKind Certification. A copy of the accreditation letter is included in (Appendix K).

**UNANTICIPATED SUCCESSES**

Prior to coming together under the Pain Centre umbrella, we were all independently involved with many pain related activities, but often in silos. The Pain Centre has provided new opportunities to forge a strong team which meets regularly, communicates often, networks widely and works collaboratively – whether it be on clinical, research, education or integrated initiatives. Over the past 5 years we have met with several successes both individually and collectively as the result of Pain Centre collaborations evidenced by our productivity, tangible outputs and impact.

**SickKids Innovators Award - 2013**

The Pain Centre was chosen as the first funding priority for the SickKids Innovators – an exclusive group of like-minded philanthropists and business leaders who are committed to making a difference. Throughout the year, members of this exclusive group were exposed to ground-breaking research, state-of-the-art facilities, and inspiring stories of courage and hope through the Pain Centre lens. The year ended with a Dragon’s Den style vote, where their collective investment was allocated towards funding three seed grant competitions and educational initiatives within the Centre.

**Brain Canada – 2014 (Mogil, Salter, De Koninck, Lerch, Brudno)**

The Pain Centre provided $25K in matching funds to support this research. Fundamental cellular and molecular signaling pathways for chronic pain in females are different from those in males. There are profound implications of the female-male differences in neuro-immune signaling ranging from diagnostics, to therapeutics, to prevention of chronic pain. Even more, because neuro-immune interactions are increasingly implicated as critical in CNS disorders more generally (e.g., as shown by the recent finding of our Team that these same mechanisms are relevant to opioid-induced hyperalgesia), the recent work by our Team members provides the framework for the study of a broad range of disorders of the spinal cord and brain. The proposed experiments are designed to establish the scope and generalizability of this sex difference, in
terms of biological mechanisms within the spinal cords of mice, across the neuraxis, across genotype, and across species.

**Canadian Institutes of Health Research Knowledge Translation Award - 2014 recipient**

Dr. Bonnie Stevens, Associate Chief of Nursing Research, received the 2014 Canadian Institutes of Health Research (CIHR) Knowledge Translation (KT) Award in Ottawa, in recognition of her leadership and outstanding work in translating research into practice. The CIHR KT award honours and supports the exemplary knowledge translation efforts and activities of an exceptional individual, team or organization that has made an outstanding contribution to increasing the application of research findings, improving the health of Canadians, health services and products, or strengthening the health-care system. The award will be used to fund the development of a novel web-based KT Toolkit to foster better pain management processes and ultimately decrease pain and suffering in infants and children.

**MOHLTC Funding for Pediatric Chronic Pain – 2015**

Until 2014 there were only 8 dedicated multidisciplinary pediatric chronic pain clinics across Canada with only 2 in Ontario. The Ministry of Health and Long Term Care (MOHLTC) has formed a Pediatric Chronic Pain Network, to develop a comprehensive strategy to put systems in place to provide evidence-based care for children and youth with chronic pain. In 2013 Dr. Fiona Campbell in her capacity as Pain Centre Co-Director was asked by the SickKids CEO to join the Network’s Advisory Board, which she was invited to Co-Chair due to her recognized leadership in the area of pediatric pain, together with a Senior Medical Advisor at the Ministry. Efforts of the Network have led to a government investment of $3.6 million to enhance capacity and reduce inequities in access to care. Nearly $1 million of this is for new programs at SickKids and Holland Bloorview Kids Rehabilitation Hospital. Part of the mandate is to develop a pediatric chronic pain registry, which will yield standardized data based upon current best practices for clinical outcome measurement on the largest cohort of pediatric chronic pain patients assembled to date. (Stinson and Campbell)

**FINANCIAL PERFORMANCE**

The Pain Centre receives revenue primarily from the interest from Endowed funds and philanthropic donations secured through SickKids Foundation (SKF). Expenses related to the running of the Centre including supporting the Pain Centre Manager and minor expenses and services. A summary of the expenses and income for the past 3 years are included in a financial report in Appendix L.

**Pain Centre Funds**

Pain Centre endowment funds include the *Tour de Blue and Cadillac Fairview funds*. In 2015, philanthropy source funding raised approximately $125K of dedicated funds towards educational
and seed grant funding to support the Pain Centre. These funds came primarily through the SickKids Innovators group ($100K) and an additional $17K from the SickKids Breakfast of Champions event. Revenue generating activities at the Centre level are through various activities including the biannual Pain Conferences.

**FOUNDATION RELATIONS**

Potential donors are very supportive and understanding of the challenges associated with pain. However, traditional philanthropy has predominantly targeted perceived causes of pain rather than pain as a symptom or disease entity that is important in its own right. A challenge moving forward it to guide donors towards the importance of foundational and clinical pain research, education and knowledge translation that will positively impact pain outcomes at SK and globally. Several recent opportunities have included the Pain Centre in the greater context of patient care, resulting in 2 new Endowed Chair positions in Pain and Anaesthesia, and a $1M donation directed towards tackling pain in pediatric cancer, which will be jointly managed with the *Garron Family Cancer Centre*. This type of partnership will be integral to the future success of fundraising for the *Pain Centre*.

![Figure 5. Pain Centre funds represented by endowment revenue and total funds raised (2010-2015)](image-url)
**FUTURE PLANS**

**Challenges from the last 5 years**

Overall, we have enjoyed a great deal of success since the inception of our Centre, as indicated in the many achievements highlighted in this report. However, there are some challenges. These include:

- **Financial resources** – although we greatly appreciate the fundraising efforts of the SickKids Foundation, we are limited in our potential growth and expansion by the amount of available funding. Potential collaboration with other Centres may provide one solution moving forward.
- **Membership** – while we have excellent engagement from current members, our aim is to expand the Pain Centre membership significantly and include a broader range of stakeholders including children and parents.
- **Research integration** – we have highly successful individual researchers. However, some silos between individuals and types of research remain. Initiatives such as Seed Grant and KT competitions and Cross talks are beginning to break these down; however further efforts and novel initiatives are required.
- **Our clinical focus has been on pain in inpatient units – we will now expand this to ambulatory units with a focus on pain prevention by implementing evidence informed strategies, and process improvements.**

**Objectives for the Next 5 Years**

The Pain Centre held two strategic planning sessions in June 2014. The SickKids Corporate Strategies Department facilitated these sessions that were attended by 35 Pain Centre members and other key stakeholders. Our goal was to determine the strategic plan for 2015-2020. This session focused on future aims, and actionable plans that would meet targets moving ahead.

<table>
<thead>
<tr>
<th>5 Year Objectives, Activities and Measurable Outcomes</th>
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<tbody>
<tr>
<td><strong>1. Lead in World Class Quality and Service Excellence</strong></td>
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<tr>
<td><em>Pain Centre Objective: To advance a culture of pain prevention within the context of family centered care</em></td>
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<tr>
<td>Focus QI initiatives on pain prevention and management targeting moderate to severe pain</td>
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<tr>
<td><em>Outcome: Decreased prevalence of moderate to severe pain to &lt; 20%</em></td>
</tr>
<tr>
<td>Develop strategies integrating children and families in pain prevention initiatives</td>
</tr>
<tr>
<td><em>Outcome: 1 child/family included on Pain Committee, and on initiatives to enhance existing strategies (e.g. AboutKidsHealth revisions) to address pain prevention.</em></td>
</tr>
</tbody>
</table>
Create novel strategies for pain prevention and management locally and globally

*Outcome:* Developed 3 new strategies (e.g. novel pharmacological, physical, psychological interventions), and increased use of existing strategies to address pain prevention

Determine the influence of context on pain prevention at all levels

*Outcome:* Articulated salient contextual factors incorporated in pain prevention initiatives at the individual, unit and hospital levels

2. Enhance Child Health Systems

   **Pain Centre Objective:** To become global leaders in preventing pain by integrating excellence in education, research and clinical

   Enhance linkages between basic, clinical and implementation science

   *Outcome:* Increased number (1-3 per year) of inter-pillar research as demonstrated through seed grants and KT projects

   Identify and leverage partnerships across SickKids Centres

   *Outcome:* Partnerships with 5 new SickKids Centres (1/ year over next 5 years)

   Develop Centre led versus individual research projects

   *Outcome:* Successfully funded 1 centre-led project in addition to continued success with individual research funding by scientists

   Leverage partnerships and initiatives with pain centres globally

   *Outcome:* Established partnership with 1 Canadian and 1 international pain centre

   Implement KT strategies to facilitate new knowledge uptake globally

   *Outcome:* 3 novel KT strategies (e.g. OPPC, Toolbox, Apps) implemented locally and globally within the next 5 years

   Create an inspirational vision and clear standard messaging for pain prevention tailored to patient goals

   *Outcome:* Novel standardized CPG for pain prevention (based on needs assessment) implemented at SK and shared broadly

3. Enable our People

   **Pain Centre Objective:** To enhance KT between the Pain Centre and stakeholders

   Facilitate the input of families and children into the Pain Champion Program

   *Outcome:* Children and parents invited to participate in Pain Centre Committees, unit pain committees, and focus groups to obtain patient centred perspectives.
4. Build Sustainable Infrastructure

_Pain Centre Objective: Leverage existing strategies to enhance partnerships, communication and collaboration with children, families and other stakeholders_

- Enhance the role of Pain champions locally
  
  _Outcome: New activities for Pain Champions to go beyond current QIP-Pain plan_

- Develop, update and review policies and CPGs
  
  _Outcome: Pain policies and CPGs updated every 2 years_

- Ensure consistency in unit to unit pain documentation
  
  _Outcome: Pain incorporated as part of the new electronic patient record within the next 5 years_

5. Maintain Financial Health

_Pain Centre Objective: To place the Pain Centre on a sound, sustainable financial footing_

- Develop a funding formula to allocate a percentage of the investment in people, places, and in programs to support delivery of care, research and education as the core Centre activities
  
  _Outcome: Strong relationship with SK Foundation and collaborations with other SK Centres to successfully raise funds to allocate as above_

- Increase strong base of research funding with new researchers
  
  _Outcomes: Collaborations between researchers for funding opportunities. Research infrastructure with highly qualified trainees_

- Establish the Pain Centre as the local and global leader in pediatric pain prevention and management and ‘magnet’ for high quality talent
  
  _Outcome: 100 new Pain Centre members recruited in the next 5 years_

- Identify opportunities to partner with corporate; government; educational, charitable foundations and not-for-profit partners
  
  _Outcome: Potential opportunities with key partners and SKF explored_

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Table 4. Objectives and Activities 2015
REFERENCES


ACKNOWLEDGMENTS

We are incredibly fortunate to work with outstanding people who help us to achieve our goals and objectives. First, we would like to acknowledge the leadership team, both from our past and current members. In particular, our Executive Sponsor, Pam Hubley has been an outstanding resource and supporter of the Pain Centre. Similarly, we greatly appreciate our past and present Executive members, without whom, we would not be where we are today.

We would also like to acknowledge all members of our previous Advisory Committee. These individuals are experts in pain in children who possess outstanding enthusiasm for pain research, education and clinical practices. Their passion for advocating pain prevention and management in children has been invaluable. We would like to thank our three Pain Centre Managers, particularly Suzanne McGovern, who organizes our current initiatives and the administrative support group who have participated in the development of this review material. We also acknowledge the superb oversight and support from Dr. Janet Yamada.

We wish to recognize and thank The SickKids Foundation for their belief in our cause. Their philanthropic initiatives supporting the Pain Centre provide a voice for children who are often not heard. We also thank the Learning Institute and the Research Institute for their meaningful input and leadership. We cannot emphasize enough the importance of all the Unit champions that support the QIP-Pain project. Without their dedication, we would not have been able to achieve our QIP-Plan targets. Finally, we want to acknowledge all of the children and families who are the essence of the SickKids family and are part of our clinical practice, education initiatives, research and quality improvement projects daily. We simply could not do it without you!