Pain in Child Health from 2002 to 2015: The early years of an international research training initiative

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ABSTRACT

Background: The 2018 Global Year for Excellence in Pain Education, an initiative of the International Association for the Study of Pain, brought worldwide attention to the need for increased education in pain, particularly education that crosses narrow disciplinary boundaries, that addresses up-to-date research methods and findings, and encourages teamwork among trainees and mentors at different levels of training and with different perspectives.

Aims: This commentary describes the development of Pain in Child Health (PICH), an interdisciplinary training program for researchers in pediatric pain at the undergraduate, graduate, and postdoctoral levels of training.

Methods: Based on documentation of the structure, training processes, leadership, and membership of PICH, we outline its organization and its challenges and accomplishments over the first 12 years of its growth into a well-known international program.

Results and Conclusions: Pain in Child Health began as a Strategic Training Initiative of the Canadian Institutes of Health Research in 2002 and developed into an international research training consortium featuring cross-site and cross-discipline mentorship and collaboration. PICH trainees and alumni have contributed extensively to the current scientific literature on children’s pain. PICH could serve as a possible model for training and mentorship in other specialized health research domains within and outside the study of pain.

KEYWORDS

research methods; education; children; pediatric pain; developmental

The 2018 Global Year for Excellence in Pain Education, an initiative of the International Association for the Study of Pain, brought worldwide attention to the need for increased education in pain, particularly education that crosses narrow disciplinary boundaries, that addresses up-to-date research methods and findings, and encourages teamwork among trainees and mentors at different levels of training and with different perspectives.
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Grounded in this perspective, our commentary describes Pain in Child Health (PICH), an interdisciplinary training program for researchers in pediatric pain at the undergraduate, graduate, and postdoctoral levels of training. We outline its inception and organization and the first 12 years of its development into a well-known international program. It could serve as a possible model for training and mentorship in other specialized health research domains within and outside the study of pain.

**Inception**

PICH was conceived on a Saturday morning in early 2001 at the Farmers Market in Halifax, by Patrick McGrath and Allen Finley, at one of their weekly visits for coffee. They had seen a call for strategic research training initiatives from the Canadian Institutes of Health Research (CIHR) and wondered what they could do in the field of pediatric pain. At the time, pain researchers focusing on childhood often felt marginalized within their departments, across all disciplines. Research on adults’ pain was much more visible.

Based on a preliminary proposal, CIHR provided a small grant to get a group of coinvestigators together. McGrath and Finley invited researchers from across Canada who specialized in pediatric pain and had advanced research trainees. The founding group of co-principal investigators (co-PIs), and the PICH Management Committee from 2002 through 2009, were as follows (Table 1).

They met in Halifax for a grant writing weekend. The application, following much polishing, was submitted and was successful, supporting the founding of “Pain in Child Health—A Strategic Training Initiative of the Canadian Institutes of Health Research” with a 6-year grant of nearly $2 million to run from 2002 through 2008.

At an early meeting of the co-PIs in Winnipeg in 2002, an ambitious program of activities was laid out (Table 2). Most of these programs were offered starting in the first years of PICH, and additional programs including extensive international collaboration were added to this preliminary list.

### Table 1. Co-principal investigators for first PICH grant, 2002–2009.

| Name                | Department  | Institution                                      |
|---------------------|-------------|---------------------------------------------------|
| Allen Finley        | Anaesthesia | Dalhousie University and IWK Health Centre        |
| Kenneth Craig       | Psychology  | University of British Columbia                    |
| Bonnie Stevens      | Nursing     | University of Toronto and Hospital for Sick Children |
| Carl von Baeyer     | Psychology  | University of Saskatchewan and Royal University Hospital |
| Celeste Johnston    | Nursing     | McGill University and Montreal Children’s Hospital |

PICH = Pain in Child Health.

### Table 2. May 2002 brainstorm list of activities planned for PICH, with notes on later implementation.

| Concept or plan (2002)                                                                 | Notes on later implementation (2018)                                                                 |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Annual, week-long summer/fall institute with a concentrated curriculum on research methods                        | Training institutes (workshops) were 1–3 days and usually associated with another conference; see Table 4 |
| Biweekly, national research teleconference with data display capabilities                  | These became monthly international webinars                                                        |
| Sophisticated electronic communication system across the research centres                 | Email listserv and resources shared on website                                                      |
| Web-based education modules/courses for trainees                                         | One course was developed for PICH, on measurement and assessment of pain                            |
| Visits by trainees and faculty to other research centers to learn techniques, develop new methodologies, and collaborate on grant applications and research in progress | As planned                                                                                            |
| Transdisciplinary and cross-center supervision of research trainees                      |                                                                                                     |
| Mentoring workshop for faculty and trainees                                              |                                                                                                     |
| Visiting speakers program of distinguished scientists                                      |                                                                                                     |
| Partnerships with industry (pharmaceutical, communications), government                  |                                                                                                     |
| (Health Canada, Provincial Departments of Health), universities, health centers, pediatric research foundations, other training consortia, funding agencies (CIHR, SSHRC, NSERC, CHSRF, provincial agencies), professional associations, and pain-related organizations, (CUREPAIN2, Canadian Pain Society) | As planned but rare                                                                                 |
| Evaluation of the structure, process, and outcome of our collaborative research program |                                                                                                     |
| Dissemination program for pediatric pain research to clinicians, policymakers, and the public | Completed for PICH renewal, 2009                                                                   |
|                                                                                         |                                                                                                     |

PICH = Pain in Child Health; CIHR = Canadian Institutes of Health Research; SSHRC = Social Sciences and Humanities Research Council of Canada; NSERC = Natural Sciences and Engineering Research Council of Canada; CHSRF = Canadian Health Services Research Foundation.
The administrative structure of the program as of 2002 is shown as an organizational chart in Figure 1.

Additions were later made to the group of co-PIs as shown in Table 3.

In 2015, Bonnie Stevens took over from Patrick McGrath as nominated principal investigator and chair of the PICH Management Committee, and the headquarters of PICH was moved to the SickKids Centre for Pain Management, Research and Education (Pain Centre) in Toronto.

The two major grants from CIHR (2002–2009 and 2009–2018) provided funds for Canadian PICH trainees’ stipends and travel to training institutes and lab visits as well as for PICH administration to support training activities. The participating universities contributed to funding of their own trainees’ PICH activities. In addition, an unrestricted educational grant was received from Janssen-Ortho Pharmaceuticals, and funding was also received from the Nova Scotia Health Research Foundation. The Mayday Fund, a private charitable foundation based in New York and dedicated to the alleviation of pain, provided generous financial support for trainees who were not based at Canadian universities. With the invaluable support of the Mayday Fund and its Executive Director Christina Spellman, by 2013 trainees and faculty from 14 countries were participating in PICH: see the infographic in Figure 2.

**Trainees**

Starting immediately with the award of the first CIHR grant in 2002, trainees were recruited with their supervisors’
support. Most trainees came from the disciplines of psychology and nursing, with fewer from other health care disciplines such as medicine, pharmacy, physical therapy, and neuroscience. The first groups of trainees in 2002 were Canadian; from 2003 onward international trainees were accepted. All of the first intake of international trainees (2003–2005; n = 11) and almost all of the Canadian trainees remained active in pediatric pain work after their PICH years. By 2009, over 200 trainees had joined PICH, and by 2018, over 300 had joined.

Activities and impact

Though trainees and mentors met periodically at conferences and in monthly webinars, the core of PICH activities was training workshops (institutes), generally around 2 days in length, which were held once or twice a year across Canada. From 2002 through 2015, 18 such workshops were held. A list of the training institutes with their locations and topics is shown in Table 4. Every second year these were held in conjunction with the International Forum on Pediatric Pain in Nova Scotia. Other workshops were held in conjunction with national and international pain conferences, including the World Congress on Pain and the International Symposium on Pediatric Pain, to leverage the benefits of trainee travel. All trainees attending these institutes were expected and supported to stay for the conference and strongly encouraged to present posters. In 2014, a workshop emphasizing neuroscience was held with another CIHR Strategic Initiative on Health Research, Molecules to Community (PainM2C). PICH activities are further documented in PICH Pulse, a newsletter that has been published regularly from 2002 through the present (www.sickkids.ca/PICH/key-info/PICH-pulse).

A previous study of the impact of PICH used quantitative and qualitative methods to document how it has helped to create a global community of researchers in pediatric pain up to 2013.2 Many international collaborations have been fostered through lab visits and conferences. The impact of PICH is seen partly in trainees’ publications: by 2014, over 700 unique articles had been published by PICH trainees.2 Publications led by PICH trainees have appeared in journals of pain, pediatrics, anesthesiology and other medical disciplines, nursing, neuroscience, psychology, physiotherapy, computer science, and medical anthropology, published in North and South America, Europe, Australia, and Asia. Moreover, according to a bibliometric study, nearly 9% of all identified articles on pediatric pain published between 2003 and 2010 were by a first or senior author affiliated with PICH.5

In 2012, under the direction of the Canadian minister of industry, the Council of Canadian Academies released a report entitled The State of Science and Technology in Canada.4 Pediatric pain was identified as first in research productivity in a list of the top 10 Canadian highly specialized research clusters. Canada’s share of world publications on pediatric pain, at 15.5%, was greater than Canada’s proportionate share of world research on the environment, fisheries, geology, oil, gold, and other major Canadian investigative themes. It is likely that the success of PICH over the previous decade contributed to this accomplishment.

Present and future opportunities

The strong foundational years of PICH have resulted in a global network of interdisciplinary pediatric pain researchers that has contributed significantly to enhancing research capacity. The current Canadian leaders of PICH are broadening this network to include scholars from other countries and clinical disciplines, as well as basic and knowledge translation scientists, patients, clinicians, and educators. PICH has disseminated new knowledge of pediatric pain broadly and is continuing to grow with the help of knowledge translation strategies newly being adopted in science, including social media. Online pediatric pain curricula and networking opportunities in local and regional meetings in different continents bolster the existing monthly PICH webinars, lab exchanges, and mentoring opportunities.

As well as securing funding, which required continuous effort, PICH leaders have worked hard to engage trainees and faculty from disciplines outside of psychology and nursing. Many other disciplines such as medicine, pharmacology, neurobiology, kinesiology, education, medical anthropology, computer science, and physical and

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**Table 3. Additional co-principal investigators for second CIHR grant, 2009–2015 (extended to 2018).**

| Year of Grant (as part of a succession plan for PICH leadership) | Psychology | University | 2013 (as part of the successful application for a 6-year renewal of the CIHR grant) |
| --- | --- | --- | --- |
| 2009 | Psychology | University of British Columbia and BC Child and Family Research Institute | Ruth Grunau Psychology University of British Columbia and BC Child and Family Research Institute |
| 2009 | Psychology | University of Toronto and Hospital for Sick Children | Jennifer Stinson Nursing Dalhousie University and IWK Health Centre |
| 2009 | Psychology | York University and Hospital for Sick Children | Christine Chambers Psychology University of Toronto and Hospital for Sick Children |
| 2009 | Psychology | Dalhousie University and IWK Health Centre | Rebecca Pillai Riddell Psychology University of Toronto and Hospital for Sick Children |
| 2009 | Psychology | University of Toronto and Hospital for Sick Children | 2009 (As part of the successful application for a 6-year renewal of the CIHR grant) |

CIHR = Canadian Institutes of Health Research; PICH = Pain in Child Health.
Figure 2. Infographic from 2014 summarizing PICH activities in its first 12 years. The 2018 version, adapted for the new location and funding sources at SickKids, is at www.sickkids.ca/PICH/key-info
occupational therapy were represented by only a few participants. This represents an opportunity for growth of the PICH community in Canada and worldwide.

PICH continues to bring together trainees and researchers in Canada and many other countries. With the initial co-PIs having transitioned into advisory roles, many lead roles are occupied by a new generation of PICH scholars. They actively seek external partnerships to support foundational activities such as the monthly webinars as well as new formats for meetings and other new activities that innovatively strengthen PICH impacts across the spectrum of stakeholders. PICH members have access to many other resources through the SickKids Pain Centre. Current developments include a web-based, free, internationally accessible set of 10 online training modules (Online Pediatric Pain Curriculum) and a new model for training workshops (PICH2GO). These new developments include outreach to patients and families and greater involvement of clinicians. Current and future plans are shown on the PICH website, www.sickkids.ca/PICH.

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