

# The Canadian Consortium for Research in Pediatric Surgery: Roadmap for Creation and Implementation of a National Subspecialty Research Consortium

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Clinical practice should be driven by high-quality research that produces evidence to inform best practices. Generation of such evidence is often challenging, particularly for smaller specialties, such as pediatric surgery, that treat many patients with rare diseases. Multi-institutional collaboration is seen as a major strategy to address these challenges. We have recently created the Canadian Consortium for Research in Pediatric Surgery, a national consortium that includes all major pediatric surgical services across Canada. The mission of the Consortium is to improve pediatric surgical care through high-quality collaborative research. In this article, we describe the rationale and methodology for creation of the Canadian Consortium for Research in Pediatric Surgery, demonstrate its achievements to date, and share a number of foundational concepts that are integral to its success. Our aim is to provide a model for creation of such consortia, ultimately leading to improvements in the quality of clinical research and patient care. (*J Am Coll Surg* 2022;235:952–961. © 2022 The Author(s). Published by Wolters Kluwer Health, Inc. on behalf of the American College of Surgeons. This is an open-access article distributed under the terms of the [Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 \[CCBY-NC-ND\]](#), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.)

Pediatric surgery is a discipline of rare diseases. Although pediatric surgeons treat a number of common conditions, such as appendicitis and inguinal hernias, their training and practice are centered on gaining the skills to correct congenital anomalies, resect pediatric solid tumors, and treat a number of rare surgical conditions in children. Since the inception of the specialty, the rarity of pediatric surgical diseases has challenged the generation of high-quality research to inform best practices. These challenges have been particularly significant in Canada where, given the population and the size of the country, many pediatric surgical practices are small in volume.<sup>1</sup> A 10-year review of the level of clinical evidence of scientific presentations at the annual meetings of the Canadian Association of Paediatric Surgeons (CAPS)

demonstrated that 80% were rated as Oxford level 4 or 5.<sup>2</sup> This was also typical of the pediatric surgical field in general. Rangel and colleagues<sup>3</sup> analyzed clinical research reporting in pediatric surgery during a 5-year period and found that 95% of studies were retrospective, and only one-fourth of those studies used a control group. Hardin and colleagues<sup>4</sup> analyzed more than 9,300 studies published in the major pediatric surgical journals and found that only 1.48% and 0.3% were prospective and randomized controlled trials, respectively. Since the turn of the century, there has been a loudly echoing call to improve research methods and quality of evidence in pediatric surgery.

Canadian pediatric surgery was among the first to answer this call by creating the Canadian Pediatric Surgical Network

Members of CanCORPS who coauthored this manuscript are listed in the Appendix.

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### Abbreviations and Acronyms

CanCORPS	= Canadian Consortium for Research in Pediatric Surgery
CAPS	= Canadian Association of Paediatric Surgeons
CAPSNet	= Canadian Pediatric Surgical Network
CIHR	= Canadian Institute of Health Research
REB	= Research ethics board

(CAPSNet).<sup>5</sup> The network, initially funded by a grant from the Canadian Institute of Health Research (CIHR), was established in 2005 and consists of 16 perinatal centers across Canada. CAPSNet created a national population-based observational database for 2 congenital anomalies, gastroschisis and congenital diaphragmatic hernia. Data are collected starting from prenatal diagnosis until hospital discharge of the baby. CAPSNet has been immensely successful, resulting in a large number of publications during the past 15 years.<sup>6</sup> In addition, CAPSNet initiated the concept of research collaboration within the Canadian pediatric surgical community and spurred further initiatives, including the Canadian Biliary Atresia Registry and the Canadian Congenital Diaphragmatic Hernia Collaborative.<sup>7,8</sup>

Nevertheless, CAPSNet, The Canadian Biliary Atresia Registry, and the Canadian Congenital Diaphragmatic Hernia Collaborative have some important limitations. The disease-based nature limits the number of participating investigators to those with a particular interest in the disease studied. This in turn limits the number of centers participating in knowledge generation and translation. In the case of CAPSNet, the bulk of the publications came from only 4 of the 16 centers participating in data collection. The open-ended nature of the registry presents challenges in continued patient enrollment, funding, and sustainability. Retrospective reviews of prospectively collected data do not allow for the possibility of conducting clinical trials or hypothesis testing in a prospective manner. Clearly, a new model was needed to further advance the quality of Canadian pediatric surgical research. This model is the Canadian Consortium for Research in Pediatric Surgery (CanCORPS), the subject of this article. We present this as a potential model for other specialties in Canada and beyond that wish to create similar national research organizations. Such organizations have strong potential to improve research quality, evidence-based practice, and knowledge translation by uniting practitioners throughout the country.

## METHODS

### Background, rationale, and inception

The idea that eventually led to the creation of CanCORPS was first raised by 3 pediatric surgeons during an investigators

meeting held in Miami, Florida in March 2010 to launch the Moxipedia international clinical trial.<sup>9</sup> Recognizing that Canadian pediatric surgical practice is centralized in university-based tertiary and quaternary hospitals, the surgeons believed that the field was ideally positioned for establishing a comprehensive research consortium. The proposed research consortium would broaden research infrastructure across the country and accomplish 4 goals. First, it would allow pediatric surgeons with research interests in any area of the field to participate and contribute. Second, it would allow for pooling of data from multiple institutions, many of which are low volume, to create stronger studies. Third, study results would reflect national practice patterns and outcomes. Fourth, the consortium would likely have more success in obtaining external study funding by creating strong, national research proposals.

In 2017, a number of events occurred that coalesced to provide momentum to proceed with the idea of a national consortium. In the US, the Midwest Pediatric Surgery Consortium published the process of its creation, providing a potential road map for the creation of a Canadian consortium.<sup>10</sup> An anticipated endowment of an academic chair at McGill University would provide seed funding to hire a national coordinator for a Canadian consortium. Most importantly, the Canadian pediatric surgery community was anticipating the celebration of the 50th anniversary of CAPS in 2018, spurring a vision to launch bold initiatives.<sup>11</sup> The time was right.

The name CanCORPS was adopted, and the consortium proposal was endorsed by the CAPS Research Committee, as well as the entire CAPS membership, at the 2017 annual meeting in Banff, Alberta. The consortium creation process was rolled out in 3 phases through the ensuing year. In the first phase, a description of the new organization, highlighting its general structure and objectives, was sent to all pediatric surgery division chiefs in Canada. In the second phase, divisions who agreed to join designated a CanCORPS site director, and if desired, a site associate director, for their institution. The site director(s) would act as the liaison(s) to the local principal investigator(s) and represent the institution in the consortium's creation and future function. In the third phase, the site directors and codirectors from the 14 inaugural institutions created working groups to formulate founding articles, a governance structure, and a consortium agreement. The third phase was initiated through a conference call on January 29, 2018. The site directors and codirectors from the 14 inaugural institutions (Fig. 1), were divided into 3 working groups, as described in the next section. This culminated in the inaugural meeting of the consortium, hosted by the University of Calgary Department of Surgery and held at the Alberta Children's Hospital on July 21 and 22, 2018. The meeting was attended by site directors from 11 of the 14 founding institutions.

	Hospital	University	City	Province
1	Children's Hospital of British Columbia	University of British Columbia	Vancouver	British Columbia
2	Alberta Children's Hospital	University of Calgary	Calgary	Alberta
3	Jim Pattison Children's Hospital	University of Saskatchewan	Saskatoon	Saskatchewan
4	Children's Hospital of Winnipeg	University of Manitoba	Winnipeg	Manitoba
5	Children's Hospital London Health Sciences Centre	Western University	London	Ontario
6	McMaster Children's Hospital	McMaster University	Hamilton	Ontario
7	Hospital for Sick Children	University of Toronto	Toronto	Ontario
8	Children's Hospital of Eastern Ontario	University of Ottawa	Ottawa	Ontario
9	The Montreal Children's Hospital	McGill University	Montreal	Quebec
10	Centre hospitalier universitaire Sainte-Justine	Université de Montréal	Montreal	Quebec
11	Centre hospitalier universitaire de Sherbrooke	Université de Sherbrooke	Sherbrooke	Quebec
12	Centre hospitalier universitaire de Québec	Université Laval	Quebec	Quebec
13	IWK Health Centre	Dalhousie University	Halifax	Nova Scotia
14	Janeway Children's Health and Rehabilitation Centre	Memorial University of Newfoundland	St. John's	Newfoundland



**Figure 1.** Canadian Consortium for Research in Pediatric Surgery (CanCORPS) founding institutions. Map courtesy of Porcupen – stock.adobe.com.

### Foundational process

At the inaugural meeting, the founders sought to adopt best practices.<sup>12</sup> The meeting had 4 goals: creation of the draft consortium agreement, establishment of a process for inclusive, transparent, and renewable governance, selection of leadership, and selection of initial studies. The

last goal was particularly important, because the group believed it was critical to conclude the founding meeting with the selection of specific research projects, not just the creation of an infrastructure. Six studies had been submitted before the meeting, and three were selected. At the outset of the meeting, the group agreed on a set

of values that have come to characterize the culture of CanCORPS. These values were framed in the form of 5 pledges, as follows:

1. We will maintain momentum.
2. We will seek consensus but settle for majority.
3. We will be driven by the success of the consortium, not only by our individual or institutional success.
4. We will respect our differences.
5. We will decline studies but recognize their worth.

The foundational process relied strongly on the work of the 3 working groups as follows:

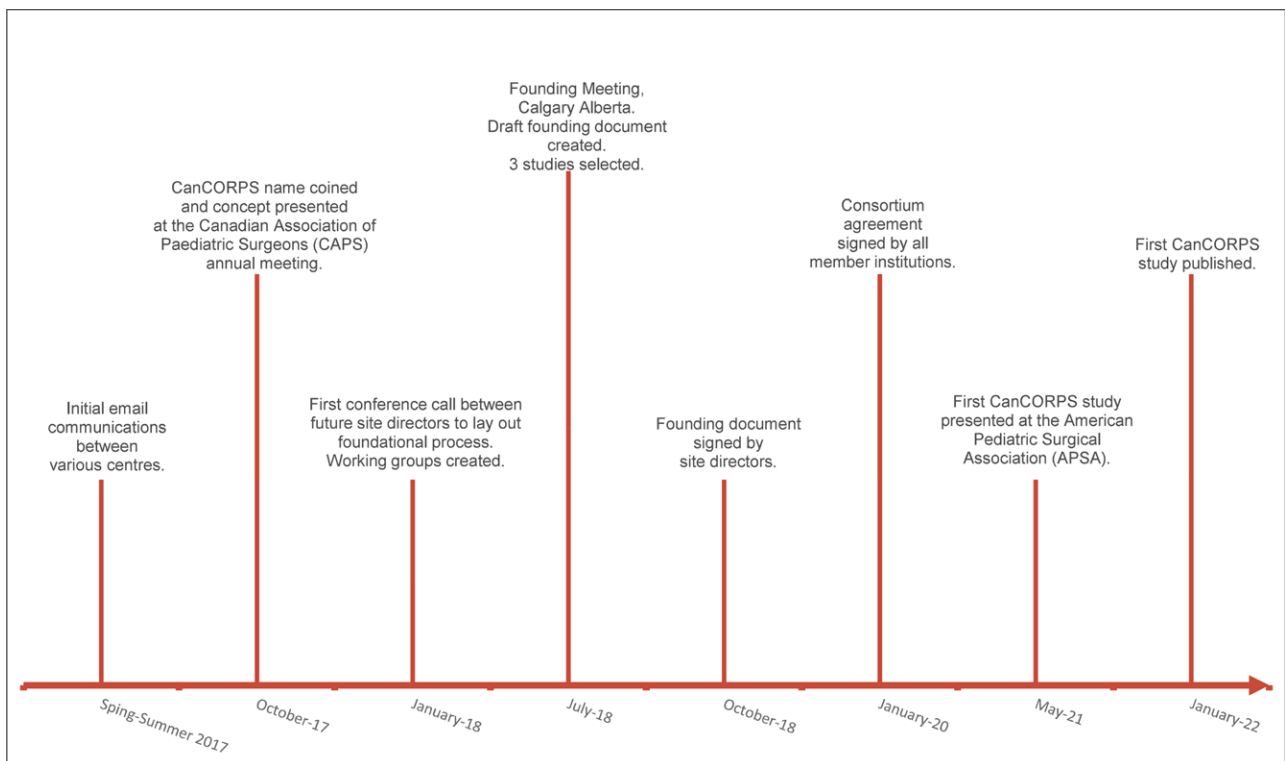
Group I: Membership, Data Management, and Study Selection

Group II: Leadership, Governance, and Funding

Group III: Presentations, Publications, and Logistics

Each group comprised 3 to 4 members who worked collaboratively on their section before the founding meeting and brought a draft of that section for further discussion and finalization at the meeting. These discussions created consensus around the final founding document. All aspects of the Consortium's function were discussed. Because the *raison d'être* of the Consortium was the

conduct of research studies, significant time was invested in creating the process of submission, evaluation, scoring, and selection of studies. A Study Scoring sheet was developed based on scientific merit, methodology, feasibility, and impact (**Supplemental Digital Content 1**, <http://links.lww.com/JACS/A143>). Each of the 4 sections contains 5 questions that can be scored from 1 to 5, resulting in a maximum of 25 points per section or 100 points per study. To be eligible for selection to a CanCORPS study, a minimum total score of 50 must be achieved. Other significant topics included definition of a CanCORPS study (if not all centers participate), data handling (data ownership, data-sharing agreements, research ethics board harmonization), governance structure (selection, terms, and roles of Chair, Steering Committee, and Board), continuity (meeting frequency, institutional participation, consideration of new members, decision-making), manuscript authorships and credits, and branding (logo, website, CanCORPS citation). The meeting ended with a planned vote for Consortium Chair and Steering Committee members. The vote was held confidentially by electronic survey shortly after the meeting, and the initial leadership was chosen. The timeline from idea inception to publication of the Consortium's first study is shown in [Figure 2](#).



**Figure 2.** Canadian Consortium for Research in Pediatric Surgery (CanCORPS) timeline.

## RESULTS

### Consortium agreement

In October 2018, 3 months after the founding meeting, the site directors of all 14 founding institutions (CanCORPS Board) signed the initial founding document. After consultation with legal counsel from The Research Institute of the McGill University Health Centre, the Consortium decided to proceed with a formal process that would create a legal consortium agreement among all member institutions. This would also include a comprehensive “Implementing Letter” to facilitate the data-sharing process. This document serves 3 purposes. First, it allows the safe and legal sharing of data not containing reasonably identifiable personal health information, across all CanCORPS centers. Second, it provides a record of all data transfers occurring pursuant to that agreement and provides the specific information regarding each transfer. Third, it expedites the legal process and forgoes additional exchanges and delays related to the type of data being transferred. This facilitates the research ethics board (REB) approval process while we work toward centralizing the REB process for the consortium. The agreement was reviewed extensively by all institutions, and the signatory process was lengthy because it involved the site director for each institution as well as each legal department, some of which included both the hospital and the affiliated university, as well as provincial authorities in some cases. The original components of the document were separated to allow for a main agreement that would be changed infrequently, if at all, with many schedules that may be modified without full institutional signatures (**Supplemental Digital Content 2**, <http://links.lww.com/JACS/A144>). The process was initiated in November 2018 and successfully concluded in January 2020, one of CanCORPS’ sentinel achievements.

Some of the Consortium Agreement’s highlights are as follows. A clear and transparent governance and leadership structure was established with term limits and a voting mechanism that encourages wide participation in the Consortium’s leadership. A national coordinator, funded by research funds from the Harvey E. Beardmore Division of Pediatric Surgery at The Montreal Children’s Hospital and an endowed Chair at the McGill University Faculty of Medicine and Health Sciences, was appointed. The national coordinator oversees all administrative and logistical issues and gives assistance to local coordinators. A clear process for study selection was established with defined roles for the Steering Committee, as well as the CanCORPS Board, in decisions leading to acceptance or rejection of studies. Publication and presentation decisions were clearly outlined, and authorship and scientific credit criteria were clearly established.

### Sustainability

Sustainability of the Consortium’s development, growth, and activities occurs through regular Board and Steering Committee meetings. The Board was mandated to meet at least 3 times per year to review and approve any amendments to the Consortium agreement, review and approve the studies to be conducted, and review and approve abstracts and manuscripts for presentation and publication. The Consortium is currently reviewing the mandate and appointments of Board members (site directors and codirectors) to ensure membership renewal and inclusion. The Steering Committee was mandated to meet quarterly. All new study proposals are submitted to the Steering Committee, which evaluates the quality, integrity, and feasibility of new projects before they are circulated to the Board. The Steering Committee provides feedback to the investigator(s) to optimize the quality of the proposal before consideration by the Board. The Steering Committee also reviews the results and conclusions of completed projects before circulation to the Board. Finally, the Steering Committee has the responsibility to address financial and authorship issues that may arise. Despite the emergence of the COVID-19 pandemic during the second year of the Consortium’s existence, activities have been sustained. Eight Board meetings and 8 Steering Committee meetings have been held. All meetings have been held virtually since March 2020. Each meeting ended with a set of deliverable action items that were reported on during the following meeting to ensure progress. The Consortium Chair provided an annual update to the Board, as well as an update at the annual CAPS meetings.

Since the founding of the Consortium, a 15th institution has joined the Consortium, and a 16th is in the process of joining. The Consortium has created an initial website through the Research Institute of the McGill University Health Centre (<https://rimuhc.ca/research-initiatives/cancorps>), and is in the process of launching a dedicated website (<https://cancorps.ca>). The Steering Committee held a meeting with the Scientific Director of the Institute for Human Development, Child, and Youth Health to introduce the Consortium and its goals, and to forge links with the CIHR. The Consortium became an affiliated network of The Maternal Infant Child and Youth Research Network. This partnership will help to increase its visibility as well as provide it with additional support for grant submissions, site monitoring, and potential funding opportunities. An upcoming study by CanCORPS was selected as a pilot project in the Canadian Collaboration for Child Health: Efficiency and Excellence in the Ethics Review of Research (CHEER) initiative. This will immensely aid in our goal of harmonizing and streamlining REB approvals across Canada.

## Productivity

Despite the tremendous amount of time and effort spent on establishing the Consortium's infrastructure and finalizing the Consortium agreement, the membership uniformly believed that the Consortium's success would only be judged by its research productivity. The membership approved 3 initial studies at the founding meeting:

### **Treatment and outcomes of congenital ovarian cysts**

The Consortium approved a retrospective study, led by The Montreal Children's Hospital, to evaluate outcomes of a common congenital anomaly characterized by significant variability in diagnosis and treatment. This investigation has successfully concluded, producing the largest study to date on this subject. The study was presented at 1 of 2 plenary sessions of the 2021 annual meeting of the American Pediatric Surgical Association. It has since been published in *Annals of Surgery*.<sup>13</sup> Diagnostic data obtained from the study resulted in a second investigation, *Differentiating congenital ovarian cysts from other cystic lesions in female infants*. That study was presented at the "Surgeon's Den" session of the 2021 CAPS meeting. It was subsequently published in the *Journal of Pediatric Surgery*.<sup>14</sup>

### **The Canadian Registry for Malformations of the Airway: establishing best practices for the assessment, management, and outcomes of congenital lung malformations**

Congenital airway malformations represent another group of anomalies characterized by significant variability in care, including significant controversy whether observation or resection produces the best outcomes. This prospective, longitudinal registry, led by the Children's Hospital of Eastern Ontario, seeks to prospectively gather data starting with prenatal diagnosis and continuing to several years of age. Eleven CanCORPS sites are participating, and the registry is now open for patient enrollment. Multiple publications are expected from this project, and the data gathered are expected to decrease care variability and produce optimal treatment algorithms.

### **The therapeutic role of Gastrografin for treating small-bowel obstruction in children**

The role of the water-soluble contrast, Gastrografin, in treating pediatric adhesive small-bowel obstruction has not been elucidated. This is a prospective nonrandomized

cluster trial (<https://clinicaltrials.gov/ct2/show/NCT03573921>) led by the Children's Hospital, London Health Sciences Centre, that involves 9 CanCORPS centers. The primary objective of this study is to determine if administering Gastrografin as part of a standard nonsurgical management protocol will reduce the rate of surgical intervention for small-bowel obstruction in pediatric patients. Patient recruitment into the trial was significantly delayed by the COVID pandemic, but the trial is now starting to recruit patients.

To date, a total of 13 study proposals have been submitted for consideration. In addition to the studies already discussed in the text, another 3 studies have been approved.

1. National validation of a risk stratification system for resource utilization and outcomes of pediatric perforated appendicitis.
2. An exploratory evaluation of pediatric thyroid surgery in Canada.
3. Rates of postoperative complications among pediatric patients with Hirschsprung's Disease: a retrospective multicenter study.

## DISCUSSION

Pediatric surgery embodies a clinical discipline that treats a variety of both common and rare conditions, encompassing both congenital and acquired pathology of the head and neck, thorax, abdomen, genitourinary system, and integument, and spanning the prenatal period until transition to adulthood. Individual practitioners typically accrue a limited personal experience of the entire breadth of practice. This infrequency also constrains the capacity to perform rigorous trials that elucidate best treatment options. Patient recruitment and retention, trial costs, and the ethical challenges of surgical research in a pediatric population result in a limited evidence base to inform best practices.<sup>15,16</sup>

CanCORPS was created to improve pediatric surgical care through high-quality collaborative research. CanCORPS aims to elevate the quality of pediatric surgical research by providing the highest scientific and ethical research standards. It currently includes 15 major pediatric institutions across Canada and is about to add a 16th. With that addition, the Consortium will unite all of Canadian pediatric surgery in 4 common objectives: (1) to provide a platform for the successful conduct of collaborative, multi-institutional research focused on patient-centered outcomes; (2) to improve the efficiency of scientific and ethical reviews through streamlining of research protocols; (3) to maintain the highest degree of scientific and ethical integrity in conducting research initiatives; and

(4) to promote the dissemination of new knowledge into pediatric surgical practice and healthcare policy. Results of its studies will reflect national practices and facilitate standardization of care. This was already evident in the Consortium's first study on congenital ovarian cysts, where the results allowed the creation of a standard algorithm for evaluation and treatment of these lesions.<sup>14</sup> This algorithm will be submitted for a future prospective observational CanCORPS study.

A consortium is "an agreement, combination, or group (as of companies) formed to undertake an enterprise beyond the resources of any one member."<sup>17</sup> Clinical research consortia such as CanCORPS follow this principle, undertaking clinical research initiatives that cannot be efficiently or effectively attained or reached by a single institution alone. Also often termed as "networks" or "collaboratives," clinical research consortia can frequently be differentiated from "multi-institutional studies" by the establishment of up-front common principles, policies, and administrative agreements that facilitate multiple initiatives, all focused on a common goal or theme of research shared by all members.

Many well-known Canadian clinical research consortia have successfully demonstrated the benefits of this new paradigm in clinical research. Pediatric Emergency Research Canada is a network of pediatric emergency medicine researchers from all 15 designated pediatric health centers in Canada.<sup>18</sup> Strict rules of governance guide the management of Pediatric Emergency Research Canada studies. Similarly, the Pediatric interest group of the Canadian Critical Care Clinical Trials Group has capitalized on the consortium infrastructure of the Canadian Critical Care Clinical Trials Group to successfully run many large-scale trials in the realm of pediatric critical care.<sup>19</sup> Through a progressive data-sharing partnership with the existing research scaffold of the Canadian Neonatal Network, CAPSNet continues to collect granular, population-based, disease-specific data salient to the care of children with congenital diaphragmatic hernia and gastroschisis.<sup>20</sup> Although its reach is limited, its focus on these specific conditions has facilitated successful evidence-enriched changes to practice and improvements in outcomes.<sup>8,21,22</sup> The Canadian Neonatal Follow-Up Network similarly facilitates collaborative research between Canada's primary neonatal follow-up sites but goes beyond to engage in knowledge translation and quality improvement.<sup>23</sup> Finally, the Maternal Infant Child and Youth Research Network facilitates multijurisdictional pediatric and maternal research in Canada by addressing barriers to collaboration and fostering linkages between organizations, as well as housing its own clinical trials consortium.<sup>24</sup>

We herein describe the inauguration of a national pediatric surgical research collaboration designed to generate and disseminate new knowledge in the service of children with surgical conditions and their families. It builds on the achievements and experiences of many of the aforementioned consortia as well as non-Canadian consortia such as the Midwest Pediatric Surgery Consortium and the Pediatric Surgery Research Collaborative.<sup>25,26</sup> It further builds on the benefits of collaborations such as CAPSNet and Pediatric Emergency Research Canada in that it involves all major pediatric surgery services in Canada, thereby facilitating research with a population-health lens, and enables high case volumes and a diversity of skills akin to the Midwest Pediatric Surgery Consortium and Pediatric Surgery Research Collaborative. Formal agreements and central coordination within CanCORPS facilitate ethics applications at individual sites, processes that vary due to the diversity of associated university processes and provincial healthcare systems. Central coordination also permits information to flow more easily and selectively between sites, lessening the burden of site-specific researchers.

The Consortium also allows for effective communication and coordination between various site investigators and support staff such as research coordinators, which, in turn, facilitates forward momentum on projects. This also helps to disseminate workload, because what is learned at one center can be used to anticipate difficulties that may be encountered at another. This collaborative organization allows institutions with an established research culture in place to act as role models for institutions with less research experience. Consequently, this consortium is not only improving the quality of pediatric surgery research on a national level, but also has a very favorable impact on all participating institutions. A clear Consortium agreement that contains criteria for study selection and guidelines on authorship provides clarity on prioritizing studies and their output. This agreement, which can be found in **Supplemental Digital Content 2** (<http://links.lww.com/JACS/A144>), contains a tremendous amount of intellectual property. It can serve as a model for specialties, in Canada and beyond, who wish to emulate it. Major lessons were learned throughout the inception, creation, and implementation of CanCORPS. A summary of the most important elements of success is shown in **Figure 3**. Most of these elements were envisioned from the inception as part of a roadmap for creation of CanCORPS, but some were learned along the path of creation and implementation. Other important steps that may have further facilitated the implementation of the Consortium include the appointment of a Consortium biostatistician to oversee all generated data, earlier seeking of collaborations with

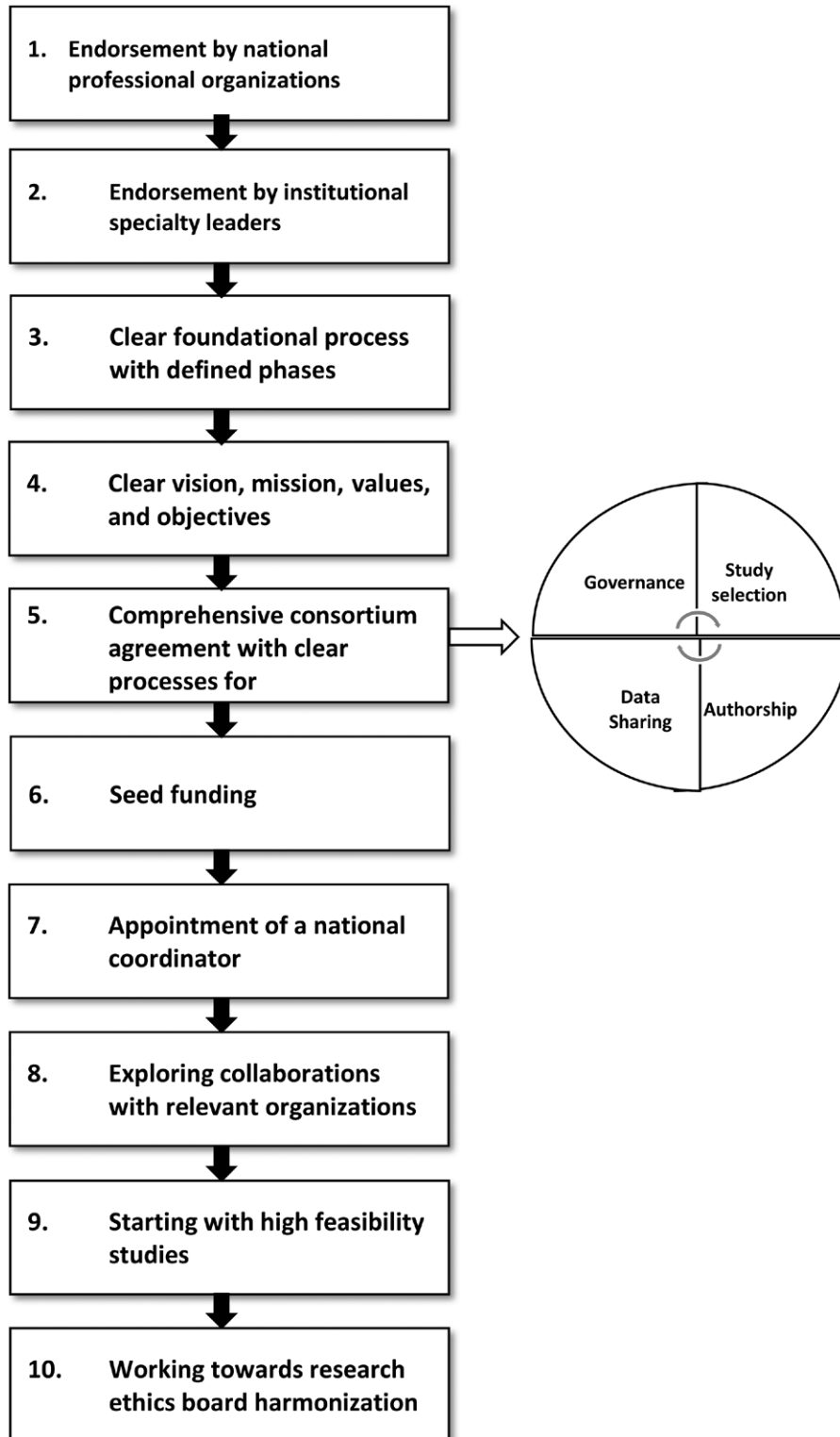


Figure 3. Elements of success in the creation and implementation of research consortia.



some of the organizations mentioned earlier, and strongly encouraging division chiefs to provide some protected time to CanCORPS site directors.

These benefits do not come without their challenges, however. The pace of study initiation can be slower than single or smaller multi-institutional endeavors due to the need for interinstitutional communication. Each institution has different levels of resources to facilitate onboarding projects (eg REB), collecting data and enrolling patients. As such, large and more complex (eg prospective) studies can be more daunting to initiate at some centers relative to others. All healthcare and research in Canada falls under provincial jurisdictions. Harmonization of research ethics board approvals has proven to be a challenge due to the lack of reciprocity among provinces. The Consortium is collaborating with the CIHR Canadian Collaboration for Child Health: Efficiency and Excellence in the Ethics Review of Research initiative, as mentioned earlier, to address these limitations. The Consortium benefited from an endowed chair at one of its founding institutions to provide seed funds for establishing its infrastructure. These seed funds have supported the salary of the national coordinator and some logistics, such as meeting expenses. However, ongoing funding, not only to maintain the central infrastructure of the consortium, but also funding for individual sites to permit their ongoing participation remains an ongoing challenge. Protected time for research activities remains a challenge for many of the CanCORPS investigators, most of whom are busy clinicians. Grants, whether by governmental or nongovernmental organizations, are provided to support studies, rather than infrastructure. CanCORPS plans to meet future funding challenges by initiation of institutional membership fees, and by submitting grant applications to support specific studies to CIHR and other relevant organizations.

The future of CanCORPS depends on the engagement of its member institutions, responsible stewardship of its executive committee, and the selection and execution of high-impact studies that position the Consortium to compete for external funding opportunities. Children with surgical diseases suffer from multiple barriers to receiving care firmly supported by high-level evidence, including the rarity of many of these diseases and the underrepresentation of pediatric participation in prospective trials. Higher quality, multi-institution initiatives such as CanCORPS are clearly needed to address this gap in evidence-based practice. The patients we serve deserve nothing less.

## APPENDIX

Members of the Canadian Consortium for Research in Pediatric Surgery (CanCORPS) investigators group:- David Price, MD, FRCSC, Janeway Health Sciences

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Analysis and interpretation of data: Emil, Guadagno, Baird, Puligandla, Romao, Van HouWelingen, Yanchar

Drafting of manuscript: Emil, Guadagno, Baird, Puligandla, Romao, Van HouWelingen, Yanchar

Critical revision: All authors

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## Invited Commentary

### Building Collaboratives to Improve Research Quality in Pediatric Surgery: It's More Than Just Numbers

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Dr Sherif Emil and coauthors highlight a well-known problem and opportunity within pediatric surgery, and surgery in general, in their publication describing the Canadian Consortium for Research in Pediatric Surgery (CanCORPS).<sup>1</sup> Building on the success of an earlier collaboration (Canadian Pediatric Surgery Network, established in 2005), the newly established CanCORPS includes all major pediatric surgery services across Canada and functions as a national subspecialty research consortium, which they believe has strong potential to improve research quality, evidence-based practice, and knowledge translation. They cite the main reason that high-quality clinical research within pediatric surgery is so difficult is the rarity of the conditions treated (eg gastroschisis, congenital diaphragmatic hernia, others), which we agree is an obstacle. The authors are to be congratulated for their persistence and organizational success in forming these national collaboratives in Canada to address the obstacles to high-quality clinical research as an overall field of surgery, rather than relying on each institution. The funding for their Consortium currently relies on important Foundational endowments, although a purpose of the Consortium is to