

KidSIM Fellowship in Simulation Education and Research

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Alberta Children's Hospital, University of Calgary

Program Outline

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Introduction:

The KidSIM Pediatric Simulation Program at the Alberta Children's Hospital is offering a Non-clinical Fellowship in Simulation Education and Research. This Fellowship is offered in collaboration with the Ward of the 21st Century and the Medical Education Specialization Program at the University of Calgary.

The overall aim of this fellowship is to initiate the process of preparing the candidate for an academic career as a clinician educator, with advanced knowledge and skill in the delivery of simulation-based education and research. The program will include both:

- Training and mentorship in simulation-based curriculum development, teaching, and learning.
- Designing and conducting of innovative simulation-based research relevant to the field of health professional education and practice.

KidSIM Simulation Fellowship Objectives:

1. Demonstrate knowledge of concepts in adult learning theory, experimental design, evaluation, and computer applications in simulation-based education.
2. Participate in the development of innovative simulation-based teaching strategies for all levels of learning: undergraduate and postgraduate trainees, as well as continuing education for healthcare providers.
3. Participate in the delivery of interprofessional education by an interprofessional teaching team.
4. Demonstrate knowledge of key issues in simulation-based education relevant to both the simulation learner and the simulation educator.
5. Initiate, design, conduct, present and or publish a simulation-based research project with the mentorship of the KidSIM-ASPIRE research program leaders.
6. Participate in the structured KidSIM Simulation Fellowship curriculum and other educational opportunities (i.e.: outreach simulation, rounds, fellowship coaching days).
7. Demonstrate a commitment to medical education by considering enrolment in a graduate degree program in education (Master's or PhD).



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KidSIM Simulation Program Overview

Program Director: Dr. Vincent Grant, MD, FRCPC & Dr. Alexandra St-Onge-St-Hilaire, MD, FRCPC

The KidSIM Pediatric Simulation Program at Alberta Children's Hospital (ACH) has been training health care professionals both as individuals and as part of interprofessional teams since October of 2005. Since that time, the KidSIM Program has educated over 80,000 learners, from nurses to physicians, paramedics to allied health practitioners, families and school staff, using immersive, team-based simulation experiences that improve real-world clinical care. Up to 6,000 learners per year are trained by KidSIM, from all levels of training, from undergraduate learners all the way through to practicing health professionals. They come from diverse backgrounds, everything from rural EMS providers to operating room nurses to attending pediatric intensivists, among many others, both at the Alberta Children's Hospital site, as well as via outreach education to providers in the broader Calgary community, and regional and rural healthcare providers in Southern Alberta.

The KidSIM program works to provide learners surrogate clinical experience with pediatric patients in as close to a 'real-life' situation as possible using high-fidelity mannequins as well as realistic teaching space mimicking various clinical spaces. In doing so, it is hoped that the learners experience the pressure and stressors of the real situation, as they work as individuals and in teams, to learn more about the assessment and management of clinical cases.

This realism is further enhanced by moulage of the patients, providing the real results of tests and adding simulation participants to cases to act in various roles (parent, consultant, etc.). Evaluation of the scenarios and of the program, are overwhelmingly positive, with a common theme being the request for more and more sessions. Over the years, there has been incredible growth in the number and diversity of learners, as well as growth in the number of areas incorporating simulation into their overall education plan.

The mission of the KidSIM Program is to support interprofessional education by working together with physicians, nurses and allied health care providers to ensure optimal accessibility, innovation, leadership and excellence in pediatric experiential learning and simulation education. Simulation is an essential component to meet current and future demands related to healthcare education, experiential learning, team crisis resource management, patient safety, workforce utilization, and clinical research.

Since 2005, the program has grown from one mannequin, one basement laboratory at the former ACH site, and a handful of trained educators to one of the broadest and busiest pediatric simulation programs in the world. Through on-going support from the Department of Pediatrics and the Alberta Children's Hospital Foundation, the program now boasts greater than 120 trained simulation education facilitators, 16 high-fidelity mannequins spanning infancy to adolescence, and one of the largest Pediatric simulation centers in Canada, a 3,600 square foot facility on the 4th floor of the ACH.

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The KidSIM Program has become known for several innovative programs, including: 1) an interprofessional training program for undergraduate students from the faculties of medicine, nursing and respiratory therapy, for whom this opportunity is the first they have had in their clinical training to work and learn alongside other health professionals; 2) a simulation program aimed at providing families hands-on education and feedback about how to look after their children with significant medical needs; 3) an internationally-recognized faculty development curriculum called ASSET: Advanced Skills for Simulation Educators & Teachers; 4) a highly regarded and successful simulation outreach program to the regional and rural centers in Southern Alberta; and 5) the KidSIM-ASPIRE Research Program (Assessing Simulation in Pediatrics: Improving Resuscitation Education) aimed at performing high quality research in the areas of resuscitation and cardiac arrest, artificial intelligence, quality improvement and patient safety, and return on investment.

The KidSIM Program is a proud partner of eSIM, the provincial simulation program in the Province of Alberta, as well as a founding member of the Canadian Pediatric Simulation Network. The Program is also affiliated with INSPIRE, the International Network for Simulation-based Pediatric Innovation, Research and Education, (www.inspiresim.com) and IPSS, the International Pediatric Simulation Society (www.ipedsim.com).

KidSIM-ASPIRE Simulation Research Program Overview

The KidSIM-ASPIRE Simulation Research Program aims to address the pressing need for assessment and evaluation of simulation-based education and interventions in life-saving care for children. The mission of the KidSIM-ASPIRE program: “Assessing Simulation in Pediatrics: Improving Resuscitation Education” is to conduct innovative, high-quality, simulation-based research to inform healthcare providers, administrators and families of best practices, which will optimize pediatric patient outcomes from illness.

The KidSIM-ASPIRE team has established a unified strategic research plan designed to achieve its overarching research objectives. This strategy is built on four foundational research pillars, each representing a core focus area with a distinct aim. These pillars serve as the framework for organizing and advancing research initiatives within the KidSIM-ASPIRE program, enabling targeted efforts and measurable impact in key domains.

1. Resuscitation and Cardiac Arrest
2. Artificial Intelligence
3. Quality Improvement and Patient Safety
4. Return on Investment

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Table: Specific Aims for 4 Research Pillars of KidSIM-ASPIRE

Research Pillar	Specific Aim
<i>Resuscitation and Cardiac Arrest</i>	Develop and evaluate novel techniques and strategies for improving resuscitative care of pediatric patients suffering from cardiac arrest.
<i>Artificial Intelligence</i>	Design, develop and evaluate the use of artificial intelligence to improve clinical skills training and assessment.
<i>Quality Improvement and Patient Safety</i>	Design and evaluate simulation-based interventions to enhance patient safety and improve patient outcomes.
<i>Return on Investment.</i>	Assess and evaluate the cost effectiveness of simulation-based training in healthcare.

The KidSIM-ASPIRE research program has become highly popular amongst trainees interested in simulation-based or medical education research. Our research team is actively supervising residents, fellows and PhD trainees who are conducting simulation-based research projects within our program. Each project has been carefully selected and designed to help target the aim of one or more of the research pillars of our program.

The KidSIM-ASPIRE simulation research program is a world leader in simulation-based research, as evidenced by becoming the most published simulation program in the world, and active involvement in multicenter studies both as the lead site and as a collaborative site. The KidSIM-ASPIRE team is committed to translating the knowledge gained by research findings at National pediatric emergency and pre-hospital care conferences, annual nursing education sessions, local nursing conferences, and international simulation conferences.

Additionally, KidSIM-ASPIRE is a leading research site within the International Network for Simulation-based Pediatric Innovation, Research and Education (INSPIRE). The INSPIRE network (www.inspiresim.org), co-founded by Dr. Adam Cheng of ACH, is the largest international pediatric simulation network in the world.



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KidSIM Fellowship Program: Key Partners

Medical Education Specialization Program

Department of Community Health Sciences, University of Calgary

Liaison to KidSIM: Dr. Tanya Beran, PhD

<http://www.ucalgary.ca/communityhealthsciences/prospective-students/potential-supervisors/medical-education/faculty-interested-medical-education>

Medical Education prepares health providers to be educators and researchers who can work as program administrators, health educators, and health education researchers to address topics relevant to medical education. As a result of several social, educational, scientific and resource pressures, medical schools increasingly require staff with degrees in medical education. Professionalism in medical education is enhanced with the MSc degree with more advanced scholars and researchers attaining the PhD degree. The Medical Education Specialization Program at the University of Calgary has a team a dedicated of interprofessional researchers and educators who provide supervision and mentorship for postgraduate trainees in medical education.

Ward of the 21st Century (W21C)

University of Calgary

W21C Liaison to KidSIM: Dr. Jeff Caird, PhD

<http://w21c.org/about-us/overview>

The Ward of the 21st Century is a research and innovation initiative based in the University of Calgary and the Calgary zone of Alberta Health Services (AHS). The collaborative space and diverse team enables both researchers and industry experts to bring new ideas, prototypes, or health care products for testing in pre-clinical and clinical environments - to enhance patient safety and quality of care both now and in the future. The overall mission of W21C is to innovate, create, educate, and evolve to build new paradigms of health care delivery.

Fellowship Program Components

The KidSIM Simulation Fellowship Program will comprise of educational and research objectives, which will be achieved through involvement in new and ongoing program curricula and projects, along with participation in educational rounds delivered at Alberta Children's Hospital and in collaboration with our program partners.

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Fellowship Activities

1. Simulation educator training via the Advanced Skills for Simulation Educators & Teachers (ASSET) Courses.
2. Participation as an educator in existing simulation curriculum and programs.
3. Development of new simulation curriculum and simulation scenarios.
4. Conduct a simulation-based research project.
5. Participation in educational and research rounds.
6. Attendance at committee meetings (Pediatric Simulation Education Committee and KidSIM-ASPIRE research meetings).
7. Participation in organizing / attending journal club.
8. Attendance and presentation at the Simulation Coaching sessions.
9. Attendance at regional, national and/or international simulation conferences.
10. Attendance at regional, national and/or international simulation research meetings.
11. Self-directed learning.

The following is a list of educational, research and leadership topics that will be covered during simulation fellowship training through diverse activities.

Simulation-Based Education

1. Principles of Adult Learning
2. The Nature and Nurture of Medical Expertise
3. Knowledge, Levels and Systems
4. Transfer of Learning
5. Clinical Reasoning
6. Information Management in Healthcare Education Scholarship
7. Individual Learning Styles
8. Simulation in Medical Education – Theory & Application
9. Teaching and Learning Psychomotor Skills
10. Curriculum Design
11. Web-based Curricula (optional)
12. Giving Effective Feedback
13. Brief Structured Observation/ One Minute Preceptor
14. Presentation Skills Workshop – Teaching in Large Groups
15. Teaching in Small Groups
16. Orienting the Learner/Setting and Discussing Goals and Objectives
17. Professionalism Instruction and Assessment
18. Self-Assessment
19. Program Evaluation
20. Integrating Assessment into Clinical Teaching
21. Evaluating Effective Teaching/Teacher Effectiveness Ratings

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Simulation-Based Research

22. Research Methods (Quantitative and/or Qualitative)
23. Publishing in Healthcare Education Journals
24. Assessment Methods in Healthcare Education Research

Leadership and Career Development

25. Educational Portfolios
26. Educational Scholarship in the Academic Health Center
27. Leaders as Scholars and Scholars as Leaders
28. Leading Change in Organizations
29. Running Effective Meetings

Application

Please visit our website, <https://www.kidsim.ca/fellowship> for application details. Deadline for applications is November 30th for a following July 1st start date.

Acknowledgements

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