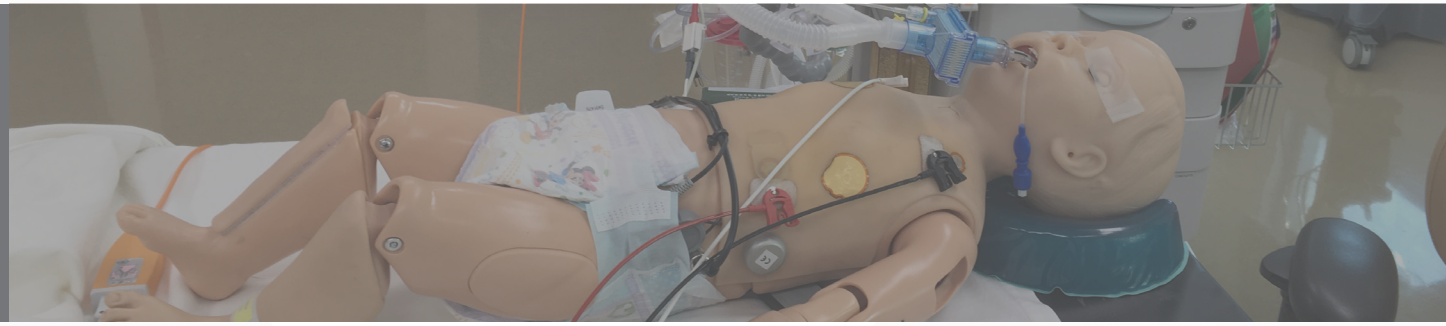
KidSIM



Annual Report

2022 - 2023

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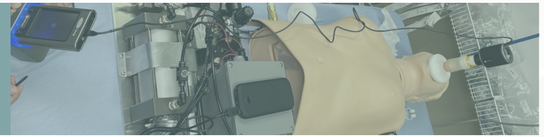


KIDSIM PEDIATRIC SIMULATION PROGRAM

The KidSIM Pediatric Simulation Program based out of the Alberta Children's Hospital 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 become a world-class program, known for delivering top-notch educational programs and conducting cutting-edge research. The KidSIM program works to provide learners surrogate clinical experiences with pediatric patients in as close to a 'real-life' situation as possible through the use of high-fidelity mannequins as well as a teaching space that mimics the clinical setting. Additionally, KidSIM provides education and support to help families, schools, and other non-clinical care providers to be better prepared for looking after children with high-risk medical situations that might occur outside the healthcare setting.

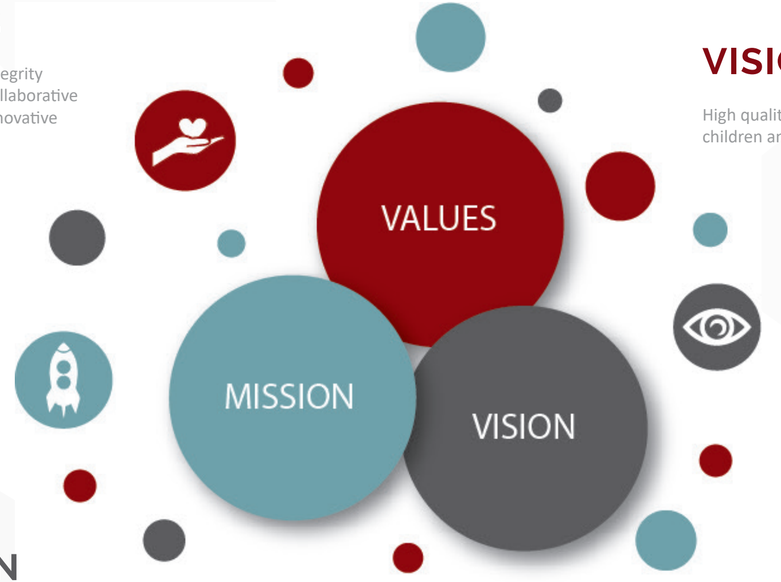
In 2022, the KidSIM Program was accredited for another 5 year term by the Royal College of Physicians and Surgeons of Canada. As an accredited simulation program, all activities developed and provided by KidSIM are automatically approved as accredited activities within the Maintenance of Certification (MOC) Program. The Royal College of Physicians and Surgeons of Canada established a formal accreditation system for simulation programs with the goal of building capacity in simulation-based medical education. Simulation program accreditation is a voluntary process that reflects a simulation program's ability to provide simulation-based education activities that model the highest administrative, educational, and ethical standards. Accredited simulation programs are internationally recognized as leaders in simulation-based learning and providers of activities that are planned and delivered according to the latest educational research to ensure patient safety and quality care provided by health professionals.

The KidSIM Program will honor our vision, mission & values by:

- Using medical simulation technology to enhance and assist with the ongoing professional development of front-line providers in our health care communities.
- Improving efficiency, availability and integration of simulation technology and scenarios into the educational programs of all pediatric stakeholders.
- Using medical simulation technologies to provide pediatric-focused acute care education and training to clinical areas within the ACH, as well as facilities that perform pediatric care in the Calgary Health Region, and rural and regional centers in Southern Alberta, Central Alberta and Southeastern British Columbia.
- Recruitment and facilitation of the training and development of future simulation educators providing a respectful, supportive and non-threatening learning environment for learners.
- Promoting excellence in simulation-based research by securing grant funding, mentoring novice researchers, collaborating with global experts, and engaging community partners to ensure broad dissemination of evidence.
- Creating an environment for improved patient safety and quality of care through uncovering and addressing patient safety threats.

VALUES

Respect
Supportive
Honesty
Inclusivity
Integrity
Collaborative
Innovative



VISION

High quality healthcare for all children and families.

MISSION

Promote and measure high quality interprofessional pediatric education by:
Ensuring optimal accessibility to this education tool;
Providing leadership and excellence in academic delivery and evaluation of simulation-based education;
Developing and mentoring high quality simulation educators;
Innovating and disseminating best practice;
Supporting quality and patient safety initiatives;
Conducting high quality simulation-based research

KIDSIM TEAM

Dr. Kerri Landry, Medical Director

Dr. Kerri Landry is originally from Montreal, Quebec where she attended McGill University and completed her MD/MBA, her Pediatrics' Residency and finally her Pediatric Emergency Medicine Fellowship. During her time at McGill, her interest in simulation education was sparked when they opened the Steinberg Centre for Simulation and Interactive Learning in 2006. She quickly fell in love with sim and became an active participant and educator in their emergency program. In 2009, she left the east, excited to join the Emergency Medicine Group at the Alberta Children's Hospital. Once in Alberta, Kerri became an active instructor with the KidSIM program, teaching at the undergraduate, resident, fellowship and staff levels as well as helping out with the Mobile Outreach Education program and various conferences and workshops. Delighted by the chance to take on a more formal role with the KidSIM program, in the spring of 2016, Kerri jumped at the chance to become an Assistant Medical Director overseeing the Mobile Outreach Education program. While she loved her role as the lead for Mobile Education, Kerri is now the Medical Director of the KidSIM Program. So far, she has worked with the team to navigate the Covid-19 pandemic and the program's Royal College Accreditation and is excited to explore how KidSIM can contribute its simulation expertise to help further the Quality Improvement work being done at the Alberta Children's Hospital.

Dr. Adam Cheng, Research and Development

Dr. Adam Cheng is a Professor with the Department of Pediatrics and Emergency Medicine at the University of Calgary. As a scientist and researcher at the Alberta Children's Hospital Research Institute, he oversees a program of simulation-based research focused on improving outcomes from cardiac arrest. Currently, he is leading the simulation research program (KidSIM-ASPIRE) at ACH and is also the Co-Director of the KidSIM Fellowship Program. Adam is internationally known for his work in simulation-based education and research. He has developed numerous simulation-based curricula, both at the local and national levels. His research in cardiac arrest, cardiopulmonary resuscitation and debriefing, includes a number of highly cited, simulation-based randomized controlled trials that have informed changes in international resuscitation courses. In 2018, he was lead author on the American Heart Association's Scientific Statement on Resuscitation Education that was published in the journal Circulation. He has edited several textbooks and is lead author of the Education Science of the 2020 American Heart Association Cardiopulmonary Resuscitation guidelines. Adam has been an active international leader. He is past-chair of the International Network for Simulation-based Pediatric Innovation, Research and Education (INSPIRE), which is the largest simulation research network in the world, comprised of over 250 pediatric hospitals and simulation programs.

Dr. Christine Kennedy, Assistant Medical Lead

Dr. Christine Kennedy is originally from Winnipeg and attended medical school at the University of Manitoba prior to moving to Calgary for her Pediatrics residency and Emergency Medicine fellowship. Throughout her fellowship she developed a passion for medical education and completed the Teaching Scholars in Medicine Certificate Program at the University of Calgary. She has been working as an Emergency Physician at the Alberta Children's Hospital since 2011 and has a very active role in teaching medical students, residents, and fellows. Christine took on a formal role with KidSIM in 2021 as an Assistant Medical Director and oversees the Mobile Outreach Education Program. She is excited to be involved in helping to develop and grow other educational programs within KidSIM.

Dr. Ashlea Wilmott, Assistant Medical Lead

Originally from Halifax, Nova Scotia, Dr. Ashlea Wilmott started her career in Nursing at the (then) brand new Alberta Children's Hospital in 2007. She subsequently attended medical school at McMaster University before migrating further west to complete the Royal College Emergency Medicine program at the University of Calgary. She works as an Attending Physician at the Alberta Children's Hospital and still enjoys seeing "big kids" at Cochrane Urgent Care. She has held positions in education and leadership within the provincial Connect Care project and RAAPID South. She and her husband, Shaun are the proud and tired parents of four busy children. Ashlea is very excited and humbled to be joining the incredible KidSIM Team in an Assistant Medical Director capacity focussing on Patient Safety and Quality Improvement.

Dr. Vincent Grant, KidSIM Fellowship Director

Dr. Vince Grant is the Co-Director of the KidSIM Fellowship Program and has been the Provincial Medical Director of the eSIM Program for Alberta Health Services since 2019. He is an Emergency Physician at ACH and a Professor of Pediatrics and Emergency Medicine at the Cumming School of Medicine at the University of Calgary. Vince was the Founding Medical Director for the KidSIM Program from 2005-2020, as well as the Founding Medical Director for the ATSSL at the University of Calgary. He has been an integral part of the growth of simulation-based education locally and has developed a national and international reputation for his work in this area. His main academic interests include simulation faculty development, debriefing and feedback methods, interprofessional simulation education, rural mobile outreach simulation, and innovation in medical education technologies.

Nicola Peiris, Team Lead

Nicola graduated with her BSc. from the University of Calgary. She has worked at the Alberta Children's Hospital since 2008 and joined the KidSIM-ASPIRE team in 2011. Nicola has managed numerous large research projects since 2009 and has worked with research teams within the PICU and the KidSIM-ASPIRE Program. From 2011 - 2020 , she was the Network Manager for the International Network for Simulation-based Pediatric Innovation, Research and Education (INSPIRE), the largest pediatric simulation research network in the world. Nicola assumed the role of Team Lead for KidSIM in 2016 and works with the Medical Director, Research Director, Patient Care Manager and Education Consultants to oversee the day-to-day program and research operations of KidSIM.

Helen Catena, Simulation Education Consultant

Helen graduated from Oxford UK with a pediatric nursing degree and after working in the UK for 2 years moved to work at The Hospital for Sick Children in Toronto. 2 years later Helen relocated to the Alberta Children's Hospital in Calgary, working in the Intensive Care Unit since 2004. She became interested in simulation in 2006 when she started teaching in the KidSIM Program. Helen helped lead the development of the Undergraduate Interprofessional Education program as well as the Inpatient Hospital Pediatrics program. Helen formally joined the KidSIM Program part-time in 2011 as the KidSIM Simulation Education Consultant helping to co-ordinate all aspects of education that occurs in the program.

Amy Cripps, Simulation Education Consultant

Amy has a wide range of knowledge from her acute care experience in PICU and as a 2-person pediatric transport team as a RRT. This helps her be able to teach any level of learner from any discipline. She has been involved in simulation since 2008 and has been essential for the success of the Just-In-Time inpatient program that started in 2011 and continues to run bi-monthly. Amy has helped this unique delivery of simulation spread into other areas including PICU, NICU and Oncology/ Hematology unit, making it a huge success. Amy assumed the role of Simulation Education Consultant in 2016. She works to organize and assist in all aspects of the program, particularly mentoring and faculty development.

Louise Simonot, Simulation Education Consultant

Louise graduated from the College of Nursing at the University of Saskatchewan and moved into general pediatrics for a year before transitioning to the Cardiac PICU. She quickly moved to Calgary to continue her work in the PICU which took on many roles. She was involved in family centered care, transport and other committees which eventually lead to the Nurse Educator role in the PICU. Her love of teaching led her to the KidSIM Program in 2013, where her passion for teaching and family centered care has continued to grow. She is also involved in assisting and organizing aspects of the undergraduate program, mentoring and program development for family centered care.

Dr. Jeffrey Lin, Senior Analyst

Dr. Yiqun Lin (aka Jeffrey Lin) obtained his medical degree and completed his pediatrics residency training in China. While he was practicing at the Children's Hospital of Fudan University in Shanghai, he was granted a budget to establish a simulation lab within the Emergency Department, which represents the first pediatric simulation center equipped with high fidelity simulators in mainland China. He moved to Vancouver in 2011 and completed a master's degree on clinical epidemiology. In addition to a simulation research fellowship with the KidSIM Simulation Research Program at the Alberta Children's Hospital, Dr. Lin completed both his PhD and postdoctoral research project at the University of Calgary. His PhD project, examining the efficacy and cost-effectiveness of distributed practice and appropriate feedback on CPR quality, is critical to resuscitation education science. In 2022, Jeffrey accepted a new role as Senior Analyst, evaluating return on investment and cost-effectiveness for programs in the KidSIM Center.

Kerianne Craig, Simulation Aide

Kerianne has been at AHS Supply since 2003 and moved in 2009 to work in Supply management, specifically for Alberta Children's Hospital. Kerianne assumed the role of KidSIM Simulation Aide in 2016. Her previous experience has been essential in how she has been able to help ensure all the labs are constantly organized and restocked for both the facilitators and the learners. She has helped organize and tidy the center and provides technical support and equipment training. Kerianne is relied on by all of KidSIM. Kerianne's other interest is learning to run the wide range of mannequins used for all levels of sessions so that she can be more involved in the scenarios themselves.

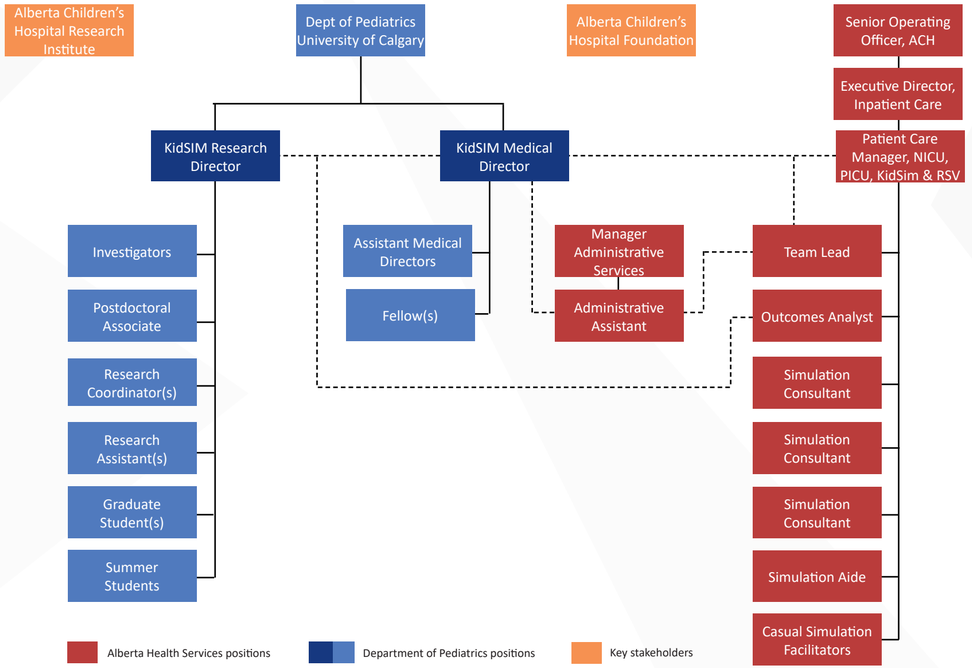
Keely Piscopo, Administrative Assistant

Keely has a Medical Office Administration Diploma which she obtained from CDI College. Her career with AHS started in 2012 where she worked for the Regional Scheduling Offices. Keely came to the Alberta Children's Hospital in June of 2015 where she worked for the Department of Pediatrics, Section of Emergency Medicine as administrative support for three emergency physicians. Keely assumed the role of KidSIM Administrative Assistant in 2016. She has a wide array of experience with computer software, and technology troubleshooting. She brings with her talent, organizational experience, and in depth knowledge and she has been a real asset since joining the team.

Jeffrey Stone, Administrative Assistant

Jeffrey joined the KidSIM Progam from March 2022-January 2023 providing administrative support during Keely's maternity leave. Jeff has a Bachelor's degree in Communication Studies, which he obtained from the University of Calgary. His career at Alberta Health Services is fresh, as this is his first year with the organization. Jeff came to the Alberta Children's Hospital after spending 5+ in a patient care coordinator role at an optometry practice. Jeff is thrilled to bring his communications background to the Children's Hospital.

GOVERNANCE



SIMULATION SUPPORT

KidSIM Team
Kerri Landry
Nicola Peiris
Christine Kennedy
Ashlea Wilmott
Helen Catena
Amy Cripps
Louise Simonot
Jeffrey Lin
Kerianne Craig
Keely Piscopo

FELLOWSHIP PROGRAM
Robert Catena
Karly Pauls

RESEARCH
Adam Cheng
Jennifer Davidson
Brandi Wan

MOBILE EDUCATION
Christine Kennedy
Amy Cripps

BIOMED SUPPORT
Dan Duperron
Darren Steidel

TRAUMA SERVICES
Karl Philips
Sherry MacGillivray

EMERGENCY MEDICINE
Andrea Boone
Antonia Stang
Caitlin Fernley
Christie Li Pi Shan
Connie Abrey
Dana Stys
Deborah Tamura
Diane Hamel
Gord McNeil
Hussein Unwala
Ian Wishart
Jennifer Pearson
Jennifer Thull-Freedman
Julie Wallin
Kaitlin Burke
Kelly Millar
Kida Stevens
Kristen Johnson
Laura Tak
Lindsay Burke
Lorraine Mabon
Melanie Willimann
Naminder Sandhu
Pamela Vandenbiggelaar
Peggy Thomson-Gibson
Roxanne Turnbull
Russell Lam
Sean Burke
Shabnam Minoosepehr
Sherry Wilson
Shirmee Doshi
Tammy Nelson
TJ Kodeeswaran

PEDIATRIC TRANSPORT
Caitlin Colvin
Chris Broderick
Eli Gilad
Jenna Camphaug
Kimberley Menzies
Neil Baribeau
Shannon Lindsay
Troy Carmichael

PICU
Andrea Jesney
Donovan Duncan
Eli Gilad
Jaime Blackwood
John Gilleland
Joy Handley
Laurie Lee
Meagan Mahoney
Rachel Brewer
Rob Catena
Tais Da Costa Sao Pedro
Tanya Drews

RESPIRATORY THERAPY
Alicia Tisnic
Chantel Jolivel
Hibah Hijair
Jeanine Johnson
Jennifer Oliverio
Lindsay Gibbs
Michelle Vizard
Salvatore Cimino
Welsey Li

STEP
Kathryn Le-Williams
Leslie Ramos-Charlton

ECLS
Pat Yee
Steve Menzies

INPATIENT PEDIATRICS
Andrea Grotemeyer
Angie Arcuri
Chantel Jolivel
Chantelle Barnard
Chris Novak
Coty Ong
Danielle Maubert
Deanna Cook
Heather Breault
Jenna Wiseman
Jennifer Walker
Jennifer Shehata
Kirby Bell
Laura Davies
Lily Ragan
Lindsay Long
Marsha Bucsis
Maria Clowater
Maribeth Faustino Hill
Matthew Jansen
Megan Allison
Michael Friesen
Michelle Jackman
Preet Sandhu
Renee Jackson
Sharon Spicer
Suzette Cooke
Tobi Reisig
Victoria Johnston

SURGERY
Corey Dowler
Shantel Cunningham
Steve Lopushinksy

OPERATING ROOM
Adam Spence
David Lardner
Elisabeth Dobereiner
Jamin Mulvey
Jeremy Luntley
Mark Gale
Mary Brindle
Michael Letal

PACU
Karen Bibaud
Noemi Ly

NEWBORN CRITICAL CARE
Amelie Strizke
Blair Becker
Claire Wattleworth
Jan Lind
Lori Stephen
Norma Oliver

HOME CARE
Amber Deus
Juanita Davis
Lee Carson
Meredith Luipasco

ROTARY FLAMES HOUSE
Kathryn daSilva Curiel

CLINIC
Eileen Pyra
Nilufer Hasanova
Rebecca Perry
Wendy Schwarz

SPEECH
Beverly Collisson
Laura Sawers

CASUAL
Ashley Holloway
Wendy Bissett

FUNDING

The KidSIM Program is grateful to have received financial support for infrastructure, equipment and operations from various sources since 2004. The KidSIM Program is extremely proud of its long-standing relationship with the Alberta Children's Hospital Foundation, without whose support the pediatric simulation program would likely not exist.

ALBERTA CHILDREN'S HOSPITAL FOUNDATION (ACHF)		
2004	$262,898	Purchase of School-Aged Mannequin (METI) and AV equipment
2005	$7,400	Purchase of Multimedia Equipment
2006	$60,000	Purchase of Infant Mannequin (METI)
2007	$203,740	Purchase of Portable Infant (Laerdal), School-Aged (METI) and Adolescent Mannequins (Laerdal)
2007	$20,000	Physiological Monitor for Simulation Laboratory
2007	$20,700	Funding for Simulation Facilitators
2008	$76,000	Outreach equipment and portability solutions
2008	$21,000	Funding for Simulation Facilitators
2008	$2,394,500	Construction and Outfitting of the KidSIM Centre (2012-2013)
2009	$150,000	Three year funding commitment for Simulation Facilitators (2010-2013)
2014	$100,000	Funding for Simulation Facilitators
2015-2019	$1,582,000	Funding for Infrastructure Support and Simulation Facilitators
2018-2019	$181,000	Support for KidSIM Innovation: ACH 3D Printing Challenge
2019	$93,685	Radiothon Support for purchase of new mannequins
2019	$90,000	Radiothon Support for KidSIM Innovation: Virtual and Augmented Reality at ACH
2019-2022	$1,350,000	Funding Extension for Infrastructure and Operations Support
2019-2020	$51,784	Baby Sim Doll, Radiothon 2019
2019-2020	$985	4 Little Junior CPR Trainers, Radiothon 2019
2019-2020	$14,435	4 Resusci Juniors CPR Trainers, Radiothon 2019
2019-2020	$490,000	Virtual & AR Technology, Radiothon 2019
2019-2020	$26,480	Additional Funding, Radiothon 2019
2022-2027	$3,457,368	Funding for Infrastructure Support and Simulation Facilitators

FAMILY CENTERED CARE AND TECHNOLOGY PROGRAM (FUNDED BY ACHF)		
2011	$30,000	Purchase of Toddler-Aged Mannequin (Gaumard)

PGME PROGRAM - DEPARTMENT OF PEDIATRICS		
2010	$30,000	Purchase of School-Aged Mannequin (Gaumard)
2010	$30,000	Purchase of Toddler-Aged Mannequin (Gaumard)
2013	$25,000	Purchase of School-Aged Mannequin (Laerdal)
2015	$30,000	Purchase of Toddler-Aged Mannequin (Gaumard)
2021	$26,200	Purchase of School-Aged Mannequin (Laerdal)
2022	$358	Laerdal Sim Baby Skins

DEPARTMENT OF PEDIATRICS		
2005-present	0.2 FTE	Medical Director, KidSIM
2005-present	0.3 FTE	Program Coordinator/eSIM Consultant, KidSIM
2005-2013	$129,372	KidSIM Operations Supplies, Minor Equipment, Warranties
2006-present		MD Facilitation Hours
2011-present	0.5 FTE	Research & Development Director, KidSIM-ASPIRE
2011-present	0.5 FTE	Administrative Assistant, KidSIM
2021	$60,000	KidSIM Fellow

eSIM PROVINCIAL SIMULATION PROGRAM		
2008-present	0.2 FTE	eSIM Consultant, KidSIM
2011-present	0.4 FTE	eSIM Consultant, KidSIM
2018-present	0.2 FTE	eSIM Consultant, KidSIM
2010	$30,000	Infant Mannequin (Gaumard)
2012	$30,000	Infant Mannequin (Gaumard)

OTHER PROGRAMS		
2017	$20,000	Purchase of Premie-Aged Mannequin (Gaumard) - NICU Program, Family Donor
2017	$3,000	Purchase of Premature Anne Task Trainer (Laerdal) - NICU Program, Family Donor

Award: The John G Wade Visiting Professorship in Patient Safety and Simulation-Based Medical Education

The KidSIM Program was the recipient of the John G Wade Visiting Professorship Award in 2022. This award from the Royal College of Physicians and Surgeons supports up to $4,000 towards a distinguished educator to visit a Royal College accredited simulation center in Canada, in order to promote the use of simulation in medical education, and its application to improving patient safety.

KIDSIM CENTER

Through various fundraising endeavors, the $2.4 million dollar KidSIM Simulation Center opened in January 2014. The KidSIM Center is a 3,600 square foot facility and is the largest pediatric simulation facility in Canada.

Located on the 4th floor of the Alberta Children's Hospital, the KidSIM Center accommodates four state of the art simulation suites each with individual control rooms, two proper debriefing rooms, a dedicated storage room, and space for administrative and program staff. Each of the teaching spaces is outfitted with an advanced multimedia system to be able to enhance the education experience and continue to offer the possibility of video recording for both research and quality assurance purposes. The debriefing spaces are both Telehealth and Zoom capable to support rural partners, families, and virtual faculty development. Telehealth is also used to regularly incorporate the transport team during mobile education sessions. This provides an added layer of realism and education to mobile education, and is a launching pad for the transport program to widely implement the use of telehealth technology for all calls coming into the team.

With the ability to run concurrent simulations in multiple labs, the KidSIM Program has been able to provide more learning opportunities than ever before, especially for large interprofessional teams. The versatility of the space has allowed it to serve the diverse needs of both clinical and academic/research groups, including clinical education and training, faculty development, research, advocacy, family centered care and community outreach.

EDUCATION COMMITTEE

The purpose of the Pediatric Simulation Education Committee (PSEC) is to provide leadership, expertise and guidance in relation to the dissemination of pediatric simulation education, simulation curriculum, scenario design, evaluation, and simulation research. PSEC objectives include:

- To develop, review and disseminate peer-reviewed scenarios for use within the simulation program.
- To ensure excellence in the quality of program curricula and scenarios.
- To evaluate needs assessments from various user groups and design curriculum and scenarios to support these needs.
- Encourage and champion interprofessional education.
- Support the development of education models which integrate simulation technology.
- To review summative evaluations of user groups.
- To critically evaluate education provided by the KidSIM Program.
- To advise the Medical Director of the KidSIM Program as to resource needs from various user groups.
- Through the Medical Director of the KidSIM Program: To advise the Department Chair, Pediatrics; the Facility Medical Director and the Vice President of the Alberta Children's Hospital, the Child Health Advisory Committee, the Executive Director of eSIM, the Director of eSIM South, and the ACH Foundation about resource issues and needs in pediatric simulation.
- To provide a leadership role in experiential education related to pediatric patient simulation in Southern and Central Alberta, and Southeastern British Columbia.
- At the request of the Medical Director, KidSIM Program: To provide representation on related local, regional and provincial committees when required.
- To facilitate and support research projects incorporating pediatric human patient simulation.

Nicola Peiris (chair) - Team Lead, KidSIM
Dr. Kerri Landry - Medical Director, KidSIM
Dr. Adam Cheng - Lead, Research & Development, KidSIM-ASPIRE
Dr. Christine Kennedy - Assistant Medical Director, Mobile Education, KidSIM
Dr. Ashlea Wilmott - Assistant Medical Director, QI and Patient Safety, KidSIM
Dr. Vincent Grant - Medical Director, eSIM Provincial Simulation Program
Helen Catena - Simulation Consultant, KidSIM
Amy Cripps - Simulation Consultant, KidSIM
Louise Simonot - Simulation Consultant, KidSIM
Kerianne Craig - Simulation Aide, KidSIM
Keely Piscopo, Administrative Assistant, KidSIM
Jeffrey Lin - ROI Outcomes Analyst, KidSIM
Marlene Franklin - Patient Care Manager, PICU/NICU/RSV Program/KidSIM
Jennifer Davidson - Research Coordinator, KidSIM-ASPIRE
Robert Catena - KidSIM Fellow
Sherry MacGillivray - ACH Trauma Program
Andrea Jesney - Pediatric Intensive Care Unit
Juanita Davis - Pediatric Trach Coordinator
Dr. Eli Gilad - ACH Transport Program
Dr. Mark Gale / Dr. Michael Letal - Department of Anesthesia
Dr. Suzette Cooke - Section of Hospital Pediatrics
Corey Dowler - Clinical Nurse Specialist, Surgical/Ambulatory Services
Karen Bibaud - Clinical Nurse educator, PACU
Tara Bourque - Unit Manager, Operating Room & PACU
Connie Abrey - Clinical Nurse Educator, Emergency Department
Dr. Sharron Spicer - Child Health Safety Committee

PROGRAMS

KidSIM is responsible for the training of up to 6, 000 learners per year. These learners come from all levels of training, from undergraduate learners all the way through to practicing health professionals, and also includes the parents and family supports who care for children at home or in schools. The breadth of the education programs offered by KidSIM demonstrate our commitment to providing accessible, comprehensive, integrated and coordinated health education delivery to both healthcare providers and families.

Our objective of delivering simulation-based education to all individuals and interprofessional teams across the ACH and our focus on expanding this education to families aligns our work with the ACH vision of providing excellence in family-centered care. Our track record also demonstrates alignment with the strategic directions of AHS, in that we are bringing health care education to the communities that serve their local populations, striving for a safer and more efficient care system, and increasingly showing that we are working towards better health outcomes.

KidSIM Program Outcomes:

- Improved performance of skills of ACH staff and emergency staff in hospitals across the catchment area
- Improved adherence to established clinical guidelines and protocols of ACH staff and emergency staff in hospitals across the catchment area
- Improved teamwork and collaboration of ACH staff and emergency staff in hospitals across the catchment area
- Improved performance of skills of family/caregivers providing in-home care to children with acute illness
- Improved patient safety and quality of care through uncovering and addressing patient safety threats
- 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.

PEDIATRIC EMERGENCY MEDICINE

Undergraduate Interprofessional Education

The Undergraduate Interprofessional Education Program is one of the first of its kind in the entire world. This program allows undergraduate learners from different health professions in their final year of training to work together to manage common pediatric illnesses and injury. These sessions include nursing students from the University of Calgary and Mount Royal University, respiratory therapy (RT) students from SAIT, licensed practical nurse (LPN) students from Bow Valley College, Emergency Medical Services (EMS from SAIT), pharmacy students from University of Alberta and medical students from the University of Calgary during their clerkship rotation in Pediatric Emergency Medicine. These sessions focus primarily on teamwork skills such as communication, roles and leadership while also learning to manage common pediatric acute care presentations (such as shock, respiratory distress, seizures and anaphylaxis). This program runs weekly year round.

Pediatric Emergency Medicine Junior Resident Simulation Education

This program runs monthly and is aimed at junior residents (PGY1 and 2) during their Pediatric Emergency Medicine rotation. These residents come from various postgraduate programs and this program is intended to teach them various aspects of the care of common pediatric acute care scenarios, including respiratory distress, shock, seizures, anaphylaxis and trauma care.

Pediatric Emergency Medicine Senior Resident / Fellow Interprofessional Team Training

The Emergency Medicine interprofessional team training program links senior residents (typically PGY3 and above) who are performing their rotation in Pediatric Emergency Medicine, as well as Pediatric Emergency Medicine Fellows (as part of their academic half-day schedule) with experienced emergency department nurses from the Alberta Children's Hospital. This session runs monthly and incorporates cases related to complex emergency department patients. The program focuses on allowing senior residents and pediatric emergency medicine fellows the opportunity to lead resuscitation teams from the pediatric emergency department. Team training is a compulsory part of the education curriculum for emergency room nurses and they must attend one session per year. The curriculum focuses on teamwork skills and management of complex pediatric acute care patients.

Managing Pediatric Emergencies for Adult Emergency Department Nurses

This program provides valuable experience and teaches basic management of pediatric emergencies to adult emergency department nurses during their orientation period. The learners are new nurses from all Calgary Emergency Departments and Urgent Care Centers. Objectives of this program are based on management and identification of common pediatric emergency presentations.

Pediatric Emergency Medicine Fellowship Simulation Education

The curriculum for pediatric emergency medicine fellowship training was developed with help from leaders the Alberta Children's Hospital. The new national curriculum adopted by the Royal College of Physicians and Surgeons of Canada has 16 required subjects embedded into it over the 2 years, to create a total of 24 scenarios. This fellowship training not only focuses on the medical management of the patient in these scenarios but also developing and improving teamwork and communication skills by ensuring that they are all interprofessional. Nursing and Respiratory Therapists from the emergency department are a vital component in these monthly sessions.

Pediatric Emergency Medicine Attending Physician Interprofessional Simulation Education

Recognizing the importance of team training and continuing competence, the emergency department has implemented monthly simulation sessions involving attending physicians, staff nurses and respiratory therapists. Whenever possible, the training occurs in the Trauma room of the Alberta Children's Hospital Emergency Department to enhance the realism of the scenario and evaluate current systems. These sessions focus primarily on the management of acutely ill pediatric patients.

Pediatric Trauma Services Simulation Program

This Pediatric Trauma Program provides simulation opportunities to any healthcare providers that work with trauma patients to teach both teamwork and medical management. These Trauma simulation sessions help to look

at issues, guide revisions to the system and educational needs. Learners come from a variety of clinical backgrounds that includes: the pre-hospital environment for Emergency Medical Services, the Emergency Department, Diagnostic Imaging, Transfusion Medicine, the Intensive Care Unit, the Operating Room, and the inpatient Trauma Unit (Unit 4). Involving multiple services across the trauma care continuum enables better communication and care management necessary to effectively treat multiple injured pediatric patients; doing this with simulation is felt to be the best, most realistic technique.

The Pediatric Trauma Program also collaborates with KidSIM in the Mobile Education Program. As a Level 1 Pediatric Trauma Centre, the Trauma Program is mandated to provide education for the ACH referral centers. Scenarios are developed on needs assessment from those centers, as well as real cases that were identified as being challenging. The interprofessional teams take part in the scenario in their own resuscitation/trauma room which helps to identify equipment, resources, logistical and educational needs. This proves to be invaluable for the referral centers in multiple ways. Of note, the Accreditation Canada survey September 2019 for Provincial Trauma Distinction highlighted this robust outreach program as a clear demonstration of commitment to provide quality trauma care to the pediatric population of Southern Alberta. e is always a hospital pediatrician and intensivist as part of the team facilitating the mock. Following each mock code there is a summary document circulated with learning points from the event (system, communication / teamwork skills, etc.)

CHILD LIFE

Child Life Emergency Department Support NEW!
The collaboration between KidSIM and Child life specialists aimed to enhance the competency and confidence of staff in the high acuity and fast-paced emergency room environment. As the demand on the emergency department increased, there was also a growing need for Child Life staff to support children and families. To achieve their objective, Child life staff incorporated simulation into their training for both new and experienced staff, focusing on scenarios that they would typically encounter while assisting children in the Emergency Department. The simulations aimed to teach staff how to effectively prepare children and families for various procedures such as stitches, sedations, IVs, and blood tests. They also trained staff on how to distract children while anticipating the next steps in the procedure and where to stand to provide the best possible support. The simulation allowed staff to share their experiences and insights, thereby increasing the capacity for Child Life and enriching the overall experience for all involved. All Child Life staff had the opportunity to take part in the simulation, enabling them to practice in a simulated environment without any adverse outcomes for the child and family. This training approach provided a safe space for staff to learn and develop the necessary skills to assist children and families in the emergency room effectively.

PEDIATRIC INTENSIVE CARE UNIT (PICU)

Mock Code Program
This long-standing program provides code blue (resuscitation) teams and the corresponding 'host' staff where the mock code blue occurs to practice resuscitation skills on a monthly basis. Various areas around the hospital are selected to 'host' mock code training. Scenarios are built specifically for the 'host' area and involve a deterioration of a patient that would typically be seen in that clinical area. The scenarios are geared to the interprofessional on-call resuscitation team. However, staff from the 'host' unit is also included in the simulation. There is also a significant focus on process related components within the mock code to identify gaps or issues around those aspects of calling a code blue. This program involves the real team that would be running the code. To maintain a safe learning and debriefing environment, there is always a hospital pediatrician and intensivist as part of the team facilitating the mock. Following each mock code there is a summary document circulated with learning points from the event (system, communication, teamwork, etc.)

PICU Nursing Orientation NEW!
Nurses hired for the PICU are provided an orientation which prepares them to work in this challenging environment. KidSIM offers a space for educators to engage these staff in simulation-based skill development opportunities which augments the didactic content.

Extracorporeal Life Support (ECLS) Team Training
This essential care was initiated in October 2011 and is a program involving training interprofessional and interdisciplinary teams to manage critically ill pediatric patients requiring initiation of ECLS. Curriculum for this training has been created with objectives focusing around the initiating of ECLS for pediatric patients (newborn to 18yrs) who have received maximal medical management including CPR requiring heart and/or lung support similar to bypass.

The ACH ECLS program is unique worldwide and success can be largely attributed to simulation as the core of the educational curriculum. These sessions include a large interprofessional team including Nurses/Respiratory therapy, General Surgeons, Intensivists, Cardiologists and Perfusionists. This allows them to practice the entire procedure of stabilizing and connecting a patient to the ECLS and can include simulating complications and rare events that the team may face during this complex process. The program owns its own ECLS simulator which allowing staff to train on circuit and patient troubleshooting complications. The ECLS team have developed their own cannulation mannequins in both infant and pediatric sizes that allow appropriate CPR delivery, cannulation of neck vessels, and attachment and circulation on pump. Simulation is also routinely used to map out process throughout different aspects of the program. All patients at ACH have access to ECLS therapy as the program has now expanded to include all inpatient areas, the NICU and the emergency department.

As of February 2023, the program has had 68 neonatal and pediatric patients requiring ECLS care ,with 43 of those children surviving to hospital discharge. Survival to hospital discharge for ACH ECLS patients is 63%, as compared to the ELSO Registry international average which sits between 54-65% (depending on diagnosis).

Pediatric Intensive Care Unit (PICU) Just-In-Time Training
The education team in the PICU has established regular interprofessional sessions based on real patients. The benefit is that the worst case scenario of a deterioration of a patient is practiced in a safe environment so that the team knows what to do and how to manage the change in condition.

PICU Interprofessional Team Training

This program focuses on critical care medicine and team training in the Intensive Care Unit. The participants are PICU Nurses, Respiratory Therapists and Attending PICU physicians. The objectives focus primarily on teamwork skills and medical management of the most critically ill and complex children cared for in the PICU. They have used simulation to change systems and introduce new equipment to staff ensuring that they are well trained and prepared for any situation.

PICU Continuous Renal Replacement Therapy (CRRT) and Therapeutic Plasma Exchange (TPE) Programs

The PICU based CRRT program was initiated in the fall of 2016 and the team consists of PICU physicians and RN specialists. For 2020 we have just launched a TPE program using the same CRRT equipment and team members. This team of 30 Specialists receives initial training sessions of 2-3 days, and then annual re-certifications of 4 hours. All these sessions incorporate simulation approaches to create optimal learning for the participants and help the educators evaluate education processes. A big challenge for the team has been maintaining skills for these low volume/high acuity therapies and we have found simulation helps the team feel confident providing excellent care for our critically ill pediatric patients.

STEP Team Training

The STEP team is a pediatric critical care response team who provides early assessment, education and management of evolving unstable pediatric patients admitted to inpatient units, as well as transition care for patients being transferred out of the PICU to the inpatient units. The STEP team is involved in a number of interprofessional simulation sessions and use the venue to provide education to healthcare teams on the role of the STEP team, as well as patient management of acutely ill children. The team uses simulation to orientate new team members, maintain skills and practice management of the deteriorating pediatric patient. The team is involved in many different educational courses that simulate the need for the healthcare team to activate the STEP team. If the STEP team is available and not busy with a real patient they will respond to this call and take part as a participant in the simulation.

Pediatric Transport Program

The Pediatric Critical Care Transport Team (PCCTT) is responsible for the safe transfer of critically ill children from across southern Alberta and southeastern British Columbia to the Alberta Children's Hospital for escalating care, and to transfer patients to the Stollery Children's Hospital (Edmonton) for cardiac surgical services. This team currently has 38 RN's and RT's. In 2022 the Transport team began training 6 RN's and 4 RRT's. At the present 32 members of the PCCTT are certified to fly transport patients without physician accompaniment (RN/RT team only). In 2022, 302 children were transported by the transport team, and 90% of pediatric transports performed used a two person (nurse and respiratory therapist) transport team, and a medical control physician consulting via phone.

Simulation is a key component to the educational curriculum, including a formalized simulation program that runs the team through weekly sessions. Simulation is used for initial training, skill maintenance, process improvement, and equipment familiarizations. The transport team partners with EMS, STARS and Air Ambulance to run simulation sessions incorporating their team members and to utilize their vehicle simulators to run scenarios in the real environment. The program utilizes a simulation exam as a part of the certification process for RNs and RTs. The transport team has partnered with the mobile education program over the last number of years to have a transport team member trained as a facilitator to participate on every mobile outreach session.

The past 6 years have seen the transport team regularly incorporate telehealth during mobile education sessions. This provides an added layer of realism and education to mobile education, and is a launching pad for the transport program to widely implement the use of telehealth technology for all calls coming in to the team. Simulation provides the opportunity to be one of the most well-trained pediatric transport teams in the country.

NEONATAL INTENSIVE CARE UNIT (NICU)

Neonatal Resuscitation Program (NRP)

The ACH NICU Education team has incorporated simulation in the Neonatal Resuscitation Program. This is a required course for all nurses, respiratory therapists and physicians. They run monthly courses to ensure all the staff are kept up to date and maintain their skills. This course has been very successful; simulation has added to the realism for the learners.

NICU Interprofessional team training

The NICU educational team has worked hard providing regular in situ simulation sessions for the entire medical team working that day. They have created common scenarios that they would see and have managed to engage the staff in taking part in simulation. They are also focusing on medical management, teamwork and communication as well as systems. Simulation has helped them adapt the unit to fit their needs better with simple changes helping the staff become more efficient.

Neonatal Intensive Care Unit (NICU) Just-In-Time Training

The Neonatal Intensive Care unit has established a Just-In-Time simulation on real patients that are admitted in the unit. This provides the entire team, novice to expert the skills and knowledge to predict and anticipate potential deterioration of that patient with the hope that the change in condition is able to be prevented.

NICU Proskills Pediatric Resident Training

The NICU Proskills team has provided pediatric residents the opportunity to learn and practice NRP via high fidelity simulation at KidSIM. They also provide residents the chance to learn more focused hands on skills that relate to caring for the most critically ill newborns of southern Alberta.

PICU/NICU/ED

Difficult Airway Activation

When a difficult airway is encountered or suspected in a patient anywhere in the Alberta Children's Hospital, a specialized team equipped with advanced pediatric airway skills urgently attends the situation. The KidSIM Program has supported the implementation of the Difficult Airway Activation plan, supporting multi-disciplinary teams from Emergency, PICU, NICU and Inpatient Units to work together in stressful and urgent situations to improve patient safety and quality of care. Through careful planning, teams develop sustainability plans and KidSIM shares learnings from these events throughout the hospital.

NEURO CRITICAL CARE

Neuro Critical Resident Simulations NEW!

During the academic year, the Neurocritical Fellow approached KidSIM with the intention of establishing a training program for Neuro Critical residents. The aim was to provide residents with exposure to patient conditions that are not frequently encountered and to equip them with the necessary skills and knowledge to manage such situations. KidSIM played a pivotal role in the program by providing a simulated environment, facilitating the sessions, and collaborating in the development of scenarios. Over the course of six months, the program has proven to be a success, with neurocritical residents becoming more engaged and confident in their ability to manage these patients. As a result, they are eager to continue with the program and ensure that residents receive the education and exposure necessary to effectively manage this patient population. The collaboration between KidSIM and the Neurocritical fellows has facilitated the creation of an effective training program that has demonstrated its value in enhancing the skills and confidence of neurocritical residents. The program's success is a testament to the importance of collaborative efforts in promoting education and training in medical fields.

SYSTEMS SIMULATIONS

Ebola Preparedness NEW!

In light of the global concern surrounding the Ebola virus, it became necessary to provide Personal Protection Equipment (PPE) training for staff in high-risk areas within ACH. KidSIM, in collaboration with the Environmental Protection department, played a key role in delivering this training. The training sessions involved several insitu simulations using real PPE, providing staff with hands-on experience in the process of donning and doffing equipment, as well as safety precautions to be taken when working in high-risk areas. Through this training, the staff were able to identify a core group responsible for PPE management, understand the available resources, and implement safety protocols through the use of a buddy system. As a result of the PPE training program, staff members are better equipped to manage the risks associated with working in high-risk areas. The success of this program highlights the importance of collaboration in developing effective solutions to address global health concerns such as the Ebola virus. By leveraging the expertise and resources, KidSIM was able to provide staff with the knowledge and skills necessary to operate safely in high-risk areas and effectively manage the risks associated with the Ebola virus.

MASS Unit NEW!

The respiratory pandemic that occurred in the fall/winter of 2023 had significant consequences for both staff and patients in healthcare facilities. One of the effects was the opening of a Medical Acute Short Stay unit to help manage the influx of patients with respiratory illnesses, which required the redeployment of nursing staff from other departments. To ensure the success of the new unit, prior to opening to real patients, KidSIM organized a simulation within the department to identify safety needs, required resources, troubleshoot potential challenges, and establish the flow within the department. The simulation involved different departments providing expert content, additional support, and resources to the team. KidSIM also played a crucial role in training nursing staff on how to manage new patients' conditions falling within the unit specific admission guidelines. The use of simulation in healthcare training is becoming increasingly important, particularly during times of crisis like the COVID-19 pandemic. Simulation helped to identify learning gaps, provide resources, and troubleshoot different situations. Additionally, KidSIM provided continued support as new patients were admitted and discharged to identify patient, safety, and resource needs.

Evacuation Simulations

In preparing for the unknown, simulation can play a valuable role in systems simulations which allow the team to practice potential real events. In 2018, the Alberta Children's Hospital, along with KidSIM, practiced evacuation simulations with several different pieces of equipment. Staff involved safety, simulated within the hospital, what it might be like to have to evacuate patients. Going down different staircases, over different types of flooring and with multiple sizes of patients. By preparing for evacuation events, it can allow for all disciplines within the hospital to be equipped and supported if a real event was to occur.

Systems Simulations

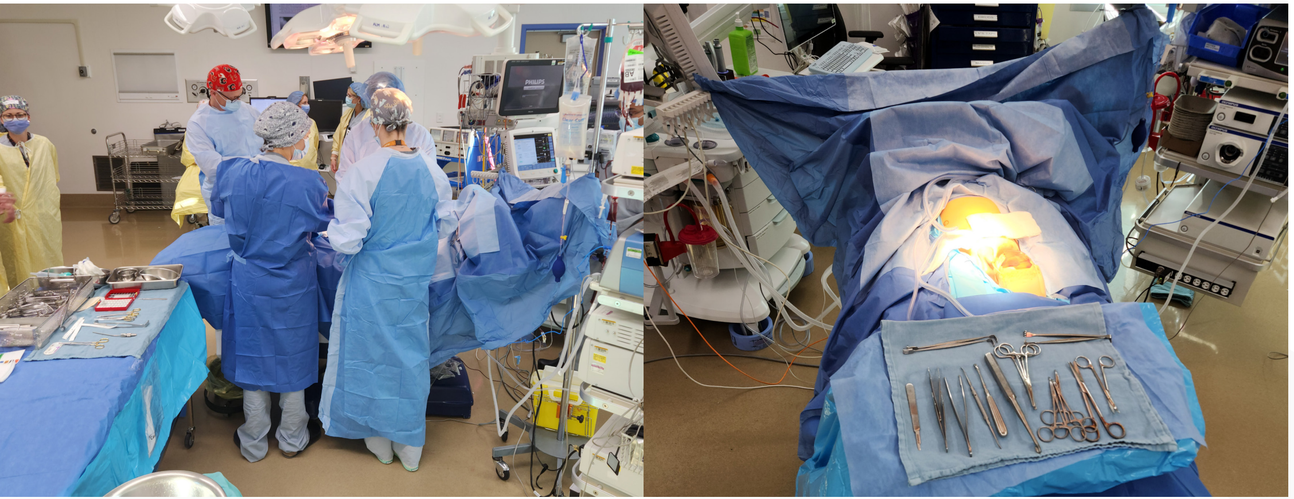
Simulation is being used on a regular basis to test systems/environments in most areas within the hospital. This has included simulating moving sick children from one area to another (ER to OR, inpatient unit to PICU during CPR), to work out new processes and discover some unforeseen challenges in caring for the child in this situation. The simulation helps identify high risk processes that are often unpredicted and also allows staff to experience these scenarios prior to them occurring. Simulation has also been utilized to practice new or changes in processes or test new areas of patient care prior to an adverse event occurring.

Emergency Management Disaster Preparedness

Simulation is the foundation of testing emergency management disasters to prepare staff for an unpredicted event. This has included Code purple (Hostage or threatening situation) and Ebola exposure allowing staff to safely practice an event occurring within the hospital. The staff involved are fully supported during and after the event with a special focus on maintaining psychological wellness while practice distressing events. Systems issues or gaps in education can be identified and a solution created prior to real event.

ER Trailer Sim NEW!

The COVID-19 pandemic had a profound impact on the Emergency Department (ED) department, leading to a significant rise in patient population and acuity, resulting in longer wait times and increased numbers of patients within and outside the hospital doors. To address the situation, the hospital leadership obtained a portable trailer to shelter the waiting population, but the trailer posed a physical disconnect with the ED department. To address this issue, KidSIM received a consult to evaluate the safety, flow and process of the trailer once it was set up and reviewed in accordance with the perceived needs of the department. A simulation was conducted involving a parent and child who attend the trailer and wait to be assessed while the patient's condition deteriorates. Through this simulation, the team identified safety issues, new resources, and new processes that needed to be implemented to improve the overall care of patients in the ED department.



OPERATING ROOMS/DAY SURGERY/POST-ANESTHETIC CARE UNITS

Day Surgery
This program runs monthly simulation sessions capitalizing on previous set education time, currently 45 minutes on Friday mornings. These sessions are uni-professional focusing on nursing staff of the Short Stay Surgical Unit and occasionally the Nursing Support Team. The objectives focus on managing a variety of routine post-surgical complications, emergency scenarios, addressing past complex cases or safety concerns, and recently, the addition of safest together initiatives.

Operating Room and Post Anesthetic Care Unit Just-In-Time Training
This unit has been successful in implementing Just-In-Time training into the OR and PACU. They have the unique situation in being able to prepare educational sessions based on the planned surgical cases. This allows them time to predict potential situations that need to be practiced to ensure the best possible outcomes.

Post-Anesthetic Care Unit (PACU)
Simulation education is built right into existing education time for PACU staff which is currently 30 minutes on Friday mornings, of which simulation sessions are approximately 4-6 times per year for nursing staff. The team is trying to include Anesthesia into the sessions when they are available. Most of the sessions to date have focused on emergency events that may happen in PACU, such as airway management. PACU also includes simulation in annual continuing education skills day, which every staff member must complete. The KidSim Lab is also used for new hires to teach PACU specific scenarios.

OR Education On Demand
This simulation program within the Operating Room has a similar design to Just In Time Simulation. The intent of this program is to provide a simulation experience based on potential situations that have a high probability of occurring within the OR clinical environment. These scenarios require a high functioning team to manage and the OR team may not experience these situations on a regular basis. With Education on Demand sessions, everyone gets an opportunity to work through an acute situation and together determine how to provide the best care to the patient. The OR team involved in these scenarios work together throughout the rest of the day; the idea is that participating in these simulations will provide them with the ability to plan, practice and discuss how they will work together in the event of an actual crisis. In order to respect the needs of our learners and the flow of patients through the OR, these simulation experiences are kept to 30 minutes. Targeted learning objectives focus mainly on potential system issues that can arise during an acute situation and on building the perioperative team.

Surgical Services Simulation - Combined OR/PACU/SSSU
This program is trying to build quarterly simulation opportunities with members from all three nursing teams in surgical services (OR, PACU and the Short Stay Surgical Unit). Scenarios are based on a variety of emergency management scenarios that all areas may see. A big focus is to facilitate communication and team building by bringing nurses from all areas of Surgical Services together. These sessions have allowed teams to work and learn together while helping to identify the different skill sets and supports that each area brings to the care of our surgical patients. Objectives depend on the environment that the scenario is set but focus mostly on the nursing management of common surgical complications. This simulation was used to help implement the Entonox program, so the nurses could have a scenario on what using Entonox would look and feel like.

MEPA (Managing Emergencies in Pediatric Anesthesia)
This is an all-day simulation course focusing on 4 Pediatric Anesthesia Crises. Every resident in the U of C Anesthesia Program has been taught through this internationally-recognized program that is offered every 6 months. MEPA is a well-established course in the UK which was brought to the ACH to improve comfort and competence in Pediatric anesthesia management for trainees.

Pediatric Anesthesia Core Sessions
This is a 9 week program offered every two years at ACH. Over 9 Thursday afternoons, all U of C anesthesia residents (from R1-R4) participate in a four hour session with didactic lectures covering a broad range of pediatric anesthesia subjects. Prior to the lectures his program facilitates simulations which are germane to the proceeding lectures for that particular session.

Perioperative Crisis Management Course (POCM)
POCM is a full one-day course at ACH designed and developed to improve crisis management in operating rooms. POCM is a multidisciplinary, inter-professional course involving operating room RNs, post-operative recovery room RNs, Pediatric Anesthesiologists, Pediatric Surgeons, and Respiratory Therapists. This 6 hour course involves 3-4 simulated crises scenarios based on real scenarios that have happened in the peri-operative environment. Cases which have been reviewed at Quality Improvement/Quality Assurance rounds are used as a foundation for scenario development, uniting QI/QA initiative with a simulation initiative with a goal to optimize patient care. POCM participants receive extensive feedback on their performance. In addition to self-assessment, participants engage in prolonged debriefings where team assessment is the focus. Both individual and team performance are highlighted within each debrief and all members of the team are involved in each scenario and debrief. The objectives include the recognition of the importance of a multidisciplinary team and the impact of human factors on the delivery of safe and effective care during a perioperative crisis.

INPATIENT PEDIATRIC UNITS

Pediatric Interdisciplinary In-patient Simulation Education

The Section of Hospital Pediatrics has been running interprofessional training sessions with in-patient unit nurses and respiratory therapists since 2007. This is a truly novel program that includes the attending staff hospital pediatricians. These bi-monthly sessions incorporate specific cases related to the inpatient unit where the participating staff normally works. The sessions are designed to highlight both medical objectives and teamwork skills. The Section of Hospital Pediatrics has made this a mandatory education session for all Pediatric Attending Hospital Pediatricians working at the Alberta Children's Hospital. Simulation sessions have incorporated other departments to highlight new policies and processes, including PICU and the ECMO team, anesthesia, sub-specialty medical and surgical services, and Child Life, to make these simulations truly relevant to current in-patient practice.

Pediatric Residents' Academic Half-Day Interprofessional Simulation Team Training with In-patient Nurses

On a yearly basis, each post-graduate year (PGY) level of resident is offered two complete afternoons dedicated to simulation team training with in-patients nurses (total 8 times per year). During these sessions, the pediatric residents are paired up with nurses from the various in-patient units and work through pediatrics scenarios. The cases are run with respect to the unit from which the nurses come, so that these are the types of patients they would be likely to see on their unit. For example, the PGY2 residents might run a scenario of shock, which would be modified to fit an oncology patient if the nurses are from Unit 1. The residents are given the opportunity to act both as team leaders and team members during each of the scenarios. These sessions focus on teamwork skills, as well as medical management.

General Nursing Orientation Programs

Clinical Nursing Educators (CNEs) from across the hospital created a new orientation for every RN and LPN that starts at the Alberta Children's hospital. This is an intense 2 week course allowing the new staff to obtain all the information they need to in a short time. New in 2018, the program has incorporated Pediatric Emergency Assessment, Recognition, and Stabilization course (PEARS, Heart & Stroke Foundation) along with simulation to consolidate the knowledge that they obtain from the lectures. The feedback has been very positive in both how much they enjoy the simulation and how much they learned during it. Following this positive introduction to KidSIM and simulation the hope is that they will become more comfortable in taking part in simulation as their career develops at ACH.

CAR-T

Unit 1 started a transplant process in the unit called CAR-T. The side effects of this treatment can be life threatening and a significant number of patients need PICU admission to support them through these side effects which is similar to sepsis and assessing for neurologic Toxicity. As this is new to everyone (Oncology unit and PICU healthcare workers) and required collaboration with many different groups to understand the process and be aware of the side effects and the process of managing the symptoms for Oncology teams and PICU teams. Training included theory information followed by simulation to provide them the opportunity to practice this management and experience all the potential deterioration to help them prepare. This also included targeted simulation for each unit, with the scenarios being just for each unit.

Nursing Education Programs

Clinical Nursing Educators (CNEs) from across the hospital regularly build simulation into a variety of their educational programs. This includes everything from orientation of new staff to mandatory annual education to targeted education days. New policies and procedures are introduced using simulation as a teaching tool. Scenarios are built to be unit specific and focus on teamwork and patient management. Simulation is used to help staff familiarize themselves with new equipment and create a safe environment for trouble shooting issues that may have arisen.

The "First Five Minutes" Program NEW!

The "First Five Minutes" program is a training initiative that targets in-patient teams, consisting of nurses, respiratory therapists, occupational therapists, physiotherapists, and other members involved in providing care on a given unit. The program employs simulation scenarios that simulate serious events and challenges the team and how to respond appropriately. During the simulation, the team identifies how to call for help and which team is required, the roles that are necessary and how to assign them, and how to manage the patient using available resources on the unit while waiting for the advanced team to arrive. The intended audience for this training is the healthcare teams that are currently providing or will potentially provide care on the unit. By participating in these sessions, the team becomes more knowledgeable about the resources available to them, how to call for help, and the roles required while waiting for advanced assistance to arrive.

HHHFNC NEW!

During the winter pandemic, the need for Heated Humidified High Flow Nasal Canula Oxygen (HHHFNC) for pediatric patients on inpatient units was accentuated due to the increased acuity and patient population. To address this issue, KidSIM collaborated with the Nursing Education team to provide insitu education on equipment and the use of HHHFNC as per the policy developed by Alberta Health Services (AHS). A mobile teaching team was deployed to circulate throughout the hospital and provide visual and hands-on education on the equipment, provide information, and help troubleshoot any questions or concerns. The outcome of this initiative was that the team felt more competent in using HHHFNC, more patients received therapy on the inpatient units, and there was greater fluidity in communication and collaboration between the Pediatric Intensive Care Unit (PICU) and Pediatrician teams in providing optimal care to the patient.

Trafficking Simulation NEW!

Pediatric residents from PGY1 to PGY3 participated in an inaugural simulation experience during their academic half day to identify victims of exploitation in a hospital setting. This was a communication-based scenario designed to highlight the red flags of sexual exploitation, identify strategies to de-escalate and separate exploiters from exploited adolescents, and to better understand referrals and pathways of care. An eye-opening debrief session was provided by Bree McClellan, who is the coordinator of the COPE program at McMan Calgary. While this was a difficult subject to discuss and enact (with much kudos to the actors who volunteered), it was a necessary addition to the pediatric resident curriculum. The hope is that victims of sexual exploitation who come into contact with future pediatricians will not be missed and be offered timely opportunities to seek the help they need.

OUTPATIENT SIMULATION PROGRAM

Outpatient Simulation Program

KidSIM routinely offers training to specific outpatient clinical areas. The learners practice skills as a 'first-responder' and come from a variety of backgrounds such as infectious diseases, cardiology (including ECG technicians), dentistry and diagnostic imaging, among others. Scenarios and objectives are specific to the clinical area and are based on rare and uncommon patient adverse events. These sessions often include the STEP team or Mock Code program.

CONNECT CARE

Connect Care is a province wide initiative health information system that gives healthcare providers at AHS and its partners a central access point for more complete, up-to-date patient information and best practices. A benefit of Connect Care is its potential to close gaps in knowledge and care by providing a single, comprehensive source of information. This can improve the accuracy and completeness of patient information, reduce the risk of errors, and enhance patient safety. Connect Care can also be used to simulate real-time patient encounters, where providers can interact with simulated patients through the Connect Care system. Instructors can provide immediate feedback to students and guide them through the simulation, allowing them to learn and refine their clinical skills.

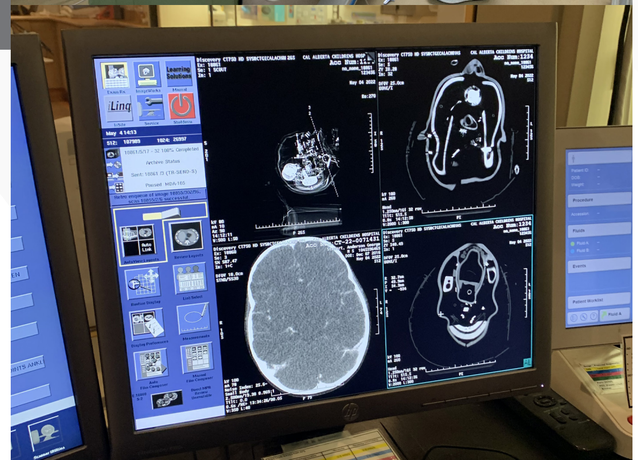
In preparation for the Connect Care launch at the Alberta Children's Hospital in 2022, simulation was utilized as a tool to apply knowledge gained in the classroom setting into a simulated patient encounter. By incorporating Connect Care into simulations, providers learned to navigate the system, enter patient data, and review patient records in a simulated clinical environment. This helped them develop critical skills, such as accurately documenting patient information, identifying potential medication interactions or allergies, and ensuring appropriate treatment plans were put in place. Through simulation broken links in Connect Care workflows were identified and brought forward to the Connect Care Leadership team. Overall, the use of Connect Care in healthcare education through simulation offers a valuable learning experience for providers, helping them develop critical skills and prepare for real-world clinical settings.

System Simulations in Connect Care Patient Movement NEW!

System simulation with Connect Care is a valuable tool for healthcare education, allowing students to practice clinical skills and decision-making abilities in a safe, controlled environment. KidSIM Simulated the process of moving a patient from the emergency department through diagnostic imaging to the pediatric intensive care unit (PICU) with the use of Connect Care offers a comprehensive learning experience for healthcare professionals, enabling them to develop critical skills such as navigating the Connect Care system, accurately documenting patient information, and ensuring appropriate management and treatment plans are in place. This same process was used by KidSIM to simulate a patient moving from the emergency department to the operating room and looking at how the Connect Care system operates with the patient moving from one area to another. This simulation also enhances their understanding of the process of caring for critically ill patients and provides opportunities for interprofessional education.

Inpatient/Emergency Simulations NEW!

Simulation with Connect Care is a valuable tool for teaching inpatient and emergency healthcare providers how to use the computer system. The simulation would involve a simulated patient case, where participants would practice entering orders, documenting care, and communicating with other members of the healthcare team using the Connect Care system. Facilitators would provide feedback and guide learners through the process, allowing them to practice and refine their skills in a safe, controlled environment. The simulation would also allow participants to learn about the different features and functions of the Connect Care system, such as the medication administration record, patient care flowsheets, and physician order entry. By using simulation with Connect Care, inpatient and emergency healthcare providers can develop confidence in using the system, which can ultimately improve patient safety and outcomes.



MENTAL HEALTH

EMS Re-integration NEW!

Post-traumatic injury can have a significant impact on EMS staff, both physically and emotionally. For EMS personnel, returning to work after an injury can be a challenging experience, particularly if they have lost confidence in their ability to perform their duties effectively. Simulation can be an effective tool to help EMS staff re-integrate into their roles after an injury. By creating realistic scenarios that reflect the challenges and demands of the EMS environment, simulation can provide a safe and controlled environment for staff to refresh their knowledge and skills, gain new insights and rebuild their confidence. In addition to clinical skills, simulation can also help EMS staff prepare for the emotional and psychological challenges of returning to work after an injury. Simulations can be designed to reflect the unique emotional and psychological demands of the EMS environment, such as managing stress, dealing with critical incidents, and communicating effectively with colleagues and patients.

The use of simulation is a valuable tool for EMS staff re-integration after an injury. By providing a safe and controlled environment for staff to practice their skills and build self-assurance, simulation can help EMS personnel return to work with the confidence and resilience needed to provide high-quality care to their patients.

PALLIATIVE CARE

Rotary Flames House

This program has utilized simulation in a variety of ways. Rotary Flames House has grown to care for patients with greater medical needs, such as ventilated tracheotomy patients. They have incorporated interprofessional in situ simulation for the staff to become more familiar with the specialized needs of their patients. They have also adopted the 'Just-In-Time' philosophy and run scenarios based on the care needed for their patients that are presently admitted in the Rotary Flames House.

FAMILY CENTERED CARE

FCC CPR Training

KidSIM supports families whose children have a life threatening cardiac condition that would require them to perform compressions and rescue breathing (CPR) and potentially the need to use an AED to treat the cardiac arrhythmias through defibrillation, the application of electricity to reset the heart into an effective rhythm. Teaching occurs in the Cardiology clinic on the use of the AED and then they are referred to KidSIM to have CPR and AED training that is adapted to suit their specific child. Traditional CPR courses do not address these unique types of situations. Families and their supports attend a 3-4 hour individualized course allowing them to practice CPR with feedback and practicing an emergency situation from start of the emergency, initiating CPR, using the AED, and to simulating EMS arriving. Families have appreciated their improved confidence and feeling of readiness.

KidSIM has also been asked by families and schools to help them prepare for a child with a medical emergency in a school setting. Similar to Fire or Lock Down drills these schools are now incorporating medical emergency drills. This training has helped schools create, trial and train staff in their medical emergency plan. This program has slowed slightly due to the COVID-19 pandemic and the number of children homeschooling.

FCC Seizure Program

This program benefits families through the use of simulation to support traditional seizure discharge teaching when going home from the hospital with a child who has a seizure condition. Using simulation, the families practice managing a seizure and administering medications in the simulated home environment. This program increases the confidence and skill level of family members who are discharged home with children who are at high risk of suffering seizures. This program was developed from a project that was generously supported by a grant through the ACH Foundation.

FCC Seizure Program with CPR Training

This program allows families the opportunity to practice the emergency management and care of their child while seizing who stops breathing. A need was identified that families are sent home with children who can have life threatening conditions and these families do not have any opportunity to learn how to deal with these emergencies. Traditional CPR courses do not address these unique types of situations. Families and their supports attend a 3-4 hour individualized didactic and hands on teaching session which includes seizure management teaching and lifesaving skills and CPR training. The goal of these sessions is to provide the family and the child's support system the opportunity to practice using high fidelity simulators and CPR feedback manikins to become skillful at lifesaving skills.

Seizure Teaching Pamphlets

When teaching families how to manage their child's seizures at home, a need was recognized to provide visual and written information and also provide a reference for the families in order to teach other support persons. In conjunction with Neurology clinic, Pharmacy and KidSIM, teaching pamphlets have been developed to target those identified learning needs. The Family Centered Resource center has provided full support and has involved families to help review the material and ensure it is approachable and pertinent to those that have children with seizures.

FCC Simulation in Educational Centers

Challenges in integrating children with complex health care needs into the educational system (preschool, daycare, kindergarten and schools) have been identified. Simulation has been used regularly to help the educational centers have a better understanding of the child and their needs, and to practice the specialized emergency care that child may require. This program occurs in the educational centers and provides education and simulation for all the staff involved in the child's care, including bus drivers in their centers and utilizes the child's personal equipment such as wheelchairs and standing frames. The staff become prepared for an emergency situation and have had the opportunity to create and trial a plan prior to an incident. Emergency Medical Services (EMS) have also been involved in these simulations to create a plan identifying the unique emergency care requirements of each child to mitigate risks and to prepare EMS staff.

FCC Home Care

Children with complex health care needs are cared for in the community. Simulation has been used to train home care staff to care for the children in a variety of settings including home and schools. This training includes new equipment that a child requires, maintenance of competency and to prepare staff for emergencies in the community.

FCC Tracheostomy Program

The CCAN (Children with Complex Airway Needs) Program, which was supported by the ACH Foundation in development and design, has been in place since January 2019. In 2022, 31 policies and procedures were revised into one large practice support document that encompasses the spectrum of care from PICU, inpatients, home, and Rotary Flames House care for these complex children; as well, the module content of the FCRC website was updated and revised from 14 modules to 8. We had 4 children receive tracheostomies in 2022, two of which were decannulated within 2 months. The other two received training and were able to go home within 10 weeks after illness onset.

2022 brought the opportunity to ally with Stollery Children's Hospital in terms of supporting children with tracheostomies. Stollery was able to apply for PRHIS grant funds to support an initiative to improve care of these types of children, as Stollery did not have a Pediatric Trach Coordinator nor a suite of education materials nor a website. The grant's purpose is to improve training and care for these children. A Trach Coordinator role was then created and was filled at the end of 2022. The ACH Tracheostomy program is working closely with Stollery to provide access and supports to create a similar pathway of care, education, simulation, and resources to help Stollery discharge these children more efficiently and with better outcomes once home.

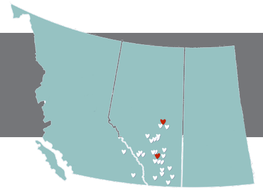
Christine Meikle School Emergency Preparedness NEW!

KidSIM, continues to focus on emergency preparedness in educational settings. A larger project has been partnering with Christine Meikle Calgary Board of Education (CBE) school this year. Christine Meikle School caters to junior high and high school students with moderate to severe cognitive disabilities and complex needs. The school's programming emphasizes the development of communication, independence, and vocational skills tailored to each student's abilities.

Given the unique needs of the students, medical emergencies, including seizures, physical injuries, low blood sugar, and respiratory distress, occur frequently within the school. To address this, CBE, Alberta Health Services (AHS), and KidSIM collaborated to identify the challenges specific to medical emergencies in the school environment. Together a comprehensive plan was created that offers a standardized approach and utilizes supportive tools to guide the school staff. Two separate education/simulation sessions were conducted during the school year, each involving all staff members, including teachers, behavioral therapists, and educational assistants. The simulations were designed to educate the staff on managing individuals with medical emergencies and ensuring the safety of other students in the building. Evaluations were collected after each session to ensure that the education and simulation methods effectively met the staff's needs.

The benefit of this collaboration and training has been in the staffs confidence of understanding the process of calling for help/911 and This collaborative effort and simulation-based training exemplify the commitment to providing a safe and supportive environment for students with unique medical requirements. Further simulation opportunities to maintain skills, knowledge and confidence are planned for the 2023/2024 school year.

MOBILE EDUCATION



Mobile Education is an interprofessional program designed to deliver in-situ pediatric education to our Rural and Community partners. We foster supported learning environments where team members can work through common pediatric scenarios and have the opportunity to respond in real time to pediatric medical emergencies in a controlled and safe environment. Participants talk with their patient, gather information, work as a team, perform physical examinations and procedures and work on team communication. A great benefit to having scenarios in your own working environment is being able to find your own equipment, medications, and pediatric references, in order to identify potential problems and challenges prior to having an actual patient. An adjunct to our Simulation Education is a hands-on workshop where key critical resuscitation skills are reviewed and practiced. Our program is committed to supporting our rural partners and helping to identify and correct any obstacles to our pediatric population being able to receive the best possible care. Telehealth is used to regularly incorporate the transport team during mobile education sessions. This provides an added layer of realism and education to mobile education, and is a launching pad for the transport program to widely implement the use of telehealth technology for all calls coming in to the team.

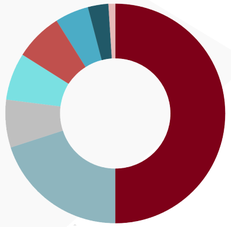
In 2022, the Mobile Education Program made a strong return following two scaled back years due to the Covid-19 pandemic and staffing challenges across sites. The Mobile Education team visited 15 different sites, including overnight trips this provided 20 days of education. Sites included; High River, Lethbridge, Brooks, Fort MacLeod, Cardston, Three Hills, Crowsnest Pass, Pincher Creek, Crankbrook, Black Diamond, Medicine Hat, Canmore, Strathmore, South Calgary Health Center, and the Sheldon Chumir Health Center.

The ImPACTS (Improving Pediatric Acute Care through Simulation) collaborative was created to ensure that ill and injured children receive the highest quality of emergency care whenever and wherever it is needed. Currently, there are disparities in pediatric emergency readiness, quality of care and outcomes across emergency departments in Canada and the U.S. and the majority of children are cared for in non-pediatric hospitals who may lack the resources and personnel to effectively care for pediatric emergencies. The ImPACTS 2018 Protocol is an innovative improvement intervention involving Children's Hospitals "hubs" collaborating with Community Hospital "spokes" supported by a central "core" based out of Yale University with the goal of improving overall pediatric readiness at "spoke" sites. The KidSIM Mobile Education Program joined ImPACTS in January 2019 and is currently actively engaged with "spoke" sites in this quality improvement intervention.

20
EDUCATION DAYS
In 2022, the KidSIM Mobile Education program made a strong return following two years of the pandemic and staffing shortages.

15
SITES
The Mobile Education team visited 15 different sites, including overnight trips this provided 20 days of education.

200
LEARNERS



- Attending Physicians 20%
- Fellows/Residents 5%
- Medical Students 3%
- Registered Nurses 50%
- Nursing Students 1%
- Licenced Practical Nurses 7%
- Respiratory Therapists 7%
- Emergency Medical Services 7%

ANNUAL SUMMARY

2224
SESSION HOURS
The KidSIM Program has seen a 37% increase in hours following a decrease in activity during the pandemic.

534
SESSIONS
The KidSIM Program has seen a 28% increase in sessions following a decrease in activity during the pandemic.

79%
KIDSIM CENTER
The majority of simulation sessions take place in the KidSIM Center. 14% take place in-situ within ACH and 7% take place off-site.

3851
LEARNERS
The KidSIM Program has seen a 30% increase in learners following a decrease in activity during the pandemic.

46%
ANNUAL CAPACITY
The KidSIM Center was scheduled 46% of total center operating hours.

136
FACILITATORS
The KidSIM Program collaborates with trained simulation facilitators and educators across ACH.

72
TOTAL FCC SESSIONS
The KidSIM Family Centered Care Program continues to expand support to children, families and caregivers.

156
SCHOOL STAFF
KidSIM provides onsite specialized training to daycare and school staff.

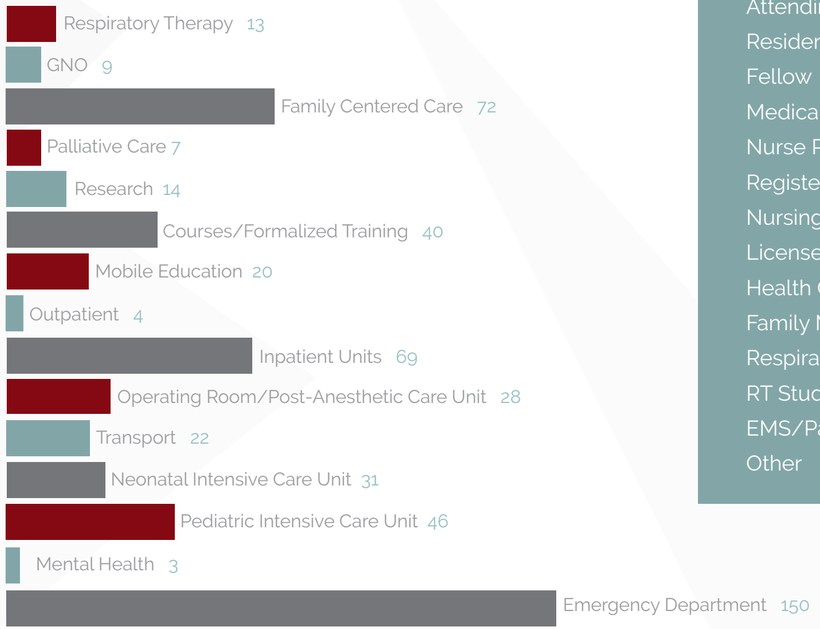
157
FCC CAREGIVERS
KidSIM provides training to caregivers supoorting children in the community.

90
FAMILY MEMBERS
KidSIM provides ongoing support to all family members requesting education.

11
SCHOOLS/DAYCARES
KidSIM prpvided 11 total sessions of education to support daycare and school staff.

94%
TEAM TRAINING
Team training continues to be a main priority for the KidSIM Program.

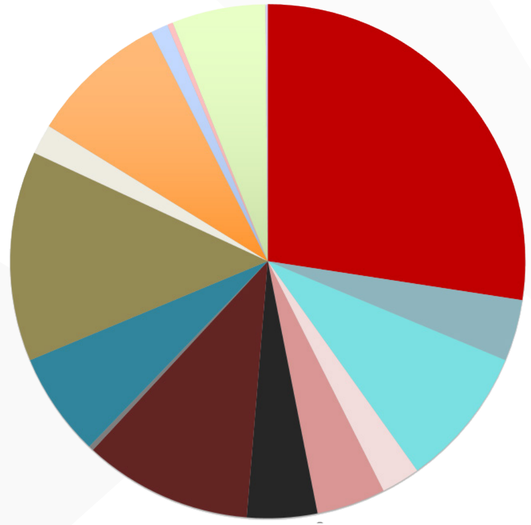
TOTAL SESSIONS BY PROGRAM



TOTAL LEARNERS BY GROUP

Attending Physician	**301**
Resident	**816**
Fellow	**129**
Medical Students	**190**
Nurse Practitioner	**3**
Registered Nurse	**1368**
Nursing Student	**186**
Licensed Practical Nurse	**186**
Health Care Aide	**60**
Family Member/School	**90**
Respiratory Therapist (RT)	**245**
RT Student	**26**
EMS/Paramedic	**19**
Other	**76**

SIMULATION HOURS BY PROGRAM



- Emergency Department 610
- Pediatric Intensive Care Unit 86
- Neonatal Intensive Care Unit 197
- Respiratory Therapy 54
- Transport 96
- Operating Room/Post-Anesthetic Care Unit 98
- Inpatient Units 235
- Outpatient 7
- Mobile Education 145
- Courses/Formalized Training 294
- Research 42
- Family Centered Care 194
- Palliative Care 24
- GNO 131
- Mental Health 3

KIDSIM FELLOWSHIP

The KidSIM Pediatric Simulation Program offers a Fellowship in Simulation Education and Research. This Fellowship is offered in collaboration with the Medical Education Specialization Program at the University of Calgary. The overall aim of this fellowship is to prepare the candidate for an academic career as a simulation educator, with advanced knowledge and skills in the delivery of simulation-based education and research. KidSIM trained 1 fellow in the 2022-2023 academic year: Robert Catena, Associate Professor, School of Nursing and Midwifery.

Educators from the University of Calgary have developed a longitudinal simulation-based education and research curriculum for fellows from across the various simulation fellowship programs associated with the University of Calgary. It is hoped that this curriculum will provide an opportunity for fellows to collaborate and work with a broad array of simulation-based educators and researchers in Calgary. The program aims to foster a solid grounding in the theory and practice of simulation via interactive teaching on various elements of simulation in education, research, and integration into systems, quality and patient safety programs. The KidSIM Program was involved in the planning and launch of this curriculum and several KidSIM Faculty are instructors.

KIDSIM 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 (ie outreach simulation, rounds).
7. Demonstrate a commitment to medical education by considering enrollment in a graduate degree program in education (Masters or PhD).

JOURNAL CLUB

KidSIM Fellows and Graduate Students participate in a regular monthly journal club, which serves three main purposes:

1. To review the latest evidence and best practices in simulation; and
2. For the trainees to be exposed to the various methods of conducting simulation-based research; and
3. To provide the trainees further experience in formal presentation skills.

LECTURE SERIES

The KidSIM Fellowship Program offers a monthly lecture series inviting different experts in the simualtion and debriefing community to present on a highlighted topic each month. In the 2022-23 fellowship academic year, the following guest lecturers presented:

- D. Kristin Fraser - Cognitive Load and Emotion in Simulation
- Dr. Jon Duff - Team Training & Interprofessional Education, Assessment in Simulation
- Dr. Stuart Rose - Clinical Debriefing
- Mirette Dube - Patient Safety and Systems Integration
- Dr. Jonathan Pirie - Program Evaluation / Curriculum Design
- Dr. Adam Cheng - Debriefing in Simulation
- Dr. Vince Grant - Program Administration, Leadership in Simulation
- Helen Catena - Scenario Design in Simulation
- Dr. Jeffrey Lin - Research in Simulation, Instructional Design for Procedural Skills Training

FELLOWSHIP COLLABORATION

KidSIM has partnered with the Hospital for Sick Children in Toronto to offer joint journal club, hot topic and lecture series for fellows at both ACH and SickKids.

KIDSIM ELECTIVES

The KidSIM program developed an elective rotation for residents and fellows with an interest in developing skills and experience in simulation-based education. In the 2022-2023 academic year, 2 residents from the University of Calgary completed the elective rotation.

FOUR MAJOR COMPONENTS

SIMULATION PROGRAM OPERATIONS

Residents will demonstrate an understanding of the basic planning, organization and operation of a simulation center. Residents will also understand the value of experiential learning in adult education and how simulation is an ideal tool for that type of learning. Residents will also demonstrate an understanding of the different simulation equipment available.

SIMULATOR TECHNICAL SKILLS

Residents will demonstrate the basic use of the simulation equipment and software being used in the KidSIM Program. Residents will also demonstrate how to facilitate a scenario for learners.

DEBRIEFING SKILLS

Residents will demonstrate how to run an effective debriefing session following a simulation scenario. Most of the time in the rotation will be spent practicing and consolidating these skills. Residents are encouraged to get involved in as many sessions as possible, and to take advantage of this practice in the presence of an experienced facilitator.

SCENARIO DEVELOPMENT

Residents will demonstrate an understanding of the aspects and development of an objective-based scenario, including relevant roles, props and audiovisual aides.

FACULTY DEVELOPMENT

PACE PROGRAM

www.pace4kids.org
pace@kidsim.ca

PACE is Pediatric Acute Care Education for health care providers. The PACE Program at KidSIM works to provide learners surrogate clinical experience with pediatric patients in as close to a 'real-life' situation as possible through the use of high-fidelity mannequins as well as teaching space that mimics the clinical setting as closely as possible. PACE incorporates leading-edge simulation technology run by Western Canada's top pediatric emergency medicine and critical care educators. Hands-on teaching using the latest evidence-based medicine practices is a kaey focus, making PACE the best choice for emergency physicians, pediatricians, family physicians, NPs, nurses and allied healthcare professionals to maintain their Pediatric Acute Care Education.

The PACE Program offers the following courses:

- Pediatric Advanced Life Support (PALS) Provider
- Pediatric Advanced Life Support (PALS) Provider Hybrid
- Pediatric Advance Life Support (PALS)Renewal
- The Pediatric Airway Course (TPAC)
- Basic Cardiac Life Support (BCLS)
- Pediatric Emergency Assessment, Recognition, and Stabilization (PEARS) Provider Course
- Neonatal Resuscitation Program (NRP) Course
- Emergency Nursing Pediatric Course (ENPC)
- Trauma Nurse Core Course (TNCC)

DEBRIEF 2 LEARN

www.debrief2learn.org

Effective feedback and debriefing play a critical role in healthcare education in both simulated and workplace-based environments. Developed by KidSIM leadership in collaboration with global experts in simulation, Debrief2Learn supports clinical educators by sharing resources to guide faculty development and exploring the latest innovations. We aim to create an online community of practice for health professions educators while advancing knowledge through cutting-edge collaborative research.

ADVANCED SKILLS FOR SIMULATION EDUCATION & TEACHERS (ASSET)

www.kidsim.ca
info@kidsim.ca

The ASSET program introduces participants to all of the concepts of simulation, as well as provides practical experience in the delivery of simulation-based education. Courses consist of learners from various healthcare provider backgrounds, including medicine, nursing, respiratory therapy, among other healthcare professionals. KidSIM redeveloped ASSET courses to a virtual format in order to continue to provide valuable simulation and debriefing education and training during the COVID-19 pandemic. in 2022, KidSIM formally trained 81 Simulation Facilitators.

ASSET FOUNDATIONS

Foundation of Simulation Education and Debriefing

ASSET Foundations is a two-day course that provides a broad overview of core simulation concepts and principles to novice and intermediate simulation educators. By the end of the course, the participants will be able to design and run their own simulation, and feel comfortable facilitating the debriefing session that follows. KidSIM also offers a one day ASSET Foundations Refresher course for those who have already taken Foundations and require an overview of core simulation concepts and principles.
48 trained facilitators in 2022.

ASSET CO-DEBRIEFING

Strategies for Effective Co-Debriefing

ASSET Co-Debriefing is a one-day course for intermediate simulation instructors who have experience with running simulation with another colleague and the difficulties that arise from doing this. By the end of the course the participants will learn techniques to address these challenges and skills to effectively run scenarios and debrief with colleagues.
5 trained facilitators in 2022.

ASSET FAMILY

Strategies to Integrate Simulation Education into Discharge Teaching

ASSET Family is a one-day course for anyone involved in patient and family education or discharge teaching. By the end of the course the participants will learn specific strategies to design, deliver, and debrief simulation scenarios targeted specifically to patients and families.

ASSET ADVANCED

Advanced Toolbox for Difficult Debriefing Situations

ASSET Advanced is a one-day course for intermediate simulation instructors (ideally with at least 12 months of simulation and debriefing experience) designed to provide advanced debriefing skills and techniques. Participants will be introduced to common debriefing challenges and pitfalls, including some important ways to avoid them. Participants will also be introduced to an advanced toolbox of debriefing skills designed to help overcome difficult debriefing situations. Videos of simulation scenarios will be used as the basis for discussion, debriefing practice and feedback.
20 trained facilitators in 2022.

ASSET PEER COACHING

Strategies for Providing Effective Feedback to Peers and Colleagues

ASSET Peer Coaching is a one-day course for intermediate simulation instructors who have experience running simulations with another colleague. Participants will explore how to provide effective feedback to peers and colleagues in a way that is non-threatening and how to seek constructive feedback from colleagues to identify learning gaps in their own practice. By the end of the course the participants will learn techniques to define and describe the benefits of peer coaching; highlight strategies for creating a culture for peer coaching; describe elements of pre-briefing, scenario execution and debriefing performance that can be explored when coaching peers; and apply tools designed to help with peer coaching.
8 trained facilitators in 2022.

VISITING PROFESSORS

ELLEN DEUTSCH, MD, MS, FACS, FAAP, FSSH, CPPS

Pediatric Otolaryngologist
Respected authority in Simulation and Patient Safety and recipient of the John G Wade Visiting Professorship in Patient Safety and Simulation-Based Medical Education

In 2022, after a pause in hosting on site visiting professors during the pandemic, the KidSIM Program was excited to invite simulation and patient safety expert, Dr. Ellen Deutsch to share her expertise with KidSIM Program team members and staff at the Alberta Children's Hospital.

Dr. Ellen Deutsch is an experienced Pediatric Otolaryngologist and Patient Safety and Simulation expert, with a demonstrated history of developing engaging programs to improve the skills, behaviors, and capacities of individuals, teams and healthcare systems, and expertise in data analysis and display. She has served as a Senior Scientist at the Children's Hospital of Philadelphia, an Adjunct Associate Professor at the University of Pennsylvania Perelman School of Medicine, a Medical Director at ECRI Institute and the Pennsylvania Patient Safety Authority, Editor of the Pennsylvania Patient Safety Advisory, and Director of PeriOperative Simulation at CHOP, following 20 years of practice as a Pediatric Otolaryngologist at the Nemours Hospital for Children and St. Christopher's Hospital for Children.

Dr. Deutsch has proudly served as a board member for the American Society of Pediatric Otolaryngology and the International Pediatric Simulation Society as well as in leadership positions in the Society for Simulation in Healthcare and Section on Otolaryngology of the American Academy of Pediatrics. She serves on the Editorial Board of the Simulation in Healthcare Journal and as an Associate Editor for the Human Factors in Healthcare Journal. She has authored more than 100 peer-reviewed articles, chapters and editorials, and given more than 80 invited lectures. Her goals include implementing human factors principles and enhancing the resilience of healthcare delivery systems thereby empowering clinicians to improve patient safety and provider satisfaction.

Dr. Deutsch presented to Alberta Children's Hospital staff a lecture on "How Can Smart People Use Dummies to Improve Safety?" and a Workshop on "Resilience Engineering for Patient Safety".

RETURN ON INVESTMENT

Return on Investment (ROI) Overview NEW!
Over the past few decades, simulation has been integrated into the fabric of medical education across specialties and professions. Simulation-based medical education is effective, but the establishment and maintenance of a program is also incredibly resource-intensive. Although it is generally believed that investing in medical education will benefit society by improving the quality of delivery of healthcare, decision makers will need some means to know that an investment will be fruitful compared with other alternatives that might be available.

The KidSIM center has been dedicated to simulation-based education and research in the past 10 years. This year, we started to work on return-on-investment / cost-effectiveness of educational program in our center. The determination of ROI consists of the 3 main parts below.

(1) Estimation of the costs
(2) Measuring the benefits
(3) Linking the costs and benefits

All stages of simulation activities need to be considered when estimating the costs of a simulation program. The cost components include personnel, equipment/supply, operation and maintenance, facility/space, administration, productivity loss, and others. Some situations need special consideration such as depreciation of the equipment, shared costs across programs, volunteer time and discount rate of the cost.

The benefits of simulation-based training include but not limited to improved self-confidence, improved knowledge, technical skills, and non-technical skills, changed behavior and improved patient outcomes. When simulation is used to improve the system, the benefits are improved patient safety, detection of latent safety threats. We will attempt to turn these benefits into monetary units for the calculation of ROI. To deal with some intangible benefits, we measure the willingness-to-pay for the learners.

The return-on-investment is calculated by linking the costs and benefits. Most of the previous literature used cost avoidance. The comparison of willingness-to-pay and actual costs is an alternative for ROI. For those projects with a comparation, incremental cost-effectiveness ratio (ICER) is usually used to determine cost-effectiveness.

ROI Program Spotlight - UIPE NEW!
Undergraduate Inter-Professional Education (UIPE) is a program facilitated by the KidSIM program with the support from the University of Calgary, Mount Royal University, and the Southern Alberta Institute of Technology. The program focusses on non-technical skills (e.g. leadership, communication, teamwork) and trains medical students, nursing students and respiratory therapist trainees in a simulated environment. Over the past few years, the UIPE program has been highly evaluated by the trainees. This year, we evaluated the costs and benefits of the program.

Cost is estimated in the unit of 1 facilitator for 5 trainees with 2 simulation scenarios in 1 lab for 2 hours. The benefits of the UIPE training were evaluated in 3 aspects. (1) The perceived improvement in non-technical skill measured by both the instructor and the leaners themselves; (2) The relative value of training compared with other educational strategies; (3) Willingness-to-pay for the training.

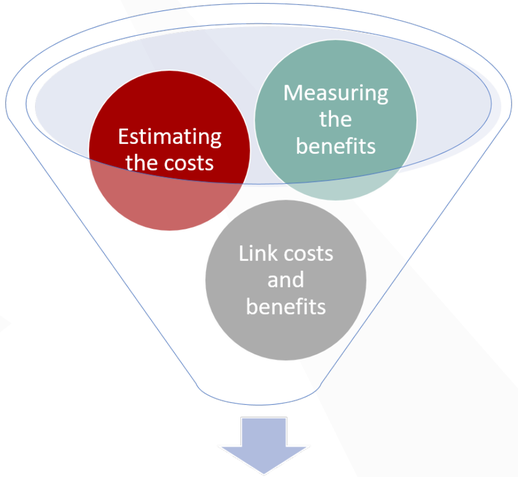
Based on data we collected from the past 2 months, we found that although the UIPE program was costly, it was highly valued by the leaners. Compared to other educational strategies to improve non-technical skills, the UIPE program achieved a return on investment of approximately 40 – 50%.

ROI FRAMEWORK

- Personnel
- Equipment/supply
- Operation/maintenance
- Administration
- Facility (space)
- Productivity loss
- Others

- Consider costs in all phases
  - » Needs assessment
  - » Scenario design/development
  - » Implementation of simulation
  - » Post event activities (assessment/ evaluation/follow-up/PDSA cycle)

- Consider shared costs/depreciation rate/discount rate



- Kirkpatrick pyramid
  - » Satisfaction, confidence, reaction
  - » Learning
  - » Behavior change
  - » Patient outcome

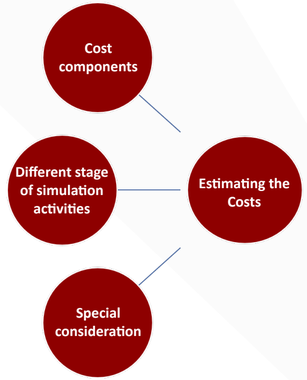
- Willingness to pay
- Latent safety threat detection
- Patient safety
- Retention of healthcare providers

- Cost avoidance associated with the benefit
- Incremental cost-effectiveness ratio
- Actual cost vs willingness-to-pay

- Personnel
- Equipment/Supply
- Operation/maintenance
- Administration
- Facility (Space)
- Productivity loss
- Others

- Needs assessment
- Scenario design/ development
- Implementation of simulation
- Post-event activities (assessment / evaluation/ follow-up / PDSA cycle)

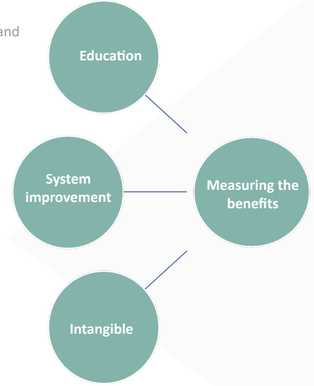
- Shared costs
- Depreciation
- Discount costs
- Volunteer time/donation



- Reaction/ Satisfaction
- Knowledge, technical and non-technical skill
- Behaviour change
- Patient outcomes

- Latent safety threats detection
- Healthcare providers retention
- Patient safety

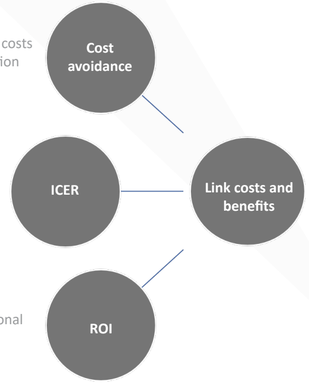
- Willingness to pay



- Potential decreased costs due to the intervention

- Incremental cost-effectiveness ratio

- Percentage of additional benefits over costs



KIDSIM-ASPIRE PROGRAM

The KidSIM-ASPIRE (Assessing Simulation in Pediatrics: Improving Resuscitation Events) Simulation Research Program at Alberta Children's Hospital was established to bring together an interprofessional group of Alberta-based leaders in clinical care, education, human factors, engineering, computer science and psychology interested in improving the delivery of healthcare to sick infants and children. Our team has developed a solid foundation which positions us well to address the main objectives of the acute and life-saving care pillar of ACH. Studies are formulated to identify novel and innovative methods of healthcare delivery in order to improve effectiveness and efficiency of care. In our collaborative research model, we also aim to facilitate the academic growth of young investigators and trainees by exposing them to established mentors both locally and worldwide and nurturing the skills necessary to become successful researchers.

After completion of several successful large-scale studies that have provided significant results and insight into acute care, KidSIM-ASPIRE is committed to translating the knowledge gained by the research findings. National pediatric emergency and pre-hospital care conferences, annual nursing education sessions, local nursing conferences, and international simulation conferences are venues where the research team has presented findings. Perhaps most importantly, these presentations focused on how recent findings need to be applied to improve provider education and patient care.

PROGRAM GOAL

The goal of the program 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. As lifesaving treatment in pediatric patients involves effective interprofessional care, we strive to conduct single and multicenter studies which involve various professions (nursing, respiratory therapy, paramedics, physicians etc) in order to optimize the impact of our research on patients.

RESEARCH PILLARS

In 2022, members of the KidSIM-ASPIRE team met to develop a common research strategic plan for the next 5 years, and to identify priorities and action items to help the collaborative achieve its research goals. The results of this consensus process helped to inform the development of 4 key KidSIM-ASPIRE research pillars, each with a specific aim for research.

RESUSCITATION AND CARDIAC ARREST

Goal: Develop and evaluate novel techniques and strategies for improving resuscitative care of pediatric patients suffering from cardiac arrest.

ARTIFICIAL INTELLIGENCE

Goal: Design, develop and evaluate the use of artificial intelligence to improve clinical skills training and assessment.

QUALITY IMPROVEMENT AND PATIENT SAFETY

Goal: Design and evaluate simulation-based interventions to enhance patient safety and improve patient outcomes.

RETURN ON INVESTMENT

Goal: Assess and evaluate the cost effectiveness of simulation-based training in healthcare.

Dr. Adam Cheng
Director, Research

Dr. Vincent Grant
Medical Director, eSIM

Dr. Jeffrey Lin
Outcomes Analyst, KidSIM

Jennifer Davidson
Research Coordinator

Nicola Peiris
Team Lead, KidSIM

Dr. Kerri Landry
Medical Director,KidSIM

Brandi Wan
Research Assistant

Helen Catena
Simulation Consultant

Amy Cripps
Simulation Consultant

Kerrianne Craig
Simulation Aide

Keely Piscopo
Admin Assistant

Rob Catena
KidSIM Fellow, 2022-23

Dr. Christine Kennedy
Assistant Medical Lead, KidSIM

Dr. Ashlea Wilmot
Assistant Medical Lead, KidSIM

Wendy Bissett
Research Educator,ACH

Dr. Omar Damji
EM Physician, ACH

Dr. Martin Perlsteyn
KidSIM Fellow, 2021-22

Dr. Donovan Duncan
KidSIM Fellow, 2021-22

Dr. Chris Young
KidSIM Fellow, 2021-22

Dr. Louise Ing
KidSIM Fellow, 2021-22

Kent Hecker
Researcher, UCalgary

Dr. Kangsoo Kim
Assistant Professor, UCalgary

Tom O'Neill
Psychologist, UCalgary

Dr. Steve Lopushinsky
Pediatric General Surgery

Alyshah Kaba
Provincial Scientific Lead, eSIM, PI & IHOT

KIDSIM-ASPIRE TEAM

ANNUAL SUMMARY

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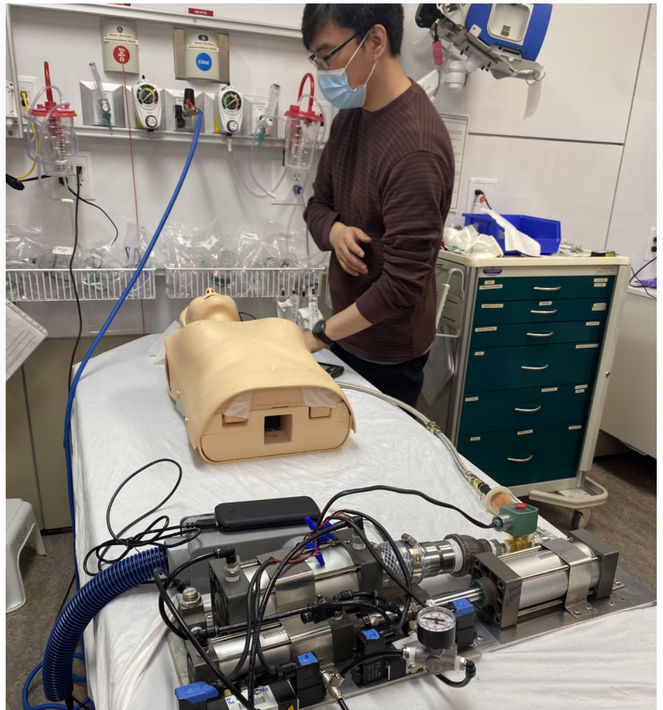
NEW GRANTS

INTERNAL GRANTS		
2023 – 2024	$10,000 CAD	Project Title: Design and Development of an Augmented Reality Decision Support System for Cardiopulmonary Arrest. Funded By: University of Calgary Clinical Research Fund Grant. Project Involvement: Dr. Adam Cheng, Principal Investigator
2023 – 2024	$7,634 CAD	Project Title: Speaking Up to Improve Patient Safety. Funded By: Mount Royal University Research Grant Fund. Project Involvement: Robert Catena, Principal Investigator; Dr. Adam Cheng, Senior Investigator.
2022 – 2023	$25,000 CAD	Project Title: Impact of Aerosol Box Use during Cardiopulmonary Arrest: A Multicenter Trial. Funded By: University of Calgary Medical Group - Bridge Grant. Project Involvement: Dr. Adam Cheng, Principal Investigator
2022 – 2023	$13,500 CAD	Project Title: Development and Validation of a Pediatric Aerosolization Device. Funded By: Alberta Children's Hospital Research Institute/ Alberta Children's Hospital - Bridge Grant. Project Involvement: Dr. Adam Cheng, Principal Investigator

EXTERNAL GRANTS		
2023 – 2026	$478,126 CAD	Project Title: Impact of Aerosol Box Use during Cardiopulmonary Arrest: A Multicenter, Randomized Trial. Funded By: Canadian Institutes of Health Research – Project Grant. Project Involvement: Dr. Adam Cheng, Principal Investigator
2023 – 2025	$38,000 CAD	Project Title: Design and Development of an Augmented Reality Decision Support System for Cardiopulmonary Arrest. Funded By: NSERC Alliance – Alberta Innovates Advance Program. Project Involvement: Dr. Adam Cheng, Collaborator

RESEARCH ACTIVITY



PROJECT SUMMARIES

Impact of Aerosol Box Use on Patterns of Healthcare Provider and Environmental Contamination during Aerosol Generating Medical Procedures: A Multicenter Study NEW!

Dr. Adam Cheng, Dr. Arielle Levy, Dr. Jonathan Pirie, Dr. Todd Chang, Dr. Jeffrey Lin, Dr. Jon Duff, Jennifer Davidson

This study involves a prospective, randomized controlled trial at five pediatric hospitals (Alberta Children's Hospital, Stollery Children's hospital, Ste. Justine Hospital, Children's Hospital of Los Angeles and The Hospital for Sick Children). The primary aim of this study is to further explore the effectiveness of an aerosol box - a hard sided plexiglass box that fits over the torso of a patient to act as a physical barrier that contains infectious droplets. Aerosol box use will be compared with no aerosol box use for reducing Health Care Provider (HCP) and environmental contamination during the provision of Cardiopulmonary Resuscitation during a resuscitation scenario. Other secondary aims are: (a) to compare provider workload while performing CPR in aerosol box vs. no aerosol box groups; (b) to compare quality of intubation performance in aerosol box vs. no aerosol box groups; and (c) describe the pros and cons of aerosol box use during AGMPs. This study is funded by the Canadian Institutes of Health Research (CIHR).

Portable Respiratory Simulator (PRISM) Validation Study NEW!

Dr. Jack Fu, Dr. Jeffrey Lin, Dr. Adam Cheng, Amy Cripps

Aerosol generating medical procedures (AGMPs) produce airborne viral particles that elevate the risk of infection for front-line health care providers (HCPs). Successive waves of the COVID-19 pandemic have heightened the importance of understanding how aerosols behave in the clinical environment. Currently, there are no pediatric aerosolization models available that can

accurately simulate breathing and aerosol production during AGMPs. A realistic model will allow us to: (a) better understand how droplets are spread during AGMPs; (b) assess strategies to minimize aerosol spread; and (c) better inform infection control practices and resuscitation guidelines. The pediatric Portable Respiratory Simulator (PRISM) aerosolization device has been developed at KidSIM and is capable of simulating realistic breathing and producing respiratory aerosols. The main objective for this project is to collect data to support PRISM's ability to simulate realistic respirations and generate respiratory aerosols for a child.

Design and Development of an Augmented Reality Decision Support System for Cardiopulmonary Arrest NEW!

Dr. Kangsoo Kim, Dr. Jeffrey Lin, Dr. Adam Cheng, Jennifer Davidson

Survival rates from cardiac arrest remain poor despite advancements in clinical science and resuscitation education. Unfortunately most healthcare teams still to provide guideline-compliant advanced life support (ALS) care during cardiac arrest. Adherence to guidelines can be supported by cognitive aids that provide real-time decision support. Prior studies from collaborators amongst our research team have demonstrated that use of augmented reality (AR) technology reduces medication errors, use of a tablet-based app improves adherence to ALS guidelines, and use of an LCD screen enhances situational awareness and team communication. Our goal is to design and evaluate a novel decision support system (InterFACE-AR) that integrates all three of these components to function as a cognitive aid system during cardiac arrest.

Our primary aim is to design a novel decision support system for resuscitation teams and determine if use of the InterFACE-AR system improves adherence to guidelines during cardiac arrest. Our secondary aims are to determine if use of InterFACE-AR influences provider workload during cardiac arrest. The InterFACE-AR system is comprised of four key components that are interconnected: (a) two augmented reality devices (team leader and medication nurse); (b) a tablet-based Guiding-Pad app; and (c) an LCD screen. The proposed project has 2 phases: in phase 1, we will use an iterative prototyping development approach to design the InterFACE-AR system. In phase 2, we will then conduct a prospective, randomized controlled trial. Participants forming resuscitation teams will be randomized into either the control arm (i.e. pocket reference card), or the intervention arm (InterFACE-AR). Teams will participate in a simulated cardiac arrest scenario, with clinical performance metrics captured by video review and provider workload collected by survey. We expect to find that use of the new decision support system during cardiopulmonary arrest improves clinical care (i.e. time to epinephrine, time to critical tasks, CPR quality, reduced medication errors) and reduces provider workload. These outcome metrics have direct associations with patient survival, which will provide a strong argument for the integration of InterFACE-AR support systems into acute care environments.

Speaking Up for Success: a pilot project using Simulation Based Education to support nursing with communication skills to facilitate patient safety NEW!

Rob Catena, Louise Simonot, Amy Cripps, Helen Catena, Dr. Adam Cheng, Dr. Jeffrey Lin, Jennifer Davidson

The ability to communicate efficiently within healthcare teams is an evolving issue and one of the main challenges within healthcare teams. The purpose of this study is to support nurses and other healthcare professionals to initiate the speaking up communication technique as a strategy to present patient safety concerns within healthcare teams using the Safest Together-Error Prevention ARCC communication tool (Ask a question, Request a change, Concern about the current situation, and if not resolved escalate to the Chain of Command). This entails using a mixed methods crossover design involving simulation-based education that employs multiple deliberate practice training opportunities. The aim is to evaluate the effectiveness of this modality of simulation versus the current Error Prevention Program that uses a blended teaching approach consisting of online modules and a didactic lecture, but without providing opportunities to practice using the ARCC communication tool. Providing a simulation educational strategy, based on building confidence through more opportunities to practice communication skills, nurses and other healthcare professionals will be prepared to explicitly speak up to address patient safety issues within healthcare teams. This study is funded by Mount Royal University, Internal Research Grant Fund.

Accuracy and completeness of digital vs. Paper charting during resuscitation: a simulation-based study NEW!

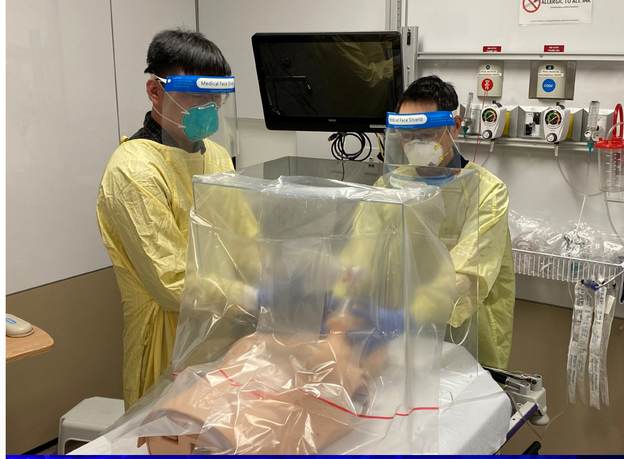
Dr Alexandra St. Onge-St. Hilaire, Dr. Adam Cheng, Dr. Jeffrey Lin, Jennifer Davidson

Resuscitation teams often struggle to achieve key tasks in a timely fashion during a critical event. This can contribute to poor outcomes from cardiac arrest. We rely on charting during these events to provide data for many critical resuscitation tasks, such as time to medication administration, time of fluid administration or time to secure a definitive airway. Unfortunately, it is recognized that paper-based charting fails to accurately capture important events that may be used to inform educational activities and quality improvement processes. The advent of electronic charting offers a new alternative to document resuscitation events. Electronic documentation has shown increased quality and quantity of documentation in various clinical settings but little is known about digital charting quality during resuscitation and cardiac arrest. This project aims to compare compare the completeness and accuracy of data collected by charting nurses, acquired from digital charting in comparison to paper-based charting, during a simulated pediatric cardiac arrest scenario.

Patterns of Contamination from Aerosol Generating Medical Procedures (AGMP)

Dr. Adam Cheng, Dr. Arielle Levy, Dr. Jonathan Pirie, Dr. Todd Chang, Dr. Jeffrey Lin, Jennifer Davidson

This study involves a prospective, randomized controlled trial at four INSPIRE network sites (Alberta Children's Hospital, Ste. Justine Hospital, and Children's Hospital of Los Angeles and The Hospital for Sick Children). The primary aim of this study is to evaluate the effectiveness of an aerosol box - a hard sided plexiglass box that fits over the torso of a patient to act as a physical barrier that contains infectious droplets. Aerosol box use will be compared with no aerosol box use for reducing Health Care Provider (HCP) and environmental contamination during performance of AGMPs. These airway procedures will be carried out by a trained airway team during care of a simulated patients in respiratory failure due to COVID-19. The secondary aim is to determine if aerosol box use influences the time to successful completion and first-pass success rate for ETI and LMA insertion in trained airway teams. We aim to



describe patterns of HCP and environmental contamination caused by AGMPs during the care of a simulated patient in respiratory failure due to COVID-19. Other secondary aims are: (a) to compare provider workload during AGMPs in aerosol box vs. no aerosol box groups; (b) to compare quality of intubation performance in aerosol box vs. no aerosol box groups; and (c) describe the pros and cons of aerosol box use during AGMPs. This study is funded by the Canadian Institutes of Health Research (CIHR) and the International Network for Simulation-based Pediatric Innovation, Research, & Education (INSPIRE).

Keeping Fragile Feeders Safe: Utilizing Simulation Education to Enhance Patient Safety

Stacey Dalgleish, Helen Catena, Rachelle Wanotch, Dr. Alixe Howlett, Dr. Sharron Spicer, Dr. Beverly Collisson

Acquisition of safe infant feeding and swallowing care can be facilitated through guided practice using simulation scenarios (sims). The 'Safe Feeding Experiences for Fragile Infants' sim was co-created by a multi-specialist team comprised of Speech Language Pathologists, a KidSIM Nurse Educator, and a Neonatal Nurse Practitioner, with the goal of enhancing patient safety during feeding interactions to reduce long-term adversity associated with unsupported feeding and swallowing development. Speech Language Pathologists employed at a tertiary care level hospital participated in the 'Safe Feeding Experiences for Fragile Infants' sims (23 sessions in 2021). Preliminary data analyses suggests increased Speech Language Pathologist knowledge, skills, proficiency, and self-confidence after participating in simulation. The goal of the KidSIM Program is to provide similar opportunities to other allied health professionals, such as Occupational Therapists, Physiotherapists, and continue to include Speech Language Pathologists.

Improving Cardiac Arrest Outcomes with Resuscitation Research (iCORE): Exploring the Role of Data-Informed Debriefing, Digital Charting, and Situational Awareness

Dr. Adam Cheng, Dr. Elaine Gilfoyle, Dr. Vincent Grant, Dr. Jeffrey Lin, Jennifer Davidson

Debriefing has been shown to improved provider performance, while CPR data-informed debriefings have been associated with a near-doubling of the survival rate from cardiac arrest in one single-center study. Unfortunately, CPR data is rarely used during debriefing at most institutions, causing providers to consistently overestimate the quality of CPR delivered during care. Part of the issue is lack of reliable data. Paper charting of resuscitation events is highly inaccurate, thus leading to unreliable data (that serve as stimulus for discussion during debriefing) for key variables known to influence survival from cardiac arrest (eg. time to epinephrine administration, defibrillation, and/or initiation of CPR). Recently, digital charting in the form of a handheld tablet device offers a novel alternative to paper charting during resuscitation. Furthermore, new CPR feedback defibrillators collect quantitative CPR data that can be used during debriefing. The combination of quantitative data from a digital chart and the CPR feedback defibrillator has the potential to enhance the quality and impact of debriefings after cardiac arrest. In this study, we will assess the impact of using quantitative data collected from a digital chart and CPR defibrillator during post-event debriefings. This study is funded by the Alberta Children's Hospital Foundation.

Accuracy of Visual Assessment in Resuscitative Ventilation: Does Point of View Make a Difference?

Dr. Gloria Yoo, Dr. Jeffrey Lin, Dr. Adam Cheng

Given that pediatric cardiopulmonary arrest is more commonly associated with respiratory disease, adequate ventilation and oxygenation during resuscitative ventilation is a critical component of CPR and provides an opportunity to improve patient outcomes. Both hypo- and hyperventilation have been shown to have deleterious effects. Current methods of assessing resuscitative ventilation rely on visual assessment, oxygen saturation (SpO_2), end tidal CO_2 ($EtCO_2$), and lung auscultation. During resuscitation, the team leader needs to ensure effective and adequate resuscitation overall, which includes accurate quality of ventilation according to the most recent American Heart Association (AHA) guidelines. In order to do this, the team leader relies primarily on visual assessment of ventilation quality which at a minimum is ensuring appropriate RR based on various clinical contexts (ie. ventilation with pulse, ventilation without pulse, ventilation with advanced airway). As one of the primary methods of determining adequate resuscitative ventilation is through visual assessment, our team sought out to determine the proportion of time, within a 6-minute simulated pediatric resuscitation recording, that health care providers accurately identify ventilation rates in compliance with the 2020 AHA guidelines. This will be a cross-sectional observational study consisting of an online questionnaire and 8 simulated scenarios based on two cases with varying ventilation quality from different viewpoints relative to the patient. Participants will rate the quality of ventilation in each of these simulated scenarios. It is expected that visual assessment will prove not to be a very effective way of assessing ventilation quality in a resuscitation setting.

Who is the Leader? What are the observed leadership characteristics of a CPR Coach and Team Leader during a Cardiac Arrest Resuscitation?

Dr. Tyson Savage, Dr. Genevieve Gravel, Dr. Adam Cheng, Dr. Jeffrey Lin, Jennifer Davidson

Previous work has demonstrated that the addition of a CPR Coach to simulated pediatric cardiac arrest team enhances CPR metrics associated with improved survival outcomes. This study aims to better describe what leadership and crisis resource management qualities are demonstrated by the CPR Coach in comparison to the Team Leader. This will be done through use of a previously validated Behavioral Assessment Tool to assess crisis resource management skills and leadership performance. Findings will provide important insight on how to optimize the integration of the CPR Coach role into the resuscitation team structure. This project has been submitted for publication.

Virtual and Augmented Reality for Intubation Training As a Lifesaving Measure

Dr. Omar Damji, Dr. Vincent Grant, Dr. Christian Jacob, Dr. Pina Colarusso

Medical training environments have been forced to change in light of work-hour regulations in residency programs. Confidence, training environments, and direct comparability of a training unit to clinical practice are key facets needed for proficiency in procedural skill acquisition. Intubation is a critical skill in emergency medicine requiring competency. Simulator based task training has provided a safe and ethically appropriate method of skill acquisition, but training opportunities remain limited. VITAL XR focused on creating the best simulated learning environment and platform for medical training. This work bridges a gap between real-world medical challenges and technologies like virtual and augmented reality that can extend the capabilities of critical care training scenarios. This hybrid platform is intended to maximize practice opportunities for medical staff by reinforcing techniques and learning with a safe, simulated, yet realistic approach. Flesh, muscle, and bone feel real because of 3D scanning, printing, and casting in life-like materials. Intubation is a difficult procedure, and the platform aims to set up training simulations with ultra-realistic physical and digital components using artificial intelligence trained by expert practitioners to achieve deeper learning. Real-time guidance and correction via audio visual aids as well as tactile feedback will provide results driven simulation and practice opportunities.

The Umbilical Vein Catheter Insertion Assessment Tool

Dr. Martin Perlsteyn

The Umbilical Vein Catheter Insertion Assessment Tool project is looking to validate a novel checklist to assess for learner competency in performing umbilical vein catheter insertion on a Laerdal umbi mannequin prior to it being done on a real neonate.

Evaluation of a Faculty Development Program For Simulation Educators – The KidSIM ASSET Experience

Dr. Mary Tong, Dr. Adam Cheng, Dr. Jeffrey Lin

Simulation training has been shown to strengthen medical education by enhancing acquisition of medical knowledge (e.g. ACLS algorithm), procedural skills (e.g. laparoscopic surgery, bronchoscopy, intubation), leadership and teamwork skills. Many simulation programs struggle to find trained faculty to facilitate this form of education effectively. The KidSIM simulation program has developed a specialized simulation faculty development program to teach aspiring educators the principles of simulation-based education. The Advanced Skills for Simulation Educator & Teachers (ASSET) suite of courses offered by the KidSIM Simulation Program at Alberta Children's Hospital encompasses 4 different courses. Unfortunately, little is known about the downstream impact of the ASSET program, such as the acquisition of debriefing skills over time or the retention of educators within a healthcare simulation program. A better understanding of the impact of these courses will inform future faculty development efforts in simulation programs. The objectives of this survey-based study are to: (1) assess the downstream impact of ASSET course participation by describing participant professional profiles, involvement in simulation, and perceived utility on facilitation and debriefing skills; and 2) to identify gaps in their simulation and debriefing toolbox that could be addressed with future faculty development courses.

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PUBLICATIONS

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3. Cheng A, Bhanji F, Lockey A, Nabecker S, Greif R. Shaping the Future: Pressing Needs for Resuscitation Education Research. Resuscitation Plus. 2023; 13:100353.
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6. Wyckoff M, Greif R, Morley P, Ng K, Olasveengen T, Singletary E, Soar J, Cheng A, Drennan I, et al. 2022 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations: Summary from the Basic Life Support; Advanced Life Support; Pediatric Life Support; Neonatal Life Support; Education, Implementation and Teams; and First Aid Task Forces. Resuscitation. Published online Nov 3, 2022.
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ABSTRACTS

1. Singer-Harel D, Lin Y, Pirie J, Levy A, Buyck M, Collia N, Cheng A. Impact of aerosol box on healthcare provider workload during simulated aerosol generating medical procedures. International Pediatric Simulation Symposium and Workshops. Lisbon, Portugal. May 17, 2023.
2. Collia N, Singer-Harel D, Lin Y, Pirie J, Levy A, Buyck M, Cheng A. Simulation-based Evaluation of a New Videolaryngoscope Intubation Validation Tool. International Pediatric Simulation Symposium and Workshops. Lisbon, Portugal. May 17, 2023.
3. Cheng A, Pirie J, Lin Y, Lo C, Davidson J et al. Aerosol Box use in Reducing Healthcare Worker Contamination during Airway Procedures (AIRWAY study): A Simulation-based Randomized Controlled Trial. The International Meeting for Simulation in Healthcare. Orlando, USA. January 23, 2023.
4. Singer Harel D, Lo C, Madadi M, Davidson J, Cheng A, et al. Impact of aerosol box use on the workload of healthcare providers during simulated aerosol generating medical procedures: A simulation-based trial. The International Meeting for Simulation in Healthcare. Orlando, USA. January 23, 2023.
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6. Corazza F, Arpone M, Tardini G, Stritoni V, Mormando G, Graziano A, Fiorese E, Portalone S, De Luca M, Binotti M, Tortorolo L, Salvadei S, Nucci A, Monzani A, Genoni G, Bazo M, Cheng A, Frigo AC, Da Dalt L, Bressan S. The impact of the use of the novel app PediAppRREST on the adherence to international guidelines during the management of pediatric cardiac arrest: a simulation-based randomized controlled trial. Pediatric Academic Societies Conference. April 2022.

PRESENTATIONS

1. Advanced Skills for Simulation Educators and Teachers, ASSET: Peer Coaching) Course, Calgary, AB – November 2022.
2. Advanced Simulation Skills for Educators and Teachers, ASSET: Co-Debriefing Course – Calgary, AB – November 2022.
3. Advanced Simulation Skills for Educators and Teachers, ASSET: Advanced Course – Calgary, AB – February 2022.
4. Advanced Simulation Skills for Educators and Teachers, ASSET: Foundations Course – Calgary, AB – October 2022.
5. Making Some Cognitive Space When Debriefing - SESAM Winter School, Society for Simulation in Europe, On-Line Conference - January 2022. V. Grant.
6. Advanced Simulation Skills for Educators and Teachers, ASSET:FOUNDATIONS Course – McGill University – March 2022.
7. Maximizing the Impact of Simulation-based Research (Keynote). Cleveland Clinic Simulation Grand Rounds. Cleveland, USA. January 9, 2023.
8. Maximizing the Impact of Simulation-based Research (Keynote). eSIM Annual Simposium. Calgary, Canada. October 25, 2022.
9. Moving the Needle – Optimizing Resuscitation Education, Coaching, and Debriefing (Keynote). Pediatric Acute Care / APLS Conference, Melbourne, Australia. October 20, 2022.
10. Taming the Debriefing: A Journey of Discovery, Growth, and Maturity (Grand Rounds). Lehigh Valley Health Network, University of South Florida, Tampa, USA. October 11, 2022.
11. Improving Outcomes from Cardiac Arrest (Lecture). Asia Pacific Intensive Care Symposium. August 20, 2022.
12. Feedback and Debriefing in Healthcare (Lecture). Asia Pacific Intensive Care Symposium. August 19, 2022.
13. Taming the Debriefing (Grand Rounds). Dartmouth Children's Hospital / Dartmouth University. June 1, 2022.
14. Breaking the Digital Barrier: Virtual Debriefing for the Masses (Keynote). Champions of Simulation Virtual Conference. April 13, 2022.

KIDSIM INTERNATIONAL

MISSION

To improve the quality of healthcare provided to infants and children around the world by collaborating with global partners through education, research and innovation using simulation.

PRIMARY STRATEGIES

INTERPROFESSIONAL EDUCATION

KidSIM has a wealth of experience in the provision of interprofessional simulation-based education, where healthcare providers from various professions train together in a collaborative work environment. Training in this type of environment using simulation helps to improve collective knowledge and skills, teamwork, communication and efficiency, which ultimately improve the care delivered to real patients.

RESEARCH

As one of the most successful simulation research programs in North America, KidSIM-ASPIRE will conduct research to study the impact of the education and innovation being delivered through KidSIM international programs, and also work hard to share and integrate knowledge acquired from existing research to global partners.

ASSESSMENT & EVALUATION

Assess and evaluate the impact of various models of interprofessional training on healthcare provider skills, knowledge and behaviors.

SIMULATION EXPERTISE & PROGRAM BUILDING

KidSIM has been the 'model' program in North America for growth based on little operational funding while keeping the education 'free' for the learners. Our experience in collaboration, identifying and grooming champions and growth based on limited resource will be a valuable asset to developing programs.

FACULTY DEVELOPMENT

As some educational techniques in simulation are more effective than others, our team have worked hard disseminate this knowledge to simulation educators locally and internationally by creating an instructor training course called ASSET.

FELLOWSHIP TRAINING

We train fellows to be future global leaders in simulation, who will take the knowledge, skills and experience from KidSIM fellowship back to their respective countries in order to save lives and improve outcomes of children in their area of the world.

www.KidSIM.ca