2018-2019

Simulation Program Year End Report

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IWK Health Centre

2018-2019

Cover photo:

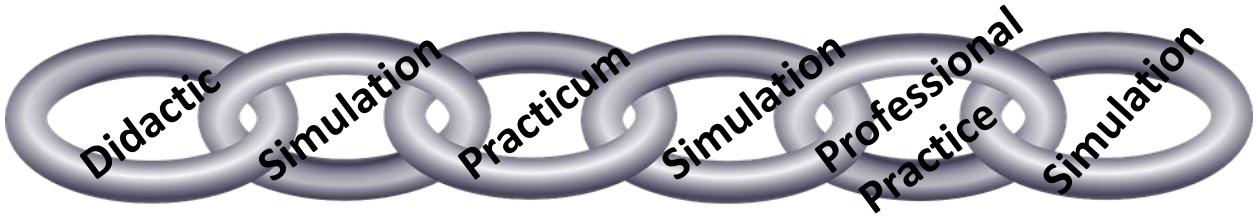
Simulation based learning is part of ongoing education and for the LifeFlight Obstetrical Team and is led by Dr. Heather Scott. The cover photo shows the combined LifeFlight Obstetrical/Neonatal/Pediatric team as they prepare for a critical low volume, high risk scenario: the delivery of a neonate during flight and potential obstetrical emergency.

The LifeFlight helicopter has less than 50 square feet of working space. In addition to the patient and team members, essential equipment must be brought into the cabin space and secured for safety and accessibility. In this photo,there is a simulated patient on the stretcher and the team has the equipment backpacks stored in the simulated cabin. Working through the logistics of delivery or emergency in flight has led to changes in configuration of the backpacks and how the team works in the environment.

Although the technical fidelity of this simulation is low, the contextual fidelity is very high, owing to the restriction of working space for the team as well as limited access to equipment and additional resources. The team must assess, anticipate, respond and reassess throughout the simulation as well as demonstrate excellent team communication skills with each other and by phone with the OB Medical Control Physician. This is just one example of how simulation based learning is planned and facilitated to meet specific learning needs and practice contexts.

Report for the IWK Simulation Program, 2018-2019

A Link in the Chain of Learning



Simulation based learning follows an individual throughout their education, into their clinical practice and beyond. The IWK Simulation Program provides support for simulation based learning to more than 30 programs, specialty teams, professional groups, care areas and educational initiatives within the IWK and with our partner organizations.

In 2018-2019 the program provided over 2600 hours of support for 3475 participants in 390 simulation based learning sessions. This marks our seventh year of growth. The supports we provide are as varied as our participant groups.

Leadership in creating simulation based activities	Audio/videography
Consultation/collaboration	Media editing
Scenario/session design	Simulator Operations
Content expertise	In-situ simulation
Facilitation/Instructing	Equipment lending
Debriefing	Model/task trainer development
Building capacity in simulation based learning	Moulage/special effects
Independent use of Simulation Learning Centre	Large group simulation
Code Blue education	Outreach simulation

The Simulation program is part of the IWK Learning Team. Our role in learning is to provide high contextual fidelity, meaningful simulation based learning experiences that meet the needs of our health centre staff and learners. We align with the Mission and Vision of the Health Centre by committing to excellence, innovation, quality, accountability and person-centredness.

Over the past year, The IWK Simulation Program has provided support to the following health professions, programs, teams, groups, organizations and activities within WNHP, CHP and with external groups. We also support simulation based learning for health professional groups and care areas within WNHP and CHP.

IWK Programs

- Neonatal Resuscitation Program
- Pediatric Advanced Life Support Program
- Advanced Life Support Program
- IWK Trauma Program
- IWK Emergency Preparedness and Response
- IWK Midwifery

IWK Speciality Teams

- Special Pediatric Outreach Team
- LifeFlight Neonatal/Pediatric Transport team
- Lifeflight Obstetrical Transport Team
- Neonatal "E" Team (Code Blue Neo)
- Extracorporeal Life Support Team
- Code Blue Pediatric and Adult response teams

IWK Partners

- Dalhousie University Schools of Medicine; pre and post licensure programs.
- Dalhousie University School of Health Professions; pre and post licensure programs, Undergraduate Interprofessional Education.
- Nova Scotia Health Authority
- Reproductive Care Program of Nova Scotia
- Halifax Regional Centre for Education High School Co-Op program
- QEII Simulation Program
- EMC Mobile Simulation Program
- SimEd Nework

Education

- IWK Learning Team
- Children's Health Resuscitation Education Committee
- First Five Minutes Code Blue response
- Nova Scotia Nursing Professional Development Education
- Nova Scotia Nursing Peri-Operative Education Program

Outreach/Offsite Simulation

- Translating Research, Education and Knowledge for Kids
- Acute Care of the at-Risk Newborn
- Simulation Leader Interprofessional Instructor Course
- Canadian Society of Rural Physicians Conference
- Canadian Society of Emergency Physicians Conference
- Western University TSAM Project

Health Professions

Registered Nurses Nurse Practitioners Licensed Practical Nurses Physiotherapists Registered Respiratory Therapists Anaesthesia Assistants Dental Assistants Paramedics Midwives Perfusionists Orthopedic Technicians Dental Technicians

Overview and Highlights 2018-2019

The sustained growth of the IWK Simulation Program follows the trajectory of interest in simulation based learning throughout the health centre and with our partner organizations. The program has a presence provincially, nationally and internationally.

The statistics presented in this report constitute the simulation based activities that are developed, planned, organized, facilitated and supported by the IWK Simulation Program. The work of Clinical Leaders of Development and Educators in simulation based learning is not captured here and represents a substantial in-situ, and just-in-time simulation based learning that is critical for health professions. The CLDs and Educators are partners in simulation with the program Coordinator and when larger education events are planned they work together to determine the best way to integrate simulation based learning into the activity. Their interest in and support of simulation has created opportunities for growth in its use throughout the health centre.

Scholarly Activity and Research 2018-2019.

The use of simulation in research, either as a research tool or as an adjunct to information gathering, has seen significant growth and it is of note that the IWK is a leader in simulation based research among its simulation partners in the region. To date, the program has participated in two completed research projects, one leading to publication and both leading to presentations. We are awaiting involvement in two new research projects within the next twelve months. The program was involved in the work leading to two presentations this past year.

Joice, S., Craig, C. (2018). Introduction and Evaluation of an Interprofessional Simulation Curriculum in Obstetrics and Gynaecology Clerkship 2016-2017. Presented at Resident Research Day, April 13, 2018.

Johnston, K.L., Dutton, T., Giouard, M., Vair B. (2018). Metrics for measuring success in simulation education. Poster presentation. Royal College Simulation Summit, September 28, 2018. Ottawa. Ontario.

Global Health: The Simulation Program Coordinator has been involved in a volunteer global outreach program through the University of Western Ontario. The Training, Support, and Access

Model (TSAM) is a partnership between Western University and the Rwandan Council of Medicine and Dentistry funded through Global affairs Canada that aims to improve the standard of health professions education in Rwanda. The Coordinator was invited to participate in several online meetings to provide expertise for planned simulation equipment purchases that would enable access to low technical fidelity simulators in all district and provincial health centres in north, central and south Rwanda. Recently, the Coordinator along with Drs. Heather Scott and Catherine Craig have been invited to participate in the development of a simulation instructor education program for a cadre of interprofessional mentors in the district and provincial health centres. This program should coincide with the delivery of the simulation equipment allowing the new simulation instructors to learn how to operate and use the equipment.

Consultation: This past year has seen a substantial increase in requests for consultation with learner groups, health professionals and teams to determine learning needs and create simulation sessions tailored to the individual group, care area or speciality. A focus on patient safety and emergency response has been at the centre of many consultations.

Consultations from organizations outside the IWK new to simulation based learning have also grown as other health centres develop simulation programs. Discussion with simulation champions in these centres have provided answers to questions around resources, education programs for simulation instructors, scenario development, equipment purchases and networking. Often there are resources available locally that can be accessed or other local connections that can be made. Occasionally, individuals have been invited to observe a simulation session at the IWK, with the permission of the participants, to see first-hand the organization of simulation based learning. Almost all of the individuals seeking assistance in the past year moved forward to attend or are seeking support to attend the Simulation Leader Interprofessional Instructor Course (SLIIC) not in its fourth year of operation.

MSNU Surgical Simulation: New for 2018-2019 has been the development of an interprofessional surgical simulation scenario conducted on MSNU involving RNs, medical students and surgery residents. The simulation session is facilitated by Dr. Jessica Mills and Katherine Dugas, Clinical Leader of Development. The scenario is based on the assessment and management of a surgical patient and concentrates on the communication that occurs between

the RN and medical student, the medical student and resident and then as an interprofessional collaborative at the bedside. The debriefing afterwards promotes the use of communication tools and the importance of interprofessional sharing of knowledge among team members.

Children's Health Resuscitation Education Committee: This committee is a branch of the Cardiac Arrest Committee formed over the past year to formalize how unannounced simulated emergencies (mock codes) are conducted within the Children's Health Program. The chair of the committee is Dr. Jennifer Foster, PICU and the committee includes Dr. Vered Gazit, Emergency Medicine, Lois Wyatt, RN, CLD Emergency Department, Ashley Thibeault RN, CLD PICU, Susan White, RRT, Educator, Respiratory Therapy, Christine Pritchett, Patient Safety Consultant and Kathy Johnston, Coordinator, Simulation Program. The committee has the support of leadership to conduct simulated emergency events within Children's Health Sites. The CLD or Clinical Leader of the care area or clinic is included in the planning and delivery of these exercises providing expertise and context of the care area practice. Each month a simulation is hosted on an inpatient care area, a clinic area or a public area. The information gathered during the simulation will help identify latent threats to patient safety as well as promote best practices in response to pediatric emergencies. Team organization in an emergency event is critical to providing coordinated care. The expectation during these exercises is that the team respond as they would in a real emergency: initial response by the area staff, quality BLS, use of emergency equipment in the area, announcement of team members, assignment of roles and management of the patient according to best practices. The committee is aware of the need to facilitate these events in a timely manner and aim to have the exercise completed within one hour, including set up and tear down. We have had great support overall for these simulations with the participant feedback identifying them as a positive learning experience.

First Five Minutes: The First Five Minutes (TFFM) learning session has grown out of the unannounced emergency simulations held throughout Children's Health Program as well as interest from Women's and Newborn Health. The premise of this session is that all staff must be prepared to respond to an emergency in their area and care for an individual who is in need of Code Blue response for the first five minutes. This includes several steps that begin the chain of response in an emergency: recognition of the need to activate Code Blue, calling for help and

either activating Code Blue from a patient room or identifying a person to call Code Blue, knowing the appropriate number for Code Blue and communicating the accurate location of the emergency, providing initial BLS including use of mask barriers for artificial ventilation and performance of chest compressions as needed, providing family support as needed, wayfinding within the care area for the Code Blue team and clear communication of the event to the Code Blue team leader on their arrival. Obviously, this cannot be done by only one person; therefore the session emphasizes knowing the resources available in the area and how to contact others in an emergency. The session is usually conducted in-situ so participants can walk through an emergency, locating equipment, resources and considering the environmental aspects of response. For larger groups, the session can take place in a classroom and the local context can be integrated into a case study of an emergency. Currently, these sessions are provided by the Coordinator, Simulation Program. In the future, they will be conducted as needed by the CLD or Clinical Leader in the care area to ensure they are delivered within the context of area practice.

Outreach Simulation: Simulation has been embedded into several IWK programs that are delivered throughout the Maritimes. The Emergency Medicine program "Translating Research and Knowledge for Kids" (TREKK) offers two simulation sessions as part of the day long course and these have been delivered across the Maritimes with good response from participants. This year the IWK TREKK group was asked to provide a simulation session for the Society of Rural Physicians Conference in Halifax. It was well received by participants as a valuable session within the conference program.

The Canadian Pediatric Society "Acute Care of the at-Risk Newborn" (ACoRN) newborn stabilization program is an education program supported by Neonatal Perinatal Medicine and the Reproductive Care Program. Over the past year it has been focused on increasing the cadre of instructors within the regional hospitals and encouraging capacity building in providing simulation based learning as a component of the course. The Simulation Program co-facilitated the instructor courses held at the IWK, including introduction to simulation and debriefing skills within the context of ACoRN. Instructors completing the course were required to team teach with the IWK ACoRN program faculty to provide the didactic content as well as practice facilitating simulation and debriefing.

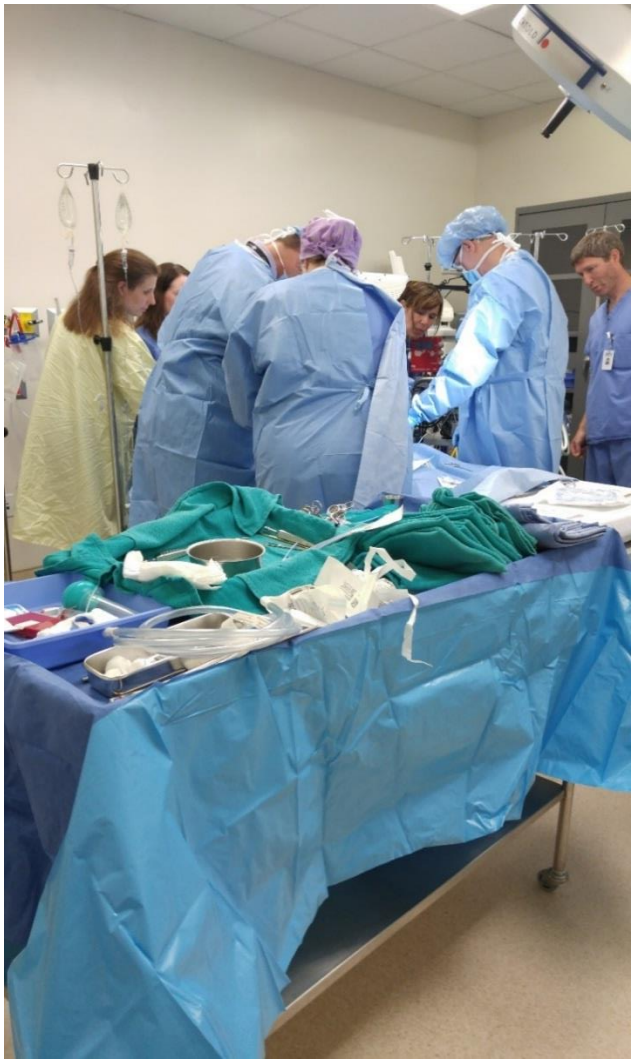
Pediatric Critical Care

Pediatric Critical Care includes the Pediatric Intensive Care Unit, Respiratory Therapy and three specialty teams: LifeFlight Neonatal/Pediatric Transport Team, the Special Outreach Pediatric Team and the Extracorporeal Life Support Team.

Simulation based learning is one of the cornerstones of orientation, maintenance of competency and continuing education.

I the picture to the right, the Cardiovascular Surgery team, PICU intensive care team, ECLS team, Perfusionists, and Operating Room RNs participate in an interprofessional in-situ simulation in the Children's Operating Room. The simulated initiation of ECLS is performed with a high degree of realism with the equipment, monitoring and interventions as in real life. The teams must coordinate with each other to ensure safe and timely transition of the patient to cardiac support.

Real time changes in vital signs and patient condition are choreographed between the facilitator of the exercise and the simulator operator. Scenarios can include unexpected deterioration in patient condition or equipment failure, necessitating rapid and critical response by the teams.



Pediatric Emergency Medicine

The Pediatric Emergency Medicine Program is the most prevalent user of simulation based learning in the health centre with over 70 simulation sessions annually. The number of sessions has steadily increased over time, limited only by human resources.

The majority of Emergency Department simulation based learning takes place in situ in the Trauma Room. This allows staff to practice in their own environment and also to uncover latent environmental and systemic threats to best patient care. This has created a very "nimble" simulation program where simulation equipment and personnel can move quickly if there is an incoming patient. It has also lead to the development of several tools used to ensure simulation equipment is not left behind. This has been identified globally as a concern with in-situ simulation and the program has developed checklists and other tools to prevent anything being left behind in the care areas.

This past year the Learning Team supported two RNs from the Emergency Department to attend SLIIC. Amy Baker and Laura O'Donnell have both become involved with simulation sessions in the Emergency Department, co-creating scenarios, ensuring the nursing role is articulated and debriefing after the scenarios. Susan White, the Respiratory Therapy Educator, is also a participant in the planning and delivery of interprofessional simulation. It takes an interprofessional group to create interprofessional simulation based learning and this model has been adopted by other areas of the health centre.

Groups participating in simulation based learning in the Emergency Department include Emergency RNs, Pediatric Residents, Pediatric and Adult Emergency Medicine Residents, the Interprofessional Trauma Team, Interprofessional Simulation for Health Professions, and learners from pre-licensure Medicine and Health Professions at Dalhousie.

The Emergency Department is also a Canadian "TREKK" site (Translating Research and Emergency Knowledge for Kids). TREKK is a one day outreach educational program that provides research based best practice information to regional centres that care for children. The IWK TREKK group has embedded simulation into their program providing two scenarios that take the participants through the identification and management of pediatric illness.

Obstetrics: Obstetrics simulation comprises the second largest number of simulation sessions each year. The OB resident simulation sessions are led by Dr. Catherine Craig. Dr. Craig has written an array of scenarios that take residents through the most basic assessments, communication and onto management of obstetrical emergencies. When possible, the sessions include RNs from the BU and anaesthesia residents to promote interprofessional teamwork, communication and collaboration. These sessions are held in the IWK Simulation learning Centre; however when advance planning is possible, sessions are held in-situ in the Birth Unit, Operating Room or Early Labour and Assessment.

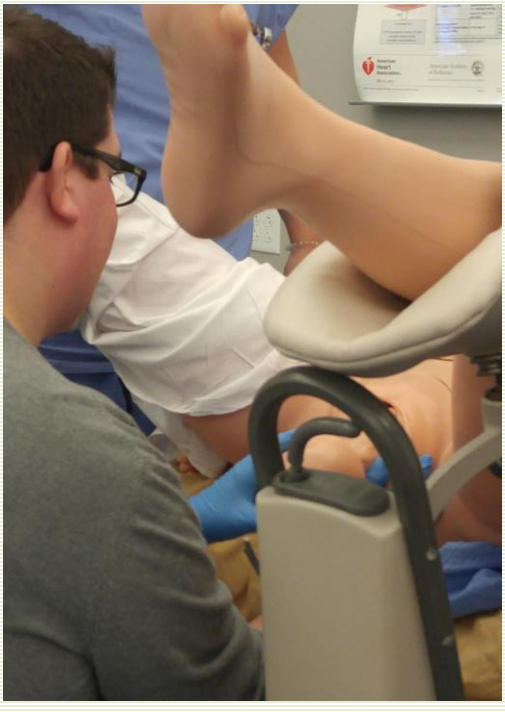
Practicing peri-mortem caesarean section during maternal arrest

The Pre-licensure interprofessional Obstetrics simulation, led by Dr. Catherine Craig, includes learners from Dalhousie medicine, nursing, respiratory therapy and Medavie School of Paramedicine. These sessions occur every six weeks. Three scenarios are run during this three hour session and learners participate in their own roles to manage the patient and practice interprofessional competencies. The team shares their knowledge and skills, including pre-hospital assessment and management of the patient by the paramedic students, and post-delivery neonatal resuscitation by the respiratory therapy students. The group hones their communication skills, including communication with the patient when there is concern about the health and wellbeing of the mother or fetus. These sessions have been well received and learner feedback indicates that they accomplish the objective of interprofessional education: learning from, with and about each other.

Birth Unit: Routine simulation based learning, skills teaching and maintenance of competencies for Birth Unit staff takes place predominantly in-situ in the Birth Unit and is led by the Clinical Leader of Development, Maxine Bernard. In situ simulation and skills practice has the extra benefit of practicing in one's own environment and provides context for learning

Nurses who will begin to care for mothers experiencing high risk pregnancies attend an orientation that includes a full day simulation session in the Simulation Learning Centre using scenarios developed for the obstetrical simulator or other model. These sessions include nursing management and intervention for common and uncommon obstetrical emergencies as well as principles of crisis resource management. When possible the simulation session is attended by anaesthesia and OB residents to promote interprofessional teamwork and communication in emergent, time critical situations.

Nurses from NSHA have the opportunity to attend simulation based learning for obstetrics in the IWK Simulation Learning Centre. These sessions are facilitated by faculty from RNPDC and Maxine Bernard with support from the simulation program. The simulations used in these sessions centre on unexpected obstetrical presentations in the emergency department: unanticipated precipitous delivery, pre-eclampsia and post-partem hemorrhage. The RNs practice basic delivery skills and rapid assessment and nursing management of maternal emergencies within he context of scenario in the emergency department.



The damage to the IWK obstetrical simulator has necessitated the search for a replacement. As part of this process, obstetrical simulators from various vendors were brought in for demonstration to determine whether they would meet our needs. The demonstrations were attended by Obstetricians as well as BU RNs who used their knowledge and skills to evaluate the realism of the simulator. In addition to uncomplicated delivery as shown in the picture to the left, the simulators were evaluated for fidelity in a number of obstetrical delivery and maternal emergencies.

Neonatal Perinatal Medicine: This includes the Neonatal Intensive Care Unit, Code Blue Neo response team, Neonatal Nurse Practitioner program and the NPM Resident program.

Simulation based learning is embedded into the orientation process for RNs orienting to NICU. Over the past year, there has been a move towards an increase in time spent in simulation to practice skills and management of intermediate and intensive care patients. The Clinical Leaders of Development for NICU, Michelle Nightingale and Stacy McCurdy facilitate these hands-on sessions in collaboration with the Simulation Program Coordinator.

The IWK Simulation Learning Centre hosted a skills education session for the Neonatal Nurse Practitioner program. NNP students beginning their NICU practicum had the opportunity to practice skills such as central line insertion, umbilical line insertion, arterial line insertion and intubation. One of the many benefits of simulation based learning is the ability to practice skills multiple times before they are performed in care of a patient. Understanding the steps of a skill or procedure, manipulating the equipment and considering the risks are important facets of skill development. This also demonstrates the patient safety and risk reduction component of simulation based learning.

Code Blue Neo is a specific designation for response to an infant requiring emergency care after delivery in the Birth Unit, or on the Family Newborn Unit. The skills used by this team are taught as part of the Neonatal Resuscitation Program, a centrewide program administered through Women's and Newborn Health. The IWK NRP sees over 300 participants per year from nursing, medicine and health professions as well as learners from a variety of programs. Several health professions, programs and care areas within the IWK have this program as a requirement for practice. The Code Blue Neo response team have additional education and skills training including a one day simulation session where they practice their knowledge and skills in several scenarios depicting common and uncommon neonatal emergencies.

Simulation based learning has become a component of education in the NPM resident program. Led by Dr. David Simpson and facilitated as an interprofessional group including neonatology, nursing and respiratory therapy, these sessions have provided NPM residents with the opportunity for formative evaluation of management skills leading an interprofessional team in a neonatal resuscitation. In addition, the NPM residents have attended workshops for rare skills and biomedical equipment used in the NICU.

Neonatology has been very active in simulation based learning and Friday afternoons from 1500-1700 in the Simulation Learning Centre are generally reserved for resident teaching, skills practice and simulation under the direction of one of the neonatologists. This year, Drs. Souvik Metra, Balpreet Singh and Beth Ellen Brown attended the Simulation Leader Interprofessional Instructor Course. As well Dr. Brown completed the NRP instructor course and Dr. Singh completed his orientation to instructing ACoRN and supporting this program.

NICU has several simulation champions within the unit, especially supportive of in situ simulation and just-in-time skills practice. Arthena MacDonald,NNP, is among these champions and often initiates just-in-time practice in anticipation of clinical events or as skills practice for learners. Simulation Champions are a vital but often unseen component of the simulation program and their support makes simulation based learning accessible.

Collaboration with other Simulation Programs. The IWK Simulation program maintains a collaborative, reciprocal relationship with other simulation programs in our external partner organization. The Dalhousie School of Nursing has been instrumental in enabling the pre-licensure Interprofessional Obstetrics simulation sessions to continue in the wake of damage to our obstetrical simulator. We have been able to access their high fidelity simulation centre and obstetric simulator to run these sessions without interruption to the schedule. Their facility is very accommodating for a large group and the equipment we need to conduct the session

Our program collaborates with other centres to create simulation sessions based on low volume, high risk care of pediatric and obstetric patients. This year we partnered with the QEII Simulation Program to create an obstetrical trauma simulation involving the emergent delivery of an infant during the resuscitation of the patient. The model for such a delivery is not available commercially, so a hybrid was developed by combining the high fidelity 3G simulator at the new QEII SimBay with a purpose built abdomen that could be incised, revealing a gravid uterus and infant for delivery. The Emergency Medicine residents agreed that performing the emergent delivery and infant resuscitation during the simulated trauma resuscitation added additional complexity to the scenario.

The IWK Simulation Learning Centre operates at close to 95% capacity with an average of six hours of use per day. The centre operates from 0800-1600 daily with occasional flexibility to extend operating hours during the week and on weekends.

The centre is used for a variety of IWK education programs such as the Neonatal Resuscitation Program, Pediatric Advanced Life Support and Advanced Cardiac Life Support. It sees high usage for learners from medicine and health professions as well as pre and post-licensure interprofessional simulation.

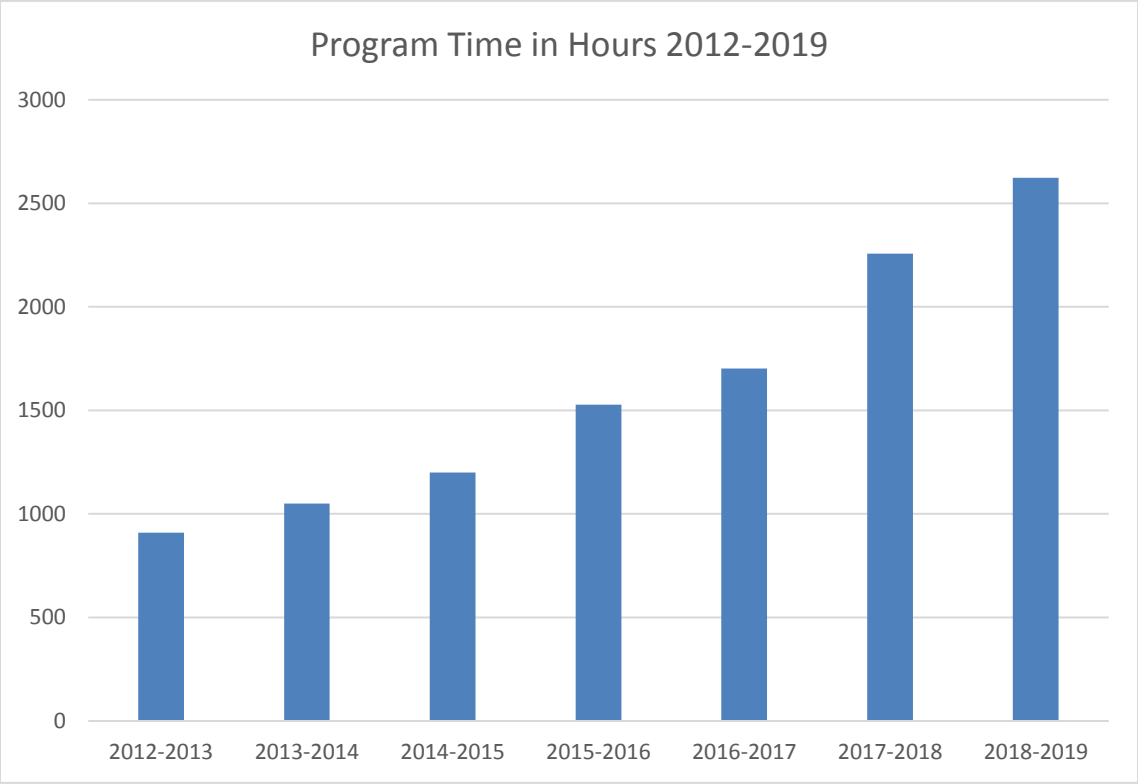
Health professions and care areas have incorporated the use of the Simulation Learning Centre for simulation based learning during staff orientation. It is an embedded component of orientation for respiratory therapists as well as nursing orientation for Birth Unit, Neonatal Intensive Care, Pediatric Intensive Care, and the Emergency Department, to name the most frequent users of simulation during orientation.

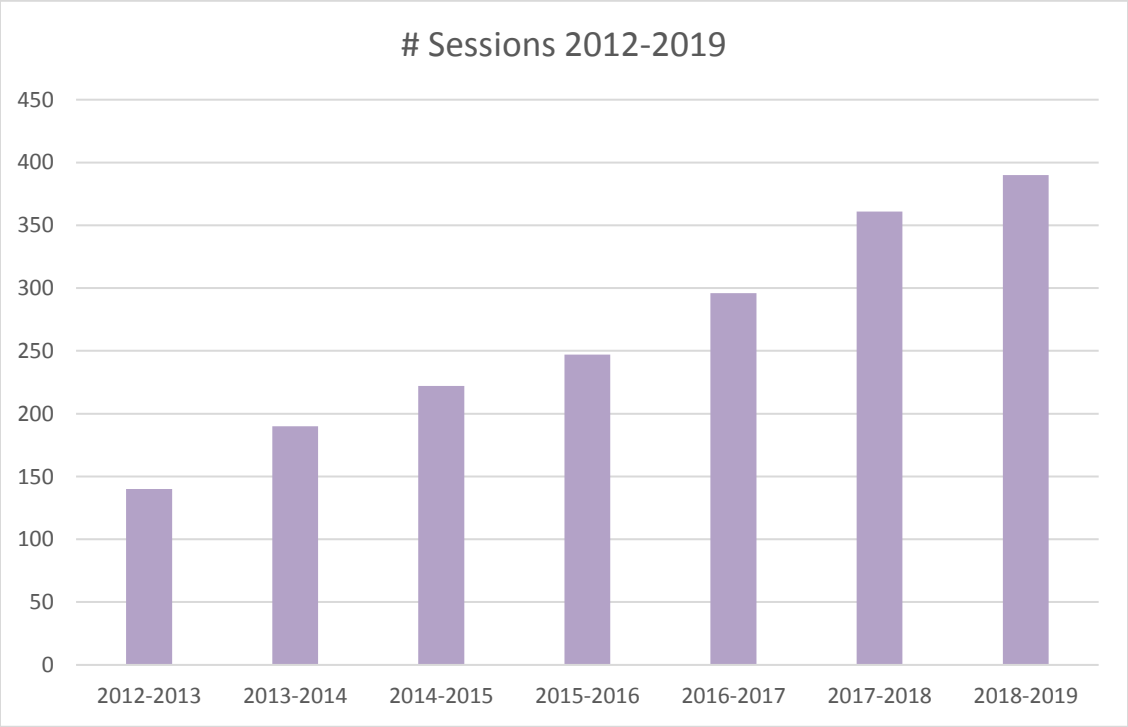
Simulation based learning is also a significant component of orientation and continuing education for speciality teams such as LifeFlight Neonatal/Pediatric and Obstetrical transport teams, the Special Outreach Pediatric Team, Extracorporeal Life Support team, Trauma Team, and the Neonatal Emergency Team (Code Blue Neo response).

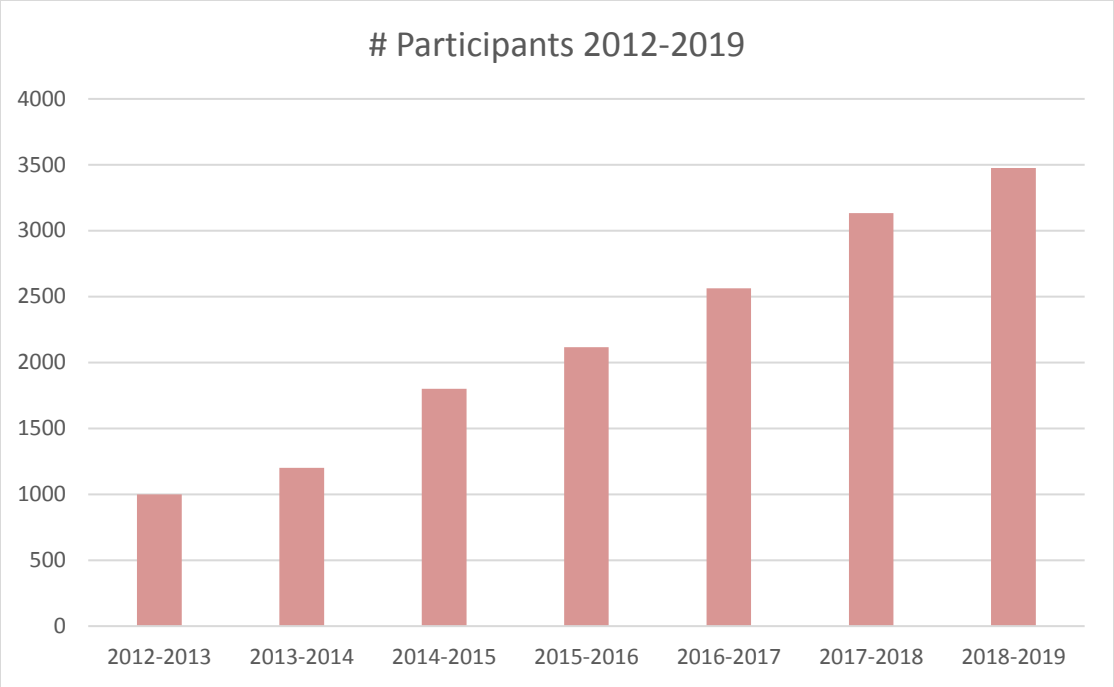
The program may allow independent use of the centre and/or equipment dependent on availability and after consultation with the coordinator to establish program objectives. A catalog of task training equipment and the contact for lending is available for download at http://pulse.iwk.nshealth.ca/subsites/page/view/?id=10207 .

Large group simulation: This year the Simulation Program participated in "NovEx"; the IWK simulated mass causality exercise lead by Dr. Vered Gazit and Phil Porter, Coordinator of the IWK Emergency Preparedness and Response Program. Our responsibilities included co-coordinating the "backstage" of the exercise with many others involved in the matching of simulated patient to their facilitator, or in the case of an actual simulator being used, their operator, coordinating equipment set up/removal and providing task trainers for procedural skills. Our Simulation Team was augmented with volunteers from the IWK and Dalhousie who shared their time and expertise to operate simulators, help with equipment transport and special effects. The program provided an element of realism to the exercise with the moulage (special effects and make-up) of injuries for the participants and the simulators. The young participants were genuinely thrilled with the artistry of Simulation Specialist Jeff Nakhaie and his team as they created lacerations, bruises, and fractures and embedded shards of simulated glass into the injuries. Moulage artists Doug Ferkol – simulated Patient Educator from Dalhousie Centre for Collaborative Clinical Learning and Research; Matt Devine - IWK Orthopedic technician and ex-military casualty simulation expert and Jasmine Proulx- medical student and ex-military medic. The result was very impactful. Additional simulator operations were provided by Doug Ferkol, Jessica Carew (RRT, LifeFlight Clinical Leader), and Haley Smith (RN, PICU)

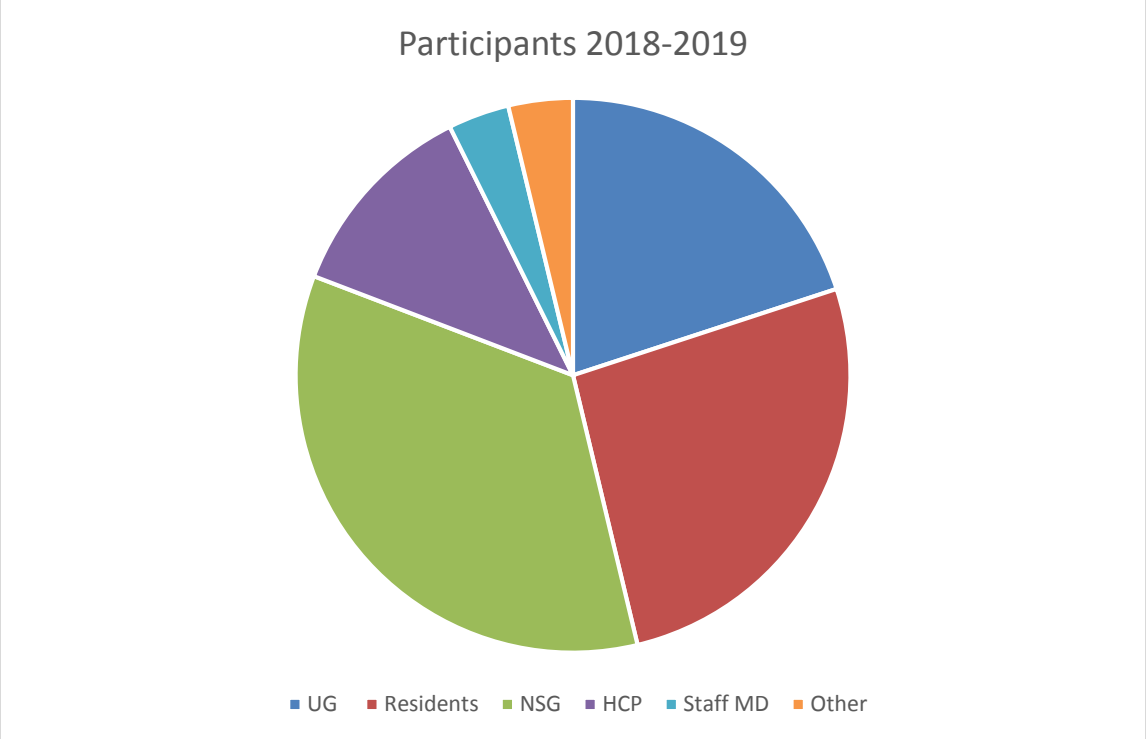
Program Statistics 2018-2019

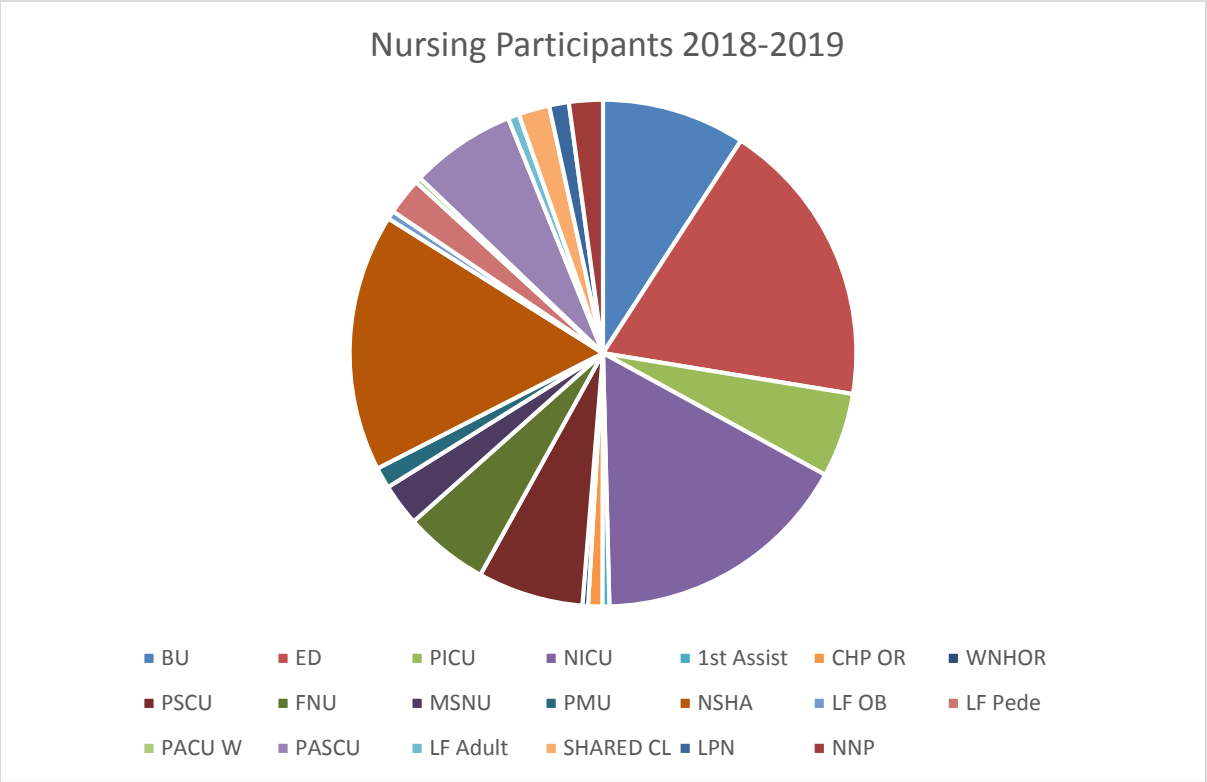


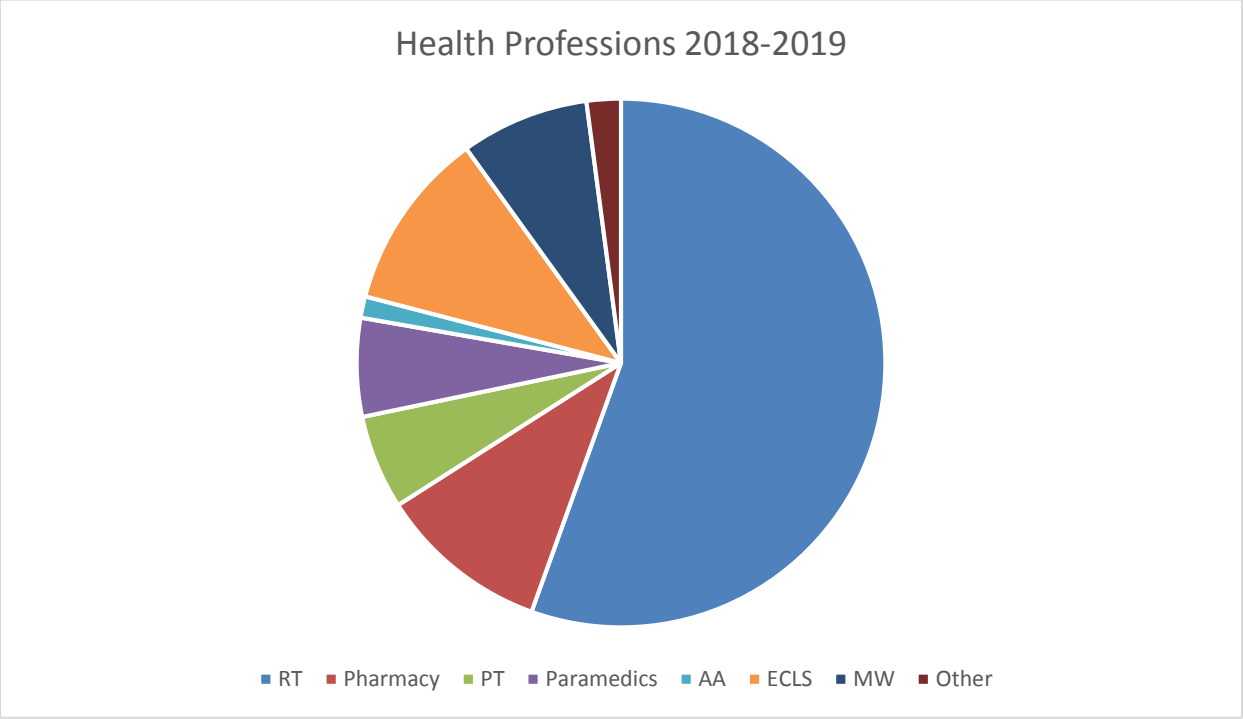


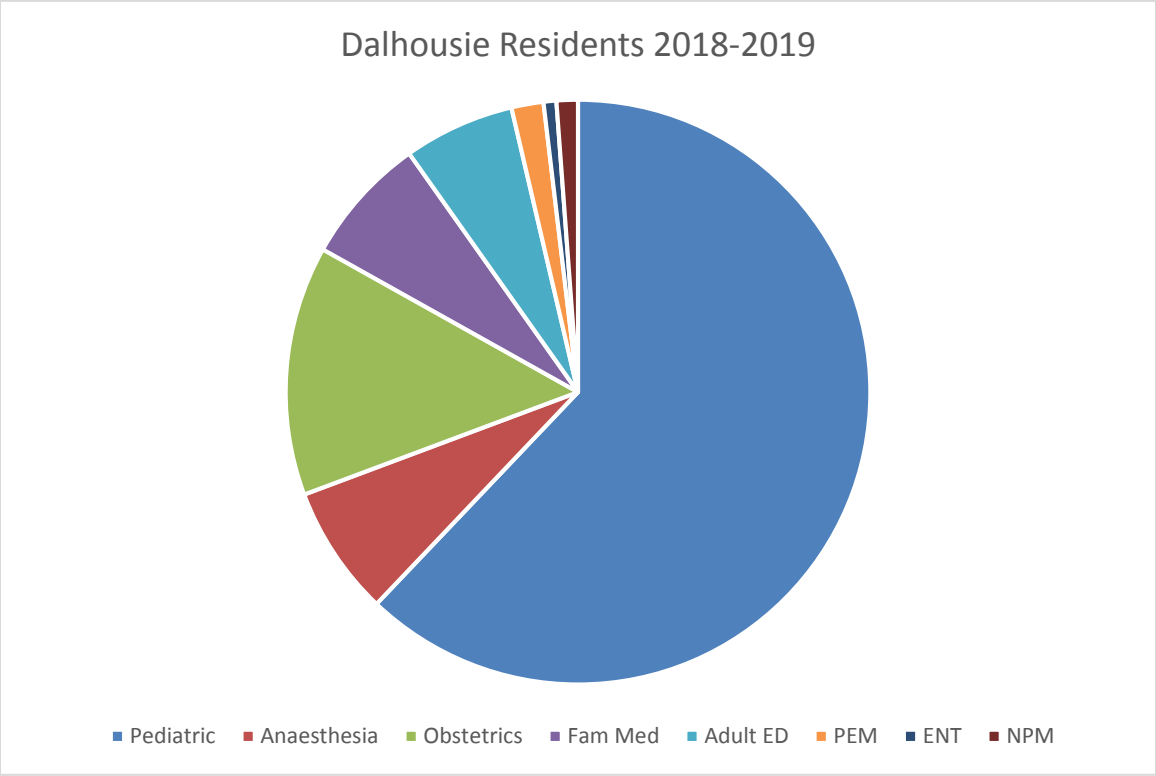


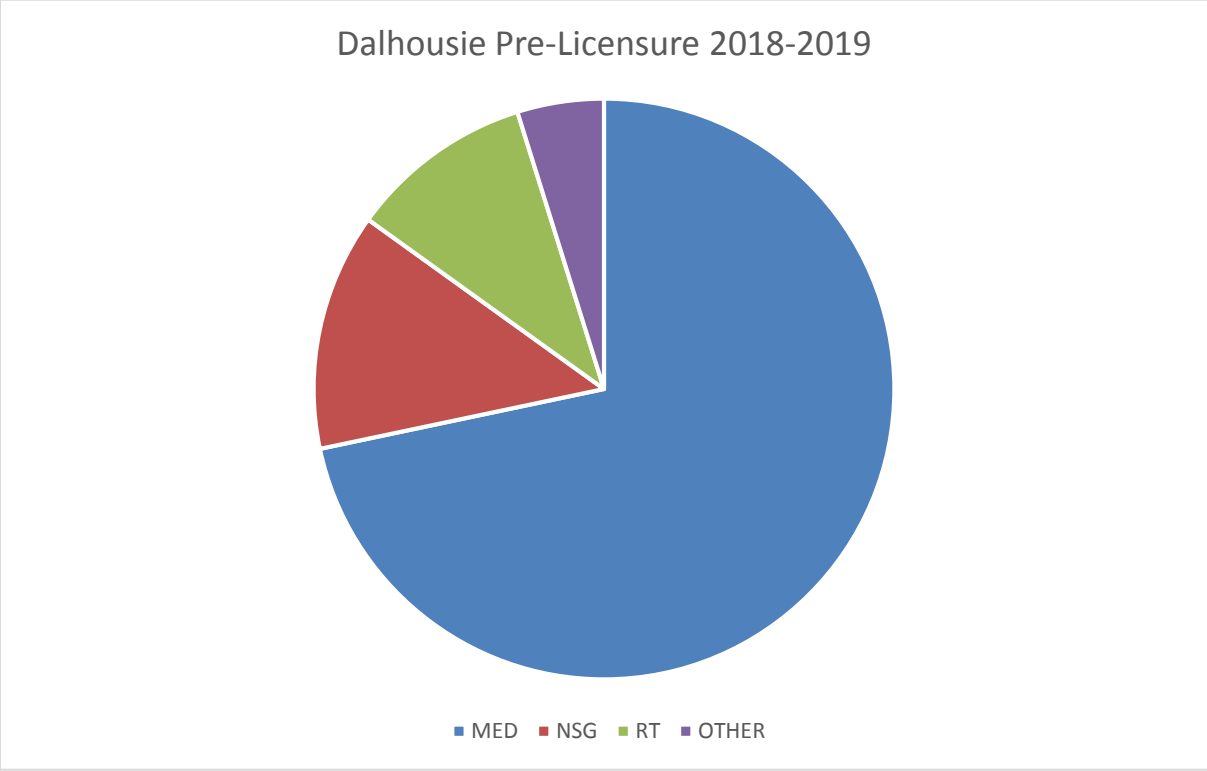
Participant Demographics




Nursing Participants 2018-2019
BU
ED
PICU
NICU
1st Assist
CHP OR
WNHOR
PSCU
FNU
MSNU
PMU
NSHA
LF OB
LF Pede
PACU W
PASCU
LF Adult
SHARED CL
LPN
NNP


Health Professions 2018-2019
RT
Pharmacy
PT
Paramedics
AA
ECLS
MW
Other


Dalhousie Residents 2018-2019
Pediatric
Anaesthesia
Obstetrics
Fam Med
Adult ED
PEM
ENT
NPM


Dalhousie Pre-Licensure 2018-2019
MED
NSG
RT
OTHER