

Simulation—an invaluable tool in the respiratory therapist's tool kit

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On a daily basis, respiratory therapists use both literal and figurative tools to accomplish their specialized mission in healthcare. Whether it is diagnostic equipment, therapeutic equipment, or technologies for furthering learning, respiratory therapists rely on a wide variety of tools. For many reasons, simulation can be an invaluable tool to respiratory therapists across all practice settings.

Some people may envision a room with a mannequin and healthcare professionals practicing life-saving interventions when they hear the term simulation. While this is a common and long-standing conception of simulation, the field of simulation has evolved considerably beyond this and the opportunities it presents the profession have expanded concurrently. As such, this commentary will present and discuss simulation as a modality rather than as one specific activity. I hope to highlight some of the areas where simulation holds great potential in enhancing respiratory therapy practice.

A TOOL FOR SOLVING PROBLEMS AND OPTIMIZING CARE

When approached as a modality rather than a specific activity, simulation provides a tool to objectively approach problems or challenges that health professionals face in providing care. Simulation, in this sense, refers to replicating clinical care or an existing process as realistically as possible. By placing the focus of the simulation on process, system, and environmentally oriented aspects, both participants and observers gain critical insights into issues that need to be addressed and opportunities for optimization arise.

Perhaps even more exciting is the opportunity to build knowledge and understanding regarding clinical spaces, workflow, and care processes that do not yet exist. Using simulation to test drive a new clinical space or to formulate or trial a proposed care process can be very rewarding.

In my work at McMaster Children's Hospital, I have been involved in conducting simulations for the purpose of learning about process, system, and environmentally oriented aspects in our care environments. McMaster Children's Hospital has a long history of using simulation to gain critical insights into new clinical spaces and for the development and optimization of care processes. Following construction of and prior to opening our current Pediatric Intensive Care Unit (ICU), a full-day comprehensive, multidisciplinary simulation was undertaken. By setting up the new unit as a fully simulated ICU, we were provided with priceless insights into how patient care would "look and feel" once our real patients were admitted. From this, we were able to identify and address multiple latent threats to patient safety and were provided with the opportunity to make reconfigurations and adjustments within the space before actual care ever took place there.

With the development of our new Pediatric Emergency Department, simulation activities started as part of the design phase, and continued with extensive process-focused or system-focused simulation in our new department prior to moving in. Through these simulations, multiple improvements in patient safety, care processes, and workflow were realized [1].

Most recently, early this summer, we held simulations in a patient room of our newly established Pediatric Complex Care Unit. The goal of this unit is to improve care and service delivery by cohorting our tracheostomy and chronic ventilation patients who do not require ICU care. The goal of the simulations was to establish the optimal configuration for these patient rooms and the necessary supplies within. These simulations involved the participation of physicians, nurses, respiratory therapists, infection control practitioners, management, business clerks, as well as parents of children with tracheostomy. Through two days of simulation, we gathered data and insights, made adjustments through rapid Plan–Do–Study–Act cycles, and repeated our simulation clinical cases to test our adjustments and continue towards an optimized solution [2].

A TOOL FOR ENHANCING INTERPROFESSIONAL COMPETENCIES AND COLLABORATION

Regardless of clinical environment or context, simulation can provide a medium for the development and refinement of interprofessional competencies. Interprofessional simulation provides the opportunity for teams to practice and improve their teamwork and communication skills [3]. Furthermore, simulation has been shown to provide a medium for healthcare providers to explore collaborative ways to improve communicative aspects of clinical care [4].

A TOOL TO PRACTICE SKILLS

While simulation has historically focused on the learning and practice of resuscitation skills, respiratory therapists now have the opportunity to harness simulation as a means to practice the complete range of clinical skills and procedures within the respiratory therapist's scope of practice [5].

By using simulation in its various forms, respiratory therapists have the opportunity to practice clinical skills without the presence of an actual patient and at a time that can be scheduled or predicted. Respiratory therapists can use simulation to advance their procedural skills, approaching mastery-level proficiency without any risk to an actual patient. Furthermore, simulated practice allows for just-in-time rehearsal of a given skill, like a respiratory therapist perfecting the insertion of a chest tube when assigned to an ICU patient who is at high risk of developing the need for an urgent chest tube.

For a moment, consider elite athletes, elite musicians, elite dancers, and the like and think about the amount of time that they spend in

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practice, both individually and as a team. If we truly desire to bring the same degree of excellence to our patients, how could we believe that we do not need to practice with the same diligence and intensity? Respiratory therapists may not need to practice skills and situations that occur every day in our given area of practice, but what about things that are not encountered frequently? As key members of the healthcare community, respiratory therapists can play a crucial role in advancing and promoting the need to practice within our teams and beyond.

It is understood that the types of skills practiced, and the frequency at which those skills are practiced, should be influenced by each individual therapist's learning goals and needs [6]. Practice setting and scope will also be a key factor in influencing skills practice, as well as institutionally mandated requirements. Whether practicing individually or as a team, using simulation to practice skills that are high acuity in nature and that are infrequently used, may yield the most gain for practicing respiratory therapists.

A TOOL FOR THE EVALUATION AND ASSESSMENT OF CLINICAL COMPETENCIES

Since its inception, the predominant use of simulation has been for training purposes. In recent years we have seen an evolution towards the use of simulation as a mechanism for evaluating and assessing the clinical competency of individual clinicians [7].

In undergraduate nursing education, we are seeing the beginnings of a move towards the inclusion of increasing amounts of simulation for summative evaluation purposes [8]. Various health professional bodies and academic institutions are advocating for or have implemented simulation as a substitute for a portion of clinical training hours that were traditionally accomplished through an actual clinical placement. Furthermore, simulation is being used more and more to address clinical competencies that could not be acquired during a particular clinical practicum because of no clinical opportunity to acquire the competency in question. Instead of being subject to the luck of the draw, simulation can fill in the gaps created by clinical variability to ensure that all required competencies can be achieved and demonstrated. In July, the Royal College of Physicians and Surgeons of Canada launched the first stages of a novel approach to how it assesses specialist physicians for credentialing based specifically on the achievement of a set of competencies rather than being defined by the traditional time-based criteria [9]. This provides one more example of this trend towards the increasing measurement of competencies in health professionals.

Whether medicine, nursing, or respiratory therapy, such competency assessments can only take place within two contexts: during actual clinical practice or simulated clinical practice. If health professions use simulated clinical hours as a valid substitute for clinical placement hours, then it stands to reason that this will naturally lend itself to an overall increase in summative evaluations accomplished through simulation.

Recent studies and ongoing research are beginning to advise us how best to use simulation for evaluative purposes. The literature suggests that simulation will be increasingly used as an evaluative tool across the professional lifespan [8]. From the graduation requirements of our health profession educational programs, to licensure requirements for entry to practice, to initial and ongoing credentialing by employers, healthcare professionals can expect to see increasing use of simulation for evaluation and assessment of clinical competencies [7].

A TOOL FOR EDUCATING OUR PATIENTS AND THEIR FAMILIES

Simulation is most often considered in terms of its use for the education of health profession trainees and for professional development amongst registered professionals. Despite these two groups as its target population, simulation can be extremely valuable as a modality for educating patients and their families.

At McMaster Children's Hospital during the summer of 2011, a pilot project was conducted using high-fidelity simulators to train parents, guardians, and other family members in the care and management of children with tracheostomy with and without home ventilation.

McMaster Children's Respiratory Care Coordinators, in collaboration with the hospital's Simulation and Outreach Program, devised simulation cases to address common care challenges and provided scenarios where participants could experience and, subsequently, manage a variety of tracheostomy and ventilator emergencies.

With the results of the pilot, a set of simulation cases were drafted and subsequently revised into a core curriculum for simulation-based family education. The pilot was highly successful in addressing gaps in caregiver understanding and skill as well as being highly rated in participant satisfaction [10]. Since 2012, these core simulations have been part of a robust pre-discharge education program and have been standard of care for all families of children being discharged from McMaster Children's Hospital with tracheostomy with or without home ventilation. Although each simulation has specific objectives, and while all core simulations must be completed, these simulations are personalized to each patient's specific details. Currently, these simulations are delivered with a hybrid simulation approach, utilizing a low-fidelity tracheostomy mannequin with high-fidelity vital signs monitor to provide real-time vital signs.

Such simulation-based training has provided our patients' parents, families, and caregivers with increased confidence and competence and has resulted in a higher level of safety for technologically dependent children [10].

HARNESSING THE POWER AND OPPORTUNITY

Simulation is an invaluable tool in the respiratory therapist's tool kit. Simulation can be used as a tool for solving problems and optimizing care. Simulation can be used to enhance interprofessional competencies and collaboration. Simulation creates a means for healthcare professionals to learn and practice skills without any risk of harm. We will see simulation increasingly used as an objective means for assessing and evaluating healthcare competencies. When providing meaningful, effective education to our patients and their families, simulation offers health professionals yet another tool to accomplish this.

Respiratory therapists can harness the power of simulation across all practice settings. Simulation simply refers to replicating clinical care or an existing process as realistically as possible, and then learning from the experience. Previously, the concept of realism in simulation was tied heavily to the level of technology that was being used. It is now understood that realism, or in other words, fidelity during simulation, depends much more heavily on how true the scenario or event is compared with actual life [11]. As such, respiratory therapists need not feel excluded from using simulation based on the lack of specialized equipment. With curiosity and creativity, many clinical skills and most clinical processes can be replicated. In your daily practice, I challenge you to watch for and actively seek out opportunities to use simulation. It truly is an invaluable tool in the respiratory therapist's tool kit.


DECLARATION OF INTEREST

The author reports no conflicts of interest.

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