

Using Interprofessional Team Training to Provide Competency Based Medical Education

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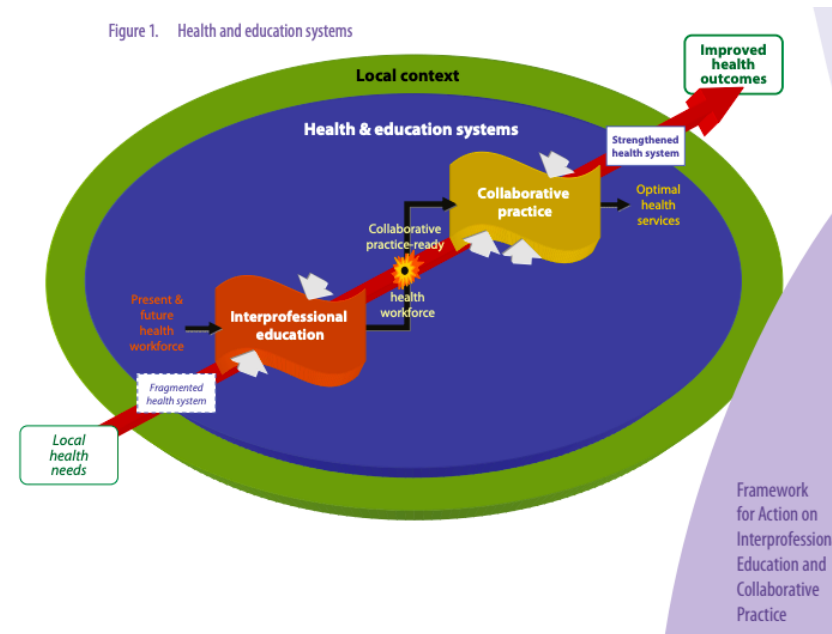
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Objectives

- Review definitions, best practices and challenges of interprofessional simulation
- Discuss how to implement interprofessional simulation to provide competency based medical education

What is interprofessional education?

- According to the WHO's *Framework for Action on Interprofessional Education and Collaborative Practice*, “interprofessional education occurs when two or more professions learn **about, from and with** each other to enable effective collaboration and improve health outcomes”



Why is interprofessional education important?

- Historically, health professions education has occurred within profession specific silos, denying learners the opportunity understand the team dynamics that are intrinsic to actual clinical practice (D'amour & Oandasan 2005; Robertson & Bandali 2008).
- Interprofessional education fosters collaboration and communication, ameliorates fragmentation of health systems, and contributes to safer, more reliable patient care. It can also unravel assumptions that individuals have about other professional roles, influence culture and test clinical systems.



History and Core Competencies of IPE

History of IPE

- 1972- Institute of Medicine recognized the need for team based patient care for improved outcomes and patient safety
- 2009- Interprofessional Education Collaborative (IPEC) formed and included five professions (nursing, pharmacy, dentistry, medicine and public health)
- 2011- IPEC core competencies were developed
- 2016- Core competencies were updated to include communities and preventative initiatives, currently encompassing sixty professions!



Interprofessional Education Collaborative

Core Competencies for Interprofessional Collaborative Practice

- Values and ethics for interprofessional practice
 - Promote climate of mutual respect and shared values
- Roles and responsibilities
 - Knowledge of individual and other professions role in assessing and addressing healthcare needs of patients
- Elements of effective communication
 - Team approach to promote and maintain health
- Teams and teamwork
 - Relationship building values and principles of team dynamics in order to effectively work as a team

Why use simulation as an IPE modality?

- Patient care is delivered by IP teams
- Patient safety is improved when team performance is optimal
- Simulation is an ideal modality for IPE because it:
 - facilitates teaching of knowledge
 - offers opportunities to practice technical and behavioral skills
 - is realistic and reproducible
 - provides an opportunity for reflection and sharing of perspectives
 - fosters collaboration

Does interprofessional simulation work to improve patient care?

- Multicenter prospective interventional study at four tertiary-care children's hospitals in Canada
- Measured, via pre and post-tests, the effect of a 1-day team training course for interprofessional pediatric resuscitation teams including residents, ICU NPs, RNs and RTs on:
 1. Adherence to PALS guidelines
 2. Time to initiation of chest compression and defibrillation
 3. Teamwork performance (as measured by the Clinical Teamwork Scale)
- Found significant improvement in all outcome measures, in a simulated setting



Does interprofessional simulation work to improve patient care?

- Integrative review method used to explore the following research questions:
 1. *Does multidisciplinary simulation-based resuscitation team training lead to improved team performance?*
 2. *Does teamwork lead to efficiency in resuscitation management?*
 3. *What simulation training models for resuscitation teams are evident in the literature?*
 4. *What do staff perceive are the necessary components of multidisciplinary simulation-based resuscitation team training?*
- This review uncovered eleven primary research articles demonstrating that simulation is an effective method to train resuscitation teams in the management of crisis scenarios in the setting of simulation.
- Transferability of these outcomes to a clinical setting needs to be more clearly demonstrated.



Does interprofessional simulation work to improve patient care?

- Longitudinal, mixed-methods study at a children's hospital embedded within a tertiary care, academic medical center.
- Examined the effect of mock codes called randomly at increasing frequency over a 48 month period on cardiopulmonary arrest survival rates within the hospital.
- Mock code participants included pediatric hospitalists, residents, PICU nurses, medical students, pharmacists and pediatric ward nurses.
- Cardiopulmonary arrest survival rates increased to from 33% to 50% over the course of the program ($p=0.000$).

Simulation-based mock codes significantly correlate with improved pediatric patient cardiopulmonary arrest survival rates*

Pamela Andreatta, PhD; Ernest Saxton, BSN; Maureen Thompson, MSN; Gail Annich, MD

Objective: To evaluate the viability and effectiveness of a simulation-based pediatric mock code program on patient outcomes, as well as residents' confidence in performing resuscitations. A resident's leadership ability is integral to accurate and efficient clinical response in the successful management of cardiopulmonary arrest (CPA). Direct experience is a contributing factor to a resident's code team leadership ability; however, opportunities to gain experience are limited by relative infrequency of pediatric arrests and code occurrences when residents are on service.

Design: Longitudinal, mixed-methods research design.
Setting: Children's hospital at a tertiary care academic medical center.

Patients: Pediatric.
Interventions: Clinicians responsible for pediatric resuscitations responded to mock codes randomly called at increasing rates over a 48-month period, just as they would an actual CPA event. Events were recorded and used for immediate debriefing facilitated by clinical faculty to provide residents feedback about their performance.

Measurements: Self-assessment data were collected from all team members. Hospital records for pediatric CPA survival rates were examined for the study duration.

Results: Survival rates increased to approximately 50% ($p = .000$), correlating with the increased number of mock codes ($r = .87$). These results are significantly above the average national pediatric CPA survival rates and held steady for 3 consecutive years, demonstrating the stability of the program's outcomes.

Conclusions: This study suggests that a simulation-based mock code program may significantly benefit pediatric patient CPA outcomes—applied clinical outcomes—not simply learner perceived value, increased confidence, or simulation-based outcomes. The use of mock codes as an integral part of residency programs could provide residents with the resuscitation training they require to become proficient in their practice. Future programs that incorporate transport scenarios, ambulatory care, and other outpatient settings could further benefit pediatric patients in prehospital contexts. (Pediatr Crit Care Med 2011; 12:33-38)

Key Words: simulation-based pediatric mock codes; pediatric cardiopulmonary arrest; residents' resuscitation training; applied clinical outcomes; improved pediatric patient cardiopulmonary arrest survival rates

The ability to provide rapid resuscitation to a child in cardiopulmonary arrest (CPA) is critical for pediatricians at every level of experience. Most pediatricians receive their training in the management of CPA during residency rotations through neonatology, pediatric critical care, and pediatric emergency medicine (1, 2), where they may perform resuscitations and are required to complete Pediatric Advanced Life Support (PALS) training as part of their formal curriculum.

In our teaching hospital setting, resuscitation is provided through the coordinated effort of multiple specialists performing emergency procedures under the direction of a senior resident, the code team leader. The ability of the code team leader is believed to be integral to accurate and efficient clinical response (3-6). Although direct experience is a contributing factor to a resident's leadership ability (3, 7, 8), opportunities for residents and pediatricians to gain this experience is limited by the relative infrequency of pediatric arrests in the clinical environment (9, 10) and whether or not a code occurs at a time when they are available to respond.

The result is predominant reliance on PALS training to acquire and maintain code management competencies. Although effective for providing and sustaining a clinical foundation of conceptual knowledge (3, 11, 12), numerous studies (3, 5, 13-18) have demonstrated that clinical skills decline within several weeks if not applied.

These studies suggested that PALS preparation is insufficient to provide residents with the confidence and abilities to perform pediatric resuscitations successfully. Not unexpectedly, physician confidence to respond correctly to CPA is consistently lower than expected for proficient clinicians (6, 9, 14, 19).

Several programs have demonstrated the effectiveness of mock code programs to improve physician confidence in responding to the need for pediatric resuscitation (9, 20-22), and many have called for the inclusion of mock code programs as adjunct support to formal PALS training in pediatric residency programs (3, 9, 13, 14, 19, 20, 23, 24). Hunt et al (3) demonstrated that simulation-based methods in performing mock codes can be utilized to assess proficiencies in the clinical knowledge, skills, and attitudes in the area of pediatric resuscitation, as well as reveal specific aspects of clinical care and management that require remediation and improvement. Although these findings provide important evidence con-

*See also p. 105.

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Challenges of IP simulation

- Different educational requirements
- Variation in staffing models
- Scheduling challenges
 - Protected educational time
 - Hourly staff
- Traditional interprofessional and intraprofessional hierarchies
- Expensive
- Variation in learning styles
- IP debriefing requires strong facilitation skills
- Assessing and proving return on investment

Successful Interprofessional Simulation

2014, 36: 853-857



TWELVE TIPS

Twelve tips for a successful interprofessional team-based high-fidelity simulation education session

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Abstract

Simulation-based education allows experiential learning without risk to patients. Interprofessional education aims to provide opportunities to different professions for learning how to work effectively together. Interprofessional simulation-based education presents many challenges, including the logistics of setting up the session and providing effective feedback to participants with different backgrounds and mental models. This paper aims to provide educators with a series of practical and pedagogical tips for designing, implementing, assessing, and evaluating a successful interprofessional team-based simulation session. The paper is organized in the sequence that an educator might use in developing an interprofessional simulation-based education session. Collectively, this paper provides guidance from determining interprofessional learning objectives and curricular design to program evaluation. With a better understanding of the concepts and pedagogical methods underlying interprofessional education and simulation, educators will be able to create conditions for a unique educational experience where individuals learn with and from other specialties and professions in a controlled, safe environment.

1. Focus on the ‘interprofessional’
2. Anticipate complex logistical challenges
3. Recruit IP simulation ‘champions’
4. Balance diversity with equity
5. Create scenarios relevant to all professions
6. Be mindful of sociological fidelity
7. Use prebriefing to put all of the professions on the same page
8. Beware of interprofessional debriefing challenges
9. Use simulation within a broader interprofessional curriculum
10. Focus the assessment on the team
11. Support interprofessional simulation educators
12. Use teaching opportunities to foster research

Our Program

- 2010: Hannaford Center for Safety, Innovation and Simulation
- 2015: Hannaford Team Training Facility at Maine Medical Center
- Lack of interprofessional team training at the Barbara Bush Children's Hospital was noted on a site review by the U.S News and World Report
- 2016: Weekly IP simulation sessions started
 - Overseen by an IP steering committee
 - Consistent prebrief
 - Debrief focus:
 - » IP teamwork & communication
 - » Explore systems of care
 - » IP management of a clinical scenario



Real Life Application of the “12 Tips” at MMC

- Multi-disciplinary steering committee led by a nurse and physician
- Focus on interprofessional/collaborative content including nursing, pharmacy, Life Flight of Maine, security and safety, hospital switchboard and care team well being
- Solicit feedback from all professions
- Use of different approaches to support event attendance based on profession
- Attention to sociological and task fidelity
- Pre-briefing and co-debriefing
- Cultivating a broader interprofessional culture
- Opportunity to study our teams



Interprofessional culture

- IP simulation education should be delivered as part of a broader interprofessional education curriculum and within a culture that emphasizes interprofessional collaboration
- Other examples of interprofessional practice could include: interprofessional education sessions, Grand Rounds, Morbidity & Mortality conferences, interprofessional and nursing awards, collaborative quality improvement and quality assurance work



Supporting IP Sim Educators!

- Annual faculty development course
- Protected time for physicians for simulation teaching, curriculum development and research
- Just in time feedback for IP co-debriefing team
- Mentorship of new debriefers
- Sharing facilitation tips
- Integrating subject matter experts (SMEs) in each debrief



Using teaching opportunities to foster research

Factors associated with interprofessional engagement in debriefing following pediatric simulation-based team training

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ABSTRACT

Simulation offers a high fidelity modality to deliver and study team-based interprofessional education. Debriefing the following simulated scenarios is a critical component of this training. Little data exist to inform best practices to optimize interprofessional engagement during debriefing. This pilot study analyzed interprofessional debriefing events following 20 pediatric simulation-based team trainings to identify associations between modifiable factors and learner engagement. Reviewers observed a total of 236 learners, using a previously published tool to assess learner engagement. Data related to the scenario, debriefing, learners, and facilitators were collected. Spearman's correlation was used to analyze the association between factors of interest and average learner engagement scores for each debriefing event. Mean engagement did not differ between physicians and nurses, but was lower for other professionals. Average learner engagement was inversely related to learner group size, but not to the proportion of learners in each profession. Oral participation differed significantly between professions for both learners and co-facilitators, with physicians speaking more in both groups. Students of all professions had lower engagement and spoke less frequently. This study identifies several modifiable factors, including total group size, learner level, and facilitator behavior that were associated with interprofessional engagement during debriefing following simulation-based team training.

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Engagement Across Professions

A Mixed Methods Study of Debriefing After Interprofessional Team Training

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Introduction: Simulation is an ideal tool for interprofessional (IP) team training. Debriefing after simulation is key to IP learning, although engagement and participation may be adversely influenced by cultural and hierarchical barriers. This mixed-methods study explored factors influencing learner engagement and participation in IP debriefing and the experience of "silent but apparently engaged" participants.

Methods: Semistructured profession-specific focus groups were conducted with participants from a weekly IP pediatric simulation program. Focus groups were recorded, transcribed, and thematically analyzed. Eligible participants were assigned to "silent" or "verbal" groups according to observed behavior and received a questionnaire. Participants' self-rated engagement scores were compared using a *t* test.

Results: Thirty-six of 81 eligible participants were included, 13 completed a questionnaire, and 23 (8 physicians, 10 nursing staff, 4 pharmacists, 1 respiratory therapist) participated in 13 focus groups. Twenty-two subthemes were grouped into 6 themes: psychological safety, realism, distractors, stress, group characteristics, and facilitator behavior, with differences in perspective according to profession. Of the 36 respondents, 18 were "silent" and 18 "verbal." Self-rated engagement scores differed between groups (3.65 vs. 4.17, $P = 0.06$); however, "silent" participants described themselves as engaged.

Conclusions: Themes identified that influenced learner engagement in debriefing included aspects of prebriefing and the simulation. Some aligned with general simulation best practices, such as psychological safety, prebriefing, and facilitator behavior. Findings unique to IP simulation included importance of realism to nonphysician professions, protecting time for training, group composition, and direct probing by cofacilitators to decrease physician bias and emphasize IP contributions. Silent participants reported engagement.

[*Sim Healthcare* 00:00–00, 2023]

Key Words: Interprofessional education, debriefing, engagement.

Using Team Training for CBME

- “Competency-based education (CBE) is an approach to preparing physicians for practice that is fundamentally oriented to graduate outcome abilities and organized around competencies derived from an analysis of societal and patient needs. It de-emphasizes time-based training and promises greater accountability, flexibility and learner-centeredness” (Frank et al, 2010)

Perspective

Advancing Competency-Based Medical Education: A Charter for Clinician-Educators

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Abstract

The International Competency-Based Medical Education (ICBME) Collaborators have been working since 2009 to promote understanding of competency-based medical education (CBME) and accelerate its uptake worldwide. This article presents a charter, supported by a literature-based rationale, which is meant to provide a shared mental model of CBME that will serve as a path forward in its widespread implementation.

At a 2013 summit, the ICBME Collaborators laid the groundwork for this charter. Here, the fundamental principles of CBME and professional responsibilities of medical educators in

its implementation process are described. The authors outline three fundamental principles: (1) Medical education must be based on the health needs of the populations served; (2) the primary focus of education and training should be the desired outcomes for learners rather than the structure and process of the educational system; and (3) the formation of a physician should be seamless across the continuum of education, training, and practice.

Building on these principles, medical educators must demonstrate commitment to teaching, assessing, and role modeling the range of

identified competencies. In the clinical setting, they must provide supervision that balances patient safety with the professional development of learners, being transparent with stakeholders about level of supervision needed. They must use effective and efficient assessment strategies and tools for basing transition decisions on competence rather than time in training, empowering learners to be active participants in their learning and assessment. Finally, advancing CBME requires program evaluation and research, faculty development, and a collaborative approach to realize its full potential.

CBME Charter, Fundamental Principles

1. Education must be based on the health needs of the population served
2. The primary focus of education and training should be the desired outcomes for learners rather than the structure and process of the educational system
3. The formation of a physician should be seamless across the continuum of education, training and practice

Works cited

- Andreatta et al. Simulation-based mock codes significantly correlate with improved pediatric patient cardiopulmonary arrest survival rates. [Pediatr Crit Care Med](#). 2011 Jan;12(1):33-8. doi: 10.1097/PCC.0b013e3181e89270.
- Boet S, et al. Twelve tips for a successful interprofessional team-based high-fidelity simulation education session. *Medical Teacher* 2014;36(10):853-857. doi:10.3109/0142159X.2014.923558
- Carraccio C, et al. Advancing Competency-Based Medical Education: A Charter for Clinician-Educators. *Academic Medicine* 2016;91(5): 645-649.
- Cheng A, et al. Co-debriefing for Simulation-based Education. *Simulation in Healthcare* 2015;10(2): 69-75.
- D'amour D, Oandsan I. 2005. Interprofessionality as the field of interprofessional practice and interprofessional education: An emerging concept. *J Interprof Care* 19(S1): 8-20
- Gilfoyle E et al. Improved Clinical Performance and Teamwork of Pediatric Interprofessional Resuscitation Teams With a Simulation-Based Educational Intervention. [Pediatr Crit Care Med](#). 2017 Feb;18(2):e62-e69. doi: 10.1097/PCC.0000000000001025.
- King A, et al. Improving collaboration among medical, nursing and respiratory therapy students through interprofessional simulation. *Journal of Interprofessional Care* 2013;27:269-271. doi:10.3109/13561820.2012.730076
- Kolb DA, Boyatzis RE, Mainemelis C. 2001. Experiential learning theory: Previous research and new directions. *Perspect Think Learn Cognitive Styles* 1:227-247.
- Murphy et al. What is the impact of multidisciplinary team simulation training on team performance and efficiency of patient care? An integrative review. [Australas Emerg Nurs J](#). 2016 Feb;19(1):44-53. doi: 10.1016/j.aenj.2015.10.001. Epub 2015 Nov 21.
- Robertson J, Bandali K. 2008. Bridging the gap: Enhancing interprofessional education using simulation. *J Interprof Care* 22(5): 499-508
- World Health Organization: Framework for Action on Interprofessional Education and Collaborative Practice. Geneva, WHO, 2010. Available at: http://www.who.int/hrh/resources/framework_action/en