Creighton Journal of Interdisciplinary Leadership
Vol. 1, No. 1, May 2015, pp. 60 – 65

SPECIAL REPORT

Support for interdisciplinary approaches in emergency medical services education

William J. Leggio, Jr., Ed.D.[1] & Kenneth J. D'Alessandro, M.S.[2]

[1]*Prince Sultan Bin Abdulaziz College for EMS, Director of Simulated Education, wleggio@ksu.edu.sa*
[2]*Saudi Red Crescent Authority, EMS Adviser, kendalessandro@creighton.edu*

Abstract. This article analyzes the need for Emergency Medical Services (EMS) educational programs and academicians to develop interdisciplinary educational and training opportunities with other healthcare disciplines. A literature review was conducted on EMS education and interdisciplinary approaches in healthcare education. In general, support for both didactic and simulated interdisciplinary education in healthcare is supported by positive impacts on student learning and improved patient outcomes. Support for interdisciplinary approaches in EMS education was constructed by applying research on interdisciplinary healthcare education to the identified criticisms of EMS education. A critical analysis of the literature allowed for recommendations to be made on the implementation of and further research for interdisciplinary approaches in EMS education. This article supports EMS students to be educated in a way that is reflective of a profession that must work collaboratively to provide out-of-hospital healthcare.

Keywords: emergency medical services, paramedic, healthcare education, interdisciplinary, patient safety

Introduction

Emergency Medical Services (EMS) operate at the intersection of public health, public safety, and medicine as a critical component in the United States healthcare and disaster response systems (American College of Emergency Physicians [ACEP], 2013). In this function, the EMS profession serves on the dynamic and often times dangerous front lines of emergency medical care as a vital link in the chain of survival for individuals suffering from an emergent illness or traumatic event (National Highway Traffic Safety Administration [NHTSA], 2011). In doing so, EMS professionals collaborate with a variety of first responders such as police officers and firefighters, and healthcare providers such as nurses and physicians. Logically, this real-world interdisciplinary role of EMS should be reflected in the education and training of EMS providers. The purpose of this article is to explore interdisciplinary healthcare education as a needed approach in EMS education to prepare EMS providers to be part of healthcare teams and serve in diverse roles.

Report

General Support for an Interdisciplinary Approach in Healthcare Education

The Institute of Medicine (IOM) published two reports, *Health professions education: A bridge to quality* (2003) and *To err is human: Building a safer health system* (2000), advocating for an interdisciplinary approach to the education and practice of healthcare providers. Interdisciplinary healthcare education is a response to the alarming number of patient deaths caused by lapses in communication between providers and preventable medical errors (Engum & Jeffries, 2012; Institute of Medicine, 2000, 2003). An interdisciplinary

Creighton Journal of Interdisciplinary Leadership
DOI: http://dx.doi.org/10.17062/CJIL.v1i1.11

approach to healthcare stems from quality improvement and being a better way to prepare healthcare professionals for practice (Engum & Jeffries, 2012). IOM (2003) described interdisciplinary healthcare education as "a group of students from health-related occupations with different educational backgrounds [who] learn and interact together during certain periods of their education in order to collaborate in providing health-related services" (p.79).

The concept of interdisciplinary healthcare education and having students from different disciplines learning to practice together dates back to 1948 in the United States (Singleton & Green-Hernandez, 1998). However, healthcare students are educated in the same isolated way that has been done for years despite claims that healthcare education is evolving (Dufrene, 2012). The isolated approach to healthcare education continues despite different healthcare professions sharing core values, knowledge, and skills (Engum & Jeffries, 2012). The need for interdisciplinary education in healthcare is supported by shared values amongst the different types of healthcare providers and because interdisciplinary practice increases the effectiveness of patient care provided in the clinical arena (Barnett, Hollister, & Hall, 2011; Singleton & Green-Hernandez, 1998).

Interdisciplinary didactic lectures, simulation and clinical teaching modalities have resulted in a greater understanding and appreciation of other professional roles, teamwork, and communication skills (Barnett et al., 2011; Dufrene, 2012). For example, Hope et al. (2005) evaluated the impact of the Downstate Team-Building Initiative (DTBI), where various healthcare students together learned decision-making, conflict mediation, and alliance building across professional positions and cultural identity. DTBI aimed to improve the abilities of future healthcare providers to work together in the delivery of quality care by having each student cohort identify and implement a health-related community project as a team (Hope et al., 2005). DTBI participants reported an increase in the team atmosphere, improved teamwork skills, higher self-confidence, and understanding of the professional functions of the other health disciplines, which yielded the greatest increase of any category tested (Hope et al., 2005).

Hope et al. (2005) described how their findings suggest the rate of progression in understanding teamwork might be more a function of the quality of time spent together rather than specific session topics, emphasizing the importance of providing students with opportunities to practice within interdisciplinary teams with other healthcare students. Barnett et al. (2011) described the interdisciplinary health team as a group of consistent, relevant individuals of different disciplines with interactions directed by a specific purpose and positive patient outcomes. Benefits from an interdisciplinary approach in healthcare delivery have been identified as greater patient satisfaction, better outcomes, cost-effectiveness and increased use of non-physician providers (Barnett et al., 2011; Singleton & Green-Hernandez, 1998).

Hosny, Kamel, El-Wazir, and Gilbert (2013) described the importance of learning about healthcare as a whole rather than a collection of discrete but disjoined actions performed by individual providers. Singleton and Green-Hernandez (1998) suggest early involvement of interdisciplinary education results in more positive professional outcomes, for example a greater understanding of and respect for one another. Others described how interdisciplinary education in healthcare results in a better understanding of one's own role on healthcare teams in addition to increased competence and self-efficacy (Dufrene, 2012; Nishisaki, Keren, & Nadkarni, 2007). These benefits increase professional collaboration and teamwork in healthcare settings (Dufrene, 2012; Nishisaki et al., 2007), which can result in improved patient care (Dufrene, 2012; Singleton & Green-Hernandez, 1998).

The World Health Organization's Department of Human Resources for Health (2010) described how healthcare workers believe they practice collaboratively because they work in a team with other providers, but in reality they individually use their skills to achieve a common goal. Xyrichis and Ream (2007) identified how teamwork was not defined the same across health disciplines. In an attempt to reconcile discrepancies between various healthcare disciplines, Xyrichis and Ream (2007) defined teamwork as:

Creighton Journal of Interdisciplinary Leadership
DOI: http://dx.doi.org/10.17062/CJIL.v1i1.11

> A dynamic process involving two or more health professionals with complementary backgrounds and skills, sharing common health goals and exercising concerted physical and mental effort in assessing, planning, or evaluating patient care. This is accomplished through interdependent collaboration, open communication and shared decision-making. This in turn generates value-added patient, organizational and staff outcomes. (p. 238)

The importance of teamwork in healthcare emerged as one of the most important factors in achieving cost-effective outcomes in various organizational structures (Xyrichis & Ream, 2007). Xyrichis and Ream (2007) described teamwork in healthcare as offering greater adaptability, productivity, and creativity while promoting job satisfaction and staff retention. Establishing healthcare team training programs has been advocated for in the United States as a means of promoting healthcare safety by lowering the levels of medical errors and creating more transparency between disciplines (Barnett et al., 2011; Xyrichis & Ream, 2007). Hope et al. (2005) described how teamwork across health disciplines is crucial to patient care, provider morale, and administrative efficiency. Teamwork education has enhanced student-learning capability, assisted in developing integrative perspectives and skills, improved self-confidence, and garnered a greater appreciation and tolerance of team members (Xyrichis & Ream, 2007).

Developing Clinical and Non-Clinical Skills Through Simulation

Simulated education is one way to deliver teamwork education that provides healthcare students with opportunities to cross disciplines, to develop and appreciate new communication techniques, and to practice psychomotor skills in real time (Engum & Jeffries, 2012). Bradley (2006) defined simulation, "as the technique of imitating the behavior of some situation or process by means of suitably analogous situation or apparatus, especially for the purpose of study or personnel training" (p. 254). Simulation-based training could prepare EMS and other healthcare students to work together in performing interventions with broader skills, such as teamwork, to help make providing patient care under pressure a learned behavior (Leikin, Aitchison, Pettineo, Kharasch & Wang, 2011).

Support for simulated training in healthcare resulted from its use to increase adherence to clinical guidelines, decrease time to develop competence, enhance team performance, and increase skill retention (Brindley, 2009). The long accepted approach to simulated education in healthcare was described as "see one, do one, teach one" (Harder, 2009, p. e169). Changes to this approach have occurred as educators recognize the role of simulation in meeting the needs of healthcare students (Harder, 2009). Simulated education now extends beyond performing psychomotor skills to being able to critically think and learning from the simulation (Harder, 2009).

Interdisciplinary approaches to simulated education allow for students to perfect interventions and patient care in situations likely to be experienced in real-life clinical settings, while being evaluated on healthcare team competencies (Engum & Jeffries, 2012). Clinical simulation is a technique that enables healthcare teams and individuals to learn and train through the creation of a clinical situation (Bradley, 2006). Clinical simulation allows for the creation of patient scenarios based on actual clinical events, which facilitates authentic learning to occur because this approach allows for conceptual knowledge to develop in a setting that reflects reality (Harder, 2009; Bradley, 2006).

Known Challenges To Implementing Interdisciplinary Healthcare Education

Even though interdisciplinary healthcare education appears to better prepare students for the changing healthcare ethos, there are recognized barriers to implementing interdisciplinary healthcare education. Singleton and Green-Hernandez (1998) discussed how faculty could create a barrier by focusing on singular professional identities and roles. Education for each health profession is influenced by that discipline's professional culture, which impact

curricular content and core values, as well as create silos by fostering relationships based on power and hierarchies (Engum & Jeffries, 2012; McNair, 2005).

In addition to these professional cultural influences, elements of the academic institute, such as hierarchy, institutional personality, and unequal allocations of resources serve as potential barriers to interdisciplinary education (Dufrene, 2012; Singleton & Green-Hernandez, 1998). There are additional challenges with scheduling interdisciplinary opportunities because of students and faculty schedules (Barnett et al., 2011; Dufrene, 2012). Singleton and Green-Hernandez (1998) attributed the lack of development and research in interdisciplinary education as another challenge of implementing an interdisciplinary approach in education.

Discussion

The U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA, 2011) described a vision of EMS systems having a sufficient number of well educated and adequately prepared EMS providers in the future. The current, and growing, role of EMS providers is to simultaneously operate as part of public health, public safety, and healthcare systems (ACEP, 2013). It is important to acknowledge and embrace the important interdisciplinary role that EMS has in providing national healthcare and disaster response systems. It is important to consider how additional education on interdisciplinary practice will most likely increase EMS educational requirements beyond the confines of certificate education, which currently focus mostly on EMS medical knowledge and developing necessary interventional skills to practice.

The aim of healthcare education curricula is to teach the knowledge and skills required for practice, but also to immerse students into their future roles (Engum & Jeffries, 2012). Additional educational requirements should consider the real world function of EMS professionals by requiring the education and training to develop the skills necessary to collaborate with other first responders and be part of healthcare teams. A broader based educational approach in EMS would better prepare EMS professionals for more diverse roles (McNeill, 2014). Preparing future EMS professionals to function in diverse roles across disciplines will be best served by an interdisciplinary approach to EMS education.

Furthering EMS education and creating interdisciplinary learning opportunities does not mean a complete rewrite of EMS curricula (Miller, 2014). The creation of an interdisciplinary EMS education program could start with identifying foundational courses shared with nursing and allied healthcare programs. Shared foundational courses would provide opportunities for early involvement of interdisciplinary education in an attempt to develop a shared medical language and understanding amongst healthcare providers. Early introduction of learning together as healthcare professionals would ideally support learning about healthcare as a whole rather than individual and disjoined actions.

An additional opportunity to learn about healthcare as a whole is through healthcare team-based simulation. Simulated medical education and training focuses on creating patient care experiences for healthcare students to learn and practice in a controlled setting that is reflective of reality. The realities of work-related stress and fatigue are familiar to EMS providers (ACEP, 2013). The effects of fatigue in EMS revealed fatigued providers were at 2.2 greater odds of medical errors and adverse events, and 3.6 greater odds of safety-compromising behavior than non-fatigued providers (ACEP, 2013). These risks in EMS practice support the need for interdisciplinary simulated scenarios because of the opportunity to work collaboratively with others to perform interventions and broader skills under pressure as a learned behavior (Leikin et al., 2011). The intended outcomes of these simulations, both under pressure and under normal conditions, should be to increase team efficiency and positively impact patient care provided by student healthcare teams.

Interdisciplinary EMS education programs should include health profession oriented courses, for example healthcare ethics. These courses would develop future EMS

Creighton Journal of Interdisciplinary Leadership
DOI: http://dx.doi.org/10.17062/CJIL.v1i1.11

professionals capable of engaging collaboratively with other healthcare professionals by developing a shared multi-dimensional understanding of healthcare services and systems. These courses would provide opportunities for students from various healthcare disciplines to explore different approaches to the same problems or challenges found in real-world healthcare environments. The intended outcomes of these interactions should be to increase understanding of how different disciplines view and approach the healthcare profession.

Research to identify the best practices for developing interdisciplinary EMS education is needed. Several qualitative, quantitative, and mixed-method approaches could be applied in focused or longitudinal studies to assess the impact of interdisciplinary EMS education. Additionally, pre and post assessments after conducting interdisciplinary education would identify any changes in the understanding of other healthcare professionals or students and impact on self-efficacy and performance when part of a healthcare team.

This report holds practical implications for EMS academicians wanting to develop an interdisciplinary EMS education program. The authors suggest starting with assessing institutional environment and culture, including correlations between interdisciplinary healthcare education and the institute's mission, vision, and values. The institutional assessment should then identify potential challenges such as a fear or resistance to change, personality conflicts, and unequal allocation of resources. Building institutional support for interdisciplinary healthcare education could appear daunting, but it is important to remember the first step is acknowledging the need to evolve educational practices then build support, even if it is one person or course at a time.

Conclusion

The real world function of EMS providers is to provide patient care in dynamic environments and collaborate with other first responders and healthcare providers. The real-world function of EMS and the general direction of healthcare education towards an interdisciplinary approach are strong supporting reasons to develop interdisciplinary education in EMS. The need for interdisciplinary EMS education raises the question of whether a certificate program can adequately cover all required EMS topics and additional interdisciplinary courses. The EMS profession must recognize how interdisciplinary approaches in healthcare education and practice is supported by better teamwork, increased self-efficacy, and most importantly, safer patient care and improved patient outcomes. After all, collaboration and teamwork is how healthcare is provided in actual patient care environments including EMS. Just as other health professions have influenced their discipline's educational requirements, approaches, and content, so must the EMS profession by supporting interdisciplinary approaches when training EMS providers. Simply, an interdisciplinary approach to EMS education would reflect the real-world EMS profession that must work collaboratively with other disciplines.

References

American College of Emergency Physicians. (2013). *Strategy for a national EMS culture of safety*. Retrieved from http://www.emsculturеofsafety.org/wpcontent/uploads/2013/10/strategy-for-a-national-EMS-culture-of-safety-10-03-13.pdf

Barnett, G. V., Hollister, L., & Hall, S. (2011) Use of the standardized patient to clarify interdisciplinary team roles. *Clinical Simulation in Nursing*, *7*(5), e169-e173. doi:10.1016/j.ecns.2010.01.004

Bradley, P. (2006). The history of simulation in medical education and possible future directions. *Medical Education*, *40*(3), 254-262. doi:10.1111/j.365-2929.2006.02394.x

Brindley, P. G. (2009). Medical Simulation: No longer "why" but "how". *Journal of Critical Care*, *24*(1), 153-154. doi:10.1016/j.jcrc.2008.08.013

Department of Human Resources for Health. (2010). *Framework for action on interprofessional education and collaborative practice*. Geneva, Switzerland: World Health Organization. Retrieved from http://whqlibdoc.who.int/hq/2010/WHO_HRH_HPN_10.3_eng.pdf

Dufrene, C. (2012). Health Care Partnerships: A literature review of interdisciplinary education. *Journal of Nursing Education*, *51*(4), 212-216. doi:10.3928/01484834-20120224-01

Engum, S. A., & Jeffries, P. R. (2012). Interdisciplinary collisions: bringing healthcare professionals together. *Collegian*, *19*, 145-151. doi:10.1016/j.colegn.2012.05.005

Harder, N. (2009). Evolution of simulation use in health care education. *Clinical Simulation in Nursing*, *5*(5), e169-e172. doi:10.1016/j.ecns.2009.04.092

Hope, J. M., Lugassy, D., Meyer, R., Jeanty, F., Myers, S., Jones, S., … Mitchell, R., & Cramer, E. (2005). Bringing interdisciplinary and multicultural team building to health care education: The downstate team-building initiative. *Academic Medicine*, *80*(1), 74-83.

Hosny, S., Kamel, M. H., El-Wazir, Y., & Gilbert, J. (2013). Integrating interprofessional education in community-based learning activities: Case study. *Medical Teacher*, *35*, S68-S73. doi:10.3109/0142159X.2013.765550

Institute of Medicine. (2003). Health professions education: A bridge to quality. Washington, DC: National Academy Press.

Institute of Medicine. (2000). To err is human: Building a safer health system. Washington DC: National Academy Press

Leikin, S., Aitchinson, P., Pettineo, M., Kharasch, M., & Wang, E. E. (2011). Simulation applications in emergency medical services. *Disease-a-Month*, *57*(11), 723-733. doi:10.1016/j.disamonth.2011.08.012

McNair, R. (2005). The case for educating healthcare students in professionalism as the core content of interprofessional education. *Medical Education*, *39*(5), 456-464. doi:10.1111/j.1365-2929.2005.02116.x

McNeill, B. A. (2014). Transitions in EMS education: from ambulance attendant to recognized allied health professional. *Domain[3]: National Association of EMS Educators,* 13-14.

Miller, M. (2014). Is the paramedic education model failing its students? *Domain[3]: National Association of EMS Educators,* 8-13.

Nishisaki, A., Keren, R., & Nadkarni, V. (2007). Does simulation improve patient safety? Self-efficacy, competence, operational performance, and patient safety. *Anesthesiology Clinics*, *3*(9), 225-236. doi:10.1016/j.anclin.2007.03.009

Singleton, D., & Green-Hernandez, C. (1998). Interdisciplinary education and practice: Has its time come? *Journal of Nurse-Midwifery*, *43*, 3-7.

U.S. Department of Transportation: National Highway Traffic Safety Administration. (2011). *The Emergency Medical Services Workforce Agenda for the Future*. Retrieved fromhttp://www.ems.gov/pdf/2011/EMS_workforce_agenda_052011.pdf

Xyrichis, A., & Ream, E. (2007). Teamwork: A concept analysis. *Journal of Advanced Nursing*, 61(2), 232-241. doi:10.1111/j.1365-2648.2007.04496.x

Creighton Journal of Interdisciplinary Leadership
DOI: http://dx.doi.org/10.17062/CJIL.v1i1.11