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Guest Editorial

Interprofessionalism between physicians and nurses: Moving forward

Medical education has evolved through the years with the emergence of an emphasis on interprofessionalism to improve multidisciplinary healthcare communication and to enhance collaborative practice, especially among physicians and nurses. Whereas successful stories of physician-nurse collaboration have been linked to positive patient outcomes (Irwin et al., 2012; Manojlovich and deCicco, 2007), poor relationships have been associated with unhealthy work environments and fragmented communication that may jeopardize the quality of patient care (Larson, 1999). In recognition of this, a number of international expert bodies have ushered forth support in the development of policies for interprofessional education (IPE), defined as "occasions when two or more professions learn with, from, and about each other to improve collaboration and quality of care" (Feeth et al., 2005). These groups included the World Health Organization (WHO 2010), the Institute of Medicine (Institute of Medicine, 2003), as well as the Health Council of Canada (Health Council of Canada, 2005). With the recent publication of the *Framework for Action on Interprofessional Education & Collaborative Practice* by the WHO, policy-makers are now equipped with ideas and strategies to shape collaborative practice through educational and curricular mechanisms (WHO, 2010).

An area of focus in academic development has been the expansion of the medical student curriculum, building from the foundation of physician professional development. Despite the ideal of a collaborative atmosphere, the relationship between physicians and nurses has been less than harmonious, even adversarial through the years (Fagin, 1992; Larson, 1999). One thought has been that suboptimal physician-nursing relationships perhaps stemmed from medical student misconceptions of the responsibilities and capabilities of nurses which would gradually progress and carry onto their professional careers (Hall and Weaver, 2001; Nadolski et al., 2006). Yet, interestingly, there have been few studies on the interaction between nurses and medical students until recently. To no surprise, medical students have been found to interact best with residents and worst with nurses, whereas, on the other hand, nurses interacted best with nurses and worst with medical students (Nadolski et al., 2006). Yet, the relationship between physicians and nurses is an interdependent one, with one role complementing the other. Furthermore, with the continuing growth of the healthcare workforce from nurses to occupational and physical therapists, to social workers and pharmacists, information technology can only accomplish so much in the communication of complex patient care. The net result is a farewell to the days of a solo approach to medicine with a preference in team-oriented systems striving for decreased medical errors and improved patient satisfaction.

To address this concern, a number of curricular approaches have surfaced in IPE. According to a recent interview with institutional leaders in the field, the whole purpose of IPE is to achieve a point where team-based care is the norm (Graybeal et al., 2010). This vision has since inspired the convening of an expert panel to identify a core set of collaborative competencies for interprofessional development "that each profession needs to work together with others, such as other specialties within a profession, between professions, with patients and families, with non-professionals and volunteers, within and between organizations, within communicities, and at a broader policy level" (IPEC, 2011). From this meeting, a resulting framework with 38 competencies was identified, divided into four domains (IPEC, 2011):

1. Competency Domain 1: Values/Ethics for Interprofessional Practice
2. Competency Domain 2: Roles/Responsibilities
3. Competency Domain 3: Interprofessional Communication
4. Competency Domain 4: Teams and Teamwork

One curricular approach in IPE is the introduction of simulated learning environments in which medical students collaborate with nursing students (Brashers et al.,

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2012; Carpenter, 1995; Hale et al., 2011; King et al., 2013; Tofil et al., 2014; Worzala et al., 2006). Its aim was to bridge the institutionalized separation between medical school and nursing school and to foster positive attitudes and camaraderie between the different professions. At the end of the intervention, medical students generally agreed in the importance of physician-nurse collaboration and were able to improve their understanding of the roles and responsibilities of nurses (Carpenter, 1995; Worzala et al., 2006). However, when compared to nursing students, medical students generally exhibited less positive attitudes both before and after intervention (Horsborough et al., 2001). In support of this approach, some viewed that early intervention would favor the dissolution of negative conceptions between the differing professions (Hall and Weaver, 2001). However, it has been argued that these interventions might not even be helpful at all if these stereotypes have already been formed (Rudland and Mires, 2005). Other difficulties seen in these simulated learning environments also included less specific teaching with reduced pace and greater time required which can be inefficient as a result. In addition, there were also questions of role blurring with an unclear division of jobs (Rudland and Mires, 2005).

An alternative curricular approach in IPE is a nurse-shadowing system for medical students recently started in a number of institutions (Jain et al., 2012; Mathastein and Klingenberg, 2010; Rosen et al., 2013; Shafran et al., 2015). The exposure-based learning initiative was motivated by studies illustrating poor interactions between medical students and nurses suggesting the lack of educational experiences to advance the goal of improved physician-nurse collaboration (Nadolski et al., 2006). The intervention was introduced to first year (Jain et al., 2012; Rosen et al., 2013) and third/fourth year (Shafran et al., 2015) medical students during which they followed a nurse on a one-on-one shadowing experience. The results showed an increased openness to learning from nurses, an increased knowledge-base about what nurses bring to the team, an increased ability to communicate with nurses, and an overall significantly increased respect for the knowledge and skills of nurses (Jain et al., 2012). The approach was expanded to include other healthcare professions with 90.4% of respondents reporting an improved understanding and an overall clearer demarcation of their roles in the healthcare team (Shafran et al., 2015).

However, both of these IPE interventions are only short-term fixes. To date, there have not been any studies illustrating the long-term implications or consequences in addition to any other lasting effects. Perhaps the next step should be aiming toward a longitudinal curriculum that maintains a level of continuity. As much as physicians and nurses hold continuity of patient care in high regard, so too should medical education. One approach would be the formation of longitudinal multidisciplinary educational teams revolving around nursing students, medical students, residents, nurses, and attendings. As seen in studies in the Pediatric setting, multidisciplinary team training exercises work because they perfect teamwork skills by modifying behaviors and attitudes and overcoming barriers to communication (Daniels and Auguste, 2013; Patterson et al., 2013). Team structure is an important component of interprofessional teamwork (Xyrichis and Lowton, 2008). By centering on varying stages of professional development in each discipline, it allows for a near-peer-assisted learning experience that benefits both the teacher and the learner (Aba, 2015; Owen and Ward-Smith, 2014).

One interesting approach would be to combine elements from these two approaches to create a hybrid system of learning with both simulation exercises as well as interdisciplinary shadowing opportunities. While learning in simulated learning environments has been shown to enhance collaboration among medical and nursing students, how each individual professional role transitions to the overall healthcare team is not entirely clear. This role blurring is due to tasks in simulated learning environments that may overlap with the merging of professions and jobs (Rudland and Mires, 2005). Concurrently introducing an exposure-based model, such as nurse- or physician-shadowing, will immerse the learner in the responsibilities of the other healthcare profession which to date has only been studied in medical students (Jain et al., 2012; Mathastein and Klingenberg, 2010; Rosen et al., 2013; Shafran et al., 2015). A similar experience with nursing students shadowing other healthcare professions has yet to be studied.

Nonetheless, a key component in the development of these curricular interventions is how well they actually perform. To date, there have only been eight proposed formal measures in assessing and evaluating aspects of interprofessional education and interprofessional collaboration (Thannhauser et al., 2010). These include in chronological order:

1. Interprofessional Perceptions Scale (Ducanis and Golin, 1979)
2. Interdisciplinary Education Perception Scale (IEPS) (Luecht et al., 1990; McFadyen et al., 2007)
3. Readiness for Interprofessional Learning Scale (RIPLS) (Parsell and Bligh, 1999; Reid et al., 2006)
4. Multidisciplinary Collaboration Instrument (Carroll, 1999)
5. Index of Interdisiplinary Collaboration (Bronstein, 2002)
6. Role Perceptions Questionaire (Mackay, 2004)
7. University of Western England Interprofessional Questionaire (Pollard et al., 2004)
8. Modified Index of Interdisciplinary Collaboration (Oliver et al., 2007)

Of the eight scales listed, only two have been extensively studied comprising the IEPS (Luecht et al., 1990; McFadyen et al., 2007) and the RIPLS (Parsell and Bligh, 1999; Reid et al., 2006) with limited evidence for the remaining six which have been found lacking in both psychometric properties and in reliability and validity (Thannhauser et al., 2010). Furthermore, there has been a lack of consensus in the number and type of factors critical for interdisciplinary teamwork. More studies will need to be invested in refining these measures.

In summary, a number of advancements have emerged, encouraging a very positive outlook in interprofessionalism