

Interprofessionality: Pathway to a More Sustainable National Healthcare System

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ABSTRACT

Preventable medical errors (PME) is the third leading cause of death in the United States with an incidence range of 210,000 to 400,000 deaths per year and an estimated cost of \$19.5 billion to \$958 billion per year. Despite advances in patient safety, PME persists across the nation. An unmarked extremity, a soft sponge, medication dose, poor communication, ... are possible precursors of PME that may lead to death. Preventable medical errors such as wrong-patient or wrong-site surgery; botched transplants, and death from myocardial infarction or septic shock following a discharge from the emergency department are frequently reported. According to the Institute of Medicine, most PME in the healthcare system are caused by poor team collaboration and care coordination, particularly when patient care was provided by independent providers. Therefore, the healthcare workforce must work within interprofessional teams for safe, cost-effective, and quality care delivery significant to sustainable healthcare reform.

Keywords: Collaborative Practice, Complex Health Problems, Chronic Disease, Health Professions, Interprofessional Education, Institute of Medicine, National Institutes of Health, Preventable Medical Errors

INTRODUCTION

The healthcare system is like an orchestra. The orchestra combines instruments from different families which are unified by a set tempo that shapes the sound of the ensemble. These instruments must be in sync to produce the harmonious and satisfying sound that offers the patron an opportunity to experience the power and passion of classical music.

Preventable medical errors (PME) is the third leading cause of death in the United States (US) (Makary & Daniel, 2016; Robertson & Long, 2018) with an incidence range of 210,000 to 400,000 deaths per year (Andel, Davidow, Hollander, & Moreno, 2012; James, 2013; Makary & Daniel, 2016). The cost of PME is estimated at \$19.5 billion to \$958 billion per year (Patient Safety Movement, n.d). Despite advances in patient safety, PME persists across the nation.

An unmarked extremity, a soft sponge, medication dose, poor communication are possible precursors of PME that lead to patient injuries or death. Preventable medical errors that are frequently reported include: wrong-patient or wrong-site surgery; botched transplants, and death from myocardial infarction or septic shock following a discharge from the emergency department (Wachter & Gupta, 2019). According to a multicenter study led by researchers from Boston Children's Hospital (Starmer et al., 2014), poor communication and hand-off errors are the most reported PME in hospitals across the US. Starmer et al., (2014) reported a relationship between communication, hand-offs, and PME. Hence PME decreased by 30 percent if improvements were made in verbal and written communication between healthcare providers during patient hand-offs. Similarly, PME decreased in the operating room through the use of

‘time-outs’ - when a procedure can be interrupted to confirm patient identification and surgical site selection (Altpeter et al., 2007).

Preventing PME has become the responsibility of the entire healthcare team. According to the Institute of Medicine (Wakefield, 2000), most PME in the healthcare system are caused by poor team collaboration and care coordination, particularly when patient care was provided by independent providers (Wakefield, 2000). Hence, effective collaborative interprofessional teamwork may serve to avoid and mitigate medical errors (Thomas, Sherwood, & Helmreich, 2003).

The healthcare industry looked toward aviation to determine how teamwork was instilled in the crew members to similarly inform healthcare teams. Following the tragic collision of two 747s on a foggy morning in Tenerife and other similar accidents, aviation began a series of training programs, generally called “crew resource management” or “cockpit resource management” programs, designed to train diverse crews in communication and teamwork (Wachter & Gupta, 2019). Some of the training programs utilized the Situation, Background, Assessment, and Recommendations (SBAR) technique - commonly used in healthcare - for communication strategies and briefing/debriefing techniques (Wachter & Gupta, 2019). The aviation industry acknowledged that these communication and teamwork-based programs were in large part responsible for improving the culture of aviation and the remarkable safety record of commercial airlines over the years (Wachter & Gupta, 2019). The dynamics of the airplane cockpit are similar to those of the operating room. Therefore, operating room services were selected to pilot-test the aviation model of safety training in healthcare (Rivers, Swain, & Nixon, 2003).

The experience of teamwork and crew members in the aviation industry has substantiated the need for teamwork and a focus on improving safe and quality patient care within the healthcare system. Healthcare providers must train and work within interprofessional teams for safe and quality care delivery to patients. However, current healthcare professions' curricula are lacking with regards to interprofessionality. Traditional curricula do not address the necessary interprofessional aspects that equip learners with the tools they need to provide optimally safe and quality care (Alper, Rosenberg, O'Brien, Fischer, & Durning, 2009; Thom, 2016). Hence, the on-going reform of the healthcare system is warranted.

According to Berwick et al. (2008), the current healthcare system is broken. Berwick et al. reported that the most powerful team members: patients, family members, and community partners are not asked to be on the healthcare team. There is no consciousness of interaction among healthcare professionals and healthcare professions students; and there is little awareness of interdependence among the healthcare professions and the healthcare workforce. Consequently, healthcare delivery systems and education systems are fragmented. This lack of coordination produces inadequate quality of care and high cost of healthcare that results in tremendous suffering among patients, families, and the society in general. Hence, the urgent need for healthcare reform (Berwick et al., 2008; Healthcare Reform Roundtable [Part I], 2009; Emanuel & Orszag, 2010) that is founded on the principles of interprofessionality and collaborative practice across health professions and other disciplines. According to D'amour and Oandasan (2005), interprofessionality is a response to the realities of the fragmentation within the US healthcare system. It is the "process by which professionals reflect on and develop ways of practicing that provides an integrated and cohesive answer to the needs of the client, family or the population" (p.9). This process involves professionals from diverse disciplines who gather to:

reconcile their differences and opposing views, establish shared goals, and address patient care issues to optimize care.

Increasingly, there is growing recognition that complex public health problems require interprofessional solutions (Lakhani, Benzies, & Hayden, 2012; Lee, McDonald, Anderson, & Tarczy-Hornoch, 2009). Leading research funding agencies in the US including the National Institutes of Health (NIH) require researchers from different professions or disciplines working together in interprofessional teams to produce effective and sustained solutions to myriad of complex and multifaceted health care problems (Nagarajan, Kalinka, & Hogan, 2013). Yet, most models of research training for health professions students at both undergraduate and graduate levels still operate in silos (Little et al., 2017) – which hinders preparation of a collaborative practice-ready biomedical or biobehavioral research workforce (World Health Organization [WHO], 2010). We need an interprofessional and collaborative research workforce for the effective generation of knowledge to advance population health, reduce healthcare costs, and patient health-related outcomes (Little et al., 2017; Nelson-Brantley & Warshawsky, 2018). This chapter aims to present the current state of interprofessional education (IPE), interprofessional collaborative practice (IPCP), and collaborative research training, challenges, solutions, and future and emerging trends for the way forward.

BACKGROUND

The Institute of Medicine ([IOM], 2001) examined the state of the current US healthcare system and identified strategies to achieve substantial improvements in the quality of healthcare. In the report (2001), IOM recognized the benefits of IPE and recommended that training for health professions students should be redesigned to include more opportunities for

interprofessional training (Institute of Medicine, 2001). Further, in an address at the 2011 annual meeting of the American Psychology Association, Rozensky (2012) emphasized the importance of interprofessional education and collaborative practice (IPECP) towards the delivery of cost effective and quality healthcare.

Following the IOM report (2001), synergistic efforts have emerged among academic educators, health professions students, and healthcare providers to increase awareness and understanding of IPECP (Retchin, 2008; Zwarenstein, Goldman, & Reeves, 2009; Kirsh, Schaub, & Aron, 2009; Khan, Louie, Reicherter, & Roberts, 2016). In another IOM report (2015), three major barriers to the advancement of IPECP were identified which includes: 1) misalignment between education and health delivery systems; 2) lack of a conceptual model that provides a common taxonomy and framework to guide studies that examine the influence of IPE on systems outcomes; and 3) scarcity of research that examine associations of IPECP and patient, population, and health system outcomes. Additionally, the IOM (2015) developed the interprofessional learning continuum (IPLC) model to guide IPE evaluation from education to practice and health and systems outcomes. Although this model can be adapted in multiple settings, the model has not been empirically tested (IOM, 2015). Creating innovative strategies to address these barriers will provide the evidence that funders and policy makers require to support a redesign of the US healthcare system (Cox, Cuff, Brandt, Reeves, & Zierler, 2016).

Consistent with the WHO framework on IPE (2010), investigators including Little and colleagues (2017) agree that interprofessional collaborative research practice occurs when practitioners from more than one health profession engage in scientific inquiry to jointly create and disseminate new knowledge to health professionals in order to provide the highest quality of care to improve patient-level and population-level health outcomes (p.15). Although,

interprofessional collaborative research practice is widely implemented, interprofessional collaborative research training for students at all educational levels has lagged behind (Interprofessional Education Collaborative [IPEC] Expert Panel, 2011; Little et al., 2017). Yet, NIH - the nation's leading authority on health research funding - requires and funds research studies conducted by interprofessional collaborative research teams. While some researchers without formal interprofessional collaborative research training might be able to figure out how to function, a workforce trained through IPE is more likely to work better in teams to deliver better health outcomes to the patient populations served (Green & Johnson, 2015; IPEC Expert Panel, 2011). Potential barriers to interprofessional collaborative research training may include lack of knowledge of effective models of training (Lutfiyya et al., 2019) and challenges inherent in collaborative process. Collaborative process may be hindered by differences in health professions' (e.g., medicine and nursing) unique knowledge and skills for managing patients' health care problems; differences in hierarchy and knowledge generation, and available resources among different professions (Green & Johnson, 2015; Little et al., 2017). Therefore, different health professionals must have not only mutual respect for one another's professions but also work cooperatively and transparently to foster equitable sharing of responsibilities and decision-making (Bridges et al., 2011; Hall, 2005). The next section of the chapter will focus on solutions and recommendations in dealing with issues related to interprofessionality in education, clinical practice, and research in addition to future and emerging trends for the way forward.

MAIN FOCUS OF THE CHAPTER

Interprofessionality and Education

Interprofessional education and collaborative practice (IPECP) encompasses IPE and interprofessional collaborative practice (IPCP). Interprofessional education occurs when individuals from multiple professions learn about, from, and with each other to enable effective collaborative interactions that may improve health outcomes. Interprofessional education involves initiatives and structured interprofessional educational activities that impact learner outcomes (D'amour & Oandasan, 2005; Levett-Jones et al., 2018). Interprofessional collaborative practice involves healthcare professionals working together to improve the quality and safety of patient care using complementary knowledge and skills with respect for each other's expertise (Rogers et al., 2017). Ultimately, the goal is to enhance patient outcomes; however, the opportunity for collaborative practice depends on the team members' ability to bond, mutually trust one another, and understand each other's role in patient care. Consequently, collaborators must know each other's educational model, professional cultural values, and roles and responsibilities (D'amour & Oandasan, 2005) in providing care to patients in acute and primary care settings.

With on-going developments to redesign primary care, US health systems and institutions of higher learning are challenged in educating students in the classroom, simulations, and clinical settings in ways that may release collaborative-minded healthcare professionals into the workforce. The majority of the current healthcare workforce were trained in silos. Consequently, many healthcare providers may lack the skills required to practice in an interprofessional, team-based environment. To develop interprofessional team-based health professionals, a paradigm shift is imperative to generate collaborative team-based characteristics among health professions students as well as healthcare providers. A workforce prepared to function in a collaborative team-model emerges from IPE training experiences (Green & Johnson,

2015).

To further advance IPECP in the US, accreditation bodies for the health professions programs have developed accepted standards for curricula in medicine, nursing, . . . , and pharmacy programs. For example, undergraduate nursing curricula elements for IPE have been clearly stated in The Essentials of Baccalaureate Education for Professional Nursing Practice which stated that “...interprofessional education enables the baccalaureate graduate to enter the workplace with baseline competencies and confidence for interactions and communication skills, that will improve practice, thus yielding better patient outcomes . . . interprofessional education optimizes opportunities for the development of respect and trust for other members of the healthcare team” (American Association of Colleges of Nursing, p. 22, 2008). Given that the elements of IPECP curriculum in nursing have been provided and that many nursing programs have implemented this IPECP as a pedagogical approach, it is pertinent that studies are conducted that evaluate IPECP programs across the US education and health systems.

Issues Related to Education. Research has indicated that challenges to the systemic integration of IPECP include: 1) absence of evidence base regarding the specific interprofessional education and training for all learners (Lutfiyya et al., 2016; Cox, Cuff, Brandt, Reeves & Zierler, 2016); 2) identifying facilities where interprofessional clinical competencies and learning objectives can be achieved and the tools for assessing site readiness (Gilligan, Outram, & Levett-Jones, 2014); 3) healthcare workforce planning disconnected from an interprofessional team-based orientation; differences in accreditation requirements and competencies across the health professions (Schuetz, Mann, & Everett, 2010); 4) ill-prepared faculty members being assigned to deliver interprofessional curriculum (Hall & Zierler, 2015); and 5) identifying the best approaches for implementing IPECP during workforce training and

the expected outcomes that should be achieved (Reeves, Perrier, Goldman, Freeth, & Zwarenstein, 2013).

Major barriers encountered in IPECP are the existence of silos, prevalent stereotypes and minimal interaction among the health professions (D'amour & Oandasan, 2005; Berwick et al., 2008; Schuetz, Mann, & Everett, 2010; Gilligan et al., 2014). Health professions students receive profession-specific training and have the tendency to practice in silos. For example, inadequate interaction between: 1) students of the health professions and 2) students of the health professions and students of other disciplines (Meleis, 2016).

Interprofessionality and Clinical Practice

According to Green and Johnson (2015), IPCP is the future for delivering quality healthcare in the US, specifically, in the management of chronic diseases such as asthma, type 2 diabetes, cardiovascular disease, hypertension, mood disorders and other complex health conditions. The expectation is that team members in IPCP must be well informed and effective when collaborating in practice to improve clinical outcomes.

Issues Related to Clinical Practice. The management of chronic diseases and complex health conditions require a variety of health services. However, health professionals encounter difficulties when collaborating in delivering care. The barriers are related to “imbalances of authority, limited understanding of others’ roles and responsibilities, and professional boundary friction” (Reeves, Pelone, Harrison, Goldman, & Zwarenstein, 2017, p.7).

The task of creating an efficient standard IPCP model for the US healthcare system is an on-going process. The use of IPCP among innovative healthcare systems has increased over the last decade via a variety of models, most notably in chronic disease management (Southerland,

Webster-Cyriaque, Bednarsh, & Mouton, 2016). The Chronic Care Model (CCM) is the most well-known model in chronic disease management which was designed to transform acute and reactive care to proactive, planned, and population-based care (Wagner, 1998). However, Cherry Health and *CHI Health* are two emerging IPCP CCM models with outcome data to support their roles in IPCP care.

Cherry Health. This Federally Qualified Health Center (FQHC) was established in 1988. It is the largest independent, non-profit FQHC system in the state of Michigan serving seven counties in more than 20 locations. Cherry Health clinics provide services that include: primary care, women's health, pediatrics, dental, vision, behavioral health, mental health, correctional health, five school-based health centers and employee assistance for employers (Hardin, Kilian, & Spykerman, 2017). The *Cherry Health Durham Clinic* (CHDC), created a high-need, high frequency patient integrated primary care model. Patients receive services in one location from all team members with a primary focus of providing high quality healthcare services to those who have little or no access to healthcare, regardless of income or insurance status. The CHDC incorporates care with a primary care physician, physician assistant, psychiatrist, nurses, health coaches, and supports coordinator in one office (Hardin, Kilian, & Spykerman, 2017).

In 2012, CHDC and *Mercy Health Saint Mary's* (MHSM) decided to investigate an inter-organizational collaborative practice between the healthcare systems to improve patient outcomes and quality of patient care, to reduce healthcare costs while improving clinical outcomes, and to address fragmentation in the patients' plans of care contributing to patterns of high utilization (Hardin, Kilian, & Spykerman, 2017). The inter-organizational collaborative practice had 19 patients with 396 hospital visits (emergency department [ED]; Inpatient [IP]; and outpatient) during the 12 months prior to the intervention. The outcomes of the inter-

organizational collaborative practice 12 months post-intervention included a decrease in: average ED visits by 28%; IP admissions by 50%; length of stay days by 49%; computerized axial tomography scans by 67%; gross charges in the population by 51%; and direct expenses by 54%. Despite decrease in hospital visits, operating margin increased by \$84,774, representing a 71% increase in operating margin (Hardin, Kilian, & Spykerman, 2017).

CHI Health. In 2017, *CHI Health - Creighton University Medical Center – University Campus* re-opened its doors as an IPCP ambulatory care clinic (ACC) located in a family medicine residency and faculty practice at a new ACC (Guck et al., 2019). The IPCP clinic serves high-risk patients by integrating family medicine, pediatrics, women’s health, psychiatry, pharmacy, and physical therapy in a one-stop location (Creighton University, 2017). To integrate the IPCP team with each other, the team attended three conflict engagement sessions before and after opening; the team attends daily huddles before morning and afternoon clinic; teamlets collaborate on patient care throughout the day; and all ACC patients are introduced to the IPCP team with handoffs from the primary care physician or medical assistant (Creighton University, 2017).

The patient outcomes and costs for the IPCP ACC were compared before the clinic opened in 2016 and after it opened as an IPCP ACC in 2017. The outcomes included a decrease of: 16.7% in ED visits; 17.7% in hospital visits; and a decrease of 0.8% in patients’ hemoglobin A_{1C} levels. Total patient charges decreased from \$18,491 to \$9,572 representing a 48.2% decrease in total patient charges (Creighton University, 2017).

Further, two hospital-based models awaiting final outcomes provide IPCP clinical education experiences for health professions students. The models are: 1) The Vanderbilt Program in Interprofessional Learning (VPIL) which is a longitudinal continuity experience

for health professions students assigned to a clinic for two years and 2) The Veterans Health Administration Patient Aligned Care Team (VHA-PACT) which is a provider and health professions students model designed to promote patient-centric care in a variety of clinical services (Vanderbilt University, 2019; VHA, 2019).

The VPIL Clinic. This is a model for health professions students from five universities in the middle Tennessee region. This model includes students from nursing, medicine, pharmacy, and social work who spend one half-day per week in either clinics or classroom settings working in interprofessional teams. The clinic provides one half-day each week for students to deliver care to a panel of patients under the supervision of multi-professional attending providers. As the learners advance in their pre-licensure program, their clinic roles also advance and differentiate. Learners also provide a breadth of services to their patients including health coaching and medication counseling. The learners also have the opportunity to arrange for laboratory and imaging studies, contact consultants, and access community resources, when necessary. In addition, one half-day each month the teams meet for a variety of classroom-based activities. Teams have the opportunity to debrief using reflective exercises, assess team performances, and review patient outcomes and ongoing needs. The ultimate goal for the experience is to prepare health professions students for a collaborative-practice-ready workforce (Vanderbilt University, 2019).

The VHA-PACT. In this model, transformation begins with primary care and permeates into other areas of the health care system to include specialty care, women's health care, and geriatrics. The PACT focuses on partnerships with veterans, access to care using diverse methods, coordinated care among team members, and team-based care, with Veterans at the center of the team. The PACT considers all aspects of the veterans' health, with an emphasis

on prevention and health promotion through a team-based collaboration with all providers and learners. The PACT members have defined roles with a focus on forging trusted personal relationships with the veterans (VHA, 2019).

As IPCP models evolve, the US health care systems and institutions of higher learning must; 1) partner to develop new educational environments for IPECP; 2) share new ideas and novel innovations in practice designs; and 3) partner to generate evidence-based knowledge for IPECP via research (Earnest & Brandt, 2014).

Interprofessionality and Research

Issues Related to Research. Although there are funded research training programs, most are traditionally limited to a single profession. One example is the National Research Service Awards (NRSA), which is funded by several institutes within NIH including National Institute of Nursing Research (NINR). The National Institute of Nursing Research, grants the Ruth Kirschstein Research Service Award to institutions or individual pre-doctoral or post-doctoral students or fellows (NIH, n.d.). Fellows include one-profession group, in this case nursing only. Fellows meet together regularly with their program directors for seminars. Fellows are expected to have a health or health-related non-nursing mentor. However, there is no expectation to train together with students from other professions. Yet, as a future biomedical or biobehavioral research workforce, they are expected to conduct interprofessional research projects. This is a missed opportunity for preparation of a collaborative practice-ready research workforce (World Health Organization [WHO], 2010). Hence, the need for an interprofessional and collaborative research workforce for the effective generation of knowledge to advance population health, reduce healthcare costs, and improve patient health-related outcomes (Little et al., 2017; Nelson-

Brantley & Warshawsky, 2018).

SOLUTIONS AND RECOMMENDATIONS

Despite the challenges, creative strategies that target adequate implementation of IPECP continue to emerge. These strategies include: extracurricular activities that involve informal social interaction that will help break down the preconceptions, stereotypes, and silos of the health professions; scheduling and provision of co-curricular activities that involve actual intellectual interaction among interprofessional students in lectures and simulations, and clinical settings; initiatives that necessitate healthcare professionals interacting with one another in new ways that may improve patient outcomes (Gordon, Lasater, Brunett, & Dieckmann, 2015; Lutfiyya et al., 2016).

According to Meleis (2016), it is well documented in the literature that medicine as a discipline claims hierarchical supremacy over other healthcare professions. Consequently, we must be reminded that effective teams: 1) respect and complement each other with no privilege or feelings of supremacy; 2) set common goals and work together to achieve the goals; and 3) provide joint solutions that improve patient outcomes. The success of IPECP is anchored on the effectiveness of individual team members and their collective capacities (Meleis, 2016). Hence, health professions students must actively interact with peers by getting involved in interprofessional co-curricular and extracurricular activities.

One example of an extracurricular activity is the Institute for Healthcare Improvement (IHI) Open School chapters at US university campuses and other countries. The IHI Open School chapter is an interprofessional student organization committed to improving healthcare

quality. In this organization, health professions students work with peers and faculty advisors across the health professions on health-related student-driven projects and may present their projects at IHI conferences. Students in this IHI club learn specialized skills in team building and organizing for change that may empower them to become performance improvement leaders in team-based environments.

Given the advancement of IPECP and interprofessional collaborative research at US universities and health systems, complementary efforts to improve the K-12 curricula are needed such that K-12 students begin to develop team characteristics prior to attending college. To guide K-12 students towards learning team characteristics, pedagogical approaches that highlight the essential roles of the community, peers, families, and teachers as part of a child's social development (Powers & de Waters, 2004; Papatheodorou & Moyles, 2008) must be strongly emphasized in K-12 curricula. Students who learn the basics of teamwork prior to college may be better prepared for the post-secondary IPECP curricula.

Students trained using interprofessional models of research are more likely to become interprofessional team members (IOM, 2001). Models used in IPE broadly could be adapted to fit interprofessional collaborative research training specifically. Collaboration is a long-term process and requires investment. Therefore, the organizational cultures and leadership across stakeholder groups have to invest and commit to formational relationships, nurturing it both in principle and in resources (Green & Johnson, 2015). This includes providing necessary training for faculty involved; making the necessary changes in content and conduct of health research training to pre- and postdoctoral fellows. These investments and commitments will lead to a cadre of interprofessional collaborative practice-ready researchers who will work with not only one another but also patient populations served (WHO, 2010; Bridges et al., 2011).

FUTURE RESEARCH DIRECTIONS

Few available studies show promise that interprofessional health care teams can make significant and meaningful contributions to improvement of patient and population health outcomes and to the redesign of the US health care delivery system (Lutfiyya, Brandt, & Cerra, 2016; Lutfiyya et al., 2019; Nelson-Brantley & Warshawsky, 2018). However, there is need for more evidence that explicitly map IPE and CP training to the outcomes of improved population health, reduced healthcare costs, and are patient health-related; and better linkage between health professions education or training and practice (Gilbert, 2013; Lutfiyya et al., 2016; Lutfiyya et al., 2019). Compared to IPECP broadly, interprofessional collaborative research training lags behind in its implementation; and as such, there is a paucity of evaluation research. Future research directions may focus on several questions: (1) what are the specific training requirements and competencies for interprofessional collaborative research training for students and faculty educators alike (Bridges et al., 2011; Lutfiyya et al., 2016; Paradis, & Whitehead, 2018)? (2) What are requisite curricular mechanisms (i.e., logistics and scheduling, program content, compulsory attendance, shared objectives, learning principles, and contextual learning), [WHO, 2010]? (3) How should health profession teams be constituted to achieve desired health-related outcomes (Lutfiyya et al., 2016)? (4) What is the effect of interprofessional collaborative research training on practice and outcomes of improved population health and reduced health care costs; and how to measure these outcomes (Lutfiyya et al., 2016)?

CONCLUSION

There is a paucity of IPE activities for health professions students training for research. IPE activities need to be threaded across all dimensions of research training for undergraduate and graduate or pre- and post-doctoral students at all educational levels in order to develop a collaborative practice-ready biomedical and biobehavioral research workforce. We need interprofessional collaborative research workforce to jointly create and disseminate new knowledge to health professionals in order to provide the highest quality of patient care to improve patient-level and population-level health outcomes. Hence, an urgent need for increased IPECP scientific conferences across the US to: build capacity for all stakeholders (students, educators, clinicians, patients, families, communities, and researchers) and disseminate models of excellence that 1) improve access to care, 2) decrease costs, and 3) improve quality of care.

Healthcare reform will be accelerated once the inseparable link between interprofessional education, interprofessional collaborative practice, and research is adequately addressed by all stakeholders. New or redesigned models of care will lose value without a workforce that is versatile in knowledge and skills that would effectively coordinate the implementation of the models. Regardless of the model of care, the US is long overdue for a coordinated health care system in which IPECP is adequately implemented among educators, practitioners, researchers, and policy-makers at all levels of the health system. Finally, to achieve a sustainable healthcare reform, the educational, social, and health systems must establish a shared goal that recognizes patients, families, and communities as partners in the delivery of care.

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ADDITIONAL READING

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KEY TERMS AND DEFINITIONS

Chronic Disease/Chronic Condition: A health condition that has one or more of the following characteristics: permanent; leaves lingering disability; non-reversible pathological condition.

Collaboration: Collaboration implies two or more individuals working together for a desired outcome or goal. For this chapter, that goal is oriented toward improved patient health outcomes through a team-based approach to care.

Collaborative Research Practice: Occurs when researchers from more than one health-related profession engage in scientific inquiry to jointly create and disseminate new knowledge to clinical and research health professionals in order to provide the highest quality of patient care to improve population health outcomes.

Complex Chronic Disease/Complex Chronic Condition: Refers to a health condition that has one or more chronic diseases and one or more of the following characteristics: permanent; leaves lingering disability; non-reversible pathological condition; co-exists with a psychological illness.

Health Professions Students: Health professions students are learners from healthcare disciplines, e.g. dentistry, nursing, nutrition, medicine, pharmacy, physical therapy, radiology, health information management, and social work.

Interdisciplinary Research: Research that cuts across the disciplines and fosters the integration of ideas.

Interprofessional And Interdisciplinary Research Collaboration: Occurs when researchers from more than one profession or discipline work together to achieve the common goal of producing new scientific.

Interprofessional Collaborative Practice: Occurs when multiple health workers from different professional backgrounds work together with patients, families, caregivers and communities to deliver the highest quality of care.

Interprofessional Education: Occurs when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes. Once students understand how to work interprofessionally, they are ready to enter the workplace as a member of the collaborative practice team.

Simulation: A pedagogical approach tailored to realistic scenarios in a safe, controlled environment for learners to demonstrate their knowledge and practice the learned skills without consequences of their actions.