Toward a system where workforce planning and interprofessional practice and education are designed around patients and populations not professions

Erin Fraher^a and Barbara Brandt^b

^aDepartment of Family Medicine and Deputy Director for Policy, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA; ^bNational Center for Interprofessional Practice and Education, Academic Health Center, University of Minnesota, Minneapolis, MN, USA

ABSTRACT

Traditional workforce planning methodologies and interprofessional education (IPE) approaches will not address the significant challenges facing health care systems seeking to integrate services, eliminate waste and meet rising demand within fixed or shrinking budgets. This article describes how New Zealand's workforce planning approach could be used as a model by other countries to move toward needs-based, interprofessional workforce planning. Such an approach requires a paradigm shift to reframe health workforce planning away from a focus on shortages toward assessing how to more effectively deploy and retrain the existing workforce; away from silo-based workforce projection models toward methodologies that recognize professions' overlapping scopes of practice; and away from a focus on traditional health professions toward including both health and social care workers. We propose that IPE must develop new models of learning that are delivered in the context of practice. This will require a shift from today's predominant focus on preparing students in the pipeline to be collaboration-ready to designing clinical practice environments that support continuous learning that benefits not just learners, but patients, populations, and providers as well. We highlight the need for improved data and methods to evaluate IPE and call for better collaboration between health workforce planners and IPE stakeholders.

ARTICLE HISTORY

Received 15 December 2017
Revised 30 November 2018
Accepted 20 December 2018

KEYWORDS

Interprofessional education;
interprofessional
collaborative practice;
workforce planning;
international; New Zealand;
new models of care

Introduction

Across the globe, new delivery and payment models are rapidly transforming the way that health care is organized, paid for and delivered. Hospitals, health systems, and community-based practices are experimenting with ways to improve population health, enhance patient and provider experience, and lower costs (Berwick, Nolan, & Whittington, 2008; Bodenheimer & Sinsky, 2014; Frenk et al., 2010). Less attention has been paid to aligning the workforce and education systems to meet the needs of evolving health care systems which may be one reason that new payment and care delivery models are not demonstrating expected, and hoped for, outcomes in terms of increased quality and lower costs (McWilliams, 2016; Sinaiko et al., 2017).

With few exceptions (Birch et al., 2009; Tomblin Murphy et al., 2012), workforce planning efforts in many countries have taken a supply-side approach that asks "how many doctors, nurses or other health professions do we need?" Even in countries where workforce planning has taken a more demand-side approach aimed at meeting population health needs, policy levers generally are targeted toward supply-side interventions designed to increase the number of providers. For example, England recently announced the creation of five new medical schools, representing a 25% expansion in medical student positions (Rimmer, 2018). Efforts are also underway in England to expand the number of physician associate/physician assistant

training positions (Aiello & Roberts, 2017). Whether these expansions will address workforce shortages in primary and acute care remains uncertain. Supply-side workforce investments often do not have the intended effect as England discovered in 2017 when they tried to increase the number of nurses in training by removing National Health Service (NHS) funding for nursing education. The hope was that universities, which set their own fees and generate income from nursing courses, would increase the number of nurses in training. This increase was not realized; and fewer older nurses, who typically fill mental health and community nursing positions where shortages exist, were accepted into training (Maguire, 2018).

Some countries, including New Zealand, have taken a needs-based approach that focuses not simply on increasing the supply of new workers but on redesigning professional roles, regulation, education and practice to meet evolving health care requirements (Gorman, 2010, 2013, 2015). This approach recognizes that aligning workforce supply with patient and population health needs requires an increased focus on retooling the existing workforce so that actively practicing health professionals gain the knowledge, skills and attitudes needed to work in teams in new models of care. The focus on preparing health professionals to work in teams while concurrently retooling the workforce has led to a renewed, global interest in the not-so-new concept of interprofessional education (IPE) and interprofessional, collaborative practice (IPCP) (World Health Organization, 2010).

Early pioneers in the 1960s and 1970s envisioned IPE/IPCP not only as a better way to educate students for practice in teams but also as a mechanism to maximize the contributions of all health professionals for better patient care (Institute of Medicine, 1972; McCreary, 1964). Contemporary attention on workforce redesign has the potential to bring IPE/IPCP full circle to reconnect with its early vision.

Increased collaboration between workforce planners and interprofessional educators, two groups that rarely work together, is a key component to achieve this vision. The workforce planning field is struggling to overcome traditional methods that “count noses” and focus on shortages. At the same time, IPE is struggling with a long history of efforts that have resulted in limited “real change” and suspicions that the current attention on IPE is yet another educational fad destined to fail. Sticking with the well-worn and separate paths of workforce planning and IPE/IPCP has significant consequences for people’s health, the well-being of current and future health professionals, and the financial viability of the education and health care systems. Despite differing payment systems, most health care systems are facing increased pressures to consolidate services, eliminate waste and provide more services within fixed or shrinking budgets.

The article begins with a description of how New Zealand’s workforce planning approach could be used as a model by other countries as they identify ways to redesign education, regulation and practice to move toward needs-based, interprofessional workforce planning. We suggest that this approach requires a paradigm shift to reframe health workforce planning away from a focus on shortages toward assessing how to more effectively deploy and retrain the existing workforce. This shift is away from silo-based analyses of workforce needs toward recognizing that different professional groups have flexible, dynamic and overlapping scopes of practice, and away from a focus on planning only for traditional health professions like nurses and physicians toward including workers employed in both health and social care. We propose that IPE/IPCP needs to shift from today’s predominant focus on students in the pipeline (Institute of Medicine, 2015) to designing clinical practice environments to support continuous learning that benefits not just learners, but patients, populations, and providers as well. We discuss the need for rigorous data collection and improved methods to evaluate IPE/IPCP and conclude by highlighting the imperative for better collaboration between health workforce planners and IPE/IPCP stakeholders.

Why New Zealand?

At first glance, an island nation with just 4.5 million people seems an unlikely place to look for expertise about reconfiguring the health workforce (Bowser, Reed, & Fraher, 2015). Yet New Zealand’s efforts to design care around the populations’ need for health services provides a valuable model. Between 2010 and 2014, New Zealand developed a series of work service forecasts (WSFs) aimed at reconfiguring the workforce to meet a doubling of demand with a 40% increase in funding and constant (or improved) patient satisfaction. The forecasts identify the future workforce needed to deliver patient care for 10 types of health

care services, including aged care, anesthesia, dermatology, diabetes, eye health, gastroenterology, mental health and addiction, musculoskeletal care, palliative care, and rehabilitation. Four workforce service forecasts are aimed at addressing the health needs of populations including the elderly; the Māori (NZ’s largest minority population); Pacific peoples; and mothers and babies and youth. New Zealand’s WSFs are clinician-led and engage patients, health professionals and workforce planners in thinking about how care pathways should be redesigned *instead of retrofitting care to meet the competencies and roles of the existing workforce*.

Many of the WSFs recommended not only task-shifting within the existing workforce but also expanded roles, including the development of an advanced anesthesia technician role, advanced training for nurses to perform endoscopies, scope of practice changes to allow optometrists to prescribe glaucoma medications, and the development of training for a “nurse specialist in dermatology” qualification. Focusing on the workforce needed for “service aggregates” shifted the focus from planning for the needs of individual professions or specialties to planning for the needs of patients and populations. Physicians and nurses, optometrists and ophthalmologists and other professions with overlapping (and often competing) scopes of practice have had to work together to revise training programs and modify registration (licensure) to focus on the patient’s and population need for services rather than their own professional interests.

The WSFs have uncovered skill gaps and training needs in the existing workforce, highlighting that New Zealand’s home and community-based care workers, who have the potential to take on new responsibilities safely, are under-skilled and undertrained. The New Zealand WSFs suggest ways to diffuse tasks currently provided by specialists – particularly for rehabilitation and aged care – to the primary care and community-based workforce. The WSFs highlight the need to develop team-based skills in practice that not only make better use of the knowledge and skills of the existing workforce but also allow every member of the health care team to practice at the top of their abilities, education, certification and experience.

Such an approach is critically needed in the U.S. and other nations where workforce policy debates center on whether we will have enough physicians, nurses and other health care workers (Gudbranson, Glickman, & Emanuel, 2017; Kirch & Petelle, 2017). Instead, we need to start asking whether the millions of health care workers already employed in the system have the knowledge, skills, and attitudes to function in new models of care. If not, what changes are needed to workforce planning, education, practice, and regulation to accelerate transformation to a truly patient-centered workforce?

Reframing health workforce planning and IPE and IPCP

To accelerate workforce redesign, health workforce planners and IPE/IPCP stakeholders need to collaborate. Table 1 summarizes the paradigm shifts required to reframe health workforce planning and IPE and IPCP to better meet the evolving needs of patients and populations. The contents of Table 1 are elaborated in the sections that follow.

Table 1. Reframing health workforce planning and policy with IPE and IPCP.*

Reframing Workforce Planning and Policy with IPE and IPCP	Traditional Frame	New Frame
From a focus on disciplinary shortages to addressing the “demand-capacity mismatch”. (Bodenheimer & Smith, 2013)	Asks “will we have enough (nurses, doctors, other health professionals) to meet future demand?”	Asks “how can we more effectively and efficiently deploy the workforce already employed in the health care system in interprofessional teams to meet patient and population health needs?”
From a focus on provider type to provider role.	Assumes that each professional group and specialty have distinct and unique scopes of practice.	Health professions regulation that recognizes “plasticity” of real-world practice – different professional groups and specialties have flexible, overlapping and dynamic scopes of practice that change depending on patients’ needs, the care setting and the services provided by other members of the team.
From a focus on workforce planning for professions to workforce planning for patients/people, families and communities.	Workforce planning focuses on traditional health professions.	Workforce planning that includes broader range of workers in health and social care.
From a predominant focus on students in the pipeline to concurrently retooling and retraining the existing workforce for new roles.	IPE focused primarily on redesigning curriculum for pre-licensure students in foundational training to be “collaboration-ready” after graduation.	New models of interprofessional education and clinical learning environments that support informal and formal learning across the continuum from foundational education through continuing education.
From accreditation standards focused on a single profession to incorporating the importance of team-based care.	Accreditation standards for individual professions are viewed as barriers to IPE.	Accreditation standards require IPE and team-based competencies and move toward common frameworks for IPE and IPCP across professions.
From an “academic tourism” model for single professions to an integrated interprofessional health and learning organization.	Students are placed in experiential education rotations in short term “required” clinical rotation placements.	Interprofessional learning systems are concurrently redesigned to benefit patients, families and communities; practices; and learners (i.e., students, residents and clinicians).
From limited evidence that IPE benefits learners to commitment to collecting evidence for IPE/PCP on learning and health outcomes.	Resistance to change based upon perceived lack of evidence for team-based care and IPE.	Commitment to rigorous research methods in IPE, leading to growing evidence base used to redesign interprofessional practice and education improve population health, enhance patient and provider experience, and lower costs

*Adapted from Table 2 in Fraher, Machta, and Halladay (2015).

From focus on shortages to addressing the demand-capacity mismatch

The prevailing narrative in many countries suggests that the aging population and increased burden of chronic disease will produce workforce shortages (Pettersen et al., 2012). Bodenheimer and Smith suggest the need to redefine this crisis as a “demand-capacity mismatch” instead of a shortage (Bodenheimer & Smith, 2013). New Zealand’s workforce planning approach provides an example of what Bodenheimer and Smith propose is needed – developing teams of licensed and unlicensed providers that are empowered to redesign workflows and reallocate responsibilities to meet patient needs. This approach shifts the dialogue from whether we will have an adequate number of health professionals to one about whether shortfalls in services could be addressed by strategically redistributing responsibilities among the existing health workforce. Because New Zealand’s WSFs were undertaken within the constraints of meeting a doubling of demand with only a 40% increase in funding, the process encouraged participants to think “outside the box” about how to redeploy and retrain the existing workforce, an approach that makes better use of existing human capital instead of investing in training new providers. The WSFs also move beyond simply evaluating how many workers with different skill sets are needed: they assess how service redesign, technology and capital changes could be combined with workforce redesign to meet population health needs.

Shift focus from provider type to provider role

The health workforce planning community, as well as consumers of health workforce projections, typically ask about the numbers and specific types of health professionals needed, rather than asking about the gaps in services that exist. Health professional associations, academic health centers, educators and other workforce stakeholders embrace a shortage narrative that they use to justify advocacy positions on a wide range of issues including increased spending on health professions education (“we need more X, let’s build a new school”). Or, they justify the need for expanded scope of practice by citing a shortage of another type of provider instead of seeing that expanded scope of practice as a solution designed to address a gap in health services for a specific group of patients or population. The most frequent example is when advocates of expanded roles for nurses cite a shortage of physicians as the motivating rationale for changing regulations. The New Zealand model suggests that expanded scope of practice may be required for various providers, but it is based on an identified need for services rather than a shortage of another health professional group. A 2016 Josiah Macy Jr. Foundation report in the U.S. is a rare example of a workforce report that, instead of motivating the need to redesign the role of Registered Nurses (RN) in primary care by citing a shortage of primary care physicians, identifies how RN education and practice could be simultaneously reconfigured to improve health outcomes, reduce costs and enhance provider and patient satisfaction in primary care (Bodenheimer & Mason, 2016).

Traditional workforce planning approaches assume that health professionals have relatively fixed and exclusive scope of practices. Yet there is emerging evidence in the United States (U.S.) that medical assistants (Chapman & Blash, 2017; Chapman, Marks, & Dower, 2015), nurse practitioners (Buerhaus, DesRoches, Dittus, & Donelan, 2015; DesRoches, Clarke, Perloff, O'Reilly-Jacob, & Buerhaus, 2017), social workers (Fraher, Richman, Zerden, & Lombardi, 2018), pharmacists and other health professionals are taking on new roles in team-based models of care. Evidence from NHS England suggests the same – that when a gap in services emerges, the roles of health professionals with overlapping and dynamic scopes of services can be redesigned to address the gap. In July 2015, NHS England launched a pilot scheme to embed pharmacists in general practice where they could take on some of the functions traditionally performed by general practitioners. Preliminary results suggest they have increased practice efficiency, decreased GP workload, and increased pharmacist job satisfaction (Ryan et al., 2018). These workforce innovations point toward the need to move away from specialty-specific workforce projections toward approaches that recognize the “plasticity” of health professionals’ roles (Holmes, Morrison, Pathman, & Fraher, 2013). A plasticity approach acknowledges that different types of health professionals will take on overlapping roles and functions depending on the health care setting, care delivery and payment models, geography, patient population and density of other providers with similar/different skill sets.

Some observers in the U.S. have noted that the current regulatory system is not flexible enough to adapt to new roles and responsibilities, that there is a mismatch between professional competence and state scope of practice laws and that state laws limit overlap in scopes of practice among professions that share tasks and responsibilities (Dower, Moore, & Langelier, 2013). New Zealand’s WSFs have resulted in numerous changes to regulations that recognize that regulation must balance allowing shared responsibility for roles that overlap with reserving some responsibilities for professions with specific expertise and training. While regulatory debates often pit one profession against another, an approach that centers on designing regulations around patients and populations reframes discussions away from what a given profession stands to “gain” or “lose”, toward a focus on how regulations can support high-performing teams that meet the needs of patients and populations, not the professions.

From a focus on workforce planning for professions to workforce planning for patients and populations

Across the world, health systems are increasingly recognizing that keeping people healthy is about more than what happens inside a physician’s office and are integrating health and social care services (Alley, Asomugha, Conway, & Sanghavi, 2016). These models expand the boundaries of many traditional roles in the health care system and require that health workforce planners and educators adopt a broader definition of who is in the workforce – a shift from thinking of a “health workforce” to a “workforce for health” (Fraher, 2017). For example, in the U.S., the Community Aging in Place – Advancing

Better Living for Elders (CAPABLE) team is comprised of an occupational therapist, a registered nurse, and a handyman who provide assistive devices and make home modifications to enable the elderly to age in place. After completing a five-month program, 75 percent of elderly participants (n = 281 adults age 65+) had improved their performance of activities of daily living such as shopping and managing medications (Szanton, Leff, Wolff, Roberts, & Gitlin, 2016). Many of the roles that are evolving to provide integrated care services and address patients’ social determinants of health involve professions that have not traditionally been the focus of workforce planning or IPE efforts, including social workers, patient navigators, community health workers, paramedics, public health professionals and other community-based social service workers. To address evolving workforce needs, university-based IPE/IPCP efforts need to expand to include vocational and technical colleges and focus on developing training sites and preceptors in community-based settings outside the walls of academic health centers.

New models of care require new models of learning

New Zealand’s workforce redesign is moving a nation beyond rhetoric to action, surfacing the need for new models of care that deploy health professionals in new ways. To be successful, the workforce will not only need to master new clinical knowledge and skills but also adjust to new roles and workforce configurations. Health professionals will need to be confident that they are competent to take on new functions and be willing to delegate tasks based on a trust that others on the care team have the skills and competencies needed to deliver services (Ladden et al., 2013). Those involved in the transformation will likely feel challenged about what it means to be a health professional, how their own expertise relates to others, who should lead teams, and how to reshape their relationships with patients, families and communities while maintaining their professional status and participating fully as members of the team. Although New Zealand’s workforce service methodology provides an example of how needs-based workforce planning can be implemented, to be successful New Zealand and other countries *must develop new models of learning that are delivered in the context of practice and are responsive to the needs of patients, learners and the practices themselves.*

A brief review of the evolution of IPE/IPCP illustrates the nature of today’s fundamental paradigm shift of aligning IPE with practice and highlights the assets that the maturing IPE field brings to workforce redesign. In an era of impending physician shortages and new national health policy, early pioneers over fifty years ago envisioned an academically-based model, interdisciplinary education, now called interprofessional education, with the goal of preparing pre-professional students from different programs “by the same teachers in the same classrooms, and on the same patients” for future practice (McCreary, 1964). In 1972, the Institute of Medicine (IOM) extended the concept of IPE to recognize “the synergistic interrelationship of all who can contribute to the patient’s well-being” (Institute of Medicine, 1972). This IOM report underscored the need to educate students in teams *while concurrently redesigning the health care system* to “redeploy the functions of

health professions in new ways” to be more “efficient, effective, comprehensive, and personalized”. These new ways included expanding “the roles of some professions and perhaps eliminating others, but more closely meshing the functions of each than ever before” (Institute of Medicine, 1972).

Despite this call for reform, early attempts to implement and educate teams rarely considered practical considerations such as type, membership, purpose, conditions, and cost/benefits (Baldwin, 1996). Team-based care has become the norm for patients with complex care needs in geriatrics, rehabilitation, renal care, cancer, burn care and transplantation. However, the health care system as a whole, particularly in the U.S., did not evolve around a model of IPCP; instead, such care became an outlier. In the 1970s and beyond, important barriers hindered the full-scale adoption and mainstreaming of IPCP, including fee-for-service payment models that incentivized physician-centric models of care versus capitated payment models that enabled team-based approaches. Little early interest in the design of health care processes and workflow, and the lack of evidence on team effectiveness also limited implementation of IPCP (Schmitt, 1994; Schmitt, Baldwin, & Reeves, 2011). By the early 1990s, interprofessional initiatives in education and health care had achieved limited change and impact (Schmitt, 1994). Both the education and health care practice systems seemed imperious to change.

Against this backdrop, the commitment to IPE across health professions schools came in and out of favor over the next forty years (Brandt, 2015). In many ways, the hurdles facing academically-based IPE are steeper than implementing IPCP in practice, haunting the field to this day. Such barriers include scheduling times and classrooms for students to meet, siloed and rigid curricula in individual health professions schools, tensions between professions and specialties, and lack of perceived value for IPE (Baldwin, 1996; Curran, Sharpe, & Forristall, 2007). Without external incentives such as accreditation standards requiring IPE and resources to implement IPE, few universities offered or could sustain IPE programs (Baldwin, 1996; McPherson & Sachs, 1982). Moreover, without consistent team role models in practice, students and graduates observed traditional hierarchical models of care rather than collaboration and teamwork skills taught in the classroom. This mismatch between what is taught in the formal curriculum and inconsistent behaviors and values that are transmitted, but not openly acknowledged, to students in clinical practice is the “hidden curriculum” (Hafferty, 1998). How health professionals model behavior in practice tends to exert a more powerful influence on students than what is taught in the classroom. Therefore, real and substantive change in IPE cannot occur exclusively in the classroom for pre-professional students; interprofessional learning models in practice engaging all stakeholders need to be designed simultaneously with pre-professional and graduate education (Cox & Naylor, 2013).

Recently, numerous calls to action have declared a sense of urgency to radically redesign the educational continuum from pre-professional education through continuing professional development (CPD), particularly around the social determinants of health (Frenk et al., 2010; Institute of Medicine, 2015). In 2005, Health Canada sparked a renewed global

interest in IPE for IPCP by investing \$22M in projects to universities across the nation to increase the number of health professionals trained for patient-centered IPCP at entry-, graduate- and continuing education-levels (Herbert, 2005). In an international review of IPE, Barr and colleagues recently documented the momentum from a wide range of interprofessional activities occurring in 41 countries with coordination through the World Coordinating Committee that now comprises ten networks (Barr, 2015). A theoretical framework and empirical evidence base are emerging to inform a wide variety of IPE issues such as addressing the impact of hierarchical cultures, stereotypes and biases on learning (Carpenter & Dickinson, 2008); using effective instructional and facilitation methodologies rooted in adult learning; the role of senior leaders; and strategies for faculty development (Reeves et al., 2016). Particularly relevant for workforce redesign is scholarship that has emerged on informal workplace learning that occurs in practice and results in performance improvement, enhanced patient safety, collaborative practice models and better patient outcomes (Nisbet, Lincoln, & Dunn, 2013).

In the frenzy of new ideas and in an age of uncertainty, employers, educators, health professions, policymakers and other workforce stakeholders anxiously seek a new vision of how to configure and train the workforce. They understand that the future workforce will work in teams, but they are uncertain how to move from their current reality to a future in which education and practice are concurrently redesigned to retool and prepare the current and future workforce. We return to Table 1 to illustrate the steps needed to reframe IPE/IPCP thinking for workforce redesign.

From a focus on students in the pipeline to retooling the existing workforce

To date, much of the literature has focused on describing how the curriculum for health professions students in foundational training needs to change to prepare the workforce for new models of care (Kaprielian et al., 2013). Much less has been written about how to retrain the current workforce who will be the ones to transform care (Fraher, Ricketts, Lefebvre, & Newton, 2013). To transform practice, we need interprofessional continuing education modules and new CPD approaches in care coordination, population health management, behavioral health, patient education and engagement, health coaching, quality improvement, geriatrics, and other emerging skill sets.

The high level of uncertainty across the globe in how health care will be organized and paid for in the future requires a workforce with career flexibility. As the NHS in England has noted “Clinicians want well-defined career frameworks that provide flexibility to change roles and settings, develop new capabilities and alter their professional focus in response to the changing healthcare environment, the needs of patients and their own aspirations”(National Health Service England & Department of Health, 2008). However, higher education systems are generally insulated from health care system redesign and are lagging in providing ways for the existing workforce to retool their skills as they take on new roles (Ricketts & Fraher, 2013). Academic-practice partnerships that foster closer collaborations between health care

delivery and education systems are needed so that four-year, two-year and continuing education systems can develop seamless career ladders that allow health professionals to retrain for deployment in different settings, services and patient populations.

Across the globe, health care systems are experimenting with ways to shift care “closer to home” from expensive inpatient settings to less expensive ambulatory and community-based settings, including patients’ homes. In the U.S., nearly two-thirds of the 2.5 million new health care jobs created between 2001 and 2017 were in ambulatory care, and, within ambulatory care, the fastest growing employment sector was home health, which grew by 49% (Turner, Roehrig, & Hempstead, 2017). Physicians, nurses and other health professionals who have been educated and employed in acute care settings will need to develop the skills necessary for practice in ambulatory and home health settings. Clinical placement sites need to be developed where learners can practice on interprofessional teams in high performing primary care practices (Bauer & Bodenheimer, 2017) and more attention needs to be paid to developing interprofessional, team-based models of education and practice that reach outside the walls of acute care settings to include a range of community-based providers (Fraher & Ricketts, 2016).

From accreditation standards focusing on a single profession to incorporating the importance of team-based care

Accreditation of health professions education is rapidly shifting from a perceived inhibitor of IPE to a driver of change (Cox, Cuff, Brandt, Reeves, & Zierler, 2016). Traditionally, accreditation is viewed as bureaucratic, time-consuming and punitive rather than facilitative of quality and change. Accreditors focus on their own professions by creating and monitoring standards for education; surveying and advising universities and colleges to maintain and improve professional programs; and determining compliance with standards. In a 2009 review of U.S. accreditation standards in 9 professions, the authors concluded that accreditors contributed to the “perpetuation of the silo approach” (Royeen, Walsh, & Terhaar, 2009). As a result, professions have, in the past, cited accreditation requirements as a justification for not implementing IPE.

Calls for supporting IPE in U.S. accreditation standards began in the 1990s (Gelmon, 1997). New national IPCP competencies (Interprofessional Education Collaborative [IPEC], 2011) emerged and many – if not most – accreditation agencies responded to these changes by writing specific standards regarding the necessity for students to be “collaboration-ready for team-based care”. What is problematic, however, is that each accreditor wrote standards and criteria in isolation, leading to confusion at the local level for IPE implementation. Today, both Canada and the U.S. have taken action to convene multiple accreditors to develop consensus approaches to accreditation of IPE (Accreditation of Interprofessional Health Education, 2018; Health Professions Accreditors Collaborative, 2018). Furthermore, in the U.S., continuing education accreditors in medicine, nursing and pharmacy

have formed the Joint Accreditors in Interprofessional Continuing Education to stimulate new team-based models of continuing professional development (Chappell, Regnier, & Travlos, 2018).

From an “academic tourism” model for single professions to an integrated interprofessional health and learning organization

Rapidly transforming health systems are a cauldron of competing teaching and training demands (i.e., pre-licensure, residency, and CPD). Health systems question the return on investment of the teaching mission, especially when their needs and those of their patients are not considered. When hundreds of universities and college programs working in siloes compete with one another in an uncoordinated “academic tourism” model placing multiple health professions students in health systems for short-term assignments, significant onboarding and oversight responsibilities and costs are added onto practice (Earnest & Brandt, 2014). As thinking moves from espousing a shortage narrative that focuses on producing more health professionals to a recognition that our resource-constrained environment requires that we deploy the existing workforce in new ways in new models of care, redesigned IPE/IPCP efforts will make important contributions to improving the delivery of health care services and health professions education.

The New Zealand model exemplifies a change vision that engages multiple stakeholders in the redesign effort. Leadership is needed to create a compelling vision of IPE/IPCP within an environment where appropriate resources are available, and risk is acceptable and can be managed (Cerra, Pacala, Brandt, & Lutfiyya, 2015). The commitment to IPE/IPCP needs to occur on all levels of those involved, including “top down” governmental policies and accreditation standards that are aligned with the change. Local and clinical champions are needed but will not be sufficient to sustain IPE implementation (Reeves et al., 2016). Leaders will likely experience challenges to long-held beliefs and value systems within and between health professional groups and specialties. Traditional educational and training models do not challenge these assumptions. Therefore, interprofessional educators will need to integrate new thinking such as workplace learning (Nisbet et al., 2013) that uses reflective learning approaches in addition to technical solutions such as quality improvement techniques, standard classroom instruction, and team training models. With a new vision for an integrated health and learning system, IPE needs to be redesigned so that teams of students and residents are incorporated into practice in a way that intentionally adds value to patient care in ambulatory care, acute care, transitional care, and community settings (Earnest & Brandt, 2014).

From limited evidence that IPE benefits learners to commitment to collecting evidence for IPE/IPCP on learning and health outcomes

In 1997, in response to the question “Does IPE make any difference in healthcare?” DeWitt Baldwin, a pioneer in IPE and IPCP, remarked that “Interprofessional education is a great truth that is waiting scientific confirmation” (Gilbert, 2013). Though

evidence supporting the impact of any health professions education intervention is limited (Chen, Bauchner, & Burstin, 2004), assembling evidence for IPE has faced formidable hurdles. The field has been plagued by confusion over the inconsistent use of terminology (e.g., multidisciplinary vs. interdisciplinary vs. interprofessional) to describe collaborative learning and practice (Institute of Medicine, 2015). The lack of a theory base has complicated rigorous research, measurement, the identification of standard research instruments and the analysis of data (Gilbert, 2013; Thannhauser, Russell-Mayhew, & Scott, 2010).

After nearly fifty years, the IPE/IPCP field is still a relatively nascent scholarly field that is changing with increased interest in aligning IPE with clinical practice redesign (Lutfiyya, Brandt, & Cerra, 2016). The majority of IPE/IPCP studies are single project evaluations with limited generalizability, and most publications do not describe the methodology or theoretical constructs used in study design (Institute of Medicine, 2015). New efforts are addressing these deficiencies. For example, a 2015 Best Evidence Medical Education Review identified 25 high-quality studies to add to 21 studies previously identified in 2007, making a total of 46 high-quality IPE papers (Reeves et al., 2016). The number of interprofessional-specific publication outlets is growing, and the impact factor of the international Journal of Interprofessional Care has risen to 2.025 in 2016–2017 (Barr et al., 2018). The Institute of Medicine proposed strengthening the evidence base by creating the Interprofessional Learning Continuum Model (IPLCM) to guide the description and purpose of IPE/IPCP interventions. Using the model, interdisciplinary and interprofessional teams of researchers can use a consistent taxonomy and framework (i.e., learning continuum of formal and informal education, enabling and interfering factors, hierarchy of learning outcomes, and health and systems outcomes) to strengthen the evidence base on the impact of IPE on collaborative behavior and health and systems outcomes (Institute of Medicine, 2015). Other scholarly work can contribute to increasing understanding of the IPLCM. An international group of IPE scholars have published a consensus statement on the assessment of interprofessional learning outcomes (Rogers et al., 2017). A recent framework, the InterProfessional Activity Classification Tool (InterPACT) will provide guidance for research to examine the nature of IPCP (Xyrichis, Reeves, & Zwarenstein, 2018).

Conclusion: reflections from the road not taken

Traditional workforce planning methodologies and IPE approaches will not be sufficient to address the significant challenges facing health care systems. Workforce planners must move beyond an approach that plans for individual professions to one that plans for patients and populations. The IPE field must build an evidence base to overcome cynicism that IPE interventions have had limited impact. As financial pressures accelerate, both fields will have the opportunity to seize the crisis as an opportunity to work together to reframe their vision and methodologies. Educators involved in IPE will need to evolve with the infusion of new thinking from workforce planners to stay current on the workforce needs of new payment and care delivery models. Workforce planners will need the interprofessional educators' perspectives to understand the

educational and clinical contexts in which their data and research are being used. Collectively, the two groups can work together to redesign education and care around patients, families, communities and learners.

Funding

Dr. Fraher's work was supported by a University Research Council grant from the University of North Carolina at Chapel Hill and the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under HRSA Cooperative Agreement U81HP26495: Health Workforce Research Centers Program. Dr. Brandt's work is supported by the Josiah Macy Jr Foundation, Robert Wood Johnson Foundation, Gordon and Betty Moore Foundation, and the John A. Hartford Foundation and was supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under HRSA Cooperative Agreement UE5HP25067. The content and conclusions are those of the authors and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government or private foundations.

References

- Accreditation of Interprofessional Health Education. (2018). *Interprofessional health education accreditation standards guide*. Retrieved from www.aiphe.ca
- Aiello, M., & Roberts, K. A. (2017). Development of the United Kingdom physician associate profession. *Journal of the American Academy of Physician Assistants*, 30(4), 1–8. doi:10.1097/01.JAA.0000513357.68395.12
- Alley, D. E., Asomugha, C. N., Conway, P. H., & Sanghavi, D. M. (2016). Accountable health communities – Addressing social needs through medicare and medicaid. *New England Journal of Medicine*, 374(1), 8–11. doi:10.1056/NEJMp1512532
- Baldwin, D. C. (1996). Some historical notes on interdisciplinary and interprofessional education and practice in health care in the USA. *Journal of Interprofessional Care*, 10(2), 173–187. doi:10.3109/13561829609034100
- Barr, H. (2015). *Interprofessional education - the genesis of a global movement*. Fareham, England: Centre for the Advancement of Interprofessional Education. Retrieved from <https://www.caiphe.org/resources/publications/barr-h-2015-interprofessional-education-genesis-global-movement>
- Barr, H., Ross, F., Schmitt, M., Patel, K. D., Zwarenstein, M., Brandt, B. F., ... Eyre, L. (2018). Scott Reeves: 1967–2018. *Journal of Interprofessional Care*, 32(4), 403. doi:10.1080/13561820.2018.1494962
- Bauer, L., & Bodenheimer, T. (2017). Expanded roles of registered nurses in primary care delivery of the future. *Nursing Outlook*, 65(5), 624–632. doi:10.1016/j.outlook.2017.03.011
- Berwick, D. M., Nolan, T. W., & Whittington, J. (2008). The triple aim: Care, health, and cost. *Health Affairs (Millwood)*, 27(3), 759–769. doi:10.1377/hlthaff.27.3.759
- Birch, S., Kephart, G., Murphy, G. T., O'Brien-Pallas, L., Alder, R., & MacKenzie, A. (2009). Health human resources planning and the production of health: Development of an extended analytical framework for needs-based health human resources planning. *Journal of Public Health Management & Practice*, 15(6 Suppl), S56–61. doi:10.1097/PHH.0b013e3181b1ec0e
- Bodenheimer, T., & Mason, D. (2016, 2017 March). *Registered nurses: Partners in transforming primary care*. Paper presented at the Josiah Macy Jr. Foundation Preparing Registered Nurses for Enhanced Roles in Primary Care Conference, Atlanta, Georgia.
- Bodenheimer, T., & Sinsky, C. (2014). From triple to quadruple aim: Care of the patient requires care of the provider. *Annals of Family Medicine*, 12(6), 573–576. doi:10.1370/afm.1713
- Bodenheimer, T. S., & Smith, M. D. (2013). Primary care: Proposed solutions to the physician shortage without training more physicians. *Health Affairs (Millwood)*, 32(11), 1881–1886. doi:10.1377/hlthaff.2013.0234

- Bowser, J., Reed, H., & Fraher, E. (2015). Commentaries on health services research. *Journal of the American Academy of Physician Assistants*, 28(7), 61–62. doi:10.1097/01.JAA.0000467188.66664.b9
- Brandt, B. F. (2015, March). Interprofessional education and collaborative practice: Welcome to the “new” forty-year old field. *The Advisor*, p. 9–17.
- Buerhaus, P. I., DesRoches, C. M., Dittus, R., & Donelan, K. (2015). Practice characteristics of primary care nurse practitioners and physicians. *Nursing Outlook*, 63(2), 144–153. doi:10.1016/j.outlook.2014.08.008
- Carpenter, J., & Dickinson, H. (2008). *Interprofessional education training*. Bristol, UK: Policy Press.
- Cerra, F. B., Pacala, J., Brandt, B. F., & Lutfiyya, M. N. (2015). The application of informatics in delineating the proof of concept for creating knowledge of the value added by interprofessional practice and education. *Healthcare*, 3, 1158–1173. doi:10.3390/healthcare3041158
- Chapman, S. A., & Blash, L. K. (2017). New roles for medical assistants in innovative primary care practices. *Health Services Research*, 52(Suppl 1), 383–406. doi:10.1111/1475-6773.12602
- Chapman, S. A., Marks, A., & Dower, C. (2015). Positioning medical assistants for a greater role in the era of health reform. *Academic Medicine*, 90(10), 1347–1352. doi:10.1097/acm.0000000000000775
- Chappell, K., Regnier, K., & Travlos, D. V. (2018). Leading by example: The role of accreditors in promoting interprofessional collaborative practice. *Journal of Interprofessional Care*, 32(4), 404–406. doi:10.1080/13561820.2018.1433276
- Chen, F. M., Bauchner, H., & Burstin, H. (2004). A call for outcomes research in medical education. *Academic Medicine*, 79(10), 955–960.
- Cox, M., Cuff, P., Brandt, B. F., Reeves, S., & Zierler, B. (2016). Measuring the impact of interprofessional education on collaborative practice and patient outcomes. *Journal of Interprofessional Care*, 30(1), 1–3. doi:10.3109/13561820.2015.1111052
- Cox, M., & Naylor, M. (Eds). (2013). *Transforming patient care; Aligning interprofessional education with clinical practice redesign*. Proceedings of a conference sponsored by the Josiah Macy Jr. Foundation in New York, NY, January 2013. New York, NY: Josiah Macy Jr. Foundation.
- Curran, V. R., Sharpe, D., & Forristall, J. (2007). Attitudes of health sciences faculty members towards interprofessional teamwork and education. *Medical Education*, 41, 892–896. doi:10.1111/med.2007.41.issue-9
- DesRoches, C. M., Clarke, S., Perloff, J., O'Reilly-Jacob, M., & Buerhaus, P. (2017). The quality of primary care provided by nurse practitioners to vulnerable medicare beneficiaries. *Nursing Outlook*, 65(6), 679–688. doi:10.1016/j.outlook.2017.06.007
- Dower, C., Moore, J., & Langelier, M. (2013). It is time to restructure health professions scope-of-practice regulations to remove barriers to care. *Health Affairs (Millwood)*, 32(11), 1971–1976. doi:10.1377/hlthaff.2013.0537
- Earnest, M., & Brandt, B. F. (2014). Aligning practice redesign and interprofessional education to advance triple aim outcomes. *Journal of Interprofessional Care*, 28(6), 497–500. doi:10.3109/13561820.2014.933650
- Fraher, E. P. (2017). *Workforce planning in a rapidly changing healthcare system* [PowerPoint slides]. Retrieved from http://www.shepscenter.unc.edu/wp-content/uploads/2017/02/FraherSCHA_SCIOMFeb13.pdf
- Fraher, E., Machta, R., & Halladay, J. (2015, November). *The workforce transformations needed to staff value-based models of care*. Carolina Health Workforce Research Center, Cecil G. Sheps Center for Health Services Research. Retrieved from http://www.shepscenter.unc.edu/wp-content/uploads/2015/12/DataBrief_ValueBasedWorkforce_FraherMachtaHalladay_final.pdf
- Fraher, E. P., Richman, E. L., Zerden, L. S., & Lombardi, B. (2018). Social work student and practitioner roles in integrated care settings. *American Journal of Preventive Medicine*, 54(6s3), S281–S289. doi:10.1016/j.amepre.2018.01.046
- Fraher, E. P., & Ricketts, T. C., 3rd. (2016). Building a value-based workforce in North Carolina. *North Carolina Medical Journal*, 77(2), 94–98. doi:10.18043/ncm.77.2.94
- Fraher, E. P., Ricketts, T. C., 3rd, Lefebvre, A., & Newton, W. P. (2013). The role of academic health centers and their partners in reconfiguring and retooling the existing workforce to practice in a transformed health system. *Academic Medicine*, 88(12), 1812–1816. doi:10.1097/ACM.0000000000000024
- Frenk, J., Chen, L., Bhutta, Z. A., Cohen, J., Crisp, N., Evans, T., ... Zurayk, H. (2010). Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world. *The Lancet*, 376(9756), 1923–1958. doi:10.1016/S0140-6736(10)61854-5
- Gelmon, S. B. (1997). Accreditation, core curriculum and allied health education: Barriers and opportunities. *Journal of Allied Health*, 26(3), 119–125.
- Gilbert, J. H. V. (2013). Interprofessional - education, learning, practice and care. *Journal of Interprofessional Care*, 27(4), 283–285. doi:10.3109/13561820.2012.755807
- Gorman, D. (2010). The utility of idealised patient journeys as a centre-piece of health workforce planning. *Asia Pacific Journal of Health Care Management*, 5(2), 8–13.
- Gorman, D. (2013). Towards a sustainable and fit-for-purpose health workforce – Lessons from New Zealand. *Medical Journal of Australia*, 199(5 Suppl), S32–36.
- Gorman, D. (2015). Developing health care workforces for uncertain futures. *Academic Medicine*, 90(4), 400–403. doi:10.1097/ACM.0000000000000644
- Gudbranson, E., Glickman, A., & Emanuel, E. J. (2017). Reassessing the data on whether a physician shortage exists. *Journal of the American Medical Association*, 317(19), 1945–1946. doi:10.1001/jama.2017.2609
- Hafferty, F. W. (1998). Beyond curriculum reform: Confronting medicine's hidden curriculum. *Academic Medicine*, 73(4), 403–407.
- Health Professions Accreditors Collaborative. (2018). *Health Professions Accreditors Collaborative description*. Retrieved from <http://healthprofessionsaccreditors.org/>
- Herbert, C. P. (2005). Changing the culture: Interprofessional education for collaborative patient-centred practice in Canada. *Journal of Interprofessional Care*, 19(sup1), 1–4. doi:10.1080/13561820500081539
- Holmes, G. M., Morrison, M., Pathman, D. E., & Fraher, E. (2013). The contribution of “plasticity” to modeling how a community's need for health care services can be met by different configurations of physicians. *Academic Medicine*, 88(12), 1877–1882. doi:10.1097/acm.0000000000000026
- Institute of Medicine. (1972). *Educating for the health team: Report of the conference on the interrelationships of educational programs for health professionals* (Washington, DC, October 2–3, 1972). Institute of Medicine. Washington, DC: National Academy of Sciences.
- Institute of Medicine. (2015). *Measuring the impact of interprofessional education on collaborative practice and patient outcomes*. Board on Global Health; Institute of Medicine. Washington, DC: National Academies Press.
- Interprofessional Education Collaborative. (2011). *Core competencies for interprofessional collaborative practice: Report of an expert panel*. Washington, DC: Author.
- Kaprielian, V. S., Silberberg, M., McDonald, M. A., Koo, D., Hull, S. K., Murphy, G., ... Michener, J. L. (2013). Teaching population health: A competency map approach to education. *Academic Medicine*, 88(5), 626–637. doi:10.1097/ACM.0b013e31828acf27
- Kirch, D. G., & Petelle, K. (2017). Addressing the physician shortage: The peril of ignoring demography. *Journal of the American Medical Association*, 317(19), 1947–1948. doi:10.1001/jama.2017.2714
- Ladden, M. D., Bodenheimer, T., Fishman, N. W., Flinter, M., Hsu, C., Parchman, M., & Wagner, E. H. (2013). The emerging primary care workforce: Preliminary observations from the primary care team: Learning from effective ambulatory practices project. *Academic Medicine*, 88(12), 1830–1834. doi:10.1097/ACM.0000000000000027
- Lutfiyya, M. N., Brandt, B. F., & Cerra, F. B. (2016). Reflections from the intersection of health professions education and clinical practice: State of the science of interprofessional education and collaborative practice. *Academic Medicine*, 91(6), 766–771. doi:10.1097/ACM.0000000000001139
- Maguire, D. (2018, February 14). *Nursing student numbers: Should we panic yet?* [blog post]. Retrieved from <https://www.kingsfund.org.uk/blog/2018/02/nursing-student-numbers-should-we-panic-yet>
- McCreary, J. F. (1964). Interprofessional education in the health sciences: A projected conducted at the University of British Columbia. *Canadian Medical Association Journal*, 90, 1215–1221.
- McPherson, C., & Sachs, L. (1982). Health care team training in U.S. and Canadian medical colleges. *Journal of Medical Education*, 57(4), 282–287.

- McWilliams, J. M. (2016). Savings from ACOs - building on early success. *Annals of Internal Medicine*, 165(12), 873–875. doi:10.7326/m16-1846
- National Health Service England, & Department of Health. (2008). *A high quality workforce: NHS next stage review*. Retrieved from http://webarchive.nationalarchives.gov.uk/20130105063355/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_085841.pdf
- Nisbet, G., Lincoln, M., & Dunn, S. (2013). Informal interprofessional learning: An untapped opportunity for learning and change within the workplace. *Journal of Interprofessional Care*, 27(6), 469–475. doi:10.3109/13561820.2013.805735
- Petterson, S. M., Liaw, W. R., Phillips, R. L., Jr., Rabin, D. L., Meyers, D. S., & Bazemore, A. W. (2012). Projecting US primary care physician workforce needs: 2010–2025. *Annals Family Medicine*, 10(6), 503–509. doi:10.1370/afm.1431
- Reeves, S., Fletcher, S., Barr, H., Birch, I., Boet, S., Davies, N., & Kitto, S. (2016). A BEME systematic review of the effects of interprofessional education: BEME guide no. 39. *Medical Teacher*, 38(7), 656–668. doi:10.3109/0142159X.2016.1173663
- Ricketts, T. C., & Fraher, E. P. (2013). Reconfiguring health workforce policy so that education, training, and actual delivery of care are closely connected. *Health Affairs (Millwood)*, 32(11), 1874–1880. doi:10.1377/hlthaff.2013.0531
- Rimmer, A. (2018, March 21). Five medical schools are created in England in bid to increase home grown doctors. *BMJ*, 360. doi:10.1136/bmj.k1328
- Rogers, G. D., Thistlethwaite, J. E., Anderson, E. S., Abrandt Dahlgren, M., Grymonpre, R. E., Moran, M., & Samarasekera, D. D. (2017). International consensus statement on the assessment of interprofessional learning outcomes. *Medical Teacher*, 39(4), 347–359. doi:10.1080/0142159X.2017.1270441
- Royeen, C. B., Walsh, S. R., & Terhaar, E. (2009). Interprofessional education: History, review, and recommendations for professional accreditation agencies. In C. B. Royeen, G. M. Jensen, & R. A. Harvan (Eds.), *Leadership in interprofessional health education and practice* (pp. 29–44). Boston, MA: Jones and Bartlett Publishers.
- Ryan, K., Patel, N., Lau, W. M., Abu-Elmagd, H., Stretch, G., & Pinney, H. (2018). Pharmacists in general practice: A qualitative interview case study of stakeholders' experiences in a West London GP federation. *BMC Health Services Research*, 18(1), 234. doi:10.1186/s12913-018-3056-3
- Schmitt, M. (1994). USA: Focus on interprofessional practice, education, and research. *Journal of Interprofessional Care*, 8(1), 9–18. doi:10.3109/13561829409010397
- Schmitt, M., Baldwin, D. C., Jr., & Reeves, S. (2011). Continuing interprofessional education: Collaborative learning for collaborative practice. In D. K. Wentz (Ed.), *Continuing medical education: Looking back, planning ahead* (pp. 300–316). Hanover, NH: Dartmouth College Press.
- Sinaiko, A. D., Landrum, M. B., Meyers, D. J., Alidina, S., Maeng, D. D., Friedberg, M. W., ... Rosenthal, M. B. (2017). Synthesis of research on atient-centered medical homes brings systematic differences into relief. *Health Affairs (Millwood)*, 36(3), 500–508. doi:10.1377/hlthaff.2016.1235
- Szanton, S. L., Leff, B., Wolff, J. L., Roberts, L., & Gitlin, L. N. (2016). Home-based care program reduces disability and promotes aging in place. *Health Affairs (Millwood)*, 35(9), 1558–1563. doi:10.1377/hlthaff.2016.0140
- Thannhauser, J., Russell-Mayhew, S., & Scott, C. (2010). Measures of interprofessional education and collaboration. *Journal of Interprofessional Care*, 24(4), 336–349. doi:10.3109/13561820903442903
- Tomblin Murphy, G., Birch, S., MackKenzie, A., Alder, R., Lethbridge, L., & Little, L. (2012). Eliminating the shortage of registered nurses in Canada: An exercise in applied needs-based planning. *Health Policy*, 105, 192–202. doi:10.1016/j.healthpol.2011.11.009
- Turner, A., Roehrig, C., & Hempstead, K. (2017, March 17). What's behind 2.5 million new health jobs? [blog post]. *Health Affairs Blog*. doi:10.1377/hblog20170317.059235
- World Health Organization. (2010). *Framework for action on interprofessional education and collaborative practice*. Retrieved from: http://apps.who.int/iris/bitstream/handle/10665/70185/WHO_HRH_HP_N_10.3_eng.pdf;jsessionid=B7384D61033A7AC7CACE8B2E5FC03CD2?sequence=1
- Xyrichis, A., Reeves, S., & Zwarenstein, M. (2018). Examining the nature of interprofessional practice: An initial framework validation and creation of the InterProfessional Activity Classification Tool (InterPACT). *Journal of Interprofessional Care*, 32(4), 416–425. doi:10.1080/13561820.2017.1408576