



## Shifting the Paradigm for Interprofessional Healthcare Education: Linking Academia and Health Care Systems

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### Abstract

Changes in practice and the health care delivery system must be linked to health care education reform. Stimulated by the 2013 Affordable Care Act, the Josiah Macy, Jr. Foundation, published their conference recommendations to support the fact that rapid health care delivery redesign is not matching the pace of health professional education reform. Interprofessional education (IPE) is defined as a planned experience for learners for more than one discipline that includes direct instruction (eg. didactics, seminars, workshops) and/or a clinical experience in interprofessional care. IPE is a necessary step for health care professional students to prepare to practice in an Interprofessional Collaborative Practice (IPCP) model. The 2011 IPCP expert panel report recommends that IPE training should occur in four core competencies that include 1) values and ethics; 2) roles/responsibilities; 3) interprofessional communication and 4) teams and teamwork. Two additional domains include patient/client/family/community-centered care and interprofessional conflict resolution, a subset of interprofessional communication. This paper offers commentary/perspective on major challenges in IPE that include uniformity of health care professions in their accreditation standards, challenges posed by the diversity of student health professional training, and the need for faculty development in program implementation. Although there are examples of mature and well-defined IPE programs across the country, the University of Hawaii's early experience most likely reflects the status of most programs across the country. Description of an interprofessional work group tasked with developing a strategic plan and an early pilot project that includes key challenges of distance and geography are superficially described. A partnership between academia, two large health systems and the largest Blue Cross/Blue Shield in Hawaii provide opportunity for collaboration and linking health care reform synchronously with education advances in IPE.

**Keywords:** Interprofessional education; Interprofessional collaborative practice; Core competencies; Interprofessional communication; Health care teams

### Introduction

The Commonwealth Fund Commission rates the U.S. health care system recent Scorecard a score of 66% out of 100% for top performers [1]. Efforts to redesign health care delivery needs to be team-based and responsive to individual, family and community needs. According to the Institute for Health Care Improvement (IHI), the factors that contribute to the Triple Aim of improving care, health and cost are dependent factors, change in one component may affect the other two either negatively or positively. Efforts to improve care in a certain disease state may drive up cost due to personnel or technology costs but may concurrently improve outcomes [2]. In order for the U.S. to be successful in achieving a balanced Triple Aim, certain obstacles need to be addressed such as healthcare's supply-demand driven model, the balance of new technologies that may impact positive impact outcomes but drive up costs and decreasing physician-centric care [2].

Since 1972, the Institute of Medicine's (IOM) has encouraged the "importance of recognition of an obligation to engage in interdisciplinary education [3]. Their latest report in 2008 states that "health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team and that patients received safer, higher quality care in teams that communicate productively and understand each other's roles and ensure that care is continuous and reliable [4].

Changes in practice and the health care delivery system must be linked to health care education reform. Stimulated by the 2013 Affordable Care Act, the Josiah Macy, Jr. Foundation, published their conference recommendations to support the fact that rapid health care delivery redesign is not matching the pace of health professional

education reform [5,6]. The Foundation lists five areas to address that include 1) engaging patients and others in the community to link efforts of IPE and collaborative practice (CP); 2) accelerate the design, implementation and evaluation of innovative linkage models; 3) reform education and career development of health care professionals; 4) revise professional regulatory standards and practice to promote IPE and CP; and 5) realign existing resources to establish and sustain efforts [5,6].

Interprofessional education (IPE) is defined as a planned experience for learners for more than one discipline that includes direct instruction (eg. didactics, seminars, workshops) and/or a clinical experience in interprofessional care [7,8]. Interprofessional care is defined as joint assessment and/or management of patients by health professionals from more than one discipline closely linked in time and space and distinct from consultative or multidisciplinary models of care, or those where responsibility for patient care is delegated from one profession to another (Usually a physician to another (eg. pharmacist, nurse) [9]. Another term coined is Interprofessional Collaborative Practice

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(IPCP). From the 2011 Interprofessional Collaborative Practice (IPCP) Expert Panel report, in order for students to become IPCP trained, IPE training should occur in four core competencies that include 1) values and ethics; 2) roles/responsibilities; 3) interprofessional communication and 4) teams and teamwork. Two additional domains include patient/client/family/community-centered care and interprofessional conflict resolution, a subset of interprofessional communication [10,11].

### **IPE effect on Clinical Outcomes**

IPE has shown increasing momentum in the last five years. Studies cite that interprofessional teams enhance the quality of patient care, lower costs, decrease patients' length of stay, and reduce medical errors [7]. The updated 2013 Cochrane report provides a synoptic update of studies of IPE interventions from selected randomized controlled trials (RCT's), controlled before and after (CBA) studies and interrupted time series (ITS) [12]. Previous reports from this group were published in 1999 (no articles found) and 2008 (6 studies found). The 2013 update reviewed 9 new studies published since the 2008 report and demonstrates an increasing effort to run studies relating IPE to impact of clinical outcomes. Of the 15 reviewed studies, seven studies indicated positive outcome in the following areas: diabetes care, emergency department culture and patient satisfaction; collaborative team behavior and reduction of clinical error rates for emergency department teams; collaborative team behavior in operating rooms; management of care delivered in cases of domestic violence; and mental health practitioner competencies related to the delivery of patient care. Four studies showed mixed outcomes (positive and neutral) and four studies reported that IPE activities had no impact on either professional practice or patient care. The analysis concluded that due to small number of studies they were unable to draw generalizable inferences about the key elements of IPE and its effectiveness [12].

This commentary/perspective paper will discuss some major challenges of IPE, examples of mature programs, and a general description of the process of IPE development at the University of Hawaii that may well represent the majority of processes across the US.

### **Challenges- Academic Accreditation, Students and Educators**

According to Reeves et al, academic institutions represent one of the bottlenecks to implementing IPE and IPCP initiatives [13]. Healthcare professional programs must meet accreditation standards which may serve as a surrogate marker of a professions' readiness for change in practice standards [13]. Zorek provides a comparative analysis of interprofessional education accreditation standards. His findings from 23 accreditation documents identified for 10 health professions found that nursing and pharmacy contributed to 77% of accountable IPE statements [14]. Pharmacy standards are detailed from the Accreditation Council for Pharmacy Education (ACPE) (Standards 11a-f, 12e, 13b, 14a,e) as well as educational outcomes described from the 2013 Center for the Advancement of Pharmacy Education (CAPE) outcomes [15,16]. Nursing program accreditation from the American Association of Colleges of Nursing (AACN) Commission on Collegiate Nursing Education (CCNE) lists essential elements including effective communication and collaborative skills, leadership and organizational skills [17]. Public health programs utilize the Accreditation Body Council on Education for Public Health lists CEPH Accreditation Criteria Section 1.4 and 2.9 [18] Social Work utilizes the Educational Policy and Accreditation Standards (EPAS) for baccalaureate and masters level programs in policy 2.1.1, 2.1.3, 2.1.8 and 2.1.9 [19]

Accrediting bodies for medical schools and dental schools do not list specific standards but include statements that state that core curriculum prepare their respective students to function collaboratively on health care teams that include other health care professionals [20,21].

Zorek, however, concludes that the US accrediting bodies lack a collective mandate for IPE and until more professions detail accountable standards, a dotted landscape will continue to exist in academic programs and this translates to inconsistent improvement in IPCP in health care [14].

A second major challenge in creating IPE programs lies in the student population itself. Anderson cites that interprofessional health care groups are diverse in age, level of study, gender, and values, which have directed them towards the professional group in which they seek a career. Additionally, each profession has their own conventional education process to which they are partial [22]. Part of the educational process for any profession is the acculturation of the student to their own profession's responsibilities, thus a student may not truly understand their own profession's responsibility until well into their final year of training. Layering the understanding of other professions' roles adds to an already complex process. Additionally, comparable levels of knowledge and skills need to be matched across professions [23,24]. A more senior level student will outperform more novice students, but assumptions of grouping all first year professional students may be incorrect. Mapping of each professions curriculum will help to assess compatible skills when deciding upon the level(s) of students to group together. Careful thought to the outcomes/goals of the IPE exercise should focus on the values of the four core IPCP competencies as opposed to being content driven [23].

The third area of challenge is in the educators understanding and attitude towards IPE [23]. Resistance among faculty may be due to implementation challenges and increasing time commitment thus moving IPE lower on the list of priorities. There may be a misconception that interprofessional education is already occurring, for example, in the form of interdisciplinary rounds in acute care settings [23]. However, these teams are formed temporarily to address patient care needs. Logistical challenges occur when students from the various programs rotate through patient care teams every 4-6 weeks, usually starting and stopping at different times. These types of logistical challenges require constant adjustment to work styles, personalities and understanding roles and responsibilities and may hinder development of team building skills such as communication, building consensus, and the team's ability to focus on common goals and develop skills for conflict resolution. Developing teamwork skills in the more novice years in professional education will equip them with skills that better able them to form workable teams at a faster rate and hopefully lead to true IPCP.

Anderson cites there is little literature that focuses on health care professionals teaching abilities and skills [22]. Teaching mixed students groups require not only understanding of content but also an awareness of the importance of the process of education. IPE is more about facilitating a group of individuals to encourage communication, problem solving, directing the students to ask the right questions within a group context, and maintaining the group's focus with cooperation and respect. Most healthcare professionals' body of knowledge and expertise is gained through many years of practice and teaching the younger generation is more of a by-product of the training process. Even formally trained educators report challenges in teaching IPE and most health care professionals are not formally trained as educators [22]. Thus, the range of teaching qualifications presents a wide range

for both content and delivery and method. There are those who are full time academics who teach full time in didactic and/or clinical practice settings. Clinical pharmacist preceptors for both Introductory Pharmacy Practice Experience (IPPE) and Advanced Pharmacy Practice Experience (APPE) rotations are usually pharmacists who may or may not have dedicated teaching time within their clinical sites alongside their patient care responsibilities.

The last of the challenges in IPE for many programs include issues such as unavailability of a profession within reasonable geographic distance. This scenario truly represents reality especially in underserved or rural areas. Although technological advances are fast removing distance barriers and allowing access to many professions, these underserved areas may already face fiscal challenges and may not be able to afford technology. The ability to incorporate a professional from distance adds yet another level of complexity to the dynamics of a health care team.

### Examples of Mature IPE Programs

Early IPE health care programs from the late 80's and 90's for the most part did not include pharmacy. One of the earliest programs in 1994 came out of the University of Washington called SPARX. The program utilized forum, seminars, skills development, and service projects that focused on rural and medically underserved populations. In 2010 the newly named UW Center for Health Sciences Interprofessional programs expanded to include other professions including medicine, nursing, pharmacy and dentistry. Their program now utilizes both didactic presentations and role modeling of clinical scenarios in simulation in urgent care [8,25].

Thomas Jefferson University describes a 2 year longitudinal IPE Health Mentors Program. Students from medicine, nursing, pharmacy, physical therapy, and occupational therapy are paired with patients with a Health Mentor. The programs goals and objectives include striving to understand the roles of their colleagues and preparation to function as members of an effective health care team in patients with chronic conditions [26].

University of California at San Francisco has held an IPE program for their first year learners for pharmacy, medicine, nursing and dentistry since 2006. The program's three components include two half-day exercises and a yearlong longitudinal community-based project [27].

Some IPE programs are specific for the area of practice. Soliman et al describes a rural health professions program for pharmacy and medical students in the University of Illinois medicine and pharmacy program. Pharmacy students complete the same coursework as all pharmacy students but also participate in a parallel Rural Health Professions program curriculum – monthly lectures and related assignments during the first three years and a capstone clinical requirement in the fourth and final year. Pharmacy and medical students attend class together and participate in practice experiences. Monthly seminars begin in the first year and continue with each year adding field trips and clinical experiences in the fourth year [28].

A wide array of IPE models currently exist with the most advanced programs having all professional programs available and housed in technologically advanced physical facilities [29]. However, numerous other campuses or states may have limited health care professional programs and the trend to create IPE is in early stages in many areas. Such is the case for our college and our health care colleagues at the University of Hawai'i. Our developing program is probably representative of the majority of institutions across the U.S.

### Our Early Experience with IPE

The University of Hawai'i (UH) is a state funded institution of higher learning with the main campus UH Manoa that is located in a metropolitan city of Honolulu on the island of O'ahu. This campus contains the schools of nursing and dental health (SONDH) and public health (Myron B. Thompson School of Public Health) [30]. The John A. Burns School of Medicine (JABSOM) is located about 7 miles away from the main campus also on O'ahu [31]. The state does not have a physical or occupational therapy professional program.

The Daniel K. Inouye College of Pharmacy (DKICP) was founded in 2007 and filled the profession's education void for the state. The school is located on the island of Hawai'i (208 miles from Oahu) in a rural town of Hilo on the satellite campus called UH Hilo [32]. The college is a four-year PharmD program with the first three years of didactic instruction being held in Hilo. Introductory Pharmacy Practice Experiences (IPPE) are held in Hilo in the summer months between year P1 and PY2, two to four week IPPE rotations are also held on the other three major islands of Oahu, Maui and Kauai. Advanced Pharmacy Practice Experiences (APPE) are held throughout the four major islands, continental US, and other sites in the Pacific Rim including Alaska, Guam, American Samoa, Saipan and Thailand.

Cross-school collaborations have been limited to project focused activities. Similar to UW's simulation exercise, one APPE activity occurs on the Manoa campus at the SONDH, a state of the art Translational Health Science Simulation Center (THSCC) [33]. Pharmacy, nursing, medical and respiratory care students participate in mannequin simulation exercises in emergency care beginning with a basic emergency care scenario. The full day's exercises culminate in a full code blue mannequin simulation. This program has been in effect for two years and is part of the APPE curriculum for the acute care rotation at the Oahu hospitals.

In an effort to expand cross-school collaboration in early 2014, the Deans/Directors from the College of Health Sciences and Social Welfare (CHSSW) appointed a 12 person IPE work group (IPEW) composed of medicine, nursing, pharmacy, social work and public health. The IPEW was tasked to conduct an assessment of current IPE activities and make recommendations for a two-year strategic plan with defined goals and objectives and necessary human and fiscal resources. After seven monthly meetings, the IPEW generated a directive paper that described an inventory of interprofessional education and interprofessional health care activities that respective programs were currently holding, defined a mission and core values and reached consensus on the four competency domains described by the Josiah Macy Jr. Foundation. The group gained a better understanding of the various components of IPE. Findings of our existing IPE activities varied from school to school, with clear opportunities identified for further interdisciplinary collaboration within the current activities. A discharge planning IPE pilot project was one product of the IPEW. Nursing and pharmacy IPEW members helped to craft this pilot project. The first phase of this pilot project took place in the fall of 2014 (Phase I). The main objectives of this one day, four hour exercise course included the four main core competencies described by the IPCP expert panel.

Two different sessions were run with each session comprised of four different groups. Each group contained four third year pharmacy students (Hilo), four third year medical students and six fourth year nursing students (Oahu).

A geriatric and a pediatric case were run sequentially with

primary goals aimed at the four collaborative IPE competencies of patient/family centered care, understanding interprofessional roles and responsibilities, communication and building teamwork. Due to the geographic separation, the biggest challenges were the technical aspects of polycom technology, cameras and microphones. Smooth functioning of technology required significant support with each room using one information technology specialist, one simulation technician specialist and a medicine, nursing and pharmacy faculty member. Communication skills and group dynamics were challenged when trying to include the pharmacy students on a screen. However, initial and anecdotal results from phase I demonstrate that the first case allows the students to problem solve communication and team dynamics as well as deal with technology and distance. Amazingly, the second case ran much more smoothly once the students have debriefed the first session. From the debriefing session, the students discussed how to include the pharmacy students in the discussion, what the goals were for the group and evaluated the process of how they reached the patient care goal. Students were not graded nor did they receive credit for the exercise. Early results from student surveys, pre and post session, indicate that students gained knowledge in understanding the importance of placing the family at the center of interprofessional health care delivery; better understood the role of each profession in the patient's treatment and discharge plan and developed better communication skills. Some students felt frustrated by the distance and technology especially if they were in a room that had technical issues with microphones and cameras.

Plans are currently underway to repeat this discharge planning exercise in the next semester. This second trial will stay with four groups running concurrently but with a smaller number of students in each group, thus three rounds of the exercise will occur in one day. In the Phase I session, some students were able to not participate due to the large number of students/group and the more reserved students would let those students with more assertive styles lead the group. Other lessons learned included the need for some ice-breaking or introduction exercise to encourage the team's to begin problem solving the communication challenges presented with the geographic distance and technology.

The IPEW's primary recommendation suggested appointing a permanent interprofessional planning group (IPG) with representatives from the five schools with rotating chairmanship among disciplines. The second recommendation outlined a plan for faculty development in a summit conference to help create uniform definition and understanding of IPE, promote networking and collaboration for new IPE initiatives, and showcase contemporary educational trends and/or pedagogic approaches.

Similar faculty development seminars described by Poirier [22] and Anderson [24] note that these forums are most valued for their opportunity to exchange ideas and explore various opportunities for collaboration, address teaching and learning barriers that exist at both individual and organizational levels. Additionally, faculty gain knowledge needed to design and implement effective IPE experiences. University of Washington and University of Missouri are cited examples of programs that have robust interprofessional faculty development programs [34].

## Partnership Role for Health Care Systems

In many of the successful IPE programs described earlier, most health care professional programs have their own affiliated academic medical center which helps to link the advances made in IPE academe

to their respective health care setting. The University of Hawai'i does not have their own university teaching hospital, but utilizes several large area hospitals for teaching for the various professions students, residents and fellows.

A progressive partnership was formed in the founding of the previously mentioned simulation center THSCC on the UH Manoa campus. The center was co-funded by two large area health systems (The Queens Health Systems and Hawaii Pacific Health) and the largest Blue Cross Blue Shield independent licensee company Hawaii Medical Service Association (HMSA). Although the main purpose of the center is to educate currently enrolled health care professional students, new nursing graduates hired by these institutions participate in simulation exercises at THSCC alongside other health professional students or currently practicing clinicians. This example of partnerships of hospitals or health care systems with academic programs may become increasingly necessary to link the improvement of the healthcare delivery system and the health care training programs that support these professions. Plans to move a specific group of learners from a simulation IPE to a clinical team would be ideal to duplicate lessons learned in true life patient care scenarios.

## Need for Continuous Evaluation of IPE

Assessment and evaluation from both a qualitative and quantitative standpoint will provide opportunity for continuous improvement and development [23]. In our design of our pilot discharge planning IPE exercise, we are having difficulty finding validated and sensitive tools to assess the IPE exercise. In particular, tools for assessing teamwork skills and the technology we utilized are lacking. Pre and post surveys are most helpful to compare baseline knowledge and skills to post exercises. Immediate debriefing/discussion of the exercise between the learners helps to identify the groups' challenges, problem solving process and group's development of communication. In our patient discharge conference pilot project, each student group had all three professions as facilitators that provide an example of the professions working together, many of whom had also worked together in clinical practice. Faculty observation in real time of the group's exercise from a video control room or a one-way mirror is a helpful tool to refer to in post-exercise debriefing sessions. Due to the amount of time needed to run an IPE exercise, our group has discussed the value of having all professions in one group's session as opposed to having one facilitator for each group regardless of profession. Since development of IPE is also new for faculty, facilitators expressed a preference to having other professions present because each profession brings their unique point of view on any given situation and will bring different perspectives in evaluating and improving an IPE exercise. Other teaching tools include videotaping the session and having a post review from both students and/or facilitators on behavior, body language, and the logistics of the exercise process. In our case, with such intense use of technology, we also reviewed placements of cameras and microphones and the ability of the group to include the distance pharmacy students.

Tools to demonstrate long lasting effect need to be designed. Long-term effect could be demonstrated in documenting progressive improvement in teams demonstrating true IPCP in practice. The 2013 Cochrane report encourages continued study of IPE in RCT, CBS or ITS designed studies that include IPE comparisons as opposed to separate, profession-specific interventions. Demonstration of practice changes and cost benefits impact will help lead to improved IPE policy development. Studies should also include qualitative evaluation from both student and faculty standpoint [12]. 12

## Conclusion

IPE has continued to progress over the last two decades with most professions defining accreditation standards in their profession. Momentum continues to build across the country with an increasing body of information that is helping to develop a common framework that describes a best practice model of developing a program for interprofessional education. Studies include patient case scenarios, mannequin simulation and longitudinal experiences in ambulatory care, acute care, rural and urban settings. Factors to consider when creating learning groups are now better detailed. There is increasing development of mentors/faculty to understand the elements of IPE. Regardless, faculty must be committed to working with students especially in this type of education. Essential for most successful programs includes support from upper administration for human and technological resources. Continuing validation of assessment tools will help to bring evidence to the clinical side of health care. With these components, the partnership between academia and health systems will help to increase the understanding of how to assess team performance, and skills and hopefully better define where IPE can affect health care outcomes.

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