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Evaluating an interprofessional education program for sustainability

Cheryl Emich

DR. AMELIA LANZ

Evaluating an Interprofessional Education Program for Sustainability

by

Cheryl Emich

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Submitted in partial fulfillment of the requirements for the
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We, the undersigned members of the Graduate Faculty of The University of Alabama in Huntsville, certify that we have advised and/or supervised the candidate on the work described in this DNP project. We further certify that we have reviewed the DNP project manuscript and approve it in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice.

7-16-19 ________________ Committee Chair
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____

____

________________ DNP Program Coordinator

________________ College of Nursing, Associate Dean for Graduate Studies

________________ College of Nursing, Dean

________________ Graduate Dean

ABSTRACT
The School of Graduate Studies
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Degree: Doctor of Nursing Practice College: Nursing

Name of Candidate: Cheryl Emich

Title: Evaluating an Interprofessional Education Program for Sustainability

Interprofessional education is a requirement for many health profession education programs. Research studies reporting the outcomes of single and isolated interprofessional education offerings are plentiful, with most studies reporting learners' attitudes toward interprofessional education as opposed to healthcare or patient outcomes. Documenting how interprofessional education effects the function and performance of healthcare teams, patient outcomes, and cost reduction is vital in supporting the integration of IPE. In 2017, learners from three healthcare education programs (nursing, medicine, and pharmacy) in the southeastern United States. came together to participate in interprofessional learning. The Interprofessional Education for Collaborative Patient-Centered Practice framework with the Adoption Model served as a basis for evaluating the interprofessional education program for sustainability at the micro, meso, and macro level. Results of faculty focus group interviews (n= 17 faculty) and an electronic survey emailed to learners (n= 15) indicated three elements critical to interprofessional education sustainability were missing and other elements needed improvement. The missing elements were strategic planning, dedicated funding, and program evaluation. Elements needing improvement were faculty development, patient-centered learning, incorporating interprofessional core competencies, learner engagement, educational theory, administrated support, new partnerships, accreditation requirements, and scholarly products. The learners offered general and specific instances where the interprofessional education program improved

health outcomes. Faculty and learners viewed the interprofessional education program as positive and desired more learning events.

Keywords: interprofessional education, nursing, medicine, pharmacy, program evaluation

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The Joint Commission (2013) attributed the rise in patient care errors to the lack of effective collaboration among healthcare providers. Furthermore, Makary and Daniel (2016) concluded that medical errors in communication, diagnostics, judgment, and skills were the third leading cause of death in the United States. For close to 40 years, researchers and educators acknowledged that interprofessional learning has the potential to improve health outcomes and healthcare delivery (Reeves et al., 2018). In 2010, The World Health Organization (WHO) defined interprofessional education (IPE) as the coming together of students from at least two different healthcare disciplines to collaborate and improve healthcare outcomes. Thus, graduates from health professions schools must be prepared to work in interprofessional teams to provide high-quality patient care effectively and efficiently while containing costs (Meleis, 2016).

Through IPE, healthcare students gain a better understanding of the roles and responsibilities of other healthcare specialties (Makowsky et al., 2009; Soine, Errico, Redmond, & Sprow, 2013). The Interprofessional Education Collaborative (IPEC) aims to guide curriculum development across health profession education programs (IPEC, 2011). IPEC established four core competencies of IPE: communication, values and ethics, roles and responsibilities, and teams and teamwork to guide IPE program development (2011).

In addition to the influence from national and international health-related organizations, many nursing-specific agencies form standards of education for nursing programs such as the American Association of Colleges of Nursing (AACN), the Quality and Safety in Nursing Education Institute (QSEN), and the National League for Nursing (NLN). These agencies recognize the importance of IPE; however, they do not consistently address standards for

integrating IPE in the curriculum (AACN, 2015; NLN, 2015; QSEN Institute, 2014). The NLN (2015) released a report on "Interprofessional Collaboration in Education and Practice" and affirmed the nurse's role in team-based patient care in addition to challenging nurse educators to develop IPE programs and practice opportunities. Additionally, the AACN highlighted the need for academic nursing programs to promote team-based interprofessional healthcare in their *FY 2017 - 2019: Strategic Plan Goals and Objectives* (AACN, 2016). The QSEN Institute (2014) emphasized the importance of collaboration within nursing and within interprofessional teams. In 2015, the International Nursing Association for Clinical Simulation and Learning (INACSL) established guidelines for simulation enhanced IPE (Sim IPE) (Decker et al., 2015). The INACSL guidelines called for the use of theory in developing simulation scenarios, following best practice standards for simulation such as structured debriefing, addressing institutional issues such as leadership commitment, and including a plan for evaluation (Decker et al., 2015).

To consistently guide IPE development in health professions, the Health Professions Accreditors Collaborative (HPAC) was founded in 2014 (HPAC, 2019). HPAC published IPE guidelines that were created by a joint committee which included the Accreditation Council for Pharmacy Education (ACPE), Commission on Collegiate Nursing Education (CCNE), and Liaison Committee on Medical Education (LCME). The HPAC guidelines provided consistent expectations for IPE learning across health profession disciplines. Examples of the HPAC guidelines include having a strategic direction, securing adequate resources, having dedicated leaders, attending faculty development programs to include the IPEC competencies, conducting learner assessment, and evaluating the IPE program to include outcomes. HPAC acknowledged the need for collaboration between academic partners and health systems to create IPE learning opportunities. HPAC (2019) highlighted the importance of institutional leaders engaging

stakeholders, fostering collaborative environments, and influencing a systematic approach to IPE. Institutional leaders include Presidents, Chancellors, Provosts, and Deans (HPAC, 2019).

Another issue is the traditional higher education system which isolates learning by disciplines, resulting in students learning a unique set of values, ethics, language, and practice standards not easily transferable to other disciplines (Meleis, 2016). Effective team-based care requires communication and understanding of all team members' roles and responsibilities to improve patient outcomes, safety, and experiences (Thistlethwaite, 2012). The goal of IPE is to prepare healthcare providers to function as a member of the multidisciplinary healthcare team upon graduation and deliver safe patient-focused care (IPEC, 2011).

For these reasons, HPAC developed guidance for the development and evaluation of IPE programs (HPAC, 2019). The guidance focused on the roles of institutional leaders and program leaders. The role of the institutional leaders included strategic planning, allocation or resources, affording protected time to faculty, managing logistics, supporting faculty development, and recognizing faculty effort toward successful IPE implementation. The role of the program leader included developing IPE learning that incorporates the IPEC competencies, incorporating IPE throughout the curriculum, and planning learner assessment and evaluation strategies (HPAC, 2019).

Knowledge Gap

Documenting how IPE effects the function and performance of healthcare teams, patient outcomes, and cost reduction is vital in supporting the integration of IPE in healthcare education programs (Thistlethwaite, 2012). For example, Makowsky et al. (2009) noted that practicing physicians, pharmacists, and nurse practitioners (NP) participating in interprofessional team-based care achieved improvements in pharmacotherapy, continuity of care, and patient safety.

Research studies reporting the outcomes of single and isolated IPE offerings are plentiful with most studies reporting learners' attitudes toward IPE as opposed to healthcare or patient outcomes (Estes, Robinson, & Madigosky, 2016; Garrido, Dlugasch, & Graber, 2014; Hanyok et al., 2013; & Pittenger, Fierke, Kostka, & Jardine, 2015).

Evaluation is a crucial component of program development and informs stakeholders about resource utilization, gives a voice to all stakeholders (Blue, Chesluk, Conforti, & Holmboe, 2015; Brashers, Owen, & Haizlip, 2015), assesses achievements, and identifies opportunities for growth and improvement (Freeth, Hammick, Reeves, Koppel, & Barr, 2005; Grymonpre et al., 2016). Evaluation is useful if stakeholders accept the process as a learning opportunity (Msila & Setlhako, 2013). Before the evaluation begins, the evaluator must identify a clear purpose for the evaluation (Reeves, Boet, Zierler, & Kitto, 2015). Furthermore, a framework for the evaluation aids in directing and focusing on the goal of the evaluation (Anderson, Smith, & Hammick, 2016; Reeves et al., 2015; Shrader et al., 2016).

A review of the literature failed to identify any studies evaluating entire IPE programs using rigorous criteria to analyze the program at a micro, meso, and macro level. The micro level refers to teaching and learning factors such as what to teach and how to teach the IPE content. The meso level refers to institutional factors such as IPE leaders and organizational structure. The macro level refers to factors outside the institution, such as government and accreditation policies, external grant funding, and community partners (D'Amour & Oandansan, 2005; Grymonpre et al., 2016).

In 2017, an IPE program was established between three universities in the southeastern United States, bringing together learners from nursing (NP students), medicine (family practice and internal medicine interns), and pharmacy (students and residents). Currently, the IPE

program consists of multiple faculty planning meetings throughout the year and an annual single-day IPE event with nurse practitioner (NP) students, medical interns, and pharmacy students. Also, in 2018, pharmacy faculty participated in a telehealth IPE simulation with graduate NP students and undergraduate registered nurse students. The purpose of this project was to evaluate an entire IPE program for sustainability across the curriculum, including evaluating health outcomes related to the IPE program. The objectives of this project were to evaluate the current IPE program using an established framework for sustainable IPE, describe findings related to the micro, meso, and macro levels, and present recommendations for the IPE program for improvements that will lead to sustainability of the IPE program. The project questions were: What elements critical to IPE sustainability does the joint IPE program have?, What missing elements, critical to sustainable IPE, do the stakeholders support integrating into the joint IPE program?, and Does the joint IPE program have a positive impact on health outcomes?

Review of the Evidence

A literature review was conducted using the Cumulative Index to Nursing and Allied Health Index (CINAHL), Science Direct, PubMed, Education Resources Information Center (ERIC), and ProQuest databases with the keywords interprofessional education and program evaluation. The search was limited to published articles from 2014 to 2019, resulting in 2,284 sources. Additional delimiters included English language, peer-reviewed, and articles with full text available. Abstracts were reviewed for relevancy and duplications were removed. Occasionally, identifying one source led to another relevant source, published before 2014, which had significance for this program evaluation. The process resulted in seventeen sources appropriate for the literature review. These sources resulted in seven recurring themes that support IPE program sustainability.

Theoretical Framework

The application of a theoretical framework to IPE program evaluation adds to the growing body of knowledge related to IPE (Reeves et al., 2015). Blue and colleagues (2015) found that many institutions did not explicitly report using a framework for IPE program evaluations. A framework is an important tool which guides the evaluator in forming clear evaluation questions and methods of data collection (Reeves et al., 2015). After an extensive review of the literature from 1960 to 2012, Blue et al. (2015) noted a need for rigorous evaluation, including longitudinal data documenting patient or health outcomes. A comprehensive method for evaluating IPE programs for sustainability is essential because a systematic approach can ensure the attainment of program objectives and identify opportunities for improvement (Grymonpre et al., 2016).

Faculty Development

Besides the need for an IPE evaluation framework, several themes emerged from the literature review. The most prevalent theme is faculty development and support (Anderson et al., 2016; Brashers et al., 2015; D'Amour & Oandansan, 2005; Grymonpre et al., 2016; Lawlis, Anson, & Greenfield, 2014; Harada et al., 2018; Shrader et al., 2016; Willgerodt et al., 2015). Faculty development included financially supporting faculty attendance at workshops and seminars aimed at developing IPE competencies, training as an IPE facilitator (Grymonpre et al., 2016; Willgerodt et al., 2015), developing IPE activities (Brashers et al., 2015), and mentoring new IPE faculty (Brashers et al., 2015). Providing other forms of faculty incentives such as personalized thank you notes (Willgerodt et al., 2015) and protected time for IPE planning and participation improved faculty satisfaction (Brashers et al., 2015; Harada et al., 2018; Willgerodt et al., 2015).

Integrating IPE Across the Curricula

The integration of IPE in the curricula was another recurring theme in the literature (Brashers et al., 2015; Cahn, 2014; Grymonpre et al., 2016; Harada et al., 2018; Shrader et al., 2016; Willgerodt et al., 2015). Planning and integrating IPE curricula is time-consuming for faculty; however, the process is critical to program development (Willgerodt et al., 2015). IPE learning activities must be meaningful and reflect clinical practice goals and objectives (Brashers et al., 2015; Shrader et al., 2016). Harada et al. (2018) suggested faculty create the IPE curriculum collaboratively. The IPE curriculum should include the IPEC core competencies (Brashers et al., 2015; Cahn, 2014; Shrader et al., 2016; Willgerodt et al., 2015).

Mission, Vision, and Goals

The IPE curriculum should also be congruent with the program's strategic plan to include mission, vision, and goals to improve sustainability (Brashers et al., 2015; Cahn, 2014; Grymonpre et al., 2016; Willgerodt et al., 2015). Interestingly, the University of Virginia Interprofessional Education Initiative recruited faculty, staff, and a nationally recognized expert in IPE to draft the program vision (Brashers et al., 2015). This diversified group of stakeholders, including administrators, led to the creation of a shared mission that reflected the commitment and contribution of each member (Brashers et al., 2015). Grymonpre et al. (2016) suggested developing a strategic plan in a thoughtful and unhurried manner and, to revisit and revise the plan as needed.

Administrative Support

Administrative support, including budgeting or funding, is another recurring theme found in the literature (Brashers et al., 2015; Cahn, 2014; Freeth et al., 2005; Grymonpre et al., 2016; Harada et al., 2018; Lawlis et al., 2014; Shrader et al., 2016; Willgerodt et al., 2015). Leadership

and administrative support added credibility to an IPE program and promoted sustainability (Shrader et al., 2016). Administrators should identify and support IPE faculty champions (Cahn, 2014; Freeth et al., 2005; Shrader et al., 2016). Additionally, administrators have budgetary responsibilities. Dedicated funding for IPE can span multiple budgets from multiple disciplines (Freeth et al., 2005). Faculty members play an essential role in securing IPE funding. Cahn (2014) noted that when administrators asked for budget requests, faculty submitted requests for profession specific needs and not for interprofessional education resulting in no funding for IPE programs. External sources of IPE funding should also be considered. Faculty must find external sources of financing such as grants. Grants, however, are often temporary but offer flexibility that traditional budget constraints prevent (Freeth et al., 2005). External funding helps faculty develop a sustainable IPE program (Brashers et al., 2015; Willgerodt et al., 2015). However, external grants are limited and difficult to acquire and renew (Lawlis et al., 2014). Administrators also serve a crucial role in developing new interprofessional partnerships. Building new partnerships in the community and with other academic programs improves IPE program sustainability (Blue et al., 2015; Grymonpre et al., 2016; Harada et al., 2018).

Documenting Outcomes

Another recurring theme in the literature is the need for IPE programs to link program objectives and health outcomes (Blue et al., 2015; Brandt, Lutfiyya, King, & Chioreso, 2014; Martin, Ummenhofer, Manser, & Spirig, 2010; Grymonpre et al., 2016; Reeves, Perrier, Goldman, Freeth, & Zwarenstein, 2018). In 2018, Reeves et al. published an update to a previous literature review of interprofessional practice and healthcare outcomes. Despite the increase in studies focused on IPE, few researchers documented patient outcomes (Reeves et al., 2018). Researchers recommended that future IPE research include effectiveness of IPE

compared to traditional education (Reeves et al., 2018), more rigorous and comprehensive studies (Blue et al., 2015; Brandt et al., 2014; D'Amour & Oandansan, 2005; Martin et al., 2010; Reeves et al., 2018), healthcare cost-benefit analysis (Brandt et al., 2014; Reeves et al., 2018), and quality of patient care (Brandt et al., 2014; Martin et al., 2010).

Planning for Change

The final recurring theme noted in the literature is planning for change (Donnelly, Shulha, Klinger, & Letts, 2016; Grymonpre et al., 2016; Msila & Setlhako, 2013). Grymonpre et al. (2016) refer to this as *inertia*. Maintaining a sustainable IPE program means planning for changes in faculty (Donnelly et al., 2016; Grymonpre et al., 2016), changes in institutional policy, changes in practice environments, and changes or additions in partnerships (Grymonpre et al., 2016). Group dynamics can change as group members change (Grymonpre et al., 2016), and having a plan can minimize negative consequences of change (Msila & Setlhako, 2013). Examples of planning for change include mapping program outcomes to initiatives to inform future members of the intricacies of the IPE program (Msila & Setlhako, 2013), mentoring new team members so that pertinent information is communicated clearly (Donnelly et al., 2016), and developing central repositories of program information to guide future planning (Shrader et al., 2016; Willgerodt et al., 2015).

Conceptual Framework

D'Amour and Oandasan (2005) proposed a theoretical framework for developing a sustainable IPE program, the Interprofessional Education for Collaborative Patient-Centered Practice (IECPCP), that focused on the critical elements needed for sustainability at the micro, meso, and macro levels. The IECPCP framework linked collaboration and factors affecting collaboration at micro, meso, and macro levels. The IECPC framework also served as a link

between IPE and interprofessional collaboration (IPC) by focusing on the learner and the patient. Factors affecting learners at the micro level were behaviors towards IPE, profession specific beliefs and values, curriculum, and teaching. Meso level factors affecting learners were administrative support and resources for IPE programs. Factors affecting learners at the macro level were IPE partnerships and clinical settings where learners apply new IPE skills in collaborative practice (D'Amour & Oandansan, 2005).

Factors affecting patients at the micro level were patient needs, patient complexity, and learner interaction with the patient (D'Amour & Oandansan, 2005). Meso level factor affecting the patient included support for IPC from organizational leadership. Macro level factors affecting the patient were a shared vision between academic partners, healthcare institutions, and government entities that shaped health policy (D'Amour & Oandansan, 2005).

Grymonpre et al. (2016) operationalized the IECPCP framework by creating the Adoption Model for sustainable IPE programs. Grymonpre et al. (2016) attributed the success of the IPE program at the University of Manitoba to the foundations developed in D'Amour and Oandasan's (2005) framework. Grymonpre et al. (2016) used the IECPCP framework as a guide to identify specific educational and socialization factors for IPE at the micro level and identify areas for improvement at the meso level and macro level. Interaction and cooperation between academic programs and healthcare systems was critical to the framework (Grymonpre et al., 2016).

D'Amour and Oandasan's framework (2005) with the Adoption Model (Grymonpre et al., 2016) should serve as a basis for evaluating IPE programs for sustainability. Grymonpre et al. (2016) offered a reflection of the results of IECPCP framework and guidance for building a sustainable IPE program. At the micro level, the IECPCP framework centered on the learner and

the patient, thus having educational and practice application (D'Amour & Oandasan, 2005). Critical elements for a sustainable IPE program at the micro level included having a common structure and language across disciplines, applying educational theory to learning opportunities, organizing IPE planning sessions, attending faculty development, engaging learners, creating a continuum of learning, addressing importance of interprofessional communication, and developing plans to prepare for change (Grymonpre et al., 2016). At the meso level, Grymonpre et al. (2016) suggested leadership support, organizational structure, a designated IPE coordinator, dedicated resources, and strategic plan were critical elements needed for a sustainable IPE program. Finally, critical elements for the macro level included developing partnerships with government agencies and the practice community, letting accreditation drive IPE, supporting research and scholarly works, and evaluating to improve the quality of the program (Grymonpre et al., 2016). Thus, the IECPCP framework with the Adoption Model (Grymonpre et al., 2016) was the basis for evaluating this IPE program for sustainability. Appendix A is the evaluation tool used for the faculty interviews.

Methodology

Setting

The three university campuses are located in the same city in the southeastern United States. The school of medicine and the school of pharmacy were satellite campuses from larger universities within the southeast. The school of medicine and the school of pharmacy shared a clinical teaching facility approximately 15 miles from the college of nursing.

Participants

Participants included faculty who participated in the IPE events and planning meetings in 2017- 2019 from the three universities. Additionally, faculty volunteered to be interviewed in

discipline-specific focus groups for approximately one hour. Learners from the three universities who participated in the IPE event in 2017 and 2018 were invited to take part in an electronic survey.

Data Collection

Data collection occurred in three phases. The first part was the review of program documentation. Documentation review included information from IPE planning meeting minutes, IPE debriefing notes, and IPE schedules. Documents from 2017 through spring of 2019 were reviewed, summarized, and compared to the list of critical elements of sustainability. Critical elements of sustainability included faculty development, IPE leaning across the curriculum, strategic planning, forming academic and community partnerships, and documenting health outcomes of IPE.

The second part of the data collection was the surveying of learners. An electronic survey was sent by email to learners who participated in the IPE program in 2017 and 2018. Informed consent was obtained before learners completed the survey (Appendix B). The learners were asked to give specific examples of how IPE training affected a health outcome in their practice or clinical settings (Appendix C). The learners had ten days to complete the six-question survey, and a reminder email was sent after five days to encourage responses. Learners provided suggestions for improving the IPE program and provided basic demographic information such as which program they completed and where they are currently practicing.

The final part of the data collection was the faculty focus group interviews. Twenty faculty members from the three universities were invited by email to participate in the focus group interviews. Informed consent was obtained from IPE faculty from pharmacy, medicine, and nursing (Appendix D). Approval letters from each academic institution are in Appendix E.

The interview consisted of 23 questions which focused on how the joint IPE program addresses the elements of sustainability. Faculty were asked to provide suggestions for addressing missing elements or offer suggestions for improving the integration of existing elements. The interviewer grouped the open-ended questions by micro, meso, and macro levels. The interviewer asked follow-up questions, when needed, to clarify responses. Interview data were kept confidential and stored on a secure computer, and notes were kept in a locked drawer in a locked office. The use of focus groups early in the evaluation process is useful in developing surveys used later in the program evaluation (Reeves et al., 2015) and when interaction among interviewees will likely yield more information (Creswell, 2015). All interview questions related to elements deemed critical to a sustainable IPE program by D'Amour and Oandasan (2005) and Grymonpre et al. (2016) (see Appendix A). An internal evaluator with first-hand knowledge of the IPE program conducted the focus group interviews.

Data analysis included descriptive statistics of the participants and a descriptive analysis of the data from the focus group interviews, electronic survey data, and program documents. The data were compared to the critical elements of sustainability as described by D'Amour & Oandansan (2005) and Grymonpre et al. (2016).

Potential barriers to the data collection were the use of an internal evaluator and recruitment of participants. The internal evaluator must be aware of any bias and ensure the conclusions derive from the data and not from personal opinion (Lavinghouze & Snyder, 2013). Advantages of an internal evaluator include having an intimate knowledge of the program and resources and an ability to negotiate access to stakeholders and documents (Freeth et al., 2005). Also, an internal evaluator can process emerging data faster and more effectively than an external evaluator (Freeth et al., 2005).

An additional concern was recruiting participants. Faculty members are frequently busy with teaching assignments and clinical work. Thus, scheduling a time for the focus group interview was carefully coordinated. Each academic institution provided email addresses for the learners. However, several email addresses returned as inaccurate. Of the 86 learners from 2017 and 2018, only 51 emails were verified.

Ethical Considerations

The institutional review board approved the study, and participants volunteered and gave informed consent. Participants did not receive payment or compensation for participating in the project. The use of an internal evaluator poses a potential bias. The learners were no longer students or interns, and thus, grades or evaluations could not be affected by participation status. Finally, interview data were kept confidential and stored in a secure site, and electronic survey responses were anonymized.

Findings

Program Documents

In 2017, deans from nursing and medicine and a faculty member from pharmacy agreed to bring NP students, medicine interns, and pharmacy students together for IPE simulations. In the spring of 2017, the faculty from the three academic institutions met to modify existing simulation scenarios and choose skills for the learning event. Since that time, the faculty from each academic institution have met three to four times each year, including simulation dry-runs, post IPE event debriefing, and planning meetings. During the first year, 2017, the learners came together for the entire day and rotated through skills labs and simulations in mixed IPE teams. Post IPE debriefing comments noted that faculty had different understandings of the goals of the skills labs, and some skills labs were not meeting the learner's needs or faculty expectations. At

the follow-up planning meeting in 2018, the medicine faculty expressed concern that the NP students were more familiar with simulations, and this gave the NP students an advantage over the interns. The medicine faculty requested, and pharmacy and nursing faculty agreed, to change the schedule to allow the interns and pharmacy students to run through simulation scenarios together in the morning and have the NP students join in for the afternoon session. The faculty also noted the need for learners to interact with each other before the simulations.

In 2018, the medicine interns and pharmacy students completed simulations in the morning, and the NP students joined for afternoon simulations and a case study which was intended to mimic grand rounds. The faculty introduced an ice-breaker game, and students interviewed other members of their team during lunch to learn teamwork skills and learn about each other's role. Additionally, learners were surveyed using the Readiness for Interprofessional Learning Survey (RIPLS) (McFayden et al., 2005), and all learners showed a high level of readiness for IPE. During debriefing in 2018, the medicine faculty stated the change in schedule was beneficial, and the intern's performance in the afternoon met the faculty's expectations.

In the fall of 2018, a nursing faculty member and a pharmacy faculty member adapted a simulation scenario for IPE learning. The pharmacy faculty member participated in a simulation with the AGACNP students. Additionally, to improve team functioning, the faculty developed a longer team-building game for 2019 and, the IPE faculty jointly created the new outpatient scenario based on faculty and learner feedback.

When compared to the critical elements for IPE sustainability at the micro level, the program documents do not contain information about faculty development with the exception of a meeting agenda item in 2018 that was not discussed due to lack of time. Ice breakers were added and extended to improve teamwork, an IPEC competency. However, formal training in

the IPEC competencies was not documented. Learner engagement came from debriefing but, learners were not included in the planning. Patient-centered learning was addressed in the development of a new outpatient scenario.

The critical elements of IPE sustainability at the meso level were given less attention. The documentation did not contain a mission, vision, or goals. Also, a budget discussion was not documented.

At the macro level, the documents supported scholarly work. In 2018, a discussion during a planning meeting led to an interprofessional abstract submission. Although the learner's perception of IPE was measured, the documents did not indicate an attempt at measuring health outcomes related to the IPE program. Additionally, the program documents did not support discussion or action on forming additional academic or community partnerships, accreditation requirements, or collaborative learning beyond the IPE program.

Learner's Survey

A total of 86 learners participated in the IPE learning event in 2017 and 2018. Working email addresses were obtained for 51 learners (20 for medicine, three for pharmacy, 28 for nursing). Fifteen (29.4%) of the 51 learners who were sent the electronic survey responded (two from medicine, none from pharmacy, 13 from nursing). Five of the learners participated in the 2017 IPE event, and 10 learners participated in the 2018 IPE event. Table 1 is a summary of participants by academic discipline. The learners currently practice in various geographical locations. Geographical locations range from as far north as Delaware and Virginia, as far west as Texas, and as far south as Florida. The majority of the learners who responded to the survey practice within the southeastern U.S. Practice settings for learners include critical care, pain

management, neurology, orthopedics, urology, infectious disease, internal medicine, family medicine, cardiology, and nephrology.

Table 1

IPE Program Evaluation Participants

	Faculty	Learners	Total
Nursing	n= 7	n= 13	n = 20
Medicine	n = 6	n = 2	n = 8
Pharmacy	n = 4	n = 0	n = 4
Total	n = 17	n = 15	n = 32

Although requested to provide specific examples of how participating in the IPE program lead to improved health outcomes, most responses from the learners were non-specific. For instance, learners commented that "the simulation helped me to understand their grasp of our education as well as understand their thought process." One learner responded: "the simulation helps integrate teamwork with the healthcare team while also emphasizing the patient leading to better patient outcomes. While admitting patients in the emergency room, this has helped me see the big picture and has helped with communication across the board." A more specific description of a positive health outcome related to the IPE program was ". . . a post kidney transplant patient experiencing respiratory issues but was managed mostly by the transplant doctor. The decision had to be made to intubate the patient based upon clinical presentations and unsuccessful attempts to diuresis based upon belief he was volume overloaded. After consulting with [the anesthesia service], the decision was made [collaboratively to intubate the patient] without further compromise." Another survey response was, "The interprofessional event helped me to develop my communication skills with other professionals. I was able to use these skills when dealing with a situation with a physician where we did not agree on the patient's treatment

course. We were able to agree to better the patient's care." Learners also commented that collaborating with pharmacists improved the optimization of patient's medications and the IPE program improved the ability to work with multiple healthcare providers "to get the best possible outcome for patients."

The learners offered suggestions for additions or changes to the IPE program to improve the learner's ability to function in an interdisciplinary healthcare team to improve health outcomes. Learners suggested more opportunities to practice patient presentation and to develop differential diagnoses as a team. Another suggestion was to have a day where learners can ask questions and interact with various healthcare professionals that the learners did not have an opportunity to interact with during their clinical rotations. Three NP students (one from 2017 and two from 2018) noted that the interns and medicine faculty did not understand the role of the NP, and one learner specifically said that the interns would ". . . discuss with each other what was going on but not with the NP." Another learner stated, "Start with the professors for M.D. students – educate them on what the NP role is/does. It trickles down from there. I felt that some of the professors were arrogant/demeaning to the NP students." Overall, learners viewed the IPE program as positive. The common theme in the suggestions from NP respondents was a desire for more IPE events.

Faculty Focus Group Interviews

The faculty participated in focus group interviews during June 2019. Seventeen faculty members participated in the faculty interviews (six from medicine, four from pharmacy, and seven from nursing). The faculty focus group interviews lasted 40 - 75 minutes. The average faculty member attended 3.18 IPE training programs that supported their role as IPE faculty. One faculty member who participated in the IPE program for two years reported attending 500

IPE educational offerings, but this was a distant outlier and not included in the average. Table 2 is a summary of the faculty interviews as they relate to the critical elements at the micro, meso, and macro levels.

Table 2

Summary of Faculty Focus Group Interviews

Micro	Meso	Macro
✓ Faculty development	✓ Institutional/Administrative support	✓ Academic, community, government partners
✓ Patient-centered learning	Strategic planning (mission, vision, goals)	✓ Accreditation Requirements
✓ Incorporating IPE core competencies in the curriculum.	Dedicated funding	✓ Collaborative practice opportunities for students beyond the IPE program
✓ Learner engagement		✓ Scholarly products
✓ Applying educational theory		Program evaluation (health outcomes)

✓ = the element is present to some extent

Micro Level

While all faculty have participated in some form of training that supports the role of an IPE faculty team member, the faculty did suggest additional programs to support their IPE role. The faculty reported programs such as web-based training modules, live hands-on courses participating in interprofessional simulations, and faculty led debriefing training were helpful in developing skills as an IPE faculty member. The faculty suggested specific programs such as TeamSTEPPS®, IPEC yearly Spring Institute, and a regional university's IPE poverty simulation. Broader suggestions for faculty development program topics included courses on IPEC competencies, and how to integrate more than one discipline in IPE learning scenarios.

The faculty disagreed about how well the IPE program promoted the patient as the key member of the healthcare team. One faculty member stated that too much emphasis was placed on the patient, and not enough emphasis was placed on teamwork. Other faculty noted that the simulation scenarios were designed to be patient-focused, but, the learners have difficulty focusing on the patient due to the complexity of team members sorting out roles. One pharmacy faculty member suggested that learners are better able to focus on patients in the clinical setting as opposed to the IPE simulations. Suggested solutions for promoting the patient as the key member of the healthcare team were to add a specific objective that relates to patient-centered care and communication. The faculty also suggested spending more time teaching teamwork skills before the simulations, improving debriefing techniques to emphasize communication and teamwork as opposed to getting the diagnosis correct, and having faculty create videos modeling desired behaviors and having learners critique the videos.

The faculty groups also had varying opinions about which of the four IPEC competencies (communication, teams and teamwork, roles and responsibilities, and values and ethics) are part of the IPE program. All agreed communication and teams and teamwork are prominent in the IPE program. However, the faculty groups disagreed on whether values and ethics and roles and responsibilities are part of the IPE program.

Several faculty suggestions for improving the integration of IPEC competencies included adding "what ifs" to simulation debriefing to encourage learners to consider different strategies for patient care when ethical issues occurred. The medicine faculty suggested developing scenarios that address social determinants of health such as poverty. A broader suggestion from nursing suggestion was to create a core IPE faculty team with two members from each discipline

to build and coordinate the program. The team would map the IPEC competencies across a growing IPE program.

The topic of learning theories used in the IPE program did not generate much discussion. Several nursing faculty members noted Kolb's experiential learning theory as the basis for the simulation scenario development. The pharmacy faculty pointed out that learning theory is part of the student's orientation but was unaware of any theory applied in the IPE program. The medicine faculty did not indicate whether learning theory is used in the development of IPE simulations.

The faculty focus groups noted multiple opportunities for additional IPE learning throughout the learner's programs. These opportunities included NP students spending a day with another health professional to learn about education, certification, and licensure for that role. Additionally, pharmacy students and medical residents participating in interprofessional journal club to debate emerging healthcare topics. Other examples of IPE learning opportunities are medicine residents and pharmacy student consulting with embedded social workers in a clinical setting and NP students rotating through an NP faculty run clinic that collaborates with medicine. The IPE program, however, does not have a mechanism for progressive IPE learning along the education continuum. To improve progressive interprofessional learning along a continuum, faculty suggested developing simulations that build on previous IPE learning and using telehealth robots to increase IPE learning opportunities.

All of the faculty agreed that the learner involvement in IPE planning comes from debriefing feedback after the learning event. Learners do not participate in the initial planning of the IPE event; however, the feedback from debriefing is used in future planning. The medicine faulty noted that the interns arrive at campus approximately one week before the IPE event and

spend that time completing orientation requirements, and thus, it is not feasible to include them in the planning process. The faculty focus groups agreed that involving learners in the planning meetings could benefit the program.

The faculty focus groups offered many suggestions for increasing communication among academic programs. Pharmacy and medicine faculty practice in the same building, and thus, opportunities to communicate and collaborate are readily available. A frequent comment from each of the faculty focus groups was the heavy faculty workload, which limited time for interprofessional communication and collaboration among faculty. Faculty perceive IPE as an "add-on" requirement without protected time. The faculty suggested having protected time for IPE planning and development may improve faculty "buy-in" and participation. Additionally, one suggestion was to invite the nursing faculty to attend and present at medicine grand rounds to increase faculty interaction.

The faculty focus groups agreed that IPE was part of each disciplines curriculum. However, nursing noted that the IPE program is not explicitly referenced in the syllabi because not all of the NP students can participate in the program. Currently, the IPE simulation day has 20 interns, 20 NP students (ten FNP and ten AGACNP), and approximately four pharmacy students). At least 80% of the NP students do not participate in the IPE simulation day due to limited space for learners in the half-day event. In 2018, all AGACNP students (48) participated in a simulation with undergraduate nursing students and a pharmacy faculty.

Each academic program reported producing scholarly work related to the IPE program. The only product which included authors from the three universities was a poster presented at a national nurse practitioner faculty conference in April 2019. The close physical working environment between pharmacy and medicine is more conducive to creating interprofessional

scholarly projects. The IPE program lacks a mechanism to encourage interprofessional scholarly projects. One nursing faculty suggestion for improving scholarly collaboration was to have the proposed core IPE team establish a yearly research focus and suggest appropriate tools for measuring learner performance and outcomes. Increasing financial assistance for scholarly work and presentations was another suggestion for enticing faculty and learners to engage in IPE research. Nursing students can compete for research funding that compensates them for the time spent on the scholarly project.

Meso Level

Having a strategic plan is critical to IPE program development. However, the faculty agreed that a strategic plan, mission, vision, or goals were not established. An important part of strategic planning is funding. All faculty focus groups agreed that IPE is not a line item in the budgets. To support IPE, the academic deans must find money within the existing operating budgets.

Logistical support for the IPE program comes from nursing's simulation laboratory. The simulation laboratory staff set up simulation rooms, maintain equipment, provide audio and video capture of the simulations, train standardized patients, and assist with coordinating the event. The IPE program does not have a dedicated staff person to manage logistics. The faculty focus groups suggested applying for outside funding such as a grant as a way to fund a staff position to manage the logistics for the IPE program. The nursing faculty commented that grant money is scarce and difficult to get.

Macro Level

Currently, three academic programs form the IPE program. Faculty members disagree about whether to add more partners. Medicine faculty commented that an additional partner

would make the program "too big and too difficult to manage." One nursing faculty member noted that until the current partners are "on the same page," adding more partners would not be a good idea. Several faculty members from the various programs suggested potential partners such as hospital chaplains, hospice organizations, the local indigent medical and dental clinics, high school healthcare academy programs, geriatric health clinics, and senior centers.

Faculty were asked if the current IPE program met each academic disciplines accreditation IPE requirements *completely*, *somewhat*, or *not at all*. All of the faculty focus groups agreed that the current IPE program was *somewhat* meeting accreditation requirements. Nursing faculty want all NP students to participate in the IPE program and to increase the number of IPE offerings per year to meet accreditation requirements. Also, the pharmacy faculty stated that some of the pharmacy preceptors are reluctant to release students to participate in IPE events, which limits the effectiveness of the IPE program in meeting accreditation requirements.

An overall objective of the IPE program was to bring learners together to learn how to function as a healthcare team to improve health outcomes. Thus far, the faculty reported measuring learner's attitudes towards collaborative learning. Faculty noted the inherent difficulty in measuring health outcomes related to IPE because learners complete their programs and move on to practice in various geographical locations. Nursing faculty members suggested developing a broader, more robust program before measuring health outcomes.

The faculty offered additional suggestions for improving sustainability in the IPE program. One idea was for the faculty to review each other's curriculum to learn more about each program's structure and expectations. Interestingly, the nursing faculty expressed concern that the medicine faculty did not understand the role of the NP in healthcare. The nursing faculty also suggested having the medicine interns complete an initial simulation training program on a

separate day from the IPE event. Currently, medicine interns and pharmacy students run through simulated scenarios in the morning, and the NP students join in for the afternoon session. The nursing faculty expressed concern that learners may be fatigued by the afternoon, and this may limit learning. Finally, all faculty focus groups acknowledged that overall, the IPE program is a positive experience for faculty and learners.

Discussion

The IPE program in 2017 was a day-long interprofessional simulation and skills lab event integrating medicine residents, pharmacy students, and nurse practitioner students. For 2018 and 2019, the IPE simulation schedule was decreased to a half day event without skills to accommodate the medicine faculty request. Only one additional IPE event occurred in 2018 with pharmacy and nursing. The planning and scheduling of the IPE program occurred without input from learners. Assessing learners needs and including the learners in the planning process could improve the development of future IPE learning events.

During the faculty focus group interviews, the faculty members from the three academic programs agreed that certain elements critical for sustainability existed within the current IPE program. However, the faculty acknowledged opportunities for improvement to these elements. The elements included adding faculty development, incorporating patient-center learning, integrating IPEC core competencies in the curriculum, engaging learners, applying educational theory, having institutional and administrative support, creating new IPE partnerships, meeting accreditation requirements, and adding collaborative practice opportunities for learners beyond the IPE program. The faculty members disagreed on the addition of other academic, community, or government partnerships. Multiple faculty members expressed interest in creating new

partnerships to expand learning opportunities. New partnerships do not require participation from each academic program.

All faculty members agreed that three elements were missing from the IPE program: strategic planning, dedicated funding, and program evaluation. Table 1 represents the summary of which elements critical to IPE sustainability the faculty identified as being part of the IPE program and the missing elements. Without a strategic plan, including mission, vision, and goals, the IPE program lacks direction and organization. A strategic plan allows for continuity in the program when faculty leave and new faculty join the IPE program. A strategic plan also establishes priorities for the IPE program as the program competes for limited funding.

All learners who completed the survey stated they had applied the knowledge from the IPE program in the clinical setting. Ten learners attributed the IPE program with improving interprofessional communication and teamwork in the clinical setting. Two NP students described situations where IPE training lead to improved health outcomes.

Three NP students agreed that the medicine faculty did not seem to understand the role of the NP. This same sentiment was shared by nursing faculty during the focus group interview. These comments highlight the need for faculty and learners to understand the IPEC core competencies, especially roles and responsibilities.

The majority of the faculty and learners desired more IPE learning events, although, to meet the needs of the interns, the faculty agreed to decrease the IPE event to a half day. The faculty also noted a lack of protected time for IPE development and coordination made adding new learning events problematic. Some faculty stated the lack of protected time made *buy-in* difficult.

Recommendations

The data analysis and the literature support the recommendations for changes and additions to the IPE program to improve sustainability based on the literature and input from faculty and learners. First, learners and most faculty expressed a desire for more IPE events. The IPE program must expand to a minimum of quarterly offerings, including learning outside of the simulation laboratory and with various partners. Expanding the program will allow more learners to participate in IPE. IPE opportunities can include virtual journal club, gaming, grand rounds with interprofessional presentations, and continuing education for faculty and learners. HPAC recommended that IPE learning take place outside of classroom settings and suggested learners participate in IPE seminars and conferences (HPAC, 2019). Additionally, the interns should have their orientation to simulation on a separate from the IPE simulation. This will allow for a longer schedule for IPE.

Secondly, to improve the sustainability of the IPE program, the formation of a core team made up of two faculty members and one learner from each academic partner is needed. This core group will develop a mission, vision, goals, and a strategic plan for the IPE program. The strategic plan should be consistent with HPAC guidelines (2019) as these guidelines were created by a joint committee which included the accreditation agencies representing pharmacy, nursing, and medicine education (ACPE, CCNE, and LCME). Additionally, this core team would plan faculty development programs so that all faculty members are receiving consistent IPE training. Supporting faculty development is a priority of HPAC (2019). Faculty development must include topics such as learning and demonstrating the IPEC core competencies, SIM IPE guidelines, and debriefing techniques. Specifically, TeamSTEPPS® training should be added for faculty and learners. TeamSTEPPS® is a training program to

improve collaboration and communication (AHQR, 2019). Consideration should be given to faculty created videos demonstrating the IPEC competencies for the learners to review.

Third, the core IPE team will work on developing new academic and community partners for various IPE learning activities throughout the year. New partnerships should not be limited to academic programs. Consideration should be given to healthcare facilities such as rehabilitation facilities where learners have access to multiple disciplines. Utilizing technology such as telehealth opens the doors to more partnership opportunities beyond our community. Each academic program should investigate partnerships that meet their learner's needs. Creating partnerships for specific learning objectives will increase the learner's exposure to IPE, provide additional opportunities to incorporate IPEC competencies in learning environments beyond the simulation laboratory, and integrate IPE across each academic program's curriculum. Having multiple partners and learning opportunities will allow more nursing students, both graduate and undergraduate, to patriciate in IPE learning.

Fourth, another task for the core IPE team will include seeking dedicated funding. HPAC suggested the role of IPE leaders include appropriating sufficient resources, including financial, to support IPE (HPAC, 2019). HPAC (2019) supports development of financial models to support IPE which may require tuition adjustments. Additionally, the core task force should seek grant funding. However, before applying for grants, the team will need to develop innovative IPE learning opportunities that align with the funding agency's priorities. For example, the Josiah H. Macy Foundation provides for grants for IPE and teamwork that help learners from disciplines such as nursing, pharmacy, medicine, and social work. Other priorities of the Josiah H. Macy Foundation that could encompass IPE are developing new curriculum content focusing on issues such as patient safety and population health, developing new models for clinical

education, and addressing the care needs of underserved populations (The Macy. Foundation, 2019). Additional organizations providing funding for IPE are summarized in Table 3.

Table 3

Funding Opportunities for IPE

Name of Organization and Website	Funding Priorities
The John A. Hartford Foundation https://www.johnahartford.org/grants-strategy/current-strategies/age-friendly	Improving the care of older adults: 1. Age-friendly systems 2. Family caregiving 3. Serious illness and end of life (The John A. Hartford Foundation, n.d.)
The Josiah Macy Jr Foundation https://macyfoundation.org/our-priorities	Ensure health professionals are equipped to meet contemporary health needs and work effectively within today's health care environment: 1. Interprofessional education and teamwork 2. New curriculum content 3. New models for clinical education 4. Care for underserved communities 5. Career development in health professions education (The Macy Foundation, n.d.)
Robert Wood Johnson Foundation https://www.rwjf.org/en/our-focus-areas.html	To Achieve health equity and expand opportunity to pursue the best health possible: 1. Health systems 2. Healthy communities 3. Healthy children and families 4. Leadership for better health (Robert Wood Johnson Foundation, 2018)
Agency for Healthcare Research and Quality (AHRQ) https://www.ahrq.gov/topics/index.html	To improve healthcare safety, quality, equity, accessibility, and affordability: 1. Improve health care patient safety 2. Using data and technology to improve health care quality and patient outcomes 3. Increase accessibility and affordability of healthcare (AHRQ, 2014)

Fifth, to improve collaboration on scholarly projects, the core IPE team will establish a yearly research focus and evaluation tools. Learners will participate in the design, implementation, and dissemination of scholarly projects. Scholarly work creates another opportunity for IPE.

Sixth, to facilitate the work of the core IPE team, the faculty need protected time, such as release from other committee responsibilities. HPAC (2019) calls explicitly for protected time for IPE leaders and faculty. Additionally, when planning the funding request, consideration must be given to funding a part-time person to manage logistics, assist with research, and facilitate communication among partners. Communication tools can include social media or websites to keep faculty and learners updated on IPE events, educational programs, and current research. IPE learning opportunities can be designed to meet more than just IPE accreditation requirements; thus, shifting some teaching topics to IPE learning. For example, bringing learners together for pharmacology or health assessment lectures, having learners engage in research and scholarly writing, or developing IPE scenarios with a focus on cultural competencies.

Seventh, the core IPE team will conduct follow up program evaluations to include documenting health outcomes related to the IPE program using reliable and valid tools (Decker et al., 2015; HPAC, 2019). Currently, the faculty do not agree on which of the IPEC competencies are taught in the IPE program. Therefore, the core team must ensure the IPEC core competencies are integrated throughout the curricula. A coordinated effort among partners will likely lead to a more efficient collection of outcomes data. Learner assessment data should come from self-reports, faculty observations, and objective measures (HPAC, 2019). Obtaining accurate learner contact information and longitudinal data related to IPE health outcomes should be a priority. The next program evaluation should be conducted in two to three years using the same evaluation tool. A two to three-year plan allows for time to implement changes and collect data needed for the next evaluation. The strategic plan should include the schedule for program reevaluation. The evaluation must include a review of the mission, vision, and goals. The frequency of the program evaluations should coincide with any grant funding requirements for

periodic reporting. Finally, the findings and recommendations of this project will be presented to the IPE faculty and leaders Summer 2019 so that planning can begin for the 2019-2020 academic year.

Limitations

The IPE program consists of three academic partners from the southeast U.S. Seventeen faculty members participated in the focus group interviews, and fifteen learners participated in the electronic survey about the IPE program. Therefore, results and conclusions cannot be generalized. The limited number of survey responses from learners makes evaluating health outcomes related to the IPE program difficult. Survey difficulties included the medicine faculty only permitted surveying of the interns that participated in the 2018 IPE event, the roster for the 2017 event did not have the correct list of NP students who participated, and not all email addresses on file for the former NP or pharmacy students were accurate. Learners offered mostly non-specific examples of how the IPE program improved health outcomes. The learners were not asked if they practice in an environment that supports or encourages interprofessional collaboration, which may influence the learner's ability to apply IPE knowledge and skills.

Furthermore, self-reported results have an inherent bias. Learners who did not participate in the IPE event were not included in the survey. Including those learners in the evaluation process may have added to our understanding of the IPE health outcomes. Additionally, the IPE program primarily consists of a single yearly event at this time, and only a fraction of the total NP students participated. Thus, attributing health outcomes to the IPE program is challenging.

Application to Practice

Accreditation agencies mandate IPE in nursing education programs (AACN, 2015); thus, nursing faculty must take an active role in developing sustainable IPE initiatives. Additionally,

periodic evaluation of the IPE program must be completed to ensure learning outcomes are met, and stakeholders have a voice in program planning (Reeves et al., 2015). Program evaluation will also assist IPE faculty in documenting health outcomes related to the IPE program. Health outcomes included a reduction in the cost of care, improvement in patient satisfaction, reduction in medication errors, and collaborative development of evidence-based protocols. The evaluation process will be used as a method for ongoing program evaluation in the future. The adapted evaluation tool is easy to use and provides a comprehensive approach for developing and evaluating a sustainable IPE program. Furthermore, the tool includes the critical element of evaluating health outcomes related to IPE. Findings from this project will be used to make changes and additions to the IPE program and improve sustainability.

Summary

Program evaluation using a framework consistent with established guidelines is necessary for building and growing a sustainable IPE program. The IPE program evaluation tool based on the IECPCP (D'Amour & Oandansan, 2005) and the Adoption Model (Grymonpre et al., 2016) was consistent with the HPAC (2019) and Sim IPE (Decker et al., 2015) guidelines and easy to implement. Interestingly, faculty and learner comments and suggestions were also consistent with the HPAC and Sim IPE guidelines. Most importantly, sustainable IPE programs will lead to improved interprofessional collaboration and health outcomes.

Professional Journal Selection

The completed manuscript will be submitted to the Journal of Interprofessional Care. The journal was established in 1992 to disseminate information in the field of interprofessional education (IPE) and interprofessional practice (IPP). The journal editors solicit peer-reviewed original articles, systematic reviews, and theoretical manuscripts with a focus on a concept or topic related to IPE or IPP. Submitted manuscripts may be up to 6,000 words to include the abstract and references. The journal is indexed and abstracted by two databases commonly accessed by nurse researchers: Cumulative Index to Nursing & Allied Health Literature (CINAHL) and MEDLINE. The current Editor-In-Chief is Andreas Xyrichis of King's College London, UK. The editorial board for the Journal of Interprofessional Care consists of prominent IPE and IPP researchers such as Merrick Zwarenstein, Barbara Brandt, Amy V. Blue, Sarah Hean, and Jill Thistlethwaite. Several of the editors have published papers calling for improved methods of IPE program evaluations, including health outcomes in IPE research. The Journal of Interprofessional Care will be the ideal journal for this manuscript submission. Proof of manuscript submission is in Appendix F.

Abstract

Interprofessional education (IPE) is a requirement for many health profession education programs. Research studies reporting the outcomes of single and isolated IPE offerings are plentiful, with most studies reporting learners' attitudes toward IPE as opposed to health outcomes. Documenting how the sustainability of IPE programs and the effects on performance of healthcare teams and health outcomes is vital in supporting the integration of IPE. In 2017, learners from three healthcare education programs (nursing, medicine, and pharmacy) in the southeastern United States (U.S.) began an IPE program. The Interprofessional Education for Collaborative Patient-Centered Practice framework with the Adoption Model served as a basis for evaluating the IPE program for sustainability at the micro, meso, and macro level. Results of faculty focus group interviews (n= 17 faculty) and an electronic survey emailed to learners (n= 15 learners) indicated three elements critical to IPE sustainability were missing and other elements needed improvement. The learners offered general and specific instances where the IPE program improved health outcomes. Faculty and learners viewed the IPE program as positive and desired more IPE learning events.

Keywords: interprofessional education, sustainability, evaluation, nursing, medicine, pharmacy.

Evaluating an Interprofessional Education Program for Sustainability

Introduction

The Joint Commission (2013) attributed the rise in patient care errors to the lack of effective collaboration among healthcare providers. Furthermore, Makary and Daniel (2016) concluded that medical errors in communication, diagnostics, judgment, and skills were the third leading cause of death in the United States (U.S.). For close to 40 years, researchers and educators acknowledged that interprofessional learning has the potential to improve health outcomes and healthcare delivery (Reeves et al., 2018). The World Health Organization (WHO) defined interprofessional education (IPE) as the coming together of students from at least two different healthcare disciplines to collaborate and improve healthcare outcomes (WHO, 2010). Through IPE, healthcare students gain a better understanding of the roles and responsibilities of other healthcare specialties (Soine, Errico, Redmond, & Sprow, 2013). Thus, graduates from health professions schools must be prepared to work in interprofessional teams to provide high-quality patient care effectively and efficiently while containing costs (Meleis, 2016).

The Interprofessional Education Collaborative (IPEC) aims to guide curriculum development across health profession education programs (IPEC, 2011). IPEC established four core competencies of IPE: communication, values and ethics, roles and responsibilities, and teams and teamwork to guide IPE program development (2011). In an effort to consistently guide IPE development in health professions in the U.S., the Health Professions Accreditors Collaborative (HPAC) was founded in 2014 (HPAC, 2019). HPAC published IPE guidelines that were created by a joint committee which included the Accreditation Council for Pharmacy Education (ACPE), Commission on Collegiate Nursing Education (CCNE), and Liaison Committee on Medical Education (LCME). The HPAC guidelines provided consistent

expectations for IPE learning across health profession disciplines. Examples of the HPAC guidelines include having a strategic direction, securing adequate resources, having dedicated leaders, providing faculty development to include the IPEC competencies, conducting learner assessment, and evaluating the IPE program to include outcomes. Documenting how IPE effects the function and performance of healthcare teams and patient outcomes is vital in supporting the integration of IPE health profession education programs (Thistlethwaite, 2012). Research studies reporting the outcomes of single and isolated IPE offerings are plentiful with most studies reporting learners' attitudes toward IPE as opposed to healthcare outcomes (Hanyok et al., 2013).

A review of the literature failed to identify any studies evaluating entire IPE programs using rigorous criteria to analyze the program at a micro, meso, and macro level. The micro level refers to teaching and learning factors such as what to teach and how to teach the IPE content. The meso level refers to institutional factors such as IPE leaders and organizational structure. The macro level refers to factors outside the institution, such as government and accreditation policies, external grant funding, and community partners (D'Amour & Oandansan, 2005; Grymonpre et al., 2016).

The evaluation process is a crucial component of program development by informing stakeholders about resource utilization, giving a voice to all stakeholders (Blue, Chesluk, Conforti, & Holmboe, 2015), assessing achievements, and identifying opportunities for growth and improvement (Freeth, Hammick, Reeves, Koppel, & Barr, 2005; Grymonpre et al., 2016). Before the evaluation begins, the evaluator must identify a clear purpose for the evaluation (Reeves, Boet, Zierler, & Kitto, 2015). Additionally, a framework for the evaluation aids in directing and focusing on the goal of the evaluation and adds to the growing body of knowledge related to IPE (Reeves et al., 2015). Blue and colleagues (2015) found that many institutions did

not explicitly report using a framework for IPE program evaluations. A comprehensive method for evaluating IPE programs for sustainability is essential because a systematic approach can ensure the attainment of program objectives and identify opportunities for improvement (Grymonpre et al., 2016).

In 2017, an IPE program was established between three universities in the southeastern U.S., bringing together learners from nursing, medicine, and pharmacy. Currently, the IPE program consists of multiple faculty planning meetings throughout the year and an annual single-day IPE event with nurse practitioner students, medical interns, and pharmacy students. Also, in 2018, a pharmacy faculty participated in a telehealth IPE simulation with graduate NP students and undergraduate registered nurse students.

In the literature, the phrase *IPE program evaluation* often describes single learning events but, rarely describes IPE across a curriculum (Anderson, Smith, & Hammick, 2016). The purpose of this project was to evaluate an IPE program for elements critical for sustainability at the micro, meso, and macro level, and suggest recommendations that will improve the program's sustainability. The project questions were: What elements critical to IPE sustainability does the joint IPE program have?, What missing elements critical to sustainable IPE do the faculty and learners support integrating into the joint IPE program?, and Does the joint IPE program have a positive impact on health outcomes?

Conceptual Framework

D'Amour and Oandasan (2005) proposed a theoretical framework for developing a sustainable IPE program, the Interprofessional Education for Collaborative Patient-Centered Practice (IECPCP), that focused on the critical elements needed for sustainability at the micro, meso, and macro levels. The IECPCP framework linked collaboration and factors affecting

collaboration at micro, meso, and macro levels. The IECPC framework also served as a link between IPE and interprofessional collaboration (IPC) by focusing on the learner and the patient.

Grymonpre et al. (2016) operationalized the IECPCP framework by creating the Adoption Model for sustainable IPE programs. Grymonpre et al. (2016) attributed the success of the IPE program at the University of Manitoba to the foundations developed in D'Amour and Oandasan's (2005) framework. Grymonpre et al. (2016) used the IECPCP framework as a guide to identify specific educational and socialization factors for IPE at the micro level and identify areas for improvement at the meso level (institution) and macro level (partners, practice settings, and government regulatory agencies). Interaction and cooperation between academic programs and healthcare systems was critical to the framework (Grymonpre et al., 2016).

Grymonpre et al. (2016) offered a reflection of the results of IECPCP framework and guidance for building a sustainable IPE program. At the micro level, the IECPCP framework centered on the learner and the patient, thus having educational and practice application (D'Amour & Oandasan, 2005). Critical elements for a sustainable IPE program at the micro level included having a common structure and language across disciplines, applying educational theory to learning opportunities, organizing IPE planning sessions, attending faculty development programs, engaging learners, creating a continuum of learning, addressing importance of interprofessional communication, and developing plans to prepare for change (Grymonpre et al., 2016). At the meso level, Grymonpre et al. (2016) suggested leadership support, organizational structure, a designated IPE coordinator, dedicated resources, and strategic plan were critical elements needed for a sustainable IPE program. Finally, critical elements for the macro level included developing partnerships with government agencies and the practice community, letting accreditation drive IPE, supporting research and scholarly works, and

evaluating to improve the quality of the program (Grymonpre et al., 2016). Thus, the IECPCP framework with the Adoption Model (Grymonpre et al., 2016) was the basis for evaluating this IPE program for sustainability.

Methodology

Data collection occurred in three phases. The first part was the review of program documentation. Documentation review included information from IPE planning meeting minutes, IPE debriefing notes, and IPE schedules. Documents from 2017 through the spring of 2019 were reviewed, summarized, and compared to the list of critical elements of sustainability.

The second part of the data collection was the surveying of learners. An electronic survey was sent to learners who participated in the IPE program in 2017 and 2018. Informed consent was obtained before learners completed the survey. The learners were asked to give specific examples of how IPE training affected a health outcome in their practice or clinical settings. The learners had ten days to complete the six-question survey, and a reminder email was sent after five days to encourage responses. Learners provided suggestions for improving the IPE program and provided basic demographic information such as which program they completed and where they are currently practicing.

The final part of the data collection was the faculty focus group interviews. Twenty faculty members were invited via email to participate in the in-person focus group interviews. Informed consent was obtained from IPE faculty from pharmacy, medicine, and nursing. The interview consisted of 23 questions which focused on how the joint IPE program addresses the elements of sustainability. Faculty were asked to provide suggestions for addressing missing elements or offer suggestions for improving the integration of existing elements. The interviewer grouped the open-ended questions by micro, meso, and macro levels. The

interviewer asked follow-up questions, when needed, to clarify responses. All interview questions related to elements deemed critical to a sustainable IPE program by D'Amour and Oandasan (2005) and Grymonpre et al. (2016). An internal evaluator with first-hand knowledge of the IPE program conducted the focus group interviews.

Data analysis included descriptive statistics of the participants and a descriptive analysis of the data from the focus group interviews, electronic survey data, and program documents. The data were compared to the critical elements of sustainability as described by D'Amour & Oandansan (2005) and Grymonpre et al. (2016).

Findings

Program Documents

In 2017, deans from nursing and medicine and a faculty member from pharmacy agreed to bring NP students, medicine interns, and pharmacy students together for IPE simulations. In the spring of 2017, the faculty from the three academic institutions met to modify existing simulation scenarios for interprofessional learning and choose skills for the learning event. Since that time, the faculty from each academic institution have met three to four times each year, including simulation dry-runs, post IPE event debriefing, and planning meetings. During the first year, 2017, the learners came together for the entire day and rotated through skills labs and simulations in mixed IPE teams. Post IPE debriefing comments noted that faculty had different understandings of the goals of the skills labs, and some skills labs were not meeting the learner's needs or faculty expectations. At the follow-up planning meeting in 2018, the medicine faculty expressed concern that the NP students were more familiar with simulations, and this gave the NP students an advantage over the interns. The faculty agreed to change the schedule to allow the interns and pharmacy students to run through simulation scenarios together in the morning

and have the NP students join in for the afternoon session. The faculty also noted the need for learners to interact with each other before the simulations.

In 2018, the medicine interns and pharmacy students completed simulations in the morning, and the NP students joined for afternoon simulations and a case study which was intended to mimic grand rounds. The faculty introduced an ice-breaker game, and students interviewed other members of their team during lunch to learn teamwork skills and learn about each other's role before the interprofessional simulations. Additionally, learners were surveyed using the Readiness for Interprofessional Learning Survey (RIPLS) (McFayden et al., 2005), and all learners showed a high level of readiness for IPE. During debriefing in 2018, the medicine faculty stated the change in schedule was beneficial, and the intern's performance in the afternoon met the faculty's expectations.

In the fall of 2018, a nursing faculty member and a pharmacy faculty member adapted a simulation scenario for IPE learning. The pharmacy faculty member participated in a simulation with the AGACNP students. Additionally, to improve team functioning, the faculty developed a longer team-building game for 2019 and, the IPE faculty jointly created the new outpatient scenario based on faculty and learner feedback.

When compared to the critical elements for IPE sustainability at the micro level, the program documents do not contain information about faculty development with the exception of a meeting agenda item in 2018 that was not discussed due to lack of time. Ice breakers were added and extended to improve teamwork, an IPEC competency. However, formal training in the IPEC competencies was not documented. Learner engagement came from debriefing but, learners were not included in the planning. Patient-centered learning was addressed in the development of a new outpatient scenario.

The critical elements of IPE sustainability at the meso level were given less attention. The documentation did not contain a mission, vision, or goals. Also, a budget discussion was not documented.

At the macro level, the documents supported scholarly work. In 2018, a discussion during a planning meeting led to an interprofessional abstract submission. Although the learner's perception of IPE was measured, the documents did not indicate an attempt at measuring health outcomes related to the IPE program. Additionally, the program documents did not support discussion or action on forming additional academic or community partnerships, accreditation requirements, or collaborative learning beyond the IPE program.

Learner's Survey

A total of 86 learners participated in the IPE learning event in 2017 and 2018. Working email addresses were obtained for 51 learners (20 for medicine, three for pharmacy, 28 for nursing). Fifteen (29.4%) of the 51 learners who were sent the electronic survey responded (two from medicine, none from pharmacy, 13 from nursing). Five of the learners participated in the 2017 IPE event, and 10 learners participated in the 2018 IPE event. Table 1 is a summary of participants by academic discipline. The learners currently practice in various geographical locations. The majority of the learners who responded to the survey practice within the southeastern U.S. Practice settings for learners include critical care, pain management, neurology, orthopedics, urology, infectious disease, internal medicine, family medicine, cardiology, and nephrology.

Although requested to provide specific examples of how participating in the IPE program led to improved health outcomes, most responses from the learners were non-specific. For instance, learners commented that "the simulation helped me to understand their grasp of our

education as well as understand their thought process." One learner responded: "the simulation helps integrate teamwork with the healthcare team while also emphasizing the patient leading to better patient outcomes. While admitting patients in the [emergency department], this has helped me see the big picture and has helped with communication across the board." A more specific description of a positive health outcome related to the IPE program was ". . . a post kidney transplant patient experiencing respiratory issues but was managed mostly by the transplant M.D. The decision had to be made [about whether or not] to intubate the patient based upon clinical presentations and unsuccessful attempts to diuresis based upon belief he was volume overloaded. After consulting with the anesthesia [service], [a collaborative] decision was made, and the patient was successfully intubated without further compromise." Another survey response was, "The interprofessional event helped me to develop my communication skills with other professionals. I was able to use these skills when dealing with a situation with a physician where we did not agree on the patient's treatment course. We were able to agree to better the patient's care." Learners also commented that working with pharmacists improved the optimization of patient's medications and the IPE program improved the ability to collaborate with multiple healthcare providers "to get the best possible outcome for patients."

The learners offered suggestions for additions or changes to the IPE program to improve the learner's ability to function in an interdisciplinary healthcare team to improve health outcomes. Three NP students (one from 2017 and two from 2018) noted that the interns and medicine faculty did not understand the role of the NP, and one learner specifically said that the interns would ". . . discuss with each other what was going on but not with the NP." Another learner stated, "Start with the professors for M.D. students – educate them on what the NP role is/does. It trickles down from there. I felt that some of the professors were arrogant/demeaning

to the NP students." Overall, learners viewed the IPE program as positive. The common theme in the suggestions from NP respondents was a desire for more IPE events.

Faculty Focus Group Interviews

The faculty participated in focus group interviews during June 2019. Seventeen faculty members participated in the faculty interviews (six from medicine, four from pharmacy, and seven from nursing). The average faculty member attended 3.18 IPE training programs that supported their role as IPE faculty. The results of the faculty interviews are summarized in Table 2.

Micro Level

While all faculty have participated in some form of training that supports the role of an IPE faculty team member, the faculty did suggest additional programs to support their IPE role. The faculty suggested specific programs such as TeamSTEPPS, IPEC yearly Spring Institute, and a regional university's IPE poverty simulation. Broader suggestions for faculty development program topics included courses on IPEC competencies, and how to integrate more than one discipline in IPE learning scenarios.

The faculty disagreed about how well the IPE program promoted the patient as the key member of the healthcare team. One faculty member stated that too much emphasis was placed on the patient, and not enough emphasis was placed on teamwork. Other faculty noted that the simulation scenarios were designed to be patient-focused but, the learners have difficulty focusing on the patient due to the complexity of team members sorting out roles. Suggested solutions for promoting the patient as the key member of the healthcare team were to add a specific objective that relates to patient-centered care and communication. The faculty also suggested spending more time teaching teamwork skills before the simulations, improving

debriefing techniques to emphasize communication and teamwork as opposed to getting the diagnosis correct, and having faculty create videos modeling desired behaviors and having learners critique the videos.

The faculty groups also had varying opinions about which of the four IPEC competencies were part of the IPE program. All agreed communication and teams and teamwork are prominent in the IPE program. However, the faculty groups disagreed on whether values and ethics and roles and responsibilities are part of the IPE program.

Several faculty suggestions for improving the integration of IPEC competencies included adding "what ifs" to simulation debriefing to encourage learners to consider different strategies for patient care when ethical issues occurred. The medicine faculty suggested developing scenarios that address social determinants of health such as poverty. A broader suggestion from nursing was to create a core IPE faculty team with two members from each discipline to build and coordinate the program. The team would map the IPEC competencies across a growing IPE program.

The topic of learning theories used in the IPE program did not generate much discussion. Several nursing faculty members noted Kolb's experiential learning theory as the basis for the simulation scenario development. The pharmacy faculty pointed out that learning theory is part of the student's orientation but was unaware of any theory applied in the IPE program. The medicine faculty did not indicate whether learning theory is used in the development of IPE simulations.

The faculty focus groups noted multiple opportunities for additional IPE learning throughout the learner's programs. These opportunities included NP students spending a day with another health professional to learn about education, certification, and licensure for that

role. Additionally, pharmacy students and medical residents participating in interprofessional journal club to debate emerging healthcare topics. The IPE program, however, does not have a mechanism for progressive IPE learning along the education continuum. To improve progressive interprofessional learning along a continuum, faculty suggested developing simulations that build on previous IPE learning and using telehealth robots to increase IPE learning opportunities.

All of the faculty agreed that the learner involvement in IPE planning comes from debriefing feedback after the learning event. Learners do not participate in the initial planning of the IPE event; however, the feedback from the debriefing is used in future planning. The medicine faulty noted that the interns arrive at campus approximately one week before the IPE event and spend that time completing orientation requirements, and thus, it is not feasible to include them in the planning process. The faculty focus groups agreed that involving learners in the planning meetings could benefit the program.

The faculty focus groups offered many suggestions for increasing communication among academic programs. Pharmacy and medicine faculty practice in the same building, and thus, opportunities to communicate and collaborate are readily available. A frequent comment from the faculty focus groups was the heavy faculty workload, which limited time for interprofessional communication and collaboration among faculty. Faculty perceive IPE as an "add-on" requirement without protected time. The faculty suggested having protected time for IPE planning and development may improve faculty "buy-in" and participation.

The faculty focus groups agreed that IPE was part of each disciplines curriculum. However, nursing noted that the IPE program is not explicitly referenced in the syllabi because not all of the NP students can participate in the program. Currently, the IPE simulation day has

20 interns and 20 NP students (ten family nurse practitioner [FNP] and ten adult-gerontology acute care nurse practitioner [AGACNP] and approximately four pharmacy students). At least 80% of the NP students do not participate in the IPE simulation day due to limited space for learners in the half-day event.

Each academic program reported producing scholarly work related to the IPE program. The only product that included authors from the three universities was a poster presented at a national nurse practitioner faculty conference in April 2019. The close physical working environment between pharmacy and medicine is more conducive to creating interprofessional scholarly projects. The IPE program lacks a mechanism to encourage interprofessional scholarly projects. Increasing financial assistance for scholarly work and presentations was another suggestion for enticing faculty and learners to engage in IPE research.

Meso Level

Having a strategic plan is critical to IPE program development. However, the faculty agreed that the IPE program does not have a mission, vision, or goals. Furthermore, the faculty did not establish a strategic plan for the IPE program. An important part of strategic planning is funding. All faculty focus groups agreed that IPE is not a line item in the budgets.

Logistical support for the IPE program comes from nursing's simulation laboratory. The simulation laboratory staff set up simulation rooms, maintain equipment, provide audio and video capture of the simulations, train standardized patients, and assist with coordinating the event. The IPE program does not have a dedicated staff person to manage logistics. The faculty focus groups suggested applying for outside funding such as a grant as a way to fund a staff position to manage the logistics for the IPE program.

Macro Level

Currently, three academic programs form the IPE program. Faculty members disagree about whether to add more partners. Medicine faculty commented that an additional partner would make the program "too big and too difficult to manage." One nursing faculty member noted that until the current partners are "on the same page," adding more partners would not be a good idea. Several faculty members from the various programs suggested potential partners such as hospital chaplains, hospice organizations, the local indigent medical and dental clinics, and geriatric health clinics.

Faculty were asked if the current IPE program met each academic disciplines accreditation requirements for IPE *completely*, *somewhat*, or *not at all*. All of the faculty focus groups agreed that the current IPE program was *somewhat* meeting accreditation requirements. Nursing faculty want all NP students to participate in the IPE program and to increase the number of IPE offerings per year to fully meet accreditation requirements.

An overall objective of the IPE program was to bring learners together to learn how to function as a healthcare team to improve health outcomes. Thus far, the faculty reported measuring learner's attitudes towards collaborative learning. Faculty noted the inherent difficulty in measuring health outcomes related to IPE because learners complete their programs and move on to practice in various geographical locations. Nursing faculty members suggested developing a broader, more robust program before measuring health outcomes.

The faculty offered additional suggestions for improving sustainability in the IPE program. One idea was for the faculty to review each other's curriculum to learn more about each program's structure and expectations. Interestingly, the nursing faculty expressed concern that the medicine faculty did not understand the role of the NP in healthcare. The nursing faculty

also suggested having the medicine interns complete an initial simulation training program on a separate day from the IPE event. Finally, all faculty focus groups acknowledged that, overall, the IPE program is a positive experience for faculty and learners.

Discussion

The IPE program in 2017 was a day-long interprofessional simulation and skills lab event integrating medicine residents, pharmacy students, and nurse practitioner students. Although faculty expressed a desire for more IPE learning, the schedule was decreased to a half day event without skills to accommodate one of the partner's request. Only one additional IPE event occurred in 2018 with pharmacy and nursing. The planning and scheduling of the IPE program occurred without input from learners. Assessing learners needs and including the learners in the planning process could improve the development of future IPE learning events.

Faculty acknowledged opportunities for improvement to several elements critical to sustainability. The faculty members disagreed on the addition of other academic, community, or government partnerships. Multiple faculty members expressed interest in creating new partnerships to expand learning opportunities. New partnerships do not require participation from each academic program but would increase opportunities for IPE.

All faculty members agreed that three elements were missing from the IPE program: strategic planning, dedicated funding, and program evaluation. Table 1 represents the summary of which elements critical to IPE sustainability the faculty identified as being part of the IPE program and which elements were missing. Without a strategic plan, including mission, vision, and goals, the IPE program lacks direction and organization. A strategic plan allows for continuity in the program when faculty leave and new faculty join the IPE program. A strategic plan also establishes priorities for the IPE program as the program competes for limited funding.

All learners who completed the survey stated they had applied the knowledge from the IPE program in the clinical setting. Two prior NP students described situations where IPE training lead to improved health outcomes. Three prior NP students agreed that the medicine faculty did not seem to understand the role of the NP. This same sentiment was shared by nursing faculty during the focus group interview. These comments highlight the need for faculty and learners to understand the IPEC core competencies, especially roles and responsibilities.

The majority of the faculty and learners desired more IPE learning events, although, to meet the needs of the interns, the faculty agreed to decrease the IPE event to a half day. The faculty also noted a lack of protected time for IPE development and coordination made adding new learning events problematic.

Recommendations

The analysis of the data supports the following recommendation for changes and additions to the IPE program to improve sustainability. First, learners and most faculty expressed a desire for more IPE events. The IPE program must be expanded to a minimum of quarterly offerings, including learning outside of the classroom and simulation laboratory as supported by HPAC (2019). IPE opportunities can include virtual journal club, gaming, grand rounds with interprofessional presentations, and continuing education for faculty and learners. Secondly, to improve the sustainability of the IPE program, I recommend the formation of a core team made up of two faculty members and one learner from each academic partner. This core group will develop a mission, vision, goals, and a strategic plan consistent with HPAC guidelines. Additionally, this core team would plan faculty development programs so that all faculty members are receiving consistent IPE training in IPEC competencies and debriefing techniques. Supporting faculty development is a priority of HPAC (2019). Consideration should

be given to faculty created videos demonstrating the IPEC competencies for the learners to review.

Third, the core IPE team will develop new academic and community partners for various IPE learning activities throughout the year. New partnerships should not be limited to academic programs. Consideration should be given to healthcare facilities such as rehabilitation facilities where learners have access to multiple disciplines. Utilizing technology such as telehealth opens the doors to more partnership opportunities beyond our community. Each academic program should investigate partnerships that meet their learner's needs.

Fourth, another task for the core IPE team will include seeking dedicated funding. HPAC suggested the role of IPE leaders include appropriating sufficient resources, including financial, to support IPE (HPAC, 2019). Additionally, the core task force should seek grant funding. However, before applying for grants, the team will need to develop innovative IPE learning opportunities that align with the funding agency's priorities. Additionally, when planning the funding request, consideration must be given to funding a part-time person to manage logistics, assist with research, and facilitate communication among partners. Communication tools can include social media or websites to keep faculty and learners updated on IPE events, educational programs, and current research.

Fifth, to improve collaboration on scholarly projects, the core IPE team will establish a yearly research focus and evaluation tools. Learners will participate in the design, implementation, and dissemination of scholarly projects. Scholarly work creates another opportunity for IPE.

Sixth, to facilitate the work of the core IPE team, the faculty need protected time, such as release from other committee responsibilities. HPAC (2019) specifically calls for protected time

for IPE leaders and faculty. IPE learning opportunities can be designed to meet more than just IPE accreditation requirements; thus, shifting some teaching topics to IPE learning. For example, bringing learners together for pharmacology or health assessment lectures and having learners engage in research and scholarly writing.

Seventh, the core IPE team will conduct follow up program evaluations to include documenting health outcomes related to the IPE program using reliable and valid tools. A coordinated effort among partners will likely lead to a more efficient collection of outcomes data. Learner assessment data should come from self-reports, faculty observations, and objective measures (HPAC, 2019). Obtaining accurate learner contact information and longitudinal data related to IPE health outcomes should be a priority. The next program evaluation should be conducted in two to three years using the same evaluation tool. A two to three-year plan allows for time to implement changes and collect data needed for the next evaluation.

Summary

Program evaluation using a framework consistent with established guidelines is necessary for building and growing a sustainable IPE program. The IPE program evaluation tool based on the IECPCP (D'Amour & Oandansan, 2005) and the Adoption Model (Grymonpre et al., 2016) was consistent with the HPAC (2019) and is easy to implement. Interestingly, faculty and learner comments and suggestions were also consistent with the HPAC and Sim IPE guidelines. Most importantly, sustainable IPE programs will lead to improved interprofessional collaboration and health outcomes.

Limitations

The IPE program consists of three academic partners from the southeast U.S. Seventeen faculty members participated in the focus group interviews, and fifteen learners participated in

the electronic survey about the IPE program. Therefore, results and conclusions cannot be generalized. The limited number of survey responses from learners makes evaluating health outcomes related to the IPE program difficult. Learners offered mostly non-specific examples of how the IPE program improved health outcomes. Additionally, the IPE program primarily consists of a single yearly event at this time, and only a fraction of the total NP students participated. Thus, attributing health outcomes to the IPE program is challenging.

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Table 1

IPE Program Evaluation Participants

	Faculty	Learners	Total
Nursing	n = 7	n= 13	n = 20
Medicine	n = 6	n = 2	n = 8
Pharmacy	n = 4	n = 0	n = 4
Total	n = 17	n = 15	n = 32

Table 2

Summary of Faculty Focus Group Interviews

Micro	Meso	Macro
✓ Faculty development	✓ Institutional/Administrative support	✓ Academic, community, government partners
✓ Patient-centered learning	Strategic planning (mission, vision, goals)	✓ Accreditation Requirements
✓ Incorporating IPE core competencies in the curriculum.	Dedicated funding	✓ Collaborative practice opportunities for students beyond the IPE program
✓ Learner engagement		✓ Scholarly products
✓ Applying educational theory		Program evaluation (health outcomes)

✓ = the element is present to some extent

Table 3

Funding Opportunities for IPE

Name of Organization and Website	Funding Priorities
The John A. Hartford Foundation https://www.johnahartford.org/grants-strategy/current-strategies/age-friendly	Improving the care of older adults: 1. Age-friendly systems 2. Family caregiving 3. Serious illness and end of life (The John A. Hartford Foundation, n.d.)
The Josiah Macy Jr Foundation https://macyfoundation.org/our-priorities	Ensure health professionals are equipped to meet contemporary health needs and work effectively within today's health care environment: 1. Interprofessional education and teamwork 2. New curriculum content 3. New models for clinical education 4. Care for underserved communities 5. Career development in health professions education (The Macy Foundation, n.d.)
Robert Wood Johnson Foundation https://www.rwjf.org/en/our-focus-areas.html	To Achieve health equity and expand opportunity to pursue the best health possible: 1. Health systems 2. Healthy communities 3. Healthy children and families 4. Leadership for better health (Robert Wood Johnson Foundation, 2018)
Agency for Healthcare Research and Quality (AHRQ) https://www.ahrq.gov/topics/index.html	To improve healthcare safety, quality, equity, accessibility, and affordability: 1. Improve health care patient safety 2. Using data and technology to improve health care quality and patient outcomes 3. Increase accessibility and affordability of healthcare (AHRQ, 2014)

Appendix A

Interview Tool for Interprofessional Education (IPE) Program Evaluation

Interprofessional Education Program Evaluation Tool adapted from Grymonpre and colleagues' (2016) Adoption Model and D'Amour and Oandasan's (2005) Interprofessional Education for Collaborative Patient-centered Practice (IECPCP) Framework

Opening Statement: Please reflect on the joint IPE program for Auburn School of Pharmacy, The University of Alabama in Birmingham School of Medicine, and The University of Alabama in Huntsville College of Nursing when answering the questions.

Individual Demographic Information	
1. Chose the academic Program you represent.	(circle one) AU UAB UAH
2. How many years have you participated in the joint IPE program? *(2017, 2018, 2019)*	(circle one) 0 1 2 3
3. How many faculty development offerings have you attended that prepared you for your role as an IPE faculty team member?	

Faculty Team Focus Group Questionnaire	
Question	**Facilitator Comments/Summary**
Micro-Level (factors directly related to teaching and learning)	
1. What faculty development programs have you attended that supported your role as an IPE faculty team member?	
2. What types of educational programs or courses would better support you in your role as IPE faculty?	
3. How does the current IPE program promote the patient as the key member of the healthcare team?	

Faculty Team Focus Group Questionnaire	
Question	**Facilitator Comments/Summary**
4. Suggest ways the IPE program can address or improve on a patient-centered approach to IPE learning.	
5. Which Interprofessional Education Collaborative (IPEC) competencies have been integrated into the IPE program? (communication, roles & responsibilities, teams & teamwork, values & ethics)	
6. Describe ways the IPE program can improve integration of IPEC competencies.	
7. Describe any learning theories used in the IPE program OR suggest ways to integrate learning theory in IPE.	
8. How does the IPE program provide multiple progressive offerings for learning along the education continuum?	
9. Suggest ways to improve IPE learning along the education continuum.	
10. Describe how the learners are involved in the planning, implementation, and/or evaluation process of the IPE learning events?	
11. Suggest ways to increase learner engagement.	
12. Suggest ways to improve communication among IPE faculty from various disciplines.	
13. Provide examples where your learners apply IPE competencies and concepts in clinical settings outside of the IPE program.	

Faculty Team Focus Group Questionnaire	
Question	**Facilitator Comments/Summary**
14. Suggest ways to increase learner's opportunity to apply IPE competencies and concepts in clinical settings outside of the IPE program.	
15. Is the IPE program included in your curriculum or syllabi for your academic program?	UAH UAB Auburn
16. Describe the existing mechanism within the IPE program that supports research and scholarship.	
17. Suggest ways to enhance research or scholarly activities in the IPE program.	
Questions 18-21 relate to administrative support. Thinking about administrative support such as Deans, Department Heads, and University level administrators:	
Meso Level (institutional factors)	
18. Describe the financial resources supporting the IPE program.	
19. Describe the logistical support for the IPE program.	
20. Describe the process of accessing or requesting resources to support IPE development.	
21. Suggest ways for enhancing administrative support for IPE development.	

Faculty Team Focus Group Questionnaire	
Question	**Facilitator Comments/Summary**
Macro- Level	
22. Suggest some opportunities for additional IPE academic or community partnerships.	
IPE Leaders/Facilitators Focus Group Questionnaire.	**School:** **AU UAB UAH**
Question	**Facilitator Comments/Summary**
Meso Level (institutional factors)	
1. Describe the IPE program's mission, values, or goals.	
2. Describe the strategic priorities for the IPE program or how strategic planning can be facilitated.	
Macro Level (factors external to the institution including)	
3. Suggest some opportunities for additional IPE academic or community partnerships.	
4. Is the IPE program meeting IPE accreditation requirements for your academic program?	UAH: No Somewhat Completely UAB: No Somewhat Completely Auburn: No Somewhat Completely
5. Suggest ways the IPE program could better meet academic program or accreditation requirements.	
6. What IPE outcomes have you been able to measure?	
7. Suggest ways to evaluate IPE program outcomes.	

Appendix B

Consent to Participate in the IPE Program Evaluation

Learner Electronic Survey

DNP Project Title: Evaluating an Interprofessional Education Program for Sustainability

Principal Investigator: Cheryl Emich, MSN, CRNP

Institution: The University of Alabama in Huntsville

- **Introduction:** You are invited to participate in a research study about the sustainability of an interprofessional education program. This study involves research, the purpose of which is to obtain the learner's opinion regarding the effectiveness of the IPE program.
- **Procedure:** Participation in this study is completely voluntary. You must be 19 years of age or older to participate. If you agree, you will participate in a short electronic survey. If you agree to participate, you will be asked up to six (6) questions. There will be approximately 80 participants overall, including faculty from the IPE program.
- **Time Commitment:** The focus group interview will take approximately 10 minutes to complete.
- **Risks:** There are no foreseeable risks or discomforts to participating in the study.
- **Confidentiality:** Your name will not be associated with your responses, and strict confidentiality of records will be maintained. No personal or identifying information will be reported. Survey results will be stored on a password-protected computer in a locked office on The University of Alabama in Huntsville campus.
- **Benefits:** Participation is voluntary, and refusal to participate will involve **no** penalty or loss of benefits. There are not personal benefits to participating in the focus group interview. Your comments, discussions, and feedback may benefit the IPE program.
- **Cost/ Payment:** The only cost to you is your time. You will not be paid to participate in this survey.
- **Withdraw from the study:** You may withdraw at any time from the study. The information you give before you withdraw may still be used to protect the reliability of the study. To withdraw from the study, contract Cheryl Emich, Cheryl.emich@uah.edu or 256-824-6419.
-

- If you any questions about the research and research participant's rights, you may contact the Principal Investigator, Cheryl Emich, MSN, Cheryl.emich@uah.edu, 256-824-6419, NB 217, or Dr. Amy Lanz, asl0007@uah.edu, 256 824 2453, **OR** you may contact the UAH IRB, Dr. Ann Bianchi, irb@uah.edu, 256.824.6101).
- To continue with this survey, you must choose ***YES*** to the statement below. Answering ***NO*** will terminate the survey, and no data will be collected.
- Thank you for your time. I greatly appreciate your participation in this study.

- I have read and understood the consent declaration and agree to be a volunteer participant in this survey.
- Yes
- No

Appendix C

Electronic Survey for learners in the IPE summer event.

1. Please indicate your credentials: MD, NP, PharmD
2. In what year did you participate in the UAH/UAB/Auburn joint IPE summer event? 2017 or 2018
3. In what specialty area are you currently practicing?
4. In what geographical location are you currently practicing? (city/state)
5. Since participating in the IPE summer event, have you had one or more opportunities to apply interprofessional skills and knowledge in the clinical setting? Yes or NO

If yes, continue to #6. If no, skip to question #7.

6. Please give a specific example of how IPE training affected a health outcome. You may give more than one example. Do not give any patient identifying information or HIPPA protected information.
7. What can the IPE program add or change to improve the learner's ability to function in an interdisciplinary healthcare team to improve clinical outcomes?

APPENDIX D

Consent to Participate in the IPE Program Evaluation

Faculty Focus Group Interview

DNP Project Title: Evaluating an Interprofessional Education Program for Sustainability

Principal Investigator: Cheryl Emich, MSN, CRNP

Institution: The University of Alabama in Huntsville

- **Introduction:** You are invited to participate in a research study about the sustainability of an interprofessional education program. This study involves research, the purpose of which is to obtain the IPE faculty's opinion regarding the sustainability of the IPE program.
- **Procedure:** Participation in this study is completely voluntary. You must be 19 years of age or older to participate. If you agree, you will participate in a small focus group (approximately 4-10 participants per group) interview. If you agree to participate, you will be asked 26 questions, including the three (3) questions on the paper clipped to your consent form. There will be approximately 80 people invited to participate in this project, including learners from the IPE program.
- **Time Commitment:** The focus group interview will take approximately 1 hour to complete.
- **Risks:** There are no foreseeable risks or discomforts to participating in the study. The focus group moderator will be sensitive to any topics or discussions that cause friction among the participants. If necessary, the interview will be briefly stopped or discontinued to avoid emotional upset. If this is the case, you may ask for a break during the interview, ask to move on to another question, elect to finish the interview privately with the principal investigator or end your participation in the interview.
- **Confidentiality:** Your name will not be associated with your responses, and strict confidentiality of records will be maintained. No personal or identifying information will be reported. Records identifying you (your signed consent form) will be kept in a locked office on The University of Alabama in Huntsville campus. Consent forms will be destroyed after three (3) years.

- **Benefits:** Participation is voluntary, and refusal to participate will involve **no** penalty or loss of benefits. There are not personal benefits to participating in the focus group interview. Your comments, discussions, and feedback may benefit the IPE program.
- **Cost/ Payment:** The only cost to you will be your time. You will not be paid for participating in this interview.
- **Withdraw from the study:** You may withdraw at any time from the study. The information you give before you withdraw may still be used to protect the reliability of the study. To withdraw from the study, contract Cheryl Emich, Cheryl.emich@uah.edu or 256-824-6419.
- If you any questions about the research and research participant's rights, you may contact the Principal Investigator, Cheryl Emich, MSN, Cheryl.emich@uah.edu, 256-824-6419, NB 217, or Dr. Amy Lanz, asl0007@uah.edu, 256 824 2453, **OR** you may contact the UAH IRB, Dr. Ann Bianchi, irb@uah.edu, 256.824.6101).

Participants Printed Name

Participant's Signature

Date

APPENDIX E

Auburn University School of Pharmacy Approval Letter

DEPARTMENT OF
PHARMACY PRACTICE

AUBURN UNIVERSITY
HARRISON SCHOOL OF PHARMACY

May 29, 2019

To: UAH IRB Board

I have spoken with Cheryl Emich regarding the IPE program evaluation she is conducting and I give her permission to conduct the program evaluation and recruit and interview the faculty and learners who have previously participated in the IPE program.

Sincerely,

Taylor Steuber, Pharm.D., BCPS

Taylor Steuber, PharmD, BCPS
Assistant Clinical Professor of Pharmacy Practice
Auburn University Harrison School of Pharmacy

1323 Walker Building, Auburn, AL 36849-5502; Telephone: 334-844-7121; Fax: 334-844-4410
www.auburn.edu/academic/pharmacy/

The University of Alabama in Birmingham School of Medicine Approval Letter

UAB MEDICINE

SCHOOL OF MEDICINE-HUNTSVILLE CAMPUS

MEMO

To: Dr. Ann Bianchi, Chair
UAH IRB Board

From: Roger D. Smalligan, MD, MPH, FACP
Regional Dean and Professor of Internal Medicine
Huntsville Regional Medical Campus
University of Alabama at Birmingham School of Medicine

Date: May 29, 2019

Subject: IPE Program Evaluation Approval

I have spoken with Cheryl Emich regarding the IPE program evaluation she is conducting. I have given her permission to conduct the program evaluation and recruit and interview the faculty and learners who have previously participated in the IPE program.

CC: Cheryl Emich, MSN, CRMP
Clinical Assistant Professor

Marsha Adams, PhD, RN, CNE, ANEF, FAAN
Dean and Professor

Regional Dean's Office
256.539.7757
Fax 256.551.4451

The University of
Alabama at Birmingham
Huntsville Campus Mailing Address:
301 GOVERNORS DR SW, STE 313
HUNTSVILLE AL 35801-5123

The University of Alabama in Huntsville College of Nursing Approval Letter

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

College of Nursing

DATE: June 13, 2019

TO: Ann Bianchi, PhD, RN
Associate Professor
UAH Institutional Review Board Chair

FROM: Marsha Howell Adams, PhD, RN, CNE, ANEF, FAAN
Dean and Professor
UAH College of Nursing

RE: Permission to conduct DNP Project

As Dean of the College of Nursing, I am writing to notify you that Ms. Cheryl Emich has permission to conduct her DNP Project at The University of Alabama in Huntsville. The project is a program evaluation of the existing Interprofessional Education (IPE) Program with The University of Alabama at Birmingham School of Medicine – Huntsville Campus and Auburn University School of Pharmacy. She will be interviewing faculty who participated in the IPE experiences in the past and surveying students to get their perspective on the IPE experience.

College of Nursing
301 Sparkman Drive
Huntsville, AL 35899

Office of the Dean 256.824.6345
Fax 256.824.6026
Faculty Office 256.824.6512 / 6513

Office of Graduate Programs 256.824.6689
Office of Undergraduate Programs 256.824.6742
Learning Resource Center 256.824.6139

APPENDIX F

Submission of Manuscript