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Interprofessional Team Development in Student Led Clinics in Rural Northeast Tennessee

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Introduction

The United States (U.S.) Census Bureau projects the U.S. population to increase from 319 million to 417 million between 2014 and 2060 (Colby & Ortman, 2015). Moreover, by 2030, one in five Americans will be age 65 and older. As the population ages, healthcare in the United States is becoming more complex and challenging with the management of multiple chronic conditions (MCC) in older adults. Advanced age and disease are directly proportional and create the requirement for extensive healthcare management of patients with MCC. Healthcare costs are soaring related to the aging population, increased number of patients having MCC, fragmented healthcare delivery system, professional silos, and errors in healthcare delivery. It is widely known that interprofessional (IP) team-based care improves healthcare outcomes (Robert Wood Johnson Foundation, 2015); however, the logistics to incorporate interprofessional practice (IPP) and interprofessional education (IPE) still remain a challenge for the U.S. healthcare delivery system.

Interprofessional education occurs when two or more healthcare disciplines learn about, from, and with one another to improve the patients' health outcomes (World Health Organization [WHO], 2010). The overall goal of IP learning is to improve safety and effectiveness in the healthcare system. In IP learning, students of the health sciences disciplines learn to work together toward patient-centered, timely, efficient, and equitable care (Institute of Medicine [IOM], 2001). Healthcare professionals do not instinctively know how to collaborate and coordinate care; therefore, IPE is the mainstay for the future of IPP.

For two decades, the IOM has provided evidence-based literature unveiling the positive impact that interdisciplinary collaboration and teamwork can have on healthcare organizational performance (IOM, 2000, 2001, 2003, 2010, 2015). Despite the known benefits of IPE and IPP, incorporating this into the curriculum still remains a challenge for academic institutions and healthcare professionals.

To combat the challenges of initiating IPP, academic health science accrediting bodies have incorporated IPE objectives and competencies into the required academic curriculum. For example, the American Association of Colleges of Nursing (2006) created eight Doctor of Nursing Practice (DNP) essentials for advanced nursing education; essential six addresses Interprofessional Collaboration for Improving Patient and Population Health Outcomes. The American Association of Colleges of Pharmacy Professional Affairs Committee (2011) recommended IPE incorporation in the academic curriculum, resulting in the Accreditation Council for Pharmacy Education changing their standards for

accreditation. Many healthcare disciplines are adopting similar competencies based on IPE recommendations from the IOM.

In 2015, the Health Resources and Services Administration (HRSA) launched a coordinating center to provide leadership, expertise, and support for IPE and collaborative practice (IOM, 2015). The program is a focal point for the rising international effort to foster IPE and IPP. The incorporation of IPE requirements into healthcare education accreditation standards and supporting federal agencies has been predicted to move IPE and IPP forward, enhancing the achievement of positive patient healthcare outcomes.

Background and Significance

IPE is now becoming an integral part of academic health science disciplines' curricula across the United States and internationally. IPP is the delivery mechanism for IPE in which various health professionals collaborate in a practice setting to discuss a patient encounter and treatment plan that best meets the needs for optimal patient health outcomes. Since 1995, East Tennessee State University's Academic Health Science Center (AHSC) has had a strong history and background supporting IPE. East Tennessee State University (ETSU) resides in the foothills of the Appalachian mountains of Tennessee bordering the states of North Carolina and Virginia. ETSU is a doctoral research university with over 15,000 students, with colleges of nursing, medicine, pharmacy, clinical and rehabilitative health sciences, and public health. The university's mission has a specific focus on rural health and primary care education associated with the university's AHSC.

ETSU began offering clinical and didactic IPE activities supported through a five year W.K. Kellogg Foundation grant in 1990. The rural health IP curriculum was supported by partnerships with rural communities (Edwards, Grover, & Wachs, 2011). That curriculum was designed to educate cohorts of students from public health, nursing, and medicine together, with service to rural communities providing the infrastructure for the IPE experience. Those early health professional students, educated together, were the forerunner of contemporary IPE experiences. The goal of the rural health partnership was that upon graduation, students who were educated in this curriculum would work as healthcare providers in rural communities and serve as community leaders.

ETSU developed the Office of Rural and Community Health Partnerships (ORCHP) as a central location to provide administrative oversight and day-to-day management operations for its rural health initiatives, because of the expansion of grant-funding and the level of community involvement. ORCHP activities were

specifically designed to improve healthcare access and health outcomes in rural Appalachia (Edwards et al. 2011). Subsequent program outcomes have shown that at 10 years following graduation, graduates of the rural IP program were more likely than traditional students to practice in rural or underserved areas, and to engage in collaborative activities with their communities (Edwards et al., 2011; Florence, Goodrow, Wachs, Grover, & Olive, 2007).

Multiple Chronic Conditions (MCC) and Appalachian Region

Patients with MCC in the Appalachian region pose challenging complex health needs (Halverson, Ma, & Harner, 2004). Health disparities in the Appalachian region require health professionals to be community- and population-focused, relationship-oriented, and sensitive to systems and context (Interprofessional Education Collaborative [IPEC], 2011). Enhanced focus on chronic disease prevention and improved health and function of patients with MCC is necessary for realizing their optimum health and quality of life (USDHHS, 2010). The high prevalence of MCC nationally (greater than 25%) combined with high costs for healthcare, poorer health outcomes, and increased functional limitations, highlight the need to improve outcomes in MCC management. Comprehensive MCC management and best MCC outcomes require the collaborative contributions of multiple health systems (Smith, 2015).

Multiple chronic conditions, unmet health needs, premature mortality, and excess health disparities are well documented in Appalachian Tennessee (Smith, 2015). Appalachia is recognized nationally as an area of significant health disparities, persistent and intense poverty, lower than national average educational attainment, and compromised economic development. Health disparities in cardiovascular diseases, chronic obstructive pulmonary disease, cancer, diabetes, and motor vehicle accidents have been documented since the 1990s (Halverson et al., 2004) with excess and premature mortality confirmed for many disease categories among Appalachian women, elders, infants, and African Americans (Ezzati, Friedman, Kulkarni, & Murray, 2008; Murray, Kulkarni, & Ezzati, 2005). According to Hayes (2006), similar Appalachian disparities are confirmed in the ETSU and Johnson City Community Health Clinic (JCCHC) service areas including cardiovascular conditions, diabetes, pulmonary conditions, multiple comorbidities, arthritis, mental health concerns, chronic pain, and limited physical and social functioning.

ETSU College of Nursing's Nurse Managed Clinics

ETSU's nurse-managed clinics (NMCs) provide primary care to medically underserved populations in the Appalachian region. These medically underserved

patients include those who obtain their healthcare through use of the federally qualified health center at the JCCHC and its nine clinical practice outreach sites. The practice sites are governed within the ETSU College of Nursing (CON) Faculty Practice Network (FPN), providing essential health services to underserved populations in northeast Tennessee. ETSU NMCs have over 22 years of experience providing high quality, effective primary healthcare service to large numbers of patients with MCCs in Appalachian Tennessee (Smith, 2015). Among university-run NMCs with a federally qualified community health center, ETSU's NMCs are among the oldest. The NMCs provide comprehensive health services to patients who do not have the ability to pay. Income levels for 83% of patients served in the NMCs are at or below 100% of the federal poverty level (Smith, 2015). The NMCs provide services from pediatric to older adult care, behavioral and mental healthcare, women's specialty and prenatal care services, homeless care, services for migrant workers, geriatrics, speech language pathology, audiology, dental care, nutrition services, social work services, telehealth consultations, and school-based healthcare.

IP care has been a goal of the CON's NMCs since their inception. One example includes the 2010 Nurse Education, Practice and Retention (NEPR) Health Resources and Services Administration (HRSA) grant-funded project which provided nurse-managed primary care through multidisciplinary home visits allowing AHSC graduate students from nursing, pharmacy, and clinical nutrition to demonstrate IPE core competencies (IPEC, 2011).

Advanced Nursing Education Program (ANEP) Grant Background

The mission of the CON at ETSU is to facilitate the health of the community through excellence and innovation in nursing education, research, service, and practice. The CON is organized into academic, research, and faculty practice divisions with academic programs that include a post-baccalaureate and post-master of science in nursing, Doctor of Nursing Practice (DNP), and Doctor of Philosophy in Nursing (PhD) degree programs. Within these programs, preparation as primary care nurse practitioner includes the Family Nurse Practitioner (FNP), Adult Gerontological Nurse Practitioner (AGNP), or Psychiatric Mental Health Nurse Practitioner (PMHNP). A DNP healthcare systems-focus as Nurse Executive Leadership is also available. To meet HRSA grant requirements focused on incorporating ANEP into an IPE model, ETSU CON proposed a grant that addressed the healthcare needs of persons with MCCs (Smith, 2015).

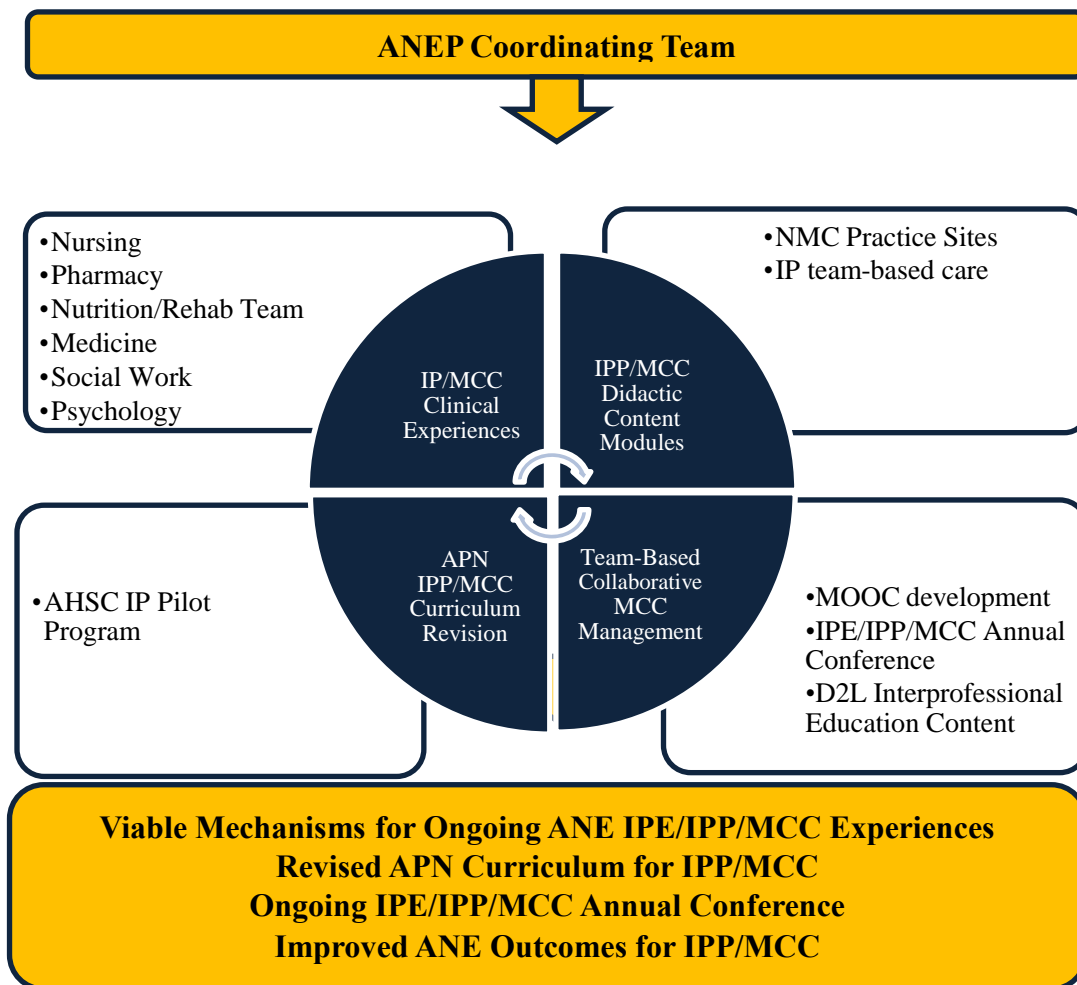
The project's purpose was to build capacity for the effective management of persons with MCC by integrating IPE into the BSN to DNP (BSN-DNP) primary

care nurse practitioner clinical and didactic learning experiences. The grant's primary aim was to deliver healthcare to underserved populations and improve health outcomes for patients with MCC. Beginning with BSN-DNP students in the FNP and AGNP programs, students engaged in shared clinical and didactic learning experiences with students in the doctoral pharmacy and master clinical nutrition programs through ETSU's AHSC disciplines. The Clinical Fellows program, consisting of students and faculty from various healthcare disciplines, emphasized comprehensive, interdisciplinary care for persons with MCC (Smith, 2015). The second year of the project allowed PMHNP students and other clinical and rehabilitative health science (CRHS) disciplines to join the nursing, pharmacy, and clinical nutrition students in the IPE and IPP clinical settings. The third year of the grant will allow ETSU's College of Medicine (COM) to phase in first year medical students with nursing, pharmacy, and clinical nutrition students at ETSU's Rural Health Clinic located in Mountain City, Tennessee. The IPE and IPP experience allows the number of healthcare disciplines and clinical sites to increase each year of the grant. By the conclusion of the grant period IP management of patients with MCC will include four of the CON's NMCs and collaborative IP learning experiences involving a minimum of five of the AHSC's health professions disciplines (Smith, 2015).

Clinical Fellows Model

The synthesis of over 23 years' experience with IPE at ETSU led to the development of an IPP model that will revolutionize care within the CON FPN. By intentionally integrating IPP into advanced nursing education through a Clinical Fellows Model, (Figure 1), the development of IP practices could be accelerated, thus better meeting regional health needs and significantly strengthening ETSU advanced practice nursing graduates' competencies in IPP and MCC management. The goal was to accelerate development of an IP learning environment through the implementation of an integrated, interactive Clinical Fellows Model combining clinical and didactic learning experiences at the CON's NMCs.

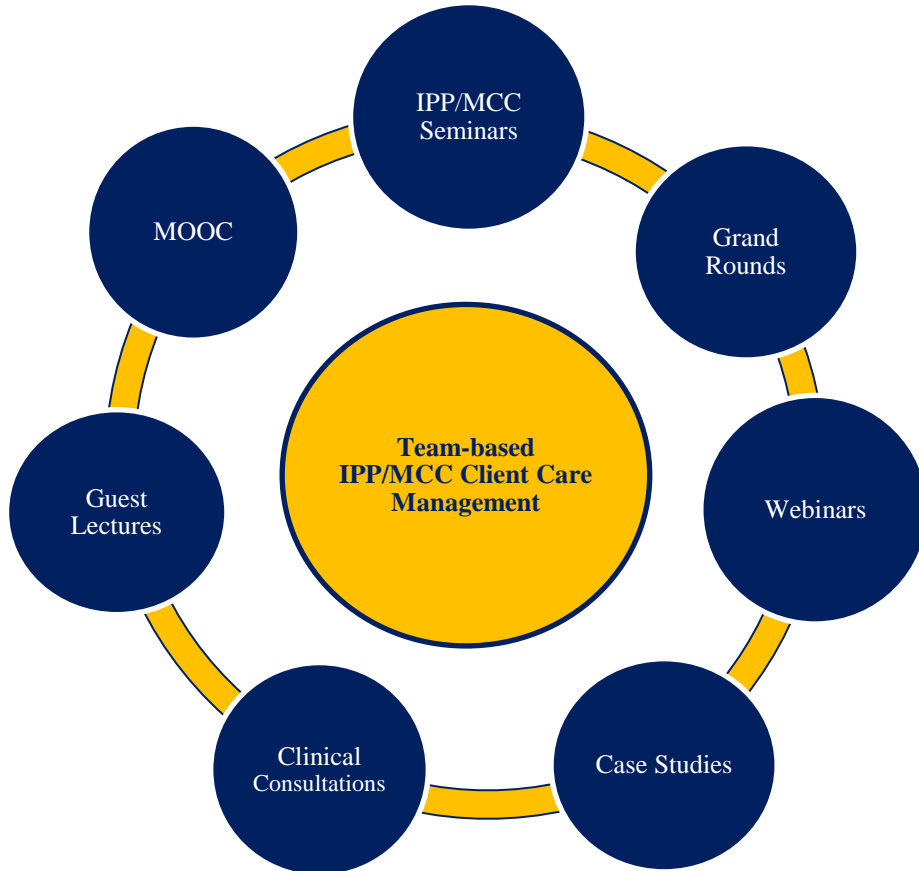
Figure 1. Clinical Fellows Model which incorporates an innovative approach to enhance students' learning experiences by promoting IPP.



Abbreviations: ANE-Advanced Nurse Education; APN-Advanced Practice Nurse; AHSC-Academic Health Science Center; ANEP-Advanced Nursing Education Program; D2L-Desire2Learn; IP-Interprofessional; IPE-Interprofessional Education; IPP-Interprofessional Practice; MCC-Multiple Chronic Conditions; NMC-Nurse Managed Clinic; MOOC-Massive Online Open Course;

To build upon an already established IPE initiative within the AHSC, NP students with clinical and/or DNP residency placements in the CON's NMCs and other shared clinical sites were provided with integrated IP clinical and didactic learning experiences. These experiences focus on IPP and effective care for persons and populations with MCC (Smith, 2015). The students' clinical experience is termed a "Clinical Fellows Model" and demonstrates the following opportunities for students: IP seminars, grand rounds, guest lectures, clinical consultations, case presentations, webinars, and collaborative case management. Didactic courses in the BSN-DNP curriculum with content applicable to IPE, IPP, and MCC were revised with current, evidence-based, best practices content, and learning experiences (Figure 2; Smith, 2015).

Figure 2. Clinical Fellows Model: Clinically-Situated Team-Based Learning



Innovative Approaches to Incorporate Interprofessional Experiences

This project took the innovative approach of collaborating among disciplines by acknowledging the specialized knowledge, skills, and contributions that each discipline offers. Faculty from several colleges in the AHSC are integrated to provide clinical supervision for IP team-based patient-centered care.

Simultaneously, students were empowered to become active decision-makers and develop leadership roles. The project provides IP team-based, patient-centered care by allowing the students of each discipline to identify patient health problems and determine as an IP group how to best manage and/or treat these patients with multiple chronic conditions. The interprofessional team represents the CON (DNP and BSN nursing students and licensed family nurse practitioner/faculty), the Bill Gatton College of Pharmacy (fourth year pharmacy students and licensed/registered pharmacist/faculty), and the College of Clinical and Rehabilitative Health Sciences (first year clinical nutrition graduate students and registered/licensed dietitian/faculty), all belonging to the ETSU AHSC.

The IP team embedded themselves in four existing ETSU nurse-managed clinics while allowing students to conduct student-led clinics with faculty oversight. The student-led clinics encourage collaboration, leadership, and role development among the students by allowing each discipline to take the lead in presenting the patient, directing the patient interview and assessment, and developing the management and/or treatment plan as a group. The team is usually represented by nursing, pharmacy, and clinical nutrition students. In the second year, the team expanded to include students from medicine, social work, psychology and behavioral health.

The student-led IP team meets in a designated room at the various clinics to review the schedule and patients' health records. Each discipline determines questions to ask the patient based on their specialized knowledge. The student team (i.e., each student from each discipline represented) interviews the patient in the examination room. Each discipline is allotted time to ask pertinent questions regarding the patient's chief complaint and healthcare goals. Each student performs an assessment during the patient interview pertaining to their discipline, ensuring that the team is directed and focused. Based on the interview and presenting problems, a physical examination is conducted, typically by the NP student but with input from the other disciplines as pertinent. After the patient evaluation, the team returns to the meeting room and each student presents their discipline-specific information to the faculty. After each discipline has presented, the student leader (discipline varies) then directs the team in the development of the management/treatment plan for the patient (with faculty supervision and input). After the team has determined the patient's plan, each discipline visits the

patient to conduct their portion of the treatment plan, which may include education, medication changes, treatments, or referrals. Feasibility is verified with the patient to ensure the delivery of patient-centered care. All disciplines document in the electronic health record. Discharge plans and patient satisfaction surveys are given to the patient with follow-up appointments or referrals scheduled.

Incorporating the Interprofessional Competencies

The four IP competencies include values/ethics for IPP; roles/responsibilities; IP communication; and teams/teamwork (Table 1). The four IP competencies are incorporated into the student led clinics using several approaches. Students from each discipline are required to attend a general orientation, during which the four IP competencies are introduced and discussed. A general orientation to IPE and IPP is also provided. The IP competencies are discussed in various discipline-specific didactic courses. The supervising faculty, in the student-led clinics, find ways to include which competency is being addressed when discussing patients; most often addressing all four competencies. Another approach to incorporating the IP competencies in the clinics is requiring the student-led teams to develop and present a case study. Each team selects a patient that they have seen and evaluated, develops a case study addressing the four competencies, various other criteria, and presents to faculty and peers on the last day of the clinic. These case studies are also uploaded to the Desire2Learn (D2L) electronic course management site for all clinical fellows, clinical faculty, and didactic faculty to review.

Part of the grant process supporting the clinical fellows model required the development of online didactic modules. The D2L site was populated with a variety of modules addressing various topics such as IP education, the four core IP competencies, health literacy, cultural competency, clinic case studies, and a variety of healthcare, nutrition, pharmacy, and nursing curricula. Access to the D2L site is open to all ETSU faculty and students of each discipline participating in the student-led clinics. A Massive Online Open Course (MOOC) is currently being developed with an anticipated 2017 launch date.

Table 1. Examples of Four Interprofessional Competencies (IPEC, 2011) Demonstrated in the Student-Led Clinics

Competency	Description
Teams/Teamwork	Work with individuals of other professions to maintain a climate of mutual respect and shared values; mentorship of students and faculty member with less clinical experience and varied levels of training; sharing the clinical time with all student disciplines when interviewing the patient
IP Communication	Communicate with patients, families, communities, and other health professionals in a responsive and responsible manner that supports a team approach to the maintenance of health and the treatment of disease; working with the staff and administration at the parent clinic, scheduling meeting/patient rooms, scheduling patient appointments, student orientation to the Clinical Fellows Model, monthly clinical faculty meetings; active listening with all the team members
Roles/Responsibilities	Use the knowledge of one's own role and those of other professions to appropriately assess and address the healthcare needs of the patients and populations served; shared responsibility for documentation of patient encounters; students rotating the responsibility of a group leader/presenter of patient information; education provided to patient from student discipline with expertise material presented
Values/Ethics	Apply relationship-building values and principles of team dynamics to perform effectively in different team roles to plan and deliver patient- and population-centered care that is safe, timely, efficient, effective, and equitable; assessment of the patients healthcare goals upon arrival; defining the patients' definition of health; ensuring the patient plans are feasible for the patients' lifestyle; use of interpreters for Spanish-speaking patients; consideration of all social determinants of health when making care recommendations; respecting the patients' views; respecting the healthcare team members clinical expertise and worth

Another component of the grant process supporting this clinical fellows model required faculty associated with the grant to sponsor an IPE conference. The faculty delivered a national conference, *The 1st Annual Southeastern IPE Conference: Improving Outcomes for Patients with Multiple Chronic Conditions*, on June 11, 2015 in Pigeon Forge, Tennessee. The theme for the conference was “*Improving Outcomes for Patients with Multiple Chronic Conditions.*” The conference mission sought to provide a plan and open dialogue for ongoing IP and collaborative education and dissemination of shared practices among academic health centers. The one-day conference had a variety of nationally recognized speakers addressing strategies to implement effective and efficient IP care for patients with MCC in various healthcare settings; methods for integrating IP healthcare via observation of proficient IP practices; implementing strategies to address barriers and challenges related to team-based care; and the importance of team-based care and IPE during the formative training years of future healthcare providers.

Challenges and Barriers Encountered During IPE Team Development

Challenges faced during the development of the student-led IPE clinic include different levels of training among healthcare students, scheduling conflicts with students and faculty, integration of the clinic into existing workflow and space limitations of the clinic, interactions with providers not familiar with the IP model, integration of online learning modules with active learning in the clinical setting, and lengthy evaluation processes by faculty and students.

The student-led clinic integrates students at different levels of clinical training. When the IPE student-led clinics begin in the fall semester Doctor of Pharmacy students are in the fourth and final year of training, Doctor of Nursing Practice students are in the first or second year of the program, and the Master’s of Clinical Nutrition students are in the introductory stages of their program. The differences in levels of training were noticed when the team convened to determine an appropriate assessment and plan for the patient. The more clinically experienced students tended to take the lead. To combat this educational barrier, an orientation process was developed for the clinical fellows. During the orientation, the level of training of each student discipline is discussed, directing students to assist and mentor other students with less clinical training.

Scheduling of student-led clinics can be very challenging. With faculty from different disciplines and with varying teaching schedules, it is difficult to schedule clinic times for consistent faculty supervision and mentoring. This is further compounded by the fact that the Colleges of Nursing, Pharmacy, and Clinical and Rehabilitative Sciences (includes clinical nutrition), all operate on different

academic schedules, which makes it difficult to allocate designated time together in the clinic. Between the first and second years of the grant program and IPE clinic development, significant turnover of personnel occurred in the nursing faculty assigned to the IPE clinics.

One of the most significant challenges encountered when initiating the student-led IPE clinics was integration into the primary clinic with an established work-flow. Providers, administration, and clinic staff were not familiar with the clinical fellows model and questioned our practice of a student-led clinic. The IPE clinic required an established nurse in the clinic to room patients, which added to the burden on staff. The collaboration between disciplines requires communication between all team members, which increases the time required for patient visits. This extended time spent with the patient led to examination rooms being occupied for a prolonged period of time, which in turn led to efficiency issues in the clinic. At the initiation of the IPE clinic, the team did not have designated examination rooms or conference rooms in which to meet. This inconsistency from week to week made it difficult for the team to efficiently use time in the clinic and establish rapport with clinic staff.

Nurse practitioner students were tasked with documenting in the electronic health record (EHR) during the patient visit. Most students and some faculty had little training on using the system, and documentation was time consuming and frustrating for the team. Another challenge arose from the lack of training when the student team would document in the EHR in a different way than established providers (i.e., source of referrals from the clinic), which often led to confusion and frustration within the clinic.

Interaction with providers not familiar with the clinical fellows model and IPE was challenging. Providers, who practice in the primary facility, referred the patients seen in the IPE clinic. Without an understanding of the IPE process, some providers and staff referred patients without chronic health concerns and thus not appropriate for our multidisciplinary setting focusing on chronic health conditions. If an explanation of the IPE process was not provided to the patient referred to the IPE clinic, patients tended not to show for their appointment or be surprised that multiple disciplines would be seeing them during the appointment.

Part of the grant process supporting this clinical fellows model required integration of online didactic modules with active learning in the clinical setting. This integration was a challenge at the beginning of the process because not all students had access to the learning management system. In addition, faculty were unclear of what type, format, and depth of didactic information would be appropriate for students at different levels of clinical training. Creation of the

didactic learning modules was time-consuming, not unlike the development of new content for any teaching activity, and insufficient lead-time was built into the grant to accommodate this developmental phase.

The evaluation processes designed to assess student beliefs, attitudes, and behaviors at the conclusion of each semester were also lengthy and time consuming paper-based questionnaires. Faculty were required to complete these evaluations for each student and found the process to be burdensome. Students found much of the evaluation paperwork that was requested of them to be duplicative and time-consuming.

Addressing the Challenges and Barriers for Successful Outcomes

During the second year of the program, new providers were oriented to the IPE process and clinical fellows model to serve as clinical faculty in the student-led clinics. This allowed the program to expand to three clinic sites where IPE student-led clinics were available for 16 hours a week. An expert in IPE care teams was brought in from outside the University to assess our clinic processes, interaction of team members, faculty mentorship, and evaluation processes. As a result of the consultant's recommendation and the team's willingness to work continuously on overcoming barriers, significant progress was made, overcoming the challenges experienced during the first year (Table 2).

A day-long orientation was developed for students assigned to the IP clinic for the academic year. This orientation included a tour of the clinic, introduction to clinic providers and staff, and training on the EHR. The new faculty members who were precepting students in the clinic were regular users of the EHR and the time required for documentation of patient encounters has decreased significantly.

The IPE team made purposeful efforts to build relationships with the staff and providers at the clinic sites. The IPE faculty presented at clinic-wide staff meetings about the innovative student-led clinics and even provided a lunch-and-learn session where clinic members were able to ask questions about the clinic and brainstorm ways to best integrate the IPE team into the clinic schedule and other activities. The IPE team educated providers about appropriate referrals. After the education process, no show visits decreased significantly and the number of appropriate referrals of patients with multiple chronic conditions increased. The team shared success stories with the providers, which increased communication about patient care, increased interest in how the IPE student-led clinic operated, and led to numerous referrals. The clinic administration worked with the IPE team to designate two examination rooms for use during the student-led clinic time slots. In addition, the administration worked carefully to make sure

the IPE team was assigned a conference room in order to meet and collaborate as a group for patient care.

Table 2. Barriers to IPE derived from East Tennessee State University Student-Led Clinic Experiences

Barriers	Strategies of IP Team Development
Combining students from multiple disciplines with different levels of knowledge	Developed an orientation for students explaining the varying levels of knowledge and encouraging mentorship
Scheduling clinic time around faculty teaching schedules	Strategically worked with faculty from each discipline to develop available clinic times for faculty and students
Integrating a new clinic into existing clinic workflow	Incorporate a BSN student to expedite IP clinic workflow; BSN assigns patient room, attains patient history, vital signs, and implements nursing treatments; close communication with administration and existing clinic staff to schedule rooms, patient visits, and follow-ups
Interaction with providers not familiar with the IP model	Interaction with providers unfamiliar with IPE; conduct lunch and learn sessions for existing clinic staff
Integration of online modules and active learning in the clinical setting	Created IP learning content modules in D2L; presented the online modules to DNP didactic faculty to incorporate evidence-based, IP content into existing courses; gave all students access to course content after the IP clinic orientation
Collaboration requires communication between team members, which increases time required for patient visits	Team works together to address all of the patients' chronic illnesses, long-term healthcare needs, and illness prevention methods; the model steers away from the episodic, acute care.

To help eliminate the need for a nurse's time to triage and room patients for the student-led clinic, BSN students were integrated into the team. The BSN student roomed the patient and performed patient intake increasing efficiencies and adding a beneficial dynamic to the team. As a result of the successes seen early in the second year, other disciplines expressed interest in joining the IPE team. Students from the disciplines of medicine, social work, behavioral health and psychology joined the team and expanded the scope and depth of the patient problems the teams were able to handle.

The assessment process was streamlined and made more efficient by the development of more concise evaluation forms that were transitioned to being available electronically through the learning management system. The more concise forms were easier to use and required less time per patient encounter. The didactic lessons placed on the learning management system have been expanded by each profession contributing assigned materials. During down-time in the IP clinic settings, students were able to access case-studies or other lessons that stimulate conversation among the disciplines present to maximize learning.

One practical way that success has been noted in the IPE clinic has been the word-of-mouth recommendations passed along from the IPE students to classmates not participating in the program. It was noted this year that many students are requesting rotations that will guarantee them participation in the student-led clinic activities. For example, Doctor of Pharmacy students have requested placement in their Advanced Pharmacy Practice Experiences during the academic semesters when the IPE clinic is active.

Recognizing Strengths of the IPE model to Build Professional Growth and Collaboration

Strengths of the IPE model have been well documented in the literature (Grant & Finnocchio, 1995; Ho et al., 2008; WHO, 2013). Particular strengths of our clinical fellows model contributed significantly to building professional growth and collaboration. During the maturation of the IPE clinic, the focus of the team transitioned to a focus on the needs of the patient rather than on individual contributions of each discipline. A recognition that the basis of primary healthcare is effective communication with the patient was quickly realized, which is a principle shared by all health professionals, not unique to any discipline. An additional strength of the clinical fellows model was the development of an appreciation that collaboration requires both depending on others and contributing one's own ideas toward solving a common problem. This collaborative experience enables students and faculty to learn new skills and approaches to care.

The IPE clinic provides an environment for innovation and active learning in the real world setting. Many IPE programs across the United States use simulation with patient encounters for attaining the core competencies of collaborative care. Our model is innovative in that students have responsibility for the patient encounter from start to finish. The IPE team must work collaboratively to solve complex medical issues in patients with MCC, numerous co-morbidities, and in some cases, significantly advanced disease states. In addition to meeting the physical needs of the patient, the team must work together to access outside resources to meet the social, emotional, and spiritual needs of the patient. The team also has the unique opportunity to observe the outcomes of their interventions when the patient returns to visit the IP clinic for follow-up appointments.

Our clinical fellows model of IPE facilitates a shift in emphasis from acute, episodic care to long-term preventive care and chronic illness management. The students are learning evidence-based healthcare from each participating discipline. They will take this collaborative IPP approach with them into practice, thereby improving long-term health outcomes of the patients for whom they provide care.

Summary

The purpose of this project is to build capacity for IPP and deliver effective health management to patients with MCC through evidence-based practice to improve health outcomes in underserved populations of Appalachian Tennessee. This project took the innovative approach of acknowledging the specialized knowledge, skills, and contributions of nursing, pharmacy, and nutrition specialties, empowering each discipline to be an active decision-maker in the healthcare team. The IP team embedded themselves in existing nurse managed clinics, conducting student led clinics at various sites. A clinical fellows model was used to enhance the students' learning experiences and to promote IPP upon graduation.

The IP team had several challenges and overcame barriers with a purposeful strategy which has created unique opportunities for conducting student-led IP clinics. The student-led IP clinics have grown in the number of sites and disciplines supporting ETSU's vision of true IPE and IPP, resulting in effective management of patients with MCC and improvement of health outcomes.

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