The Vanderbilt Program in Interprofessional Learning: Sustaining a Longitudinal, Clinical Experience That Aligns Practice With Education

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Abstract

Problem

Designing and sustaining a longitudinal, clinic-based interprofessional learning experience is logistically challenging, which has limited the educational opportunities available in health professions schools. The authors discuss the Vanderbilt Program in Interprofessional Learning (VPIL), which addresses some of the challenges facing clinic-based interprofessional experiences.

Approach

VPIL places first- and second-year students from 4 professional degree programs (medicine, nursing, pharmacy, social work) in Nashville, Tennessee, on teams where they work and learn together in authentic clinical environments over a 2-year period. The program was implemented in 2010 and includes 3 components: a summer immersion experience, seminar-based classroom and simulation sessions, and a weekly clinical experience. Students also complete a capstone quality improvement project. VPIL administrators have set up structures at the institutional, clinic, faculty, and student levels that have contributed to the sustainability of the program.

Outcomes

Between 2010 and 2019, VPIL admitted 398 students who participated on 91 clinical teams. In addition, 55 clinical preceptors and 12 core faculty trained students for future collaborative practice. The program has received consistently high ratings from students, who have produced 69 quality improvement projects at their clinics. These projects have addressed aspects of the care delivery process and produced durable materials, showing that the program has contributed to important innovations in the health system.

Next Steps

VPIL faculty continue to improve the curriculum and administrative structures and work to expand the program to reach a wider variety of health professions students. Going forward, lessons from the program could assist educators in creating opportunities for students to learn interprofessionally and deliver high value health care in increasingly complex delivery systems.

Problem

An important component of health professions education is establishing authentic learning opportunities for students within the clinical environment. Traditional educational design places students in clinical environments where they work alongside the professionals they plan to become. For health professions students to learn to deliver high value and safe health care in increasingly complex delivery systems, they must learn to work in interprofessional teams. As a result, the field of interprofessional education (IPE) has grown exponentially in the past 2 decades.[1,2] According to the World Health Organization, IPE is "when students from two or more professions learn with, about and from each other to enable effective collaboration and improve health outcomes."[3] As the field has matured, experts have defined core competencies to focus learning, educators have shared the impact of curricular solutions, and accrediting bodies have included IPE requirements in their standards (e.g., recently publishing a guide for developing IPE programs[4]). Even with this extensive work, however, the relative paucity of interprofessional clinic sites, coupled with barriers such as aligning complicated schedules across professions, has resulted in few opportunities for students to learn alongside practicing clinical teams. To address these challenges, we developed the Vanderbilt Program in Interprofessional Learning (VPIL). Here, we describe the program and the curricular and administrative resources that contribute to its sustainability.

Approach

VPIL is a longitudinal, clinic-based IPE partnership between the Vanderbilt University Schools of Medicine and Nursing, the Lipscomb University College of Pharmacy, and the University of Tennessee College of Social Work, all in Nashville, Tennessee. VPIL embeds small teams of first- and second-year medical, advanced practice nursing, pharmacy, and social work students in clinical settings over a 2-year period. There are 3 components of the program: (1) a summer immersion experience, (2) seminar-based classroom and simulation sessions, and (3) a weekly clinical experience (see below and Figure 1). Students apply for VPIL after being admitted to their home professional school. The summer immersion begins several weeks before the start of students' home orientations, and the classroom and clinical experiences align with the academic calendar. Through continual

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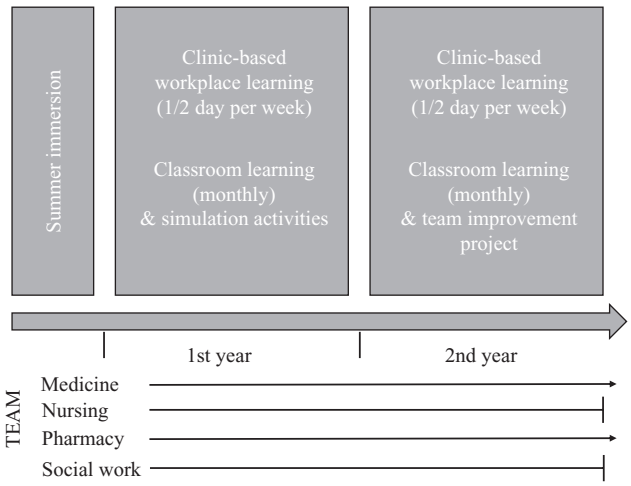

Figure 1 Overview of the Vanderbilt Program in Interprofessional Learning (VPIL), including the components of this 2-year, longitudinal, clinic-based experience. VPIL has maintained the same structure since the first cohort of students started in 2010. Nursing and social work students are enrolled throughout their entire 2-year master's program. Medical and pharmacy students are enrolled throughout the first 2 years of their 4-year doctorate programs.

evaluation and improvement efforts, we developed a meaningful curriculum and required resources that have led to effective administrative structures for the program.

The basic structure of the program has stayed the same since the first cohort of students was admitted in 2010. It remains that way today in 2019. The model was developed at a retreat in 2008, during which educators, administrators, and trainees from all the included professions discussed how to meet crucial needs at the earliest stages of health professions education, including interprofessional team-based approaches and work place learning.[5] The resulting curriculum embodied the underlying principle that "all workers learn and all learners work."[5]

Curriculum

Four primary program goals guide the VPIL curriculum: (1) cultivate respectful professionals; (2) nurture self-directed workplace learners; (3) prepare leaders who contribute to a collaborative, practice-ready workforce; and (4) improve the health care delivery system. Throughout the 2 academic years of the program, students attend their assigned clinic 1 half-day per week and participate in monthly classroom seminars and simulation activities that complement the clinical experience. The program concludes with teams completing a quality improvement project, called the capstone. Faculty assess students using a variety of methods, both formative and summative. A detailed overview of the VPIL learning objectives, seminar topics, activities, and assessment methods is available in Supplemental Digital Appendix 1 at http://links.lww.com/ACADMED/A785.

Summer immersion experience. The immersion experience[6] is a 5-day introduction course that encourages students to develop an interprofessional professional identity and relationships with their teammates before they begin to assimilate into their own professions. Through immersion, students gain a better understanding of the principles of IPE, the various health professions, the Nashville community, their clinics, and the patient experience of care.

Clinical experience. Clinical sites for the program include ambulatory, community, and hospital-based settings. VPIL preceptors are primarily nurse practitioners and physicians, with a few pharmacists and social workers joining in recent years. Each clinical session includes a preclinic huddle, interaction with patients, and postclinic debrief huddle. The huddles orient the student teams to their patients for that day and provide space for them to discuss what they learned. During clinic, teams actively participate in and contribute to clinical functions as they gain knowledge, skills, and confidence. Students complete clinic assignments to supplement their work with patients and to guide interprofessional discussions with their peers. After each clinic session, they write a brief reflection about patient care and interprofessional teamwork and post it on a discussion board to promote team learning.

Classroom experience. Once a month, student teams gather for a classroom seminar. Seminars are facilitated by VPIL faculty and provide students with an opportunity to consolidate workplace learning and process clinical experiences. The curriculum is organized around the themes of patients, professions, teams, and systems, which are used as a framework for meeting the larger program goals and objectives. Learning activities include in-class case discussions that deepen students' understanding of the needs of diverse patient populations and strategies for patient advocacy. Student teams also visit patients as part of a home visit project and develop collaborative plans of care using interprofessional perspectives. In addition, classroom-based skill building activities, such as learning medication reconciliation and health coaching techniques, are implemented within the clinical setting.

Students also engage with a longitudinal standardized patient case, Mr. Atkins, who suffers from progressive heart disease, over 3 sessions. Students interview him through the lens of their own profession, draft ideas for interprofessional care plans, and work with Mr. Atkins to finalize the plan. All sessions are recorded, and students receive feedback on their communication skills, discuss the variability in their profession's perspectives, and reflect on what type of collaboration is needed to produce an effective care plan.

Capstone. During their second year, student teams design and implement a quality improvement project in their clinics. The curriculum uses the Institute for Healthcare Improvement Open School training modules to provide foundational knowledge, and VPIL faculty guide project development. Teams present their projects at an annual event. Recently, the faculty have been updating the curriculum and have invited patients to provide feedback on the projects.

Required resources

IPE in clinical settings requires considerable resources. Paying attention to the needs of institutional, central

office, clinic, and student administrative structures is important for sustainability of the program.[7] We developed an effective administrative model through a process of intentional, continual improvement of structures and processes (see Table 1). Sustainability of the program has relied on institutional leaders firmly committing to providing the required resources. Vanderbilt University serves as the program's host institution and employs a full-time faculty director and a program manager who nurture relationships, encourage innovation, and frequently communicate with all partners to troubleshoot conflicts. Twelve faculty members representing the different professions recruit clinic sites, train clinic preceptors, deliver the curriculum, track student coursework, and integrate VPIL activities within their school's curricula.

Vanderbilt University covers the bulk of the operating budget, and the other institutions contribute faculty time and in-kind support. Each such partner institution supports approximately 0.1 full-time equivalent of a faculty member for every 4 students admitted to the program. Securing the initial seed funding (which was used from 2010 to 2013) and the early success of the program encouraged each participating school to commit ongoing financial support. Appendix 1 provides a detailed summary of the resource requirements.

Clinic needs

Recruiting and retaining clinics to participate requires continuous work from program staff and faculty. Two success factors guide this recruitment: clinic workflow and preceptor attributes. The clinic workflow must afford opportunities for students to engage with a sufficient number of patients in meaningful ways. In addition, the most effective preceptors have a deep interest in education and working with students from other professions. Sites employing a collaborative care model are ideal, but sites without an interprofessional care model can provide effective learning environments for student teams if these 2 success factors are in place.

A challenge for preceptors has been balancing the activities of student teams while simultaneously managing their own clinical workflow. Also, traditional single-provider clinics often cannot role model interprofessional practice. VPIL provides a professional development fund to address these challenges, and VPIL faculty members act as interprofessional coaches to assist preceptors in facilitating discussions during huddles and help students navigate the clinics. Faculty also monitor the weekly student reflection discussion boards to quickly identify and assist teams that may be encountering difficulties.

Student recruitment

The number of students admitted to the program depends on the number of clinics recruited each year. Presently, there are 10–12 clinics per cohort, which translates to 20–24 clinics across both years of the program. As there are 4 students per clinic team, the program supports approximately 85 students annually across the 2 cohorts. The students admitted each year represent 10%–12% of their professional classes. Each school develops its own process for recruiting and admitting students, which usually involves a combination of essays and interviews. During the selection process, schools give priority to students who have a passion for improving health care and a desire to explore different perspectives. Participating schools accept 30%–60% of applicants.

Outcomes

Between 2010 and 2019, 398 students participated on 91 VPIL teams. Fifty-five clinical preceptors and 12 core faculty now have experience working with and training IPE student teams for future collaborative practice. Many preceptors (24, 44%) accept teams for a second 2-year period, despite the intense time commitment involved, indicating the value they see in the program. Seven clinics have even hosted a third or fourth team. In annual evaluations, students rate their overall experience favorably (an average of 4.6 on a 5-point scale), with the clinic experience ranking higher than the classroom-based activities. In their final reflections, students consistently emphasize that they gained respect for different perspectives and learned the value of collaborative care models:

> I feel graciously equipped with a unique skill set to work within and empower a team to provide a higher level of care than I could alone as a future practicing physician. (VPIL medical student)

> Being engaged in the messiness of interprofessional care is a beautiful testament to people trying their best to share the load of caring for people to ensure that the patient gets exceptional care. (VPIL pharmacy student)

Table 1

Administrative Models, Structures, and Resources of the Vanderbilt Program in Interprofessional Learning (VPIL)

Administrative model	Structure	Resources needed
Central office (Vanderbilt University)	Faculty director or co-directors	1.0 FTE
	Program manager	1.0 FTE
	Administrative help from each partner school	In-kind
Core faculty	10 faculty representing each profession and partner school • Includes specific roles for a clinic coordinator and a designated faculty lead for each partner school	Range from 0.1 to 0.3 FTE per faculty
	2 volunteer faculty	
Clinical preceptors	20–24 across both years; 50% MDs, 50% advanced practice registered nurses • In recent years, 2 pharmacists and 1 social worker were added	Professional development fund
Clinics	10–12 per cohort (20–24 across 2 years)	In-kind, dependent on the needs of the clinic, to support student learners
	The majority of clinics are part of the Vanderbilt University Medical Center network	
	• Community-based clinics are associated with a variety of organizations	
Students	40–48 per cohort (approx. 85 across 2 years) • 10–12 students admitted per school per cohort	Operational budget includes support for summer immersion orientation

Abbreviation: FTE, full-time equivalent.

According to previous research we conducted, designing the VPIL interprofessional interactions around real patient care allowed students to recognize how different professions conceptualize problems in their own way. As a result, students are able to ask effective questions of their interprofessional peers, which uncover those important and diverse perspectives.[8]

The program has also contributed to important innovations in the health system through practice transformation initiatives. As of 2019, VPIL students have implemented 69 improvement projects at their clinics. These projects addressed many aspects of the care delivery process (e.g., decreasing "no-shows," helping transitions of care) and produced durable materials (e.g., diabetes education videos, asthma medication guides). VPIL faculty and students participated in the design of a collaborative practice model at a community health center that included a unique work flow for pharmacists and behavioral health professionals.[9] Additionally, a preceptor used the VPIL model as an exemplar of interprofessional training in a federal grant initiative to increase the quality of training for HIV care.

VPIL students also influence health science education at their respective institutions. For example, 2 medical students launched a community outreach organization with divinity, law, and business students. Medical and pharmacy students started a hotspotting initiative on their campuses after participating in the Association of American Medical Colleges/Camden Coalition Interprofessional Student Hotspotting Learning Collaborative. Medical students also created opportunities for nursing, pharmacy, and social work students to join them in staffing a student-run free clinic. These examples of how students and faculty have used their experiences to influence the growth of other interprofessional opportunities provide evidence of a powerful developmental milestone in the journey of being collaborative practice ready.

Next Steps

The challenge remains to offer this experience to more students and to expand collaboration with additional professions. Until there are more opportunities for students to learn in interprofessional clinical environments, increasing the number of students will remain difficult. However, we plan to continue nurturing opportunities to integrate IPE into traditional curricula, collaborate with other faculty, and encourage VPIL students to lead interprofessional discussions with their colleagues. We also plan to conduct an in-depth study of program outcomes, including what skills students integrate into their future practice. While the model may seem like a large investment for a relatively small number of students within each school, committed leaders recognize the value and vision of the program and the lessons it demonstrates.

VPIL provides students with meaningful insights into building effective, interprofessional collaborations that improve care for patients and populations. The ripple effects of this model on students and the systems in which they practice seem to be more impactful than those derived from single, modularized learning activities. The program also contributes to the national conversation on how IPE can be integrated into practice and ultimately lead to practice transformation.[10] It envisions alumni as future professionals who improve traditional systems and normalize interprofessional teams as the preferred model of care, with a goal toward improving health outcomes.

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Appendix 1

Resource Requirements for the Vanderbilt Program in Interprofessional Learning (VPIL)

Resource level	Considerations
Institution-level resources	
Host institution designation	A primary coordinating center is necessary to organize and disseminate communications, contact information, and student work. A host institution should be considered if it is necessary for students to share course management systems, libraries, IDs, etc.
Contracts or memoranda of understanding (MOU)	MOU ensure leadership support, grant distribution (if applicable), faculty allocation and expectations, in-kind administrative contributions, and access to institution- and curricular-level information.
Professional school administrative and faculty champions	Administrative leaders and faculty champions are needed from each home institution. To effectively collaborate, these people should be responsible for: • Accessing registrar and curricular-level calendars for alignment meetings • Accessing curricular expectations to monitor the reciprocal impact with an interprofessional education (IPE) program • Negotiating curricular expectations with home curriculum leaders • Incorporating assessment and evaluation expectations for students to receive credit • Incorporating strategic-level decisions regarding curriculum reform or accreditation requirements
Student credit earned	Integration of the IPE program into the home curriculum may cause variations in how students receive credit. In VPIL, credit is distributed as follows: • Medical students: partial credit for required longitudinal health systems science course • Nursing students: partial credit for required community health course and clinical hours in specialty • Pharmacy students: credit for introduction to pharmacy practice settings • Social work students: opportunity to include as part of internship hours
Sufficient funding	Faculty and preceptor funding: Each partner institution contributes 0.1 full-time equivalent faculty time/agreed upon proportion of students. Professional development funding: Small monetary incentives are provided to preceptors to encourage clinicians to mentor 4 students at one time.
Central administration-level resources	
Central office	Central staff located at the host institution coordinate information, monitor and troubleshoot potential conflicts, serve as a communication clearinghouse, and maintain a central database of contact information.
Compliance monitoring	Each institution requires students to complete necessary compliance training (Health Insurance Portability and Accountability Act, Basic Life Support, etc.).
Communication strategy	It's important to maintain regular communication between all parties (institutions, faculty, clinic preceptors, and students). There is a plan for last-minute/urgent communications, as student and clinic issues arise regularly.
Sufficient funding	The operational budget covers clinical preceptor professional development funds, office supplies and technology, summer immersion rentals and catering, support for team events and capstone catering, and honoraria for patient partners.
Clinic-level resources	
Contracts or MOU	Items that should be included in contracts and/or MOU are curricular expectations, guidelines for patient interaction, calendars, and assurances of preceptor(s) commitment. • Some institutions may require unique affiliation agreements.
Identify relationship with clinic: • administrator(s) • preceptor(s) • other clinic educators	A clinic administrator should be included in the development of the IPE experience. Administrators can help implement the educational environment with the clinic staff and can help the clinic team think creatively about how to fit IPE teams into the current workflow. Clinic preceptors can change or may not be available for students when needed. It is important that multiple clinic staff members commit to supporting the IPE experience, which will then strengthen team learning.
Protocol for providing student assessment	Consistent expectations should be developed for all students, regardless of differences among home curriculum rubrics.
Protocol for assessing student team-level conduct	A dysfunctional team may need remediation or it could lead to the team members' dismissal from a clinical placement. A protocol will help guide the faculty intervention process if a team exhibits problematic behavior.
Faculty coaches in clinic	Clinics that have IPE potential but do not have an interprofessional workflow will need support from faculty with an IPE perspective. It is very easy for preceptors (or other clinic staff) to revert to traditional methods for training their own professional students. Faculty site visits can ensure that each learning environment meets IPE goals.

(*Appendix continues*)

Appendix 1
(Continued)

Resource level	Considerations
Student-level resources	
Special student status	A single host institution may be able to designate a "special student status" for nonhost institution students. This will allow all of the students to work on similar institutional structures, such as course management systems, access to the same libraries, consistent identification cards, etc.
Status change: • new students • dropouts • dismissals	A protocol should be developed to work with any student status change. Student status changes will trigger multiple communication needs between student team members, preceptors, course directors, and central administration.
Grading expectations	Each school is responsible for how students are graded using their own relevant rubrics. The central program compiles completed work, and course directors interpret that work based on each school's requirements. • Be aware of unanticipated consequences. We have found that students often rate their level of involvement in a team project based on the weight of their anticipated grade. Even though each school is responsible for grading its own students, the IPE faculty need to make expectations very clear to ensure student accountability.
Conduct expectations in clinic	Clinic absence (unexcused vs excused) must be negotiated among faculty. Be aware of unanticipated consequences when students from one profession are seen as being "excused" from teamwork when the others are not.
Protocol for behavioral concerns	Faculty will most likely receive concerns from their own students regarding the behavior of one of their teammates (from another school). Develop a protocol for how such concerns are systematically addressed among the course directors and communicated appropriately to all members in the program.