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Student Perspectives on Interprofessional Education: Implications for Curriculum Development

A Thesis Submitted to the
Yale University School of Medicine
in Partial Fulfillment of the Requirements for the
Degree of Doctor of Medicine

by

Jacob Alan Weatherly

2016

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Abstract

Title: Student Perspectives on Interprofessional Education

Background

The Yale Schools of Medicine and Nursing and the Yale Physician Associate (PA) Program are collaborating to implement an interprofessional curriculum. Although healthcare organizations have called for interprofessional education (IPE), such initiatives have been difficult to implement. Per the Kern framework of curriculum development, design and implementation is likely to be more successful if a needs assessment is done as the first step.

Objective

To better understand healthcare professional students' perspectives about IPE as part of a needs assessment for developing an IPE curriculum.

Methods

Because little is known about stakeholder perceptions of IPE, we used a qualitative, content analysis approach. We conducted in-depth, semi-structured interviews of students from the three health professional programs at Yale. Sixteen students were selected using purposeful sampling. Interviews were audiotaped, transcribed and stored in Atlas-ti. A focus group was conducted with volunteers at the HAVEN student-run clinic to triangulate the data and see if any new ideas emerged. Members of an interprofessional team individually conducted open coding of transcripts. Codes were compared using an iterative process and constant comparative method, resulting in emerging categories. Data collection at this stage stopped when a saturation of concepts and codes was reached.

Results

Many emerging concepts were identified, including a number of implications for an IPE curriculum. The students' ideas are organized into five categories: culture and teamwork, communication, roles, hidden curriculum, and implementation of IPE. These categories lead to a conceptual model for an interprofessional curriculum: the curriculum should build teamwork and teach about roles, information about other professions' training curricula, communication, and conflict resolution, and the curriculum can be delivered in an interprofessional setting where a student's responsibilities are based on competencies

Discussion

Our study shows student perspectives that imply a conceptual model for an interprofessional curriculum. Student perceptions will inform curriculum development, improving the likelihood of success.

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Abbreviations

APRN – Advanced Practice Registered Nurse
IPE – Interprofessional Education
NP – Nurse Practitioner
PA – Physician Associate / Physician Assistant

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Introduction

The American healthcare system is changing to better serve patients, and one ripe opportunity for improvement is in the training of healthcare professionals. Students who are becoming doctors, nurses, nurse practitioners (NP's), physician associates (PA's), public health professionals, social workers, and other healthcare professionals, currently interact too little during their training. Then, after graduation, the healthcare system, patients, and the public expect healthcare professionals to collaborate seamlessly to provide the highest quality and safest care. This represents a disconnect between models of education and the needs of the population.(1-6)

Interprofessional education (IPE) would prepare students to collaborate as healthcare professionals. Although providers collaborate today, for the most part, they were never explicitly trained to do so. Thus, we are left with variability in the quality of collaboration among healthcare teams. Some doctors and nurses have a relationship of trust and mutual respect while others impose a strict hierarchy. Some doctors have a collaborative relationship with NP's and PA's while others are in competition with "midlevel providers." What other teams are put together with expectation of high performance (life-saving in some cases) and have never trained together? Would we ask the Broncos to play in the Superbowl with out practicing together?

The benefits of interprofessional education are many.(1, 4, 6, 7) Physicians, nurses, and physician associates who train together will better understand one another's language and competencies, the skills that each professional brings to patient care. This mutual understanding will lead to improved communication and teamwork. In a global

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survey commissioned by the World Health Organization in 2010, participants identified teaching and learning benefits of interprofessional education as well as benefits to practice and policy. Teaching and learning benefits include acquisition of real-world experience and insights, interprofessional consultation in program development, learning about the work of other professions, incorporation of multiple perspectives, knowledge of the learning content of students from other professions, and benefits from discussion. In practice and policy, interprofessional education leads to improved access to health care, better health outcomes and quality of care, higher morale of the health care team, improved staff workforce practices and productivity, higher rates of staff retention, benefits to health workforce recruitment, and cost savings, especially in preventing costly mistakes.(6)

Evidence has shown that interprofessional education leads to improved outcomes. In a Cochrane Review from 2013, Reeves et al. reviewed 15 studies that compared IPE to no IPE and evaluated the impact on outcomes. While four studies showed that IPE had a positive or neutral impact on patient care and four studies showed no impact on practice or patient care, the remaining seven studies showed that IPE led to improved outcomes. These seven studies involved diabetes care, emergency department culture and patient satisfaction, collaborative team behavior and reduction of clinical error rates in the emergency department, collaborative team behavior in operating rooms, management of care delivered in cases of domestic violence, and mental health practitioner competencies related to the delivery of patient care.(5)

Outcomes are better when healthcare teams work together with trust and mutual respect, when each team member is on more of an equal footing rather than a strict

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hierarchy. In a study of hospital strategies to reduce risk-stratified mortality rates after acute myocardial infarction (AMI), communication and coordination among groups led to statistically significant lower mortality rates. Successful strategies included monthly meetings between clinicians and emergency medical services (EMS) to review the care of patients with AMI, good coordination among different departments like cardiology and emergency medicine, and having both physician and nurse champions focused on improving mortality in patients with AMI rather than a physician champion only or nurse champion only. Inclusion of pharmacists in multidisciplinary rounds also reduced mortality after AMI. (8)

Why does collaboration lead to improved outcomes? One answer is that nurses, who are on the front lines of patient care, enjoy a greater sense of autonomy and professional satisfaction when they collaborate with physicians to reach a consensus on care decisions. In a study of 163 adult intensive care unit (ICU) nurses in Cyprus, nurses who reported higher satisfaction with collaboration and care decisions also reported higher professional satisfaction and higher sense of autonomy. This would in turn lead to better patient care. (9)

A second reason that collaboration improves outcomes is decreased burnout. In a study of a training program for emergency department staff aimed at improving communication and reducing conflict, Leiter and Laschinger found that the program reduced burnout, improved staff well-being, lowered rates of absenteeism, improved staff retention, and led to better patient care and safety.(10, 11) More civil interactions among physicians, nurses, physician associates, EMS, and all healthcare providers, translates

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into fewer conflicts. A collaborative environment leads to less frustration and higher quality care.

A third reason that interprofessional collaboration translates into better outcomes is improved hand-offs and transfers. In studies of transfers from planned home birth to hospital, research shows that clear communication and coordination among midwives and physicians leads to a lower rate of intrapartum neonatal and maternal deaths. (12) Qualitative studies have shown that interprofessional interactions are crucial to one of the most important hand-offs in medicine, the hospital discharge. In a Canadian study in 2015, researchers conducted interviews and observed interprofessional interactions in preparation for patient discharge on a general internal medicine unit. (3) They found that interprofessional rounds, interprofessional orientation to the unit, and individual teaching and role modeling facilitated negotiation between medical residents and other staff in preparation for discharge, but participants had varied perspectives about their effectiveness in ensuring a safe and quality discharge. To make the interprofessional collaboration surrounding hospital discharge more effective, healthcare professional students must learn to negotiate with one another as part of their training.

Experience shows that respectful collaboration does not come naturally; universities must teach future healthcare providers to work together effectively. This is why, in 2010, the report of the Commission on Education of Health Professionals for the 21st Century emphasized interprofessional education. The idea is that nursing, physician associate, and medical students spend a portion of their time learning together. The Commission described IPE as “education that breaks down professional silos while enhancing collaborative and non-hierarchical relationships in effective teams.” (7) **Figure**

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1 from the Commission's report provides a graphical comparison of the current dominant model of health professional training and the new interprofessional model.

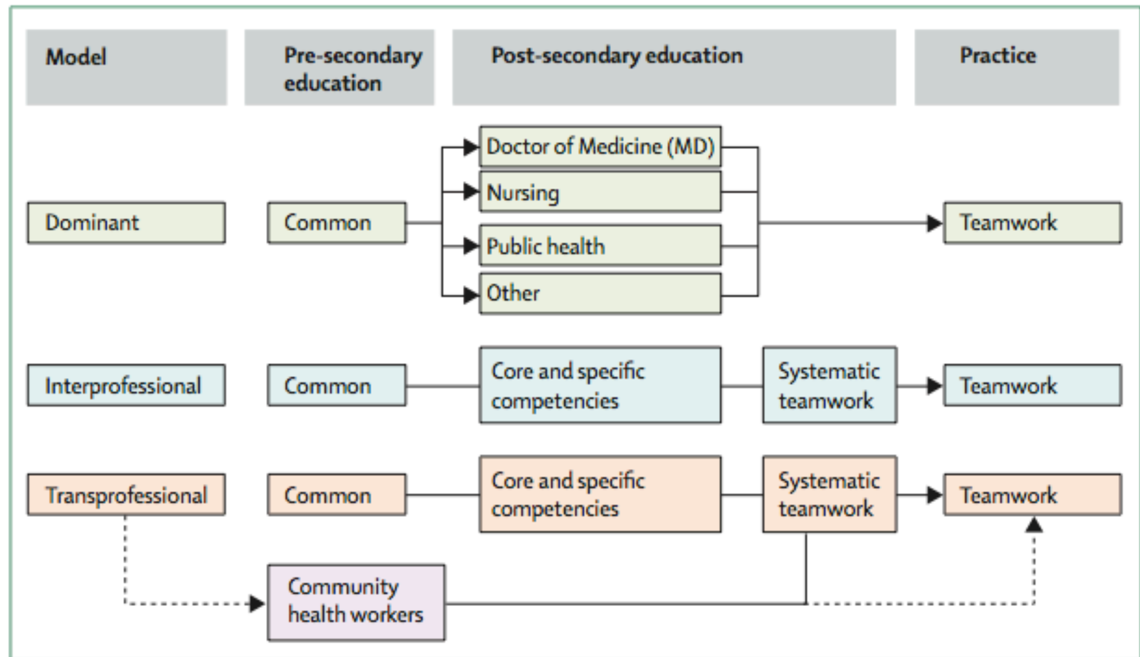

Figure 1 – Comparison of the current dominant model of health care education, the new interprofessional model, and a transprofessional model that includes community health workers. This is Figure 10 from Frenk et al. 2010. (7)

Following the Commission's 2010 report, the Interprofessional Education Collaborative, which consists of associations of American healthcare professionals, issued a report on Core Competencies for Interprofessional Collaborative Practice in May 2011. (4) They identified the following four competency domains:

1. Values/Ethics for Interprofessional Practice
2. Roles/Responsibilities
3. Interprofessional Communication

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4. Teams and Teamwork

These two reports and other calls to action have led many institutions to implement interprofessional education at all levels of training, from undergraduate education, to professional school, to residency, and beyond to continuing education of licensed practitioners and faculty.

For example, at Yale, the Veterans Affairs Connecticut Healthcare System (VACHS) Center of Excellence (COE) in Primary Care Education offers 10 months of residency training in an interprofessional ambulatory setting. Residents are assigned to NP and MD faculty preceptors and are assigned to a specific support team consisting of an RN or health technician throughout their training. The stated areas of focus for the program coalesce with the four interprofessional competency domains listed above. The program also offers interprofessional skills training through EHPIC (Educating Health Professionals for Interprofessional Collaboration), a course developed at the University of Toronto Centre for Interprofessional Education.

This initiative at the University of Toronto provides a toolkit for interprofessional faculty development and describes the IPE curriculum at the University of Toronto. There, healthcare students receive an introduction to the values and ethics related to IPE, learn about roles in case workshops, practice communication and conflict resolution, and work with other health professions students in their clinical placements.

The Center for Interprofessional Studies and Innovation (CIPSI) at Massachusetts General Hospital Institute of Health Professions holds interprofessional rounds once a year. This grand rounds-format convention brings together students from nursing, health and rehabilitation sciences, communication sciences and disorders, occupational therapy,

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and physical therapy to discuss a topic important to all healthcare professionals. The topic in 2013 was "Co-Creation: Health Care Problem Solving in Low-Resource Settings," which included a discussion of making an incubator out of car parts in developing countries. In addition to this yearly conference, the CIPSI has incorporated interprofessional learning into the Institute's day-to-day curriculum. All entering students take a course together on Ethical Issues in Health Care, and all students participate in interprofessional education rounds. Students from different disciplines also share clinical placements and learn from faculty with a variety of professional backgrounds.

In June 2010, seven institutions that have both nursing and medical schools participated in the conference "Educating Nurses and Physicians: Toward New Horizons," hosted by the Josiah Macy, Jr. Foundation and the Carnegie Foundation for the Advancement of Teaching. The seven schools aimed to advance interprofessional education by discussing three themes: integration of scientific knowledge with clinical experience, systems improvement, and professionalism. Each of the seven institutions has interprofessional intitiatives in place.

The Duke Department of Community and Family Medicine, for example, holds voluntary interprofessional case conferences every three months that are open to medical, nursing, physical therapy, PA, pharmacy, and social work students. Faculty from all disciplines help to facilitate the conferences.

New York University has developed an initiative called NYU3T: Teaching, Technology, Teamwork, for nursing and medical students. NYU3T consists of web modules, virtual patients, mannequin simulations, and three hours per semester of MD students shadowing nurses and nursing students shadowing MD's.

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At Penn State, the Hershey Clinical Simulation Center provides opportunities for different health professional students to practice teamwork in a trauma or operating room setting. The Interprofessional Healthcare Simulation Center (IHSC) at the University of New Mexico and the University of Alaska Anchorage Interprofessional Health Sciences Simulation Center offer similar simulated clinical scenarios.

The University of Colorado at Denver offers three IPE programs. First, a group of interprofessional students works with health mentors in the community (patients with chronic conditions). Second is a program called TeamSTEPPS (Team Strategies and Tools to Enhance Performance and Patient Safety), developed by the Department of Defense with the Agency for Healthcare Research and Quality (AHRQ), consisting of simulations for healthcare teams. The third is an interprofessional clinical rotations program in which students from different disciplines share clinical placements.

The University of Washington provides interprofessional training through the Center for Health Science Interprofessional Education, Research, and Practice, and in 2012, the Health Resources and Services Administration (HRSA) selected the University of Minnesota as the home of the National Coordinating Center for Interprofessional Education and Collaborative Practice (CC-IPECP). The Josiah Macy, Jr. Foundation, Robert Wood Johnson Foundation, John A. Hartford Foundation, and Gordon and Betty Moore Foundation support the CC-IPECP and provide grants for research and advancement of IPE.

A model for longitudinal care has been the Vanderbilt Program in Interprofessional Learning (VPIL). This innovative program is a collaboration among Belmont University College of Pharmacy, Lipscomb University College of Pharmacy, Middle Tennessee

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Collaborative Master of Social Work Program at Tennessee State University, Vanderbilt University School of Medicine, and Vanderbilt University School of Nursing. Students come together for a longitudinal clinical experience that lasts for the duration of their degree program. As they advance, students assume more clinical roles, and senior students mentor beginner students entering the program. The students meet for a half-day each week in clinic, home visits, group visits, and patient education sessions. They spend one half-day each month in the classroom learning from a case-based curriculum and reflecting on their clinical experiences, assessing team performance, and reviewing patient outcomes and needs.

The Yale Schools of Nursing and Medicine and the Physician Associate Program are piloting a Longitudinal Clinical Experience (LCE) similar to VPIL. The LCE will be a year-long program in which a small group of nursing, PA, and medical students follow a group of patients for a year on community clinic visits, home visits, hospital visits, and any other setting in which the patients interact with the healthcare system. The results of the present study of student perspectives will inform design of the LCE curriculum.

Barriers to Implementation of IPE

While the benefits of IPE are widely recognized, barriers to implementation remain. The Interprofessional Education Collaborative identified several of these barriers, including the following:

1. Institutional Level Challenges – Administrative leadership at academic institutions must spearhead IPE efforts.

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2. Lack of Institutional Collaborators – Some universities may only have a medical school, for example, so they face the challenge of finding other schools to collaborate with them. Yale does not have this challenge.
3. Practical Issues – Logistics and scheduling are a challenge.
4. Faculty Development Issues – Faculty need training in order to become interprofessional educators.
5. Assessment Issues – Rubrics for assessing interprofessional competencies need to be developed.
6. Lack of Regulatory Expectations – Accrediting bodies need to integrate interprofessional competencies into their regulations. (6)

In addition, cultural differences exist among the different professions. Each profession uses its own language. Professionals perceive each other in different ways, and we have a long tradition of uni-professional education, in which each profession is educated separately from the others, in silos, so to speak.

Statement of Purpose

To better understand how to overcome these barriers and implement IPE, this paper presents a rigorous qualitative study of perspectives on this topic among Yale nursing, physician associate, and medical students. The research team previously performed a similar study with faculty from the three programs. Faculty perspectives from that study along with insights gleaned from students in the current study will help to inform IPE initiatives at Yale and comparable institutions.

While quantitative studies of student perspectives on IPE have been performed using validated and reliability-tested scales, a qualitative study of students has yet to be

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performed. (13, 14) Qualitative inquiry is important because students have attitudes about their own profession and other professions based on their experiences and cultural mores. For example, some medical students may have experiences that lead them to think of physicians, nurses, and PA's as colleagues, but others may think of nursing and PA professionals as support staff. Issues of hierarchy, power, educational level, status, and personality all come into play, and must be taken into consideration in the development of an interprofessional curriculum. These ideas are better captured with in-depth semi-structured interviews rather than through a survey alone.

Resistance to interprofessional education is real, but a full understanding of why is not clear. Very little is known about the student perspective. Because Yale is launching a new curriculum involving interprofessional education, it is crucial to understand the student perspective. Therefore, the objective of this study is to understand better student perspectives about interprofessional education as a needs assessment to help guide the design and implementation of a new curriculum.

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Methods

This is a qualitative study consisting of interviews and a focus group. Hanson et al. refer to this strategy of gathering multiple types of data as triangulation, which strengthens the study's credibility.(15) Data collection and analysis were performed from 2013-2015.

Interviews

The primary author interviewed 16 Yale nursing, PA, and medical students (Table 1). The participants were offered a $10 Amazon or Starbucks gift card (their choice) to thank them for their time as the interviews lasted approximately one hour. The interview guide is attached as Appendix 1. The interviews were audio-recorded and transcribed by an independent transcription service, and the interview guide changed as the transcripts were coded to make the questions more directed and gain a deeper understanding of important themes (constant-comparative method).

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	Number	Age Range	Gender	Ethnicity	Undergraduate Majors	Past Experiences	Specialties
Physician Associate (PA) students	4	24-33	75% F	Caucasian	Biology and society, science education, exercise science	Public health school, EMT, ER scribe, work at reproductive clinic, epidemiology, portrait photography, teaching	Primary care, surgery, hospitalist, dermatology, ENT, emergency, orthopedics
Nurse Practitioner (NP) students	7	25-40	57% F	African American, Caucasian, Filipino, Asian	Microbiology, human biology, philosophy, English, nursing, political science, engineering	Public health school, research, public relations, stockbroker, retail, teaching, school nurse, consulting	Pediatrics, women's health, family practice, cardiology
Medical students	5	25-31	60% F	Asian, Hispanic, Caucasian	Human biology, biochemistry, public health, Middle East Studies, Nursing	Pharmacy school, teaching, medical volunteer, paramedic	Oncology, internal medicine, pediatrics, surgery, emergency, cardiology
Total	16						

Table 1. Interviewee characteristics.

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Focus Group

A focus group consisting of a heterogeneous group of nurse practitioner, PA, and medical student volunteers at the student-run HAVEN Free Clinic was used to triangulate the data, to see whether new concepts emerged in the group that did not come up in individual interviews (Table 2). Krueger and Casey provide a guide for conducting focus groups.(16) The focus group presented the opportunity for students to play off one another and discuss interprofessional issues in a dynamic way. (17-19) While some recommend that a focus group be homogenous to decrease the power differential between the moderator and the participants by allowing the group to feel comfortable and open, it was felt that the group was in a sense homogenous as they were all volunteers at HAVEN. This, in turn, allowed the participants to feel comfortable enough to open up and share their ideas. The heterogeneous group provided the benefit of students from different professions discussing the issues together. Similar to the interviews, the focus group was audio recorded and transcribed. The moderator guide for the focus group can be found in Appendix 2.

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Participant #	School	Gender	Specialty	Position at HAVEN
1	Nurse practitioner (NP)	F	Acute care	Junior Clinical Team Member (JCTM)
2	Physician Associate (PA)	F	Primary care	Pharmacy
3	NP	F	Women's health/midwifery	Reproductive health
4	Medicine (MD)	M	Psychiatry	Clinical Advisor
5	MD	F	Internal Medicine	Senior Clinical Team Member (SCTM)
6	NP	F	Family nurse practitioner	Lab director
7	NP	F	Geriatric Acute care	Lab volunteer

Table 2. Focus group participants.

Analysis

The methods of inductive qualitative content analysis were used to interpret the interviews and focus group to understand the concepts that students have about interprofessional education.(20) Hsieh and Shannon refer to this method as conventional qualitative content analysis, which starts without a preexisting theory to identify themes in the data that lead to a conceptual model.(21) The process of identifying the concepts or categories in the data begins with coding the transcripts.

In order to reduce bias, the coders represented many different perspectives on IPE. The coders made up an interdisciplinary team consisting of the director of the first-year Graduate Entry Prespecialty in Nursing (GEPN) program, a GEPN student, the interim director of the PA program, a pediatrician, the Associate Director for Educator and Curriculum Assessment at the School of Medicine Teaching and Learning Center, and a medical student.

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This approach requires careful analysis of transcripts, which was conducted in three passes as described by Hanson et al and Elo et al.(15, 22) Figure 2 contains a schematic of the three stages of coding.

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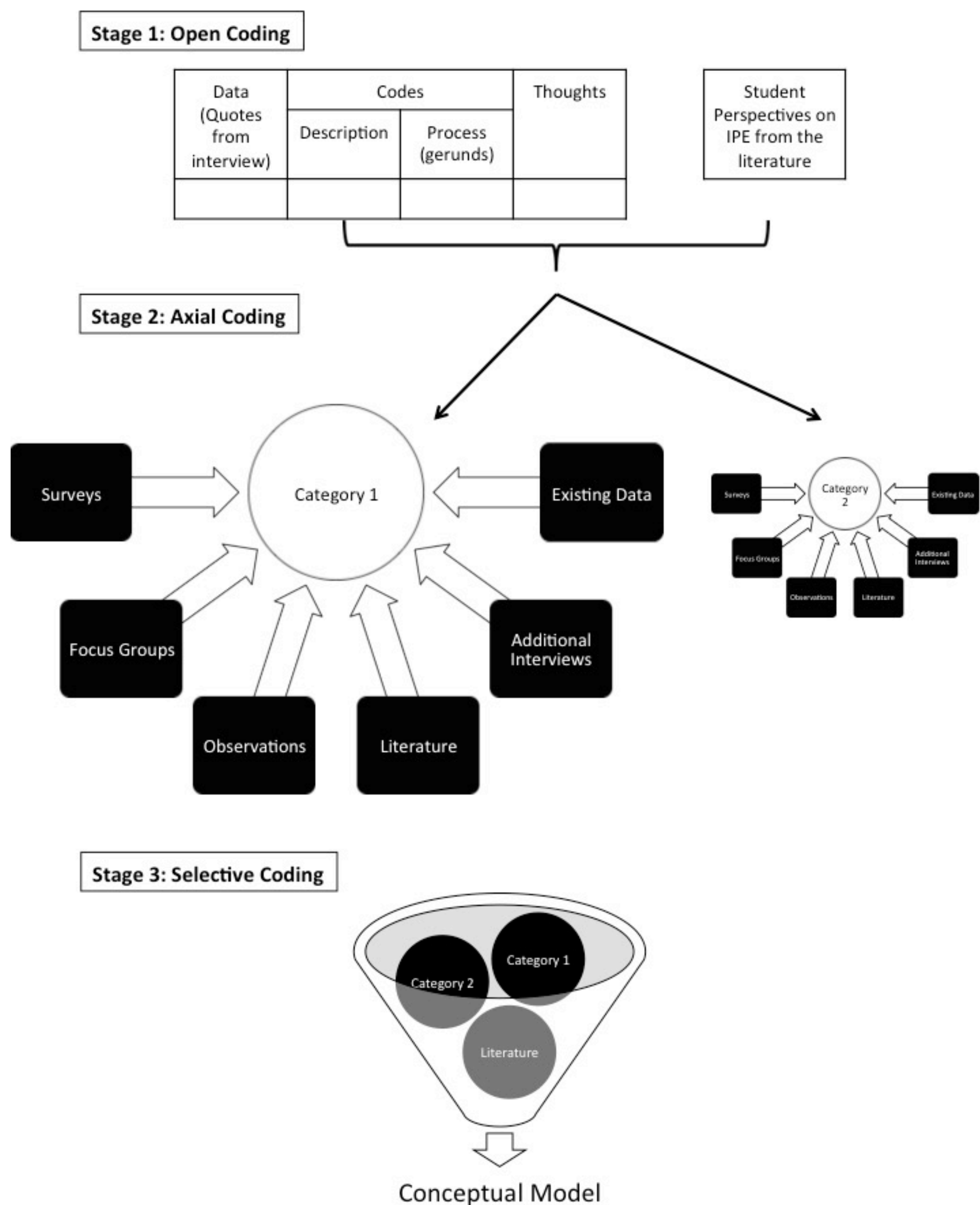

Figure 2. The three stages of coding

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In the analytic method of inductive content analysis, the coders interpret the data without preexisting knowledge to determine the concepts that emerge from the data. The first pass, open coding, involves coding the data. Codes are labels for ideas present in the interview. We used two types of codes, description codes and process codes. Description codes summarize the interviewee's thoughts, such as "Doctors do not like to touch their patients." Process codes use gerunds to identify the action that the interviewee is discussing (i.e. "Interacting with the patient, getting on the patient's level.") The coders read the transcripts individually and used the Microsoft Word comment feature to comment on ideas they found important. Then, we held conference calls to discuss one another's ideas and arrive at a consensus of all the significant ideas present in the transcript. For those who could not attend the conference call, they sent their commented copy of the transcript, so that their comments would be incorporated.

In the second pass, axial coding, the coded data was grouped into categories, or themes. At this stage, the ideas were grouped into categories without necessarily settling on labels for the categories. Then, we held a conference call to discuss the categories and arrive at a consensus.

The third pass, selective coding, consists of synthesis, reexamining the data to identify relationships between themes and prove or disprove that each theme actually emerges from the data. At this stage of analysis, we can develop a conceptual model that can inform curriculum design and be further explored in future qualitative or quantitative studies. We used the software suite ATLAS.ti to aid in our analysis, but the brunt of the burden rests on the researchers to notice nonverbal cues and explore unexpected

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concepts. While alert to the risk of bias, qualitative research views the researchers' thoughts, experiences, and perceptions as important tools for analysis.

We group nursing, PA, and medical students into one data set because we are aiming to understand healthcare students' perspectives on interprofessional education, not necessarily the differences between professions. We take this grouping to be valid because students have not been practicing for years and therefore may not be as steeped in their own profession as faculty may be.

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Results

Students come into their training with perceptions about their own chosen profession and perceptions about other professions. They also bring perspectives about working together in interprofessional teams, and their perspectives are informed by experiences that they had both before beginning their professional training and during their training program. Here we present student perspectives about what educators should consider when developing an interprofessional curriculum. The results are organized into five categories important for curriculum development: culture and teamwork, communication, roles, hidden curriculum, and implementation of IPE. These categories and sub-themes are presented in Table 3. The quotes have been edited to make it easier to read, but the meaning has not been altered.

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Culture and Teamwork

- **collaboration**
- **hierarchy**
- **contempt**
- **hostility**
- **eagerness to learn, curiosity**
- **inclusiveness**
- **diversity of expertise**
- **shared goals**

Communication

- **Shared language**
- **hierarchical communication versus communication among colleagues**
- concise
- clear
- **conflict resolution**
- **having a voice**

Roles

- **lack of knowledge of other professions' roles**
- **overlapping and complementary roles**

Hidden Curriculum

- **importance of role modeling**

Implementation of Interprofessional Education

- **teams of interprofessional students in clinical settings**
- simulation
- starting early in training
- competency-based
- peer learning

Table 3. Categories and Sub-Themes. Ideas that emerged from both the interviews and the focus group are highlighted in bold.

I. Culture and Teamwork

During the in-depth semi-structured interviews, students emphasized the culture of the environment in which they were learning to become providers. Merriam-Webster defines culture as "the set of shared attitudes, values, goals, and practices that characterizes an institution or organization." In some cases, the healthcare culture promotes collaboration and teamwork, and in other cases, the culture is distrustful and skeptical of different professionals. Many students believe that an interprofessional

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curriculum should create a culture that promotes the well-being of the patient and the success of the student. A PA student who was formerly a teacher talked about a culture that fosters good outcomes:

> INTERVIEWER: What do you think of when you hear the term IPE?
> INTERVIEWEE: I think of people with different backgrounds and specialties working together and respecting that everyone has their own strengths to add to the mix in order to have better overall outcomes. For example, with teaching, it was creating a successful learning environment for a student, and here it is creating a successful environment for a patient. I think what also is inherent in that is a hierarchy that is there for a reason, should somebody need to make some kind of a decision, but I think the more you stress the hierarchy, the less successful the environment is going to be.
> (PA transcript 9 lines 70-83)

Students acknowledge that hierarchy exists for a reason, but interprofessional collaboration calls for a flattening of the hierarchy to give each provider, and the patient, a voice in decision-making. A medical student described his experience with hierarchy as follows:

> INTERVIEWEE: I think in medicine, we are very used to having a very obvious and very traditional hierarchy in terms of who is in charge and who responds to whom. Some fields more than others, such as surgery versus medicine, in which the medical student's at the bottom, then the intern, then the residents and the attending, and sometimes that hierarchy is supposed to be for a reason. There should be somebody that is ultimately in charge of the patient and in charge of their care. At other times, they take it to a different extreme in which you cannot even talk to the attending because you have to go through the intern. If you were the medical student, you have to go through the intern. Then, the intern has to talk to the junior resident, and the junior resident has to talk to the senior resident, and then they have to talk to the chief, and the chief could talk to the attending. There are different extremes to this hierarchy, but I think it exists, and sometimes it can be problematic because it precludes people from expressing their voice and their opinions directly and openly for the care of the patient.
> INTERVIEWER: Where do nurses and PAs fit in this hierarchy?
> INTERVIEWEE: It depends. The nurses, just regular nurses that work providing day-to-day care to their patients, are usually regarded as ancillary helpers, so they are not even within the hierarchy. They are outside, as part of the structure of the hospital and support. Unless they have a serious concern or they feel obligated by their code of ethics to not do something that the attending has told them to do. I feel that sometimes the nurses tend to be ignored in some specialties more than

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> others. In terms of midlevel providers or what we call now advanced level providers, they tend to fit the role of the intern or junior resident in which they know what is going on and they do a lot of the "scut work" as we call it, so they do a lot of the busy work that needs to happen and the administrative stuff and basic patient care, but usually it doesn't go beyond that because I believe those are the limitations of their training. They are in the hierarchy, these advanced level providers, but it usually stops between the junior and senior resident level. (MD transcript 10 lines 156-186)

The culture that this student described is one in which each trainee must be careful to stay in his or her place. It is also one in which APRN's and PA's inhabit a decidedly lower level on the hierarchy than attending physicians, and where registered nurses (RN's) are not even within the hierarchy. This hierarchical culture creates contempt for those lower in the hierarchy, as observed by a medical student who has worked as a paramedic:

> INTERVIEWEE: I think it is still something that comes up, which is unfortunate, but you still see it here. I think it is much more prevalent in older faculty than in younger faculty, but there is still contempt for the professionalism of anyone who is not a doctor. I think that is something you see all the time. Nurses can be nice, and they can be friendly, but to see them as professionals is something that still has not yet achieved across-the-board acceptance.
> (MD transcript 12 lines 576-585)

A nursing student made this observation as well:

> INTERVIEWEE: There is bashing that goes on, on either side. You do not see a ton, but the environment is not always the best.
> (NP transcript 15 lines 136-138)

This student went on to discuss how this hostile environment changes physicians and nurses as they go through training. She shared an experience when she had the opportunity to teach a group of medical students at the end of her RN year. The medical students were open to learning from her and were eager to learn, but she had a foreboding that their attitude would change as they became physicians:

> INTERVIEWEE: You kind of get jaded in the way where you [nursing student] feel they [medical students] are going to get jaded soon, and so it's so nice that we're all at this point right now where we want to work really closely together

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> and we are just so eager in every aspect and so willing to learn because I think that definitely does change. And I have seen it in other people that I know who have had more experience under their belt, and so I think that's a shame. That has to do with the hospital culture where it is not very…it could be more collaborative.
> (NP transcript 15 lines 325-328)

The student points out that the early stages of training are a ripe opportunity for interprofessional education because students are enthusiastic and open to learning. Learning together prepares students for teamwork, and creating a culture of teamwork and collaboration would be an important objective of an interprofessional curriculum. A PA student described how teamwork with physicians was central to her decision to become a PA:

> INTERVIEWEE: I was very attracted to the fact that you do not have to specialize to be a PA. You can go into a specialty, but you never will be locked into that specialty. I started out as a public school teacher, so that is what I thought I was going to do for the rest of my life, so it was important to me to have variety wherever I went next. I also really like about the PA profession that I inherently have to work as a team member with somebody. Obviously if you are going to go to PA, you are going to consider medicine. As a doctor, you can make more autonomous decisions, and you can kind of play that role as a PA, but I like the fact that I am going to have to check in with somebody.
> (PA transcript 9 lines 15-24)

Teamwork requires a culture of inclusiveness, in which each team member providing for the care of the patient has a seat at the table. A medical student made inclusiveness the cornerstone of his definition of IPE:

> INTERVIEWER: What do you think of when you hear the term interprofessional education?
> INTERVIEWEE: When I hear that, I think of a team that is comprised of all the members of the healthcare team, so that includes the doctor, the nurse, any subspecialty care, also any technical workers, physical therapists, and anything that might be included in the patient's care that also includes social workers and care coordinators, so a full team that actually cares for the patient from the moment they come into the clinic or the hospital until they leave.
> (MD transcript 10 lines 27-35)

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Many students define the team very broadly to include nutritionists, occupational and speech therapists, pharmacists, and many others in addition to the professionals mentioned above. Students envision an interprofessional education as inclusive not only of the health professionals that a particular institution trains (in Yale's case, APRN's, PA's, and MD's), but also other professionals.

When asked for their definition of IPE, students often point to a culture of collaboration and inclusion, a culture that empowers the team to provide high quality care for patients. One of the most important aspects of culture is the group's shared goals, and an interprofessional culture's goal would be to provide "the best care possible." A nursing student shared this perspective:

> INTERVIEWEE: I know that in the real world we will have to work together. I have not had much of an opportunity to experience it, but I know that we will for the sake of the patient. Patients have very complex conditions, and a lot of different professions have to come together in order to find the best way to take care of the patient. If we do not learn of each other's schools of thought, it is going to be a waste of resources. The patient is not going to get the best care possible.
> INTERVIEWER: What are the benefits to patient care of having us learn together?
> INTERVIEWEE: First of all, communication. It seems like there is a lack of communication between providers, and I am not just talking between MDs and nurse practitioners or PAs. It is also from M.D. to M.D. I am amazed at all the mistakes we could be causing just because we are not talking to each other.
> INTERVIEWER: What benefits do you think there might be to how we use resources if the different students learn together?
> INTERVIEWEE: Instead of going around and having to find out what happened with this patient, if we had better communication, I would feel confident enough to go and ask the M.D., and feel like I am at the same level and that we have our goals in line, and then I could be honest. I do not know how to describe it, but I just feel like if we do not learn about how to work with each other, then who is going to teach us? How are we going to learn this later on?
> (NP transcript 2 lines 448-475)

This student addresses the issue of communication, a major consideration for an interprofessional curriculum.

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II. Communication

Many students identify the importance of communication for effective interprofessional collaboration and patient care. A medical student spoke about communication in the context of including the many different professionals who help care for patients:

> INTERVIEWER: What do you think of when you hear the term "interprofessional education?"
> INTERVIEWEE: It made me think about how within the hospital, there are different roles being played by different people, medical students, attendings, nurses, nursing students, PA students, PAs, all the different types of medical personnel that are working towards one goal and seeing how they interact with each other to accomplish this one goal. It is how we communicate with each other, to get the work done.
> (MD transcript 8 lines 55-69)

Students believe that interprofessional education can help providers communicate by leveling the hierarchy. IPE that gives providers an understanding of one another's roles enables providers to speak the same language. This leads to a shared understanding when they communicate. A medical student who trained as a nurse illustrated this point when she says that having been a nurse, she was able to communicate better with nurses when she became a medical student. She understood what she was asking of the nurses because she had seen nursing work herself:

> INTERVIEWEE: I do not like to expect something of someone that I would not be able to execute myself too, especially when it is coming from a position of authority and a position of power. I don't agree with it being that kind of a power dynamic and a vertical type of communication as opposed to a horizontal one among colleagues. I think that is the way it ends up playing out, and some might choose to look at it more like somebody has to take a leadership position or make decisions and then others are executing. I think they are two different things. I think that we need to have certain experiences in order to understand where people are coming from, and I think you need to have certain experiences in order to facilitate an interaction. I think there is something to be said about having to spend about 12 hours at the bedside at some point in your life to be able to put into context what you are asking someone for when you say you need this lab

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> drawn now. I do not think nursing school taught me how to talk to people or how to communicate with them. I do not think that the nursing school has made me a more empathic person. I do not think that that is what you learn in nursing school. I feel like I get that a lot that, “Oh that is why you are so good with your patients. You’re a nurse” or, “That is why you can communicate, and that is why everyone loves you,” and I do not think it was something that was taught to me. I love people and for me, it is effortless to want to get along and understand them and interact with them, and I think that is why it is easy for me. That said, I also think that my experiences in nursing inevitably gave me some degree of understanding that enables me to communicate more effectively because I have a sense of what it is I am asking for, like the logistics of what that means, or I found myself in a similar position having similar days when you see a nurse that is overwhelmed by a specific family. You can think back and “Oh, I remember that,” and that gives you some degree of pause and puts things into perspective, so I think experiences cannot be undervalued.
> (MD transcript 13 lines 140-171)

This student explains that shared experiences build empathy, which enables improved communication among providers. A nursing student shared a similar perspective, discussing the experience of paging a physician:

> INTERVIEWEE: You see each other at rounds in the morning and then the residents will go out and they see other patients and you have to be able to communicate with each other in a way that is concise. You have got to know the lingo that each other speaks in order to communicate effectively. I think this is one of the problems with nursing, but if they talk about nurses being so caring, then I think that is sometimes a detriment in communication. I see pages that some of my nursing colleagues have made when they are trying to get something clarified with a physician. There is this large text that there is no way they are going to read all of that and that you are upset that they are not responding to you. You have to understand that the logistics of what they are doing does not allow for this long page. You have got to be concise, you have got to be clear, and you have got to help them, got to provide them the opportunity to respond and not make responding such an ordeal, and I found that for myself. Your understanding on the other hand what the different healthcare providers are doing really helped me engage with them more easily and get the results that I wanted versus only saying things from a myopic view and thinking that everyone operated under the same constraints that I did. I think having an interaction would really benefit the healthcare center.
> (NP transcript 14 lines 407-425)

Students understand the importance of learning to communicate effectively, and one aspect of communication that especially interests students is conflict resolution. An MD

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student discussed his involvement in a bioethics interest group and the group's desire to explore conflict resolution:

> INTERVIEWEE: The nursing student is interested exploring issues of authority in the hospital. What does a nurse do if she thinks that the doctor is wrong? What is the doctor to do if he thinks the nurse is wrong, and how those issues can get settled without people getting mad at each other all the time.
> (MD transcript 12 lines 197-204)

In order to settle a conflict "without people getting mad at each other all the time," each team member must have a voice in patient care. A nursing student shared a story in which the nurse's not having a voice impeded conflict resolution and quality care:

> INTERVIEWEE: I saw one nurse was getting frustrated because a doctor wrote medication orders wrong for a patient that was being discharged that day, and it is so frustrating to her that that happened, and then there was a struggle back and forth telling him, "You messed this up." I have heard from some nurses where they have seen certain things where doctors or people or health professionals that are a little bit above on the hierarchy do certain things, but some nurses did not feel like they could point certain things out because of fear of losing their job or feeling like they did not have a voice because this person was higher up on the totem pole.
> (NP transcript 4 lines 129-146)

Ensuring that each team member has a voice in communication is an important quality and safety measure. In addition, effective communication improves professional satisfaction. A medical student discussed the quality and safety benefits when each team member communicated and had a voice on morning rounds:

> INTERVIEWER: You mentioned earlier that the nurse might feel satisfaction in having their voice heard on rounds? Can you tell me more about that?
> INTERVIEWEE: I think that not only does it make their job better to know that their concerns and their opinions and their own clinical thinking is being considered, but also it makes it better for the patient because they do get a second set of eyes that is looking on different things that the medical team might not be observing. It improves the care that they receive because there are more minds thinking about the issue at hand, and a lot of these nurses have been doing this for many, many years, and they know from their own experiences on the job what things look like and how things present and can many times anticipate things from going badly, so listening to them is definitely an advantage to the medical team.

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(MD transcript 10 lines 192-205)

From students' perspectives, an interprofessional curriculum must be charged with creating a collaborative culture and instilling communication skills. These serve to improve patient care, but only if providers understand one another's roles on the team.

III. Roles

A common theme that emerged from the interviews is that students are unsure of one another's roles. PA students are not certain of what APRN's do, and medical students do not know what PA's do, and vice versa. Students repeatedly acknowledge that they do not understand other professions' roles:

> INTERVIEWEE: I wish I knew more about PAs. I know how they sort of are kind of similar to what we do in terms of focusing in primary health at least. Actually, I have no clue. I am assuming that they focus on primary care, but maybe they have had opportunities to go into more specialized areas. It would be nice to learn more about PAs. I know that they have to work under a doctor whereas nurse practitioners do not. So, that is one major difference.
> (APRN 2 lines 540-545)

> INTERVIEWEE: I think one thing, like what the study is doing now, is that we do not learn together before we get out in the working field. I mean, I feel like people understand what doctors do because I feel like society holds doctors up so high, and like they are given this ultimate respect, but I feel like professions like nurse practitioner and PAs and even sometimes nurses, even though nurses have been around so long. I think that people in society do not 100% understand like what they do, and then also it is just like…the other thing is that I do not think that as nurses, as PAs, and as doctors, like, we do not quite understand how we all collaborate together, even, you know. Especially as nurse practitioners as we can work independently with the collaborative agreement with the doctor, but the doctor does not necessarily have to be in the clinic where we are practicing and stuff like that. They do not have to be like up on us signing all of our orders every time we see a patient, and I feel like sometimes like medical students, when you tell them that you are a nurse practitioner, they don't quite get like where we come in or where PAs come in. So, yeah, I think there is a kind of disconnect. I feel like that we do not know how all the pieces run together or how they all come together, so which is really unfortunate because I think it causes a lot of tension that doesn't need to be, and I also think it hinders collaboration too.
> (APRN 4 lines 266-289)

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> INTERVIEWEE: I mean I think uhm, I think there's some feeling, some feeling that some medical professionals may not fully understand the role of nurse practitioners and sort of their scope of practice and capabilities and so I think there is some eagerness to kind of inform other health care providers about the roles of nurse practitioners and what we can do and how we can work together and sort of compliment each other's services. So I think there is an eagerness in that regard.
> (APRN 5 lines 436-441)

> INTERVIEWEE: I think one huge problem in medicine is that nobody really knows what anybody else's job is, you know. Everybody's own job is complicated enough that if you understand your own responsibilities, you can be proud of yourself, and people really don't know what all the other people around them are supposed to be doing all day. Uhm, and that leads to confusion, I guess very often to miscommunication and to conflict, and if we can start as early as possible on that, then I think everybody will benefit.
> (MD 12 lines 370-375)

> INTERVIEWEE: Oh yeah, but I think it is…like an inherent competition because you know, a lot of like, if we're [APRNs] doing primary care and there's a primary care physician, there's that competition of our schooling versus their schooling. How many years they've had to like train for, like the residency, med school itself versus ours and whether we are competent enough to do, like, to act in the same role, and then of course it comes down to like patients, then like do you see what your scope of practice is, how much money, I mean how much of their patients are taken away. But there's a lot of overlap in the skills, and so… And there's like not a lot of knowledge about what the other person does that I think that it's very easy to become defensive and protective.
> (APRN 15 lines 254-262)

Students want to learn about one another's roles. Understanding roles leads to better communication, less conflict, and improved patient care. An interprofessional curriculum does not need to emphasize the differences between one another's roles, though. As a PA student points out, roles are often interchangeable:

> INTERVIEWEE: I think it is strange that PAs and APRNs were not really aware of how each other were educated and that sort of thing, which is interesting for two professions that can kind of be interchangeable. You can have a PA or an NP sometimes fulfilling the same role. On some of the rotations I worked with, they, you know, will have a PA or a nurse practitioner doing the same job.
> (PA 11 lines 436-440)

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Students believe that understanding roles and the flexibility and fluidity of roles is important to providing patient care. A PA student described his experiences in the operating room (OR) on different surgical services. The PA's roles were different on the different services:

> INTERVIEWEE: That was an interesting setting because I felt like the PAs on that service, for one thing, I did not have a lot of interaction with them in the OR on the general surgery service, but on the rotation I am on now, they have their PAs in the OR all the time, so I think it just kind of goes to show you how the PAs can be utilized differently depending on the service. Whereas on general surgery, they [PAs] were doing a lot more of the managing the patients on the floors rather than actually scrubbing into surgeries and that sort of thing, and with general surgery it was more the PAs working with the house staff, not so much the attendings directly, which is different from a lot of the medicine rotations that I am aware. It is more of the PAs working with the attending physicians. (PA 11 lines 494-503)

On some services, the PAs scrub into surgical cases, and on other services, the PAs spend more time managing patients on the floor. A profession's role oftentimes depends on the situation. Students are exposed to a wide variety of roles for their own and other professions, and they are curious to learn about the different roles they can fill and the roles of other healthcare providers.

IV. Hidden Curriculum

Students become enculturated in healthcare not only by the formal curriculum, but importantly by all the interactions and experiences they have during training. Much enculturation happens organically and is not planned by educators:

> INTERVIEWEE: A lot of the cross-training, like interprofessional training that does happen in the hospital, is not premeditated. It is actually by accident, I think. (transcript 10 lines 433-435)

When discussing interprofessional education, students bring up these "accidental" experiences often, which are grouped here as the hidden curriculum. Students learn the

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hidden curriculum from role models who in some cases provide examples of interprofessional collaboration:

> INTERVIEWER: Can you tell me about other experiences where you have seen interprofessional education maybe as a patient yourself or where you have seen the different health professionals working together?
> INTERVIEWEE: I'm trying to think…well, in my current…my last clinical, I did see a nurse practitioner and doctors working together very well and collaboratively, especially the nurse practitioner feeling comfortable to go to ask the doctors in her primary care office for a second opinion if she did not feel comfortable or wanting to make sure that whatever diagnosis she was making or whatever plans she was coming up for that patient was the right way to go, so I have seen it, and it is definitely an environment that I would definitely want to work in…
> INTERVIEWEE: …that it can be more collaborative instead of, "No, you do what I say," type of thing.
> INTERVIEWER: Do you think there were factors or something about their relationship that made this nurse practitioner and physician comfortable in working with each other?
> INTERVIEWEE: Well, I think they have worked together for quite awhile, I think for at least, I would say at least 5 or 6 years, so I think that had a lot to do with it, that they have been working together for a while, and that they do get along, so I think just the length of time that they have worked together was good, or maybe their personalities matched. I am not sure because I do not know how their relationship was formed, but I know they have been working together for a while, so maybe there is a trust issue.
> (APRN 4 lines 164-198)

In other cases, this same student, like many students, has had experiences of noncollaborative role-modeling:

> INTERVIEWEE: I know that one office I worked in with another nurse practitioner, she did not have a good relationship with one of the doctors there, and I do not know if she clearly made it known, but there was definitely talk about how he was not the greatest person to collaborate with and was not the greatest communicator with his patients, and the sad thing was, you know, at first I was like well, you know, that is just her opinion. I cannot form this opinion about this doctor because I have never had a conversation with him, but then it got to a point where actual patients from that clinic were saying horrible things about that doctor and preferred to go to the nurse practitioner because of that communication barrier to the point where when the patient would ask a question about like "Why are you increasing my meds?" "What does this test mean?" or something like that, he would ask them, "Well what's your education level?"
> [. . .]

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INTERVIEWEE: It was not…actually, I felt like it was professional between them, but it was not the type of like friendly, warm, collaborative-type interaction than I saw with other doctors in the specific clinic. I know that I did accompany this physician one time to a nursing home, and the interaction with registered nurses with him was not that great, either. It was still like, you know, it was respectful, but then it was just like, you could tell like when they were talking to him, but you could tell like after he left like they did not really care for him.
INTERVIEWER: And earlier you mentioned trust. Was there an issue of trust between this physician and nurse practitioners or RNs that he worked with?
INTERVIEWEE: I do not think it was the issue with trust necessarily. I think that with this specific physician and nurse practitioner, it may have been a hierarchy thing going on, especially in the nursing home because, you know, at times, I feel that sometimes some physicians do not give regular registered nurses the…I do not want to say respect, but the credit due to them. I mean, yes, their education level is different, but, you know, these are the people that are right at the patient's bedside that administer the medication, that does like pretty much everything with like caring for hands-on for the patient, and I feel like there is a lot to be said about that, and I feel like it needs to be respected. I think everybody needs to be respected, but I feel like sometimes that registered nurses do not get the respect that they deserve.
(APRN 4 lines 208-260)

Students find negative role modeling to be unhelpful for their education:

INTERVIEWEE: I feel like that I have seen most of the power struggles and non-collaboration with people who are actually out of school…
INTERVIEWEE: …who are already professionals and stuff like that, and I do not think it is a great example for our students.
(APRN 4 lines 307-313)

A nursing student experienced negative role modeling that made her feel excluded from teaching on the wards:

INTERVIEWER: Have you had interactions with PAs or MDs?
INTERVIEWEE: Uh-uh. The only interaction that I had, and it wasn't much of an interaction, was with medical students. Uhm, they were, we had the same patient assigned, uhm, and it was actually two medical students taking care of that one patient and myself, uhm, so they had come in earlier, seen the patient, and then I think they must have been their second year, I have no clue, but then they went out, and they were sort of preparing a case study to later present to the group, and they were nice enough to invite me, uhm, and so I decided to go. The MD that was sort of running the...
INTERVIEWEE: The conference, the clinical conference, I am assuming, was not really particularly…he did not seem particularly happy that I was there.
INTERVIEWEE: He did not even, like, ask who I was, even though I was sitting,

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> I do not know, where he is sitting now. He did not really care much why I was there.
> INTERVIEWEE: The students were really friendly, and they were like, "Oh, you have to sit with us," you know.
> INTERVIEWEE: The med students said, "You are also taking care of the patient, so yes, you do have a say with this," so that was good.
> INTERVIEWEE: The medical students were so friendly and so open to having me there because it was a small group.
> (APRN 2 lines 300-337)

The hidden curriculum begins even before students step onto the wards. In the first year of the PA program, many of the lecturers from the MD program give the same lectures to the PA students. Students identify this as a time when they are learning from a different profession, but the MDs giving the lectures may not be aware of the PA program's objectives:

> INTERVIEWEE: I noticed right off that our lecturers were unaware that there were objectives they were supposed to follow, and the [PA] program will say over and over again that we tell them, and whether or not they do, a lot of lectures, I still do not know because I have spoken to them directly and had a number of them say to me, "Oh, I did not know we have these," and that may also be because the lecturers also lecture for the medical school, which does not require them to have objectives. They can make their own objectives for the medical school. So, I am sure there is some confusion there, but the PA program in my mind is supposed to be... So, it is this accelerated year and it is really, really fast. So, if you are going to have the best school in the nation, which there is no reason why Yale should not have the best PA program in the nation with all of the resources and great minds around that it has, information should be very efficiently given to students so that they can take the time to master it, but instead, because of all of the discontinuity in this setup, we spend so much time searching for information that was not covered in lecture, sorting out what was given to us that was not on the objectives that we do not have to learn that may be important, but it was not on the objectives, so we are not being tested on it, and then, on top of all of these, so, your livelihood in the PA program is based out of tests. We take, I think, like 42 or 43 tests during the didactic year, which is very different than medical school, and I understand the need to monitor us because we are on this accelerated curriculum. You have to make sure people are keeping up, but the person who writes the tests does not sit in on any of the lectures. We have been told that the lecturers submit questions, but they often get modified by the program or not even used by the program. I mean there is just all of these rumors like what happened with the questions, so basically what it comes down to is you do not even trust what you are given by the lecturer because you know that the

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> lecturer is not the person who writes the test, so that is one of the reasons why our class on average has 50% attendance for the entire year. People stay home, and they study what the objectives say because they know that is what is going to be tested. I do not know. I feel like the PA program probably started off trying to model itself off of the medical school program, and PA school has to be efficient because it is so fast. So, maybe you can get away with having 15 different lecturers coming to a course for the medical school because the medical students have a little more time to get the information together and they are getting things more in depth, so they are probably seeing more repeating themes than we are, whereas we are having to go really, really fast, and there are so many PA students in our program that have for the first time gone to mental health because they have just been in such, like, high states of anxiety that with just kind of the loss of control about their education, which is our entire life because, you know, everybody goes home and they are studying for 5 or 6 hours a day and then you take a test and go for a walk.
> (PA 9 lines 402-438)

The implicit curriculum being delivered is that the MD's who are lecturing to the PA students are out of touch. The lecturers do not know the PA program's objectives. Though the intention of the curriculum is to deliver lectures about pathophysiology, the takeaway for PA students may be quite different from what was intended. The APRN students interviewed also experienced lectures from other professions, but did not bring up the issue of the lecturers' being unaware of the APRN program's objectives:

> INTERVIEWEE: We have had a number of… we have had medical doctors, teachers, I do not know if we have had any PAs who give us lectures. We have had pharmacists that give us lectures. As a matter of fact, our advanced pharmacology course is taught by a pharmacist.
> (APRN 16 lines 357-360)

The MD students interviewed were less certain of whether their lecturers had come from other professions, but this medical student did provide the example of gynecologic teaching associates:

> INTERVIEWER: Have you learned with other health profession students or learned from faculty from other health professions?
> INTERVIEWEE: As for faculty from other schools, it is hard to know. You know, a lot of people come in front of the room. You do not always know exactly who they are or what school they have appointments in, but with their lectures

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> where somebody said, "I'm a nurse, I'm not a doctor, or I'm a PA, I'm not a doctor," I do not really remember. We learned breast exam from some folks who were definitely not all doctors. A couple of them I think happened to be nurses, but I think they were certified independent of any other profession that they did during the day. That is about it. I saw them in the hallway sometimes in anatomy lab going back and forth, but we never... They were involved in the service of gratitude, but we never learned together.
> (MD 12 lines 101-109)

Students have the experience that although different professions teach them through lectures or clinical skill sessions, they are not learning about those different professions, and the professionals teaching them may not even be aware of the students' objectives. The hidden curriculum is that knowledge of other health professionals is not a subject for study. Students say that interprofessional education requires an intentional effort, and share many ideas for implementation.

V. Implementation of an Interprofessional Curriculum

Students identified aspects of the current curriculum that provide exposure to other professions. In particular, Power Day brings together medical and nursing students to discuss issues of power and hierarchy. A medical student shared her experience of Power Day:

> INTERVIEWEE: So the first Power Day, which is right before third year… so okay, so first and second year, because we do not get as much exposure to nursing students, the PA students, you are kind of on your own campus. You are worried about Step 1. You are worried about qualifiers. You know, you really do not think about other people that you are working with in the hospital, that is what I mean, and then at Power Day, that was when I… I was surprised…
> INTERVIEWEE: To see that, to realize that there is tension between nursing students and medical students, and that was the first time I knew that it was real, right? Because I never heard of this before, you know, I always thought that everyone just works happily with each other, and, you know, that they are very comfortable with each other, and no one is trying to be above anyone else because we have different jobs, but in my group, most of the time, they were talking about this friction between nursing students and medical students.
> INTERVIEWEE: I was like, where did this come from? I have never experienced this before, and as you see, the nursing students had already been in

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the hospital for a while, and so I guess they were talking about their experiences with other medical students, you know, years before us. And so I always have this, you know, they would talk about, you know, how the medical students, you know they… or even like not medical students, but also like attending physicians, you know, how they had this attitude of being above the nurse, anyway telling them what to do and, you know, being, I guess, cocky, and the nursing students obviously did not like that, and then they, I do not, I mean… I didn't hear of any cases where they would say something, right?
INTERVIEWEE: To the attending or the medical student, but there is… you could tell, you know, and the vibe in the group was that there is this tension.
INTERVIEWEE: It's funny because there was this tension that was being created even before the medical students were there, before we even started the third year, and so when I started third year, you know, I just kind of like was trying to notice if these things were real.
INTERVIEWEE: You know, because before, I mean I do not know. I just saw myself going to third year and everyone would be happy.
INTERVIEWEE: Because before, I mean, I do not know, so, I guess I imagined myself going into third year, everyone was happy, and was nice with each other, that nurses help the medical students, you know, do procedures like blood drawing and stuff. But then knowing this, there is friction or tension and the nurses did not like medical students because they think they are better than them, or they think that in the future, they are going to be their bosses or something. There was this tension, and then I started noticing it too in third year. Not, you know, obviously not with every nurse. Not with every, and I have to say with nurses, because I did not really work much with nursing students. But I feel like that I was biased a little bit before going to third year because of these conversations that we had in Power Day. What else? And so then during Power Day there were, I think, some students who went up and spoke about their experiences in the hospital.
INTERVIEWEE: And I did not like how, there was a nursing student who went up and spoke about her experience with a psychiatric patient.
INTERVIEWEE: And she made the medical personnel or medical student, the attending, the resident, look like people that did not care. They were just there, like, and they would just look. They did not want to touch the patient. You know, just check something, and say, "Okay, increase the dose of this," or "Okay, we are going to do this," and she described how she would go in and clean the patient and you know, whatever. You know, do the "nice humane things" right? And the resident was like the mean one who did not have a heart. They just care about the science part. I was, I really disliked. Everyone liked her. I mean, I think everyone, a lot of people, nursing students, liked her speech, right? It was very, it was nice, you know, but I did not like it because, you know she was just emphasizing this, you know, I do not know, distance or this tension that existed between nurses and medical students, even before we even, you know, went into the hospital. And you know how we have this acronym of NURSing a patient, right? And she kind of like made fun of it, and then at the end said, "Well, I am,

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you know, I was the one nursing the shit out of my patient." That is what she said, right?
INTERVIEWER: Wow.
INTERVIEWEE: And then how we used this acronym. You know it is kind of like, fake, whatever. You know? I did not like it at all. Especially before we went into the third year. There is this, and I think I did not like it because I did not know it existed, right?
INTERVIEWEE: Like maybe if I knew before, there are good things we talked about, but I feel like they are just complaining. I just have to be honest, right? They were complaining, and there are not a lot of solutions, right? No one was talking like, "How can I make this better?" Now the medical students, we do not have anything to say, right? Because we do not have experience yet. I mean we have not started the wards, and the few times we go to the hospital like once a week, we are just with our PCC tutors. And with the patient you do not really interact much with the nurses or PAs.
INTERVIEWEE: So I was, so I did not like it. I did not like Power Day.
(MD 8 lines 334-434)

Other students had a more positive experience of Power Day:

INTERVIEWER: Can you tell me what your experience was like with Power Day?
INTERVIEWEE: I think Power Day was great, but I think Power Day needs to be like a whole, like, semester. I think that, like I definitely understood like what Power Day was about. It was about getting us all together, learning how to like put our guards down and understand what each other does and stuff like that. I think the groups that we broke out into were great, and there was a lot of good conversations about like, "Oh, I didn't know," you know, medical students did not know some of the stuff that we do, and they were like, "Oh, I didn't even know you did that," and so I think it was that way, but I think it is just the day. I feel like people go in and like, "Oh, I had this great conversation," you know, "now I guess we understand what each other does. Hey, see you on the flip side." Like that is it. Maybe some people take something away and it really sticks with them for like throughout the rest of their, I guess, medical school career or nursing career, but I think like for me personally, like it showed me what medical students thought of nurse practitioners. It showed us even what our biases were and, yeah, I will take something away from it because I honestly want to work, you know, learn collaboratively with PAs and medical students, things like that, but I just think that it is going to take more than just a day for people, and I feel like that, you know, it is a great start, but I do not think it's … more needs to be done, and I hope the study, you know, what comes of the study, that we will have like a semester together or a class together to kind of work together to learn more about each other's roles.
(APRN 4 lines 334-354)

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Power Day makes students aware of and gives them space to discuss interprofessional issues, but "more needs to be done." Students suggest that they could learn clinical skills with one another. A first-year PA student thought of learning clinical skills interprofessionally early in students' training:

> INTERVIEWEE: Certainly, I don't see why our clinical experience needs to be separate. Do you guys [medical students] like go into the hospital and see patients right now [in the first year of medical school]?
> INTERVIEWER: We do, even as first years.
> (PA 1 lines 393-395)

A nursing student shared a similar view about learning together in clinical settings and simulation settings:

> INTERVIEWER: How would you envision implementing interprofessional education at Yale?
> INTERVIEWEE: Well, I think that this is good, what the study is doing now, kind of seeing what the perceptions are, but then taking this information and coming up with a curriculum that we can all share together like maybe it is just like, I do not know, health professional role class or something like that, and then maybe we can implement like clinical skills into it or something because I know that, like you said, medical students would not start clinicals until…
> INTERVIEWER: Right.
> INTERVIEWEE: Until like the beginning of their third year.
> INTERVIEWER: That is right.
> INTERVIEWEE: So, I think that like maybe even coming, not waiting until after they finish their second year, like coming together even earlier. So, I think it would be helpful to medical students to kind of get some kind of clinical experience like in their first 2 years, you know, since we get our clinical experience like after the first week, which is insanely scary, but I think it was a great thing, and so, yeah I definitely think that like maybe, and maybe even like a workshop where there is like a mock situation like a patient or something, the patient comes in and then coming up with scenarios about, you know, what is the role of the doctor, what is the role, we have a PA and a nurse practitioner here, what is the role of them.
> INTERVIEWER: Right.
> INTERVIEWEE: What is the role of an RN? Kind of like coming up with scenarios so we can kind of see it.
> (APRN 4 lines 358-387)

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Early interprofessional education in clinical skills would help students understand one another's roles. This does not mean that the medical student would play doctor and the nursing student would play nurse. Rather, the students could play other roles in order to develop understanding of one another. For example, a nursing student proposed that medical students might try their hands at RN care:

> INTERVIEWEE: And to incorporate nursing care, like R.N. nursing care into the medical training, I think, would make better doctors. I am not saying that you need to focus your whole education on that, or revamp everything, but to include in the curriculum some level of nursing care, that would be a curriculum improvement. You know what I mean?
> (APRN 6 lines 265-269)

In a similar vein, a medical student suggested that the preclinical clerkship (PCC), in which traditionally groups of medical students have met with patients to learn history and physical exam skills, could be performed in interprofessional groups. She also mentioned opportunities to learning about the curricula of other healthcare professionals:

> INTERVIEWER: How do you think we could get IPE going at Yale?
> INTERVIEWEE: You know, I think in the similar way that we have PCC, I think, you know, we have it once with... we go twice, right, during the week.
> INTERVIEWER: Right. Twice a week.
> INTERVIEWEE: At least one of them, with the nursing student or PA. You know, and start interacting with them earlier on in our medical career…sometime before third year. I think also knowing, this is weird, though, but in surgery, we had one of my classmates who was a nursing student, and she gave a talk on the curriculum of a nursing student and what they know and their capabilities and the classes they have taken. And then, it was so interesting because you knew, and you go like, "Oh," you know, "They did the same classes as us," you know, a lot of the same classes and stuff, so I think that just knowing the curriculum of what everyone does and the skills they have in the three different professional schools would be very helpful.
> (MD 8 lines 956-970)

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VI. Triangulation of Results: Focus Group

A focus group was conducted with HAVEN volunteers to see whether the same themes emerged as had emerged from the individual interviews. HAVEN is the student-run free clinic at Yale, staffed by volunteers from the medical school, nursing school, and PA program. Similar themes emerged from the focus group, especially regarding the importance of teamwork. During a discussion about the different lengths and types of training that the different professionals receive, an APRN student emphasized teamwork:

> NP 6: But I actually did not know even as an NP student like, I did not know the vigorous, like, rotations that they [PA students] go through, and I had the opportunity to talk to one of the directors at HAVEN who is a PA student, and it is just amazing what they go through, and that made me even as a student realize what I lack in knowledge even as a current student because I just get to hear about all the rotations and the time that they put in, and almost in the sense I already doubt my own profession, but I was like "Oh, well, they do get more training. More training, more exposure than I will get in the 2 years I am here even though their program might be 1.5 years or 2 years or whatever it is." So I think it is kind of like a give and take. So I think that in the setting where all professions are present, I think they just need to work as a team because what I know about the bedside, you might not know, and what you know, I might not know, so I think it is like a, you know, you got to work as a team.
> (APRN 6 focus group lines 331-342)

The issue of communication and the hidden curriculum was a topic of discussion in the focus group, as well. A PA student shared her experience of being treated differently from the medical students on the wards:

> PA 2: What I am saying is like, you know, when the resident says, "Steven is a medical student [as opposed to a PA student]," and it still affects…they see it, like, when you are on the wards in the hospital, like some attendings talk down to you [PA students] versus others. They tend to value you [medical students] a little bit more [than PA students].
> (PA 2 focus group lines 507-510)

The focus group participants also discussed how practicing clinical skills together at HAVEN is an enriching experience:

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INTERVIEWER: Here at HAVEN, MD, PA and nurse practitioner students all volunteer. How does that bring richness to Haven, or in other words, how would HAVEN be different if it did not have students from all three programs?
MD 4: I will tell you, it would be really different, you know. I think, well I think first of all, I think what is really nice about being here is that we can teach everybody what we do, and we came to do the same roles so to speak because, you know, the people who provide medical care to the patient as SCTM, which means senior clinical team member, they can be APRNs, they can be PA students, or they can be med students, right? In other words, we are qualified to do the same thing. Yet, we all went to different trainings to get there, which are just different training names, but really the same thing at the end of the day. And it is a sense of like sharing information and sharing backgrounds and familiarizing with what other people do and making friends with other schools. It is a great opportunity like, as far as like the quality of care, I think, you see, I do not think I would say it is different between what the med students do, what PA students do, and what APRN students do. I think each one has its own richness again. And I want to say the word richness, it is just like, you know, like, you know, as a background of profession some people are like trained to like, you know, be heavy-handed here, to like be leaders, you know, and they can only see the world with that view, and some other people see things as more patient-centered. And I think the patient is getting care from different providers with different views, which contributes to like a more complete approach, instead of just like everyone being treated through the same viewpoint.
(MD 4 focus group lines 572-595)

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Discussion

This study provides a conceptual model for an interprofessional curriculum: the curriculum should build teamwork and teach about roles; should give students information about one another's curriculum; should allow students to practice communication and conflict resolution; and the curriculum should be delivered in an interprofessional setting where a student's responsibilities are based on competencies. An interprofessional curriculum would need to acknowledge that role models and everyday, unplanned interactions comprise a significant part of the hidden curriculum.

An interprofessional curriculum is tasked with creating a culture of collaboration, teamwork, quality, and safety. Educators can deliver such a curriculum by teaching clinical skills of taking a history, performing a physical exam, and reasoning through a differential diagnosis and management plan. Interprofessional service learning experiences like HAVEN provide a proof-of-concept that this model enriches students' training and the quality of patient care.

The themes that emerged from this research (culture of teamwork, communication, roles, hidden curriculum, and implementation of IPE) complement the Interprofessional Education Collaborative's Core Competencies for Interprofessional Collaborative Practice: values/ethics for interprofessional practice, roles/responsibilities, interprofessional communication, and teams and teamwork. (4) It is significant that students' perspectives coalesce with the competencies. This lends further credence to the competencies. An interprofessional curriculum built around the competencies would have a high likelihood of success because it takes into account the students' perspective.

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Limitations

The results may reasonably be generalized to institutions similar to Yale that have different health professions schools and in which all health professions students have a bachelor's degree. While some of the concepts may remain the same at other schools, the context in which this study was performed should be taken into consideration. This is the principle of "theoretical generalizability" or "transferability" of qualitative research as explained by Sim:

> Here, the data gained from a particular study provide theoretical insights which possess a sufficient degree of generality or universality to allow their projection to other contexts or situations which are comparable to that of the original study. The researcher recognizes parallels, at a conceptual or theoretical level, between the case or situation studied and another case or situation, which may differ considerably in terms of the attributes or variables that it exhibits. (23)

A further limitation of the study is that only one focus group was conducted. Future work should further triangulate the data to understand new concepts that emerged in the focus group but did not receive as much attention in the interviews, such as the issue of competition for patients and the importance of residency programs.

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Appendix 1: Interview Guide

1. Why did you choose this profession?

Probe: What is important to you about your profession?

2. Did you consider another professional school?

Probe: Why / why not?

3. What do you think of when you hear the term "inter-professional education?"

4. EXPERIENCES: Have you had an experience seeing different health professionals work together?

Probe: Think of physicians, nurses, physician associates, pharmacists, social workers, physical therapists, nutritionists, etc. Maybe you were a patient, family member, or volunteer when you had this experience? Tell me more about this experience. Can we go through these experiences chronologically?

5. EDUCATION: Have you had experience with interprofessional *education* (that may include being taught by interprofessionals or learning with other interprofessional students)? Can you describe that experience?

Probe: Even if it was not planned, have you worked side-by-side with other health professional students in an educational setting?

6. CLINICAL WORK: Can you describe any clinical work that you do or have most recently done with patients? What aspects of it do you consider interprofessional meaning that you work together with professionals or students from other healthcare fields like [choose one they are not: nursing, medicine, physician associate, pharmacy, social work]?

Probe: In your clinical work, what would you say works well and what has not worked as

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well in terms of interprofessional work?

7. ACTIVITIES: In addition to what you described above, have you ever / are you participating in an activity in which nursing, medical, and PA students work together (such as HAVEN free clinic, DESK (Downtown Evening Soup Kitchen), Bioethics Interest Group, COVS, etc)? If yes, can you describe that experience?

Probes: What types of professional students were involved in the program/session? What kinds of activities were you and the other students involved in?

8. SOCIAL: What opportunities have you had to socialize with students from other professional schools?

Probes: Can you describe these social interactions? Were they over lunch, talent shows, etc? Did they happen spontaneously, or were they organized social events?

9. Where do you live?

Probe: Do you live around students from other professional schools?

10. What do you think of when you think about the characteristics that describe other health professionals [e.g choose the ones they are not: physician/nurse/physician associate]?

Probe: Are there specific characteristics that you identify as being unique to those other professions?

11. What do you think of nursing, physician associate, and medical students working together?

Probe: What do you think would be the benefits? What would be the drawbacks?

12. Why do you think our current curriculum does not include more interprofessional education?

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Probes: Why do you think the curriculum does not have more joint experiences around patient care? What has prevented us from implementing interprofessional education?

13. Here at Yale, how do you think we could get IPE going?

Probe: What do you think facilitates the implementation of interprofessional education?

14. Are there any other issues we have not covered that you would like to talk about related to interprofessional education?

15. We are trying to obtain a broad range of perspectives across disciplines with this work. Are there other students you think we should talk to?

Probes: Someone who may have different views? Someone who may share your views?

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Appendix 2: Focus Group Guide

1. I'd like to go around the room and ask each person why you decided to become a nurse practitioner (NP), a physician associate (PA), or a doctor (MD)?

Probe: What is important to you about your profession? How did economic considerations influence your choice of profession?

2. Did anyone consider another health profession besides the one that you ended up choosing?

Probe: Why did you not choose that other profession? What factors did you consider?

3. What do you think of interprofessional education?

Probe: What does it look like? What are the benefits? What are the drawbacks?

4. How would you describe the roles of the different health professionals represented here?

Probe: What is the role of a registered nurse (RN)? What is the role of a nurse practitioner? PA? MD?

5. Why does HAVEN involve volunteers from the MD Program, the PA Program, and the School of Nursing?

Probe: Why collaborate with people from other professions? How would HAVEN be different if there were only volunteers from one profession?

6. In your experience, how do medical decisions get made?

How do you go about making a clinical decision here at HAVEN? What do you do when you have a difficult decision? What is your process for making a decision? Whom do you consult? How are disagreements resolved? Who is involved in making decisions?

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