

Incorporating Inter-Professional Education into a Veterinary Medical Curriculum

Amara H. Estrada ■ Linda Behar-Horenstein ■ Daniel J. Estrada ■ Erik Black ■
Alison Kwiatkowski ■ Annie Bzoch ■ Amy Blue

ABSTRACT

Inter-professional education (IPE) is identified as an important component of health profession training and is listed in the accreditation requirements for many fields, including veterinary medicine. The goals of IPE are to develop inter-professional skills and to improve patient-oriented care and community health outcomes. To meet these goals, IPE relies on enhanced teamwork, a high level of communication, mutual planning, collective decision making, and shared responsibilities. One Health initiatives have also become integral parts of core competencies for veterinary curricular development. While the overall objectives of an IPE program are similar to those of a One Health initiative, they are not identical. There are unique differences in expectations and outcomes for an IPE program. The purpose of this study was to explore veterinary medical students' perceptions of their inter-professional experiences following participation in a required IPE course that brought together beginning health profession students from the colleges of medicine, dentistry, nursing, pharmacy, nutrition, public health and health professions, and veterinary medicine. Using qualitative research methods, we found that there is powerful experiential learning that occurs for both the veterinary students and the other health profession students when they work together at the beginning of their curriculum as an inter-professional team.

Key words: inter-professional education, qualitative research, veterinary medical students

INTRODUCTION

Inter-professional education (IPE) is defined as learning about, from, and with members of other health professions to improve collaboration and the quality of care.¹ IPE is identified as an important component of health profession training and is listed in the accreditation requirements for many fields,² including veterinary medicine.³ The goals of IPE are to develop learners' inter-professional skills as well as improve patient-oriented care and community health outcomes through enhanced teamwork. Such teamwork is accomplished through interactive effort, a high level of communication, mutual planning, collective decision making, and shared responsibilities.⁴ One Health initiatives have also become integral parts of core competencies for veterinary curricular development. One Health has been defined as "the collaborative effort of multiple disciplines working locally, nationally, and globally to attain optimal health for people, animals and our environment."⁵ While the overall objectives of an IPE program are similar to those of a One Health initiative, they are not identical. There are unique differences in expectations and outcomes for an IPE program. Powerful experiential learning can occur for both the veterinary students and other health profession students involved. A recent scoping review article⁶ suggested that there is some type of IPE program in place at many veterinary colleges but that these programs are

very diverse in their structure, delivery, objectives, and outcomes across institutions. IPE continues to expand in US and Canadian health professions programs. Increased attention to inter-professional teamwork skills in the accreditation standards of many health professions⁷ signals further growth. While the literature describes IPE learning activities and key elements for effective program design,^{2,8,9} most literature has neglected to explore *how* IPE programs have been established and assessed. The challenges related to IPE have been described in the literature.¹⁰⁻¹³

There is a need to further explore and develop these initiatives so as to enhance understanding of what constitutes effective IPE for veterinary medical students and the human health professions.

The University of Florida (UF) IPE experience, Interdisciplinary Family Health (IFH), is a long-standing (17 years) required course for beginning UF health profession students from the health professions colleges and the Institute for Food and Agricultural Sciences (medicine, dentistry, nursing, pharmacy, nutrition, and public health and health professions).¹⁴ An inter-professional service-learning experience, the central theme of IFH is learning as a team about the impact of resources and environment on health status. The course is designed to introduce a more humanistic and collaborative approach to the curriculum of students in health professions. It pairs inter-professional students with volunteer families

within the local community. Working with these volunteers, students participate in a longitudinal series of home visits to learn about teamwork, social determinants of health, health professionals' roles and responsibilities, cultural differences and diversity, and patient safety. The program is designed to increase knowledge of one's own professional role and those of other professions in addressing the health care of populations and patients/clients served.

A formal integration of first-year UF veterinary students into the required year-long course commenced in fall of 2014, and focus groups were organized immediately following course completion to allow for program refinements for the following year. The purpose of this study was to explore veterinary medical students' perceptions of their inter-professional experiences, to assess the impact of the course, and to evaluate their awareness of access and disparity issues in health care following completion of the IPE course.

THE IFH EXPERIENCE

In 2014–2015, 700 students were randomly assigned to 55 different small groups consisting of 12 to 16 students and two to three inter-professional faculty facilitators. Within these small groups, students were further subdivided into three to four teams of four inter-professional students. Teams were configured so that no two students from the same profession would be teamed together. Throughout the academic year, students participated in six small-group meetings facilitated by their assigned faculty. Each small-group meeting focused on a different theme: teamwork, social determinants to health, cultural competency, and inter-professional roles and responsibilities. In addition to these group meetings, each student team was assigned a volunteer family from the local community. Students were responsible for conducting four different home visits with their volunteer family. Home visits were structured around information gathering exercises for students. This allowed the students to get to know the volunteer family through a scaffolded process and to understand the interactions between their personal health and social environment. Student teams were required to complete a health improvement project tailored to the needs of the volunteer family. For example, past projects have included a CD of swing dance music from the 1960s for a blind female who used to dance, a dietary program for a family dog, and a Nintendo Wii given to a 10-year-old, pre-diabetic, obese child to encourage physical movement and help develop an exercise regimen.

METHODS

Participants

Near the end of their first year, veterinary medical students ($n = 111$) from the University of Florida College of Veterinary Medicine were asked to participate in the study via email invitations. Based upon their schedules, 28 students were assigned to one of three focus groups. Twenty-four were female, and four were male. Two were Asian, three Hispanic, one black, and the remainder white.

Data Collection

Three separate focus groups were conducted with 9, 9, and 10 students, respectively. Each meeting was 90 minutes. The purpose of the focus groups was to elicit participants' perceptions of their experiences in IFH across the six co-located health science colleges (all six are on the same physical campus). Focus group questions were used to draw out participants' perspectives on the effectiveness of the program vis-à-vis their professional development. Questions were designed to ascertain the following from the students: (1) ideas about working with students in other professions, (2) ability to work as a team player with others across the professions, (3) perceived value for other professions as well as for veterinary medicine, (4) understanding of their role in the community as a veterinarian, (5) awareness of access and disparity issues in health care, and (6) perceptions of how this experience affected their clinical problem-solving skills.

One of the authors (LBH) conducted the focus groups, while a staff member in the College of Veterinary Medicine took note of which participant was speaking and recorded participants' non-verbal cues and responses. Both conducted debriefing sessions immediately following each focus group meeting. All interviews were audiotaped and transcribed verbatim by an individual not associated with the analysis. The study was conducted after receiving the approval from the university's institutional review board (IRB #2105-U-0308). Signed letters of informed consent were obtained from each participant before the focus group interviews.

DATA ANALYSIS

Each of the five authors open coded the data. We analyzed each focus group transcription as a distinct and separate set before proceeding to the next transcription using line-by-line coding (see Table 1), and both initial coding and focused coding. Initial coding is provisional, comparative, and grounded in the data.¹⁵ The process is iterative, involving close study of data fragments, including words, lines, segments, and incidents. Consistent with Charmaz's approach, two columns were employed, whereby small segments of the original transcription noted in the first column were categorized in the second column. These were categorized using gerunds followed by either a short name or phrase, to retain participants' expressions, and specific meanings assigned. The use of gerunds is consistent with process coding, as described by Saldana (2013),¹⁶ which categorizes observable and conceptual action in the data. Process coding takes into account actions intertwined with the dynamics of time, such as things that emerge, change, occur in particular sequences, or become strategically implemented. In that sense, the codes stayed close to the data, revealing the actions and the story from which they were taken. This preliminary stage led to the focused coding stage, in which selected significant initial codes were tested against extensive data.

Reading and coding line by line allowed for initial coding in the margins of the transcriptions, making supporting quotations more accessible. Once themes across the

Table 1: Initial coding sample

Transcript excerpts	Initial codes: line by line
<p>Focus group 1, lines 814–24</p> <p>“My family member was visually impaired so she could not drive and she had to rely on para transit and she did not have any pets, but just that example opened my eyes to the fact that their compliance is not necessarily based on a lack of care or love for that pet, but just a simple inability to do simple things that they just can’t do.”</p>	<p>COMPLYING NOT BASED ON CARE/LOVE</p>
<p>Focus group 2, lines 504–17</p> <p>“So I think this kind of affirmed what I wanted to do with my life because I am kind of an anomaly within the vet class because I am here primarily so that I can help people and it reaffirmed that there is such a need that people have in their lives and we can be there to serve them and recognizing that I want to improve your quality of life and I want to help your pet as well, but I want to balance it out in a way that is going to most benefit you the person first and then serve the animal in the capacity that you have and the means in which you are able to accomplish that.”</p>	<p>AFFIRMING MY CAREER CHOICE</p>
<p>Focus group 3, lines 438–42</p> <p>“I wanted to go off what they said yes I felt marginalized, but I also felt that was part of our huge role as being involved in this course was to explain to our family the importance of our role in society.”</p>	<p>EXPLAINING ROLE OF VET MED</p>

categories were finalized, we created an outline that depicted the relationships among and across the categories. We analyzed the data inductively. The process involved coding, refining codes, identifying examples to support the categories, analyzing within categories, looking for themes across categories, making a master outline showing relationships, and locating quotations to support the outline. Inductive analysis is described by Hatch as “a systematic approach to processing large amounts of data in ways that allow researchers to feel confident that what they report is indeed representative of the social situations they are examining and/or the perspectives of participants they are studying.”^{17(p.179)}

Following the open coding by individual authors, two pairs of authors met and categorized their open codes, and then the full research team met to analyze each set of categories that emerged across the three groups of analysts. We incorporated the constant comparative method, after which we moved data to better-fitting codes and codes to other categories or themes. Some themes coalesced and others expanded in the process. In addition, we used the collected responses and notes recorded during the debriefing to corroborate or refute findings.

To ensure the rigor of the data analysis, several of Creswell’s (2012)¹⁸ strategies were applied, including triangulation; using thick, rich descriptions to convey findings; clarifying the bias the researcher brings to the study; employing peer reviewers; and using an audit trail (see Table 2).

RESULTS

Four themes emerged from the analysis: (1) Recognizing what I might not, (2) Working with other health professions, (3) Reaffirming career path, and (4) Leadership and professional skills. *Recognizing what I might not* refers

to what students learned about the participating families relative to providing health care and communicating with patients. *Working with other health professions* refers to what students learned by interacting with students in health professions other than their own. *Reaffirming career path* refers to students finding that they have appropriately chosen veterinary medicine. *Leadership and professional skills* refers to students’ descriptions of their emergent leadership roles and of how they negotiate the challenges that sometimes accompany working in small groups.

Recognizing What I Might Not

Visiting families with a low socio-economic status broadened student understanding of why individuals may not bring pets in for care even when they know that care is needed. Recognizing the importance of the home environment, one student stated, “You really do not know what is going on at home.” She described a hypothetical situation of being presented with a horse whose feet look really bad: “If you are at the home, you would see oh the pet is sitting in mud all day and can see why they look really bad. But you don’t really know what it is like at home so that home perspective would be helpful so you see what is going on in everyday life.” Understanding that people who come to the clinic may be challenged by life circumstances, another participant suggested that it is important not to have a “hardened heart” and treat patients reproachfully by asking: “Why didn’t you take care of this day one?” Another participant described a family’s home situation and expressed concern for parasites in the dog after realizing that there were multiple grandchildren playing barefoot in the same yard as the dog: “If I am just seeing the animal at the clinic, I might not know that I need to discuss the potential of the transmissible diseases and things like that can occur with

Table 2: Strategies used to check accuracy of findings

Strategy	How the strategy was applied
Creditability triangulation	Different data sources were used to build coherent justification of themes. Sources included multiple individual focus data from the participants, multiple analysts, and five researchers who reviewed and open coded each data set independently and then as a group.
Using thick, rich descriptions to convey findings	In data collection and analysis, and in writing the final analysis, thick, rich descriptions were preserved and used to convey shared experiences.
Clarifying the bias the researcher brings to the study	Two of the authors have expertise in qualitative research. Four of the authors are professors in health sciences; the other is an educational researcher.
Employing peer reviewer	Four of the five authors served as peer reviewers for one another and corroborated the findings by reviewing and assessing the data to determine whether similar conclusions of themes were created from <i>in vivo</i> coding, process coding, and data analysis. The analysts came together to reach consensus on the emergent themes and to refine their definitions.
Dependability and confirmability audit trail	An audit trail was maintained to describe the data collection, coding, and decision-making processes in detail.

her and her great-grandchild that I might not see at a veterinary clinic."

From the IFH experience, participants began to recognize that even if a pet owner does not have financial limitations, there can be mitigating circumstances due to the owner's physical or mental limitations. One student described a visually impaired client who had to rely on paraprofessional transit to get to appointments or do anything within the community. Even though the family did not own any pets, the student explained, "This example opened my eyes to the fact that their compliance is not necessarily based on a lack of care or love for that pet, but just a simple inability to do simple things that they just can't do." Sometimes circumstances outside one's own control affect the decisions and behaviors that owners exhibit, and it has nothing to do with loving their pet or their family.

Participants also described other types of access disparities and issues. One participant reported that her family had a severely autistic child. During the team's conversations about what they could do for him, she recognized that there was "not really a lot of support in the community for these adults with autism and there is really no one that you can contact. When we were looking for resources, we realized that there really were not any."

Participants explained the importance of going into others' homes:

We got to see what is their priority in life. I think that is important for us to know as a veterinarian. For us it is about the animal. This dog needs this antibiotic, but there are so many other things going on in their lives. This lady had diabetes and 20 grandkids. Her cat being obese was not her biggest priority. We need to see where they are coming from and what they are dealing with on a daily basis with other things in their life and you have to understand that maybe they can't be as good at giving all

of the medications we are recommending and all of the treatments we are recommending. I think this is an important aspect for us to see it from. There is a lot more going on than giving the dog antibiotics every day.

Further emphasizing the importance of understanding problems at home, one participant reported that a family member was going to the doctor but was failing to report her exact problems to the doctor. When the team asked about the reasons for this, she replied, "I didn't think that it was important that I have a sleep disorder." The student stated, "No, it is pretty important." The participant discovered that there may be "things that are missing out of the picture when you take a history."

Another participant reported, "I will look back on this experience and realize that there might be a whole host of other issues that are going on. Maybe that will help me with my patients I hope. [However] just having that experience and seeing what is going on, you never know what is going on behind the scenes." For others, IFH helped them "learn how to speak to people and just being company to them."

Going into others' homes and seeing the choices they have to make put a human face on issues related to access and disparity. Perhaps one of the most eye-opening experiences for one student was going through website after website to find help for a family who could not afford the cost of care for their dog. "How would anybody who needs it really be able to find it when it is that buried or that difficult to go through the steps to get the access?" After learning about the financial hardships of families, some participants realized the need to think about the financial impact of treatment. While commenting on the role that veterinary medicine plays in the world, others remarked on the importance of educating the public about their profession: "Zoonotic diseases are emerging as the top epidemics in the world. [It is] important to show others how far we are in the community as

far as public health." Some participants observed that they "have a lot to teach the public about our career." Another participant experienced an increased awareness of her role within society and in the community. She pointed out the need to educate society about veterinary medicine's role in our society, to demonstrate "how we can benefit [them]" while also showing "a heart for people just as much as we do for their animals."

Working with Other Health Professions

Working with students in other health professions helped participants recognize the value of these other professions as well as their own and "Just being able to teach people about veterinary medicine and things that they did not know." While talking to the pharmacy student in her group and describing the difficulties of drug dosing and compounding for different species, she learned that there is a whole network of specializations within the pharmacy field, such as geriatrics, pediatrics, and cancer specialization. This "was beneficial for her career as well as mine and learning about our different professions."

Another student described the benefits of learning from other health professions: "I was talking with a medical student about diabetes. We were both learning about it at the same time, so I really enjoyed comparing and talking about cats and the differences between diabetes in cats and diabetes in a human." As a professional who will rely on products designed for people but used clinically in animals, this student valued the exchange of viewpoints and the opportunity to understand the differences between the human and animal models.

While realizing the benefits of multiple perspectives across the professions and appreciating others' contributions, a participant commented, "There are so many other minds in the room that might have alternative solutions that could be better than mine, or even a different perspective on things. It really sort of taught me to quiet my mouth and realize that other people have important things that they can say too." Learning about other professions was another benefit: "I still don't understand all different levels of being a nurse. I asked and I learned from the nursing student. I am still a bit confused." Another participant remarked how little other health professions knew about veterinary medicine: "They just thought that we played with dogs and cats all day. They did not know anything else about our field, but they were very open to learning."

The majority of participants felt that the experience helped them realize the importance of veterinarians working with human doctors. "I think they understand that veterinarians are doctors and understand that we are educated, but I do not know if they know exactly how we fit in and that kind of translates to the rest of us."

Working with a family without pets gave other participants a perspective on potential clients who might have no idea how to care for animals properly: "I saw how uneducated some people were about animal health. If he came to me as a client with a new dog, I would have to start from scratch explaining things to him. We all

just assume that everyone knows things because we are all in veterinary school, but that is just not the case."

Reaffirming Career Path

For some students, the IFH experience reaffirmed their decision to seek a career in veterinary medicine: "This kind of affirmed what I wanted to do with my life. I am here primarily so that I can help people." The experience supported this participant's hope that veterinarians can serve people, improve the quality of their lives, and help their pets as well: "I want to balance it out in a way that is going to most benefit you the person first and then serve the animal in the capacity that you have and the means in which you are able to accomplish that." Another participant reported, "This experience reaffirmed that if I can help the person, then I can help the animal and give back. It just like reaffirmed what I can do and the empathy I need to show as a veterinarian."

For others, IFH prepared them for a career working in a multi-doctor practice, where "you would never know what kind of person you are going to be working with." Although he found IPE to be a challenge, one participant discerned that "it does not mean that you can't be good at what you are doing if you are working with challenging people."

Others came to value their program even more: "I think that I realize that part of one of the huge benefits of the veterinary curriculum and one that I appreciate a lot now is the fact that, if you are a veterinarian, you are a general practitioner, and therefore you are every specialist. I think that we have to think more from a whole body system perspective." For one other participant, the experience solidified that "as veterinarians we are trained to look at problems systematically and the One Health approach that veterinary schools are really starting to focus on is very important and it is starting to come up in almost every event I go to."

Another participant shared that IFH helped her realize the importance of interdisciplinary work and that she should "take more seriously parts of the curriculum I felt was less important." One other found that IFH "solidified" what students were being taught through the curriculum and helped him realize the importance of not making any assumptions while talking to patients. He emphasized the need for taking a careful and thoughtful history of the patient and suggested that an explanation of diagnosis and treatment plans should help ensure understanding and avoid the use of jargon.

Leadership and Professional Skills

Participants described the leadership roles they assumed during IFH as well as how the experience helped clarify their professional identity. Even when faced with the challenges associated with group projects, they found a way to work through problems. One participant remarked, "If someone is not going to put forth effort in this, they certainly are not going to in other situations and that will reflect on them. All you can kind of do is do your best. It is just frustrating when there is paperwork due from the whole group, yet one person has to do it."

Another participant did all of the work and despite the acknowledgment, "It didn't make me feel better the entire time because I was doing all of the work. But it was nice to be acknowledged." Others described how they felt that IFH forced them to take leadership roles: "Although I had good teammates, I found I had to initiate it in every conversation regarding when we were planning on going and what we were going to do and so on and so forth." One participant stated, "Even with some of the things that were more medically oriented, I took the lead on those even though my teammates were more human medically oriented."

Others found the silence during small discussions awkward: "In my discussion group, I did a large majority of the talking. They would start with a discussion question and then it would just be a long silence where no one said anything. Then if I didn't say anything, no one was going to say anything. So I spoke up and then like maybe one or two people would be called upon to contribute." One participant emerged as a team leader and was able to impart a lot of useful perspectives. He offered the following explanation: "I care about people just as much as I do about their animals. So even though this family didn't have any animal, I was really able to care for them and I know that my personal team really like told me that they valued that." He felt that "a huge part of our role within this class was to explain to society what we do and about vet school."

Several participants felt that their communication skills surpassed those of students in other health professions. They described the requirements for paid work experience before admission to veterinary school and explained how these requirements were more beneficial than the requirements for other professional students: "We could talk to people on a better level as veterinarians and had less issues starting conversations and bringing up awkward topics like prostate exams. It did not bother us that much, but other professionals that deal with humans were scared of those topics." Working with people in different professions is likely to occur in their careers, and IFH helped prepare them: "We have already been able to communicate and form relationships with other people in other professions. [This] will help us a lot when it comes down to it and we have to refer situations to other people." In another example of leadership, one student took the lead in reading a family member's blood chemistry results. A family member in one of the groups was concerned because he did not understand his own blood work results. The veterinary student on the team replied, "Let's look at this chemistry." Her group was astonished and asked how she was able to do this. She replied, "I am a veterinary student and I have been doing this for a couple of years." And she surmised, "I think that they learned a lot about those things that we actually know."

Others recognized that, in spite of working with students across the health professions, "For all of their roles, I realized that those are all roles I am going to have to play as a veterinarian. Like, I am going to be the pharmacist, the physical therapist, and things like that."

DISCUSSION

The results of this study demonstrate the professional development benefits to veterinary medical students acquired as a result of an inter-professional, service-learning experience. IFH raised participant awareness about the scope of access and disparity issues that can effect animal care. From this experience, they came to appreciate that caring for a pet is not simply influenced by love or desire but also by circumstances beyond one's control. The veterinary students in this study took on leadership roles within their small groups even when the distribution of effort was unequal. Rather than criticizing others, they completed work when others did not fulfill their responsibilities. They were evidently able to work collaboratively and for the benefit of one another. Students' regard for their own program of study increased from the IFH experience. Perhaps this was the result of seeing veterinary medicine applied in context. When the team was presented with problems, they may have realized the benefits of their holistic curriculum and their problem-solving ability. The participants regarded their placement in veterinary school as both fortunate and appropriate. They also seemed to recognize the important contributions to society that their profession has made and the need to help others understand the role that they play in public health.

Findings from this study convey the power of the individual student experiences. However, it is important to point out that the findings represent only those students who participated in this study and not necessarily the views of non-participants. Students elected to participate in the study, and thus there was a potential for self-selection bias. The findings are also limited to veterinary medicine; collecting corresponding data from students in the other health professions was not within the scope of this study. As with all qualitative work, the findings should be considered within the context of the study.

Many health care professional curricula incorporate IPE, while veterinary schools incorporate One Health. Previously, the IFH program at our university focused on collaborative inter-professional practice without regard for the role of animals or the environment. Our study's findings emphasize the benefits of putting veterinary students together with students in other health-related professions at the beginning of their curriculum to work together as an inter-professional team at the human, animal, and environmental interface. This is a critical first step to successfully achieving the full potential benefits of IPE and a One Health curriculum.

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AUTHOR INFORMATION

Amara H. Estrada, DVM, Diplomate ACVIM (Cardiology), is Associate Chair for Instruction Department of Small Animal Clinical Sciences and Associate Professor and Director of the Teaching Academy, University of Florida, College of Veterinary Medicine, 2015 S.W. 16th Avenue, Post Office Box 100116, Gainesville, FL 32610 USA. Email: estradaa@ufl.edu.

Linda Behar-Horenstein, PhD, is a Distinguished Teaching Scholar and Professor in the University of Florida Colleges of Education and Dentistry, Department of Community Dentistry and Behavioral Science, Norman Hall, Room 1212, PO Box 110746, Gainesville, FL 32611 USA. Email: LBehar-Horenstein@dental.ufl.edu.

Daniel J. Estrada, PhD, MBA, MHS, is the MHA Program Director and a Clinical Assistant Professor in the Department of Health Services Research, Management and Policy, College of Public Health and Health Professions, University of Florida, 1225 Center Drive, HPNP 3106, Gainesville, FL 32611 USA. Email: estrada@ufl.edu.

Erik Black, PhD, is Assistant Professor in Pediatrics and Educational Technology at the College of Medicine at the University of Florida, PO Box 100185, Gainesville, FL 32610 USA. Email: ewblack@ufl.edu.

Alison Kwiatkowski, MS, was an educational coordinator at the College of Veterinary Medicine, University of Florida, when this paper was written. Her current position is at George Washington School of Law, Washington, DC. Email: akwiatkowski@law.gwu.edu.

Annie Bzoch, BS, is an administrative assistant to the Teaching Academy at the College of Veterinary Medicine, University of Florida, Gainesville, FL.

Amy Blue, PhD, is the Associate Vice President for Interprofessional Education, Health Sciences, and the Associate Dean for Educational Affairs in the College of Public Health and Health Professions at the University of Florida, Dean's Office, PO Box 100185, Gainesville, FL 32610 USA. Email: amy.blue@phhp.ufl.edu.