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Journal of the Association of Veterinary Technician Educators (JAVTE)

The Journal of the Association of Veterinary Technician Educators (JAVTE), a peer-reviewed, scholarly journal, is the official publication of the Association of Veterinary Technician Educators (AVTE). Its purpose is to act as a publication for disseminating evidence-based research to people working as educators in the field of veterinary technology. The journal's emphasis is on encouraging collaboration among veterinary technology educators through scholarly inquiry relating to the understanding and/or improvement of educational processes and outcomes, organizational issues in education, concepts of teaching and learning, and student engagement based upon research, observations, and experience relevant to the field.

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Papers will be reviewed using the JAVTE double-blind peer-review process and should be prepared using the JAVTE author guidelines (see Editorial Policies and Peer Review Process). Submission of papers is the author's acknowledgement of and agreement to JAVTE's ethical duties of the author policy.

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AVTE

Letter from the President of the Association of Veterinary Technician Educators

Jennifer Serling, CVT, RVT, BVSc, AAS

AVTE President



Hello friends!! We are quickly approaching the summer and like the holidays, I can't help but get excited with anticipation for the annual conference. There is nothing that invigorates me more than reconnecting and recharging with fellow AVTE colleagues! It never fails that I leave the conference with a few new teaching ideas and many new educator friends. Our conference committee has been hard at work over the past year developing an amazing lineup of engaging speakers. We also have some amazing sponsors that allow us to provide you with these opportunities and events and we could not do this without them. I hope you will consider joining us this year in Philadelphia.

On that note, the organization exists and continues to thrive because of our members. We are a member driven association and everything we do is for and because of you. We continue to develop new content to showcase member benefits. If you are interested in donating your time, we would love to have you join one of our committees or get involved in another way. Most of these will not impact your time too greatly as we all strive to maintain that ever elusive work/life balance.

One of the new/returning member benefits is the relaunching of this JAVTE. When I first joined AVTE, I always looked forward to reading the journal and nothing pleases me more to be able to provide high quality articles again to our community. We were inundated with some incredible submissions and I believe you will be very pleased with what the JAVTE committee put together.

We are finally coming out of (dare I say it??.....well at least I hope so) two difficult years that were challenging to so many of us both personally and professionally. Speaking for myself, I took on a new assistant director position at a university after 14 years as a program director, dealt with a son that was deployed in Afghanistan for a year, and another that left for college leaving me as an empty nester (minus dog and cat). During this time, I could at any time log onto the Facebook page and see a post that made me smile or one that I could provide input to and hopefully help a colleague. It has always been my desire that we have a robust and welcoming community and the last two years have proved that beyond a doubt. I have made many lifelong friends through AVTE and I hope that you have as well.

At this year's conference, committee and board members will be easily identified so that if you are a first-time attendee or a member who is traveling solo, we might be a welcoming face and a friend to sit with during breaks or mealtime. It is my hope to make this inclusive and welcoming to all!!

I still have another year left in my tenure as your president and I hope to still have a few tricks up my sleeve in providing amazing events, activities, and perks to you, my friends, my colleagues, and my AVTE family.

Teaching Tips & Tricks

Jeanette Reinhardt, LVT, MA
SUNY Delhi

I've done scavenger hunts, med term bingo, locked boxes, playdough brains, etc.

The scavenger hunt is a list of questions that pertain to certain bones on a skeleton and then they must find the special tape that matches the answer to the questions. You can use this for just about any section, but the skeleton system was easier.

With the Med Term bingo, I use the Free Bingo Sheets online and print them out. I go by chapter and offer extra points for winners (I usually get about half the class or more with winners). If the student wins Bingo, they get to draw a piece of paper out of a box that has different points written on them and they go from 2 points up to 10 points and those points go on to their next test.

The lock boxes are a series of questions that part of the answer will match up to a number or letter or direction arrow on a lock. Each section will be a specific lock and I highlight the letter/vowel or number that is part of the answer to the lock. I have 5 different locks I use, which vary from letters/vowels to numbers, to directional arrows, to a plain key hidden within the room (like a plastic heart or under a stomach, etc.). Then once they are inside the box, I have 1 final clue and that clue goes to the Golden Ticket. That Golden Ticket is worth points onto a test. I do not time them on the lock boxes and each box has its own clues. This is a review at the end of the semester.

The Playdough brains, I do have a rubric that students follow to make sure that they include everything that I am looking for into the project and this is when I do the brain/nervous system as a review. I do supply all the students with playdough, cut up and in plastic baggies, with a wooden stick and instructions.

Trinity M. Bell, BA, RVT

BridgeValley Community and Technical School & Carver Career and Technical Education Center

After some preceptor student reviews that suggested our students are a little “soft” on their soft skills, we developed a mock veterinary clinic simulation on campus. We asked local veterinary staff to come and “play client.” We turned our lab and attached rooms into a treatment area with exam rooms. Clients were given (or brought) a live animal. Students were expected to perform a thorough PE while taking a history and communicating results to clients. Students followed the case all the way through to diagnosis. They had to explain cost, diagnostics, and treatment options to the client as well as thoroughly ‘discharge’ them. Clients were given a rubric to provide a score and feedback, and students were given a typed feedback summary after the simulation. This served doubly to allow local clinics to meet and greet some students and allowed the students to ask working RVT’s some questions!

Jennifer Battiato, BBA, LVT, CVPM
Bergen Community College

I paint a mixture of nail polish and flour onto the teeth of canine and feline dentoform models to simulate tartar and have the students hand scale and ultrasonic scale it off to learn proper technique.



Image: Canine Dentoform Model- Basic. Serona Animal Health. Accessed February 9, 2022. <https://serona.vet/collections/dental-models/products/canine-dentoform-model-basic>

To allow students to practice cleaning teeth, I paint a mixture of nail polish and all-purpose flour onto the teeth of canine and feline dentoform models to simulate tartar. The nail polish and flour should be mixed until a brownie batter like consistency is achieved and can be applied using cotton tipped applicators. The mixture can be applied as heavily or lightly as desired to simulate the varying degrees of dental disease and should be allowed to dry overnight. Using these models, students can hand scale and ultrasonic scale the “tartar” off of the teeth to

learn proper technique prior performing dental prophies on live patients.

Heather Bhakta, DVM
Lincoln Memorial University

I gave the students playdough and a clear plastic cup to make the abdominal organs when we were discussing abdominal palpation. They were able to visualize what they should be palpating in each section of the abdomen.

Katrina Bowers, LVT
Baker College of Jackson

Whiteboard writable walls in the classroom. LOVE ours. This is mind mapping a physical exam and history taking. The wall can be used for so many different learning tools. Drawing pictures, listing vocab or a giant matching game. I also use the wall for diagnostics class with parasitology and blood cells.



Photo Citation: Katrina Bowers, LVT; email: katrina.bowers@baker.edu, Feb, 2022

I found some students don't know what a mind map is, so I had the students practice with a simple mind map. We started with "food" in the middle circle. Then I ask students to shout out types of food they like, then build it from there.

For the PE/History mind map: each group builds their own mind map starting with what comes from their own mind. Then I give them a list of vocab terms to be placed in the mind map somewhere. Once completed we discuss how each system can interrelate with each other.

Nicole Cruise, CVT
Northcentral Technical College

For this semesters students I created an anal gland expression model with nitrile gloves and slime. A small hole must be created in the glove for the expression to

be possible, otherwise the glove will just explode and all the material comes out in one blob. At first students wanted to pull the entire "gland" out of the model to express them, so I decided to have students take the glands outside of the animal and practice the motion of the expression between the thumb and pointer finger. Once they got the hang of that, we placed full glands in the model for them to express. Jaws, as we call our small model, is a star patient!

Photo courtesy of Nicole Cruise, CVT. This image shows the practice of the expression outside of the model. Jan. 2022

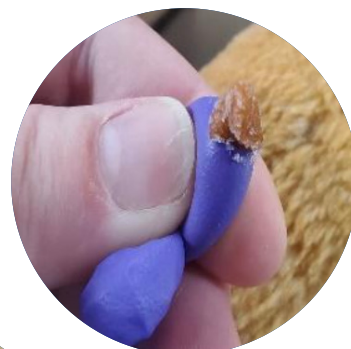


Photo courtesy of Nicole Cruise, CVT. This image shows the practice anal glands inserted into the model for a more realistic expression. Jan. 2022

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Moving Away from Lecture: Alternative Pharmacology Teaching Techniques for Veterinary Technology Programs: A Review of the Literature

Stephanie Ortel, MS(Ed), BS, LVT, CCRP, CVPP, CCFT
Genesee Community College

Veterinary technicians need to know common medications, as well as the indications, contraindications and dosages to be part of a quality care team. Lecture is often used as the primary method of teaching pharmacology to veterinary technology students, but has limitations. Evidence-based teaching methods can be expanded to engage students and enrich the learning experience. A factor to motivate change in teaching methods may be to facilitate increased scores on the Veterinary Technician National Exam. According to the American Association of Veterinary State Boards¹, pharmacology comprises 12% of the exam questions. Increased student knowledge comprehension and retention may lead to improved scores.

Veterinary technology education lacks in specific research compared to information available for teaching nursing students. Clark, et al^{2(p274)} write that the nursing and veterinary technology “parallel extends to their emergence as disciplines within higher education and the move away from a wholly vocational educational model. This transition brings with it the challenge to veterinary technology graduates, similar to that experienced earlier within human nursing, of finding a professional voice in the academic literature.” The goal of this literature review is to review alternative teaching methods discussed in nursing education and consider how they could be applied to a veterinary technician pharmacology course or curriculum.

Lim and Honey³ explore the potential for curriculum integration in which pharmacology is gradually presented as it relates to each subject. Integration is aided through clinical internships where students can see the application of pharmacology in practice. Veterinary technology students could reflect on case studies observed in internships and explore drugs used and implications. Lim and Honey^{3(p168)} identify challenges of this method as ensuring instructors are comfortable with the method and knowledgeable in the content.

Alton^{4(p2)} presented information as blocks, taught students to organize, and planned work in small groups. Specific strategies used included “making charts to compare and contrast drugs and drug classes, writing out drug flash cards, making or reviewing creative projects, prioritizing information, making or using visual study aids, and using time and repetition to space learning.” Students were encouraged to think not just of the short-term (passing the course and licensing exam), but also skills that could

make them more competent and hireable as professionals throughout their careers.

Geist, Larimore, Rawiszer and Abdellatif^{5(p114)} explored how people learn. They incorporated learner-centered, knowledge-centered, assessment-centered and community-centered techniques to increase active learning experiences using a flipped-classroom model. Activities and timely feedback on skills aided struggling students in correcting gaps in information or thinking. The information taught was also applicable to “real world” situations, so the students could immediately understand how patients would be impacted^{5(p115)}. Moffett⁶, with a veterinary medicine education background, identifies tips for a flipped-classroom model, explaining the benefits of this student-centered technique to encourage higher-level learning.

Banning^{7(p460)} takes a similar perspective suggesting an applied approach to include the domains of “applied pharmacology and therapeutics, physical assessment integrated with applied biological sciences, research application, interactive psychological, the culture of nursing, effective nursing practice and strategic leadership for health.” An educational goal^{7(p462)} should be to produce professionals who are capable in their field, not just competent. Specific strategies include case studies, role play, small group discussions, patient simulations and peer support^{7(p463)}.

Carpenter, Reddix, and Martin⁸ examined teaching techniques through providing innovative face-to-face and online learning strategies in an attempt to appeal to different learning preferences and to help learners understand and apply drug information. Face-to-face pre-class lecture sessions, midweek recitation sessions, pre-examination reviews, and post-examination reviews were used. Additionally, online strategies such as streaming videos, blogs, Web quizzes, and discussion board forums were all opportunities for students to learn how to learn. The authors^{8(p182)} write that “our experiences reinforced the importance of student-engaged learning on student performance in nursing pharmacology.”

Thomas & Schuessler⁹ provided active learning through the use of using games and case studies to improve outcomes for a nursing pharmacology course in which lecture had previously provided poor results. Student retention of information improved, as reflected in exam scores. In

addition to positive student feedback, the pharmacology section on nursing exams increased after changing the way in which the course was taught^{9(p175)}. Games and group activities included questions and answers on index cards, a Bingo-like game and a game where clues were provided and the student had to find the medication name. Interactive digital games including trivia, name matching or patient simulations were researched by Sera & Wheeler¹⁰. Scavenger hunts¹¹ are considered for students to examine medications from a consumer, nursing and ethical view. The products that the students found helped to facilitate further discussions. This could be integrated into internship activities or examining consumer-targeted companion animal medication sources and websites.

The use of case studies is researched in three studies. First, Jordan¹² examines the use of case studies in pharmacology. While this is a 20-year old study, pharmacology theory is linked to practice, which is the basis for more recent research. Learning in the classroom is applied to patient care, an early attempt at alternative teaching methods to improve comprehension. Next, Croteau, Howe, Timmons, et al¹³ use hypothetical people for students to apply pharmacology knowledge. In this method, community information is presented to include inhabitants with specific conditions, family histories and resources available to community members. Throughout the semester, learners are asked to progressively apply physiology and pharmacology knowledge to manage diseases and any side effects. This scenario could easily be applied to veterinary patients as an example of how a patient with comorbidities and polypharmacy could be managed. Client education for those conditions could also be incorporated into the exercise. The third example of the use of case study is based on research reviewed and incorporates the media of video for students to view¹⁴.

In conclusion, active learning and developing critical thinking skills can help to close the divide between theory and practice. Linking pharmacology theory and classroom learning to the situations veterinary technicians will encounter in the workplace can be the key to professional proficiency.

Declaration of interest: The author reports no conflicts of interest. The author alone is responsible for the content and writing of this article.

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Barriers to Client Compliance and Understanding of Heartworm Prevention in the Canine Patient

Emily Fischels, BSA and Laura Ken Hoffman, DVM
Murray State College

ABSTRACT

Dirofilaria immitis is a common and largely preventable mosquito-borne parasite that causes dirofilariasis, or heartworm disease, in a number of animal species. The necessity of heartworm prevention in the canine patient is undisputed and well-known among veterinary professionals, yet many clients do not provide regular heartworm prevention for pet dogs. Heartworm prevention traditionally requires a monthly administration of medication; therefore, its efficacy relies on owner compliance. The barriers to canines receiving heartworm prevention were assessed using a survey targeted at pet owners whose dogs have seen the veterinarian in the past year. The main barriers identified were inadequate client communication and understanding, expense of prevention, and forgetfulness. The goal of this research is to establish the barriers to pets receiving monthly heartworm prevention so that veterinary professionals can work to address them and ultimately reduce the number of dogs infected. As frontline communicators in the clinic, veterinary technicians play a key role in educating clients on the critical importance of heartworm prevention.

INTRODUCTION

Veterinary professionals understand the dangers of heartworm disease. The parasite's method of infection, life cycle, and effects on the host body are well studied, and a variety of safe and effective heartworm preventive medications are commercially available. However, according to a 2019 study only twenty-five percent of canines consistently receive heartworm prevention.¹ While veterinary professionals provide advice from the exam room, the client is ultimately responsible for administering prevention as scheduled to protect their pets.

In this study, the barriers to clients administering heartworm prevention were explored. The barriers mainly focused on the communication between the client and the veterinary professional, but other barriers such as expense and forgetfulness were also addressed. Our hypothesis stated that lack of heartworm prevention use results from ineffective communication between the client and veterinary professional, including insufficient discussion of heartworm prevalence and inadequate client understanding of the significant risks associated with heartworm disease. Clients are the middle ground between veterinarian recommendations and the care that a patient receives. They are responsible for consistently purchasing and administering heartworm prevention.

METHODS

An online survey was written targeting canine owners whose pets had undergone veterinary care within the previous year. The survey consisted of multiple choice, open response and "select all that apply" questions, with opportunities for clients to provide additional comments. Partially completed surveys were included in analyses. The survey was disseminated in an online format through Facebook under the title "Barriers to Client Compliance and Understanding of Heartworm Prevention in the Canine Patient." The survey was posted on a personal Facebook page and shared on twenty-eight personal pages and one pet advice page. A flyer with a link to the survey was also advertised in various pet-related businesses and parks in Murray, KY, a rural college town. The survey was available to the public for twenty-five days.

RESULTS

The survey received one hundred and seventeen responses. The participants collectively represented the care of two hundred and twenty-eight canines. All participants were the primary caretaker of at least one dog. Approximately 96% of respondents indicated that a veterinary professional had spoken with them about heartworm prevention and of those, nearly 90% indicated an understanding of why prevention was recommended and how and when to administer it. Eighty-four percent of participants responded that they administer heartworm prevention, but when the products they reported were analyzed, 20.5% of those respondents were only providing flea and tick prevention.

Eighty-seven percent (102/117) of respondents answered questions related to timing of heartworm prevention administration. Of these, 84% (86/102) responded correctly about the recommended schedule of oral or topical heartworm prevention to be either monthly or once every thirty days. However, 33% (39/117) of total respondents indicated they administer heartworm prevention only partially throughout the year. Of these respondents, 33% (13/39) did not believe prevention was necessary in the winter/cooler months. A significant portion of the respondents indicated they either forgot to purchase (20.5%; 8/39) or administer (33%; 13/39) prevention on time. Relatively few of the respondents cited the expense (5.2%; 2/39) of heartworm prevention as a reason for sporadic administration, and one respondent (2.6%) stated they did not administer year-round protection because the pet rarely went outside.

Twenty-three survey respondents indicated they do not provide heartworm prevention at all. The most frequent reason for lack of prevention was finances (34.7%; 8/23), followed by a perceived low risk of infection in their pets (30.4%; 7/23) and the belief that heartworm prevention is ineffective (13%; 3/23).

ANALYSIS

The American Heartworm Society's website states, "More than a million pets in the United States have heartworms. But heartworm disease is preventable." Our survey suggests that there are significant barriers to veterinary client compliance related to administration of heartworm prevention. Cited barriers include the expense associated with heartworm prevention, and the presence of client forgetfulness or confusion. Expense and forgetfulness are well documented barriers to owner compliance in veterinary medicine; however, the reported frequency of client confusion among our survey respondents suggests that veterinary teams can be ineffective communicators of key points related to heartworm disease and prevention.

For example, nearly all survey respondents reported they understood how and when to administer heartworm prevention, but approximately one-quarter of these respondents did not report the correct monthly dosing schedule. Also, one-fifth of clients who indicated they provided heartworm prevention were in fact only administering flea and tick prevention. These are examples of communication failure, when clients fail to understand the products that they are giving. Client communication is an important skill set for all members of the veterinary team to develop. The veterinary technician is frequently the first and last team member to speak with clients during veterinary visits. Effective communication techniques can be incorporated into the educational curriculum; allowing students to learn the importance of communication in the classroom and then providing opportunities to practice realistic scenarios in laboratory sessions will help them fine-tune these skills for application later in their career. There are also related resources about communication on the AVMA website, and the American Heartworm Society's website.

Many clients perceive their pets' risk of infection to be low, and therefore, they provide incomplete or no protection against heartworm infection. It is unclear from our data if clients fully understand the potentially fatal outcome of heartworm disease due to end-stage heart failure, as well as the risks, cost, and time required for treatment of heartworm disease. Thus, it is the role of the veterinary professional to provide clear and effective education for the client. All members of the veterinary team, including vet techs, should maintain a strong foundation of knowledge on the heartworm life cycle, disease statistics, and options for prevention and treatment. These topics, especially those proven to be most unclear such as products and dosing frequency, should be discussed with clients at every wellness visit, not just the pet's first visit after adoption or purchase. Ultimately, effective communication between the veterinary

team and the client can help lower the barriers of expense and inconvenience associated with heartworm prevention.

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SOAP: Self Outlook Analysis Project – Using the SOAP Format as a Tool for Student Self-Evaluation

Catherine Colangelo, DVM
LaGuardia Community College

INTRODUCTION

All veterinary professionals are familiar with patient assessment under the acronym “S.O.A.P.”: Subjective, Objective, Assessment, Plan. Over the last three years, including during the COVID-19 pandemic, the author has implemented the SOAP framework as a tool for student self-assessment, allowing veterinary technology students to achieve academic goals while increasing familiarity with the SOAP system for clinical application.

SOAP OVERVIEW

SOAPs are typically utilized to organize a patient’s condition treatment plan in the medical record. Veterinarians give every patient a SOAP outlining presenting complaints, pertinent physical examination findings, a thorough review of all discoveries, list of potential differential diagnoses and an action strategy based on resolving any and all problems. Physical therapy educators have previously used a “self-SOAP note” journaling exercise for clinical internship students.

CLINICAL APPLICATION OF SOAP

Clinicians use the SOAP format in a veterinary clinical setting for patient management as follows. Subjective (S) findings typically include parameters that cannot be measured, such as medical history details or health concerns shared by a patient’s guardians, notes on appetite, energy level and elimination status, a pain and body condition assessment, and gait and postural observations. Objective (O) data tend to include all physical examination results plus quantifiable items such as patient weight and vital sign measurement. Assessments (A) comprise an overview and analysis of all subjective and objective information with the goal of formulating a potential diagnosis. Plans (P) list various treatment options, medical interventions, and recommended diagnostics that are appropriate in light of the assessment. Additionally, the plan section may include any follow-up care advice, surgical suggestions or client education points including dietary, exercise or monitoring strategies.

APPLICATION OF SOAP TO STUDENT SELF-ASSESSMENT

For this project, the author applied the SOAP framework in an academic setting as a student self-evaluation tool for the purpose of identifying areas in which students need support in achieving success according to their goals. Students enrolled in the advanced veterinary nursing course were required to complete two self-assessment assignments during the semester using the SOAP structure. The initial SOAP assignment aimed to introduce student

thoughts, concerns, or complaints regarding the upcoming semester, future career, or their personal life. Students were encouraged to set goals and formulate strategic plans to fulfill their semester ambitions. As with a re-evaluation of a medical problem, the second SOAP self-evaluation functioned as a “recheck” by tasking students with reflecting on their ongoing experiences as the semester progressed. Students were expected to analyze their semester development by addressing the effectiveness of their “treatment” plans, with emphasis on whether they found success meeting set goals, encountered any surprises during their growth, or learned new skills.

DISCUSSION

The self-assessment exercises included a range of insights into student personal and educational goals, challenges, and tactics focused on stress reduction, and building proper study habits.

Student Subjective (S) comments included feelings, fears, and opinions about coursework, unclear subjects from previous courses, and personal life struggles. In addition, themes included apprehension regarding passage of the Veterinary Technician National Examination (VTNE) and handling responsibilities as a licensed veterinary technician. Some students presented a specific complaint or problem set that they pledged to remedy during the course’s progression. Other students defined a particular skill requiring further development or improvement such as intravenous catheter placement, venipuncture, or anesthetic monitoring comfort level.

Objective (O) findings involved creative interpretations of measurable parameters for the body systems discussed in their introductory nursing course applied to their physiological experiences associated with coursework. Typical body system abnormalities reported were cardiovascular (tachycardia, hypertension), respiratory (tachypnea, wheezes) integumentary (profuse perspiration, acne, urticaria), gastrointestinal (discomfort, bloating), and neurologic (twitching, general agitation). One student noted peripheral lymphadenopathy due to chronic synthetic jewelry adornment.

Student Assessment (A) was focused on individual introspection regarding their own subjective and objective observations. Students were strongly encouraged to freely express themselves with the assignment; however, one limitation that arose was that a small percentage of students were reluctant to share. Under Assessment, students

generally provided insight into their current bandwidth, hopes for the future, and their perceived abilities.

Plans (P) allowed students to create an actionable roadmap to address issues and challenges raised in their Subjective, Objective, and Assessment sections. Student plans ranged from setting goals and best practices for navigating their courses (proven study habits, tutoring sessions, attacking assignments early) to coping and self-care regimens focused on stress relief (meditation, nutrition, hydration, exercise).

SOAP self-assessments revealed that students frequently used words such as “stress/stressed,” “anxiety/anxious,” “worried/nervous,” and “tired/exhausted” throughout the exercise. Students emphasized a pattern of stressors: time management, juggling coursework requirements, and properly studying for examinations. Students felt sleep deprived, dehydrated, and maintained poor eating habits throughout the semester. Additionally, COVID-19 impacted student academic goals significantly as teaching modalities abruptly changed and access to faculty became limited.

The author incorporated the SOAP assignment into the advanced nursing course initially to guide student success and provide an outline for a realistic and fruitful semester plan. However, in addition to providing a framework for student reflection, the SOAP assignment allowed for greater instructor awareness of student battles and personal insights. As students outlined skills to improve, anxiety-causing course objectives, and challenges impacting their academic goals, a targeted instructor support system was born.

By employing firsthand knowledge of student stressors and concerns, having effectively taken the students’ “temperature,” instructors could begin sharing appropriate resources to more effectively serve student needs. Instructors delivered tailored tutoring sessions covering challenging course topics, opened additional laboratory sessions, and posted supplemental educational materials. Mock VTNE examinations and training sessions were made available to familiarize students with the exam. Students indicated that SOAP exercises were a valuable outlet for coping with academic challenges posed by the pandemic. Naturally, full student engagement is a challenge. Unfortunately, a few students – no more than one or two per class of thirty – turned in lackluster, disengaged responses.

An alternate approach that may be explored in future implementations of SOAP self-assessments would team students up as “accountability buddies,” to support and encourage achievement of goals. Another approach to be considered might include focusing each element of the SOAP on one issue, such as preparing for the VTNE, a personal challenge, or acquiring specific skills.

Additionally, the stress-related vocabulary echoed throughout the assignment warranted investigation into class stress reduction techniques. A study on veterinary student stress level prior to performing surgery on live

animals demonstrated the value of breathing exercises as a reliable pre-surgical stress reduction method to calm students, increase performance and reduce errors. This author intends to explore practices such as breathing exercises, moving meditation methods and music therapy with her students. Participating students may benefit from these techniques before trying events such as examinations and essential skill testing.

CONCLUSION

The author discovered that the SOAP self-evaluation framework provides veterinary technician students, who are facing school-related stressors, external pressures, and pandemic challenges, an opportunity to review their status, set academic goals, and effectively communicate with instructors, allowing for improved engagement and academic success.

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Cementing Student Soft Skills

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The term “soft skills” seems a bit nebulous at first glance. When that glance is through the lens of the educator’s eye, the concept increases in complexity. An educator notices when a student possesses a mastery of these skills, and they certainly notice when mastery is not yet in reach. By definition, “soft skills” are personal attributes and therefore not learned and cannot be measured, so why is it important to address these concepts in the classroom? Because they are VITAL to a student’s future success! Students who excel in communication and interpersonal skills will be veterinary technicians who are enthusiastically hired and prized by their teams.

If this is true, then how do we encourage the construction of these invaluable skills in the brief window of time in which we have to work?

The inclusion of a simulated clinical activity that focuses on common communication between the client and a working veterinary technician into program curriculum will boost soft skills performance in veterinary technology students beginning as early as preceptorships.

NECESSITIES

The most difficult and most important part of this process is the selection of “clients.” Veterinary professionals play the best role. Not only do they understand the scenario through which the students must work, but they are intimately familiar with the types of clients that students will be encountering each day. These clients must be willing to donate some time for the purpose of student education and must be willing to provide clear and constructive feedback upon completion of the activity.

The next task to be conquered is the location and inclusion of live animals- one per client. These animals must be vetted for temperament, vaccination status etc., as any other animal that travels to campus.

Once clients and patients have been secured, brainstorming begins! What scenarios would you like students to solve? What patient histories should students be able to troubleshoot as a new technician? Commonly encountered diagnoses are preferred if the focus is communication rather than course content.

A workspace must be procured for use during the day of the simulation. The size and number of rooms may vary depending on the available space, the number of clients available, or even student/staff number. A working clinical

lab on campus may be easily converted to a treatment area and examination room setup. Exam rooms should be clearly numbered so that students immediately understand which “exam room” they should enter when instructed to begin.

PREPARATION

Preparation for a fluid simulation such as this, is crucial. Each patient “presenting complaint” must be carefully planned and fleshed out. Diagnostic results and eventual prescribed drugs for each case should be prepared and available on the day of the simulation. These materials are used by instructors to help each student work through their case. Once prepared, clients should be made aware of their assigned case before the day of the simulation so that they may prepare their history.

Another concept to consider during preparation is collection of feedback and/or assessment of student performance. One option is to provide each client with a rubric, scoring each of the desired soft skills as well as providing a location for free feedback after each interaction.

Student success may also be gauged through their medical charting of each case. Did they ask the right questions about the patient’s history? Did they ask for the correct diagnostic results from the instructor to confirm diagnosis or rule out a possible differential? For example, if the chart indicates a presenting complaint of vomiting by a canine, did the student investigate patient age, vaccination status, dietary change or indiscretion, possible toxin or FBO ingestion, potential for parasitism, etc.

ADDITIONAL CONSIDERATIONS

This type of simulation may be as realistic as desired. Other potential content (and opportunities to practice soft skills) to consider may include discussion of the client’s financial obligation for treatment and discharge of the patient including instruction regarding administration of medications.

Financial discussion is an uncomfortable topic for any technician, let alone a new one. Allowing students to breach these difficult conversations in a setting where constructive feedback is provided offers a chance to equip them with tools to be used in their future careers. A very simple estimate generator may be created using a program like Excel. This allows each student to think about what might be required for each case, and then explain/justify each of their choices to the client. Does that pancreatitis pet need an IV catheter during hospitalization? If yes, now the student must explain

to the client why the IV catheter charge appears on their estimate as they discuss the issue of hydration in a patient who has experienced significant fluid loss.

Discharge instructions require the student to explain to the client what symptoms are to be expected and what symptoms would compel a phone call to the simulated veterinary hospital. This also gives the student the chance to elaborate on prescription medication and give any tips on how to make medication administration more successful.

RESULTS

In 2018, student evaluations of program content requested implementing mock client interactions to practice and improve soft skills. In 2019, the most consistent student weakness cited by preceptor sites was “communication skills.” The first client communication simulation was implemented before 2020 preceptor evaluations.

The classification of hard skills indicated on preceptor reviews includes the following: Venipuncture, IV catheter placement, pharmacology drugs/calculations, dental prophylaxis skills, recognition of animal behavior, administering injections, anesthetic monitoring, medical charting, restraint, and computer skills.

The classification of soft skills indicated on preceptor reviews includes the following: Communication skills, time management, compassion, teamwork, attitude, self-motivation, the ability to multitask, willingness to learn, critical thinking, willingness to attempt new task, willingness to learn, and self-confidence.

FIND A WAY!

Even with the complications encountered in a post-pandemic world, a clinical simulation activity of this kind is still very

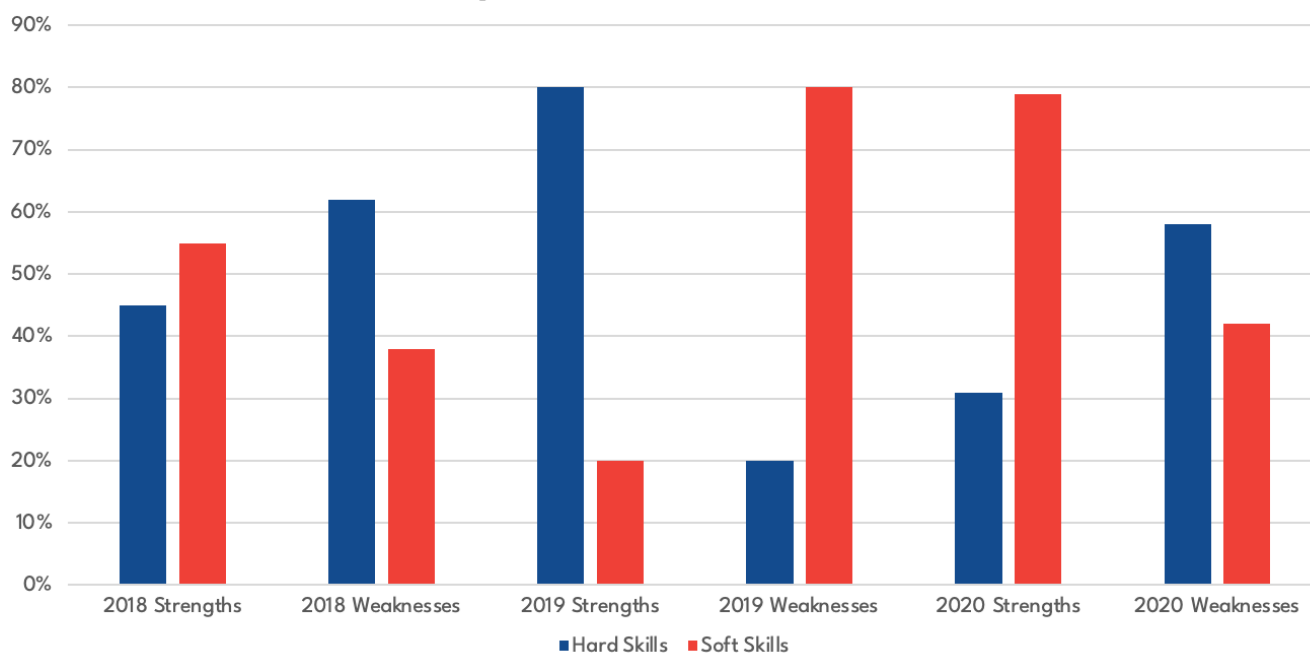
achievable. Part of our responsibility as educators lies in preparing our students for the job market, which includes the cultivation of soft skills. (Meeks 2017) In an increasingly digital world, developing soft skills may often be more difficult for the newest generation of students. This means as educators, we have the opportunity to adapt and create diverse learning opportunities for the specific students who enter our classrooms. What is an educator if not a champion of a challenge?

The author has no conflict of interest to disclose.

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Preceptor Site Student Evaluations



Developing a Continuous Improvement Training Model for Competency-Based Anesthesia Simulation Training in Veterinary Medicine

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BACKGROUND

Veterinary educators face the challenge of adequately preparing students for high risk clinical activities such as anesthesia. Programs must equip students with a wide range of technical and communication skills that are applicable across species.¹ One promising solution to the challenges is curricular integration of simulation training.

Medical educators have shifted towards a model of learning-based on competency or observable abilities.²⁻⁷ This competency-based medical education (CBME) model of learning is designed to ensure that learners achieve patient centered outcomes during training. To verify that students have acquired the specific skills that comprise competencies, assessment strategies must also be designed according to a competency-based approach.^{4,8,9}

Research demonstrates that simulation-based medical education enhances knowledge and clinical skills when compared with traditional training methods.²⁻⁴ When integrated into a CBME curriculum simulation holds promise as a valuable strategy that can both provide patient-centered training and assess clinical competency.^{10,2,11} Further, simulation-based assessment of clinical skills can identify skills requiring further emphasis to produce mastery thereby providing instructors the ability to continuously improve the training process.¹²⁻¹⁷

PURPOSE AND OBJECTIVES

A competency-based anesthesia simulation training program (ST) was developed for veterinary technicians focusing on core anesthesia tasks. ST and competency-based assessments were aligned permitting evaluation of both learner performance and the training model. The goal was to design an assessment strategy that could identify skill deficiencies across learners and enable continuous improvement of the training model encompassing the following objectives.

Objective 1: Create a ST for veterinary technicians.

Objective 2: Adapt validated assessment instruments to align with the ST for veterinary technicians.

Objective 3: Obtain pilot data testing the ability of assessments to quantitate specific skill acquisition post ST.

MATERIALS & METHODS

A competency-based anesthesia simulation training program was developed focusing on four major simulation scenarios (patient connection and monitoring, bradycardia, hypotension, and hypercapnia). Table 1 provides an example of how the training was designed. Self-efficacy and knowledge questions that pertained to the four simulation scenarios were created (Tables 2a and 2b) along with four clinical assessment rubrics (Table 1) designed to evaluate specific skill acquisition. Nine first year veterinary technician students^a having little to no experience in managing veterinary patients under anesthesia (Table 3) completed a pre-training evaluation of anesthesia skill self-efficacy and knowledge. Upon completion of pre-test evaluations participants received four-hours of instruction in small animal anesthesia monitoring and management.

The competency-based simulation instruction consisted of one hour trainings for each of the four anesthesia scenarios. A pre-briefing was conducted by a board-certified veterinary anesthesiologist (author RDK) immediately prior to each training and was followed by approximately 35 minutes of simulation training for each of the four scenarios (a total of 2 hours and 20 minutes of simulation training). Upon completion of each scenario participants received a debrief session to ensure that participants had understood the didactic points embedded in the training. All participants returned in one week completing post-tests for all the assessments.

STATISTICS

Growth in affective, cognitive, and clinical outcomes were evaluated using paired students' t-tests to examine differences between pre and post self-efficacy, knowledge and simulation performance scores, respectively. The type I error rate for all analyses was set at .05.

RESULTS

Scores from students were evaluated to determine if changes in specific skills could be detected by the competency-aligned assessment instruments. The results of the pre and post-

test training comparison revealed significant increases in all cognitive and clinical skill domains (Table 3). Knowledge test and self-efficacy scores are presented in Tables 4 and 5, respectively. Mean scores on the knowledge test increased from 2.22 (± 1.48) to 6.78 (± 1.09) ($p < 0.001$). Mean scores for self-efficacy increased from 2.44 (± 0.85) to 6.05 (± 0.53). Clinical performance data is presented in Tables 6-9. The mean scores for all anesthesia simulation scenarios increased significantly with mean scores increasing about 3-fold (bradycardia and hypotension) and nearly 6-fold (hypercapnia).

DISCUSSION

Results of this study demonstrate a statistically significant difference between the mean pre- and post-test scores for all cognitive and clinical domains. In all areas evaluated, trainee competency outcomes were significantly higher after the anesthesia simulation training for the pilot test participants. Although students demonstrated enhanced post-training learning outcomes, this analysis did not reveal whether students had mastered specific skills within each competency. Therefore, to determine which specific skills participants acquired versus those that required more training time, further analyses were performed on the knowledge test, self-efficacy inventory and clinical performance scores to evaluate the extent to which mastery occurred for specific skills within each competency.

Although simulation training is becoming increasingly accepted in veterinary education as an effective instruction and assessment approach, such training tends not to be competency-based or designed according to a program evaluation strategy. This study provides foundational information regarding how to design training that is intended to improve categorical learning outcomes and provides a model of how to design training using a competency-based program evaluation strategy. In addition to understanding whether training enhances general performance measures, this method provides granular information pertaining to specific concepts in anesthesia management and that data can be used to inform and enhance subsequent training methods.

We chose a continuous quality improvement (QI) approach as a model to evaluate our anesthesia simulation training program based on the growing medical education literature.¹⁸ While the QI strategy has long been applied to medical practice, it is becoming increasingly utilized in medical education as use is associated with a positive impact on learning outcomes in a clinical environment.¹⁸ Human medical education programs are already required by regulatory and accrediting bodies to engage in QI to improve education outcomes.¹⁹⁻²¹ Veterinary programs should be prepared to incorporate such methods that continuously improve instruction by providing granular detail of specific skill acquisition.

Conflict of interested statement: Dr. Noyes and Dr. Keegan have a managing interest in the entity (WholeLogic, Inc) that created and distributes the Stage III simulation software,

competency-based program, and assessment strategy used in the training described in this paper. Midmark Animal Health employs Mr. Schultz and Ms. Flynn and offers clinic-based anesthesia instruction using the Stage III simulation as a focus.

TABLES

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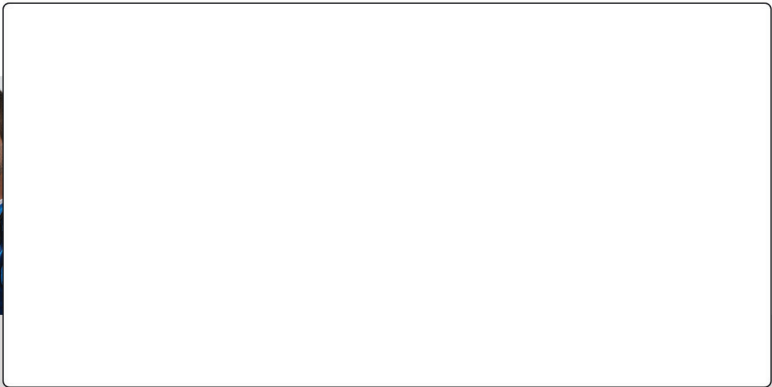
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