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Enhancing Spectrum of Care Preparation in Veterinary Education Programs: An Implementation Strategies Guide

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SOC IMPLEMENTATION STRATEGIES GUIDE

Contents

INTRODUCTION

PLANNING

SOC IMPLEMENTATION STRATEGIES GUIDE

Contents (Continued)

IMPLEMENTING

SUSTAINING

INTRODUCTION

Overview of the AAVMC Spectrum of Care Initiative

Heather N. Fedesco, *American Association of Veterinary Medical Colleges*

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The Societal Need for Spectrum of Care–Ready Graduates

Pet owners from diverse socioeconomic backgrounds need affordable, high-quality veterinary care for their pets. Many pet-owning households report barriers to accessing care, particularly due to financial constraints (Access to Veterinary Care Coalition, 2018). Additionally, some pet owners choose not to pursue care because they perceive that the cost of care is more than it is worth (American Veterinary Medical Association, 2022). These challenges are further intensified during economic inflation (Salois, 2023). Practicing across the spectrum of care (SOC) can help veterinarians work with pet owners to overcome these barriers, thereby improving the health and welfare of humans, animals, and communities (Blackwell & O'Reilly, 2023; Brown et al., 2021; Roberts et al., 2023). This approach also helps maintain the profitability of veterinary practices by enabling care for more patients without subsidizing costs (Benson & Tincher, 2023; Salois, 2023).

SOC Practice

The term "spectrum of care" refers to the wide range of care options veterinarians can provide. Practicing across the spectrum of care involves tailoring care options based on contextual factors, such as client goals, abilities, and resources, as well as patient, veterinarian, and practice factors, while considering available evidence (Englar, 2023a; Fingland et al., 2021; Skipper et al., 2021; Stull et al., 2018). An SOC approach provides a framework for navigating complex clinical decisions and supports the development of veterinarians' professional identities (Armitage-Chan & May, 2018).

The term "contextualized care" has also emerged to address similar concerns within the profession. Contextualized care has been described as an approach that is "intentionally shaped by the aims, knowledge, experiences and circumstances of individual animal caregivers and veterinary professionals, acknowledging the wider contexts of each clinical encounter, to deliver the most appropriate welfare-focused care for every animal" (Skipper et al., 2024, p.117).

SOC, Evidence-Based Veterinary Medicine, and the "Gold Standard"

In SOC practice, multiple care options are acceptable, with the best option being that which is most appropriate for the circumstances of the individual patient and client. This approach aligns well with current definitions of evidence-based veterinary medicine (EBVM), which "involves applying the best and most relevant scientific evidence, integrated with clinical expertise, whilst taking into account each patient and owner's individual circumstances, when making clinical decisions" (RCVS Knowledge, 2024, para. 1). Both SOC practice and EBVM as defined above stand in contrast with the "gold standard" care veterinarians commonly are taught or expect to provide. The term "gold standard" has been defined as the best available, most accurate, or most comprehensive care (Englar, 2023a; Skipper et al., 2021). The emphasis by educators and researchers on "gold standard" practice was originally part of a good-faith effort to improve healthcare quality by basing decisions on the best possible evidence; however, over time the concept has evolved into a belief that a single, ideal approach to clinical decision-making exists in all cases (Englar, 2023a). SOC practice explicitly acknowledges that the concept of a "gold standard" is inherently flawed, and that there are a range of appropriate care options for any given scenario (Englar, 2023b). A one-size-fits-all approach to case management is rarely appropriate and has become outdated following the advent of the SOC framework and the provision of contextualized care.

The use of the term "gold standard" is damaging to veterinarian–client–patient relationships, patient and client experience, patient outcomes, and veterinary team satisfaction. The push for "gold standard" care in veterinary healthcare is part of the reason we are in a care crisis. Immediate efforts are needed to reframe the use of this term in healthcare. Throughout this document we made concerted efforts not to use the term "gold standard"—when it is used, it is used *deliberately* to convey the challenges with this term.

SOC Preparation as a Critical Step Towards SOC Practice

SOC-ready graduates can confidently and competently offer a range of evidence-based care options tailored to clients' and patients' unique circumstances (Fingland et al., 2021; Stull et al., 2018). These options span the continua of cost, technical complexity, resource needs, and required skill level. Making curricular changes to enhance SOC preparedness advances the mission of veterinary programs to develop compassionate leaders equipped to navigate the complexities of veterinary medical care, client relationships, and business sustainability.

The AAVMC Spectrum of Care Initiative

To assist veterinary programs in making SOC curricular changes, the AAVMC launched the Spectrum of Care Initiative (SOCI) in 2021, with support from the Stanton Foundation. This initiative provides the infrastructure and support for an inclusive approach to enhancing SOC preparation in veterinary education. The AAVMC SOCI is guided by a task force of key players in veterinary education, including national and international academic leaders, educators, and practitioners in both academia and private practice.

The SOCI Task Force developed the SOC Implementation Strategies Guide as a comprehensive set of resources to assist programs through the stages of planning, implementing, and sustaining SOC curricular changes. Veterinary faculty, educators, practitioners, and professionals contributed to these resources on a volunteer basis, demonstrating investment from across the veterinary medical community in enhancing SOC preparation and practice.

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Glossary of Key Terms

The following are definitions of key terms used throughout the SOC Implementation Strategies Guide.

Access to Veterinary Care

"Access to veterinary care is a complex problem that sits at the intersection of a number of societal factors including income inequality, access to transportation, language and cultural differences as well as the spatial distribution of veterinary care providers" (Neal & Greenberg, 2022, p. 9).

Neal, S. M., Greenberg, M. J. (2022). Putting access to veterinary care on the map: A veterinary care accessibility index. *Frontiers in Veterinary Science, 9*. 857644. **http://doi.org./10.3389/fvets.2022.857644**

Contextualized Care

Contextualized care "encompasses everything in play during any caregiving interaction, including the people, patient(s) and wider environment (e.g., personal, clinical, professional, organisational, economic, geographical, societal, political, ethical, ecological)" (Skipper et al., 2024, p. 117). These contextual factors should not be regarded as "non-financial 'costs'; rather, they explicitly or covertly shape all veterinary activities in both positive and negative ways....Contextualised veterinary care describes an approach that is intentionally shaped by the aims, knowledge, experiences and circumstances of individual animal caregivers and veterinary professionals, acknowledging the wider contexts of each clinical encounter, to deliver the most appropriate welfare-focused care for every animal" (Skipper et al., 2024, p.117). The term "spectrum of care" has emerged to address similar concerns within the profession.

Skipper, A., O'Neill, D., Serlin, R., Davidson, J., Elwood, C., & Gray C. (2024) Contextualised care: Faddish or foundational? *Veterinary Record, 195*(3), 117. **https://doi.org/10.1002/vetr.4567**

Cultural Humility

Cultural humility involves understanding the complexity of identities — that even in sameness there is difference — and that a clinician will never be fully competent about the evolving and dynamic nature of a patient's experiences.*

Khan, S. (2021). *Cultural humility vs. cultural competence - and why providers need both.* Healthcity: Health equity news from Boston Medical Center. **https://healthcity.bmc.org/cultural-humility-vs-cultural-competence-providers-need-both/**

*From Open Door Veterinary Collective: **https://opendoorschool.thinkific.com/collections/digital-downloads**

Gold Standard Care

Generally refers to the most intensive and technologically advanced treatment that is believed to produce the best outcome or the longest survival. The fallacy of the "gold standard" is that many criteria factor into which treatment would be the best for a specific patient and their family. Additionally, many conditions do not clearly have one treatment option that assures the best outcome, longest survival, minimal complications, or fewest unintended side-effects. Less intensive treatments might offer similar outcomes or even be preferred by the client. Clinicians are instead encouraged to practice with a "spectrum of care/contextualized care" approach to developing treatment plans. "The most appropriate pathway for each patient and owner should be navigated through an iterative process of 'shared decision-making'; we cannot separate clinical decisions from their social contexts" (Skipper et al., 2021, p. 331).*

ASPCAPro (2021). *Enaging the future: Access to veterinary care roundtable AVC*. **https://www.aspcapro.org/resource/avc-roundtable-overview**

Skipper, A., Gray, C., Serlin, R., O'Neill, D., Elwood, C., & Davidson, J. (2021). "Gold standard care" is an unhelpful term. *Veterinary Record, 189*(8), 331. **https://doi.org/10.1002/vetr.1113**

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Implicit/Unconscious Bias

There are two types of bias: explicit (or conscious) and implicit (or unconscious). Conscious bias in its extreme is characterized by overt negative behavior that can be expressed through physical and verbal harassment or through more subtle means such as exclusion. Implicit bias operates outside of the person's awareness and can be in direct contradiction to a person's espoused beliefs and values. What is so dangerous about implicit bias is that it automatically seeps into a person's affect or behavior and is outside of the full awareness of that person. Implicit bias can interfere with clinical assessment, decision-making, and provider-patient relationships such that the health goals that the provider and patient are seeking are compromised.*

National Center for Cultural Competence at Georgetown University. (n.d.). *Two types of bias.* **https://nccc.georgetown.edu/bias/module-3/1.php**

*From Open Door Veterinary Collective: **https://opendoorschool.thinkific.com/collections/digital-downloads**

Incremental Care

A strategy that delivers staged diagnostic and therapeutic options sequentially, over-time. Noncritical procedures are delayed to help control costs. It relies on the clinical judgment of the veterinarian, active follow-up of case progression, and, when appropriate, in-home care that can be provided by the client. In addition, there is a focus on prevention and early diagnosis and intervention.*

Program for Pet Health Equity. (2024). *Incremental veterinary care case management approach.* **https://pphe.utk.edu/brite/resources/incremental-veterinary-care/**

*From Open Door Veterinary Collective: **https://opendoorschool.thinkific.com/collections/digital-downloads**

Moral Distress

Moral distress can be defined as the powerlessness, anger, and guilt that healthcare professionals experience when they must act professionally in a way that is misaligned with their own values or beliefs.

Blackwell, M. J., & O'Reilly, A. (2023). Access to veterinary care–a national family crisis and case for One Health. *Advances in Small Animal Care, 4*(1), 145–157. **https://doi.org/10.1016/j.yasa.2023.05.003**

Dodek, P. M., Wong, H., Norena, M., Ayas, N., Reynolds, S. C., Keenan, S. P., Hamric, A., Rodney, P., Stewart, M., & Alden, L. (2016). Moral distress in intensive care unit professionals is associated with profession, age, and years of experience. *Journal of Critical Care, 31*(1), 178–182. **https://doi.org/10.1016/j.jcrc.2015.10.011**

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One Health

A collaborative, multisectoral, and transdisciplinary approach—working at the local, regional, national, and global levels—with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.*

CDC. (2024, October 30). *One Health.* **https://www.cdc.gov/one-health/about/index.html**

*From Open Door Veterinary Collective: **https://opendoorschool.thinkific.com/collections/digital-downloads**

Professional identity

"Professional identity is a multi-dimensional construct that incorporates personal, familial, and cultural values; learning from critical workplace experiences; social identity validation; and individual professional priorities" (Armitage-Chan, 2020, p. 126).

Armitage-Chan, E. (2020). Best practice in supporting professional identity formation: Use of a professional reasoning framework. *Journal of Veterinary Medical Education, 47*(2), 125–136. **https://doi.org/10.3138/jvme.0218-019r**

Shared Decision-Making

A collaborative approach that involves the client in all decisions regarding a pet's health care. It depends on mutual respect and communication and requires the veterinary team to accept the client's decisions without judgment. The process of clinician and patient jointly participating in making a treatment decision after discussing the options, benefits, and harms, and considering the patient's values, preferences, and circumstances. Shared-decision making builds trust and increases client satisfaction with veterinary visits.*

Marks, N. (2024). The progressive veterinary practice. *Veterinary Clinics of North America: Small Animal Practice, 54*(2), 265—276. **https://doi.org/10.1016/j.cvsm.2023.10.011**

Ito, Y., Ishikawa, H., Suzuki, A., & Kato, M. (2022). The relationship between evaluation of shared decision-making by pet owners and veterinarians and satisfaction with veterinary consultations. *BMC Veterinary Research, 18*, 296. **https://doi.org/10.1186/s12917-022-03401-6**

Barry, M. J., & Edgman-Levitan, S. (2012). Shared decision making—Pinnacle of patient-centered care. *The New England Journal of Medicine, 366*(9), 780–781. **https://doi.org/10.1056/NEJMp1109283**

Janke, N., Shaw, J. R., & Coe, J. B. (2022). On-site communication skills education increases appointment-specific client satisfaction in four companion animal practices in Texas. *Journal of the American Veterinary Medical Association, 260*(13), 1711–1720. **https://doi.org/10.2460/javma.22.06.0242**

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Social Determinants of Health/Social Determinants of Animal Health

The health of humans and of animals is influenced directly by individual genetics as well as indirectly by the social, political, economic, and environmental conditions in which people and pets are born, live, and die. These non-medical factors greatly affect, or determine, the overall health of both people and animals. Inequities in such factors as housing and food security, education, cultural/ethnic acceptance, gender, income distribution, social inclusion, access and affordability of healthcare, employment and working conditions, language, internet access, and digital literacy can seriously impact the health of people and animals.*

Card, C., Epp, T., & Lem, M. (2018). Exploring the social determinants of animal health. *Journal of Veterinary Medical Education, 45*(4), 437–447. **https://doi.org/10.3138/jvme.0317-047r**

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Spectrum of Care

Spectrum of care refers to the wide range of care options veterinarians can provide. Practicing across the spectrum of care involves tailoring care options based on contextual factors, such as client goals, abilities, and resources, as well as patient, veterinarian, and practice factors, while considering available evidence. The term "contextualized care" has emerged to address similar concerns within the profession.

Englar, R. E. (2023). Recasting the gold standard—part I of II: Delineating healthcare options across a continuum of care. *Journal of Feline Medicine and Surgery, 25*(12), 1098612X231209855. **https://doi.org/10.1177/1098612X231209855**

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Standard of Care

The concept lies at the intersection of clinical practice, veterinary ethics, and the law. The legal system uses a locality rule to define it as the standard of care required of and practiced by the average, reasonably prudent, competent veterinarian in the community. Veterinary specialists are held to a higher standard of care than are general practitioners in any location. The standard of care changes over time as new data is available.*

Block, G. (2018). A new look at standard of care. *Journal of the American Veterinary Medical Association, 252*(11), 1343–1344. **https://doi.org/10.2460/javma.252.11.1343**

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Executive Summary

Implementing changes in any organization is challenging, but academic institutions have unique complexities that make change initiatives especially difficult to accomplish. Higher education is characterized by a decentralized dual-authority structure (i.e., faculty vs. administrators), in which most of the institutional work is completed by autonomous individuals who frequently move in and out of key decision-making roles. Common mistakes when making curricular changes, such as assuming others will accept a good idea or thinking changes can be mandated in higher education, further hinder well-intentioned change efforts. Adopting an evidence-based approach to making change is thus essential for success (Kezar, 2018).

To support veterinary education programs in making spectrum of care (SOC) curricular changes, the AAVMC Spectrum of Care Initiative (SOCI) Task Force used higher education change management theories and research. The task force leveraged the University of Southern California Pullias Center's Change Leadership Toolkit, featuring the Ecosystem Model of Systemic Change Leadership (Elrod et al., 2024). This toolkit fills a gap in change management literature by providing a user-friendly, research-based model to facilitate systemic institutional change.

The task force adapted the Ecosystem Model by creating a flowchart that highlights strategies for implementing SOC curricular change. The flowchart will serve as the executive summary of the SOC Implementation Strategies Guide. To effectively use this guide, start by reviewing the ***Navigating Spectrum of Care Curricular Change Flowcharts*** *for an overview of the different moves you can make in the planning, implementing, and sustaining phases of curricular change.*

The next page lists specific ways that you can use the resources in the guide to make the moves identified in the flowcharts. ➔

PLANNING PHASE

CREATE THE VISION AND STRATEGY
for your SOC curricular change by:

- Reviewing the **Spectrum of Care Education Model**, which identifies the competencies that new veterinarians need to be able to offer a wide range evidence-based care options tailored to clients' and patients' unique circumstances.
- Using the **Vision-Setting Reflection Template** to tailor your vision to your program's context.
- Leveraging the arguments in the **Spectrum of Care and Veterinary Education Hot Topics Write-Ups** to articulate how your change aligns with your program's values and strategic initiatives.
- Reviewing the **Who Should Be on the Spectrum of Care Curriculum Team?** resource to identify individuals to recruit to help with making SOC curricular change in your program.
- Using the **Gathering Evidence for Spectrum of Care Curricular Change by Mapping Your Curriculum** resource to identify opportunities in your curriculum to enhance SOC preparation.

ANTICIPATE CHALLENGES
to your SOC curricular change by:

- Reviewing the **Anticipated Challenges and Potential Solutions to Spectrum of Care Curricular Change** to identify and prepare for potential barriers to your SOC curricular change.
- Leveraging expert explanations from the **Spectrum of Care Common Misconceptions Q&As** to clarify misunderstandings about your SOC curricular change.

IMPLEMENTING PHASE

ENACT THE PLAN
for your SOC curricular change by:

- Reviewing the **Spectrum of Care Assessment Tools and Instructional Methods** resource for a quick reference on types of assessments and activities that can enhance SOC preparation.
- Integrating some of the innovative teaching strategies featured in the **Spectrum of Care Learning Experiences** and **Teaching Spectrum of Care Case Management** resources.

GATHER EVIDENCE OF OUTCOMES
for your SOC curricular change by:

- Developing an evaluation plan using the Resources for **Gathering Evidence of Curricular Change Implementation and Outcomes.**

SUSTAINING PHASE

Consider the suggestions for how to ***ensure continued success*** and ***share and use evidence*** as you move forward with making lasting SOC curricular change.

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Kezar, A. (2018). *How colleges change: Understanding, leading, and enacting change* (2nd ed.). Routledge. **https://doi.org/10.4324/9781315121178**

Navigating Spectrum of Care Curricular Change Flowcharts

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The change management flowchart presented below outlines the steps for planning, implementing, and sustaining spectrum of care (SOC) curricular changes. This flowchart serves as the executive summary of the SOC Implementation Strategies Guide. Within the guide, each step is elaborated on and features additional evidence-based resources for navigating the curricular change process.

The change management flowchart is presented in two formats. The first provides a clear overview of steps across the planning, implementing, and sustaining phases. Arrows indicate that steps may need to be revisited or taken out of order; the process is not strictly linear and requires repetition. For those who prefer a more metaphorical depiction, the task force created a second flowchart illustrating the change process as a river journey. The path may be smooth or filled with unanticipated barriers. There may be stagnant moments or branches in unexpected directions. Despite the long and unpredictable journey, the process can lead to a rewarding destination.

RECOMMENDED CITATION

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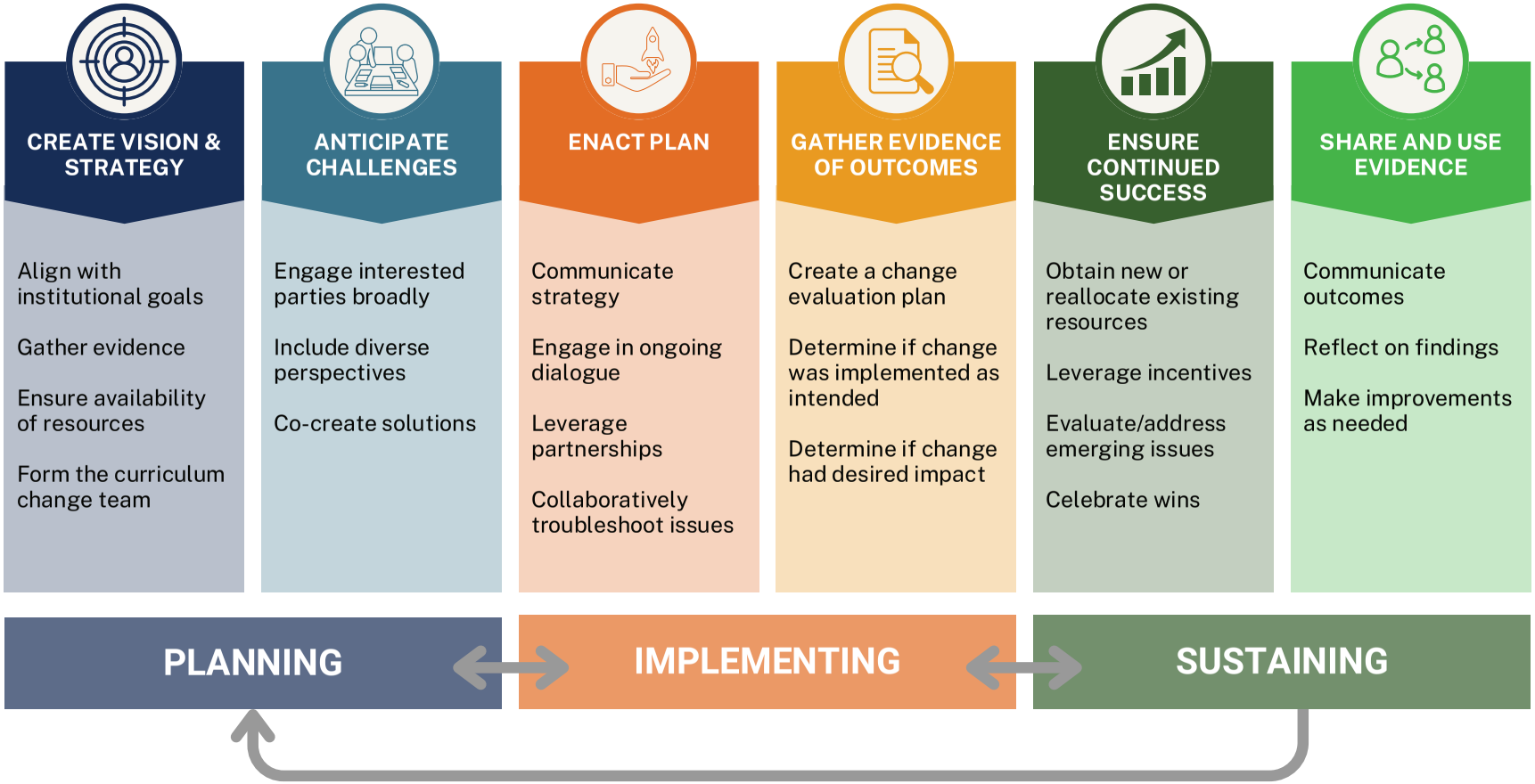
AAVMC American Association of Veterinary Medical Colleges

SPECTRUM OF CARE INITIATIVE

NAVIGATING SOC CURRICULAR CHANGE

ENHANCING SPECTRUM OF CARE PREPARATION IN YOUR PROGRAM




Navigating the River of SOC Curricular Change
PLANNING
Create Vision & Strategy
Align with institutional goals
Gather evidence
Ensure availability of resources
Form the curriculum change team
Anticipate Challenges
Engage interested parties broadly
Include diverse perspectives
Co-create solutions
IMPLEMENTING
Enact Plan
Communicate strategy
Engage in ongoing dialogue
Leverage partnerships
Collaboratively troubleshoot issues
Gather Evidence of Outcomes
Create a change evaluation plan
Determine if change was implemented as intended
Determine if change had desired impact
SUSTAINING
Ensure Continued Success
Obtain new or reallocate existing resources
Leverage incentives
Evaluate/address emerging issues
Celebrate wins
Share and Use Evidence
Communicate outcomes
Reflect on findings
Make improvements as needed

PLANNING

Create Vision & Strategy

To successfully implement change, the team must share a unified vision of their goals. Without such a shared vision, each team member might prioritize different aspects, leading to a fragmented effort and difficulty in reaching a consensus on necessary actions. A unified vision also facilitates better communication with others who need to support or provide resources for the change.

Once the vision is set, the team should establish a plan to enact the change. A strategic approach is essential to provide the team and other participants with a clear roadmap, outlining both the destination and the steps to get there. To maximize success, these plans need to be in harmony with the overall vision and other campus priorities and institutional goals.

To create vision and strategy, gather input from diverse campus key players and define specific goals, expected outcomes, actions needed to achieve the goals, and timelines. This task also includes organizing the required financial resources, infrastructure, evidence of change needs, and change team members.

Featured Resources

The Spectrum of Care Education Model

Sets the vision for the curricular change goals by defining the competencies that new veterinarians need to be able to offer a wide range of evidence-based care options tailored to clients' and patients' unique circumstances.

Vision-Setting Reflection Template

Helps veterinary education programs tailor the change vision established by the Spectrum of Care Education Model to fit the unique context of their own programs.

Spectrum of Care and Veterinary Education Hot Topics Write-Ups

Helps programs see where alignment exists between enhancing spectrum of care preparation and important institutional and program goals.

Who Should Be on the Spectrum of Care Curriculum Team?

Helps programs identify the structure of the curricular change team and individuals to potentially recruit to be part of the team.

Gathering Evidence for Spectrum of Care Curricular Change by Mapping Your Curriculum

Provides a systematic approach for gathering evidence of programs' current strengths in spectrum of care preparation and identifying opportunities to enhance their preparation.

The Spectrum of Care Education Model

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Preparing graduates to practice across the spectrum of care (SOC) advances veterinary programs' mission to develop compassionate leaders equipped to navigate the complexities of evolving veterinary medical care, client relationships, and business sustainability.

The SOC Education Model was created to support veterinary medical programs and the broader veterinary education community in preparing graduates for SOC practice. In recognition that SOC is practiced across clinical contexts and areas, the model is intended to help facilitate and bolster collaboration among all clinicians engaged in this endeavor (Warman et al., 2023).

Upon graduation, an SOC-ready graduate can confidently and competently offer a range of evidence-based care options tailored to clients' and patients' unique circumstances (Fingland et al., 2021; Stull et al., 2018). This enhances their ability to meet the growing societal demand for accessible veterinary healthcare and build financially successful practices that benefit their communities without subsidizing care (Salois, 2023).

Below, we summarize the key information about SOC practice that informed the development of the SOC Education Model. We also briefly describe the structure of the model, how it was developed, and recommended uses.

Brief Background on SOC Practice

The term "spectrum of care" refers to the wide range of care options veterinarians can provide. Practicing across the spectrum of care involves tailoring care options based on contextual factors, such as client goals, abilities, and resources, as well as patient, veterinarian, and practice factors, while considering available evidence (Englar, 2023a; Fingland et al., 2021; Stull et al., 2018). The term "contextualized care" has also emerged to address similar pedagogic and professional concerns within the profession (Skipper et al., 2024; Skipper et al., 2021).

While SOC as a term is relatively new, practicing across the spectrum of care is not a novel approach to veterinary practice. Many veterinarians are experienced in offering a range of care options, working with clients to develop a care plan aligned with each case's unique circumstances, and iteratively adjusting the care plan based on the patient's response and client input. In addition to patient factors, influential contextual factors include client factors (e.g., goals, abilities, resources), veterinarian factors (e.g., skillset, biases and assumptions, adaptability), and veterinary practice factors (e.g., healthcare team, policies, resources; Englar, 2023a). In keeping with evidence-based medical practice, the range of appropriate care options is also informed by findings from outcome-based research whenever possible (Evason et al., 2023).

In SOC practice, multiple care options are considered appropriate and acceptable, and the care option that best meets the unique needs of each patient and client is not necessarily the "gold standard" option (Englar, 2023a; Skipper et al., 2021). The term "gold standard," particularly without consideration of context, can be problematic, creating unachievable expectations of care for both client and veterinarian. A care plan will often differ from the perceived "gold standard" while still meeting an acceptable standard of care, provided that client discussions and decisions are properly documented (Block, 2021; Englar, 2023b). SOC pedagogic approaches require a culture of humility and empathy from all interested parties when discussing care options.

Shifting from "gold standard" care to an SOC approach can help increase access to veterinary care and strengthen the health and welfare of humans, animals, and communities (Blackwell & O'Reilly, 2023; Brown et al., 2021; Roberts et al., 2023). Being able to provide care to more patients without subsidizing costs also maintains the profitability of veterinary practices, especially during periods of economic inflation when clients are not able to spend as much on veterinary care (Benson & Tincher, 2023; Salois, 2023). An SOC approach provides a framework to help navigate complex clinical decisions and contexts, while providing acceptable outcomes for patients and clients. This approach can support the development of veterinarians' professional identity (e.g., values and goals) in a way that helps them value the many and varied contextual challenges inherent to daily clinical practice (Armitage-Chan & May, 2018). As demand for accessible veterinary healthcare continues to grow, veterinary medical programs are striving to enhance the preparedness of their graduates for SOC practice.

The SOC Education Model

The SOC Education Model provides an outcomes-focused framework for helping veterinary medical programs prepare students to practice across the spectrum of care options. This approach aligns with the growing adoption of competency-based education in veterinary medicine (Banse et al., 2023). The desired competencies, or abilities, of all new veterinarians are described in the AAVMC Competency-Based Veterinary Education (CBVE) Framework (AAVMC Council on Outcomes-based Veterinary Education et al., 2024). While most healthcare tasks require veterinarians to use multiple competencies, the framework identifies these competencies individually to guide the design of veterinary curricula.

The SOC Education Model introduces eight competencies that describe the observable abilities of new veterinarians who are prepared specifically for SOC practice. These SOC competencies integrate into the AAVMC CBVE Framework as illustrative subcompetencies, which veterinary medical programs may choose to adopt to enhance curricular focus on SOC outcomes.

Each SOC subcompetency is accompanied by examples of course-level learning outcomes describing the skills, knowledge, and attributes/behaviors that students should develop to meet these competencies at graduation. These outcomes can also help guide the addition or revision of assessments and learning experiences to scaffold students' development of the subcompetencies across the curriculum. Ideally, curricula should include multiple increasingly complex opportunities for students to acquire, practice, and integrate the knowledge, skills, and attributes/behaviors that comprise the SOC subcompetencies (Fingland et al., 2021; Harden & Stamper, 1999; May & Silva-Fletcher, 2015).

The SOC subcompetencies and learning outcomes are intended to be applicable to patients across species. The term "care options" is used to refer to diagnostic and treatment options for preventative, therapeutic, and behavioral care. The term "client" is used in reference to the individual or organization that is the patient's primary caretaker.

In recognition of the diverse landscape of veterinary education, the SOC Education Model was designed to be applicable across curricular models and learning contexts. The model is intended to be evergreen and avoids mention of specific frameworks or jargon; it will continue to evolve as additional information and feedback becomes available.

Table 1 presents the SOC subcompetencies and course-level learning outcomes, and their alignment with the competencies and domains in the AAVMC CBVE Framework.

Alignment with the AAVMC CBVE Framework

The decision to align the SOC competencies as subcompetencies of the AAVMC CBVE Framework was made in recognition of veterinary medical programs' growing use of the framework to structure curricula (Banse et al., 2023). This alignment allows programs to seamlessly integrate the SOC competencies into their adoption of the AAVMC CBVE Framework. Additionally, to assess these subcompetencies, programs can leverage resources that have already been developed for the competencies and domains of the AAVMC CBVE Framework. These include entrustable professional activities, developmental milestones, and an assessment toolkit available on the AAVMC CBVE website (**www.cbve.org**).

How to Use the SOC Education Model

The SOC Education Model can be used by veterinary medical programs and the broader veterinary education community to guide the development of new veterinary curricula that prepare graduates to practice across the spectrum of care options.

The SOC Education Model can also be used to guide changes in existing curricula. Mapping courses or entire curricula to the SOC subcompetencies can provide evidence of strengths and areas of improvement in current SOC training (Harden, 2001). Integrating multiple increasingly complex opportunities for students to acquire, practice, and integrate the knowledge, skills, and attributes/behaviors that comprise the SOC subcompetencies provides a concrete strategy for addressing gaps identified through mapping.

Development of the SOC Education Model

The SOC Education Model was developed by the AAVMC Spectrum of Care Initiative (SOCI). With support from The Stanton Foundation, the SOCI was founded in 2021 to provide infrastructure, guidance, and assistance for an inclusive and collaborative approach to supporting and enhancing SOC training in veterinary education. The SOCI is spearheaded by the AAVMC SOCI team with the guidance of a task force representing a variety of key players in veterinary education, including national and international academic leaders, educators, and practitioners in both academia and private practice.

The SOC Education Model was developed using an evidence-based approach that drew on information gathered from international competency frameworks, peer-reviewed literature, and interviews and focus groups. This information was reviewed, synthesized, and refined via expert consensus. Feedback was also collected and integrated from the broader veterinary education community.

Table 1: Spectrum of Care (SOC) Subcompetencies and Learning Outcomes Aligned with the AAVMC CBVE Framework

This table presents the SOC subcompetencies (i.e., program-level outcomes), course-level learning outcomes (LOs), and their alignment with competencies and domains in the AAVMC CBVE Framework (AAVMC Council on Outcomes-based Veterinary Education et al., 2024).

SOC subcompetencies and LOs are in **orange**.

The SOC subcompetencies and LOs are intended to be applicable for caring for patients across species. The term "care options" is used to refer to diagnostic and treatment options for preventative, therapeutic, and behavioral care. The term "client" is used in reference to the individual or organization that is the primary caretaker for the patient(s).

In recognition of the diverse landscape of veterinary education, the SOC Education Model was designed to be applicable across curricular models and learning contexts. The model is intended to be evergreen and avoids mention of specific frameworks or jargon. The model will continue to evolve as additional information and feedback becomes available.

CBVE DOMAIN 1: CLINICAL REASONING AND DECISION-MAKING	
CBVE Competency 1.1	Gathers and assimilates relevant information about animals
CBVE Subcompetency 1.1.1	Collects history
CBVE Subcompetency 1.1.2	Performs physical examination
CBVE Subcompetency 1.1.3	Interprets diagnostic test results
CBVE Subcompetency 1.1.4	Performs necropsy examination
CBVE Competency 1.2	Synthesizes and prioritizes problems to arrive at differential diagnoses
CBVE Subcompetency 1.2.1	Identifies problems
CBVE Subcompetency 1.2.2	Creates refined problem list
CBVE Subcompetency 1.2.3	Prioritizes differential diagnoses
CBVE Competency 1.3	Creates and adjusts a diagnostic and/or treatment plan based on available evidence
CBVE Subcompetency 1.3.1	Appraises available clinical information and acts accordingly despite uncertainty
CBVE Subcompetency 1.3.2	Explains justification for plan
CBVE Subcompetency 1.3.3	Re-evaluates animal or population in a timely manner to adjust plan
CBVE Subcompetency 1.3.4	Uses critical thinking to determine appropriate action when unexpected outcomes occur (e.g., complications, changed diagnosis)
SOC Subcompetency 1.3.5	**Integrates information about the patient with client circumstances to identify a range of appropriate care options and to adjust the care plan** • Knowledge LO 1. Lists the client-specific factors (e.g., expectations, goals, resources, abilities, beliefs) that may impact the client's ability or desire to pursue care options for their animal. • Skill LO 1. Elicits information from the client about factors that may affect their ability or motivation to pursue care for their animal. • Skill LO 2. Explains the importance of a follow-up plan to the client. • Skill LO 3. Uses follow-up plan to determine treatment response and client perspectives and adapts as appropriate. • Attribute/Behavior LO 1. Demonstrates empathy and respect during discussions relating to client circumstances. • Attribute/Behavior LO 2. Demonstrates active listening to identify and clarify factors that may affect the client's ability or motivation to pursue care for their animal.
CBVE Competency 1.4	Incorporates animal welfare, client expectations, and economic considerations into the diagnostic or treatment plan
CBVE Subcompetency 1.4.1	Considers disease in context of the whole animal and client
CBVE Subcompetency 1.4.2	Presents a range of options to the client
CBVE Subcompetency 1.4.3	Considers euthanasia as a management option when appropriate
SOC Subcompetency 1.4.4	**Offers a range of care options that are tailored to the unique circumstances of each patient and client** • Knowledge LO 1. Explains why offering a range of care options is appropriate and integral to veterinary practice. • Knowledge LO 2. Explains the terms "spectrum of care", "contextualized care", "standard of care", and "gold standard care". • Knowledge LO 3. Gives examples of how offering a range of care options can impact a client's ability to attain care for their animal. • Knowledge LO 4. Draws on scientific evidence to identify examples in which offering a range of care options improved patient outcomes and reduced euthanasia or surrender of animals. • Knowledge LO 5. Identifies and weighs the practitioner and practice factors that impact the range of care options for a patient. • Skill LO 1. Prioritizes and tailors care options to align with the client's circumstances and expectations. • Attribute/Behavior LO 1. Demonstrates patience and flexibility to identify multiple care options that align with patient needs and client factors, despite uncertainty.

SOC Subcompetency 1.4.5	**Facilitates client decision-making regarding care by presenting the costs, risks, benefits, and evidence-base of care options** • Knowledge LO 1. Defines the characteristics of "shared decision-making". • Knowledge LO 2. Explains the costs, benefits, limitations, uncertainties, and care-giving responsibilities associated with a range of care options, including not proceeding with further veterinary care. • Skill LO 1. Invites a discussion of which care options may best align with a client's expectations and capabilities. • Skill LO 2. Communicates aspects of care options that may have an uncertain outcome, steps that will be taken to reduce uncertainty, and that plans for care may change as new information becomes available. • Attribute/Behavior LO 1. Demonstrates confidence and empathy when responding to clients' requests regarding alternative options. • Attribute/Behavior LO 2. Demonstrates regard for client's autonomy with decision-making when choosing which care options align most closely with the client's capabilities. • Attribute/Behavior LO 3. Demonstrates willingness to execute additional care options beyond the initial recommended care plan.
CBVE Competency 1.5	Prioritizes situational urgency and allocates resources
CBVE Subcompetency 1.5.1	Triages cases to address most urgent and important problems first
CBVE Subcompetency 1.5.2	Recognizes emergent situation and directs action
CBVE Competency 1.6	Adapts knowledge to varied scenarios and contexts
CBVE Subcompetency 1.6.1	Extrapolates knowledge to novel species or situations
CBVE Subcompetency 1.6.2	Adjusts existing protocol or procedure when standard measures are unavailable
CBVE Competency 1.7	Recognizes limitations of knowledge, skill and resources and consults as needed
CBVE Subcompetency 1.7.1	Identifies situations in which referral is warranted
CBVE Subcompetency 1.7.2	Consults experts both within and outside the veterinary profession
CBVE DOMAIN 2: INDIVIDUAL ANIMAL CARE AND MANAGEMENT	
CBVE Competency 2.1	Performs veterinary procedures and post- procedural care
CBVE Subcompetency 2.1.1	Performs diagnostic procedures
CBVE Subcompetency 2.1.2	Performs routine therapeutic procedures (e.g., administer fluids)
CBVE Subcompetency 2.1.3	Performs elective procedures (e.g., castration)
CBVE Subcompetency 2.1.4	Performs emergency procedures (e.g., establish an airway; perform cardiopulmonary cerebral resuscitation [CPCR])
CBVE Subcompetency 2.1.5	Provides analgesia and postoperative care
CBVE Subcompetency 2.1.6	Anesthetizes and recovers patients
CBVE Subcompetency 2.1.7	Manages patient comfort
CBVE Competency 2.2	Promotes comprehensive wellness and preventive care
CBVE Subcompetency 2.2.1	Recommends disease prevention measures
CBVE Subcompetency 2.2.2	Provides nutritional counseling appropriate to life stage and health status
CBVE Subcompetency 2.2.3	Advises clients regarding routine dental care
CBVE Subcompetency 2.2.4	Educates clients on prevention of common behavioral problems
CBVE Subcompetency 2.2.5	Counsels clients about husbandry and welfare needs
CBVE DOMAIN 3: ANIMAL POPULATION CARE AND MANAGEMENT	
CBVE Competency 3.1	Applies population management principles in compliance with legal regulations and economic realities
CBVE Subcompetency 3.1.1	Recommends disease prevention measures

CBVE Subcompetency 3.1.2	Advises on nutritional management
CBVE Subcompetency 3.1.3	Recommends housing and husbandry protocols
CBVE Subcompetency 3.1.4	Designs therapeutic plans for disease management
SOC Subcompetency 3.1.5	**Provides a range of appropriate care options for animal populations that considers animal welfare, lifestyle, economics, societal interests (e.g. food animal industry, animal activism) and public and environmental health concerns** • Knowledge LO 1. Describes and prioritizes the factors (e.g., animal welfare, societal, economic, public health and environmental) that influence decisions regarding care for animal populations. • Knowledge LO 2. Lists the client-specific factors (e.g., expectations, goals, resources, abilities, beliefs) that may impact the client's ability or desire to pursue care options for their animals. • Skill LO 1. Identifies, assesses, and prioritizes factors that may impact the range of care options offered for an animal population. • Skill LO 2. Designs feasible care plans that integrate population and client-specific factors. • Attribute/Behavior LO 1. Demonstrates empathy and respect during discussions with colleagues and clients relating to care of animal populations, including food production animals.
CBVE Competency 3.2	Recommends and evaluates protocols for biosecurity
CBVE Subcompetency 3.2.1	Develops isolation protocols
CBVE Subcompetency 3.2.2	Selects disinfection protocols
CBVE Subcompetency 3.2.3	Recommends protocols for animal movement
CBVE Competency 3.3	Advises stakeholders on practices that promote animal welfare
CBVE Subcompetency 3.3.1	Advocates for animal welfare through communication of the physical, affective and natural needs of the animal
CBVE Subcompetency 3.3.2	Explains ethical and welfare-related aspects of production processes and slaughter
CBVE Subcompetency 3.3.3	Recognizes proper handling and/or adequate facilities by interpretation of appropriate animal behaviors
CBVE Subcompetency 3.3.4	Advises on animal husbandry and transport
CBVE DOMAIN 4: PUBLIC HEALTH	
CBVE Competency 4.1	Recognizes zoonotic, transboundary, and emerging diseases and responds accordingly
CBVE Subcompetency 4.1.1	Identifies the clinical signs, clinical course, transmission potential and pathogen(s) associated with zoonotic, transboundary, and emerging diseases
CBVE Subcompetency 4.1.2	Responds to disease diagnosis through owner education, reporting, quarantine, and disinfection
CBVE Competency 4.2	Promotes the health and safety of people and the environment
CBVE Subcompetency 4.2.1	Makes recommendations for management of animal waste, carcasses, and by-products
CBVE Subcompetency 4.2.2	Implements safety and infection control practices
CBVE Subcompetency 4.2.3	Advises on disaster/emergency preparedness and response
CBVE Subcompetency 4.2.4	Practices responsible use of antimicrobial agents
CBVE Subcompetency 4.2.5	Describes the role of the veterinarian in food safety
CBVE DOMAIN 5: COMMUNICATION	
CBVE Competency 5.1	Listens attentively and communicates professionally
CBVE Subcompetency 5.1.1	Uses appropriate terminology and approach for audience
CBVE Subcompetency 5.1.2	Utilizes a variety of communication platforms to ensure effective communication and accessibility (e.g., email, talk to text)
CBVE Competency 5.2	Adapts communication style to diverse audiences
CBVE Subcompetency 5.2.1	Demonstrates audience-centered communication

CBVE Subcompetency 5.2.2	Elicits goals, expectations, perspectives and constraints, considering the human-animal bond
CBVE Subcompetency 5.2.3	Engages in difficult conversations such as financial decisions and end-of-life care (e.g., palliative care and euthanasia)
CBVE Competency 5.3	Prepares documentation/forms appropriate for the intended audience
CBVE Subcompetency 5.3.1	Records patient care information and communication using professional terminology
CBVE Subcompetency 5.3.2	Ensures documentation fulfills professional and legal requirements
CBVE DOMAIN 6: COLLABORATION	
CBVE Competency 6.1	Solicits, respects and integrates contributions from others
CBVE Subcompetency 6.1.1	Invites input from others irrespective of role, hierarchy or background
CBVE Subcompetency 6.1.2	Acknowledges input and incorporates into ongoing plan of action
CBVE Subcompetency 6.1.3	Leverages own role and roles of others to achieve shared goals
CBVE Subcompetency 6.1.4	Engages colleagues to foster a culture of patient safety and error reduction
CBVE Competency 6.2	Functions as leader or team member based on experience, skills and context
CBVE Subcompetency 6.2.1	Applies principles of teamwork
CBVE Subcompetency 6.2.2	Bases action on collaborative input
CBVE Subcompetency 6.2.3	Manages conflict
CBVE Competency 6.3	Maintains ongoing relationships to provide continuity of collaborative effort
CBVE Subcompetency 6.3.1	Organizes documentation and communicates with collaborator in preparation for transfer or discharge
CBVE Subcompetency 6.3.2	Follows up with collaborator to ensure implementation of care plan
CBVE Subcompetency 6.3.3	Provides support through encouragement, education, or redirection to refine the plan of action
CBVE Competency 6.4	Demonstrates inclusivity and cultural competence
CBVE Subcompetency 6.4.1	Demonstrates respect for diversity
CBVE Subcompetency 6.4.2	Encourages diverse contributions within the workplace
CBVE DOMAIN 7: PROFESSIONALISM AND PROFESSIONAL IDENTITY	
CBVE Competency 7.1	Adopts an ethical approach to meeting professional obligations
CBVE Subcompetency 7.1.1	Applies an ethical approach to professional decision-making
CBVE Subcompetency 7.1.2	Recognizes and responds to evidence of neglect and abuse
CBVE Competency 7.2	Practices time management
CBVE Subcompetency 7.2.1	Recognizes impact of time management on stakeholders
CBVE Subcompetency 7.2.2	Prioritizes and completes tasks according to importance and urgency
CBVE Competency 7.3	Reflects on personal actions and uses feedback to plan improvement
CBVE Subcompetency 7.3.1	Practices self-reflection
CBVE Subcompetency 7.3.2	Invites and responds to constructive feedback on performance
CBVE Subcompetency 7.3.3	Critiques decision-making process and its outcomes

SOC Subcompetency 7.3.4	**Acknowledges and considers the context of previous care decisions made by colleagues and clients** • Knowledge LO 1. Identifies strategies to discuss client and patient factors that may have influenced decision-making. • Knowledge LO 2. Lists strategies for guiding client conversations around previous care decisions. • Skill LO 1. Elicits whether a client's expectations were met during previous care and if not, why. • Skill LO 2. Maintains appropriate verbal and non-verbal communication composure when reviewing previous care options. • Attribute/Behavior LO 1. Demonstrates humility and understanding regarding prior options given and decisions made.
SOC Subcompetency 7.3.5	**Reflects on one's own professional identity in relation to providing a spectrum of care** • Knowledge LO 1. Explains how a veterinarian's personal values, goals, and prior experiences can influence care decisions. • Skill LO 1. Reflects on own values, goals, and prior experiences in relation to care decisions.
CBVE Competency 7.4	Engages in self-directed learning
CBVE Subcompetency 7.4.1	Engages in self-directed learning as a foundation for life-long learning
CBVE Subcompetency 7.4.2	Identifies and undertakes professional development to meet learning needs
CBVE Subcompetency 7.4.3	Uses appropriate resources for learning and decision making (e.g., information technology, consultation with colleagues)
SOC Subcompetency 7.4.4	**Pursues opportunities to expand skill set to offer a broader range of care options** • Skill LO 1. Recognizes own limitations and next steps for development. • Skill LO 2. Identifies training opportunities to undertake next steps for development of new or unfamiliar skills (technical and non-technical) and procedures, with appropriate support.
CBVE Competency 7.5	Attends to wellbeing of self and others
CBVE Subcompetency 7.5.1	Recognizes sources of workplace stress and acts to remedy adverse situations
CBVE Subcompetency 7.5.2	Recognizes signs of stress in self and colleagues, engages in self-care and recognizes when professional support is appropriate for self or others
CBVE Subcompetency 7.5.3	Manages expectations of client and self
CBVE Competency 7.6	Engages in career planning
CBVE Subcompetency 7.6.1	Compares career paths and weighs professional and personal rewards (e.g., financial implications)
CBVE DOMAIN 8: FINANCIAL AND PRACTICE MANAGEMENT	
CBVE Competency 8.1	Weighs financial factors in personal and business decision-making
CBVE Subcompetency 8.1.1	Applies financial principles to personal and professional decisions (e.g., debt repayment plan)
CBVE Subcompetency 8.1.2	Explains work-related insurance (e.g., personal, professional, patient)
CBVE Subcompetency 8.1.3	Describes relationship between revenue generation, expense categories, and compensation including benefits
SOC Subcompetency 8.1.4	**Provides a range of care and payment options in a manner that fosters financial viability of the practice and a positive working environment** • Knowledge LO 1. Identifies components of the practice's profits and losses as they relate to providing care options. • Knowledge LO 2. Explains how providing a range of care and payment options can have a financial impact on the practice. • Knowledge LO 3. Explains how providing a range of care and payment options can have an impact on the practice team and management processes. • Knowledge LO 4. Explains the importance of optimizing the workload allocation among the practice team to ensure financial viability.
CBVE Competency 8.2	Delivers veterinary services compliant with legal and regulatory requirements
CBVE Subcompetency 8.2.1	Acts in accordance with codes of professional practice, veterinary practice acts and licensing board regulations (e.g., veterinarian-client-patient relationship)
CBVE Subcompetency 8.2.2	Acts in accordance with legal and regulatory requirements (e.g., reportable diseases, animal cruelty, waste disposal)

CBVE Subcompetency 8.2.3	Selects drugs in accordance with regulatory and legal requirements (e.g., controlled substances, extra-label drug use)
CBVE Competency 8.3	Advocates for the health and safety of patients, clients, and members of the team within the workplace
CBVE Subcompetency 8.3.1	Complies with workplace health and safety regulations (e.g., radiation safety, infection control)
CBVE Subcompetency 8.3.2	Applies safe practices for handling hazardous materials (e.g., administration of chemotherapeutic agents)
CBVE Subcompetency 8.3.3	Identifies and addresses sources of medical error/adverse events
CBVE DOMAIN 9: SCHOLARSHIP	
CBVE Competency 9.1	Practices evidence-based veterinary medicine (EBVM)
CBVE Subcompetency 9.1.1	Formulates questions and customizes solutions, drawing on personal experience and available evidence
CBVE Subcompetency 9.1.2	Retrieves, evaluates, and applies information to solve clinical or scientific problems
CBVE Subcompetency 9.1.3	Applies creativity to develop innovative solutions
CBVE Competency 9.2	Disseminates knowledge and practices to stakeholders
CBVE Subcompetency 9.3a.	Develops and disseminates educational material
CBVE Subcompetency 9.3b.	Explains evidence-based recommendations

RECOMMENDED CITATION

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Vision-Setting Reflection Template

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Elizabeth E. Alvarez, *University of Wisconsin–Madison*
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During the planning stages of a change initiative, it is important to identify and articulate the desired goals and outcomes of the change. The AAVMC Spectrum of Care Initiative (SOCI) Task Force has created the Spectrum of Care (SOC) Education Model to help your program create a vision for making SOC curricular enhancements or changes.

As you review the SOC Education Model, consider the reflection questions below in order to tailor the suggested SOC curricular changes to your specific program and institution.

1. What do you consider to be the benefits of SOC preparation?

- How can SOC preparation expand your capacity to educate veterinary students?

2. How and why does the SOC Education Model fit with your program's vision for the veterinary education curriculum?

- How might you modify the SOC Education Model to better align with your veterinary education program's mission and vision?
- How does the SOC Education Model align with the current teaching by generalists, specialists, and house officers in your program?

3. What degree of change is required in your program to enhance SOC preparation (e.g., revising a few courses, altering clinical rotation requirements, or embedding content throughout the curriculum)?

- What approvals are necessary to institute curricular changes (e.g., institutional, curriculum committee, departments, course coordinators, and/or faculty and instructor approval)?
- What is your anticipated timeline for making SOC curricular changes?
- What are the timeline implications for scheduling of courses?

4. What resources are necessary to implement SOC curricular change?

- Consider financial, personnel, facilities, etc.
- Consider instructional support and design assistance
- Are there existing curricular models that support your vision?
- What resources do you have that can be adapted to support this change?
- What people do you have in your program who can help champion this change (e.g., administration, curriculum leaders, faculty)?

5. What is currently happening in your program that will help motivate SOC curricular change?

- Are you currently undergoing a curriculum redesign? How does SOC content align with curriculum renewal efforts? Have you implemented the AAVMC Competency-Based Veterinary Education (CBVE) Model?
- How can you align with other initiatives outside your program (e.g., strategic planning processes, university initiatives, outreach initiatives)?

6. How can you create a sense of importance and urgency to motivate SOC curricular change?

- What do most of your students do after graduation (general practice versus specialty training)?
- What do your employer/alumni surveys indicate regarding your graduates' competency in SOC practice? What are your employers seeking in your graduates?
- How can SOC preparation positively affect professional workplaces, including within your program, enhancing recruitment and retention?
- Do existing accreditation requirements align with preparing students for SOC practice (e.g., AVMA COE Standard 9 regarding providing exposure to the wide range of veterinary care options; Royal College of Veterinary Surgeons requirement that 70% of clinical education be in the general practice setting)?

RECOMMENDED CITATION

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Spectrum of Care and Veterinary Education Hot Topics Write-Ups

Within each institution, there may be individuals who are on board with the proposed spectrum of care (SOC) curricular changes, while others may need some convincing. Aligning your change vision to important institution and veterinary education program goals can help interested parties see the added value of the proposed curricular changes.

In this section, you will find compelling arguments you can make to your institutional administration, program colleagues and leaders, and students about the connections between SOC preparation and practice and hot topics within veterinary education and medicine.

Featured Resources

Supporting the financial health of veterinary practices via spectrum of care preparation and practice

By Joyce Carnevale, Kristin Jankowski, and Michelle Wisecup

Meeting access, belonging, and community-building goals via spectrum of care preparation and practice

By Lauren A. Bernstein and Elizabeth E. Alvarez

Promoting veterinarian well-being via spectrum of care preparation and practice

By Elizabeth E. Alvarez and India F. Lane

Enhancing recruitment and retention via spectrum of care preparation and practice

By India F. Lane and Sheena M. Warman

Meeting United Nations Sustainable Development Goals via spectrum of care preparation and practice

By Joyce Carnevale and Kristin Jankowski

Supporting the Financial Health of Veterinary Practices via Spectrum of Care Preparation & Practice

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KEY TAKEAWAYS

1. New graduates must adjust their care plans to meet client expectations and available resources.
2. Graduates need to balance the financial implications of their recommendations with both the practice's profitability and their own income.
3. Combining business education, spectrum of care (SOC) training, and effective mentorship helps graduates transition smoothly into practice.
4. Educating students on key performance indicators and diverse payment options enhances their understanding of practice management, contributing to improved cash flow, client compliance, and overall practice profitability.

New graduates entering private practice must quickly learn to adapt their diagnostic and treatment recommendations to meet the expectations and available resources of clients. For common problems such as canine pruritus and pyoderma secondary to atopy, practitioners may need to create multiple plans that differ from what they perceive as ideal care to meet the needs of individual clients and patients. New graduates must also consider how their recommendations affect the financial well-being and profitability of the practice as well as their own financial well-being, since their income may be tied to their productivity. A combination of basic business instruction and SOC training in veterinary school and effective mentorship during initial employment will help new graduates navigate this transition.

Educating students on factors that contribute to the financial viability of a practice is essential for careers in general practice, specialty practice, or the nonprofit sector. Creating confidence and competence in students to practice across the spectrum of care will contribute to any practice's financial health. Graduates who are trained to provide relationship-centered client care with evidence-based clinical options and knowledgeable about using diverse payment options can positively affect the practice's financial health.

Graduates who can confidently engage in discussions with practice owners about key performance indicators (KPIs) are better prepared to identify financially viable practices that fit with their professional identity and goals, contributing to the long-term financial success of the practice. A clear understanding of the impact on practice financial health of practicing along the spectrum of care is aligned with American Veterinary Medical Council on Education standards, the AAVMC Competency-Based Veterinary Education Framework, and the AAVMC SOC Education Model subcompetencies.

KPIs are specific and measurable data points related to practice performance (Nelson, 2021; Slinger, 2023). For example, the cost of necessary goods is a factor that affects practice profitability. Indicators such as the number of new clients and patients who are overdue on services are related to practice growth and could be used to create goals and monitor the implementation of strategic growth plans. KPI goals should (1) align with the practice's mission, vision, and purpose; and (2) provide information about where the practice fits into the market that it serves. Educating students on KPIs and how SOC options can affect them helps students understand vital practice management concepts.

Offering SOC options contributes to long-term practice financial viability by serving diverse clientele with options that meet client financial and personal expectations. Recent practice management trends show that clients are delaying veterinary visits due to cost following the COVID-19 pandemic (Nolen, 2023). A focus on relationship-centered care with SOC options could dramatically improve client visits and compliance, contributing to practice and personal financial health.

Providing information on sustainable payment plans other than cash or credit that contribute to practice financial health is an important piece in educating students. Billing strategies such as payment plans may increase cash flow but could be associated with risks such as labor costs (Neill et al., 2023). Outsourcing

the management of payment plans to a third party may decrease those risks. In 2022, a study evaluated the outcomes for veterinary clinics working with a private company that manages client payment plans. The study demonstrated positive financial outcomes for a diverse group of for-profit and nonprofit practices (Cammisa & Hill, 2022). Understanding diverse payment options can lead to improved cash flow, decreased discounts on services, growth of new clients, and decreased accounts receivable, leading to improved profitability of the practice. Other strategies for financially friendly approaches to offering veterinary care can be found in the Open Door Glossary at Open Door Veterinary Collective (Open Door Veterinary Collective, 2024).

Many valuable opportunities exist across the veterinary curriculum to provide students with SOC knowledge and skills that lead to personal and professional success. Education empowers graduates to manage their personal financial health and critically evaluate opportunities as associates or owners. Training allows students to identify the best practice that meets their professional expectations and needs, and contributes to practice viability, which can benefit the profession holistically.

RECOMMENDED CITATION

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Meeting Access, Belonging, and Community-Building Goals via Spectrum of Care Preparation & Practice

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KEY TAKEAWAYS

1. Opportunities still exist to improve access, belonging, and community-building in veterinary medicine, despite progress made in recent years.
2. People face personal and systemic barriers to veterinary services, and spectrum of care (SOC) is a useful framework for delivering equitable care.
3. Personal belief systems and institutional norms affect clinical decision-making and perspectives on veterinary medicine, which can influence care delivery, access, and the human–animal bond.
4. Preparing students to practice along a spectrum of care produces graduates who understand the importance of access, belonging, and community-building.

Opportunities still exist to improve access, belonging, and community-building in veterinary medicine, despite progress made in recent years.

People of all ages, races, classes, gender and sexual identities, ability status, and family structures share their lives with companion animals. Among these psychological, physical, and social differences are diverse veterinary needs, abilities, and preferences for care. Despite the diversity of pet owners, veterinary medicine continues to be one of the most homogenous professions in the country; approximately 90% of the profession is White (U.S. Bureau of Labor Statistics, 2023) and the majority of U.S. veterinary schools are predominantly White institutions with curricula centered on Western medicine. In recent years, veterinary education programs have taken significant steps to understand, value, and increase diversity among veterinary students through improved pre-veterinary school recruitment strategies and revised admissions criteria. Consider reviewing your veterinary program's progress and benchmarks in this area. You can also learn more about the American Veterinary Medical Association's (AVMA) efforts here: **https://www.avma.org/resources-tools/diversity-and-inclusion-veterinary-medicine**

Despite these efforts to make practice more equitable, the veterinary curriculum still emphasizes an inherently inequitable "gold standard" of medicine, which is not accessible, affordable, or preferable for every pet owner (Englar, 2023a).

People face personal and systemic barriers to veterinary services; SOC is a useful framework for delivering equitable care.

Veterinarians frequently provide multiple care plan options for clients, especially when faced with financial limitations. In recent years, recognition has grown of the additional personal and systemic challenges that affect clients' access to veterinary services for their pets, such as transportation challenges, cultural and language differences, and lack of awareness about the importance of routine veterinary care (Brown et al., 2021; LaVallee et al., 2017). The socioeconomic and policy landscapes within which humans and their animals exist affect not only the health of animals and people (McDowall et al., 2023), but also the trust between veterinary professionals and clients (LaVallee et al., 2017).

For example, consider a pet owner who lives in a highly polluted urban neighborhood with poor air quality—the result of city policies that permitted two factories to be built in this low-income area. Both the pet owner and the pet might experience higher rates of cardiovascular or respiratory disease than if they lived in a less polluted neighborhood. Now consider where the closest veterinarian is. If the veterinarian is outside of this community, they might not understand the systemic-level impact (i.e., air quality due to city policy) on the pet's health. They might not know to ask questions about the pet's overall living environment and may propose a treatment plan that inadequately addresses the pet's needs. If this treatment plan fails, that may sow distrust between the pet owner and the veterinarian. SOC offers a useful framework for delivering equitable care through a relational approach with open communication about client barriers to and goals for care, patient-specific considerations, and the veterinarian's own abilities or limitations (Englar, 2023b).

Personal belief systems and institutional norms affect our clinical decision-making and perspectives on veterinary medicine, which can influence care delivery, access, and the human–animal bond.

To understand where gaps in access arise at a clinic level and why SOC closes those gaps, we must understand the social influences and cumulative life experiences that create our implicit biases and personal ethics and belief systems. These biases may shape clinical decision-making and perspectives. Milstein et al. describe examples in human medicine in which "Black and Hispanic/Latino patients presenting to the emergency room are less likely to receive analgesia compared to White patients, despite no difference in patient pain level or physicians' ability to assess pain" (2022, p. 1145). Such disparities may also occur in veterinary medicine. Practicing along a spectrum of care requires a foundation of cultural humility and structural competency training. Cultural humility involves lifelong self-reflection to identify biased thoughts and behaviors (Alvarez et al., 2020). This foundation enables students to "think about how social biases, stigma, internalized racism, and power dynamics shape perceptions of health and disease" (Milstein et al., 2022, p. 1146).

Preparing students to practice along a spectrum of care produces graduates who understand the importance of access, belonging, and community-building.

SOC and access, belonging, and community-building practices cannot be mutually exclusive. Preparing students to practice along a spectrum of care requires them to simultaneously evaluate themselves and the dominant cultural values reinforced by their academic institutions. Critical to providing equitable access to veterinary care is creating inclusive environments where multiple perspectives and knowledge systems are taught, valued, and practiced. This process can include veterinary curricular changes such as teaching alternative options to the "gold standard" (i.e., SOC; Brown et al., 2021) and incorporating client knowledge, community wisdom, and traditional cultural teachings into treatment plans.

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Promoting Veterinarian Well-Being via Spectrum of Care Preparation & Practice

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KEY TAKEAWAYS

1. Moral distress can occur when veterinarians wish to provide care for animals but are unable to because clients cannot afford the cost of care; it is associated with negative mental health outcomes, including professional dissatisfaction, depression, posttraumatic stress disorder, and suicidality.
2. In veterinary curricula and academic veterinary centers where technologically and financially intensive models of practice predominate, misperceptions may develop as students transition into general practice. They may perceive that they are failing as doctors if they cannot provide the advanced care they were taught, leading to moral distress.
3. Embracing cultural humility and using spectrum of care (SOC) strategies that improve access to care for more patients could decrease burnout, buffer against professional stressors, and increase job satisfaction.

Many factors affect veterinarians' well-being as they seek to provide the most appropriate care for their patients. Veterinarians encounter ethical decisions and experiences that challenge core values as they negotiate the needs of multiple interested parties in animal care (Batchelor et al., 2012). *Moral distress* can be defined as the powerlessness, anger, and guilt that healthcare professionals experience when they must act professionally in a way that is misaligned with their own values or beliefs (Blackwell & O'Reilly, 2023; Dodek et al., 2016; Jameton, 2017). Moral distress can occur when veterinarians wish to provide care for animals but are unable to because clients cannot afford care (Ashall, 2023; Blackwell & O'Reilly, 2023; Kipperman et al., 2017). These instances of financial veterinary ethical dilemmas are at the top of the list of mental stressors for care providers (Kogan et al., 2023; Moses et al., 2018). Persistent moral distress has been related to negative mental health outcomes, including professional dissatisfaction, depression, posttraumatic stress disorder, and suicidality (Blackwell & O'Reilly, 2023; Kogan et al., 2023; Williamson et al., 2023). Because financial or other limitations of animal owners can negatively affect veterinarians' ability to practice medicine at a level consistent with their ethics and standards, the critical financial aspects of practice must be considered in veterinary training (Kogan et al., 2023).

Client economic limitations are an important cause of professional career dissatisfaction and burnout for veterinarians. A survey of over 1,000 small animal practitioners in the United States and Canada found that 57% of veterinarians believe owners' economic limitations affect the care that they are able to provide at least once per day (Kipperman et al., 2017). In a 2022 Veterinary Information Network survey, close to 2,000 veterinarians were asked how they felt about fewer clients being able to afford recommended care; 84% of respondents reported they were either distressed or extremely distressed (Kogan et al., 2023). Besides lack of financial resources, additional client factors that affect care options include the client's unique goals, values, expectations, beliefs, and abilities. As students transition into general practice, they may perceive that they are failing as doctors if they cannot consistently provide the advanced level of care they were taught. This misperception can damage new graduates' well-being as they navigate the realities of general practice, and this moral distress can be associated with decreased job satisfaction.

Students develop idealized professional identities and goals in training; these goals may misalign with their workplace experience (e.g., when a caregiver tries to model the skills and actions of a veterinary specialist while working in general practice) in a way that can harm their emotional well-being and career satisfaction (Armitage-Chan, 2020; Armitage-Chan et al., 2018). This dissatisfaction may contribute to high levels of psychological distress and burnout among veterinarians, including an increased risk of suicide (da Silva et al., 2023; Elkins et al., 1988; Strand et al., 2005; Volk, 2018).

Self-care is crucial for the well-being of future veterinarians, but mental well-being education in veterinary curricula remains limited (Liu et al., 2020). While the veterinary profession has begun to address the importance of mental health—with resources pertaining to burnout, compassion fatigue, and resilience becoming more common—less attention has been given to moral distress and its potential impact on psychological

well-being (Kogan et al., 2023). The strategy of preparing graduates to practice along a spectrum of care may improve veterinarian well-being in a variety of ways.

Recent studies have suggested that providing care to animals who otherwise would not receive it, as well as building relationships with team members and the broader community, is beneficial (Powell et al., 2021). Such positive feelings of meaningful work can be protective against burnout. By teaching students that there are multiple appropriate answers to a problem, and that the best course of action depends on the unique circumstances of each case, we can develop students' resilience as they navigate the many contextual challenges associated with providing care in general practice. Being able to offer a range of care options can also help veterinarians treat more patients, which may affect the rate of economic euthanasia and address issues surrounding access to care, thus improving veterinarian mental health.

Institutions should make time for ethical dilemma discussions along with conventional training to prepare veterinarians for circumstances in which they may not be able to provide "gold standard" care, and as a protective measure against moral distress (Ashall, 2021; Williamson et al., 2021). Offering ways to improve access to care and giving permission to offer a spectrum of care are two ways that hospitals can mitigate the negative impact of owners' financial limitations on animal medical care (Brown et al., 2021; Stull et al., 2018). Finally, educators should work to build cultural humility in our students—the ability to consider others' lived experiences and where all clients are coming from. This may help our future veterinarians embark on potentially stressful situations with empathy, curiosity, and a willingness to find solutions, rather than frustration and anger (Alvarez et al., 2020). Using SOC strategies to improve access to care for more patients can decrease burnout, buffer against professional stressors, and increase job satisfaction (Hoffman et al., 2021; Kipperman et al., 2017; Powell et al., 2021).

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Enhancing Recruitment and Retention via Spectrum of Care Preparation & Practice

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KEY TAKEAWAYS

1. Spectrum of care (SOC) preparation will affect retention of professionals across the veterinary workforce by increasing confidence, financial competence, and well-being related to dealing with client, veterinarian, and practice factors that influence veterinary care options.
2. Individuals leave the veterinary profession, including in academic institutions, for many reasons, not just for better compensation. Workload, departmental culture, organizational bureaucracy, and lack of perceived support or reward also discourage veterinarians from academic careers. SOC education offers an opportunity for the institution to highlight and fulfill its commitment to the community and reignite an overarching sense of purpose. Uncovering and allaying fears about primary and contextualized care can reduce conflict and improve morale, communication, and well-being within departments and clinical services.
3. With additional emphasis on SOC education, academic faculty and staff, as well as employers and referring veterinarians, will be more satisfied with overall hospital practices, dialog regarding patient care options, and the range of treatments afforded to a variety of clients.

Recruitment and retention of individuals in the veterinary workforce has been challenging, with widespread shortages across the profession, especially in academic settings, the veterinary technician workforce, and rural practices. An emphasis on SOC education will prepare veterinary graduates and technicians to better serve clients and communities with confidence and with appropriate economic management. The impact of SOC preparation and practice on well-being should reduce burnout and promote longevity in the profession (see Alvarez & Lane, 2025). Hopefully, general practice and rural veterinary practice careers will be perceived and experienced as more attractive and rewarding.

In academic veterinary medical centers, difficulties in recruiting and retaining faculty have been recognized for some time, especially for certain clinical specialty areas (Adams et al., 2005; Grauer, 2005; Hubbell et al., 2006; Jelinski & Silver, 2015). The concern has only grown in recent years as the number of veterinary schools and veterinary students increase (Lairmore et al., 2024). Growth in compensation and opportunities outside academia provides competition for talented veterinary graduates, graduate students, and house officers (Lairmore et al., 2024).

Competition is fierce for trainees or experienced faculty to fill critical roles in a veterinary program. Challenges include compensation, which can be constrained by limited resources; other factors playing a role in recruitment and retention may be more amenable to change. In addition to salary and benefits, reasons specialists leave veterinary academia include geographic location, family concerns, perceptions of work–life balance, and departmental culture (Furr, 2018; Furr, 2020; Jelinski & Silver, 2015). Notably, most of these individuals do not become disenchanted with academia because of the teaching or clinical practice. Their decisions are influenced by bureaucracy, perceived lack of support and reward for clinical work, and, for some, the expectations for research productivity and difficult steps to promotion or tenure (Furr, 2018).

How could SOC preparation positively affect the academic profession, especially clinical faculty recruitment and retention? While effects are theoretical at this stage, incorporating and supporting SOC preparation could affect morale, climate, and well-being across an institution. A robust curriculum and affiliated SOC practice opportunities could:

- Provide opportunities to hire additional faculty members who can contribute to the curricular, governance, and other program needs of the program in addition to providing SOC content or clinical experiences.
- Clarify roles of primary care and advanced care throughout the curriculum, reducing perceived conflicts among faculty and staff and reducing the expectations for individual educators to focus on both.
- Complement specialty care services and improve communication among specialists and primary care

clinicians to benefit the hospital environment as well as curricular content.

- Stimulate faculty professional development in instruction, clinical teaching, advanced communication skills, practice management, and leadership, which are considered attractive topics for faculty needs (Haden et al., 2010).
- Serve new populations and help the program meet multiple missions, leading to increased sense of purpose and community for all; SOC education and experiences could help demonstrate leadership's commitment to the clinical and outreach missions of the institution.
- Provide another pathway and caseload for discovery and scholarship for primary care or practitioner instructors, enhancing opportunities for promotion and reward.
- Provide an opportunity for exposure and participation of faculty, staff, and students in a workspace and workload that resembles general practice; faculty specialists could enjoy the opportunity to spend some of their clinical effort in this setting and gain more flexibility and work–life balance.

With these expected benefits, a positive effect on external key players is also likely, which can enhance student recruitment. As the program's SOC preparation efforts improve well-being, learning climate, and quality of education, student and employer satisfaction should increase. Students and graduates will feel more prepared for general practice dilemmas and more confident in SOC options. Employers will hire graduates ready to employ a variety of treatments in contextualized veterinarian–client–patient relationships. Referring veterinarians will feel more confident that a range of acceptable options may be considered and offered without judgment in a contextualized care approach, and will feel more valued as partners in patient care. All these outcomes will enhance the program's educational reputation and foster support for programs.

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Meeting United Nations Sustainable Development Goals via Spectrum of Care Preparation & Practice

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KEY TAKEAWAYS

1. The United Nations adopted 17 Sustainable Development Goals (SDGs) as part of the 2030 Agenda for Sustainable Development, aiming to achieve global peace and prosperity.
2. Veterinary medicine plays a crucial role in global health through the One Health approach, which recognizes the interconnectedness of human, animal, and environmental health.
3. Spectrum of care (SOC) practice in veterinary medicine aligns with several UNSDGs by providing tailored care across various client–patient circumstances and addressing health inequalities. Training should include understanding client and patient barriers, promoting relationship-centered care, and using evidence-based medicine.
4. Veterinary education programs can contribute to achieving the SDGs by expanding human capital, conducting research, and implementing the agenda through service-learning activities and curriculum changes that incorporate SOC concepts.

In 2015, all United Nations member states adopted the 2030 Agenda for Sustainable Development (Division for Sustainable Development Goals, n.d.), which outlines 17 goals leading to global peace and prosperity. These broad goals have health and health equity at their core, and veterinary medicine is a crucial component of global health as defined by the One Health paradigm. One Health is defined as "an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes that the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and interdependent" ("Tripartite and UNEP," 2021).

While many nations have systems in place to more equitably provide healthcare to those experiencing financial or other barriers to care, a similar structure or training system does not currently exist in veterinary medicine. SOC practice acknowledges the importance of delivering care across a range of client–patient circumstances. Incorporating SOC pedagogy takes steps towards UNSDGs 3 (Good Health and Well-Being), 4 (Quality Education), and 10 (Reduced Inequalities). SOC is defined as "providing a continuum of acceptable care that considers available evidence-based medicine while remaining responsive to client expectations and financial limitations" (Fingland et al., 2021, p. 464). A key aspect of SOC practice is tailoring care based on a range of contextual factors that are often unique to each individual case and the client, patient, and veterinarian involved in it (Stull et al., 2018).

The veterinary community can contribute to meeting several of the UNSDGs, but only if we begin to educate professionals on how to provide care across a spectrum and acknowledge that the social determinants of human health are connected to the welfare of companion animals. Training and experience in SOC will allow veterinary professionals to develop care plans across a wider range of circumstances and encourage a broader understanding of the interconnectivity of human and animal health. SOC practice is improved when professionals of veterinary medicine, social work, and public policy work together on solutions. These collaborations can inspire new ways to solve global problems, including gaining new sources of shared funding, developing more equitable healthcare policies, and improving academic program development, thus working towards UNSDGs 16 (Peace, Justice, and Strong Institutions) and 17 (Partnerships for the Goals).

The Sustainable Development Goals Fund identified three primary roles of academia in fulfilling the 2030 Agenda for Sustainable Development: Expanding Human Capital, Research, and Implementing the Agenda (Duran, n.d.). While veterinary education programs currently contribute to these three areas in diverse ways, the addition of clear guidelines around SOC practice and education will help achieve these goals more broadly. The United Nations Academic Impact website offers

guidelines and training research opportunities, and showcases best practices from universities around the world (Duran, n.d.).

Opportunities for veterinary educators, researchers, and administrators to create programs incorporating SOC concepts are diverse, and doing so can contribute to the overall goal of meeting UNSDGs. Examples of activities in each of the three primary roles of academia are discussed below. Administrators, faculty, and students are encouraged to work together to explore ways in which each individual program can contribute to the 2030 Agenda for Sustainable Development.

Expanding Human Capital

One fundamental pillar of creating SOC options is a clear understanding of client and patient capacities, expectations, and barriers (Fingland et al., 2021; Stull et al., 2018; Warman et al., 2023). Identifying these factors and training veterinarians to develop management plans for individual animals as well as animal populations support several of the UNSDGs, primarily Goal 3 (Good Health and Well-Being) and Goal 10 (Reduced Inequalities). Effective training of veterinary students or retraining graduates could support better care in underserved areas, including rural and urban domestic or international areas.

Research

Evidence-based medicine is another fundamental pillar of creating SOC options. Many veterinary health problems have not been the subject of adequate research to identify effective diagnostic and treatment plans along a spectrum of care options. New and recent practitioners often rely on educational material and clinical experiences presented by veterinary specialists; these materials often focus on approaches that are expensive and rely on advanced technologies. Once in practice serving a more diverse client population and having access to a broad range of technology, a clinician should adapt diagnostic and treatment protocols to meet the needs of clients and patients. Research supporting evidence-based medicine for common medical problems would support the implementation of SOC approaches to problems.

Research is also needed to understand what SOC options are needed to improve the health and well-being of people in a community. One Health topics such as zoonotic diseases are well understood; however, others—such as the importance of the human–animal bond to people's mental and physical well-being, or the relationship between access to veterinary care and human healthcare—remain less clear. Addressing these research opportunities can support the UNSDGs.

Implementing the Agenda

Within many veterinary education programs, students have diverse opportunities to serve at-risk communities through a variety of formal and informal service-based learning courses and noncredit events. Student activities most commonly focus on delivering SOC services, including community wellness clinics, elective spay and neuter procedures, and limited care for common first-opinion cases. Events occur in both domestic and international locations. These events support UNSDGs 16 (Peace, Justice, and Strong Institutions) and 17 (Partnerships for the Goals).

To strengthen these experiences, veterinary education programs could consider associating service-learning activities with course credit and specific learning outcomes. For example, an elective online asynchronous course combined with experiential opportunities could be incorporated into the curriculum. Credit could be assigned based on hours engaged in various service projects. Online module learning objectives could focus on options across a spectrum of care, identifying community needs, cultural competency, and postgraduate activities.

Overall, SOC concepts are integral to the mission of veterinary education programs to meet the 2030 United Nations Sustainable Development agenda. The United Nations Academic Impact page provides a wealth of information for academics, and administrators of veterinary education programs have many opportunities to contribute to goals on many distinct levels (Duran, n.d.).

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Who Should Be on the Spectrum of Care Curriculum Team?

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Change requires the involvement of many individuals, not just one leader (Elrod et al., 2024). Systemic change affects multiple areas, making it essential to have a variety of leaders actively participating. Adopting a team or shared leadership model ensures that leaders with diverse viewpoints and experiences are part of the change process.

It is important to identify high-functioning individuals who can drive the success of your program's spectrum of care (SOC) curricular change initiative. Your SOC curriculum task force should include appropriate key players and be diverse in expertise, roles, social identities, and experiences. Consider the following task force structure and potential individuals to recruit to be part of the team.

1. Chair or co-chairs: A curriculum and assessment administrative leader may be the natural driver of this charge. Alternatively, consider:
    - the chair or a senior member of the Curriculum Committee
    - the leader of the primary care curriculum or clinical experiences
    - trusted faculty or staff members who have a broad view of the curriculum, clinical environment, and both primary and specialty practice
2. Membership: Include a range of individuals who can communicate effectively with relevant key players while maintaining a manageable size for the task force. Some individuals will meet more than one task force need, which will reduce the overall size of the task force. When assembling your task force, consider including individuals from some of the following roles:
    - departmental or major unit representative
    - basic science educator
    - primary care clinician and (technician) staff member
    - external primary or shelter care veterinarian
    - liaison to veterinary technician education (in-house or collaborator)
    - veterinary medical association (e.g., local, state, provincial) representative
    - instructional designer, consultant, or staff member
    - assessment leader or relevant committee member
    - faculty specialist clinician and instructor
    - additional Curriculum Committee member
    - students (early or close to graduation) or recent graduates
    - outreach or community liaison; alumni practitioners
3. Administrative support: Assign an individual to support meetings and handle minutes, notes, follow-ups, data collection, and survey administration

4. Consider clarifying specific roles of each task force member to ensure engagement and distribution of workload. Roles could include:
    - facilitator for faculty meetings
    - facilitator for committee meetings
    - data analyst
    - literature reviewer and resource-gatherer
    - implementation leader
    - assessment planning leader
    - guest speaker/resource liaison
5. Consider establishing subgroups of the task force to focus on different change moves in the planning, implementing, and sustaining phases of SOC curricular change, including:
    - ensuring availability of resources
    - assessing SOC curriculum change needs by mapping the curriculum to the SOC Education Model
    - gathering diverse key player perspectives on SOC preparation
    - communicating the curricular change plan to various interested parties
    - evaluating program- and course-level SOC curricular changes
    - ensuring continued success
    - sharing and using evidence

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Gathering Evidence for Spectrum of Care Curricular Change by Mapping Your Curriculum

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To create evidence-based spectrum of care (SOC) curricular change, programs may consider mapping their curricula to the SOC Education Model to identify strengths and areas of improvement in their current SOC preparation. Curriculum mapping is a common technique for visualizing a curriculum's components and how they relate to each other (Harden, 2001). A similar process may be used to examine the alignment of a curriculum with an external framework, such as the SOC Education Model.

In the context of planning for SOC curricular change, the curriculum mapping process should be used formatively to help guide decision-making. Mapping curricula to the eight SOC subcompetencies in the SOC Education Model may offer the following benefits to individual programs:

- Baseline for current scaffolding of the SOC subcompetencies
- Focus and prioritization of change efforts by highlighting gaps in SOC preparation
- Data that can inform dialogue with interested parties about SOC curricular changes

Ideally, development of SOC subcompetencies is scaffolded across the curriculum. This means that students have multiple opportunities *within* and *across* years to acquire, integrate, and practice knowledge, skills, and behaviors related to the subcompetencies (Fingland et al., 2021; Harden & Stamper, 1999; May & Silva-Fletcher, 2015). We therefore encourage programs to approach the curriculum mapping process with the goal of accurately and inclusively capturing where SOC subcompetencies are addressed across both the preclinical and clinical curricula.

The Curriculum Mapping Process

Figure 1 presents a suggested process for mapping a curriculum to the eight SOC subcompetencies in the SOC Education Model. A similar approach may be used to map all the courses and sessions in a curriculum, a subset of courses, or specific course sessions. Ideally, the alignment of the content of each course/session with the subcompetencies is mapped by the individual who teaches or leads that course or session. However, this approach is resource-intensive and may not be feasible for many programs. For ease of implementation, this process thus asks program representatives to map course/session learning outcomes as a proxy for content of the curriculum.

The process entails the following steps:

Step 1: A program representative collects course/session titles, numbers, descriptions, and learning outcomes for all the courses/sessions to be mapped in the curriculum. For each course/session, the representative uses this information to fill in the mapping template presented in **Figure 2**.

Step 2: For each course/session, a program representative who is familiar with the curriculum identifies all the instances in which at least one learning outcome references knowledge, skills, or attributes/behaviors that contribute to students' progress towards each of the SOC subcompetencies. **Table 1** presents the instructions and FAQs accompanying the template.

Given that course/session learning outcomes will typically be more granular than subcompetencies, it may be helpful to look at the examples of learning outcomes that accompany each of the SOC subcompetencies in the SOC Education Model. Please see the instructions and FAQs in **Table 1** for additional guidance.

If only one program representative is conducting the mapping, it may be helpful to have a second representative available to periodically spot-check the mapping and discuss any cases for which the mapping is uncertain.

There are several options for mapping with multiple program representatives:

- Representatives map a few courses/sessions together to become familiar with the mapping process. Representatives each then map the remaining courses/sessions separately. The group meets regularly to compare maps and come to consensus for any item about which opinions differ. Alternatively, another representative may act as a tiebreaker for disagreements.
- Representatives map a few courses/sessions together to become familiar with the mapping process. Representatives each then map the same new subset of courses/sessions separately and meet to compare maps. If there is sufficient agreement, they divide up and map the remaining courses/sessions separately. Otherwise, the process repeats until they achieve sufficient agreement. Once agreement is reached and independent mapping begins, representatives may meet to discuss any cases for which the mapping is uncertain.

Step 3: Collate maps for all courses/sessions and conduct a "strengths and gaps" analysis by looking across the maps to identify a) how students are already being prepared for SOC practice, and b) gaps in SOC preparation. Years in which an SOC subcompetency is never or rarely addressed are a good starting point for considering enhancing SOC instruction.

Optional Steps:

- Program representatives may consider mapping the courses/sessions at an even more granular level by indicating if learning outcomes that align with SOC subcompetencies target knowledge, skills, or attribute/behaviors. This information can provide a more nuanced understanding of how each SOC subcompetency is developed and can help inform decisions about how/where to enhance SOC instruction.
- Gathering information from multiple key players may increase the usefulness of the mapping process for understanding the program's current SOC preparation (Harden, 2001). For example, program representatives may consider:
  - asking instructors and other interested parties to review and expand on the course/session maps. For example, for courses/sessions identified as addressing SOC subcompetencies, instructors can provide information on how the SOC-related learning outcomes are assessed and taught.
  - collecting input from students on which courses/sessions they perceive as developing their confidence and skill in the SOC subcompetencies.

Figure 1. Steps of the curriculum mapping process.

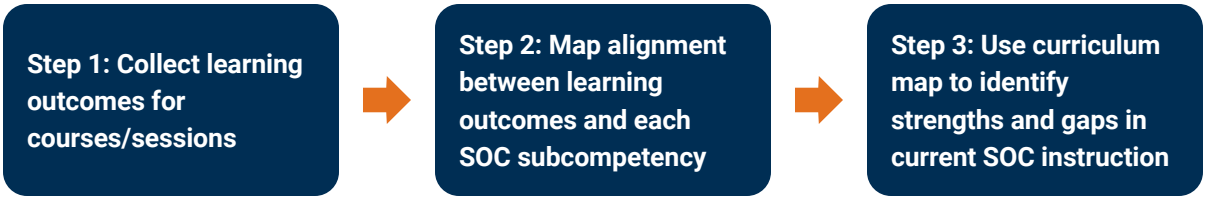

Figure 2. Template for mapping each course/session's learning outcomes against the eight SOC subcompetencies.

			COURSE/SESSION NUMBER: Course/Session Description		
			Learning Outcomes: • Learning Outcome 1 • Learning Outcome 2 • Learning Outcome 3		
		Spectrum of Care (SOC) Subcompetencies	**Please put an X for all the subcompetencies that align with at least one of the learning outcomes listed above.** Please err on the side of being inclusive. If you are really not sure, please put "Unsure."	**Please put an X for all the subcompetencies that are addressed in the course/session but are NOT specifically mentioned in any of the learning outcomes listed above.** Please err on the side of being inclusive. If you are really not sure, please put "Unsure."	**Notes/Comments**
Domain 1: Clinical Reasoning and Decision-Making	**CBVE Competency: 1.3 Creates and adjusts a diagnostic and/or treatment plan based on available evidence**	**SOC Subcompetency 1.3.5: Integrates information about the patient with client circumstances to identify a range of appropriate care options and to adjust the care plan.**			
	CBVE Competency 1.4: Incorporates animal welfare, client expectations, and economic considerations into the diagnostic or treatment plan	**SOC Subcompetency 1.4.4: Offers a range of care options that are tailored to the unique circumstances of each patient and client.**			
		SOC Subcompetency 1.4.5: Facilitates client decision-making regarding care by presenting the costs, risks, benefits, and evidence-base of care options.			
CBVE Domain 3: Animal Population Care and Management	**CBVE Competency 3.1: Applies population management principles in compliance with legal regulations and economic realities**	**SOC Subcompetency 3.1.5: Provides a range of appropriate care options for animal populations that considers animal welfare, lifestyle, economics, societal interests (e.g. food animal industry, animal activism) and public and environmental health concerns.**			
CBVE Domain 7: Professionalism and Professional Identity	**CBVE Competency 7.3: Reflects on personal actions and uses feedback to plan improvement**	**SOC Subcompetency 7.3.4: Acknowledges and considers the context of previous care decisions made by colleagues and clients.**			
		SOC Subcompetency 7.3.5: Reflects on one's own professional identity in relation to providing a spectrum of care.			
	CBVE Competency 7.4: Engages in self-directed learning	**SOC Subcompetency 7.4.4: Pursues opportunities to expand skill set to offer a broader range of care options.**			
CBVE Domain 8: Financial and Practice Management	**CBVE Competency 8.1: Weighs financial factors in personal and business decision-making**	**SOC Subcompetency 8.1.4: Provides a range of care and payment options in a manner that fosters financial viability of the practice and a positive working environment.**			
Please use this space to list any learning outcomes from the course/session that are specific to SOC but do not align with any SOC subcompetencies:					

Table 1. Instructions and FAQs accompanying the course/session mapping template.

INSTRUCTIONS

Complete the mapping template for each course/session you want to map to the SOC Education Model. In this form, you are asked to:

1. Put an X for all the subcompetencies that align with at least one of the course/session learning outcomes. Please err on the side of being inclusive. If you are not sure, please put "Unsure."
2. Put an X for all the subcompetencies that are addressed in the course/session (e.g., based on course/session description) but are NOT specifically mentioned in any of the course/session learning outcomes. Please err on the side of being inclusive. If you are not sure, please put "Unsure."
3. At the end of the list of SOC subcompetencies, there is an area to list any course/session learning outcomes that are specific to SOC but do not align with any SOC subcompetencies.

NOTE: The subcompetencies presented here are specific to being prepared for SOC practice, i.e., being able to offer a range of evidence-based care options tailored to clients' and patients' unique circumstances. These subcompetencies are not meant to capture all the expected outcomes for Day One ready graduates, as described in the AAVMC Competency-Based Veterinary Education (CBVE) Framework. Instead, they align with competencies and domains of the AAVMC CBVE Framework, as shown in the SOC Education Model. The Model also includes learning outcomes that provide examples of knowledge, skills, and attributes/behaviors that make up each SOC subcompetency.

FREQUENTLY ASKED QUESTIONS

1. How do I map a course/session that I do not teach?

We recognize that mapping a course or session that you do not teach may be challenging. To prepare for the mapping process, collect the titles, numbers, descriptions, and learning outcomes for all the courses/sessions to be mapped and enter this information into the mapping template. Then, for each course/session, use the first column to map *only* the alignment between what is written in the learning outcomes and the SOC subcompetencies. Please err on the side of being inclusive without overly interpreting the learning outcomes. This ensures that all courses/sessions are mapped consistently, regardless of whether the instructor is mapping the course.

After mapping the learning objectives, use the second column to capture any additional information about the alignment between the course/session and the SOC subcompetencies. For example, you may want to note alignment based on information provided in the course description. You may also have prior knowledge about the alignment between the course/session content and the SOC subcompetencies based on observations of the course/session, conversations with the instructor, etc. Information documented in this column is typically not included in data analysis and reporting, but can be used to inform conversations and decision-making about specific courses/sessions.

2. How do I know if a course/session learning outcome aligns with an SOC subcompetency?

Course/session learning outcomes that align with an SOC subcompetency aim to develop knowledge, skills, and attributes/behaviors that are necessary to perform the SOC ability described in the subcompetency. Please err on the side of being inclusive to provide a comprehensive understanding of how each SOC subcompetency is developed.

If you are not sure about whether an outcome aligns with an SOC subcompetency, please review the SOC Education Model for examples of knowledge, skill, and attribute/behavior outcomes for each SOC subcompetency. If you are still not sure, you can put "Unsure" in the cell for the SOC subcompetency.

3. Should I indicate which course/session learning outcomes align with each SOC subcompetency?

As long as at least one course/session learning outcome aligns with the SOC subcompetency, you can put an X in the cell for that subcompetency. If it is helpful for you to keep track of the specific outcomes, please use the Notes/Comments column.

4. Can multiple course/session learning outcomes align with the same SOC subcompetency?

Yes, this is likely to occur since course/session learning outcomes are typically written at a more granular level than competencies or subcompetencies.

5. Should I put multiple X's in a cell if more than one course/session learning outcome aligns with an SOC subcompetency?

No. Please put just one X in the cell for an SOC subcompetency if at least one course/session learning outcome aligns with that subcompetency.

6. Can one course/session learning outcome align with multiple SOC subcompetencies?

Yes, this may occur if the course/session learning outcome is written broadly.

7. I know that an SOC subcompetency is addressed in the course/session, but none of the course/session learning outcomes align with that SOC subcompetency. What do I do?

Please use the second column to indicate any SOC subcompetencies that are addressed in the course/session but are NOT specifically mentioned in any of the course/session learning outcomes.

8. An SOC subcompetency is addressed in the course/session description, but none of the course/session learning outcomes align with that SOC subcompetency. What do I do?

Please use the second column to indicate any SOC subcompetencies that are addressed in the course/session description but are NOT specifically mentioned in any of the course/session learning outcomes.

Recommended Citation

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Fingland, R. B., Stone, L. R., Read, E. K., & Moore, R. M. (2021). Preparing veterinary students for excellence in general practice: Building confidence and competence by focusing on spectrum of care. *Journal of the American Veterinary Medical Association*, *259*(5), 463–470. **https://doi.org/10.2460/javma.259.5.463**

Harden, R. M. (2001). AMEE Guide No. 21: Curriculum mapping: A tool for transparent and authentic teaching and learning. *Medical Teacher*, *23*(2), 123–137. **https://doi.org/10.1080/01421590120036547**

Harden, R. M., & Stamper, N. (1999). What is a spiral curriculum? *Medical Teacher*, *21*(2), 141–143. **https://doi.org/10.1080/01421599979752**

May, S. A., & Silva-Fletcher, A. (2015). Scaffolded active learning: Nine pedagogical principles for building a modern veterinary curriculum. *Journal of Veterinary Medical Education*, *42*(4), 332–339. **https://doi.org/10.3138/jvme.0415-063R**

PLANNING

Anticipate Challenges

Rather than waiting to see what challenges emerge during the implementation phase of curricular change, take time in the planning stage to anticipate challenges. What barriers and bottlenecks might arise as you pursue spectrum of care (SOC) curricular change, and how might you overcome them?

To anticipate challenges, engage with key players broadly. Seek out those in support of your proposed curricular changes, as well as cynics and critics. Engaging in these difficult dialogues with colleagues early on will ensure you can incorporate their diverse perspectives into your curricular change plans. You can work with these key players to cocreate solutions to any barriers that might arise.

Featured Resources

Anticipated Challenges and Potential Solutions to SOC Curricular Change

Identifies common barriers and suggested solutions to consider when making SOC curricular changes.

SOC Common Misconceptions Q&As

Insights from experts in the veterinary profession that can help address concerns about SOC preparation and practice.

Anticipated Challenges and Potential Solutions to Spectrum of Care Curricular Change

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Stacy A. Semevolos, *Oregon State University*

When making curricular changes to an already full and complex veterinary education program, you will certainly face some challenges. Below, we identify common barriers and suggested solutions for you to consider when exploring ways to enhance spectrum of care (SOC) preparation within your program. While you will also want to work with your institution's key players to identify program-specific challenges, the list of challenges below with their corresponding potential solutions will give you a useful starting point for what to expect as you navigate SOC curricular change.

At the end of the document, **Table 1** presents helpful and unhelpful concepts for navigating common challenges with enhancing SOC preparation.

CURRICULUM FRAMEWORK CHALLENGES

Challenge: Curricular change is hard

Possible Solutions: It is! The Navigating SOC Curricular Change flowcharts may help you here. Try to identify some short-term easy wins that benefit students and faculty across the curriculum as well as planning for longer-term change. Probably the most important factor is widespread faculty buy-in as to the importance of SOC—be clear on your vision (check out the SOC Education Model and Vision-Setting Reflection Template to help). Implementing new ways of teaching is unsettling and time-consuming—be clear on what resources are available, and have a plan and time frame for design, consultation, approval, and implementation of curricular change.

Selected Resources and References:
SOC curricular change resources featured in *Enhancing Spectrum of Care Preparation in Veterinary Education Programs: Implementation Strategies Guide*

Challenge: Faculty are unfamiliar with SOC.

Possible Solutions:

- The SOC Education Model is aligned with the AAVMC Competency-Based Veterinary Education (CBVE) Framework, which is familiar to many educators and can be used to support preparation.
- A shared understanding of SOC is critical. If SOC is misinterpreted as "less than gold standard" or "substandard" care, getting buy-in from faculty can be tricky. Promoting SOC at all opportunities as well as using SOCI resources, individual stories, and the evidence base can create transformative moments for colleagues. Identify the SOC champions within your communities (both primary care and specialist, as well as nonclinical colleagues) to help support the change process.

Selected Resources and References:
SOC Educational Model featured in *Enhancing spectrum of care preparation in veterinary education programs: Implementation strategies guide*

Challenge: Curricula are already full—how do we "add in" SOC content?

Possible Solutions:

- It's critical to balance discipline-specific content alongside SOC principles and options in an integrated manner. Ideally, an SOC ethos is integrated across the curriculum, which requires widespread faculty engagement. There may be room for significant reductions in depth or breadth of teaching in discipline-specific content. Areas to be streamlined can be identified through curricular mapping. Inclusion of primary care colleagues in discipline-specific teaching teams and curriculum review teams can help ensure day-one readiness and SOC relevance of content.
- Consider a shift away from traditional lecture formats. Decreasing time spent on information delivery and adding opportunities for application may improve efficiency of learning. For example:

- Using flipped classroom approaches to provide content to students, followed by team-taught case discussions providing both primary care and specialist perspectives.
- Using small group–facilitated case-based learning approaches to give students frequent opportunities to discuss SOC aspects of cases, and develop some comfort with uncertainty.

Selected Resources and References:

Matthew, S. M., Schoenfeld-Tacher, R. M., Danielson, J. A., & Warman, S. M. (2019). Flipped classroom use in veterinary education: A multinational survey of faculty experiences. *Journal of Veterinary Medical Education*, *46*(1), 97–107. **https://doi.org/10.3138/jvme.0517-058r1**

Thistlethwaite, J. E., Davies, D., Ekeocha, S., Kidd, J. M., MacDougall, C., Matthews, P., Purkis, J., & Clay, D. (2012). The effectiveness of case-based learning in health professional education. A BEME systematic review: BEME Guide No. 23. *Medical Teacher*, *34*(6), e421–e444. **https://doi.org/10.3109/0142159x.2012.680939**

FACULTY CHALLENGES

Challenge: Specialists and primary care educators work in different teams.

Possible Solutions: Supporting collaboration is fundamental to ensuring SOC ethos in a curriculum. Recognizing and valuing colleagues' perspectives and experiences is essential. Institutions should foster a nonjudgmental, curious culture in which everyone is open to identifying ways to enhance an SOC ethos within the curriculum—in such a culture, primary care and specialist colleagues can collaborate on the development and review of teaching resources. Heavy caseloads might mean that different teams rarely interact—curriculum development away-days and team-building exercises can help break down barriers, as can facilitating discussions at an individual level to review material.

Selected Resources and References:

O'Shaughnessy, S. E., Gould, L., Miles, A. C., Sellers, E. R., Squire, L. S., & Warman, S. (2023). Enhancing primary care learning in a referral hospital setting: Introducing veterinary clinical demonstrators. *Journal of Veterinary Medical Education*, *51*(2), 274–282. **https://doi.org/10.3138/jvme-2022-0143**

Challenge: Specialists have limited primary care experience.

Possible Solutions: Many specialists have experience across a relatively limited range of the care spectrum, determined by both their preselected referral client population and a disciplinary focus on single body systems.

Specialist faculty in teaching hospitals are passionate about their discipline and all that it offers, and dedicated to their students. Many specialists will have focused on specialty training immediately following graduation, with limited or no experience of primary care, and will naturally have a strong motivation to offer advanced diagnostics and treatment options. While all clinicians practice across a spectrum, the range of this spectrum in tertiary referral is likely to be biased towards the more advanced options. Without primary care experience, specialists find it challenging to authentically discuss wider SOC options with students. It is important that other options are framed not as compromise or substandard, but as appropriate to cases in different situations. Primary care practitioners have expertise that should be acknowledged in navigating SOC decisions. Team teaching approaches, in both the classroom and clinics, can be helpful here, drawing on the expertise of primary care and specialist colleagues.

Challenge: House officers may have limited primary care experience and be focused on future specialization.

Possible Solutions: House officers (interns and residents) play a major role in teaching students in hospital settings. They will have varied levels of primary care experience, and many will be focused on future specialization. It is thus essential that house officers be trained in SOC principles and encouraged to discuss options with students in a nonjudgmental way. In some situations, particularly if they have substantial primary care experience, they may be ideally placed to lead on aspects of SOC teaching.

Challenge: SOC approaches can initially conflict with personal motivations and values.

Possible Solutions: For clinicians who have built careers around training students while providing advanced diagnostic and treatment options, SOC may be perceived as a challenge to their professional identity. There is some useful work suggesting that veterinarians tend to develop either an academic-focused or challenge-focused identity (Armitage-Chan & May, 2018). Veterinarians with an academic-focused identity are driven by a desire to establish a diagnosis and offer textbook treatment options; anything other than this may create an identity dissonance.

Those with a challenge-focused identity thrive on building relationships and problem-solving to find a solution that works best for the individual situation—values that are important if they are to thrive in the primary care setting. Acknowledging different motivations and values, and recognizing the values that each veterinarian brings to their role, can help faculty understand why they may find concepts of SOC initially challenging to their sense of identity.

Selected Resources and References:
Armitage-Chan, E., & May, S. A. (2018). Identity, environment and mental wellbeing in the veterinary profession. *Veterinary Record*, *183*(2), 68. **https://doi.org/10.1136/vr.104724**

Armitage-Chan, E. (2020). "I wish I was someone else": Complexities in identity formation and professional wellbeing in veterinary surgeons. *Veterinary Record*, *187*(3), 113. **https://doi.org/10.1136/vr.105482**

Challenge: We don't have many primary care clinicians on faculty.

Possible Solutions:

- Recruiting primary care practitioners to the team can be a great way of promoting an ethos of SOC and valuing primary care expertise. Even relatively recent graduates can be quickly taught to provide consistent training in clinical skills and clinical reasoning, and integrate into hospital teams to help ensure day-one readiness and an SOC approach to cases. Experienced practitioners can contribute to team teaching approaches, bringing a wealth of expertise to contextualizing discipline-specific material.
- Program leaders should consider how best to integrate practitioners into developing content—primary care clinicians can teach aspects of many disciplines (beyond the traditional topics of preventative medicine and communication skills). Practitioners can also provide a valuable perspective on existing teaching materials, helping specialist staff benchmark appropriate levels of depth and breadth of content. To ensure a positive SOC ethos across the curriculum, there must be trust and respect within the team, and programs must recruit practitioners who have a passion for teaching and primary care practice.
- There are several ways to work with external practitioners, who are essential key players as future employers.
    - Context is critical in SOC training. Supplementing rotations in on-site hospitals (where available) with rotations in off-site practices will broaden students' learning opportunities. Many institutions are already working with external educational partners to provide placements, with effective training and quality assurance.
    - Many practitioners are motivated to give back to the profession, and recognize the importance of their input. Identifying individuals who can act as curriculum consultants and be actively involved in curriculum development can be crucial. Practitioners are busy people; financial compensation, Continuing Professional Development credits, or other recognition may be necessary.

Selected Resources and References:
O'Shaughnessy, S. E., Gould, L., Miles, A. C., Sellers, E. R., Squire, L. S., & Warman, S. (2023). Enhancing primary care learning in a referral hospital setting: Introducing veterinary clinical demonstrators. *Journal of Veterinary Medical Education*, *51*(2), 274–282. **https://doi.org/10.3138/jvme-2022-0143**

Challenge: Primary care educators are not in tenure-track leadership positions.

Possible Solutions: Traditional models of veterinary education privilege research and specialist clinical qualifications and experience over primary care expertise and experience. With an increasing focus on employability across the higher education sector, some institutions are including a focus on primary care workplace experience (clinical and leadership) within their faculty recruitment strategies. Adopting such a strategy, and ensuring that primary care clinicians have opportunities to apply for leadership roles within the teaching governance structure (and beyond), can support institutions' goals to focus on SOC within curricula, and more widely within schools. Appoint primary care faculty to committee membership and leadership roles (e.g., course and curriculum committees, director of professional or clinical skills programs).

STUDENT CHALLENGES

Challenge: Students like certainty; SOC is inherently uncertain.

Possible Solutions: It is important to balance factual content delivery with exploration of SOC decision-making starting early in the curriculum. Students need a firm foundation of essential knowledge on which to build skills in adapting plans to different situations.

Selected Resources and References:
Archer, R. M. (2022). Expert veterinarians should be trained expertly: Fostering the development of adaptive expertise in veterinary students through faculty development for veterinary educators. *Journal of Veterinary Medical Education*, *50*(4), 385–391. **https://doi.org/10.3138/jvme-2022-0018**

Challenge: Students see their teachers as role models; our teachers are mainly specialists.

Possible Solutions: Students want to emulate their role models, which can mean that following graduation they want to replicate the high levels of diagnostics and treatment offered in referral hospitals.

If an SOC ethos is embraced throughout the curriculum and actively discussed by specialists, this can help normalize SOC decision-making. However, the "what-if" discussions that happen

in referral settings are not the same learning experience as the reality of primary care decision-making. Program leaders should ensure that students have access to primary care role models, either internally or externally, throughout the curriculum.

Selected Resources and References:

Roder, C. A., & May, S. A. (2017). The hidden curriculum of veterinary education: Mediators and moderators of its effects. *Journal of Veterinary Medical Education*, *44*(3), 542–551. **https://doi.org/10.3138/jvme.0416-082**

LOGISTICAL CHALLENGES

Challenge: Placing students in primary care will be expensive or otherwise challenging.

Possible Solutions:

- Context matters—but increasing student exposure to different workplace contexts is expensive. Many institutions already provide shelter medicine, community practice, primary care, or charity placements. The differences between each of these should be acknowledged, as well as the differences between academic primary care practices (which often have long consultation times and close proximity to referral specialists and facilities) and stand-alone primary care practices. Exposure to as wide a range of practices as possible is helpful, with appropriate training for practitioner colleagues in teaching and assessment.
- Program leaders should consider costs of external placements (teaching fees, student travel, accommodation, costs associated with quality assurance visits and training).
- If increasing time spent in primary care is not feasible, another approach is to bring primary care clinicians into the referral hospital environment to support day-one readiness—for example, through rounds, practical sessions, case discussions, and drop-in sessions for students.

Selected Resources and References:

Hunt, J. A., Moses, M. S., Wisnieski, L., & Anderson, S. L. (2024). Student experience and clinicians' longitudinal evaluations demonstrate diversity of experience and achievement of day one competency in a distributed model of clinical education: A mixed methods study. *Journal of Veterinary Medical Education*, e20230104. **https://doi.org/10.3138/jvme-2023-0104**

Saxena, A., Lawrence, K., Desanghere, L., Smith-Windsor, T., White, G., Florizone, D., McGartland, S., & Stobart, K. (2018). Challenges, success factors and pitfalls: Implementation of distributed medical education. *Medical Education*, *52*(11), 1167–1177. **https://doi.org/10.1111/medu.13715**

Challenge: Clinicians are too busy or lack the expertise to conduct SOC discussions.

Possible Solutions:

- Economic pressures in primary care and referral hospitals means that finding time for teaching can be difficult, and the client population is increasingly filtered as fewer pet owners can afford the costs of care. Employing primary care clinicians to support learning in the hospital, and more widely within the curriculum, can optimize income generation by specialists while promoting the value of primary care perspectives.
- Training colleagues in time-efficient ways of optimizing learning opportunities for students, particularly in longer placements, can enable students to become integral and valued members of the team.

Selected Resources and References:

Archer, R. M. (2022). Expert veterinarians should be trained expertly: Fostering the development of adaptive expertise in veterinary students through faculty development for veterinary educators. *Journal of Veterinary Medical Education*, *50*(4), 385–391. **https://doi.org/10.3138/jvme-2022-0018**

UNHELPFUL CONCEPTS

Challenge: There are some common concepts in clinical training that warrant reflection as to the role they play in veterinary education, and the impact they may be having on our students.

"Gold standard": The concept of "gold standard" care as the only acceptable option is troublesome, and unachievable in many settings. While it is important that students learn logical, evidence-based approaches to case diagnosis and management, they must also develop confidence in contextualizing plans to the individual situation, without feeling that this is substandard or inappropriate.

Selected Resources and References:

Skipper, A., Gray, C., Serlin, R., O'Neill, D., Elwood, C., & Davidson, J. (2021). "Gold standard care" is an unhelpful term. *Veterinary Record*, *189*(8), 331. **https://doi.org/10.1002/vetr.1113**

Englar, R. E. (2023). The gold standard, standards of care, and spectrum of care: An evolving approach to diagnostic medicine. In R. E. Englar & S. M. Dial (Eds.), *Low-cost veterinary clinical diagnostics* (pp. 1–8), Wiley. **https://doi.org/10.1002/9781119714521.ch1**

Englar, R. E. (2023). Recasting the gold standard–part I of II: Communicating healthcare options along a continuum of care. *Journal of Feline Medicine and Surgery*, *25*(12), 1098612X 231215639. **https://doi.org/10.1177/1098612X231209855**

Englar, R. E. (2023). Recasting the gold standard–part II of II: Communicating healthcare options along a continuum of care. *Journal of Feline Medicine and Surgery*, *25*(12), 1098612X231215639. https://doi.org/10.1177/1098612x231215639

Minimum database: An assumption that a minimum database is required for every case immediately limits access to care, and means that students may struggle to prioritize and make decisions in the absence of these data.

Misinterpretations of evidence-based veterinary medicine (EBVM): "Evidence-based decisions combine clinical expertise with the most relevant and best available scientific evidence whilst taking into account each patient and owners' individual circumstances" ("What Is EBVM," n.d.)—but the second part of that definition can easily be overlooked. The limited evidence base for many aspects of veterinary care also presents challenges.

Selected Resources and References:

RCVS Knowledge. (n.d.). *What is EBVM?* https://knowledge.rcvs.org.uk/evidence-based-veterinary-medicine/what-is-ebvm/

Table 1. Helpful and unhelpful concepts for navigating common challenges with enhancing SOC preparation.

HELPFUL CONCEPT	DEFINITION / DESCRIPTION	SELECTED RESOURCES / REFERENCES
Contextualized care	Contextualized care "encompasses everything in play during any caregiving interaction, including the people, patient(s) and wider environment (e.g., personal, clinical, professional, organisational, economic, geographical, societal, political, ethical, ecological)" (Skipper et al., 2024, p. 117). These contextual factors should not be regarded as "non-financial 'costs'; rather, they explicitly or covertly shape all veterinary activities in both positive and negative ways....Contextualised veterinary care describes an approach that is intentionally shaped by the aims, knowledge, experiences and circumstances of individual animal caregivers and veterinary professionals, acknowledging the wider contexts of each clinical encounter, to deliver the most appropriate welfare-focused care for every animal" (Skipper et al., 2024, p.117). The term "spectrum of care" has emerged to address similar concerns within the profession.	Skipper, A., O'Neill, D., Serlin, R., Davidson, J., Elwood, C., & Gray C. (2024) Contextualised care: Faddish or foundational? *Veterinary Record, 195*(3), 117. https://doi.org/10.1002/vetr.4567
Teaching for challenge	Embracing teaching and learning approaches that help students problem-solve in a holistic manner, remaining curious and nonjudgemental about client circumstances and contextualizing care plans.	
Adaptive expertise	"The ability to shift from efficient, or routine, practice to innovative practice as needed to work through the presented problems" (Archer, 2023, p. 385).	Archer, R. M. (2022). Expert veterinarians should be trained expertly: Fostering the development of adaptive expertise in veterinary students through faculty development for veterinary educators. *Journal of Veterinary Medical Education*, *50*(4), 385–391. https://doi.org/10.3138/jvme-2022-0018
Professional identity formation	Considering whether we are role-modeling and nurturing academic-focused or challenge-focused professional identities in our students, and the effect of this modeling on future well-being.	Armitage-Chan, E., & May, S. A. (2018). Identity, environment and mental wellbeing in the veterinary profession. *Veterinary Record*, *183*(2), 68–68. https://doi.org/10.1136/vr.104724 Armitage-Chan, E. (2020). "I wish I was someone else": Complexities in identity formation and professional wellbeing in veterinary surgeons. *Veterinary Record*, *187*(3), 1–10. https://doi.org/10.1136/vr.105482
Professional reasoning	The professional reasoning framework positions clinical reasoning as a small part of professional reasoning, and is a valuable tool in student and faculty training.	Armitage-Chan, E. (2020). Best practice in supporting professional identity formation: Use of a professional reasoning framework. *Journal of Veterinary Medical Education*, *47*(2), 125 –136. https://doi.org/10.3138/jvme.0218-019r

Role modeling and hidden curriculum	Are faculty role modeling SOC concepts and approaches, in both classroom and clinic settings?	Roder, C. A., & May, S. A. (2017). The hidden curriculum of veterinary education: Mediators and moderators of its effects. *Journal of Veterinary Medical Education*, *44*(3), 542–551. **https://doi.org/10.3138/jvme.0416-082** Meindl, A. G., Roth, I. G., & Gonzalez, S. E. (2019). Never apologize for wanting to be "just" a general practitioner. *Journal of the American Veterinary Medical Association*, *255*(8), 891–893. **https://doi.org/10.2460/javma.255.8.891**
Context matters	Many specialists will have "what-if" conversations with their students, supporting the development of SOC skills. However, in the referral context, these conversations remain hypothetical. Experiencing primary care decision-making across a range of settings creates opportunities that cannot be replicated in more specialist settings.	

UNHELPFUL CONCEPT	DEFINITION / DESCRIPTION	SELECTED RESOURCES / REFERENCES
"Gold standard"	The concept of "gold standard" care as the only acceptable option is troublesome, and unachievable in many settings. While students must learn logical, evidence-based approaches to case diagnosis and management, they must also develop confidence in contextualizing plans to the individual situation, without feeling that this is substandard or inappropriate.	Skipper, A., Gray, C., Serlin, R., O'Neill, D., Elwood, C., & Davidson, J. (2021). "Gold standard care" is an unhelpful term. *Veterinary Record*, *189*(8), 331. **https://doi.org/10.1002/vetr.1113** Englar, R. E. (2023). The gold standard, standards of care, and spectrum of care: An evolving approach to diagnostic medicine. In R. E. Englar & S. M. Dial (Eds.), *Low-cost veterinary clinical diagnostics* (pp. 1–8), Wiley. **https://doi.org/10.1002/9781119714521.ch1** Englar, R. E. (2023a). Recasting the gold standard—part I of II: Delineating healthcare options across a continuum of care. *Journal of Feline Medicine and Surgery, 25*(12), 1098612X231209855. **https://doi.org/10.1177/1098612X231209855** Englar, R. E. (2023b). Recasting the gold standard—part II of II: Communicating healthcare options along a continuum of care. *Journal of Feline Medicine and Surgery, 25*(12), 1098612X231215639. **https://doi.org/10.1177/1098612x231215639**
Minimum database	An assumption that a minimum database is required for every case immediately limits access to care, and means that students may struggle to prioritize and make decisions in this absence of these data.	
Misinterpretations of evidence-based veterinary medicine (EBVM)	"Evidence-based decisions combine clinical expertise with the most relevant and best available scientific evidence whilst taking into account each patient and owners' individual circumstances" ("What Is EBVM, n.d.)—but the second part of that definition can easily be overlooked. The limited evidence for many aspects of care also presents a challenge.	RCVS Knowledge. (n.d.). *What is EBVM?* **https://knowledge.rcvs.org.uk/evidence-based-veterinary-medicine/what-is-ebvm/**

RECOMMENDED CITATION

Warman, S. M., Banse, H. E., & Semevolos, S. A. (2025). Anticipated challenges and potential solutions to spectrum of care curricular change. In AAVMC Spectrum of Care Initiative Task Force, H. N. Fedesco, & J. E. Brodsky (Eds.), *Enhancing spectrum of care preparation in veterinary education programs: An implementation strategies guide* (pp. 53–58). American Association of Veterinary Medical Colleges. **https://doi.org/10.17605/OSF.IO/AHWQE**

Spectrum of Care Common Misconceptions Q&As

A common barrier to any change initiative is misunderstandings about the proposed change. To help address some of the misconceptions around spectrum of care (SOC) preparation and practice, we conducted Q&As with experts responding to some common SOC-related questions. These Q&As can provide faculty and program leaders with language to help address concerns about SOC instruction and practice and help students, colleagues, and the profession understand the potential benefits of making SOC curricular changes.

Featured Resources

Financial implications of spectrum of care practice for individual practitioners, practices, and clients

By Matthew Salois

Alignment of spectrum of care practice with expectations of veterinary regulatory boards

By Elizabeth Venit

Alignment of spectrum of care preparation with the AVMA Council on Education curriculum requirements

By Sheila W. Allen

Financial Implications of Spectrum of Care Practice for Individual Practitioners, Practices, and Clients

Matthew Salois, *Veterinary Management Groups*

Question 1: What are the potential short- and long-term financial implications of spectrum of care (SOC) practice for individual practitioners, practices, and clients? How does offering a spectrum of care influence client retention and lifetime care, and what are the long-term financial implications for veterinary practices? For example, is there a price point at which clients are less likely to return for future visits?

Using an SOC strategy in veterinary offices can cause financial fluctuation in the near term. Revenue can initially decline when veterinarians start expanding the range of care options offered beyond the most expensive and cutting-edge diagnostics and treatments. However, over time, offering a broader range of evidence-based care options tailored to clients' and patients' unique circumstances can improve compliance and promote more regular visits, leading to an upward revenue trend. Providing several service levels that vary in scope and price also helps practitioners and practices be more flexible in their income sources and serve a broader range of clients. For example, a basic service level may be entirely preventative and focus only on wellness plans. This approach might cater to low-income or price-sensitive pet owners who otherwise might not seek any sort of veterinary care. At the other end, a premium service level could offer high-end, concierge-type service with options such as regenerative care, endoscopic procedures, and CT scans. An SOC strategy can draw a larger clientele by offering a range of reasonably priced solutions that fit various financial circumstances. While shifting to an SOC approach might involve expenses related to staff training and client marketing of the new service level, the possibility of more appointments resulting from improved customer accessibility can eventually balance these costs (Brown et al., 2021).

In the long term, an SOC strategy offers clients and practitioners financial advantages. The main benefit for veterinary offices is improved client loyalty and retention. Offering a range of service choices will help clinics increase client satisfaction, resulting in improved retention rates and generating more steady, long-term income sources. Clients and patients gain from enhanced access to care and improved health outcomes.

Lifetime treatment adherence and client retention are strongly influenced by an SOC model. Offering several care choices helps clients feel like they have options and can balance the cost of care, hence motivating them to come back for their next visit. Better pet health outcomes are likely when regular visits follow preventative care and treatment recommendations.

Price sensitivity is a crucial factor, as clients are less likely to seek care for their pet, or return for follow-up or future problems, if the price is perceived as unaffordable or too high.

Question 2: Do existing research or case studies in veterinary medicine or other healthcare fields provide evidence of these financial implications? If not, what are the most pressing research questions and what is needed to address them?

Based on findings of the existing literature (see short list below), an SOC approach can offer numerous financial benefits for veterinary practices by enhancing client satisfaction, retention, and lifetime value.

- Brown, C. R., Garrett, L. D., Gilles, W. K., Houlihan, K. E., McCobb, E., Pailler, S., Putnam, H., Scarlett, J. L., Treglia, L., Watson, B., & Wietsma, H. T. (2021). Spectrum of care: More than treatment options. *Journal of the American Veterinary Medical Association, 259*(7), 712–717. **https://doi.org/10.2460/javma.259.7.712**

- Stull, J. W., Shelby, J. A., Bonnett, B. N., Block, G., Budsberg, S. C., Dean, R. S., Dicks, M. R., Forsgren, B. W., Golab, G. C., Hamil, J. A., Kass, P. H., King, L. J., Lund, E. M., Maddux, M. L., McFarland, J. M., McKenzie, B. A., Moyer, M. R., Olson, P. M., & Wittum, T. E. (2018). Barriers and next steps to providing a spectrum of effective health care to companion animals. *Journal of the American Veterinary Medical Association*, *253*(11), 1386–1389. **https://doi.org/10.2460/javma.253.11.1386**
- Fingland, R. B., Stone, L. R., Read, E. K., & Moore, R. M. (2021). Preparing veterinary students for excellence in general practice: Building confidence and competence by focusing on spectrum of care. *Journal of the American Veterinary Medical Association*, *259*(5), 463–470. **https://doi.org/10.2460/javma.259.5.463**

Research gaps remain, however. Further study is needed to establish the price level at which customers are less likely to return. Knowing this will help practices set competitive and sustainable pricing. Studies should also customize the SOC approach to various practice sizes and specializations to meet regional and other client requirements and demographics (Stull et al., 2018).

These research limitations could be addressed by studies that look at the actual effect of an SOC approach on financial success, client retention, and treatment adherence. Ideally, these studies would take a panel or longitudinal approach to assess effects over time. Additional surveys and other quantitative and qualitative assessments of client preferences and attitudes towards SOC-type solutions are also warranted.

Question 3a: What are the characteristics of a profitable SOC practice?

Several things are needed for a practice to be profitable under an SOC approach.

If the SOC approach to care is to be successful, resources must be used effectively and efficiently. Practices can make the most of their resources by using diagnostics and treatments that have been shown to work and are also affordable. This strategy helps cut down on unnecessary costs while improving patient outcomes (Brown et al., 2021).

Candid conversations with clients about the benefits and costs of different care options are essential. These experiences will create trust, increase the likelihood of clients making informed decisions about their pets' health and well-being, support a more solid veterinary–client–patient relationship, and enhance the practice's reputation in the community.

Ultimately, it's about prioritizing client needs. This means getting to know clients well enough to know their needs and actively involving them in care, diagnosis, and treatment plans.

Question 3b: How can veterinary practices implement a spectrum of care in a way that ensures continued profitability?

Intentional staff training comes first. To provide clients with alternatives, veterinary personnel must stay current on developments in clinical practices in addition to available alternative treatments and care models. Without this knowledge, veterinary team members would not be equipped to communicate about and provide patients with a complete spectrum of diagnostic and treatment options.

Second, customers must be educated about the SOC approach and its benefits through effective communication strategies. Success stories and consumer testimonials build trust and value and will go a long way toward showing the virtues of an SOC approach to care. This communication must, again, be balanced by the costs and benefits of considering a spectrum of care.

Lastly, as with any aspect of a successful veterinary practice, a sound budget and a successful pricing strategy are critical. The range of options veterinarians offer clients is perhaps most simply defined by price, but a wide range of other resource and values aspects informs client choice. Pricing must be calibrated to the budget while also being perceived as fair and competitive by clients.

Question 3c: What costs should practices consider as part of this implementation?

Implementing an SOC strategy entails several expenses. Broadly, one can expect additional costs associated with staff training and education, technology deployment (e.g., telemedicine), and marketing and communicating to clients. In addition, other administrative costs may arise, such as the provision of payment plans or client financing options.

Question 4: What strategies can individual practitioners use to convince corporate and private veterinary practices of the financial profitability of SOC practice?

Individual practitioners who want to adopt SOC must convince corporate and private veterinary offices of its financial viability. This need may arise, for example, if the practicing veterinarian is working on a commission basis and does not want to be financially disadvantaged for offering a range of care and treatment options for their clients and patients. A convincing argument may be made in numerous ways.

First, they must present statistics and case studies. Practitioners might demonstrate how other practices have embraced SOC and increased client base and income via various service offerings. Currently, little published data exist to demonstrate this impact. The profession must prioritize the development of this evidence.

Financial estimates and modeling matter too. Financial models should highlight SOC's long-term revenue growth potential and include scenarios that compare conventional care model revenue to SOC revenue, stressing the higher lifetime value of committed customers with flexible care alternatives. Researchers should focus additional efforts on showing how different SOC models might elevate revenue and earnings, especially from the perspective of individual practitioners who are compensated on a production basis.

The industry would also benefit from a better understanding of how an SOC approach to care improves the operational efficiency of the practice. Ideally, a true SOC approach will leverage technology, such as telemedicine, and possibly lower administrative costs, while also bolstering client engagement and adherence. Again, more research is needed in this area.

Finally, the field should address the research gaps previously mentioned regarding optimal price levels that are tailored to practice differences.

RECOMMENDED CITATION

Salois, M. (2025). Financial implications of spectrum of care practice for individual practitioners, practices, and clients. In AAVMC Spectrum of Care Initiative Task Force, H. N. Fedesco, & J. E. Brodsky (Eds.), *Enhancing spectrum of care preparation in veterinary education programs: An implementation strategies guide* (pp. 60–62). American Association of Veterinary Medical Colleges. **https://doi.org/10.17605/OSF.IO/AHWQE**

Alignment of Spectrum of Care Practice with Expectations of Veterinary Regulatory Boards

Elizabeth Venit, *American Association of Veterinary State Boards*

Question 1: How do the principles of spectrum of care align with general expectations of veterinary regulatory boards?

The principles of the spectrum of care (SOC) align closely with the general expectations of veterinary regulatory boards of North America, albeit with some nuances in emphasis and interpretation. They align in the following ways:

1) Standard of Practice:

Spectrum of Care: The SOC emphasizes providing care that is appropriate for the individual patient's needs and context, considering factors such as the animal's condition, client preferences, abilities, and goals, and their available resources, as well as veterinarian and veterinary practice factors.

Regulatory Boards: Veterinary regulatory boards require veterinarians to adhere to a standard of practice that is reasonable and appropriate within the profession. The standard of practice in veterinary medicine can vary by the specific regulatory board. Some boards describe a minimum standard of practice as the expected level of care, skill, and diligence that an average competent veterinarian would provide under similar circumstances.

Others define substandard practice as "a violation of general duty, consisting of negligence or failure to exercise due care." In still other cases, standards are set by veterinary practice acts or regulations established by a jurisdiction's veterinary board. When reviewing a complaint against a veterinarian, the regulatory board reviews the available facts of the case to determine if this standard of practice was met.

In making such determinations, veterinary boards do not compare the veterinarian's care to a specific "gold standard" or set of best practices. They assume instead that veterinarians should provide a full range of options to the client, including advanced diagnostics or treatments, or referral to a specialist, if applicable. In this approach to care, veterinarians should offer less expensive, less invasive, or less advanced options that still might provide an acceptable outcome. They should avoid recommending options that would be considered negligence or substandard care, but equally avoid unnecessary diagnostic or treatment recommendations that fail to take the client's wishes into consideration.

Practitioners may sometimes encounter cases in which the client wishes to pursue a course of action that could be considered substandard care for their animal. In this instance, the practitioner must document what was offered to, and declined by, the client. These concerns must be relayed to the client in a courteous and professional way.

2) Client Consent and Client Communication:

Spectrum of Care: Client consent is a fundamental aspect of the SOC, involving communication with clients about care options, risks, benefits, and costs, to enable them to make informed decisions. Effective communication with clients is crucial to ensure understanding, adherence, and mutual decision-making regarding the care of their animals.

Regulatory Boards: Veterinarians should obtain client consent before initiating treatments or procedures. Consent is not a one-time process but should be revisited throughout the patient's care, especially when new information becomes available or when the patient's clinical status changes.

Veterinary regulatory boards emphasize clear and effective client communication as a professional responsibility. In addition to providing evidence of a client's decision, documentation of consent is essential to demonstrating transparency and ethical practice. However, it is important to note that a signed consent form does not *replace* communication, but rather documents that it has occurred.

Good client communication includes providing sufficient information about risks, benefits, and alternatives so that the owner or caregiver can make an informed decision. It also includes providing an understandable explanation of diagnoses, treatments, and prognoses, and addressing client concerns in a way that they can understand. The client must be informed of the

full range of options available, encompassing both current best practices and the minimum acceptable level of care, as well as options in between.

Clear and complete client communication aligns with the SOC because the client's goals are integral to the decision-making process. The veterinarian must ensure that substandard care is not recommended. If a client opts for a path that an average veterinarian in similar circumstances would consider to be substandard care, the client must be informed of the poor prognosis that would be expected from such a path. This conversation must be noted in the medical record or otherwise permanently documented. Allowing an animal to suffer is not an option, but absent this, doing nothing may be a suitable option for the client. If the client is unwilling or unable to pursue a path forward and the animal is suffering, euthanasia should be offered.

3) Medical Recordkeeping:

Spectrum of Care: Documentation serves to comprehensively record patient information, treatment plans, and client interactions, supporting continuity of care and accountability.

Regulatory Boards: Boards require accurate, timely, and complete documentation of all aspects of patient care. Medical records should record the patient status, exam findings, and diagnostic results and their implications for the animal's health, as well as rationale for treatment decisions, client consent and other communications, client instructions, and follow-up care.

This documentation helps demonstrate that the veterinarian has met the standard of practice, provides a medical history, and allows for continuity of care. Many regulatory boards detail specific requirements for medical records within their veterinary practice act. Veterinarians should consult this document to ensure that the requirements are met.

Veterinarians who integrate the principles of the SOC into their practice are well-positioned to meet regulatory expectations while providing care for their patients and supporting the client's needs for their animal.

Question 2: Where can new graduates learn more about their regulatory board's requirements for medical recordkeeping, client communication, and minimum standards of practice?

New graduates can learn more about their regulatory board's requirements through several avenues:

- **Regulatory Veterinary Board**: All veterinary boards have websites that provide information on regulations, practice acts, and guidelines specific to that jurisdiction. These websites often include sections dedicated to veterinary practice standards, frequently asked questions, guidance documents, and resources for new graduates. They may have regular newsletters that provide best practice examples. Some regulatory boards discuss disciplinary cases or regulatory matters in their public board meetings. Licensees interested in learning more about their jurisdiction's statutes and regulations or examples of disciplinary cases should consider attending a board meeting. These are listed on the veterinary board's website.
- **Veterinary Practice Act**: In most veterinary regulatory boards in North America, the veterinary practice act is the primary document outlining the legal requirements and standards for veterinary practice within that jurisdiction. It is comprised of the statutes and regulations that outline the practice of veterinary medicine and veterinary technology within that jurisdiction. New graduates should familiarize themselves with their jurisdiction's veterinary practice act to understand the specific regulations pertaining to recordkeeping, client communication, handling and storage of controlled substances and other drugs, and practice standards, among many other elements of practice. Often, the jurisdiction's pharmacy board will have separate additional requirements for veterinarians.
- **Continuing Education**: Continuing education courses and conferences also offer opportunities to learn about regulatory updates and best practices in veterinary medicine. Veterinary boards or veterinary medical associations may be able to recommend specific courses for interested veterinarians in topics such as medical recordkeeping, client communication, and veterinary law and ethics. Finally, research on evidence-based medicine published in peer-reviewed journals or presented at conferences may provide novel and viable methods for treating conditions along the SOC.

By using these resources, new graduates can gain a comprehensive understanding of their regulatory board's requirements for medical recordkeeping, client communication, and minimum standards of practice. Staying informed and proactive in meeting these requirements is essential for maintaining compliance and providing quality care.

Question 3: What are the best practices for documentation to avoid disciplinary action?

To avoid disciplinary action and ensure compliance with regulatory standards, veterinarians should follow best practices for documentation, while also considering specific requirements outlined in veterinary practice acts. Many regulatory boards provide requirements for medical recordkeeping in their statutes and regulations. For prescription and controlled substance documentation, veterinarians should also consult with their respective pharmacy boards.

- **Accuracy and Completeness**: Ensure that all medical records are accurate, complete, and legible. Document patient history to include the presenting complaint or reason, physical examination, diagnostic results and interpretation, treatments administered, and client communications. Consult with the

veterinary practice act to ensure that all required information is recorded.

- **Timeliness**: Record information promptly after each patient interaction or procedure to avoid inaccuracies or omissions that could lead to regulatory issues. Some regulatory boards require medical records to be completed within a specific time period. These requirements will be in the statutes or regulations.
- **Client Consent**: Document client consent for treatments, surgeries, or procedures. Include details about discussions with clients regarding risks, benefits, and alternatives, as well as their consent or refusal. Notify clients that they can withdraw consent or refusal at any time or work with the veterinarian to change the plan.
- **Follow-Up and Progress Notes**: Document follow-up appointments, patient progress, discharge information, and any changes in treatment plan to demonstrate continuity of care.
- **Communication With Clients**: Record client communications, instructions given, and client adherence. Include discussions about treatment options, prognosis, and financial considerations.
- **Record Retention**: Maintain records for the required period as specified by regulations or practice guidelines. Ensure that records are securely stored and protected against loss, theft, or unauthorized access.
- **Confidentiality**: Absent a legal exemption, ensure that client and patient records are maintained according to ethical and regulatory confidentiality requirements
- **Training and Compliance**: Ensure that all staff members involved in recordkeeping are trained in proper documentation practices.
- **Consultation or Referrals**: Document consultations with colleagues or specialists, as well as recommendations received, and decisions made based on these consultations. Document referrals offered to the client and any follow-up steps.

In addition to these best practices, veterinarians should familiarize themselves with the specific requirements outlined in their veterinary practice act. Adhering to these regulatory standards not only helps veterinarians avoid disciplinary action but also supports quality patient care, client communication, and professional accountability. Regular updates and reviews of state regulations ensure ongoing compliance and mitigate risks associated with recordkeeping.

RECOMMENDED CITATION

Venit, E. (2025). Alignment of spectrum of care practice with expectations of veterinary regulatory boards. In AAVMC Spectrum of Care Initiative Task Force, H. N. Fedesco, & J. E. Brodsky (Eds.), *Enhancing spectrum of care preparation in veterinary education programs: An implementation strategies guide* (pp. 63–65). American Association of Veterinary Medical Colleges. **https://doi.org/10.17605/OSF.IO/AHWQE**

Alignment of Spectrum of Care Preparation with the AVMA Council on Education Curriculum Requirements

Sheila W. Allen, *American Association of Veterinary Medical Colleges*

Question 1. Meeting the AVMA Council on Education (COE) Standard 9 requirements may involve including nonspecialist/non–board-certified instructors to deliver aspects of the curriculum directly related to spectrum of care (SOC) practice. How could this affect a college of veterinary medicine's accreditation review and standing?

The Standards allow for instructors who are not board-certified to deliver parts of the curriculum. This is stated in Standard 8 Faculty as follows:

> Instruction in the pre-clinical and clinical setting must be delivered by faculty who have education, training, expertise, professional development, or a combination thereof, appropriate for the subject matter. (AVMA Council on Education, 2025, p. 26)

The self-study guidelines for Standard 8 Faculty provide an opportunity for the college to describe an instructor's qualifications for teaching subject matter if it is not obvious from their credentials. The full self-study guidelines are available as part of the accreditation policies and procedures of the AVMA COE (2025). Please see 8.14. An excerpt from that document is below:

> For subject areas in which a faculty member does not have advanced training (such as board certification or an advanced degree) in their area of curricular responsibility, describe qualifications, including education, training, experience, professional development, or a combination thereof, for subject matter expertise in the area the specific faculty member provides education in a narrative. (AVMA Council on Education, 2025, pp. 114-115)

Question 2. What evidence is needed to document that a range of treatment options are included in the curriculum? What evidence will be acceptable to document that those outcomes have been achieved?

Curriculum map, tagged objectives, specific courses or course content, lecture notes, or rotation opportunities are all acceptable pieces of evidence. Site teams rely on syllabi and lists of learning objectives for courses to demonstrate that considering a range of treatment options is emphasized in the preclinical and clinical curriculum. Furthermore, the college is expected to give a presentation on its curriculum during the site visit. During that presentation and discussion, program leaders can highlight the steps the college takes to include SOC considerations in multiple areas of the curriculum. With regard to documenting outcomes, an example would be requiring students to include multiple treatment options in their diagnostic plans for patients seen on clinical rotations.

RECOMMENDED CITATION

Allen, S. W. (2025). Alignment of spectrum of care preparation with the AVMA Council on Education curriculum requirements. In AAVMC Spectrum of Care Initiative Task Force, H. N. Fedesco, & J. E. Brodsky (Eds.), *Enhancing spectrum of care preparation in veterinary education programs: An implementation strategies guide* (p. 66). American Association of Veterinary Medical Colleges. **https://doi.org/10.17605/OSF.IO/AHWQE**

REFERENCES

AVMA Council on Education Council. (2025). *Accreditation policies and procedures of the AVMA Council on Education January 2025*. **https://www.avma.org/education/center-for-veterinary-accreditation/accreditation-policies-and-procedures-avma-council-education-coe**

IMPLEMENTING

Enact Plan

As you enter the implementing phase of spectrum of care (SOC) curricular change, it is time to put your plan into action. Keep interested parties informed by regularly communicating your strategy, purpose, and timeline. In higher education's decentralized and fragmented environment, with its constant flow of individuals in and out of key decision-making roles, maintaining frequent, ongoing dialogue with interested parties is crucial. Use this communication to identify and leverage partnerships, which can help smooth the implementation process. Collaboratively troubleshoot any issues that arise, and anticipate challenges as a natural part of the transition.

The SOC Education Model features SOC subcompetencies with example course-level learning outcomes. The AAVMC Spectrum of Care Initiative Task Force gathered resources to support faculty and program representatives in identifying assessments and learning experiences that align with these subcompetencies.

Featured Resources

SOC Assessment Tools and Instructional Methods

Presents example assessment tools and instructional methods that align with the example course-level learning outcomes for the SOC subcompetencies.

SOC Learning Experiences

Features descriptions of example learning experiences from veterinary educators. These examples showcase innovative approaches in classrooms, labs, clinics, and beyond, helping students develop at least one of the eight SOC subcompetencies.

Teaching SOC Case Management

Features case examples illustrating how to use and teach an SOC approach for managing common diagnoses of canine patients seen in primary care. Examples were developed by primary care educators with input from primary care practitioners outside of academia.

Spectrum of Care Assessment Tools and Instructional Methods

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While competencies can be used to determine program-level outcomes for a curriculum, course-level learning outcomes (LOs) target students' development of the knowledge, skills, and attributes/behaviors that comprise these competencies. When considering how to integrate spectrum of care (SOC)-specific LOs into a course, educators must use instructional methods that align with these LOs and assessment tools that provide evidence that students have achieved them. However, it can be daunting to identify appropriate instructional methods and assessment tools for different types of LOs.

Table 1 presents example SOC assessment tools and instructional methods that align with the example course-level LOs for the SOC subcompetencies in the SOC Education Model. Each assessment tool and instructional method specifies the type of LO that falls into each of the three categories: knowledge LOs (K), skill LOs (S), and attribute/behavior LOs (A).

Information about most of the assessment tools can be found in the AAVMC Competency-Based Veterinary Education (CBVE) Toolkit (**https://cbve.org/assessment-toolkit**; Foreman et al., 2024).

Most instructional methods and their definitions were adopted from the Association of American Medical Colleges' MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016) or McCoy et al. (2018). **Table 2** presents the definitions and sources for the instructional methods.

Table 1. Example course-level LOs, assessment tools, and instructional methods for the SOC subcompetencies in the SOC Education Model.

SOC SUBCOMPETENCY	EXAMPLE LEARNING OUTCOMES	EXAMPLE ASSESSMENT TOOLS	EXAMPLE INSTRUCTIONAL METHODS
CBVE DOMAIN 1: CLINICAL REASONING AND DECISION-MAKING CBVE Competency 1.3: Creates and adjusts a diagnostic and/or treatment plan based on available evidence **SOC Subcompetency 1.3.5: Integrates information about the patient with client circumstances to identify a range of appropriate care options and to adjust the care plan**	Knowledge LO 1. Lists the client-specific factors (e.g., expectations, goals, resources, abilities, beliefs) that may impact the client's ability or desire to pursue care options for their animal. Skill LO 1. Elicits information from the client about factors that may affect their ability or motivation to pursue care for their animal. Skill LO 2. Explains the importance of a follow-up plan to the client. Skill LO 3. Uses follow-up plan to determine treatment response and client perspectives and adapts as appropriate. Attribute/Behavior LO 1. Demonstrates empathy and respect during discussions relating to client circumstances. Attribute/Behavior LO 2. Demonstrates active listening to identify and clarify factors that may affect the client's ability or motivation to pursue care for their animal.	• Workplace-based assessment (e.g., Mini-CEX, entrustment supervision scale, in-training evaluation report [ITER]) (S) • Short-answer question (K, S) • Communication objective structured clinical examination (OSCE) (S, A)	• Case discussion (small groups) (K) • Lecture (K) • Patient presentation—faculty (S) • Patient presentation—learners (S) • Patient-oriented problem-solving (POPS) cases (S) • Preceptorship/externship/ practicum (S) • Reflection (A) • Case-based learning (K, S) • Problem-based learning (K, S) • Client interview or panel (S, A) • Simulated client lab (S, A) • Clinical experience (K, S, A)
CBVE DOMAIN 1: CLINICAL REASONING AND DECISION-MAKING CBVE Competency 1.4: Incorporates animal welfare, client expectations, and economic considerations into the diagnostic or treatment plan **Subcompetency 1.4.4: Offers a range of care options that are tailored to the unique circumstances of each patient and client**	Knowledge LO 1. Explains why offering a range of care options is appropriate and integral to veterinary practice. Knowledge LO 2. Explains the terms "spectrum of care", "contextualized care", "standard of care", and "gold standard care". Knowledge LO 3. Gives examples of how offering a range of care options can impact a client's ability to attain care for their animal. Knowledge LO 4. Draws on scientific evidence to identify examples in which offering a range of care options improved patient outcomes and reduced euthanasia or surrender of animals. Knowledge LO 5. Identifies and weighs the practitioner and practice factors that impact the range of care options for a patient. Skill LO 1. Prioritizes and tailors care options to align with the client's circumstances and expectations. Attribute/Behavior LO 1. Demonstrates patience and flexibility to identify multiple care options that align with patient needs and client factors, despite uncertainty.	• Multiple-choice question (K) • Short-answer question (K) • Essay question (K) • Essay with reference to highest level available evidence material (K) • Short-answer written reflection (A) • Extended matching question (K, S) • Workplace-based assessment (e.g., Mini-CEX, entrustment supervision scale, ITER) (S, A)	• Lecture (K) • Formative quiz (K) • Interactive module (K) • Case discussion (small groups) (K) • Reflection (K) • Research instruction (learning to think critically and synthesize information) (K) • Clinically integrative puzzle (S) • Clinical presentation (CP) scheme (S) • Case-based learning (K, S) • Problem-based learning (K, S) • Simulated client lab (S, A) • Clinical experience (K, S, A) • Preceptorship/externship/ practicum (K, S, A)

SOC SUBCOMPETENCY	EXAMPLE LEARNING OUTCOMES	EXAMPLE ASSESSMENT TOOLS	EXAMPLE INSTRUCTIONAL METHODS
CBVE DOMAIN 1: CLINICAL REASONING AND DECISION-MAKING CBVE Competency 1.4: Incorporates animal welfare, client expectations, and economic considerations into the diagnostic or treatment plan **SOC Subcompetency 1.4.5: Facilitates client decision-making regarding care by presenting the costs, risks, benefits, and evidence-base of care options**	Knowledge LO 1. Defines the characteristics of "shared decision-making". Knowledge LO 2. Explains the costs, benefits, limitations, uncertainties, and care-giving responsibilities associated with a range of care options, including not proceeding with further veterinary care. Skill LO 1. Invites a discussion of which care options may best align with a client's expectations and capabilities. Skill LO 2. Communicates aspects of care options that may have an uncertain outcome, steps that will be taken to reduce uncertainty, and that plans for care may change as new information becomes available. Attribute/Behavior LO 1. Demonstrates confidence and empathy when responding to clients' requests regarding alternative options. Attribute/Behavior LO 2. Demonstrates regard for client's autonomy with decision-making when choosing which care options align most closely with the client's capabilities. Attribute/Behavior LO 3. Demonstrates willingness to execute additional care options beyond the initial recommended care plan.	• Short-answer question (K) • Essay question (K) • OSCE (S) • Short-answer written reflection (A) • Communication OSCE (A) • Workplace-based assessment (e.g., Mini-CEX, entrustment supervision scale, ITER) (S, A)	• Formative quiz (K) • Interactive module (K) • Lecture (K) • Patient presentation—faculty (A) • Case-based learning (K, S) • Problem-based learning (K, S) • Reflection (K, A) • Ward rounds (S, A) • Client interview or panel (S, A) • Clinical experience (K, S, A) • Simulated client lab (K, S, A)
CBVE DOMAIN 3: ANIMAL POPULATION CARE AND MANAGEMENT CBVE Competency 3.1: Applies population management principles in compliance with legal regulations and economic realities **SOC Subcompetency 3.1.5: Provides a range of appropriate care options for animal populations that considers animal welfare, lifestyle, economics, societal interests (e.g., food animal industry, animal activism), and public and environmental health concerns**	Knowledge LO 1. Describes and prioritizes the factors (e.g., animal welfare, societal, economic, public health, and environmental) that influence decisions regarding care for animal populations. Knowledge LO 2. Lists the client-specific factors (e.g., expectations, goals, resources, abilities, beliefs) that may impact the client's ability or desire to pursue care options for their animal. Skill LO 1. Identifies, assesses, and prioritizes factors that may impact the range of care options offered for an animal population. Skill LO 2. Designs feasible care plans that integrate population and client-specific factors. Attribute/Behavior LO 1. Demonstrates empathy and respect during discussions with colleagues and clients relating to care of animal populations, including food production animals.	• Short-answer written reflection (K) • Capstone assignment (e.g., producing reports for farmers) (S) • Short-answer question (case-based) (S) • Capstone assignment (e.g., producing client- or public-facing communications) (A) • Communication OSCE (A) • Short-answer question (K, S) • Essay question (K, S) • Workplace-based assessment (e.g., Mini-CEX, entrustment supervision scale, ITER) (S, A)	• Team-based learning (K) • Client interview or panel (K) • Concept mapping (K) • Interactive module (K) • Lecture (K) • Capstone assignment (S) • Preceptorship/externship/ • practicum (S) • Case-based learning (K, S) • Problem-based learning (K, S) • Roleplay (K, A) • Mentorship (K, A) • Clinical experience (S, A) • Discussion (small groups) (K, S, A) • Simulate client lab (K, S, A)

SOC SUBCOMPETENCY	EXAMPLE LEARNING OUTCOMES	EXAMPLE ASSESSMENT TOOLS	EXAMPLE INSTRUCTIONAL METHODS
CBVE DOMAIN 7: PROFESSIONALISM AND PROFESSIONAL IDENTITY CBVE Competency 7.3: Reflects on personal actions and uses feedback to plan improvement **SOC Subcompetency 7.3.4: Acknowledges and considers the context of previous care decisions made by colleagues and clients**	Knowledge LO 1. Identifies strategies to discuss client and patient factors that may have influenced decision-making. Knowledge LO 2. Lists strategies for guiding client conversations around previous care decisions. Skill LO 1. Elicits whether a client's expectations were met during previous care, and if not, why. Skill LO 2. Maintains appropriate verbal and nonverbal communication composure when reviewing previous care options. Attribute/Behavior LO 1. Demonstrates humility and understanding regarding prior options given and decisions made.	• Short-answer question (K) • Workplace-based assessment (e.g., Mini-CEX, entrustment supervision scale, ITER) (S) • Short-answer written reflection (A) • Communication OSCE (K, S, A)	• Lecture (K) • Reflection (K) • Simulated client lab (S) • Client presentation—faculty (S) • Patient presentation—learners (S) • Preceptorship/externship/ practicum (S) • Case-based learning (K, S) • Problem-based learning (K, S) • Simulated client lab (K, S) • Discussion (small groups) (K, A) • Clinical experience (S, A) • Roleplay (K, S, A)
CBVE DOMAIN 7: PROFESSIONALISM AND PROFESSIONAL IDENTITY CBVE Competency 7.3: Reflects on personal actions and uses feedback to plan improvement **SOC Subcompetency 7.3.5: Reflects on one's own professional identity in relation to providing a spectrum of care**	Knowledge LO 1. Explains how a veterinarian's personal values, goals, and prior experiences can influence care decisions. Skill LO 1. Reflects on own values, goals, and prior experiences in relation to care decisions.	• Short-answer question (K) • Short-answer written reflection (K, S)	• Lecture with interactive component (K) • Audience response (S) • Rounds (e.g., ward, grand, or conference) (S) • Case-based learning (K, S) • Reflection (K, S) • Discussion (small groups) (K, S)
CBVE DOMAIN 7: PROFESSIONALISM AND PROFESSIONAL IDENTITY CBVE Competency 7.4: Engages in self-directed learning **SOC Subcompetency 7.4.4: Pursues opportunities to expand skill set to offer a broader range of care options**	Skill LO 1. Recognizes own limitations and next steps for development. Skill LO 2. Identifies training opportunities to undertake next steps for development of new or unfamiliar skills (technical and non-technical) and procedures, with appropriate support.	• Short-answer written reflection (S) • Workplace-based assessment (e.g., entrustment supervision scale, ITER) (S)	• Case-based learning (S) • Concept mapping (S) • Clinical experience (S) • Preceptorship/externship/ practicum (S) • Reflection (S)

SOC SUBCOMPETENCY	EXAMPLE LEARNING OUTCOMES	EXAMPLE ASSESSMENT TOOLS	EXAMPLE INSTRUCTIONAL METHODS
CBVE DOMAIN 8: FINANCIAL AND PRACTICE MANAGEMENT CBVE Competency 8.1: Weighs financial factors in personal and business decision-making **SOC Subcompetency 8.1.4: Provides a range of care and payment options in a manner that fosters financial viability of the practice and a positive working environment**	Knowledge LO 1. Identifies components of the practice's profits and losses as they relate to providing care options. Knowledge LO 2. Explains how providing a range of care and payment options can have a financial impact on the practice. Knowledge LO 3. Explains how providing a range of care and payment options can have an impact on the practice team and management processes. Knowledge LO 4. Explains the importance of optimizing the workload allocation among the practice team to ensure financial viability.	• Short-answer question (K)	• Lecture (e.g., using a hospital income/losses spreadsheet) (K) • Case-based learning with costs for treatment options (K)

Table 2. Definitions and sources for instructional methods.

INSTRUCTIONAL METHOD	DEFINITION/MORE INFORMATION	SOURCE
Audience Response	Individual students respond to application of skill questions via an audience response system (ARS) or poll	McCoy et al. (2018)
Case-Based Instruction/ Learning	Use of patient cases (actual or theoretical) to stimulate discussion, questioning, problem solving, and reasoning on issues pertaining to the basic sciences and clinical disciplines (can be used with groups of different sizes depending on the instructional context)	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Clinical Experience—Ambulatory (e.g., large animal, equine, food animal, and/or population medicine)	Practical experience in patient care and health-related services carried out in an ambulatory/outpatient setting where actual patients [or groups of patients] are studied and treatment and/or counseling is given	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Clinical Experience—Hospital or clinic setting (e.g., primary or specialty care at a teaching hospital or practice)	Practical experience in patient care and health-related services carried out in a hospital or clinic setting where actual patients are studied and treatment, counseling, or both are given	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Clinical Integrative Puzzle	A puzzle in which learners collaborate to match patient presentations to the best options for prevention, diagnostics, diagnoses, treatment recommendations, or prognoses	Boller et al. (2021)
Concept Mapping	Technique that allows learners to organize and represent knowledge in an explicit interconnected network. Linkages between concepts are explored to make apparent connections that are not usually seen.	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Conference or Grand Rounds Led by Faculty, Residents, or Learners	Departmentally driven and/or content-specific presentations by clinical faculty/professionals, residents, and/or learners before a large group of other professionals and/or learners	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Clinical Presentation (CP) Scheme	An interactive exercise that encourages learners to make clinical decisions following a clinical presentation scheme (flowchart or decision tree)	McCoy et al. (2018)
Discussion, Small Group [≤12]	An exchange (oral or written) of opinions, observations, or ideas among a small group (12 or fewer participants), usually to analyze, clarify, or reach conclusions about issues, questions, or problems	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Formative Quizzes	The lesson includes a set of questions bundled together into a quiz, which allows learners to self-assess	McCoy et al. (2018)
Interactive Module	An electronic lesson, often audiovisual, that requires students to complete interactivities	McCoy et al. (2018)
Interview or panel	Students interview standardized patients, caregivers, or experts to practice interviewing and history-taking skills	McCoy et al. (2018)
Lecture	An instruction or verbal discourse by a speaker before a large group of learners	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Mentorship	The provision of guidance, direction, and support by senior professionals to learners or more junior professionals	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Patient Presentation—Faculty	A presentation by faculty to faculty, residents, or other learners of patient findings, history and physical, differential diagnosis, treatment plan, etc.	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Patient Presentation—Learner	A presentation by a learner or learners to faculty, residents, or other learners on patient findings, history and physical, differential diagnosis, treatment plan, etc.	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)

INSTRUCTIONAL METHOD	DEFINITION/MORE INFORMATION	SOURCE
Patient-Oriented Problem Solving (POPS) Cases	A 4-part simulated case scenario wherein each student, working in a group of 4, has the solution to his or her part and must guide the others through a mutual solution	McCoy et al. (2018)
Preceptorship/Externship/ Practicum	Practical experience in medical and health-related services wherein the professionally trained learner works under the supervision of an established professional in the field	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Problem-Based Learning (PBL)	The use of carefully selected and designed patient cases that demand the learner acquire critical knowledge, problem-solving proficiency, self-directed learning strategies, and team participation skills as those needed in professional practice	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Reflection	Examination by the learner of their personal experiences of a learning event, including the cognitive, emotional, and affective aspects; the use of these past experiences in combination with objective information to inform present clinical decision-making and problem-solving; reflecting on patients' and clients' experiences using narrative and storytelling	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Research	Short-term or sustained participation in research.	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Roleplay/Dramatization	Adopting or performing the role or activities of another individual	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Simulation	A method used to replace or amplify real patient and client encounters with scenarios designed to replicate real healthcare situations, using lifelike mannequins, physical models, standardized patients, or computers	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Team-Based Learning (TBL)	A form of collaborative learning that follows a specific sequence of individual work, group work, and immediate feedback; engages learners in learning activities within a small group that works independently in classes with high learner/faculty ratios	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)
Capstone Assignment/ Project	A project completed over the course of a clinical rotation that may focus on medical, business, professional development, or another aspect of veterinary practice	Not available.
Ward Rounds	An instructional session conducted in an actual clinical setting, using real patients or patient cases to demonstrate procedures or clinical skills, illustrate clinical reasoning and problem-solving, or stimulate discussion and analytical thinking among a group of learners	MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016)

Note: Most definitions for instructional methods were adopted from the Association of American Medical Colleges' MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee (2016) or McCoy et al. (2018). Any edits made for the veterinary medical education context are in blue. The MedBiquitous Standards are copyright (2024) of the Association of American Medical Colleges. All Rights Reserved. **http://www.medbiq.org**. Users of the AAMC MedBiquitous Standards are bound by their public license and terms of use, available at **https://www.medbiq.org/standards/medbiquitous-standards-public-license-and-terms-use**.

RECOMMENDED CITATION

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Spectrum of Care Learning Experiences

When revising or adding learning experiences to enhance students' preparation for spectrum of care (SOC) practice, you may benefit from the insights of colleagues who have already implemented different types of experiences in their programs. Learning from others can help you plan the logistics and anticipate potential challenges to implementing these experiences.

In this section, you will find detailed descriptions of example SOC learning experiences by veterinary educators showcasing innovative approaches they are already applying in the classroom, laboratory, clinics, and beyond to help students develop one or more of the eight SOC subcompetencies described in the SOC Education Model.

Featured Resources

WisCARES access to veterinary care, One Health clinical rotation

By Elizabeth E. Alvarez, Kelly Schultz, Jennifer Brooks, Simon Lygo-Baker, and Ruthanne Chun

Assessments that foster competence in spectrum of care

By Liz Armitage-Chan and Adrian Boswood

Spectrum of care longitudinal integrated clerkship

By Lauren A. Bernstein, Jennifer Glover, Lindsey Knox, Whitney Waldsmith, Debra Freedman, and Erin Burton

Navigating client preference for medical management of open pyometra in a canine patient: A communication exercise

By Ryane E. Englar and Teresa Graham Brett

A summary of "A unique spectrum of care tool provides a self-regulated learning opportunity and facilitates client communication"

By Ann Hohenhaus and David C. Provost

Using an on-demand, self-paced online course to facilitate a spectrum of care approach to practice

By Kristin Jankowski and Terry Spencer

A selection of additional resources on spectrum of care learning experiences

WisCARES Access to Veterinary Care, One Health Clinical Rotation

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SUMMARY

Wisconsin Companion Animal Resources, Education, and Social Services (WisCARES) is a University of Wisconsin program that provides basic veterinary medical care, housing support and advocacy, and other support services to pet owners who are low-income, currently experiencing or at risk of homelessness, or unable to pay for veterinary medical services needed to access housing.

WisCARES is a 2-week elective clinical rotation. It is designed to provide a practical, clinical experience, in which students take the lead on their cases by determining the diagnosis and treatment of general-practice preventative medicine and diseases of small animal species. The bulk of this rotation has a clinical emphasis and addresses cases through a spectrum of care (SOC) lens. Goals are building students' clinical diagnostic and surgical skills, communication skills, interdisciplinary teamwork, self-reflection, and cultural humility skills.

LEARNING OUTCOMES

DOMAIN OF COMPETENCE: Clinical Reasoning and Decision-Making

- Considers disease in context of whole animal and client.
- Presents a range of options to client.
- Considers euthanasia as a management option when appropriate.

DEMONSTRATES:

- Attends to patient welfare and client safety and comfort.
- Develops a financial estimate and obtains and documents informed consent.
- Uses clinical reasoning skills to integrate medical, ethical, legal, and economic factors as well as client desires to create a management/treatment plan.
- Explains treatment options to client and responds to questions.
- Discusses patient status and initial management plan (including euthanasia when warranted) with client and identifies client expectations.

ROUNDS AND ACTIVITIES:

- Access to care, SOC rounds
- Watch One Health video
- Reflective writing activity
- Social work rounds
- WisCARES access to care database activity

LEARNING EXPERIENCE DESCRIPTION

Wisconsin Companion Animal Resources, Education, and Social Services (WisCARES) is a University of Wisconsin program that provides basic veterinary medical care, housing support and advocacy, and other support services to Dane County pet owners who are low-income, currently experiencing or at risk of homelessness, or unable to pay for veterinary medical services needed for access to housing. The program focuses on keeping pets with their owners, preventing surrender to animal shelters, empowering people to care for their animals, providing housing resources, and aiding animals and their people in gaining access to the social support services and healthcare they need.

WisCARES is a 2-week elective clinical rotation at an Access to Care veterinary clinic. It is designed to provide a practical, clinical experience, in which students take the lead on their cases by determining the diagnosis and treatment of general-practice preventative medicine and diseases of small animal species. The bulk of this rotation has a clinical emphasis. Goals are building students' clinical diagnostic and surgical skills, communication skills, interdisciplinary teamwork, self-reflection, and cultural humility skills.

How Is WisCARES Different?

At WisCARES, we strive to provide a different sort of clinical experience for veterinary medical students—we want them to practice being doctors while still being supervised by a veterinarian! This means that students have primary case ownership of all their patients at WisCARES. There will always be a veterinarian on site to help support learners in developing their diagnostic and treatment plans.

Veterinarians discuss each case with students to check for comprehension of medical decision-making. This is also a time for students to relay any communication difficulties so we can discuss strategies for better adherence and comprehension on the client's part. Finally, veterinarians assist students in developing a plan that includes a spectrum of options and approve all final decisions around diagnostics and treatment. From there, the students guide the owners through decision-making, understanding diagnostic findings, and treatment plans. While heavily guided, students are not given all the answers.

This puts students in the driver's seat in a way that they are not otherwise accustomed to and helps them prepare to do this work on their own.

Veterinary Medical Appointments

The WisCARES clinic receives both scheduled and walk-in cases on Monday, Tuesday, Wednesday, and Friday. Typically, most students will oversee three to five cases a day, averaging about 1 hour per case (from intake to discharge). A patient check-in sheet will be prepared for all appointments and placed on the whiteboard in the treatment area. Students should focus on one appointment or patient at a time. Students will review patient medical records prior to greeting clients. Students will discuss the reason for the visit and obtain a patient history. Students will perform physical exams and curate a financial estimate and medical treatment plan, and then discuss with the veterinarian instructor.

Every patient must be examined by a veterinarian on-site. Once the case is discussed with a veterinarian and the client approves the plan and cost, it can be implemented. Students will perform as many of the tasks as possible (e.g., vaccination, blood draw, nail trim). If the patient is stressed, anxious, or aggressive, students are advised to consult with a technician or veterinarian to determine the best way to proceed prior to removing the patient from the exam room. The goal for each appointment is for the student to lead the case and be the sole contact point for the client (meaning that the veterinarian will not directly interact with the client). Students oversee coordinating care (including sedation protocols as needed) and ensure that all plan items are completed satisfactorily. They are also responsible for ensuring that the patient's condition (especially postoperatively or postsedation) is appropriate for discharge.

Surgery and Procedures

If a patient needs a surgical procedure, the student will be provided the opportunity to perform it. A veterinarian will assist the student for the duration of the procedure; however, the student should still prepare for the procedure as if they were going to perform it without instruction—using books, videos, and resources available to them to determine the plan and approach. On average, students perform one to two procedures while on the rotation and will always have veterinary support during surgical procedures.

All the Extras

A lot goes into management of a patient outside of an appointment—students will be asked to complete thorough medical records, monitor for incoming diagnostic results, adjust plans based on lab work, and update owners accordingly after consulting with a supervising veterinarian.

Patient Records (Responsibilities)

Each patient needs a brief medical record Subjective, Objective, Assessment, Plan (SOAP) completed by the end of the day. SOAPs should be completed as soon as possible.

The Learning Experience Delivery

The learning experience at WisCARES includes structured and unstructured components. As with many clinical teaching environments, the daily schedule includes morning rounds, followed by patient receiving and procedures, with a late afternoon wrap-up of the day. Veterinary medical topics during morning rounds include accessible care/SOC rounds, flea and tick rounds, and IDEXX case

rounds. Other morning rounds topics are intended to increase students' awareness of and reflection on the human side (both self and other) of veterinary medicine and include: social work rounds (week 1: social determinants of health and poverty; week 2: self-care), reflective writing rounds, and communication rounds (week 1: review of core skills with discussion about client interactions; week 2: discussion about client interactions and reflection on how they intentionally worked on one chosen skill since week 1).

The initial evidence from early studies suggests that this community-based veterinary medical setting provides students with a beneficial learning opportunity. Student feedback has been positive, with stated outcomes being increased self-confidence, communication, and case management skills, along with the value of mentorship and building a strong team (Alvarez et al., 2020; 2021; 2022). Leading cases gives students greater appreciation for the need to understand client backgrounds and challenges faced, leading to enhanced learning outcomes (Alvarez et al., 2020; 2021; 2022).

We have experienced few challenges in implementing this learning experience. We host annual WisCARES curriculum retreats during which we review student evaluations of the rotation and discuss what changes to make, including how to balance time spent receiving cases, surgery, and dentistry with time spent processing these experiences. Over the years we have developed and refined the daily schedule, consisting of clinical work as well as "rounds" sessions, and prioritized opportunities for intentional discussions and debriefing.

MORE INFORMATION ABOUT THIS LEARNING EXPERIENCE

Alvarez, E. E., Gilles, W. K., Lygo-Baker, S., & Chun, R. (2020). Teaching cultural humility and implicit bias to veterinary medical students: A review and recommendation for best practices. *Journal of Veterinary Medical Education*, *47*(1), 2–7. **https://doi.org/10.3138/jvme.1117-173r1**

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SOC SUBCOMPETENCIES

- SOC Subcompetency 1.3.5. Integrates information about the patient with client circumstances to identify a range of appropriate care options and adjust the care plan.
- SOC Subcompetency 1.4.4. Offers a range of care options that are tailored to the unique circumstances of each patient and client.
- SOC Subcompetency 1.4.5. Facilitates client decision-making regarding care by presenting the costs, risks, benefits, and evidence base of care options.
- SOC Subcompetency 3.1.5. Provides a range of appropriate care options for animal populations that considers animal welfare, lifestyle, economics, societal interests (e.g., food animal industry, animal activism), and public and environmental health concerns.
- SOC Subcompetency 7.3.4. Acknowledges and considers the context of previous care decisions made by colleagues and clients.
- SOC Subcompetency 7.3.5. Reflects on one's own professional identity in relation to providing a spectrum of care.
- SOC Subcompetency 7.4.4. Pursues opportunities to expand skill set to offer a broader range of care options.
- SOC Subcompetency 8.1.4. Provides a range of care and payment options in a manner that fosters financial viability of the practice and a positive working environment.

SPECIES

- Canine/feline
- Occasional pocket pets/exotics are also seen

AFFILIATED COURSE

- Small Animal WisCARES Rotation 623 (Dept #), 675 (Course #), 010 (Section #)

TIMING

- Preclinical and clinical curriculum
- Year 4
- The rotation is created for students in year 4; however, opportunities for students to shadow, sign up for 1-week selective experiences (year 1, 2, 3), and obtain student worker paid employment at WisCARES (throughout the school year and over the summers) allows for students throughout the curriculum (and pre-vet curriculum) to participate.

DURATION

- Two weeks; however, VM4 students can sign up to take the rotation for 1 week or for more than one 2-week rotation over their clinical year.

LOCATION

- Clinical
- Field

ESTIMATED COST

- WisCARES' annual operating budget, including staff salaries, building rental, and all operating expenses, is around $800,000. The clinic is funded through in-kind gifts from multiple industry partners, support from UW–Madison, revenue, and donations.

MATERIALS SHARING

- The reflective writing prompts, YouTube links in Canvas, and citations for the SOC standard of care papers are available upon request.

RECOMMENDED CITATION

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Assessments that Foster Competence in Spectrum of Care

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SUMMARY

Can we teach spectrum of care (SOC) competence if we don't assess it? Assessing for SOC requires more than questioning how to solve clinical problems alongside contextual factors (e.g., clients' beliefs, goals, and needs). Additional necessary competences include reflection and viewing practice as complex (multiple valid solutions that affect key players in different ways), not simple ("gold standard" answers). These are progressively developed, requiring an assessment approach that mirrors their progression. At the Royal Veterinary College (RVC) in London, SOC competences are assessed developmentally, using single best answer (e.g., multiple choice) when concepts are first introduced, then progressing to reflective essays, case reports, and SOC exam questions. Exam questions are designed to be resolved in multiple different ways, and for case reports and reflections, cases and experiences vary widely. Assessment criteria based on critical analysis rather than ideal answers represent one method of achieving assessment reliability.

LEARNING OUTCOMES

In combination, the assessments for the course are blueprinted to the following learning outcomes:

- Make decisions that balance the conflicting needs of the various key players in veterinary practice—patient, client, business, public, profession, society—based on the critical evaluation of current best evidence.
- Recognize that not all veterinarians will make the same decisions, and that even for an individual, decision-making will depend on context.
- Communicate effectively to achieve shared decision-making and successful implementation of decisions.
- Work effectively as a member of an interprofessional team to optimize the successful delivery of veterinary care.
- Predict the risks and challenges of negotiated decisions, monitor and reflect on outcomes, and make plans for managing follow-up care.
- Apply cultural sensitivity to develop diversity and inclusivity within professional problem-solving and decision-making.

LEARNING EXPERIENCE DESCRIPTION

Single best answer assessments (SBAAs) are valuable because of their feasibility: they provide a simple way to assess knowledge with an easily defined answer and enable rapid feedback to students.

However, SBAAs encourage the belief that there is always one ideal answer that applies to every patient regardless of context. Not only does this foster an assumption that the only valuable clinical approach is the "gold standard," it also inappropriately implies that clinical practice involves simple right/wrong decision-making. In reality, constructing a clinical plan is "an iterative, reflective process that requires synthesis of medical, ethical, legal, and economic factors, as well as knowledge of the strengths and limitations of the client, veterinarian, team and facilities" (Competency-Based Veterinary Education, 2024).

Open-ended assessments (OEAs) allow students to explore the different ways to solve a clinical problem and to explain how problem-solving is informed by contextual elements such as finances and clients' logistical limitations or cultural beliefs. OEAs include set exam questions, for which every student may answer the same question differently, and students' reflective essays, in which they explore their own experiences of situations that can be resolved or managed in different ways. For such assessments, rather than a standardized or "perfect" model answer, grading criteria must therefore allow for multiple different "correct" answers. Additional methods need to be applied to achieve examiner reliability when individual pieces of work may be very different.

For students, acquiring the necessary critical and contextual thinking for these assessments is a developmental process,

and the assessment approach should reflect this. When new content and concepts are first introduced, students will benefit from initially applying their content knowledge and practicing problem-solving using a simpler SBAA. Students are often more familiar with SBAA than OEA types; as more complex OEAs are introduced, instructors thus need to familiarize them with assessment criteria that are based not on the inclusion of factually correct information, but on the approach taken to resolve the scenario.

The assessment strategy within the RVC's BVetMed degree applies these principles in an assessment approach that builds SOC competence in stages. Early in the curriculum, SBAAs are used to assess foundational principles and ensure the requisite knowledge for more complex problem-solving. Students also write formative reflective essays; these provide early exposure to OEA formats, enable feedback on the critical application of theory to context, and familiarize them with assessment criteria.

During the latter years, the emphasis shifts to OEAs; instructors use a combination of summative reflective essays, reflective case reports, and unseen exam questions on SOC scenarios. Unseen exam questions are set questions delivered and answered under exam conditions that integrate clinical and contextual elements (an example is provided at the end of this section). A clinical scenario is presented, with initial grades awarded for demonstration of clinical reasoning. Authentic contextual information is provided within the question, which is intended to replicate common scenarios in general practice.

Examples may include clients having limited finances, lacking access to transport, or preferring "not to put their pet through a lot." The student is then typically asked to articulate how they would decide what to do, with the clinical scenarios structured such that euthanasia, a spectrum of clinical plans, or facilitation of clinical care (such as problem-solving travel logistics) may all represent valid solutions. Grades are awarded for students demonstrating ability to reason through various valid solutions, engaging with the needs of the significant key players, and articulating the way clinical plans would be discussed and negotiated with the client.

Reflective case reports are structured similarly, with the student selecting cases from their own experience. These in-course assignments initially prompt exploration of clinical reasoning, and then analysis of the influence of contextual factors, the ways that communication was used (e.g., to negotiate decision-making), and the impact of different perspectives on clinical care.

While this type of assignment inevitably increases grading load compared to SBAA formats, they are feasible if instructors judiciously apply assessments to focused high-stakes milestones, such as entry to rotations (summative, graded reflective essay) and entry to the profession (summative, graded integrated clinical and professional problem-solving). At other time points, instructors can assess case reports using a simplified version of the grading scheme (**Table 1**), rewarding critical analysis and contextual application of knowledge, but in a simplified "checkbox" format.

Some might argue that grading consistency would be facilitated if a uniform capstone experience was created, in which all students could engage in decision-making and subsequent reflection. However, competence in SOC practice requires confidence in working with uncertainty and in negotiating decisions with the level of independence required to work in a context of multiple valid solutions. Asking students to select their own experiences and cases to use for summative assessments helps to build this competence beyond what could be achieved by facilitating a shared activity. When writing a summative reflective essay prior to rotations, students often reflect on experiences working on farms, which is a compulsory component of the preclinical curriculum in the UK. However, the focus of their reflection is not restricted, and students also often choose to reflect on communication or ethical issues they have experienced in their wider lives.

This strategy scaffolds a developmental approach to SOC competence, using assignments that not only explicitly assess clinical reasoning integrated with contextual or professional complexity, but also assess reflection, critical analysis, and independent decision-making. A final criterion for evaluating assessment quality, face validity to students (i.e., the extent that students perceive the assignment to be valuable and in alignment with competence in veterinary practice) is also important. Our students typically arrive with little prior experience of being assessed in this way. High-achieving essays can vary significantly, particularly as students select the experiences and cases upon which to focus. Peer-to-peer comparisons, particularly among students who subscribe to a dualistic viewpoint (a belief that there is a single best way of answering the question) can lead to difficulty understanding the difference between an essay that has been judged as high-achieving and one that is at borderline pass level. When program leaders are implementing an SOC assessment strategy, they therefore must engage and educate not only faculty, but also students in the validity and criteria for the assessment. When this is done,

Table 1. Example of the institutional common grading scheme used for SOC written assessments

Pass Level	Descriptive thinking: satisfactory grasp of important concepts, analysis of which are supported by facts
Distinction Level	Critical thinking: thorough grasp of concepts with evidence of original thinking, i.e., references, factual knowledge, or both have been contextualized and viewed according to multiple perspectives to inform the analysis and decisions made

students' feedback demonstrates they can identify constructive alignment not only with new graduate clinical competence, but also with the personal skills they will need to work resiliently and humanely in a diverse professional context.

SOC SUBCOMPETENCIES

- SOC Subcompetency 1.3.5. Integrates information about the patient with client circumstances to identify a range of appropriate care options and adjust the care plan.
- SOC Subcompetency 1.4.4. Offers a range of care options that are tailored to the unique circumstances of each patient and client.
- SOC Subcompetency 1.4.5. Facilitates client decision-making regarding care by presenting the costs, risks, benefits, and evidence base of care options.
- SOC Subcompetency 3.1.5. Provides a range of appropriate care options for animal populations that considers animal welfare, lifestyle, economics, societal interests (e.g., food animal industry, animal activism), and public and environmental health concerns.
- SOC Subcompetency 7.3.4. Acknowledges and considers the context of previous care decisions made by colleagues and clients.
- SOC Subcompetency 7.3.5. Reflects on one's own professional identity in relation to providing a spectrum of care.
- SOC Subcompetency 7.4.4. Pursues opportunities to expand skill set to offer a broader range of care options.
- SOC Subcompetency 8.1.4. Provides a range of care and payment options in a manner that fosters financial viability of the practice and a positive working environment.

SPECIES

- Canine/feline
- Exotics
- Equine
- Food animal

AFFILIATED COURSE

- Principles of Veterinary Practice, a 5-year longitudinal course that runs through the BVetMed program at the Royal Veterinary College

TIMING

- Preclinical and clinical curriculum
- Years 1–5

DURATION

- Assessments are embedded throughout the 5-year BVetMed program.

LOCATION

- Classroom
- Clinical
- Field
- Assessments incorporate classroom/lecture-based content and reflective analysis of experiences during clinical rotations and external placements on farms and in veterinary practices

MATERIAL SHARING

The following materials can be provided:

- Some examples of exam questions: for example, those that are currently made available to students to aid their study.
- Complete grading scheme, available on the institutional website.

EXAMPLE OF AN OPEN-ENDED ASSESSMENT (OEA): UNSEEN EXAM QUESTION

Ms. Alli brings in her mother's 12-year-old cockapoo Ginger, who has been off her food for 3 days. Ms. Alli visits her mother once a week, and this morning she noticed Ginger was very weak and struggling to get up. Her mother cannot remember when Ginger last went outdoors, and the dog walker has not visited this week due to the holidays. On physical exam you notice that Ginger is very pale, with cold paws and weak peripheral pulses. Her heart rate is 180 and her abdomen is tense and distended. Thoracic auscultation reveals normal airway sounds and a grade III/VI soft systolic murmur. Ginger's last visit to your practice was 18 months ago when she received some treatment (ear cleaner) for an itchy ear; at that time the same murmur had been identified on physical examination.

Clinical reasoning and decision-making

1. **Write a prioritized clinical problem list for Ginger**
2. **Present and explain your proposed clinical plan (both the initial treatment and diagnostic plans)**

Guidance for graders: This is relatively "closed-ended," in that there is a standardized way to reason the approach to emergency care of this patient, and the prioritized problem list should place greater emphasis on the problems that require immediate attention. The

*students would also be expected, at a pass level, to recognize that stabilization of the apparent hypovolemia should precede diagnostic evaluation of the cause of the acute clinical signs. Using the grading scheme **(Table 1)**, a description of appropriate clinical care would achieve a passing grade, and higher-level analysis of the patient and explanation of the clinical plan (for example, titration of intravenous fluids to clinical improvement and how the effect of the cardiac murmur would influence clinical care) would be awarded a higher-level grade.*

After your initial treatment, Ginger looks brighter and is walking around her kennel. You and Ms. Alli discuss continuing your clinical plan; however, in the meantime she has had a chance to talk to her mother, who does not wish to pursue any further veterinary care. She is opposed to euthanasia and interventional care and would like Ginger to come home.

You try to explain Ginger's clinical needs, but Ms. Alli becomes visibly frustrated at this point, and angrily accuses you of only wanting to make more money. She refuses to provide consent for any further veterinary care and says she would like to pay for the treatment performed so far and take Ginger home.

Professional reasoning and decision-making, incorporating contextual elements

1. **List the feasible actions you could now take**

2. **Explain what you will do and the reasons for your approach, including an analysis of the effect of these actions on each of the important interested parties in this situation**

*Guidance for graders: This section is more open-ended, as students can make different decisions about the most appropriate course of action. For a pass-level answer, students would list several feasible options and provide a decision that does not compromise animal welfare beyond acceptable levels, and addresses professional and legal expectations surrounding consent and pet ownership (these may vary by country). A higher-level grade (again, with reference to **Table 1**) does not necessarily provide more options, but demonstrates more in-depth analysis of the situation. This particularly includes recognizing that any decisions will have both positive and negative effects on the important interested parties (the patient, client, client's mother, practice reputation/finances, and colleagues); there is thus no single best answer, and risks will need to be managed, either by taking appropriate actions (such as arranging follow-up patient assessment if the decision is to send Ginger home), or by explaining how high-level communication around negotiating the decision would be achieved. Students may focus more on communication, ethics, or reasoning through the decision (and are unlikely to be able to cover everything within a timed examination), and so grades are awarded for the depth of analysis and problem-solving of the situation, rather than expecting detailed coverage of every aspect.*

RECOMMENDED CITATION

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Spectrum of Care Longitudinal Integrated Clerkship

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SUMMARY

The University of Minnesota's Spectrum of Care Longitudinal Integrated Clerkship is a 6-week elective clinical rotation designed to facilitate fourth-year students' integration of spectrum of care (SOC) practices into various small animal clinical settings through a tailored experiential program with real-time mentoring, feedback, and support. As with clinical rotations in medical schools (1–3), students act as primary clinicians in University of Minnesota–partnered clinics, following a selected patient panel of preventive care, urgent care, geriatric patient care, and common chronic disease treatment, as offered by the specific clinic. Longitudinal Integrated Clerkship is described as follows:

> *"Clerkship" refers to the practice of medicine by medical students during their final year(s) of study; "longitudinal" applies to a long-term clinical clerkship usually of one full academic year; and "integrated" describes continuous and concurrent community and hospital clinical experiences for each learner. (1)*

Given the inaugural nature of this veterinary learning experience and current college requirements for students' final clinical year, the 2024 Spectrum of Care Longitudinal Integrated Clerkship was abbreviated to 6 weeks instead of 1 year. We have preserved the terminology to align with similar experiences described in medical literature.

Standard clinical rotations at the University of Minnesota are 2 weeks long and held in the teaching hospital. Students take part in 22 weeks of required core rotations in medicine, surgery, necropsy, clinical pathology, anesthesiology, public health, and radiology. Students are also required to complete several 2-week, track-specific rotations, elective rotations, and off-campus externships. The Spectrum of Care Longitudinal Integrated Clerkship fulfills one Primary Care rotation, one Community Medicine rotation (Primary Care alternative), and one elective rotation (small animal clinics). With the exception of off-campus externships, students do not have concurrent community experiences as they do during the Spectrum of Care Longitudinal Integrated Clerkship. One-on-one mentoring, case management autonomy, and community engagement are all unique experiences provided in the clerkship.

LEARNING OUTCOMES

The primary learner outcome of the Longitudinal Integrated Clerkship is to educate veterinary medical students in facilitating and delivering a spectrum of quality medical care. The focus is on lowering barriers to accessible care, respecting and celebrating differences in culture, and promoting quality of life in both humans and animals in various settings. The core principles and associated domains of competence include the following:

1. Graduates triage and prioritize care based on varied scenarios and within the resources available to provide individual animal care (clinical reasoning and decision-making).
2. Graduates discuss preventive medicine and urgent care options that are supported for each family (communication).
3. Graduates demonstrate client-centered communication in a culturally relevant, humble, and competent context (cultural and community engagement).
4. Graduates build connections with interest groups to explore inclusive and respectful partnerships (collaboration).
5. Graduates reflect on their own identities and values and how these influence clinical decision-making and client communication (professionalism, professional identity, and structural competency).

6. Graduates seek the resources to identify and create best practices in the emerging field of community medicine while committing to share knowledge and subject-matter expertise throughout their peer groups (scholarship).

LEARNING EXPERIENCE DESCRIPTION

Students interested in SOC apply for the Longitudinal Integrated Clerkship at the end of their second year. Application questions include: 1) describe previous experiences with community medicine, access to care, and SOC, and 2) explain how participating in the Longitudinal Integrated Clerkship will help reach career goals. Faculty and staff review applicants, and a cohort of six to eight students is accepted. The Longitudinal Integrated Clerkship is offered once a year in the spring semester of the cohort's fourth year. The timing of the clerkship ensures that participants have completed at least one Primary Care and one Small Animal Internal Medicine rotation at the University of Minnesota's teaching hospital. Students participate in cohort meetings with Longitudinal Integrated Clerkship faculty and staff before the start of the event to build group cohesion, review expectations, and develop mentoring/coaching agreements.

Clinical Components

- Two weeks at the Animal Humane Society Veterinary Center, a nonprofit primary care clinic with a tiered pricing structure located in an underserved neighborhood. In their first week (Week A), students see fewer cases with longer appointment times, and integrate key skills such as relational medicine, trauma-informed care, and interdisciplinary collaboration with social workers. Approximate Week A caseload: 25 cases per week or six to seven cases per student per week. In their second week (Week B), students build on these skills with more cases and shorter appointment times, balancing both relationship-building elements and effective case management.
- Approximate Week B caseload: 40 cases per week or 10 cases per student per week. One university faculty veterinarian and one university-certified veterinary technician who are trained in the clinic policies and protocols directly oversee and mentor the students during these 2 weeks.
- One week at Access Veterinary Care, a for-profit urgent care clinic that manages a variety of small animal cases and uses a variety of financing mechanisms. During this week, students see a high case volume and manage medical, surgical, and emergency cases. Approximate caseload: 30-48 cases per week or 15-24 cases per student per week. One university faculty veterinarian and one university-certified veterinary technician, each of whom is trained in the clinic policies and protocols, oversee the students during this week. The practice owner, who is not affiliated with the university, participates in rounds discussions, and students have the opportunity to shadow him and staff veterinarians.
- One week at one of Animal Humane Society's shelter locations, performing high-quality high-volume spay/neuter, managing shelter medicine cases, learning about public health, and understanding the role this shelter plays in surrender prevention. Approximate caseload: 30 cases per week or 15 cases per student per week. One university faculty veterinarian is on site to provide support for students and shelter partners, but one shelter veterinarian and two shelter veterinary interns provide direct oversight of students' surgeries and case management.
- One week at a Student Initiative for Reservation Veterinary Services field clinic. This organization is a field hospital–style, student-run organization providing free spay/neuter and wellness services to pets in Native Nations in Minnesota and South Dakota. Longitudinal Integrated Clerkship students' duties include triage, high-volume vaccine appointments, in-depth case management, and teaching junior veterinary students. Approximate caseload: 150-175 cases per week or 18-21 cases per student per week. All three university faculty veterinarians and one university-certified veterinary technician are on site during the clinic, but one primary faculty veterinarian provides direct oversight of students.
- **Note:** All students attend the Student Initiative for Reservation Veterinary Services field clinic at the same time. Students rotate through Animal Humane Society Veterinary Center, Access Veterinary Care, and Animal Humane Society shelter clinics at different times. A maximum of four students attend the Animal Humane Society Veterinary Center at a time. A maximum of two students attend Access Veterinary Care and Animal Humane Society clinics at a time.

Nonclinical Components

- One week dedicated to collaborating with a community organization to understand the interconnected nature of community challenges and propose solutions to structural One Health challenges.
- Daily topic rounds led by faculty veterinarians during the clinical weeks at the Animal Humane Society Veterinary Center and Access Veterinary Care. Topics include veterinary social work, kitten/puppy wellness, end of life/quality of life, and managing expensive emergent conditions such as diabetic ketoacidosis. The purpose of these rounds is to provide didactic-style learning around common situations or conditions expected during the clerkship.
- Daily end-of-day case rounds led by students during the clinical weeks at the Animal Humane Society Veterinary Center, Access Veterinary Care, and Student Initiative for Reservation Veterinary Services. The purpose of these rounds is to encourage peer-led teaching around students' own case management, including the SOC options presented and client communication. These are in-depth, complex cases that require creative problem-solving in resource-limited settings.

- Weekly cohort seminar discussions led by Longitudinal Integrated Clerkship faculty and staff that focus on the six core learning outcomes described above (clinical reasoning and decision-making; communication; collaboration; cultural humility and community engagement; scholarship; professionalism, professional identity, and structural competency). Seminars include pre-session readings, didactic-style lectures, and group discussion. An example of a seminar is described below:
  - Prior to the Communication seminar, students are required to watch a video about how clients make veterinary decisions and read a paper on SOC and redefining the "gold standard."
  - During the Communication seminar, students engage in faculty-led discussions about the prework and are asked to share communication strategies in delivering SOC, explain different communication styles of clients, and explore shared decision-making strategies.
  - Faculty also deliver a presentation on business models in access to care and SOC. To reinforce the concepts learned in the presentation, students create a communication plan presenting a business model to various audiences.
- One-on-one mentoring in which one faculty member meets with each student individually every other week in semistructured meetings focused on progress towards students' self-identified clinical skills and client communication goals. Additional one-on-one mentoring involves direct observation of and feedback on medical, surgical, technical, and communication skills.

Assessments

- Instructor feedback provided both in real time and through a college-wide tool that assesses specific American Association of Veterinary Medical College Competency-Based Veterinary Education Entrustable Professional Activities.
- Client feedback through pet owner surveys completed immediately following their appointment.
- Accurate, thorough, and efficient completion of medical records.
- Completion of an SOC case report that includes literature to support the evidence-based care plan offered.
- Completion of a project and presentation following the week spent collaborating with a community organization; the project may include a policy brief, proposal for a grassroots project, or outreach plan to mitigate barriers to care or structural One Health issues.

BENEFITS OF THE LEARNING EXPERIENCE

Existing medical literature describes the following benefits of Longitudinal Integrated Clerkship clinical experiences:

- continuity of clinical supervision
- continuity of care
- student–instructor relationships
- improved trust between patients and physicians (1)

This version of the Spectrum of Care Longitudinal Integrated Clerkship ran February 19 through March 29, 2024. At the time of writing, student evaluations of the clinical experience are not yet available. The instructors are currently building a quantitative and qualitative monitoring and evaluation plan with an external evaluation expert to understand students' perspectives on such topics as diversity of experience, caseload in comparison to other rotations, relationship-building with clients and faculty, mentoring, surgical opportunities, and community engagement. This plan aims to also follow these students into practice and learn about their SOC preparedness and competency.

CHALLENGES AND SOLUTIONS

Designing the first two Longitudinal Integrated Clerkship learning experiences (2024 and 2025) has required the instructor team to plan schedules, activities, and assessments several years in advance. Without having previous veterinary Longitudinal Integrated Clerkship opportunities to draw insight and inspiration from, it has been challenging to anticipate learners' needs, expectations of non–university-affiliated partners, and metrics of a successful learning experience. We have consulted with other University of Minnesota medical training organizations who have developed and implemented Longitudinal Integrated Clerkship programs to understand best practices and challenges.

SOC SUBCOMPETENCIES

- SOC Subcompetency 1.3.5. Integrates information about the patient with client circumstances to identify a range of appropriate care options and adjust the care plan.
- SOC Subcompetency 1.4.4. Offers a range of care options that are tailored to the unique circumstances of each patient and client.
- SOC Subcompetency 1.4.5. Facilitates client decision-making regarding care by presenting the costs, risks, benefits, and evidence base of care options.
- SOC Subcompetency 3.1.5. Provides a range of appropriate care options for animal populations that considers animal welfare, lifestyle, economics, societal interests (e.g.,

food animal industry, animal activism) and public and environmental health concerns.

- SOC Subcompetency 7.3.4. Acknowledges and considers the context of previous care decisions made by colleagues and clients.
- SOC Subcompetency 7.3.5. Reflects on one's own professional identity in relation to providing a spectrum of care.
- SOC Subcompetency 7.4.4. Pursues opportunities to expand skill set to offer a broader range of care options.
- SOC Subcompetency 8.1.4. Provides a range of care and payment options in a manner that fosters financial viability of the practice and a positive working environment.

SPECIES

- Canine/feline

AFFILIATED COURSE

- College of Veterinary Medicine 6991 Spectrum of Care Longitudinal Integrated Clerkship

TIMING

- Clinical Curriculum
- Year 4

DURATION

- 6 weeks plus pre–Longitudinal Integrated Clerkship meetings.

LOCATION

- Classroom
- Clinical
- Field
- Shelter
- Community organizations

ESTIMATED COST

- The expected cost for the SOC Learning Experience described is primarily faculty and staff effort. The costs of those efforts will vary depending on expertise level and time. A new program can expect 20%-30% DVM and 5%-10% veterinary technician effort to account for project management, mentorship, clinical supervision, and other programmatic needs. Below is an example of our program's effort breakdown. This University of Minnesota SOC Learning Experience is currently funded by an external grant for the first 3 years. Note: accommodation at Student Initiative for Reservation Veterinary Services (SIRVS) is paid for by the community, and students pay their own mileage for all other experiences. We did not include the costs of the evaluation component of this experience.

MATERIALS SHARING

- Syllabus is available in the SOC Implementation Strategies Guide repository on **AAVMC Learn**.
- Seminar discussion materials are available on a case-by-case basis.

Table 1. Estimated Cost

ITEM	ESTIMATED COST OR FTE OVER 3 YEARS	NOTES
1 DVM faculty	10%	Grant PI; clinical supervisor
1 DVM faculty	5%	Clinical supervisor
1 DVM faculty	5%	Clinical supervisor
1 staff CVT	5%	
1 temp CVT	5%	
SIRVS expenses	$5,200	Fleet van, mileage for those not driving in van; per diem for personnel and students
Estimated total cost	$45,000-$50,000	Includes salary, fringe, and experiential education costs

RECOMMENDED CITATION

Bernstein, L. A., Glover, J., Knox, L., Waldsmith, W., Freedman, D., & Burton, E. (2025). Spectrum of care longitudinal integrated clerkship. In AAVMC Spectrum of Care Initiative Task Force, H. N. Fedesco, & J. E. Brodsky (Eds.), *Enhancing spectrum of care preparation in veterinary education programs: An implementation strategies guide* (pp. 85–89). American Association of Veterinary Medical Colleges. **https://doi.org/10.17605/OSF.IO/AHWQE**

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Navigating Client Preference for Medical Management of Open Pyometra in a Canine Patient: A Communication Exercise

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SUMMARY

Historically, standard of care for case management of canine pyometra was ovariohysterectomy. However, medical management can also be successfully applied to canine patients that present with open pyometra, and may be preferred by clients who wish to preserve their dog's reproductive function. Explore how this simulated client encounter challenges students to outline medical management plans for a canine patient at the client's request, even if their default is to recommend surgical correction. Such reflective practice tasks them to consider the lens through which they are operating, as well as any underlying explicit or implicit bias towards breeders. Students learn to question the evidence base that underlies their recommendations as well as how to partner with a client who makes a different decision than we might.

LEARNING OUTCOMES

1. Identify your gut reaction to the client's request that canine patient Milonga be medically managed for open pyometra.
2. Move from reaction to response as you explore the client's request for an alternative approach to treatment.
3. Explore the client's concerns about ovariohysterectomy and elicit the client's perspective to find out why breeding Milonga is so important to them.
4. Offer medical management of open pyometra as a viable alternative to surgical sterilization.

LEARNING EXPERIENCE DESCRIPTION

All simulated client encounters take place at the Health Science Innovation Building (HSIB) in partnership with Interprofessional Clinical and Professional Skills Center (iCaPS) staff. HSIB offers 30 simulated patient–human healthcare examination rooms outfitted with the capacity for real-time audiovisual capture via CAE Learning Space software. Students are randomly assigned to a date/time slot at HSIB to complete each simulated client encounter. All simulated client encounters are scripted by a course coordinator, Ryane Englar; members of the community recruited and hired by iCaPs staff are then trained in partnership between the Professional Skills faculty and the iCaPs team.

"Milonga" is the 12th simulated client encounter out of a total of 30 in which students participate over six consecutive semesters (2 preclinical years). We are transparent with students that the primary goal of the simulation is to engage in a communication exercise. We provide students with supplemental materials containing the knowledge they need to succeed.

Prior to the simulated encounter, instructors prepare prework that students are expected to complete through the university's D2L online learning platform for the affiliated course, for a completion grade, prior to the simulated encounter. They are tasked to outline their baseline knowledge concerning case management plans for canine pyometra as well as their assumptions, perspectives, and prior experiences surrounding best practices. Prework also requires learners to proactively consider reasons why clients may prefer one method of management over the other (e.g., medical versus surgical) and what their gut reactions to their voiced preference may be. In addition, the prework introduces students to the simulated client encounter in the form of a "door chart" outlining the signalment of the patient, the client's name, and the presenting complaint. Students have access to this prework 2 weeks before the encounter. Completion of prework for Milonga contributes 3% towards the learner's final course grade.

Students also engage in a 90-minute required on-site in-class session that explores strategies for management of canine pyometra 2 weeks prior to the encounter. This in-class session introduces the evidence base for medical management of open pyometras and tasks students to engage in role-play with peers,

with assigned veterinarian and client roles. A whole-class debrief then takes place, led by the instructional team to discuss what worked well (WWW) and opportunity areas for growth (OAG) from both the student clinician's and the client's perspective.

On the day of the simulated client encounter, members of the Professional Skills team are on-site at HSIB for the duration of the event to provide support on an as-needed basis. Students have up to 15 minutes to interact with their simulated clients. The simulated client then asks the student for permission to share feedback, limited to one WWW and one OAG. Students have the option to opt out of oral feedback as a safety mechanism. Five minutes have been built into the schedule to allow for oral feedback. Following oral feedback, students leave the consultation rooms. Simulated clients then have 5 minutes to type out written feedback that students can access following their event. Students are also able to access their audiovisual recording.

Immediately following the on-site simulation, students scan a QR code to complete anonymous feedback about their experience that they may wish to share with the teaching team. On average, 5% of students also ask to pull one or more instructional team members aside after the fact to discuss gut reactions and strategic plans for next time.

Following the simulation, students have 2 weeks to complete their postencounter reflection assignment. The postencounter reflection for Milonga contributes 8% towards the learner's final course grade. Postencounter reflection questions task the students to engage in critical thinking and reflection as well as self-awareness. Students are scored numerically on the reflective components of this assignment based upon the following categories: descriptive writing, surface reflection, or deep reflection. At the point in the curriculum that "Milonga" takes place, students have had two semesters to move beyond descriptive writing into reflection. Students do not receive credit for descriptive writing in their postencounter assignment for Milonga.

Students are not graded based upon the simulated client's perception of their performance or how far they get in the simulation, but solely on their ability to reflect upon their performance.

BENEFITS OF THE LEARNING EXPERIENCE

The American Veterinary Medical Association Council on Education now requires that communication be taught in all accredited colleges of veterinary medicine. However, colleges are inconsistent in terms of which content they offer and how they deliver it. For the past 15 years, veterinary educators have experimented with faculty and guest lectures, small-group discussions, internet-based video learning, peer-assisted learning, roleplay, communications-based objective structured clinical examinations, clinical evaluation exercises, and video review of consultations. While there is no universal approach to communication training, many veterinary educators have found value in experiential learning because it promotes professional growth through opportunities to receive and process feedback and reflect upon one's performance. Receiving feedback inspires self-awareness as learners consider their strengths as well as specific opportunity areas for growth. Furthermore, the use of simulated clients for experiential learning exercises reproducibly illustrates common clinical scenarios. Such simulations train students to navigate real-life client interactions within a safe, supportive space.

CHALLENGES AND SOLUTIONS

We have incorporated this simulation into our curriculum for first-year veterinary students for the past 3 years. On average, at least 10% of students per year, in a cohort that averages 110 students per class year, voice their dislike at having to offer an alternative to the classically embraced standard of care, ovariohysterectomy as a curative treatment for open pyometra. They struggle to elicit the client's perspective and are challenged to consider that medical management can be an appropriate choice. We acknowledge the discontent and use it as a teaching opportunity because students will not always agree with client decisions and choices, yet still are required to partner with them to achieve mutually agreeable patient outcomes.

SOC SUBCOMPETENCIES

- SOC Subcompetency 1.3.5. Integrates information about the patient with client circumstances to identify a range of appropriate care options and to adjust the care plan.
- SOC Subcompetency 1.4.4. Offers a range of care options that are tailored to the unique circumstances of each patient and client.
- SOC Subcompetency 1.4.5. Facilitates client decision-making regarding care by presenting the costs, risks, benefits, and evidence base of care options.
- SOC Subcompetency 7.3.4. Acknowledges and considers the context of previous care decisions made by colleagues and clients.
- SOC Subcompetency 7.3.5. Reflects on one's own professional identity in relation to providing a spectrum of care.
- SOC Subcompetency 7.4.4. Pursues opportunities to expand skill set to offer a broader range of care options.
- SOC Subcompetency 8.1.4. Provides a range of care and payment options in a manner that fosters financial viability of the practice and a positive working environment.

SPECIES

- Canine/feline

AFFILIATED COURSE

- VMED 802C: Professional Skills III

TIMING

- Preclinical Curriculum
- Year 1 Summer Semester (Semester #3 out of six preclinical semesters)

DURATION

- Students have 2 weeks prior to the simulated client encounter to submit their prework.
- Students have 15 minutes on the day of the event to converse in the exam room with the simulated client.
- Students have 5 minutes following their simulated conversation to engage in oral feedback with the simulated client.
- Simulated clients then have an additional 5 minutes following oral feedback to provide written feedback after the student departs the exam room.
- Events reset every 30 minutes.

LOCATION

- Simulated exam room

ESTIMATED COST

- Our simulated client encounter program for the College of Veterinary Medicine costs approximately $100,000 annually to run 30 simulations (that collectively include both first- and second-year experiences).
- The average cost per simulation is $100,000/30 = $3,333.
- Funds come from internal sourcing.
- Funds cover the simulation space (which is on campus, but off-site from the College of Veterinary Medicine, at the Health Sciences Innovation Building), all simulated exam rooms, simulated client recruitment and training, CAE Learning Space audiovisual recording software for video review and analysis, and staffing.

MATERIALS SHARING

- Syllabus is available in the SOC Implementation Strategies Guide repository on **AAVMC Learn**.
- The following materials are available upon request:
  - Door chart (i.e., what learners see before they engage with the simulated client)
  - Pre-encounter assignment
  - Simulated client encounter script
  - Simulated client observation rubric
  - Postencounter reflection
  - Instructor grading rubric for postencounter reflection
  - Prework for in-class session that preps for this event
  - Proposed flow for in-class session that preps for this event

RECOMMENDED CITATION

Englar, R. E., & Brett, T. G. (2025). Navigating client preference for medical management of open pyometra in a canine patient: A communication exercise. In AAVMC Spectrum of Care Initiative Task Force, H. N. Fedesco, & J. E. Brodsky (Eds.), *Enhancing spectrum of care preparation in veterinary education programs: An implementation strategies guide* (pp. 90–93). American Association of Veterinary Medical Colleges. **https://doi.org/10.17605/OSF.IO/AHWQE**

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A Summary of "A Unique Spectrum of Care Tool Provides a Self-Regulated Learning Opportunity and Facilitates Client Communication"

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SUMMARY

Some veterinary interns have never heard of spectrum of care (SOC). Interns report that they find this a useful exercise, and some state that they could use this process in other clinical situations. The insights of interns have resulted in learning benefits for the entire oncology service at Schwarzman Animal Medical Center.

LEARNING OUTCOMES

The intern prepares for and leads an actual new oncology consultation with a pet owner whose pet has been diagnosed with cancer by presenting the SOC plan options to the pet owner using the Spectrum of Care Options, Presentation and Explanation (SCOPE) tool. The goal is for the intern to identify the tumor-specific histologic grading scale and clinical staging system, if they exist for that tumor type. The intern then uses that information to identify a spectrum of evidence-based treatment options appropriate to that tumor grade and stage. The SCOPE is a table in which the columns represent a spectrum of evidence-based treatment options for a particular pet and the rows include features of testing and treatment that the intern feels are important to convey to the pet owner. These will vary between pets, tumor type, and intern, but might include treatment schedule, adverse events associated with treatment, need for medications to be administered at home, and cost. See SCOPE examples contained in Hohenhaus and Provost (2024).

LEARNING EXPERIENCE DESCRIPTION

Intern selects a new patient appointment for the exercise.

Prework: Using instructor-provided materials, the intern performs a literature search to identify a spectrum of evidence-based treatment options appropriate for the pet's tumor stage and grade. Those materials are used to create a SCOPE.

Clinical experience: The SCOPE is used to present treatment options to the pet owner.

Feedback: The instructor gives formative assessment during creation of the SCOPE and summative assessment after the consultation. Two categories are assessed: 1) ability to identify appropriate treatment options and create a SCOPE appropriate to the pet's cancer, and 2) quality of interaction with the pet owner.

Instructor: Meets with intern one or two times prior to the consultation to answer questions, provide input into the development of the SCOPE, and prepare student for typical pet owner questions. The instructor observes the intern–pet owner interaction and answers questions outside of the intern's assigned role (discuss SOC options). Instructor provides verbal and written feedback after interaction.

Materials required: Access to information about evidence-based cancer treatment options. Pet owners willing to participate.

Materials supplied to the intern:

- WSAVA Oncology Working Group. (n.d.). Veterinary oncology glossary. WSAVA Global Veterinary Community. **https://wsava.org/wp-content/uploads/2021/11/Glossary-WOW-13.11.2021.pdf**
- Avallone, G., Rasotto, R., Chambers, J. K., Miller, A. D., Behling-Kelly, E., Monti, P., Monti, P., Valenti, P., & Roccabianca, P. (2021). Review of histological grading systems in veterinary medicine. *Veterinary Pathology*, *58*(5), 809–828. **https://doi.org/10.1177/0300985821999831**

- Stoewen, D. L., Coe, J. B., MacMartin, C., Stone, E. A., & Dewey, C. E. (2014). Qualitative study of the communication expectations of clients accessing oncology care at a tertiary referral center for dogs with life-limiting cancer. *Journal of the American Veterinary Medical Association*, *245*(7), 785–795. **https://doi.org/10.2460/javma.245.7.785**
- SCOPE example contained in Hohenhaus and Provost (2024).
- **Figure 1** contained in Hohenhaus and Provost (2024).

Assessment: Verbal/written feedback following interaction. Standardized written feedback form is being developed. Once the intern year has been completed, a survey of the participating interns will be performed to assess the outcome from the intern's perspective.

CHALLENGES AND SOLUTIONS

Meeting with the intern takes time for both the instructor and the intern. It has not happened yet, but a client could refuse to speak with the intern. Because interns have been well prepared, unsolicited client feedback has been positive.

MORE INFORMATION ABOUT THIS LEARNING EXPERIENCE

Hohenhaus, A. E., & Provost, D. C. (2024). A unique spectrum of care tool provides a self-regulated learning opportunity and facilitates client communication. *Journal of Veterinary Medical Education*, e20230144. **https://doi.org/10.3138/jvme-2023-0144**

SOC SUBCOMPETENCIES

- SOC Subcompetency 1.3.5. Integrates information about the patient with client circumstances to identify a range of appropriate care options and adjust the care plan.
- SOC Subcompetency 1.4.4. Offers a range of care options that are tailored to the unique circumstances of each patient and client.
- SOC Subcompetency 1.4.5. Facilitates client decision-making regarding care by presenting the costs, risks, benefits, and evidence base of care options.
- SOC Subcompetency 3.1.5. Provides a range of appropriate care options for animal populations that considers animal welfare, lifestyle, economics, societal interests (e.g., food animal industry, animal activism), and public and environmental health concerns.
- SOC Subcompetency 7.3.4. Acknowledges and considers the context of previous care decisions made by colleagues and clients.
- SOC Subcompetency 7.3.5. Reflects on one's own professional identity in relation to providing a spectrum of care.
- SOC Subcompetency 7.4.4. Pursues opportunities to expand skill set to offer a broader range of care options.
- SOC Subcompetency 8.1.4. Provides a range of care and payment options in a manner that fosters financial viability of the practice and a positive working environment.

ADDITIONAL INFORMATION ABOUT ALIGNMENT WITH SOC SUBCOMPETENCIES

- 1.3.5, 1.4.4, 1.4.5, 3.1.5: Using the SCOPE tool, the student outlines options in the SOC plan and elicits contextual information about lifestyle, costs, and unique circumstances of the pet owner and pet.
- 7.3.4: Oncology patients are typically referred and have a large amount of referral information. If additional testing is required, the intern will need to navigate that request without speaking negatively about the lack of testing.
- 7.3.5: Most interns at Schwarzman Animal Medical Center pursue internship training as the prerequisite for specialty training. This exercise helps them to experience the professional identify of a specialist.
- 7.4.4: This exercise applies SOC to specialty care. Most interns have not led an initial consultation in oncology, and this expands their knowledge and skills in the oncology field.
- 8.1.4: The Schwarzman Animal Medical Center is located in New York City and its clientele reflects the area's economic, cultural, and social diversity.

SPECIES

- Canine/feline

AFFILIATED COURSE

- Schwarzman Animal Medical Center, Rotating Internship, Oncology Service

TIMING

- Rotating internship

DURATION

- The rotation lasts 4 weeks and the intern can choose to lead a consultation any time during the rotation. Most choose the 4th week.

LOCATION

- Clinic

ESTIMATED COST

- There is no cost to this exercise unless there is a need to purchase access to subscription-based publications on veterinary cancer treatment.

MATERIALS SHARING

- Authors are willing to share materials for the learning experience upon request.

RECOMMENDED CITATION

Hohenhaus, A., & Provost, D. C. (2025). A summary of "A unique spectrum of care tool provides a self- regulated learning opportunity and facilitates client communication." In AAVMC Spectrum of Care Initiative Task Force, H. N. Fedesco, & J. E. Brodsky (Eds.), *Enhancing spectrum of care preparation in veterinary education programs: An implementation strategies guide* (pp. 94–96). American Association of Veterinary Medical Colleges. **https://doi.org/10.17605/OSF.IO/AHWQE**

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Using an On-Demand, Self-Paced Online Course to Facilitate a Spectrum of Care Approach to Practice

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SUMMARY

This course was created by the Open Door Veterinary Collective to help train veterinary professionals in providing compassionate, relationship-centered, evidence-based veterinary care across a spectrum of client and patient circumstances, while maintaining a net positive revenue and supporting job satisfaction of the whole veterinary care team. This course was developed for veterinary practitioners, students, educators, technicians, administrators, and leadership.

LEARNING OUTCOMES

1. The student will understand that access to veterinary care is limited by not only finances but other social determinants of health, which affect both people and animals and can influence practice profitability and staff well-being.
2. The student will deliver relationship-centered veterinary care and share decision-making with clients about diagnostic and treatment options that meet their contextual needs, and therefore improve outcomes for bonded families and the practices that serve them.
3. The student will offer a range of evidence-based diagnostic and treatment options to address the unique circumstances of each bonded family, foster financial viability of the practice, and meet the standard of veterinary care.

LEARNING EXPERIENCE DESCRIPTION

This is an interactive, modular online course that is delivered asynchronously, on-demand and self-paced. It is expected to take approximately 3 hours to complete. The course includes post-chapter quizzes as well as reflective feedback with each lesson.

The content was developed in response to our growing awareness of barriers to veterinary care and the lack of resources available to professional teams to address these challenges and remain financially sustainable. The goal was to create interactive training modules for veterinary professionals that can be continually updated to include the most current information available. Using a combination of evidence-based medical protocols, business practices, and communication skills, this course can help our entire profession break the chain of negative events so more bonded families access veterinary care, more practices get paid, and more veterinary care teams deliver the highest standard of care possible in diverse contexts.

In pursuing these goals, we have faced challenges in connecting with colleges of veterinary medicine to share information about the course. Our pilot program in 2024 included 12 schools of veterinary medicine and yielded very positive responses from both traditional and distributive models. The educators appreciated the high-quality content, evidence-based information, approachability of learning opportunities, and flexibility to integrate the content into their unique programs. The students appreciated the practical content and skills they gained about practicing veterinary medicine sustainably across a spectrum.

The course allows each veterinary program to decide how to incorporate it into preclinical courses or rotations to suit their needs. Some colleges of veterinary medicine are implementing the content as a single module in a specific course, such as Business and Communication, Spectrum of Care, or Access to Care; others are using multiple modules to supplement rotations such as Primary Care or One Health Clinic–focused care.

The RACE-approved course could also be used in Diversity, Equity, and Inclusion programs, veterinary mental wellness training, or house officer or veterinary specialist orientations. By educating the entire team, including veterinary specialists, administrators,

and school leadership, about the principles of spectrum of care (SOC), we can empower our profession to work together to help more bonded families, stay financially sustainable, and improve our sense of community and well-being.

MORE INFORMATION ABOUT THIS LEARNING EXPERIENCE

https://opendoorschool.thinkific.com/

SOC SUBCOMPETENCIES

- SOC Subcompetency 1.3.5. Integrates information about the patient with client circumstances to identify a range of appropriate care options and adjust the care plan.
- SOC Subcompetency 1.4.4. Offers a range of care options that are tailored to the unique circumstances of each patient and client.
- SOC Subcompetency 1.4.5. Facilitates client decision-making regarding care by presenting the costs, risks, benefits, and evidence base of care options.
- SOC Subcompetency 7.3.4. Acknowledges and considers the context of previous care decisions made by colleagues and clients.
- SOC Subcompetency 7.3.5. Reflects on one's own professional identity in relation to providing a spectrum of care.
- SOC Subcompetency 8.1.4. Provides a range of care and payment options in a manner that fosters financial viability of the practice and a positive working environment.

SPECIES

- Canine/feline

AFFILIATED COURSE

- Differs depending on school of veterinary medicine where the course is used.

TIMING

- Preclinical and Clinical Curriculum
- Years 1-4
- As previously mentioned, the Open Door Veterinary Collective online course is being used variably at many schools of veterinary medicine based on their individual needs.

DURATION

- It is expected to take 3 hours.

LOCATION

- Online self-paced interactive learning modules.

ESTIMATED COST

- The cost is $135 for the 3-hour course; the fee for enrollment will be waived for veterinary students based on available funding.

MATERIALS SHARING

- Syllabus is available in the SOC Implementation Strategies Guide repository on **AAVMC Learn**.

RECOMMENDED CITATION

Jankowski, K., & Spencer, T. (2025). Using an on-demand, self-paced, online course to facilitate a spectrum of care approach to practice. In AAVMC Spectrum of Care Initiative Task Force, H. N. Fedesco, & J. E. Brodsky (Eds.), *Enhancing spectrum of care preparation in veterinary education programs: An implementation strategies guide* (pp. 97–99). American Association of Veterinary Medical Colleges. https://doi.org/10.17605/OSF.IO/AHWQE

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A Selection of Additional Resources on Spectrum of Care Learning Experiences

Evason, M. D., Stein, M. R., & Stull, J. W. (2022). Impact of a spectrum of care elective course on third-year veterinary students' self-reported knowledge, attitudes, and competencies. *Journal of Veterinary Medical Education*, *50*(5), 590–598. https://doi.org/10.3138/jvme-2022-0010

This article describes an elective (one-credit) "Spectrum of Care in Small Animal General Practice" course for third-year, second-semester students at the Atlantic Veterinary College, University of Prince Edward Island. The syllabus is provided, and additional course design components are available from the authors upon request.

The authors evaluated changes in students' self-reported spectrum of care (SOC)-related knowledge, attitudes, and competencies by surveying students at the beginning and end of the course. Notably, even though students were unfamiliar with the term "spectrum of care" before the course, they were already aware of the need for SOC in practice and SOC training in the DVM curriculum. Following the course, students reported feeling better able to recommend treatment options for clients with financial limitations. Students also reported that they would benefit from more training on the cost of veterinary care in the curriculum.

Fingland, R.B., Stone, L.R., Read, E. K., & Moore, R. M. (2021). Preparing veterinary students for excellence in general practice: Building confidence and competence by focusing on spectrum of care. *Journal of the American Veterinary Medical Association*, *259*(5), 463–470. https://doi.org/10.2460/javma.259.5.463

This article describes the Preparing for Excellence in Veterinary General Practice program at the Ohio State University College of Veterinary Medicine. The program uses an integrated spiral curriculum to incorporate SOC-related instruction and experiences throughout all 4 years of students' preparation. SOC components of the curriculum include the Veterinary Clinical and Professional Skills Center, the SOC Summer Externship Program, the Veterinary Medicine Outreach Program, the shelter medicine and surgery rotation, the SOC career area of emphasis, and the Frank Stanton Veterinary SOC Clinic.

More information available at **https://vet.osu.edu/education/programs/dvm/preparing-excellence-veterinary-general-practice**

McCobb, E., Rozanski, E. A., Malcolm, E. L., Wolfus, G., & Rush, J. E. (2018). A novel model for teaching primary care in a community practice setting: Tufts at Tech Community Veterinary Clinic. *Journal of Veterinary Medical Education, 45*(1), 99–107. https://doi.org/10.3138/jvme.1116-174

This article describes the required Tufts at Tech Community Veterinary Clinic primary care rotation at Cummings School of Veterinary Medicine, Tufts University. The clinic is located at a technical high school in an underserved community that offers a veterinary assisting program. DVM students work with veterinary assisting students to manage cases under the oversight of a supervising veterinarian, including communicating with clients and performing diagnostic and surgical procedures. Follow-up evaluation indicated positive outcomes for clinic caseload and income, veterinary students, veterinary assisting students, local veterinarians, and underserved clients and their pets.

More information available at **https://vet.tufts.edu/tufts-tech**

O'Shaughnessy, S. E., Gould, L., Miles, A. C. M., Sellers, E. R., Squire, L. S. W., & Warman, S. W. (2024). Enhancing primary care learning in a referral hospital setting: Introducing veterinary clinical demonstrators. *Journal of Veterinary Medical Education*, *51*(2), 274–282. https://doi.org/10.3138/jvme-2022-0143

This article describes the process of creating and implementing a veterinary clinical demonstrator role to support teaching by specialist clinical staff in final-year rotations at the University of Bristol Veterinary School. This clinical demonstrator is responsible for helping students understand the relevance of referral cases for primary care and supporting students' development of day-one competencies.

The authors evaluated the role's initial implementation by surveying staff and students. Demonstrators positively affected workplace and student experiences, student welfare, and emphasis on day-one competencies and primary care relevance. Challenges included logistics, staffs' lack of communication and awareness of the role, and inconsistency in the support provided by demonstrators.

Suggestions for improvement are also discussed.

Warman, S. M., Armitage-Chan, E., Banse, H. E., Khosa, D. K., Noyes, J. A., & Read, E. K. (2023). Preparing veterinarians to practice across the spectrum of care: An integrated educational approach. *Advances in Small Animal Care*, *4*(1), 171–183. https://doi.org/10.1016/j.yasa.2023.04.004

This article uses a "bricks and mortar" analogy to guide veterinary medical programs in enhancing SOC instruction in their curricula. The authors describe and provide examples of classroom-based and workplace-/clinic-based instruction and assessment for two "bricks," or competencies, required for SOC practice: communication and clinical reasoning. The authors identify four strategies, or "mortar," that can help programs implement SOC-related curricular changes: fostering collaboration between specialist and primary care faculty, intentionally leveraging multiple aspects of the curriculum, providing SOC-related professional development for faculty, and considering how students can continue to develop their competence and confidence in SOC practice as they transition into practice.

Teaching Spectrum of Care Case Management

Instruction in spectrum of care (SOC) case management can be integrated in veterinary curricula through lectures, seminars, laboratory sessions, case-based learning, and clinical rotations. This section features case management examples developed by primary care educators. It also features a selection of additional resources for teaching SOC case management. The case examples introduce students to an SOC approach for managing surgical and nonsurgical diagnoses, regardless of the instructor's familiarity with SOC practice. Cases developed for this guide are accompanied by examples of assessments and learning experiences that instructors can consider using to develop the specific knowledge and skills that students need to manage each case.

The diagnoses for the developed cases were selected based on the most common canine diagnoses reported by nonacademic primary care practitioners across the United States serving a socioeconomically diverse clientele. For each diagnosis, these practitioners also provided input on care options for clients with different budgets and the skills that students should learn to provide those care options. Primary care educators used this information when developing SOC case management examples. The range of care options and references for each case were reviewed by specialists from the appropriate specialty familiar with SOC practice.

Featured Resources

Canine recurrent/chronic otitis externa

By Lindsey Harland, Tara Paterson, Rebecca Ruch-Gallie, and Michelle Wisecup

Care options and references reviewed by Paul Bloom

Canine parvovirus

By Elizabeth E. Alvarez, Lauren A. Bernstein, Elizabeth Montgomery, Tara Paterson, and Michelle Wisecup

Care options and references reviewed by Erin Lashnits

Canine pyometra

By Elizabeth E. Alvarez, Lauren A. Bernstein, Elizabeth Montgomery, Tara Paterson, and Michelle Wisecup

Care options and references reviewed by Emily McCobb

Canine foreign body ingestion +/- acute gastrointestinal obstruction

By Melanie Blevins, Joyce Carnevale, Kathryn Kuehl, and Gene Pavlovsky

Care options and references reviewed by Erin Gibson

A selection of additional resources for teaching SOC case management

Teaching Spectrum of Care Case Management: Canine Recurrent/Chronic Otitis Externa

Lindsey Harland, *University of Nottingham*

Tara Paterson, *St. George's University*

Rebecca Ruch-Gallie, *Colorado State University*

Michelle Wisecup, *The Ohio State University*

Care options and references reviewed by
***Paul Bloom**, Allergy, Skin and Ear Clinic for Pets*

Component 1: A learning objective aligned with competencies in the Spectrum of Care (SOC) Education Model

Learning objective: Managing a canine patient with recurrent/chronic otitis externa (OE).

Alignment with competencies in the SOC Education Model:

- *SOC Subcompetency 1.3.5.* Integrates information about the patient with client circumstances to identify a range of appropriate care options and to adjust the care plan.
- *SOC Subcompetency 1.4.4.* Offers a range of care options that are tailored to the unique circumstances of each patient and client.
- *SOC Subcompetency 1.4.5.* Facilitates client decision-making regarding care by presenting the costs, risks, benefits, and evidence-base of care options.
- *SOC Subcompetency 7.3.4.* Acknowledges and considers the context of previous care decisions made by colleagues and clients.
- *SOC Subcompetency 7.3.5.* Reflects on one's own professional identity in relation to providing a spectrum of care.
- *SOC Subcompetency 7.4.4.* Pursues opportunities to expand skill set to offer a broader range of care options.
- *SOC Subcompetency 8.1.4.* Provides a range of care and payment options in a manner that fosters financial viability of the practice and a positive working environment.

Component 2: The range of care options identified by primary care educators and practitioners

There are multiple care options for ***managing a canine patient with recurrent/chronic otitis externa (OE).*** Funds are prioritized for managing pain, inflammation and treating secondary infection while attempting to address underlying etiology. The care options are described in detail below and then summarized in **Table 1**. A flowchart depicting the decision-making process for managing the case is presented in **Figure 1**. Students can develop the knowledge and skills to identify, communicate, and perform these care options (Component 4) via the learning experiences in Component 5.

Please Note:

- The care options below are **NOT** intended to be comprehensive, both in terms of capturing all the options and all the components of the options. Instead, the care options focus on the main components of care options that a student is expected to consider and be able to communicate and perform in their practice.
- When using these case management materials, educators should emphasize for students the importance of clinical reasoning and reassessment with adjustment of care options.
- The primary care educators and practitioners working on this project come from different geographic regions, which means that the specific costs for care options vary. Therefore, the care options presented here are organized into three budget categories rather than by specific dollar amounts.

FOR ALL CARE OPTIONS:

- **Consultation:** Use part of the budget to cover the veterinary consultation. This includes communicating with the owner to obtain a thorough dermatological history, including identifying previous therapies, previous skin problems, dietary trials, and additional factors beyond financial constraints that may affect care options (such as patient temperament, client ability to medicate, and severe stenosis). A comprehensive physical exam would be performed.

- **Treatment:** Compounded topical therapies can be considered which may allow for improved antimicrobial stewardship, however, local regulations must be considered.
- **Note:** Primary factors underlie cases of recurrent otitis externa. Identification and management of underlying conditions which contribute is always indicated (Ngo et al., 2018; O'Neill et al., 2021; Saridomichelakis et al., 2007) but may not be possible in all cases based on financial constraints and logistics.
- **Additional considerations for all care options:** Humane euthanasia may be the best option depending on the patient's condition, comorbidities, and client circumstances. This option was identified by both educators and practitioners.

CARE OPTION 1 (LOW BUDGET):

Diagnostics:

- Otoscopic examination of the ear canal where possible.
- Ear cytology, if budget allows.

Treatment:

- Short course of oral glucocorticoids to address pain and inflammation to make cleaning and examination of ear better tolerated by patient. This may be required prior to definitive topical medication.
- Topical ear cleaners containing ingredients like TrizEDTA, chlorhexidine or salicylic acid to help remove debris, control bacterial and fungal growth, and may increase efficacy of topical antibiotics in some cases (Buckley et al., 2013). Cleaner alone may be appropriate therapy to prevent or clear mild secondary infections in some patients (Fregeneda-Grandes et al., 2020; Moog et al., 2022; Mueller et al., 2023).
- Topical ear medications containing anti-inflammatory (steroid) and/or antibiotics and/or antifungal agents to address secondary infections and inflammation if appropriate based on physical exam findings and cytology (if performed).
- Client education and demonstration of correct application of treatments and discussion of patient tolerance will impact treatment success/failure and ongoing management needs to prevent recurrence.
- One of the most common causes for recurrent otitis externa is incomplete resolution so emphasize the importance for recheck appointments when possible.

Additional considerations for Care Option 1: Identification and management of the underlying etiology of otitis externa may be limited due to budgetary constraints. Nevertheless, discussion of the predisposing, primary, and perpetuating factors is important and the likelihood of recurrence when these factors are not addressed must be emphasized. Consider long-term low-dose steroid therapy (ideally topical) for management of suspected allergy.

CARE OPTION 2 (MODERATE BUDGET):

Diagnostics:

- Otoscopic examination of the ear canal where possible.
- Ear cytology.
- Culture and sensitivity may be helpful where precise identification is needed to select appropriate therapy (Nuttall, 2023).

Treatment:

- Short course of oral glucocorticoids to address pain and inflammation to make cleaning and examination of ear better tolerated by patient. This may be required prior to definitive topical medication.
- Topical ear cleaners containing ingredients like TrizEDTA, chlorhexidine or salicylic acid to help remove debris, control bacterial and fungal growth, and may increase efficacy of topical antibiotics in some cases (Buckley et al., 2013). Cleaner alone may be appropriate therapy to prevent or clear mild secondary infections in some patients (Fregeneda-Grandes et al., 2020; Moog et al., 2022; Mueller et al., 2023).
- Topical ear medications containing anti-inflammatory (steroid) and/or antibiotics and/or antifungal agents to address infection and inflammation if appropriate based on physical exam and results of cytology. Culture may be helpful where precise identification is needed to select appropriate therapy (Nuttall, 2023).
- Client education and demonstration of correct application of treatments and discussion of patient tolerance will impact treatment success/failure and ongoing management needs to prevent recurrence.
- One of the most common causes for recurrent otitis externa is incomplete resolution so emphasize the importance for recheck appointments to be scheduled until complete resolution when possible.
- If infection is severe, involving deeper anatomical structures, or if anatomical abnormalities preclude topical treatments reaching target sites, oral antibiotics or antifungal medications may be prescribed (with limited efficacy).
- Sedated ear cleaning can be considered.
- Optional: Early referral to a veterinary dermatologist for further evaluation and management can have cost savings (Logas & Maxwell, 2021).
- In cases of end-stage ear disease or other patient/client barriers to effective treatment, surgical intervention such as lateral ear canal resection or total ear canal ablation and lateral bulla osteotomy (TECA-BO) may be considered as a salvage procedure (Doyle et al., 2004). While surgery can be expensive, the cost may be lower if performed by primary care surgeons. Surgery may be considered earlier for moderate budgets than high budgets due to funding restrictions.

Additional considerations for Care Option 2: Discussion of the predisposing, primary, and perpetuating factors is important to reduce the likelihood of recurrence. Consider initiating work-up for allergies based on client's budget- at a moderate budget level this is likely to represent diet trials and steroids. Consideration may be made for more costly anti-inflammatory/antipruritic medications such as cyclosporine, oclacitinib, and/or lokivetmab depending on case presentation.

CARE OPTION 3 (HIGH BUDGET):

Diagnostics:

- Otoscopic examination of the ear canal where possible.
- Ear cytology.
- Culture and sensitivity may be helpful where precise identification is needed to select appropriate therapy (Nuttall, 2023).
- Deep ear flushing under general anesthesia where needed for removal of excess debris and thorough evaluation of ear canals and integrity of tympanic membrane +/- myringotomy, if indicated.
- Advanced imaging, if indicated.

Treatment:

- Short course of oral glucocorticoids to address pain and inflammation to make cleaning and examination of ear better tolerated by patient. This may be required prior to definitive topical medication.
- Topical ear cleaners containing ingredients like TrizEDTA, chlorhexidine or salicylic acid to help remove debris, control bacterial and fungal growth, and may increase efficacy of topical antibiotics in some cases (Buckley et al., 2013). Cleaner alone may be appropriate therapy to prevent or clear mild secondary infections in some patients (Fregeneda-Grandes et al., 2020; Moog et al., 2022; Mueller et al., 2023).
- Topical ear medications containing anti-inflammatory (steroid) and/or antibiotics and/or antifungal agents to address infection and inflammation if appropriate based on results of cytology. Culture may be helpful where precise identification is needed to select appropriate therapy (Nuttall, 2023).
- Deep ear flush under general anesthesia +/- myringotomy, if indicated.
- Customized treatment plan based on diagnostic testing, concurrent conditions (e.g. allergies), and other case factors.
- Early referral to a veterinary dermatologist for further evaluation and management can have cost savings (Logas & Maxwell, 2021).
- Regular follow-up appointments for monitoring progress and adjusting treatment as necessary.
- Daily appointments to administer medication may be considered dependent on patient temperament and owner ability to medicate.
- In cases of end-stage ear disease or other patient/client barriers to effective treatment, surgical intervention such as lateral ear canal resection or total ear canal ablation and lateral bulla osteotomy (TECA-BO) may be considered as a salvage procedure (Doyle et al., 2004).

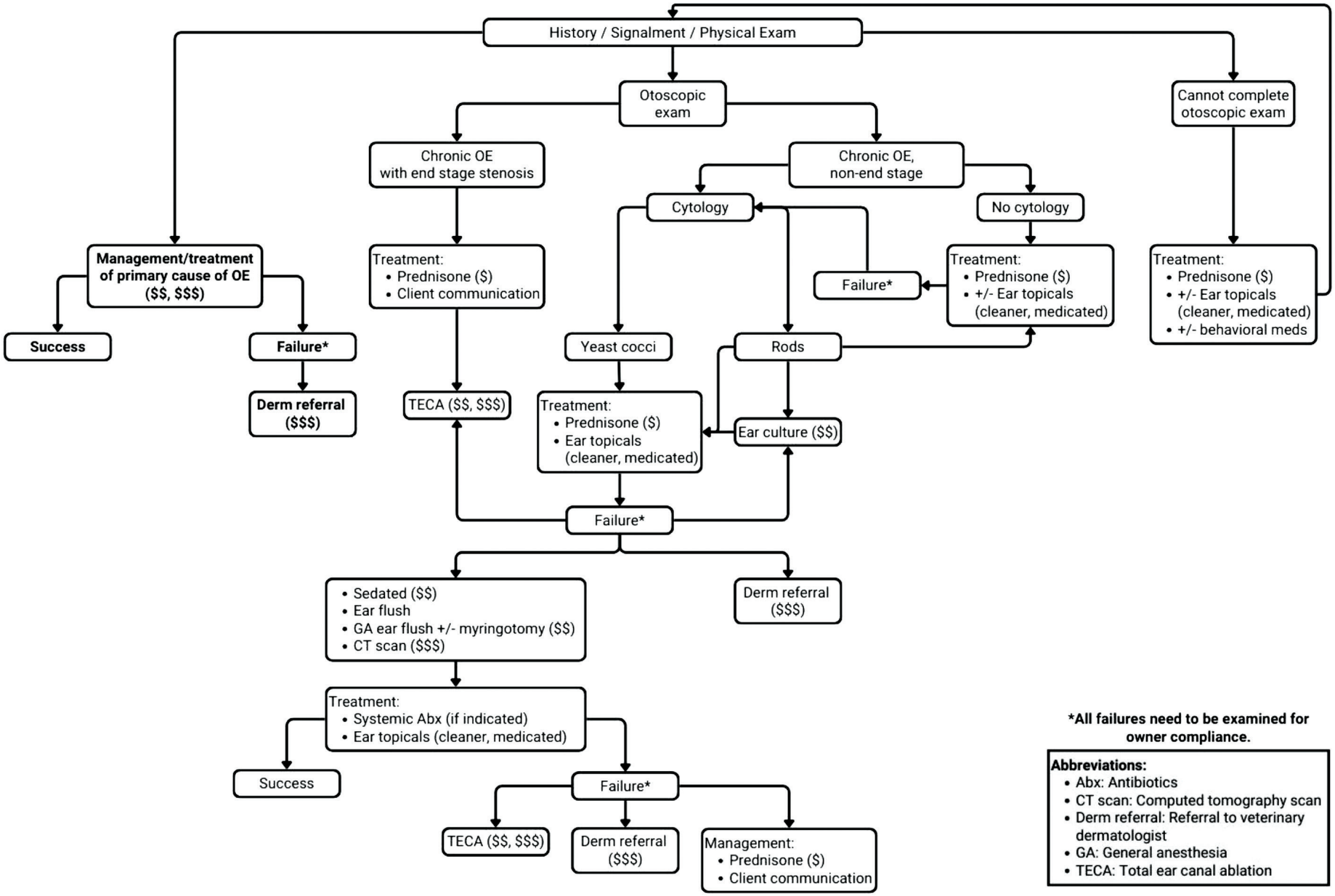
Additional considerations for Care Option 3: Discussion of the predisposing, primary, and perpetuating factors is important to reduce the likelihood of recurrence. Thorough work-up for underlying allergies should be pursued with symptomatic therapy as indicated. Early referral to a dermatologist has been associated with better patient outcomes, overall improved client satisfaction, and ultimate treatment cost savings (Hanna, 2022; Logas & Maxwell, 2021; Miller et al., 2023).

Table 1. Care options and prognoses based on budget for canine recurrent/chronic otitis externa.

	EUTHANASIA	LOW ($)	MODERATE ($$)	HIGH ($$$)
Diagnostics	NA	• Otoscopy • +/- Cytology	• Otoscopy • Cytology • +/- C&S (if indicated) • +/- Food trial	• Otoscopy • Cytology • C&S (if indicated) • Myringotomy (if indicated) • CT (if indicated) • Food trial • Intradermal allergy test • CBC/Chemistry • Thyroid panel
Treatment	NA	• Prednisone • Ear cleaner • Topical medication (antibacterial and/or antifungal)	• Prednisone • Ear cleaner • Topical medication (antibacterial and/or antifungal) • +/- Systemic antimicrobial • +/- Sedated ear flush • +/- Referral to veterinary dermatologist • +/-Surgery*	• Prednisone • Ear cleaner • Topical medication (antibacterial and/or antifungal) • +/- Systemic antimicrobial • Sedated ear flush • Deep ear flush (under GA) • Antipruritic medication (oclacitinib, lokivetmab) for suspected cases of allergy • Referral to veterinary dermatologist • Surgery*
Prognosis	NA	Variable	Variable	Prognosis improved with effective management of the primary cause of otitis externa

*Surgery includes lateral ear canal resection or total ear canal ablation + bulla osteotomy (TECA-BO) which are reserved for cases of end-stage stenotic ear disease or in cases where patient/client barriers preclude successful treatment/management of disease.

Figure 1. Flowchart of care options and prognoses with cost annotations for canine recurrent/chronic otitis externa.



Component 3: References to research literature that provides evidence for the care options

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Fregeneda-Grandes, J. M., Nicolás-González, J. J., Rejas-López, J., & Carvajal-Urueña, A. (2020). Preliminary evaluation of two commercial ear solutions in the treatment of canine otitis externa. *Journal of Small Animal Practice, 61*(9), 547–553. **https://doi.org/10.1111/jsap.13177**

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Miller, J., Simpson, A., Bloom, P., Diesel, A., Friedeck, A., Paterson, T., Wisecup, M., & Yu, C. (2023). 2023 AAHA management of allergic skin diseases in dogs and cats guidelines. *Journal of the American Animal Hospital Association, 59*(6), 255–284. **https://doi.org/10.5326/JAAHA-MS-7396**

Moog, F., Mivielle, J., Brun, J., Dumitrache, M. O., Amalric, N., Lecru, L., Pressanti, C., Kondratjeva, J., Combarros, D., Fantini, O., & Cadiergues, M. C. (2022). Clinical and microbiological performances and effects on lipid and cytokine production of a ceruminolytic ear cleaner in canine erythemato-ceruminous otitis externa. *Veterinary Sciences, 9*(4), 185. **https://doi.org/10.3390/vetsci9040185**

Mueller, R. S., Baumann, K. N., Boehm, T., Dörfelt, S., Kasper, B., & Udraite-Vovk, L. (2023). Evaluation of hypochlorous acid as an ear flush in dogs with chronic otitis externa. *Veterinary Dermatology, 34*(2), 134–141. **https://doi.org/10.1111/vde.13142**

Ngo, J., Taminiau, B., Fall, P. A., Daube, G., & Fontaine, J. (2018). Ear canal microbiota – a comparison between healthy dogs and atopic dogs without clinical signs of otitis externa. *Veterinary Dermatology*, *29*(5), 425-e140. **https://doi.org/10.1111/vde.12674**

Nuttall, T. (2023). Managing recurrent otitis externa in dogs: What have we learned and what can we do better? *Journal of the American Veterinary Medical Association, 261*(S1), S10–S22. **https://doi.org/10.2460/javma.23.01.0002**

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Component 4: Examples of specific case management knowledge and skills students need to develop to identify, communicate, and provide the care options (identified by both primary care educators and practitioners)

KNOWLEDGE AND CLINICAL REASONING SKILLS

1. Utilize knowledge of the pathophysiology and clinical signs of otitis externa and synthesize pertinent details from the history and physical exam parameters to develop a working diagnosis.
2. Select and interpret appropriate diagnostic tests for cases of recurrent otitis externa, including a diagnostic plan for suspected cases of allergy, while considering patient, client, clinic, and clinician factors and resources.
3. Use evidence-based knowledge to establish an appropriate treatment plan considering patient, client, clinic, and clinician factors and resources, and demonstrate the ability to recognize changes in patient status and adapt accordingly. Recognize when referral to a veterinary dermatologist is appropriate.
4. Identify financial support options/resources available to clients and clinics locally, regionally, and nationally when clients have very limited finances.
5. Recognize the 3Ps of otitis externa (predisposing, primary, and perpetuating factors) and synthesize the pertinent information from the history and physical exam to identify these factors.

PROFESSIONAL / COMMUNICATION SKILLS

1. Effectively communicate with clients about the pros and cons of each diagnostic and treatment option and their associated costs, and demonstrate regard for clients' factors, budget, and resources.
2. Demonstrate empathy and compassion when communicating with clients, including when euthanasia is most appropriate for the family's and pet's circumstances.
3. Consider the impact of treatment options while balancing the overall business profitability, availability of staff and doctors, and overall client satisfaction.
4. Thoroughly document all communications with the client, including diagnostic and treatment options, potential risks, and known client barriers. Include use of against medical advice (AMA) forms if indicated.
5. Educate clients on the importance of identifying and treating/managing primary causes of otitis externa to minimize the risk of recurrence and on the importance of appropriate techniques for medicating and treating the ears.

CLINICAL SKILLS

1. Demonstrate proficiency in obtaining a history and performing a thorough physical examination to identify clinical signs of otitis externa.
2. Interpret relevant diagnostics (ear cytology, culture & susceptibility, advanced diagnostic imaging where appropriate).
3. Perform an otoscopic examination of the ear, including assessment of tympanic membrane integrity.
4. Collect samples from the ear and prepare samples for microscopic evaluation. Identify common pathogens infecting the ear.
5. Utilize applied medical math for calculation of systemic medication dosages.
6. Demonstrate effective ear cleaning in a non-sedated patient, and safely perform a deep ear flush and otoscopic exam on a patient under general anesthesia.

Component 5: Examples of assessments and learning experiences that educators can use to develop the case management knowledge and skills that students need to provide the care options

LEARNING EXPERIENCES		ASSESSMENTS
Didactic (Lectures and Seminars)	Veterinary students attend lectures and seminars covering the pathogenesis, presentation and treatment of acute and chronic otitis and related topics such as allergic skin disease and microbiology. These sessions provide foundational knowledge about the factors that can predispose, cause and perpetuate otitis and their diagnosis, management and/or treatment. They also cover secondary pathogens and their effective diagnosis and treatment, as well as considerations regarding antimicrobial stewardship and surgical management of end-stage disease.	Consider use of formative and/or summative assessment to gauge understanding of key concepts. Specific assessment tools should be at the educator's discretion based on the case's intent.
Laboratory Sessions (Clinical & Communication Skills)	Hands-on laboratory sessions allow students to practice clinical and communication skills related to evaluating patients with otitis externa, including physical examination techniques, otoscopy, microscopy/cytology, taking a detailed history, and dealing with difficult conversations.	Consider use of formative and/or summative assessment to assess proficiency in performing clinical skills relevant to the case. These could include in-the-moment feedback and/or an objective structured clinical exam (OSCE). Mock interviews could be considered for assessment of communication skills. Specific assessment tools should be at the instructor's discretion based on the case's intent.
Case-Based Learning	Case-based learning exercises present students with clinical scenarios involving dogs presenting with chronic/recurrent otitis externa (see **Box 1** for example clinical scenario). Students analyze patient history, clinical signs, and diagnostic results to develop differential diagnoses and treatment plans under the guidance of faculty members. Students work together to critically evaluate clinical cases, research relevant literature, and develop evidence-based treatment plans.	Consider use of formative and/or summative assessment to assess proficiency in clinical reasoning. Consider the use of exams, written assignments, or case presentations. Specific assessment tools should be at the instructor's discretion based on the case's intent.
Clinical Rotations	Clinical rotations in community practice/primary care and dermatology allow students to observe and participate in the initial consultation, diagnosis and ongoing case management of patients with chronic/recurrent otitis externa under the supervision of experienced clinicians. Students learn to perform physical examinations, perform and interpret diagnostic tests, formulate treatment plans, and provide client communication and support.	Consider use of formative and/or summative assessment to evaluate student's ability to integrate clinical reasoning, communication and clinical skills, and ability to collaborate within the veterinary team. Use of direct observation of procedural skills (DOPS) would be applicable in this context. Specific assessment tools should be at the instructor's discretion based on the case's intent.

Box 1. Example clinical scenario for teaching case management for canine recurrent/chronic otitis externa.

Mrs. Martin called earlier today requesting a refill on antibiotics prescribed 3 months prior for an ear infection. Given the time lapse, it was necessary to see Diesel again to reassess his condition.

Signalment: Diesel, a 4-year-old, male castrated, Staffordshire terrier

History: Three months ago, Diesel presented with a history of itchy ears, thinning hair and reddened skin, salivary staining on his feet and perianal region, and anal sacculitis. At that visit, allergies (food vs. atopy) and weight management were discussed with the client, and an estimate for a full dermatologic workup, including a CBC, chemistry panel, thyroid panel and fungal culture was provided.

The client declined everything but cytology of ears and skin:

- Ears: 3+ cocci bilaterally, neutrophils present.
- Skin: 2-3+ cocci, neutrophils present with intracellular cocci.

At that time, Diesel's infections were treated as follows. Mrs. Martin reports he did well following treatment:

- Otomax ointment (steroid + antibiotic + antifungal): Apply small amount between toes & on bottom of feet. Place 6-8 drops AU every 12 hours for 10 days.
- Cephalexin (oral antibiotic) 500 mg #84: Give 2 capsules PO every 12 hours for 21 days.
- Prednisone (oral steroid) 20 mg tab #8: Give 1 tab PO every 24 hours for 4 days, then ½ tab every 24 hours for 4 days, then ½ tab every other day for 8 days. Give with food.
- Chlorpheniramine (antihistamine) 4 mg tabs: Give 3 tabs PO every 8-12 hours OR Benadryl (antihistamine) 25 mg tab: Give 3 to 4 tabs PO every 8 hours.
- Client declined topical therapy due to lack of ability to apply to ears.

Today's Physical Exam Findings:

- Ears: Mild to moderate erythema of inner pinna with a moderate amount of tan-brown debris AU. Otoscopy revealed mild to moderate inflammation in both vertical & horizontal ear canals and mild "cobblestone" appearance of the canal walls AU. Integrity of the tympanic membrane could not be assessed AU due to the presence of debris. Patient was uncomfortable during otoscopy but tolerated it sufficiently for a brief exam. During the visit, he was shaking his head frequently.
- Skin: Mild erythema noted in the axilla and inguinal regions bilaterally. Mild interdigital erythema affecting all paws with ongoing salivary staining (improved since last visit). Ongoing, mild erythema in perianal region. Hair coat is unremarkable – previous areas of alopecia resolved.
- Eyes: mild mucoid ocular discharge OU.
- Physical exam otherwise normal

RECOMMENDED CITATION

Harland, L., Paterson, T., Ruch-Gallie, R., & Wisecup, M. (2024). Teaching spectrum of care case management: Canine recurrent/chronic otitis externa. In AAVMC Spectrum of Care Initiative Task Force, H. N. Fedesco, & J. E. Brodsky (Eds.), *Enhancing spectrum of care preparation in veterinary education programs: An implementation strategies guide* (pp. 103–111). American Association of Veterinary Medical Colleges. **https://doi.org/10.17605/OSF.IO/AHWQE**

Teaching Spectrum of Care Case Management: Canine Parvovirus

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Component 1: A learning objective aligned with competencies in the Spectrum of Care (SOC) Education Model

Learning objective: Managing a stable canine patient with vomiting and diarrhea and case history consistent with parvovirus.

Alignment with competencies in the SOC Education Model:

- *SOC Subcompetency 1.3.5.* Integrates information about the patient with client circumstances to identify a range of appropriate care options and to adjust the care plan.
- *SOC Subcompetency 1.4.4.* Offers a range of care options that are tailored to the unique circumstances of each patient and client.
- *SOC Subcompetency 1.4.5.* Facilitates client decision-making regarding care by presenting the costs, risks, benefits, and evidence-base of care options.
- *SOC Subcompetency 3.1.5.* Provides a range of appropriate care options for animal populations that consider animal welfare, lifestyle, economics, societal interests (e.g., food animal industry, animal activism) and public and environmental health concerns.
- *SOC Subcompetency 8.1.4.* Provides a range of care and payment options in a manner that fosters financial viability of the practice and a positive working environment.

Component 2: The range of care options identified by primary care educators and practitioners

There are multiple care options for ***managing a stable canine patient with vomiting and diarrhea and case history consistent with parvovirus infection.*** The care options are described in detail below and then summarized in **Table 1**. Students can develop the knowledge and skills to identify, communicate, and perform these care options (Component 4) via the learning experiences in Component 5.

Please Note:

- The care options below are **NOT** intended to be comprehensive, both in terms of capturing all the options and all the components of the options. There are many subtleties in deciding when to use which diagnostic tools and when to consider empirical treatment over additional diagnostics. Instead, the care options below focus on the main components of care that a student is expected to consider and be able to communicate and perform in their practice.
- When using these case management materials, educators should emphasize for students the importance of clinical reasoning and reassessment with adjustment of care options.
- The primary care educators and practitioners working on this project come from different geographic regions, which means that the specific costs for care options vary. Therefore, the care options presented here are organized into three budget categories, rather than by specific dollar amount.

FOR ALL CARE OPTIONS:

- **Consultation:** Use part of the budget to cover the veterinary consultation. This includes communicating with the owner to obtain a thorough history and identifying factors that, in addition to financial constraints, may affect care options. These may include differences in understood and spoken languages between provider and owner, transportation/ability to return to clinic for follow ups, ability to administer a home care plan, and personal goals, preferences, or beliefs about care. Key historical information should include clinical signs (*duration and*

extent of diarrhea and vomiting episodes, patient appetite, etc.), vaccination status, potential exposure points, and signalment. A comprehensive physical exam would be performed.

- Recovered parvovirus dogs should have a parvovirus vaccine booster and other dogs in the litter and household should also be vaccinated.
- Despite initial recovery, a discussion with owners about the potential for chronic GI issues later in life is also recommended as it has been found that dogs that previously had parvo were significantly more likely to have reported chronic GI signs later in life (Kilian et al., 2018).
- Humane euthanasia may be the best option depending on the patient's condition, comorbidities, and client circumstances.
- Despite initial judgment on a client's ability (whether financial or otherwise) to pursue treatment, owners of any parvovirus infected patient should be advised of all options available, including to seek treatment at a local specialty or inpatient practice. If declined, the option of an outpatient treatment program may be discussed by clearly explaining the risks and benefits of each option below (i.e., with the Low Budget option, the risk of worsening disease or death is higher, but with the High Budget option, the risk of spending more money than you have is higher). Consider utilizing a spectrum of care diagnostic tool, such as the SCOPE tool, to help clarify client and patient contextual issues impacting the care plan (Hohenhaus & Provost, 2024). For example, would bringing a patient into the clinic for an outpatient protocol twice daily be more difficult (taking time off work, etc.) than inpatient care? Resources such as a waiver acknowledging that clients have been informed of these risks and wished to pursue a certain treatment anyways may be indicated.
- **For this case example**, a ***stable*** 16-week-old puppy presents after having diarrhea for 2-3 days and began vomiting this morning. On presentation, the puppy is quiet, alert and responsive, ambulatory, mildly to moderately dehydrated, normothermic, normotensive and tests **positive for parvovirus** on a point of care test. The patient in this case is deemed suitable for outpatient treatment.

CARE OPTION 1 (LOW BUDGET): SYMPTOMATIC TREATMENT AND MONITORING

Additional Diagnostics: If client has the financial resources, consider +/- blood glucose (BG), +/- blood smear evaluation (estimate WBC), +/- blood pressure, +/- PCV/TS, +/- fecal analysis vs. empirical deworming, depending on patient clinical signs and client goals. However, funds are primarily focused on the treatment.

Treatment:

- **Medical management:** In a stable patient (if isolated hospitalization is not feasible), outpatient medical management is warranted. Administer supportive care as indicated (e.g., subcutaneous fluids [SQ], injectable antibiotics, injectable antiemetics, etc.). Additionally, advise owners on the importance of hygiene, isolation and vaccination practices, as well as feeding a highly digestible and low-fat diet (this may need to be syringe-fed depending on appetite).
- **Close monitoring:** Owner to monitor at home. Follow-up phone calls by the veterinary healthcare team are necessary to assess the dog's overall condition and response to supportive care. Recheck as needed, keeping the owner's availability and funds in consideration. Consider recheck consultation and treatment outdoors in a designated area or in the owner's vehicle if isolation is unavailable in clinic.
- **Special note:** Outpatient medical management resulted with 83% of parvo positive dogs surviving when outpatient treatment involved SQ fluids every 12 hours, SQ antibiotics, SQ antiemetics every 24 hours and oral electrolyte support (glucose, potassium, etc.) when indicated for an average of 3.8 days (+/- 2 days). When the clinic was closed, owners were taught how to give SQ fluids and SQ antiemetics at home until the clinic re-opened (Perley et al., 2020). This is based on the Colorado State University Outpatient Treatment Protocol for parvoviral gastroenteritis (Venn et al., 2017).

CARE OPTION 2 (MODERATE BUDGET): DAYTIME HOSPITALIZATION AND OUTPATIENT SYMPTOMATIC TREATMENT AND MONITORING

Additional Diagnostics: If the client has the financial resources, +/- blood pressure, +/- CBC, +/- chemistry profile, +/- fecal analysis vs. empirical deworming can be considered, however, funds are primarily focused on the treatment rather than diagnostics (Sarpong et al., 2017). See above for the most targeted, high yield diagnostic tests to consider.

Treatment:

- **Medical management:** Hospitalization in isolation (referral may be indicated), including a broader range of medications (e.g., injectable antibiotics, antiemetics, antacids, dextrose and/or electrolytes if indicated), more efficient rehydration (e.g., IV fluid therapy), and nutritional support (e.g., syringe feeding vs nasoesophageal [NE] or nasogastric [NG] feeding tube) as financial resources allow. At-home care requires continued supportive care, pending condition when discharged (see above for outpatient therapy) and consideration of continued oral medications and nutritional support (e.g., subcutaneous fluids, oral antibiotics, and oral antiemetics, highly digestible, low fat nutritional support, probiotics, etc.). Additionally, advise owner on continued isolation and vaccination practices to prevent spread to other dogs in the home or outside.
- **Close monitoring:** Owner to monitor at home. Follow-up phone calls by the veterinary healthcare team are necessary to assess the dog's overall condition and response to supportive care. Recheck as needed (including serial lab work as indicated) keeping the owner's availability and funds in consideration. Consider recheck consultation and treatment outdoors in a designated area or in the owner's vehicle if isolation is unavailable in clinic.

- **Special note:** Canine Parvovirus Monoclonal Antibody treatment may be indicated as studies have shown that it reduces mortality in parvo patients, but the cost may limit its use (Larson et al., 2024).

CARE OPTION 3 (HIGH BUDGET): INPATIENT HOSPITALIZATION (REFERRAL AND/OR MONITORED 24-HOUR CARE FACILITY)

Additional Diagnostics: If the client has the financial resources, include (in order of priority) bloodwork (CBC and Chemistry), blood pressure, abdominal radiographs and/or ultrasound (if intussusception is suspected), fecal analysis, and/or thoracic radiographs if indicated.

Treatment:

- **Medical management:** Comprehensive treatment while hospitalized in isolation (referral may be indicated), including a broader range of injectable medications (e.g., antibiotics, antiemetics, antacids, dextrose and/or electrolytes if indicated based on serial lab work), and more efficient rehydration (e.g., IV fluid therapy). Advanced nutritional support (e.g., NE or NG feeding tube) may be necessary. Use of Canine Parvovirus Monoclonal Antibody treatment and/or fecal microbiota transplant (via enema; Pereira et al., 2018) could be considered as financial resources allow.
- **Close monitoring:** Once patient has recovered and is discharged, ongoing monitoring and adjustment to therapeutic plan is essential. Recheck as needed keeping the owner's availability and funds in consideration.
- **Special note:** Despite intensive therapy, survival is not guaranteed, and this should be communicated to the owner. Inpatient medical management resulted with 90% of parvo positive dogs surviving when inpatient treatment involved IV fluids, IV antibiotics, IV antiemetics and IV electrolyte support (glucose, potassium, etc.) when indicated for an average of 4.6 days (+/- 2 days; Venn et al., 2017).

Component 3: References to research literature that provides evidence for the care options

Hohenhaus, A. E., & Provost, D. C. (2023). A unique spectrum of care tool provides a self-regulated learning opportunity and facilitates client communication. *Journal of Veterinary Medical Educ*ation, e20230144. **https://doi.org/10.3138/jvme-2023-0144**

Kilian, E.., Suchodolski, J. S., Hartmann, K., Mueller, R. S., Wess, G., & Unterer, S. (2018). Long-term effects of canine parvovirus infection in dogs. *PLoS One*, *13*(3), e0192198. **https://doi.org/10.1371/journal.pone.0192198**

Table 1. Care options and prognoses for canine parvovirus based on budget.

	EUTHANASIA	LOW ($) (SIMPLE OUTPATIENT CARE)	MODERATE ($$) (MORE ADVANCED OUTPATIENT CARE AND DIAGNOSTICS)	HIGH ($$$) (HOSPITALIZATION AND ADVANCED DIAGNOSTICS)
Diagnostics	+/- Parvovirus Point of Care Test	Parvovirus Point of Care Test +/- BG*, +/- Blood smear, +/- BP*, +/- Fecal/Deworming	Parvovirus Point of Care Test +/- BG, +/- Blood smear, +/- BP, +/- electrolytes +/- Fecal/Deworming and serial lab work as indicated	Parvovirus Point of Care Test CBC, Chemistry, Abdominal radiograph/ultrasound, Fecal/Deworming, and serial lab work as indicated
Treatment	Euthanasia	Outpatient therapy with (ideally twice) daily visits to the hospital, with or without diagnostics: • SQ* fluids, long-acting antibiotics (cefovecin), and antiemetic (maropitant) injections • Nutritional support	Outpatient therapy with (ideally twice) daily visits to hospital with minimal diagnostics: • SQ fluids, long-acting antibiotics (cefovecin), antiemetic (maropitant +/- metoclopramide), and antacid (famotidine) injections • Oral glucose or electrolyte support, pending serial lab results • Nutritional support	Hospital admission in isolation: • IV fluid therapy, including IV antibiotics, antiemetics, antacids, dextrose/electrolytes if indicated pending serial lab results • NE or NG tube as needed for nutritional support • Canine Parvovirus Monoclonal Antibody and/or Fecal Microbiota Transplant can be considered.
Prognosis	N/A	Unknown	80% survival (Venn et al., 2017) up to 83% survival (Perley et al., 2020) with potential addition of rescue therapies**	90% survival to discharge (Venn et al., 2017)

*BG: blood glucose, BP: blood pressure, SQ: Subcutaneous

Reference the Pennsylvania Society for the Prevention of Cruelty to Animals outpatient parvovirus protocol (Perley at al., 2020). The **flow chart demonstrating the protocol used in the clinic analyzed in the retrospective study is on page 204.

Larson, L., Miller, L., Margiasso, M., Piontkowski, M., Tremblay, D., Dykstra, S., Miller, J., Slagter, B. J., Champ, D., Keil, D., Patel, M., & Wasmoen, T. (2024). Early administration of canine parvovirus monoclonal antibody prevented mortality after experimental challenge. *Journal of the American Veterinary Medical Association, 262*(4), 506—512. **https://doi.org/10.2460/javma.23.09.0541**

Pereira, G. Q., Gomes, L. A., Santos, I. S., Alfieri, A. F., Weese, J. S., Costa, & M. C. (2018). Fecal microbiota transplantation in puppies with canine parvovirus infection. *Journal of Veterinary Internal Medicine*, *32*(2), 707—711. **https://doi.org/10.1111/jvim.15072**

Perley, K., Burns, C. C., Maguire, C., Shen, V., Joffe, E., Stefanovski, D., Redding, L., Germanis, L., Drobatz, K. J., & Watson, B. (2020). Retrospective evaluation of outpatient canine parvovirus treatment in a shelter-based low-cost urban clinic. *Journal of Veterinary Emergency and Critical Care (San Antonio)*, *30*(2), 202—208. **https://doi.org/10.1111/vec.12941**

Sarpong, K. J., Lukowski, J. M., & Knapp, C. G. (2017). Evaluation of mortality rate and predictors of outcome in dogs receiving outpatient treatment for parvoviral enteritis. *Journal of the American Veterinary Medical Association*, *251*(9), 1035—1041. **https://doi.org/10.2460/javma.251.9.1035**

Venn, E. C., Preisner, K., Boscan, P. L., Twedt, D. C., & Sullivan, L. A. (2016). Evaluation of an outpatient protocol in the treatment of canine parvoviral enteritis. *Journal of Veterinary Emergency and Critical Care (San Antonio)*, *27*(1), 52—65. **https://doi.org/10.1111/vec.12561**

Component 4: Examples of specific case management knowledge and skills students need to develop to identify, communicate, and provide the care options (identified by both primary care educators and practitioners)

KNOWLEDGE AND CLINICAL REASONING SKILLS

1. Utilize knowledge of the pathophysiology and clinical signs of parvovirus and synthesize pertinent details from the history and physical exam parameters to develop a working diagnosis.
2. Select and interpret appropriate diagnostic tests to confirm the diagnosis of parvovirus.
3. Use evidence-based knowledge to establish an appropriate treatment plan considering patient, client, clinic, and clinician factors and resources, and demonstrate the ability to recognize changes in patient status and adapt accordingly.
4. Identify financial support options/resources available to clients and clinics locally, regionally, and nationally when clients have very limited finances.
5. Recognize the infectious considerations for cases of parvovirus, including risks to other pets and in-hospital isolation protocols.

PROFESSIONAL / COMMUNICATION SKILLS

1. Effectively communicate with clients about the pros and cons of each diagnostic and treatment option and their associated costs, and demonstrate regard for clients' factors, budget, and resources.
2. Demonstrate empathy and compassion when communicating with clients, including when euthanasia is most appropriate for the family's and pet's circumstances.
3. Communicate about infectious disease, including parvovirus prevention through timely vaccination, exposure risks, time from exposure to infection, sanitation protocols, and interactions with other pets and family members.
4. Consider the impact of treatment options while balancing the overall business profitability, availability of staff and doctors, and overall client satisfaction.
5. Thoroughly document all communications with the client, including diagnostic and treatment options, potential risks, and known client barriers. Include use of against medical advice (AMA) forms if indicated.

CLINICAL SKILLS

1. Demonstrate proficiency in obtaining a history and performing a thorough physical examination to identify clinical signs of parvovirus.
2. Interpret relevant diagnostics (fecal analysis, parvovirus point of care test, CBC, etc.).
3. Perform blood sample collection from jugular or saphenous sites.
4. Utilize applied medical math for calculation of medication dosages, nutritional requirements and fluid rate (SQ or IV).
5. Demonstrate skills relevant to rehydration including placement of IV catheter and administration of subcutaneous fluids.

Component 5: Examples of assessments and learning experiences that educators can use to develop the case management knowledge and skills that students need to provide the care options

LEARNING EXPERIENCES		ASSESSMENTS
Didactic (Lectures and Seminars)	Veterinary students attend lectures and seminars covering gastrointestinal physiology, anatomy, immunology, preventive care, and common gastrointestinal disorders, including parvovirus. These sessions provide foundational knowledge about the gastrointestinal system, infectious disease, and management of parvovirus.	Consider use of formative and/or summative assessment to gauge understanding of key concepts. Specific assessment tools should be at the instructor's discretion based on the case's intent.
Laboratory Sessions (Clinical & Communication Skills)	Hands-on laboratory sessions allow students to practice clinical and communication skills related to evaluation of the gastrointestinal system, including physical examination techniques, and effective client communication.	Consider use of formative and/or summative assessment to assess proficiency in performing clinical skills relevant to the case. These could include in-the-moment feedback and/or an objective structured clinical exam (OSCE). Mock interviews could be considered for assessment of communication skills. Specific assessment tools should be at the instructor's discretion based on the case's intent.
Case-Based Learning	Case-based learning exercises present students with clinical scenarios involving young dogs presenting with parvovirus (see **Box 1** for example clinical scenario). Students analyze patient history, clinical signs, and diagnostic results to develop differential diagnoses and treatment plans under the guidance of faculty members. Students work together to critically evaluate clinical cases, research relevant literature, and develop evidence-based treatment plans.	Consider use of formative and/or summative assessment to assess proficiency in clinical reasoning. Consider the use of exams, written assignments, or case presentations. Specific assessment tools should be at the instructor's discretion based on the case's intent.
Clinical Rotations	Clinical rotations in community practice/primary care, small animal medicine, and emergency/critical care allow students to observe and participate in the diagnosis and management of parvoviral cases under the supervision of experienced clinicians. Students learn to perform physical examinations, interpret diagnostic tests, formulate treatment plans, and provide client communication and support.	Consider use of formative and/or summative assessment to evaluate student's ability to integrate clinical reasoning, communication and clinical skills, and ability to collaborate within the veterinary team. Use of direct observation of procedural skills (DOPS) would be applicable in this context. Specific assessment tools should be at the instructor's discretion based on the case's intent.

Box 1. Example clinical scenario for teaching case management for canine recurrent/chronic otitis externa.

A puppy and their owner present for an illness exam.

Signalment: 12-week-old, male intact, mixed breed dog

History: The puppy has not received any prior vaccinations. Owner reports a sudden onset of severe vomiting and diarrhea. They report that the consistency of the diarrhea is watery with evidence of blood. The owner notes that the puppy is lethargic, depressed, and has a decreased appetite. The puppy often has playdates with other puppies in the neighborhood and the owner is uncertain of the vaccination status of the playmates.

Physical Exam Findings:

- General Appearance: The puppy appears weak, lethargic, and depressed. Dehydration is evident due to mildly sunken eyes and dry mucous membranes.
- Temperature: 103.5 degrees Fahrenheit.
- Heart Rate: 160 beats per minute
- Respiratory Rate: 42 breaths per minute
- Abdominal Pain: Guarded abdomen
- Mucous Membranes: Pale and tacky
- Capillary Refill Time (CRT): Prolonged CRT (>2 seconds)

RECOMMENDED CITATION

Alvarez, E. E., Bernstein, L. A., Montgomery, E., Paterson, T., & Wisecup, M. (2024). Teaching spectrum of care case management: Canine parvovirus. In AAVMC Spectrum of Care Initiative Task Force, H. N. Fedesco, & J. E. Brodsky (Eds.), *Enhancing spectrum of care preparation in veterinary education programs: An implementation strategies guide* (pp. 112–117). American Association of Veterinary Medical Colleges. **https://doi.org/10.17605/OSF.IO/AHWQE**

Teaching Spectrum of Care Case Management: Canine Pyometra

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*Care options and references reviewed by **Erin Lashnits**, University of Wisconsin-Madison*

Component 1: A learning objective aligned with competencies in the Spectrum of Care (SOC) Education Model

Learning objective: Managing an intact female canine patient presenting with case history and clinical signs consistent with pyometra requiring surgery.

Alignment with competencies in the SOC Education Model:

- *SOC Subcompetency 1.3.5.* Integrates information about the patient with client circumstances to identify a range of appropriate care options and to adjust the care plan.
- *SOC Subcompetency 1.4.4.* Offers a range of care options that are tailored to the unique circumstances of each patient and client.
- *SOC Subcompetency 1.4.5.* Facilitates client decision-making regarding care by presenting the costs, risks, benefits, and evidence-base of care options.
- *SOC Subcompetency 7.3.4.* Acknowledges and considers the context of previous care decisions made by colleagues and clients.
- *SOC Subcompetency 7.3.5.* Reflects on one's own professional identity in relation to providing a spectrum of care.
- *SOC Subcompetency 8.1.4.* Provides a range of care and payment options in a manner that fosters financial viability of the practice and a positive working environment.

Component 2: The range of care options identified by primary care educators and practitioners

There are multiple care options for ***managing an intact female canine patient presenting with case history and clinical signs consistent with pyometra requiring surgery.*** The care options are described in detail below and then summarized in **Table 1**. Students can develop the knowledge and skills to identify, communicate, and perform these care options (Component 4) via the learning experiences in Component 5.

Please Note:

- The care options below are **NOT** intended to be comprehensive, both in terms of capturing all the options and all the components of the options. Instead, the care options below focus on the main components of care that a student is expected to consider and be able to communicate and perform in their practice.
- When using these case management materials, educators should emphasize for students the importance of clinical reasoning and reassessment with adjustment of care options.
- The primary care educators and practitioners working on this project come from different geographic regions which means that the specific costs for care options vary. Therefore, the care options presented here are organized into three budget categories, rather than by specific dollar amount.

FOR ALL CARE OPTIONS:

- **Consultation:** Use part of the budget to cover the veterinary consultation. This includes communicating with the owner to obtain a thorough history, inquiring about additional factors beyond financial constraints that may affect care options. These may include differences in understood and spoken languages between provider and owner, transportation/ability to return to clinic for follow ups, ability to administer a home care plan, and personal goals, preferences, or beliefs about care. Key historical information should include signalment (especially reproductive status) and date and duration of

the most recent heat cycle. A comprehensive physical exam should be performed.

- Humane euthanasia may be the best option depending on the patient's condition, comorbidities, and client circumstances.
- **Surgical management:** If surgical costs at your clinic exceed a client's financial ability, consider options such as referral for low-cost surgery, usage of internal good Samaritan funds, internal/external payment plans, etc.
- **Note**: Medical management is not considered a definitive treatment for pyometra as it is likely to recur in the absence of surgical intervention. Surgical avoidance due to cost will likely lead to overall greater expense over the long term. The use of medical management alone is reserved for cases where surgery is not possible due to personal or religious beliefs, or there is intention to use the dog for breeding purposes. Administration of antibiotics and injectable prostaglandins over multiple days to help open the cervix and promote uterine clearance is not a definitive treatment but may help manage the symptoms. Hospitalization and close monitoring by a veterinarian are essential. Spaying before or breeding on the subsequent estrus cycle is recommended after medical treatment to avoid recurrence (Hagman, 2023).

CARE OPTION 1 (LOW BUDGET): OUTPATIENT WITH NON-URGENT TO URGENT SURGERY

1A. Outpatient: Symptomatic treatment with surgery (non-urgent*) – STABLE patient

*Non-urgent refers to planning for surgery within a reasonable time frame (based on clinical judgment). This allows the client time to source low-cost options for the surgical procedure. Although prompt surgical treatment remains a goal, in cases where limitations to performing surgery exist, delaying surgery beyond the day of presentation is still associated with a high degree of success (McCobb et al., 2022).

Clinical Presentation: Intact female, stable, mucopurulent vaginal discharge (open pyometra).

Additional Diagnostics: If client has the financial resources, consider diagnostic imaging (focused ultrasound or single lateral abdominal radiograph) to confirm diagnosis of pyometra.

Treatment:

- **Supportive care:** Treat with an appropriate course of empirical antibiotic therapy +/- analgesics, if financially feasible (Hagman, 2023).
- **Close monitoring:** Owner to closely monitor at home until time of surgery with regular communication with veterinary healthcare team.
- **Ovariohysterectomy (OVH) - delayed:** Surgery is the most effective and commonly recommended treatment.

1B. Outpatient: Symptomatic treatment with surgery (urgent*) – SICK patient

*In this case, urgent refers to more timely surgery as compared to Outpatient Option 1A while still offering the client the opportunity to source a more economical surgery.

Clinical Presentation: Intact female, lethargic, anorexic, febrile, PU/PD, +/- mucopurulent vaginal discharge (open or closed pyometra).

Additional Diagnostics: If client has the financial resources, consider diagnostic imaging (focused ultrasound or single lateral abdominal radiograph) to confirm diagnosis of pyometra.

Treatment:

- **Supportive care:** Treat with an appropriate course of empirical antibiotic therapy +/- analgesics +/- anti-nausea medication, if financially feasible (Hagman, 2023).
- **Close monitoring:** Owner to closely monitor at home for signs of deterioration until time of surgery with regular communication with veterinary healthcare team. Should the patient's condition worsen, more urgent care is recommended.
- **Ovariohysterectomy (OVH) - delayed:** Surgery is the most effective and commonly recommended treatment.

CARE OPTION 2 (MODERATE BUDGET): OUTPATIENT WITH URGENT* SURGERY

*In this case, urgent refers to more timely surgery compared to Care Options 1A & 1B (low budget) while still offering the client the opportunity to source a more economical surgery.

Clinical Presentation: Intact female, either stable or lethargic, anorexic, febrile, PU/PD, +/- mucopurulent vaginal discharge (open or closed pyometra).

Additional Diagnostics: If client has the financial resources, consider diagnostic imaging (focused ultrasound or single lateral abdominal radiograph) to confirm diagnosis of pyometra and bloodwork (CBC/Chemistry) for prognostic indicators (Hagman, 2023).

Treatment:

- **Ovariohysterectomy (OVH):** Surgery is the most effective and commonly recommended treatment.

- **Supportive care:** Administer supportive care as indicated based on clinical presentation and prognostic indicators (i.e., empirical antibiotic therapy, fluid therapy [IV or subcutaneous], analgesia, anti-nausea, etc.).
- **Close monitoring:** Postoperative recovery at home with follow-up phone calls by the veterinary healthcare team when necessary. Recheck as needed, considering the owner's availability and funds.
- **Special note:** Outpatient OVH resulted in a 94% survival 1-week post-surgery and the duration of hospitalization did not affect survival (McCobb et al., 2022). Although prompt surgical treatment remains a goal, in cases where limitations to performing surgery exist, delaying surgery or discharging patients the same day is still associated with a high degree of success (McCobb et al., 2022).

CARE OPTION 3 (HIGH BUDGET): INPATIENT WITH SURGERY: SURGICAL INTERVENTION AND HOSPITALIZATION

Clinical Presentation: Intact female, either stable or lethargic, anorexic, febrile, PU/PD, +/- mucopurulent vaginal discharge (open or closed pyometra).

Additional Diagnostics: Diagnostic imaging (focused ultrasound) +/- abdominal radiographs to confirm diagnosis of pyometra. Perform bloodwork (CBC/Chemistry) for prognostic indicators and to determine baselines +/- culture of vaginal discharge for appropriate antibiotic selection (Jitpean et al., 2014). If doing surgery that day, ideally collect samples for culture aseptically from the uterus once it has been surgically removed.

Treatment:

- **Ovariohysterectomy (OVH):** Surgery is the most effective and commonly recommended treatment.
- **Supportive care:** Administer antibiotic therapy and supportive care as indicated based on clinical presentation and bloodwork (i.e., IV fluid therapy, analgesia, anti-nausea therapy, etc.).
- **Hospitalization:** Post-operative care and monitoring in a veterinary hospital to monitor for postoperative complications.

Additional considerations for Care Option 3: Postoperative hospitalization has not been shown to reduce the incidence of postoperative surgical complications, however with close veterinary supervision, complications may be recognized sooner. Patients with poor prognostic indicators (presenting with shock, elevations in blood urea nitrogen [BUN] or creatinine, a ruptured uterus) should be hospitalized for supportive care and monitoring.

Table 1. Care options based on budget for canine pyometra.

	EUTHANASIA	LOW ($)	MODERATE ($$)	HIGH ($$$)
Diagnostics	N/A	• +/- focused ultrasound OR single lateral radiograph	• Focused ultrasound OR single lateral radiograph • +/- Blood work (CBC & Chemistry)	• Focused ultrasound and/or abdominal radiographs • Blood work (CBC & Chemistry) • +/- Culture vaginal discharge
Treatment	N/A	• OVH (outpatient) • Empirical antibiotics • Analgesia • +/- SQ fluids • +/- Anti-nausea	• OVH (outpatient) • Empirical antibiotics • Analgesia • Fluid therapy (IV or SQ) • +/- Anti-nausea	• OVH (inpatient) • Antibiotic therapy +/- changed based on culture results • Analgesia • Fluid therapy (IV or SQ) • +/- Anti-nausea
Prognosis	N/A	• Unknown	• 97% survival to discharge, 94% survival rate at 1 week after surgery (McCobb et al., 2022)	• 97% survival to discharge (non-specialized setting) (Pailler et al., 2022)

Component 3: References to research literature that provides evidence for the care options

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McCallin, A. J., Hough, V. A., & Kreisler, R. E. (2021). Pyometra management practices in the high quality, high volume spay-neuter environment. *Topics in Companion Animal Medicine*, *42*(100499). https://doi.org/10.1016/j.tcam.2020.100499

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Component 4: Examples of specific case management knowledge and skills students need to develop to identify, communicate, and provide the care options (identified by both primary care educators and practitioners)

KNOWLEDGE AND CLINICAL REASONING SKILLS

1. Utilize knowledge of the pathophysiology and clinical signs of pyometra (both open and closed) and synthesize pertinent details from the history and physical exam parameters to develop a working diagnosis.
2. Select and interpret appropriate diagnostic tests to confirm the diagnosis of pyometra.
3. Use evidence-based knowledge to establish an appropriate treatment plan considering patient, client, clinician, and clinic factors and resources, and demonstrate the ability to recognize changes in patient status and adapt accordingly.
4. Identify financial support options/resources available to clients and clinics locally, regionally, and nationally when clients have very limited finances.
5. Recognize and manage emergency situations associated with pyometra, such as uterine rupture or systemic infection.

PROFESSIONAL / COMMUNICATION SKILLS

1. Effectively communicate with clients about the pros and cons of each diagnostic and treatment option and their associated costs, and demonstrate regard for clients' factors, budget, and resources.
2. Demonstrate empathy and compassion when communicating with clients, including when euthanasia is most appropriate for the family's and pet's circumstances.
3. Educate clients on measures to prevent pyometra (spaying) and/or to reduce the risk of pyometra in intact female dogs, like breeding before the next heat cycle.
4. Consider the impact of treatment options while balancing the overall business profitability, availability of staff and doctors, and overall client satisfaction.
5. Thoroughly document all communications with the client, including diagnostic and treatment options, potential risks, and known client barriers. Include use of against medical advice (AMA) forms if indicated.

CLINICAL SKILLS

1. Demonstrate proficiency in obtaining a history and performing a thorough physical examination to identify clinical signs of pyometra.
2. Perform blood sample collection from jugular or saphenous sites.
3. Interpret relevant diagnostics (CBC/Chemistry, imaging [ultrasound/radiographs]).
4. Utilize applied medical math for calculation of medication dosages, nutritional requirements and fluid rate (SQ or IV).
5. Demonstrate skills relevant to rehydration including placement of IV catheter and administration of subcutaneous fluids.
6. Demonstrate proficiency in basic surgical and anesthetic skills, including appropriate tissue handling, asepsis, hydration status, and anesthesia administration and monitoring.

Component 5: Examples of assessments and learning experiences that educators can use to develop the case management knowledge and skills that students need to provide the care options

LEARNING EXPERIENCES		ASSESSMENTS
Didactic (Lectures and Seminars)	Veterinary students attend lectures and seminars covering reproductive physiology, anatomy, and common reproductive disorders, including pyometra. These sessions provide foundational knowledge about the female reproductive system, the estrous cycle, and the development, diagnosis, and management of pyometra.	Consider use of formative and/or summative assessment to gauge understanding of key concepts. Specific assessment tools should be at the instructor's discretion based on the case's intent.
Laboratory Sessions (Clinical & Communication Skills)	Hands-on laboratory sessions allow students to practice clinical and communication skills related to reproductive health, including physical examination techniques, diagnostic imaging interpretation, anesthesia and spay surgery, and effective client communication.	Consider use of formative and/or summative assessment to assess proficiency in performing clinical skills relevant to the case. These could include in-the-moment feedback and/or an objective structured clinical exam (OSCE). Mock interviews could be considered for assessment of communication skills. Specific assessment tools should be at the instructor's discretion based on the case's intent.
Case-Based Learning	Case-based learning exercises present students with clinical scenarios involving intact female dogs presenting with pyometra (see **Box 1** for example clinical scenario). Students analyze patient history, clinical signs, and diagnostic results to develop differential diagnoses and treatment plans under the guidance of faculty members. Students work together to critically evaluate clinical cases, research relevant literature, and develop evidence-based treatment plans.	Consider use of formative and/or summative assessment to assess proficiency in clinical reasoning. Consider the use of exams, written assignments, or case presentations. Specific assessment tools should be at the instructor's discretion based on the case's intent.
Clinical Rotations	Clinical rotations in community practice/primary care, small animal medicine, emergency/critical care, and surgery allow students to observe and participate in the diagnosis and management of pyometra cases under the supervision of experienced clinicians. Students learn to perform physical examinations, interpret diagnostic tests, formulate treatment plans, and provide client communication and support. Veterinary students receive surgical training, including ovariohysterectomy, which is the primary treatment for pyometra. Through supervised surgical rotations, students practice surgical techniques, anesthesia administration, and perioperative care for canine patients with pyometra.	Consider use of formative and/or summative assessment to evaluate student's ability to integrate clinical reasoning, communication and clinical skills, and ability to collaborate within the veterinary team. Use of direct observation of procedural skills (DOPS) would be applicable in this context. Specific assessment tools should be at the instructor's discretion based on the case's intent.

Box 1. Example clinical scenario for teaching case management for canine pyometra.

An adult dog presents to your general practice for an illness exam.

Signalment: 8-year-old, female intact, Bernese Mountain Dog

History: Owner reports recent onset of anorexia, lethargy, and vaginal discharge. The appetite has been gradually worsening over the last two weeks and, yesterday, she was much more lethargic than normal. Upon further questioning she is polyuric/polydipsic, not vomiting or having diarrhea, and her last heat cycle was approximately two months ago.

Physical Exam Findings:

- Temperature: 104.5 degrees Fahrenheit
- Mucous Membranes: Pink and moderately tacky
- Heart Rate: 145 beats per minute
- Respiratory Rate: 40 breaths per minute
- Physical Exam Findings: The patient is ambulatory but lethargic, mildly painful on caudal abdominal palpation, mucopurulent vaginal discharge

RECOMMENDED CITATION

Alvarez, E. E., Bernstein, L. A., Montgomery, E., Paterson, T., & Wisecup, M. (2024). Teaching spectrum of care case management: Canine pyometra. In AAVMC Spectrum of Care Initiative Task Force, H. N. Fedesco, & J. E. Brodsky (Eds.), *Enhancing spectrum of care preparation in veterinary education programs: An implementation strategies guide* (pp. 118–123). American Association of Veterinary Medical Colleges. **https://doi.org/10.17605/OSF.IO/AHWQE**

Teaching Spectrum Of Care Case Management: Canine Foreign Body Ingestion +/- Acute Gastrointestinal Obstruction

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Component 1: A learning objective aligned with competencies in the Spectrum of Care (SOC) Education Model

Learning objective: Managing a canine patient with suspected foreign body ingestion and/or clinical signs suggestive of an acute gastrointestinal obstruction.

Alignment with competencies in the SOC Education Model:

- *SOC Subcompetency 1.3.5.* Integrates information about the patient with client circumstances to identify a range of appropriate care options and to adjust the care plan.
- *SOC Subcompetency 1.4.4.* Offers a range of care options that are tailored to the unique circumstances of each patient and client.
- *SOC Subcompetency 1.4.5.* Facilitates client decision-making regarding care by presenting the costs, risks, benefits, and evidence-base of care options.
- *SOC Subcompetency 3.1.5.* Provides a range of appropriate care options for animal populations that considers animal welfare, lifestyle, economics, societal interests (e.g., food animal industry, animal activism) and public and environmental health concerns.
- *SOC Subcompetency 7.3.4.* Acknowledges and considers the context of previous care decisions made by colleagues and clients.
- *SOC Subcompetency 7.3.5.* Reflects on one's own professional identity in relation to providing a spectrum of care.
- *SOC Subcompetency 7.4.4.* Pursues opportunities to expand skill set to offer a broader range of care options.
- *SOC Subcompetency 8.1.4.* Provides a range of care and payment options in a manner that fosters financial viability of the practice and a positive working environment.

Component 2: The range of care options identified by primary care educators and practitioners

There are multiple care options for ***managing a canine patient with suspected foreign body ingestion and/or clinical signs suggestive of an acute gastrointestinal obstruction.*** The care options are described in detail below and then summarized in **Table 1**. A flowchart depicting the decision-making process for managing the case is presented in **Figure 1**. Students can develop the knowledge and skills to identify, communicate, and perform these care options (Component 4) via the learning experiences in Component 5.

Please Note:

- The care options below are **NOT** intended to be comprehensive, both in terms of capturing all the options and all the components of the options. Instead, the care options below focus on the main components of care that a student is expected to consider and be able to communicate and perform in their practice.
- When using these case management materials, educators should emphasize for students the importance of clinical reasoning and reassessment with adjustment of care options.

- The primary care educators and practitioners working on this project come from different geographic regions which means that the specific costs for care options vary. Therefore, the care options presented here are organized into three budget categories, rather than by specific dollar amount.

FOR ALL CARE OPTIONS:

- **Consultation:** Use part of the budget to cover the veterinary consultation. This includes communicating with the owner to obtain a thorough history, including additional factors beyond financial constraints that may affect care options. Such factors could include knowledge and timing of ingestion of a foreign body, nature of the foreign material, history of chronic GI disease or suspected neoplasia, comorbidities and presence of consistent clinical signs suggesting a GI obstruction, e.g., persistent vomiting, lethargy and hyporexia. History of prior abdominal surgeries and whether the animal has a gastropexy should be obtained. A comprehensive physical exam would be performed.

CARE OPTION 1 (LOW BUDGET): SYMPTOMATIC TREATMENT AND MONITORING

1A. Outpatient: Symptomatic treatment and monitoring – stable patient/unlikely full obstruction

Patient Presentation: Stable patient with possible history of ingestion of foreign material, may have vomited up foreign material but still eating, is not lethargic/pyrexic and not overtly painful on abdominal palpation.

Diagnostics:

- History of ingestion of foreign material: Focus on timing of possible ingestion and nature of foreign material. Consider history of dietary indiscretion as well as history of stool production +/- diarrhea.
- Limit diagnostics to comprehensive physical examination to screen for signs suggestive of a GI obstruction (lethargy, nausea, abdominal pain/discomfort, palpable foreign body etc.) and assess for signs of dehydration or hypovolemia which may indicate severity.

Treatment: Outpatient medical management if patient is stable and further diagnostics are not feasible.

- If indicated by history (timing of ingestion, suspected size of foreign material relative to patient size, non-caustic or sharp foreign objects) can induce emesis after discussion of potential risks and outcomes with owner.
- Subcutaneous fluid administration to provide/improve hydration and improve intestinal motility.
- Potentially injectable and/or oral antiemetics and/or anti-nausea drugs (e.g., maropitant, ondansetron) prescribed for 1-2 days.
- Oral or injectable analgesics, as indicated (avoiding NSAIDs if vomiting).
- Easily digestible bland, low-fat or high-fiber diet (commercial vs. home-cooked) to encourage resolution of clinical signs and/or promote motility.
- Close monitoring for improvement, worsening or recurrence of clinical signs (Miles et al., 2021). Educating owner for signs of deterioration and encouraging them to book recheck appointment in 24-48 hours if no improvement in clinical signs.

1B. Outpatient: Symptomatic treatment and monitoring – compromised/unwell/obstructed patient

Patient Presentation: Lethargy, vomiting and hyporexia, dehydration, painful abdomen on palpation.

Diagnostics:

- Prioritize lateral abdominal radiograph to check for GI tract obstruction/identify radiopaque foreign material, lack of serosal detail to assist in decision-making/prognosis. Additional views may be needed and taken as indicated.
- Consider limited blood work if additional funds are available and indicated by radiographic findings – PCV/TS, blood smear for estimated WBC and presence of band neutrophils/left shift.

Treatment: If patient has signs consistent with a poor response to outpatient therapy including (significant lethargy/depression, abdominal pain, significant dehydration, poor perfusion, abnormal WBC/bands, and/or radiograph with obstructive signs):

- Discuss the need for more aggressive diagnostics and treatment including surgery and/or depending on status, humane euthanasia.
- Other options may include use of good Samaritan funds, third party payment options, crowdsourcing or referral to charity, low-budget shelter, local/regional/national funding options.
- Trial symptomatic outpatient therapy outlined in option A while awaiting outcomes of any funding options.
- Close monitoring for worsening or of clinical signs (Miles et al., 2021). Educating owner on signs of deterioration and clearly communicating requirement for intervention, including humane euthanasia, if observed.

Additional considerations for Care Option 1:

- Care option 1 is only likely to be successful in cases where the foreign body is relatively recent, small and not causing full obstruction.
- Client should sign an AMA (against medical advice) form in the following scenarios:
  - If diagnostic and/or treatment costs are above the financial constraints/declined by the client.
  - Additional options such as referral to low-cost/community outreach clinics, good Samaritan funds, internal/external payment plans or funding, or crowdsourcing are not available/unsuccessful.
  - Humane euthanasia is refused.
- Client communications should be clearly documented at all times to avoid liability.
- Humane euthanasia may be the best option depending on the patient's condition, comorbidities, and client circumstances.

CARE OPTION 2 (MODERATE BUDGET): DIAGNOSTICS WITH INPATIENT TREATMENTS OR DAYTIME HOSPITALIZATION + OUTPATIENT TREATMENTS

Patient Presentation: Lethargy, vomiting and hyporexia, dehydration, painful abdomen on palpation or stable patient, not responding to symptomatic treatment for 24-48 hours.

Diagnostics: Prioritize survey abdominal radiograph(s): Screens for presence of radiopaque foreign material and identifies GI patterns consistent with mechanical (vs. functional) ileus suggestive of an obstruction (Drost et al., 2016).

Based on results of survey radiographs further diagnostics and treatment options outlined below.

2A. Radiographs consistent with complete GI obstruction

Additional Diagnostics: If funding is available, baseline blood testing: CBC, chemistry, electrolytes to assess overall health status and prognostic indicators for surgery.

Treatment:

- Surgical intervention depending on cause of obstruction (e.g., foreign body, intussusception, intestinal mass, etc.) and location.
- If funds allow, and clinically indicated, hospitalization with preoperative stabilization and/or post-surgical recovery care.
- Outpatient/inpatient fluid therapy – subcutaneous or intravenous, depending on status.
- Injectable and/or oral antiemetics (e.g., maropitant, ondansetron).
- Oral or injectable analgesics, as indicated (avoiding NSAIDs if vomiting or if surgical incision made into GI tract).
- Easily digestible bland, low-fat or high-fiber diet (commercial vs. home-cooked) to encourage resolution of clinical signs and/or promote motility.
- Clear communication of requirement for intervention, surgery or humane euthanasia, if deterioration or no resolution of clinical signs following treatment.

2B. Radiographs not indicative of complete GI obstruction or inconclusive

Additional Diagnostics:

- Potentially serial radiographs to see if any improvement of GI patterns following symptomatic treatment if funds allow.
- Consider abdominal US to screen for further causes of clinical signs and confirm presence of obstruction.
- If funding is available, baseline blood testing: CBC, chemistry, electrolytes to assess overall health status and prognostic indicators for surgery.

Treatment:

- Outpatient/inpatient fluid therapy – subcutaneous or intravenous, depending on status.
- Discharge with instructions to return within 24 hours for re-evaluation including a repeat of radiographs if clinically indicated. (Miles et al., 2021).
- If funds allow, hospitalization for observation, to monitor for changes in clinical signs.
- Injectable and/or oral antiemetics (e.g., maropitant, ondansetron).
- Oral or injectable analgesics, as indicated (avoiding NSAIDs if vomiting).
- Easily digestible bland, low-fat or high-fiber diet (commercial vs. home-cooked) to encourage resolution of clinical signs and/or promote motility.
- Clear communication of requirement for intervention, surgery or humane euthanasia, if deterioration or no resolution of clinical signs following treatment.

Additional considerations for Care Option 2:

- Endoscopy may be a more economical/less invasive option for some foreign body retrievals based on location, history and nature of foreign material if known. Clear communication is required of potential risks and outcome of unsuccessful retrieval and requirement for follow-up surgical intervention.
- In the case of surgical intervention, client communication prior to surgery must include the following topics and their associated additional costs:
  - Potential adverse outcomes (negative explore, decompensation during/after surgery leading to death, discovery of neoplasia).
  - Potential for more advanced surgical interventions based on the nature of the obstruction and condition of the gastrointestinal tract during surgery (ex. resection and anastomosis vs. gastrotomy/enterotomy).
  - Potential postoperative complications requiring additional intervention/treatment (ileus, dehiscence, sepsis).
- It is important to note that earlier surgical intervention has been shown to involve fewer complex procedures and faster recovery (Maxwell et al., 2021). This would have a direct impact on the total cost.

CARE OPTION 3 (HIGH BUDGET): DIAGNOSTICS, INPATIENT TREATMENTS AND SURGICAL TREATMENTS TO REMOVE/RESOLVE OBSTRUCTION

Diagnostics:

- Comprehensive and serial physical examination.
- Abdominal radiographs (Drost et al., 2016) and serial radiographs.
- Baseline blood and urine testing (CBC, chemistry, UA, electrolytes, blood gas/lactate) to screen for secondary problems and establish overall health status.
- If indicated:
  - Abdominal ultrasonography.
  - Additional imaging (e.g., CT, contrast radiography) to further characterize the gastrointestinal tract (Drost et al., 2016).
  - Thoracic imaging if concern of neoplasia or aspiration pneumonia.

Treatment:

- Endoscopic or surgical intervention depending on availability, cause of obstruction (e.g., foreign body, intussusception, intestinal mass, etc.) and location.
- Hospitalization with IV fluid therapy, preoperative stabilization and post-surgical care.
- Injectable and/or oral antiemetics (e.g., maropitant, ondansetron).
- Injectable analgesics, as indicated (avoiding NSAIDs if vomiting or if surgical incision made into GI tract).
- Post-surgery, feeding tube or parenteral nutrition as required, with transition to easily digestible bland, low-fat or high-fiber diet (commercial vs. home-cooked).
- Monitoring for, diagnosis and treatment of any potential postoperative complications such as ileus, dehiscence or sepsis.

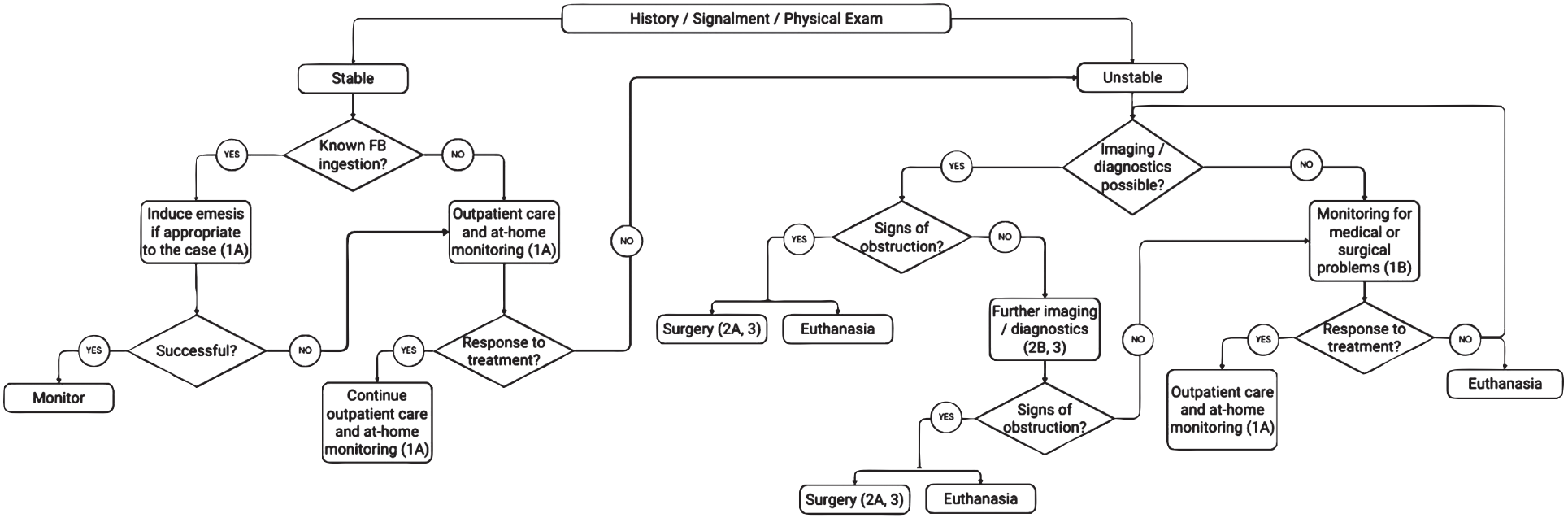
Additional considerations for Care Option 3:

- See notes above for Care Option 2.
- Consider offering gastropexy at time of surgery if indicated for the breed/conformation.
- Following diagnostics, including exploratory laparotomy, humane euthanasia may still be the best option depending on the patient's condition, comorbidities, and client circumstances. This option was identified by both educators and practitioners.

Table 1. Care options and prognoses based on budget for canine foreign body ingestion +/- acute GI obstruction.

	EUTHANASIA	LOW ($) [Symptomatic Treatment And Monitoring – Compromised/ Unwell/Obstructed Patient]	MODERATE ($$) [Diagnostics with inpatient treatments or daytime hospitalization + outpatient treatments]	HIGH ($$$) [Diagnostics, inpatient treatments and surgical treatments to remove/resolve obstruction]
Diagnostics	PE indicating some signs of shock, Radiographs (if taken) indicate complete obstruction, No response to symptomatic treatment	PE +/- lateral abdominal radiograph if funds allow	PE + Abdominal radiographs +/- CBC/Chemistry, electrolytes, PCV/TS	PE + Abdominal radiographs (single or serial) + CBC/ Chemistry, electrolytes, blood gas/lactate, PCV/TS If indicated: Abdominal US, other imaging (CT, contrast studies), thoracic radiographs
Treatment	Euthanasia	SQ fluids, injectable antiemetics (e.g., maropitant, ondansetron), analgesia, prescribed for 1-2 days, easily digestible bland, low-fat or high-fiber diet, revisit booked in 24 hours if no improvement.	**Radiographs show obstruction:** Proceed to surgery with supportive care as outlined in Care Option 2A **Radiographs are inconclusive:** Treatments as outlined in Care Option 2B If funds allow, hospitalization for observation, serial PEs/ radiographs, IV fluid therapy, Injectable antiemetics (e.g., maropitant, ondansetron), Injectable analgesics (opioids, no NSAIDs with vomiting)	Hospitalization with IV fluid therapy, correction of electrolyte and acid base abnormalities, injectable analgesia, antiemetics (e.g., maropitant, ondansetron), analgesics (no NSAIDS with vomiting or with GI incision), endoscopic or surgical intervention depending on cause of obstruction and location, post-surgical recovery care and monitoring for, diagnosis and treatment of any postoperative complications (e.g., ileus, dehiscence and sepsis)
Prognosis	N/A	Conservative management successful in 15/17 (88.2%) cases, with no complications reported for metallic sharp-pointed straight gastrointestinal foreign bodies (Crinò et al., 2023).		With surgical intervention: 91% survival rate, better for discrete FB (94%) versus linear FB (80%) (Hayes, 2009).

Figure 1. Flowchart of care options for canine foreign body ingestion +/- acute GI obstruction.



Component 3: References to research literature that provides evidence for the care options

Barash, N. R., Lashnits, E., Kern, Z. T., Tolbert, M. K., & Lunn, K. F. (2022). Outcomes of esophageal and gastric bone foreign bodies in dogs. *Journal of Veterinary Internal Medicine*, *36*(2), 500–507. https://doi.org/10.1111/jvim.16383

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Miles, S., Gaschen, L., Presley, T., Liu, C., & Granger, L. A. (2021). Influence of repeat abdominal radiographs on the resolution of mechanical obstruction and gastrointestinal foreign material in dogs and cats. *Veterinary Radiology & Ultrasound*, *62*(3), 282–288. https://doi.org/10.1111/vru.12953

Component 4: Examples of specific case management knowledge and skills students need to develop to identify, communicate, and provide the care options (identified by both primary care educators and practitioners)

KNOWLEDGE AND CLINICAL REASONING SKILLS

1. Utilize knowledge of the pathophysiology and clinical signs of gastrointestinal (GI) obstruction and synthesize pertinent details from the history and physical exam parameters to develop a working diagnosis.
2. Select and interpret appropriate diagnostic tests to confirm the diagnosis of GI obstruction considering patient, client, clinic and clinician factors and resources.
3. Use evidence-based knowledge to establish an appropriate treatment plan considering patient, client, clinic, and clinician factors and resources, and demonstrate the ability to recognize changes in patient status and adapt accordingly.
4. Identify financial support options/resources available to clients and clinics locally, regionally, and nationally when clients have very limited finances.

PROFESSIONAL / COMMUNICATION SKILLS

1. Effectively communicate with clients about the pros and cons of each diagnostic and treatment option and their associated costs, and demonstrate regard for clients' factors, budget, and resources.
2. Demonstrate empathy and compassion when communicating with clients, including when euthanasia is most appropriate for the family's and pet's circumstances.
3. Consider the impact of treatment options while balancing the overall business profitability, availability of staff and doctors, and overall client satisfaction.
4. Thoroughly document all communications with the client, including diagnostic and treatment options, potential risks, and known client barriers. Include use of against medical advice (AMA) forms if indicated.

CLINICAL SKILLS

1. Demonstrate proficiency in obtaining a history and performing a thorough physical examination to identify clinical signs of GI obstruction.
2. Perform blood sample collection from jugular or saphenous sites.
3. Interpret relevant diagnostics (radiographs, other imaging modalities, CBC/chemistry/electrolytes/lactate).
4. Utilize applied medical math for calculation of medication dosages, nutritional requirements and fluid rate (SQ or IV).
5. Demonstrate skills relevant to rehydration including placement of IV catheter and administration of subcutaneous fluids.
6. Demonstrate proficiency in basic surgical and anesthetic skills, including appropriate tissue handling, asepsis, hydration status, and anesthesia administration and monitoring.

Component 5: Examples of assessments and learning experiences that educators can use to develop the case management knowledge and skills that students need to provide the care options

LEARNING EXPERIENCES		ASSESSMENTS
Didactic (Lectures and Seminars)	Veterinary students attend lectures and seminars covering gastrointestinal anatomy, physiology and pathology including disorders such as acute gastrointestinal obstruction. These sessions provide foundational knowledge about the gastrointestinal system and the presentation, diagnosis and management of gastrointestinal obstructions.	Consider use of formative and/or summative assessment to gauge understanding of key concepts. Specific assessment tools should be at the instructor's discretion based on the case's intent.
Laboratory Sessions (Clinical & Communication Skills)	Hands-on laboratory sessions allow students to practice clinical and communication skills related to evaluation of the gastrointestinal system, including physical examination techniques, diagnostic imaging including radiography, ultrasonography or endoscopy and effective client communication.	Consider use of formative and/or summative assessment to assess proficiency in performing clinical skills relevant to the case. These could include in-the-moment feedback and/or an objective structured clinical exam (OSCE). Mock interviews could be considered for assessment of communication skills. Specific assessment tools should be at the instructor's discretion based on the case's intent.
Case-Based Learning	Case-based learning exercises present students with clinical scenarios involving animals presenting with gastrointestinal obstruction (see **Box 1** for example clinical scenario). Students analyze patient history, clinical signs, and diagnostic results to develop differential diagnoses and treatment plans under the guidance of faculty members. Students work together to critically evaluate clinical cases, research relevant literature, and develop evidence-based treatment plans.	Consider use of formative and/or summative assessment to assess proficiency in clinical reasoning. Consider the use of exams, written assignments, or case presentations. Specific assessment tools should be at the instructor's discretion based on the case's intent.
Clinical Rotations	Clinical rotations in community practice/primary care, small animal medicine, surgery and emergency/critical care allow students to observe and participate in the diagnosis and management of gastrointestinal obstruction under the supervision of experienced clinicians. Students learn to perform physical examinations, perform and interpret diagnostic tests, formulate treatment plans, and provide client communication and support. Veterinary students receive surgical training, including exploratory laparotomy and basic principles of gastrointestinal surgery. Through supervised surgical rotations, students practice surgical techniques, anesthesia administration, and perioperative care for canine patients with gastrointestinal obstruction.	Consider use of formative and/or summative assessment to evaluate student's ability to integrate clinical reasoning, communication and clinical skills, and ability to collaborate within the veterinary team. Use of direct observation of procedural skills (DOPS) would be applicable in this context. Specific assessment tools should be at the instructor's discretion based on the case's intent.

Box 1. Example clinical scenario for teaching case management for canine foreign body ingestion +/- acute GI obstruction.

"Alfred" is presented for an illness exam.

Signalment: 3-year-old, male castrated, Labrador retriever

History: Alfred is presented for acute onset of vomiting, lethargy and hyporexia of about 36 hours duration. Alfred has vomited approximately 7 times over this period of time and has been progressively more lethargic and inactive. The last time he vomited was approximately 2 hours ago. His appetite decreased acutely in the last 24 hours and the last meal he had was about 12 hours ago, and it was partial.

Alfred is an otherwise healthy dog that eats a commercial dry dog food. He is normally very active and is allowed to go out in a fenced-in yard unobserved, in addition to being taken on leashed walks. He is known to be indiscriminate in his eating behavior and has chewed up sticks and pinecones outside as well as multiple objects (usually dog toys) in the home in the past. He has never had repeated vomiting of this duration and severity before. Alfred has had normal bowel movements with the last being about 12 hours ago.

Physical Exam Findings:

- Mentation: QAR
- Mucous membranes: Pink and semi-dry/tacky
- Skin turgor: normal
- Heart rate: 150 beats per minute
- Respiratory rate: panting
- Peripheral pulses: regular, strong and synchronous
- Abdominal palpation: moderately tense, especially on deeper palpation, but not distended
- Temperature: 102.1 degrees Fahrenheit
- Patient is ambulatory but lethargic
- PE otherwise normal

RECOMMENDED CITATION

Blevins, M., Carnevale, J., Kuehl, K., & Pavlovsky, G. (2024). Teaching spectrum of care case management: Canine foreign body ingestion +/- acute gastrointestinal obstruction. In AAVMC Spectrum of Care Initiative Task Force, H. N. Fedesco, & J. E. Brodsky (Eds.), *Enhancing spectrum of care preparation in veterinary education programs: An implementation strategies guide* (pp. 124–132). American Association of Veterinary Medical Colleges. **https://doi.org/10.17605/OSF.IO/AHWQE**

A Selection of Additional Resources for Teaching Spectrum of Care Case Management

The following articles offer examples of managing common canine conditions using a spectrum of care (SOC) approach. The articles illustrate the critical role of evidence-based veterinary medicine in SOC practice.

- Evason, M. (2021, November 17). Canine parvovirus and care (even on a budget). *Veterinary Practice News*. **https://www.veterinarypracticenews.com/canine-parvovirus-and-care-even-on-a-budget/**
- Evason, M. (2022, April 12). Canine heartworm and Dirofilaria dollar discourse. *Veterinary Practice News*. **https://www.veterinarypracticenews.com/canine-heartworm-and-dirofilaria-dollar-discourse/**
- Evason, M. (2023, August 4). In a "hot spot"? Apply spectrum of care. *Veterinary Practice News*. **https://www.veterinarypracticenews.com/affordable-spectrum-of-care/**

The following special collection features research articles, perspectives, and reviews on accessible veterinary care for feline patients using an SOC approach.

- Journal of Feline Medicine and Surgery (2024). *Accessible veterinary care*. **https://journals.sagepub.com/topic/collections-jfm/jfm-1_accessible_veterinary_care/jfm**

The following website collates resources for providing evidence-based contextualized care. The term "contextualized care" has emerged to address similar concerns within the profession as spectrum of care. The website's resource collections cover contextualized care in practice, veterinary support and tools, and evidence from research.

- RCVS Knowledge. (n.d.). *Contextualised care*. **https://knowledge.rcvs.org.uk/evidence-based-veterinary-medicine/contextualised-care/**

The following articles include case studies illustrating a contextualized care approach to treating canine and feline patients:

- Futter, I., & Allen, C. (2024). Focus on contextualized care (Part 1). *BSAVA Companion*, *2024*(3), 10–15. **https://doi.org/10.22233/20412495.0324.10**
- Allen, C., & Futter, I. (2024). Focus on contextualized care (Part 2). *BSAVA Companion*, *2024*(4), 20–25. **https://doi.org/10.22233/20412495.0424.20**

IMPLEMENTING

Gather Evidence of Outcomes

As you begin to make program- or course-level curricular changes to enhance spectrum of care (SOC) preparation, consider how you will gather evidence to determine if the curricular change a) was implemented as intended, and b) resulted in the desired outcomes. For example, when evaluating course-level changes, you may want to know the extent to which planned modifications actually took place in a course and whether these modifications made a difference in enhancing students' competence and confidence to offer a wide range of evidence-based care options tailored to clients' and patients' unique circumstances.

You are encouraged to start developing your change evaluation plan during the planning phase of SOC curricular change. This will allow you to build in opportunities to collect information throughout the implementation phase, leading to a more comprehensive understanding of what happened during that phase and how it affected students' learning.

Featured Resources

Resources for Gathering Evidence of Curricular Change Implementation and Outcomes

Summarizes useful resources to help evaluate the implementation and outcomes of program- or course-level SOC curricular changes.

Resources for Gathering Evidence of Curricular Change Implementation and Outcomes

Jessica E. Brodsky, *American Association of Veterinary Medical Colleges*

Heather N. Fedesco, *American Association of Veterinary Medical Colleges*

Heidi E. Banse, *Arkansas State University*

As you begin to make program- or course-level curricular changes to enhance spectrum of care (SOC) preparation, it is helpful to gather evidence throughout the change process to determine if changes are leading to the intended outcomes. The program evaluation literature provides several useful resources to help veterinary educators through this endeavor. This document provides an overview of program evaluation and describes resources that you can use to assess the implementation and outcomes of program- or course-level SOC curricular changes.

WHAT DOES PROGRAM EVALUATION MEAN?

Program evaluation offers an approach to systematically gathering information about the implementation and outcomes of a program or intervention, such as a curricular change (Stewart et al., 2021). This information can then be used to guide decision-making. In education, evaluation differs from assessment, which focuses on students' performance (Cook, 2010).

Evaluating the implementation of a change, also known as "formative evaluation," can improve how the change is enacted and inform future iterations (Shakman & Rodriguez, 2015). Evaluating the outcomes of the change, also known as "summative evaluation," can demonstrate the impact, effectiveness, or value of the change.

RESOURCES FOR EVALUATING PROGRAM-LEVEL CURRICULAR CHANGES

1. **Program Evaluation Toolkit**
   - **Open-access self-paced modules** covering the following key components of program evaluation: logic models, evaluation questions, evaluation design, evaluation samples, data quality, data collection, data analysis, and dissemination approaches. Modules consist of videos, slide decks, handouts, worksheets, and tools.
   - Review the **evaluation matrix** for planning data collection to address evaluation questions.
   - Citation: Stewart, J., Joyce, J., Haines, M., Yanoski, D., Gagnon, D., Luke, K., Rhoads, C., & Germeroth, C. (2021). *Program evaluation toolkit: Quick start guide* (REL 2022-112). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Central. **http://ies.ed.gov/ncee/edlabs**
2. **Workshop toolkit to help others learn how to conduct program evaluations**
   - Open-access PDF presenting similar information as the modules above, but in the form of facilitator and participant workbooks with activities.
   - Citation: Shakman, K., & Rodriguez, S. M. (2015). *Logic models for program design, implementation, and evaluation: Workshop toolkit* (REL 2015–057). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northeast & Islands. **http://ies.ed.gov/ncee/edlabs**

RESOURCES FOR EVALUATING COURSE-LEVEL CURRICULAR CHANGES

3. **Handbook for veterinary educators on the educational research process**
    - Open-access handbook featuring short and accessible chapters that walk readers through the veterinary education research process from start to finish; it also offers guidance on how to handle common challenges in the research process.
    - For an overview of evaluating a course-level change, such as the use of a new teaching method, review Chapter 5a(i): How to Evaluate an Educational Intervention by Julie A. Hunt (pp. 15–23).
    - Citation: Hunt, J. A., Baillie, S., Thompson, M., Ruohoniemi, M., Phillips, V., Boller, M., & Aumarm, W. (2022). *Veterinary educational researcher's handbook*. **https://doi.org/10.35542/osf.io/dn6e2**
4. **Tips for evaluating educational programs and courses**
    - Peer-reviewed article outlining the steps for assessing the value of educational programs and courses for medical educators.
    - Citation: Cook, D. A. (2010). Twelve tips for evaluating educational programs. *Medical Teacher*, *32*(4), 296–301. **https://doi.org/10.3109/01421590903480121**

RECOMMENDED CITATION

Brodsky, J. E., Fedesco, H. N., & Banse, H. E. (2025). Resources for gathering evidence of curricular change implementation and outcomes. In AAVMC Spectrum of Care Initiative Task Force, H. N. Fedesco, & J. E. Brodsky (Eds.), *Enhancing spectrum of care preparation in veterinary education programs: An implementation strategies guide* (pp. 135–136). American Association of Veterinary Medical Colleges. **https://doi.org/10.17605/OSF.IO/AHWQE**

SUSTAINING

Ensure Continued Success

After you have implemented some spectrum of care (SOC) curricular changes, it is time to sustain these changes by ensuring continued success. Remember that long-term, scalable changes take time and require shifts in infrastructure, policies, norms, and culture. In order for curricular change teams to avoid surprises or setbacks, it is important to think through and prepare for possible challenges up front.

To ensure continued success, obtain new resources or reallocate existing ones by fund-raising, grant-writing, and securing additional commitments from leadership. Motivate engagement through incentives—align efforts to enhance SOC preparation with tenure, promotion, internal and external awards, course releases for professional development, and so on. Pay attention to and be prepared to address emerging issues throughout the curricular change process. And remember, the change process can be physically and emotionally draining, so celebrate wins to avoid burnout and inertia.

SUSTAINING

Share & Use Evidence

The change process is iterative, not linear. To sustain your spectrum of care curricular change efforts, share and use the evidence you've gathered along the way. Keep interested parties informed by communicating the results of the change evaluation you conducted during the implementation phase, including both written reports and public presentations. Reflect on your findings and make improvements as needed. A lot can be learned from initial curricular change successes and failures. Even while sustaining curricular change, you may need to revisit strategies from the planning and implementing phases.

Notes

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