

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
<p>CBVE DOMAIN 1: CLINICAL REASONING AND DECISION-MAKING</p> <p>CBVE Competency 1.3: Creates and adjusts a diagnostic and/or treatment plan based on available evidence</p> <p>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</p>	<p>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.</p> <p>Skill LO 1. Elicits information from the client about factors that may affect their ability or motivation to pursue care for their animal.</p> <p>Skill LO 2. Explains the importance of a follow-up plan to the client.</p> <p>Skill LO 3. Uses follow-up plan to determine treatment response and client perspectives and adapts as appropriate.</p> <p>Attribute/Behavior LO 1. Demonstrates empathy and respect during discussions relating to client circumstances.</p> <p>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.</p>	<ul style="list-style-type: none"> • 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) 	<ul style="list-style-type: none"> • 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)
<p>CBVE DOMAIN 1: CLINICAL REASONING AND DECISION-MAKING</p> <p>CBVE Competency 1.4: Incorporates animal welfare, client expectations, and economic considerations into the diagnostic or treatment plan</p> <p>Subcompetency 1.4.4: Offers a range of care options that are tailored to the unique circumstances of each patient and client</p>	<p>Knowledge LO 1. Explains why offering a range of care options is appropriate and integral to veterinary practice.</p> <p>Knowledge LO 2. Explains the terms “spectrum of care”, “contextualized care”, “standard of care”, and “gold standard care”.</p> <p>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.</p> <p>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.</p> <p>Knowledge LO 5. Identifies and weighs the practitioner and practice factors that impact the range of care options for a patient.</p> <p>Skill LO 1. Prioritizes and tailors care options to align with the client’s circumstances and expectations.</p> <p>Attribute/Behavior LO 1. Demonstrates patience and flexibility to identify multiple care options that align with patient needs and client factors, despite uncertainty.</p>	<ul style="list-style-type: none"> • 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) 	<ul style="list-style-type: none"> • 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)

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<p>CBVE DOMAIN 1: CLINICAL REASONING AND DECISION-MAKING</p> <p>CBVE Competency 1.4: Incorporates animal welfare, client expectations, and economic considerations into the diagnostic or treatment plan</p> <p>SOC Subcompetency 1.4.5: Facilitates client decision-making regarding care by presenting the costs, risks, benefits, and evidence-base of care options</p>	<p>Knowledge LO 1. Defines the characteristics of “shared decision-making”.</p> <p>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.</p> <p>Skill LO 1. Invites a discussion of which care options may best align with a client’s expectations and capabilities.</p> <p>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.</p> <p>Attribute/Behavior LO 1. Demonstrates confidence and empathy when responding to clients’ requests regarding alternative options.</p> <p>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.</p> <p>Attribute/Behavior LO 3. Demonstrates willingness to execute additional care options beyond the initial recommended care plan.</p>	<ul style="list-style-type: none"> • 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) 	<ul style="list-style-type: none"> • 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)
<p>CBVE DOMAIN 3: ANIMAL POPULATION CARE AND MANAGEMENT</p> <p>CBVE Competency 3.1: Applies population management principles in compliance with legal regulations and economic realities</p> <p>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</p>	<p>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.</p> <p>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.</p> <p>Skill LO 1. Identifies, assesses, and prioritizes factors that may impact the range of care options offered for an animal population.</p> <p>Skill LO 2. Designs feasible care plans that integrate population and client-specific factors.</p> <p>Attribute/Behavior LO 1. Demonstrates empathy and respect during discussions with colleagues and clients relating to care of animal populations, including food production animals.</p>	<ul style="list-style-type: none"> • 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) 	<ul style="list-style-type: none"> • 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
<p>CBVE DOMAIN 7: PROFESSIONALISM AND PROFESSIONAL IDENTITY</p> <p>CBVE Competency 7.3: Reflects on personal actions and uses feedback to plan improvement</p> <p>SOC Subcompetency 7.3.4: Acknowledges and considers the context of previous care decisions made by colleagues and clients</p>	<p>Knowledge LO 1. Identifies strategies to discuss client and patient factors that may have influenced decision-making.</p> <p>Knowledge LO 2. Lists strategies for guiding client conversations around previous care decisions.</p> <p>Skill LO 1. Elicits whether a client's expectations were met during previous care, and if not, why.</p> <p>Skill LO 2. Maintains appropriate verbal and nonverbal communication composure when reviewing previous care options.</p> <p>Attribute/Behavior LO 1. Demonstrates humility and understanding regarding prior options given and decisions made.</p>	<ul style="list-style-type: none"> • 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) 	<ul style="list-style-type: none"> • 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)
<p>CBVE DOMAIN 7: PROFESSIONALISM AND PROFESSIONAL IDENTITY</p> <p>CBVE Competency 7.3: Reflects on personal actions and uses feedback to plan improvement</p> <p>SOC Subcompetency 7.3.5: Reflects on one's own professional identity in relation to providing a spectrum of care</p>	<p>Knowledge LO 1. Explains how a veterinarian's personal values, goals, and prior experiences can influence care decisions.</p> <p>Skill LO 1. Reflects on own values, goals, and prior experiences in relation to care decisions.</p>	<ul style="list-style-type: none"> • Short-answer question (K) • Short-answer written reflection (K, S) 	<ul style="list-style-type: none"> • 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)
<p>CBVE DOMAIN 7: PROFESSIONALISM AND PROFESSIONAL IDENTITY</p> <p>CBVE Competency 7.4: Engages in self-directed learning</p> <p>SOC Subcompetency 7.4.4: Pursues opportunities to expand skill set to offer a broader range of care options</p>	<p>Skill LO 1. Recognizes own limitations and next steps for development.</p> <p>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.</p>	<ul style="list-style-type: none"> • Short-answer written reflection (S) • Workplace-based assessment (e.g., entrustment supervision scale, ITER) (S) 	<ul style="list-style-type: none"> • 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
<p>CBVE DOMAIN 8: FINANCIAL AND PRACTICE MANAGEMENT</p> <p>CBVE Competency 8.1: Weighs financial factors in personal and business decision-making</p> <p>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</p>	<p>Knowledge LO 1. Identifies components of the practice's profits and losses as they relate to providing care options.</p> <p>Knowledge LO 2. Explains how providing a range of care and payment options can have a financial impact on the practice.</p> <p>Knowledge LO 3. Explains how providing a range of care and payment options can have an impact on the practice team and management processes.</p> <p>Knowledge LO 4. Explains the importance of optimizing the workload allocation among the practice team to ensure financial viability.</p>	<ul style="list-style-type: none"> Short-answer question (K) 	<ul style="list-style-type: none"> 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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