



Competency-Based Veterinary Education:

# **Entrustable Professional Activities**



Association of American  
Veterinary Medical Colleges

March 2018

*Preparing future generations of highly qualified veterinary medical practitioners is one of our most fundamental responsibilities as educators. How can we be assured that, collectively, we are producing practice ready, entry-level professionals who are educated to a common standard and ready to deliver competent, professional care in a variety of clinical environments?*

We can ensure that our institutions meet the educational standards of performance articulated by the AVMA Council on Education. We can examine student performance data on the North American Veterinary Licensing Exam (NAVLE). But how can we create consensus for what constitutes a “practice-ready veterinarian?” And how do we know if our graduates are achieving this benchmark?

Such were the questions facing the AAVMC Competency-Based Veterinary Education Working Group when it was established in July 2015. The group began by systematically reviewing and analyzing the contemporary literature in competency-based education throughout the health professions. Then, over 32 months of coordinated work and dozens of virtual and face-to-face meetings, they constructed this framework for competency-based outcomes assessment in veterinary medical education.

The result of their labor represents one of the most substantial pedagogical projects ever undertaken by the AAVMC. We invite the colleges and schools of veterinary medicine to consider this framework as they update their professional curricula, whether they are making modest refinements or undergoing a complete curriculum redesign.

We are indebted to the CBVE Working Group for the enormous amount of time and effort they invested in this project. The framework they have produced will inform and enrich many different aspects of our professional programs, and substantially foster the professional excellence we all seek in academic veterinary medicine.

**Andrew T. Maccabe, DVM, MPH, JD**  
*AAVMC Chief Executive Officer*



# Entrustable Professional Activities

## Background

The AAVMC Competency-Based Veterinary Education (CBVE) Working Group is developing a number of documents to assist in the dissemination of their work. In a companion document entitled “CBVE Framework”, the nine domains of competence are defined along with a list of competencies for each domain. Domains are broad distinguishable areas of competence that constitute a general, yet descriptive, framework for entry-level veterinary practice. The competencies associated with each domain are observable abilities that integrate knowledge, skills, values, and attributes.

## Entrustable Professional Activities (EPAs)

The practice of veterinary medicine requires more than the ability to demonstrate independent competencies. It necessitates simultaneous integration of multiple competencies to allow veterinary professionals to perform day-to-day activities in the workplace. For an early stage professional, developing their capability, units of activity can be defined as Entrustable Professional Activities (EPAs). EPAs provide the groundwork for the future development of assessment tools (including milestones) and a structure to provide feedback to guide learners as they work towards independent practice. In this way, they provide the link between competencies and the professional workplace.

In this document, the AAVMC CBVE Working Group has identified eight core EPAs for veterinary education and outlined the relationship between each EPA and its associated domains and competencies. Colleges and schools may wish to create additional EPAs for their unique contexts. The AAVMC CBVE website provides additional resources on the CBVE framework and EPAs. Future work products, including milestones and assessment tools, will be added as they become available. Please see: [aavmc.org/cbve](http://aavmc.org/cbve)

The AAVMC CBVE Working Group has developed the CBVE framework and the Entrustable Professional Activities (EPAs). Members of this team include representatives from veterinary colleges and schools across the U.S., Canada, Europe, the U.K. and some with experience from Australia.

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## Questions, Suggestions and Comments

The AAVMC's Competency-Based Veterinary Education (CBVE) project is an ongoing, dynamic undertaking which will be continuously developed and enhanced. Suggestions and input from all sectors of academic veterinary medicine are welcome. If you have questions or suggestions about the CBVE project, please contact project leadership by emailing [CBVE@aavmc.org](mailto:CBVE@aavmc.org)

# Key Definitions

## Competency

An observable ability of a health professional related to a specific activity that integrates knowledge, skills, values, and attitudes. Since competencies are observable, they can be measured and assessed to ensure their acquisition.<sup>1</sup>

## Domains of Competence (DOC)

Broad distinguishable areas of competence that in the aggregate constitute a general descriptive framework for a profession.<sup>2</sup>

## Competency Framework

An organized and structured representation of a set of interrelated and purposeful competencies.<sup>3</sup>

## Entrustable Professional Activity (EPA)

An essential task of a discipline that a learner can be trusted to perform with limited supervision in a given context and regulatory requirements, once sufficient competence has been demonstrated. (As adapted from<sup>4</sup>)

## Milestone

A defined, observable marker of an individual's ability along a developmental continuum.<sup>4</sup>

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1. Frank, J.R., Snell, L.S., Ten Cate, O., *et al.* (2010) Competency-based medical education: Theory to practice. *Medical Teacher*, 32(8), 638-645.
  2. Englander, R., Cameron, T., Ballard, A.J., *et al.* (2013) Toward a common taxonomy of competency domains for health professions and competencies for physicians. *Academic Medicine*, 88(8), 1-7.
  3. Willet T. (2012) Performance framework definitions [Internet]. [cited 2012 Dec 5]. Available from: <http://groups.medbiq.org/medbiq/display/CWG/Performance+Framework+-+Definitions>.
  4. Englander, R., Frank, J.R., Carraccio, C., *et al.* (2017) Toward a shared language for competency-based education. *Medical Teacher*, 39(6), 582-587.

# How to use this document

Each EPA is described, followed by a more detailed commentary about the activity. The relationship between each EPA and the domains of competence and competencies follows (please refer to the companion document entitled *Competency-Based Education: Part 1 - CBVE Framework* for more information). The most relevant domains for each EPA are listed and depicted by large icons. The secondary domains are also listed and defined by smaller icons. Less relevant domains for a particular EPA are shown in gray. The second page for each EPA contains the elements within the EPA and the specific competencies that map to each element. This becomes useful as one develops assessment rubrics.

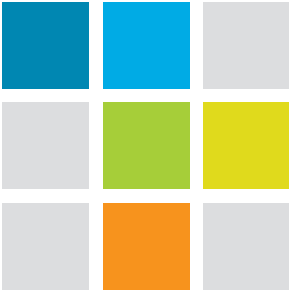
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## Domains of Competence

1		Clinical Reasoning and Decision-making
2		Individual Animal Care and Management
3		Animal Population Care and Management
4		Public Health
5		Communication
6		Collaboration
7		Professionalism and Professional Identity
8		Financial and Practice Management
9		Scholarship

# EPAs

<b>1</b>	<b>Gather a history, perform an examination, and create a prioritized differential diagnosis list</b>
<b>2</b>	<b>Develop a diagnostic plan and interpret results</b>
<b>3</b>	<b>Develop and implement a management/treatment plan</b>
<b>4</b>	<b>Recognize a patient requiring urgent or emergent care and initiate evaluation and management</b>
<b>5</b>	<b>Formulate relevant questions and retrieve evidence to advance care</b>
<b>6</b>	<b>Perform a common surgical procedure on a stable patient, including pre-operative and post-operative management</b>
<b>7</b>	<b>Perform general anesthesia and recovery of a stable patient including monitoring and support</b>
<b>8</b>	<b>Formulate recommendations for preventive healthcare</b>



# EPA 1

## Gather a history, perform an examination, and create a prioritized differential diagnosis list

<b>DESCRIPTION OF ACTIVITY</b>	Perform a history and exam on an individual animal or herd/flock and assimilate the information collected to derive a prioritized differential diagnosis.
<b>COMMENTARY</b>	The history and examination should be tailored to the clinical situation and specific patient encounter. This data gathering serves as the foundation for evaluation and management. Expectations include integration of the scientific foundations of medicine with clinical reasoning skills to guide information gathering.
<b>MOST RELEVANT DOMAINS</b>	<b>1: Clinical Reasoning &amp; Decision-making</b> ■ <b>5: Communication</b> ■
<b>SECONDARY DOMAINS</b>	<b>2: Individual Animal Care &amp; Management</b> ■ <b>6: Collaboration</b> ■ <b>8: Financial &amp; Practice Management</b> ■





# 1

## Gather a history, perform an examination, and create a prioritized differential diagnosis list



### ELEMENTS WITHIN ACTIVITY

#### Consultation

- Obtain a complete and accurate history in an organized fashion [1.1] ■
- Demonstrate client-centered interview skills (establish rapport, attentive to verbal and nonverbal cues, client culture, socioeconomic factors, demonstrate active listening skills) [5.1; 5.2] ■
- Identify the client complaint, [1.1] ■
- Identify pertinent history elements associated with common conditions [1.1] ■
- Demonstrate cultural competence in interactions with clients, recognizing the potential for bias [5.2, 6.4] ■ ■

#### Examination

- Perform exam (individual animal or herd) [1.1] ■
- Communicate findings [5.1] ■
- Attend to patient welfare and client safety and comfort [1.4, 2.2, 8.3] ■ ■ ■

#### Determining Differential Diagnosis

- Create a problem list [1.2] ■
- Justify prioritized differential diagnosis(es) [1.2] ■
- Consult or refer as needed based on limitations [1.7] ■

#### Documentation

- Document findings in the medical record [5.3] ■



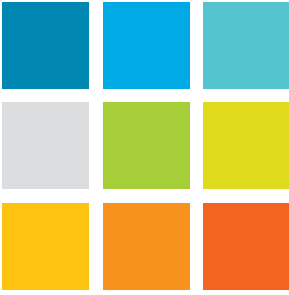


# EPA 2

## Develop a diagnostic plan and interpret results

<b>DESCRIPTION OF ACTIVITY</b>	Integrate individual animal or herd data to create a prioritized differential diagnostic list and determine a diagnostic plan, obtain consent for diagnostic testing and interpret results.
<b>COMMENTARY</b>	Developing a diagnostic action plan is an iterative, reflective process that requires continuous adaptation to avoid common errors of clinical reasoning.
<b>MOST RELEVANT DOMAINS</b>	<b>1: Clinical Reasoning &amp; Decision-making</b> ■ <b>5: Communication</b> ■
<b>SECONDARY DOMAINS</b>	<b>6: Collaboration</b> ■ <b>9: Scholarship</b> ■
<b>ELEMENTS WITHIN ACTIVITY</b>	<ul style="list-style-type: none"> <li>• Use clinical reasoning skills to create a prioritized differential diagnosis list [1.2; 9.2] ■</li> <li>• Select initial diagnostic tests/procedures [1.3; 9.1] ■ ■</li> <li>• Explain working diagnosis and rationale for further testing [1.3; 5.1; 9.2] ■ ■ ■</li> <li>• Develop a financial estimate and obtain and document informed consent [1.4; 5.2; 5.3; 6.1] ■ ■ ■ ■</li> <li>• Interpret test results [1.1] ■</li> <li>• Update working diagnosis, diagnostic plan and client consent as new information is obtained [1.3, 5.2, 9.2] ■ ■ ■</li> <li>• Document diagnostic plan in medical record [5.3] ■</li> </ul>





# EPA 3

## Develop and implement a management/treatment plan

<b>DESCRIPTION OF ACTIVITY</b>	Utilize working diagnosis and client considerations to formulate a management/treatment plan for an individual animal or herd (including referral or euthanasia when warranted), implement the plan and adjust based on response.
<b>COMMENTARY</b>	Developing a management/treatment 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. Implementation of the plan includes performance of veterinary procedures, team collaboration and client education.
<b>MOST RELEVANT DOMAINS</b>	<ol style="list-style-type: none"> <li>1: Clinical Reasoning &amp; Decision-making ■</li> <li>2: Individual Care &amp; Management ■</li> <li>5: Communication ■</li> <li>7: Professionalism &amp; Professional Identity ■</li> <li>8: Practice &amp; Financial Management ■</li> </ol>
<b>SECONDARY DOMAINS</b>	<ol style="list-style-type: none"> <li>3: Animal Population Care &amp; Management ■</li> <li>6: Collaboration ■</li> <li>9: Scholarship ■</li> </ol>



# 3

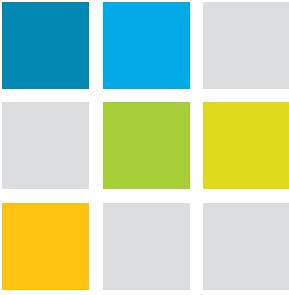
## Develop and implement a management/treatment plan



### ELEMENTS WITHIN ACTIVITY

- Use clinical reasoning skills to integrate medical, ethical, legal and economic factors, and client desires, to create a management/treatment plan [1.3; 1.4; 3.1; 7.1; 8.2; 9.2] ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
- Act in the face of ambiguity resulting from gaps in available information [1.3; 1.6; 7.3] ■ ■ ■
- Explain treatment options to client and respond to questions [1.4; 5.1; 5.2] ■ ■ ■ ■
- Perform therapeutic interventions, including euthanasia when warranted [2.1] ■ ■ ■
- Educate client or team to provide ongoing care for patient, and recognize changes or concerns that trigger additional action [1.3; 5.1; 9.3] ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
- Integrate new information as it is available to update management/treatment plan [1.3; 9.2] ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
- Recognize limitations of personal veterinary skills, team or facilities and arrange for referral based upon client circumstances [1.7; 6.1] ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
- Follow-up with clients or team to determine change in patient status, compliance with recommendations, and/or capability to implement treatment plan. [5.2; 6.3] ■ ■ ■ ■ ■ ■ ■ ■ ■ ■





# EPA 4

## Recognize a patient requiring urgent or emergent care and initiate evaluation and management

<b>DESCRIPTION OF ACTIVITY</b>	Recognize a patient/situation that requires urgent or emergent care and triage based on severity. Initial emergency management should include procedures that support vital functions.
<b>COMMENTARY</b>	This activity requires both application of knowledge and psychomotor skills as well as the ability to function as part of a team, to know one's limitations, and to seek help when necessary. Initial evaluation of individual should include level of consciousness and adequacy of ventilation and circulation.
<b>MOST RELEVANT DOMAINS</b>	<ol style="list-style-type: none"> <li>1: Clinical Reasoning &amp; Decision-making ■</li> <li>2: Individual Care &amp; Management ■</li> <li>6: Collaboration ■</li> <li>7: Professionalism &amp; Professional Identity ■</li> </ol>
<b>SECONDARY DOMAINS</b>	<ol style="list-style-type: none"> <li>5: Communication ■</li> </ol>



# 4

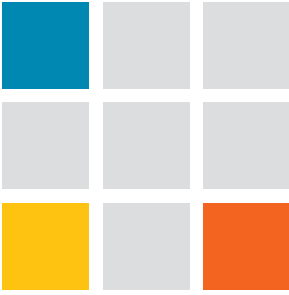
## Recognize a patient requiring urgent or emergent care and initiate evaluation and management



### ELEMENTS WITHIN ACTIVITY

- Quickly assess a situation to identify patient(s) that might require urgent or emergent treatment [1.1; 1.5] ■
- In the case of multiple patients, effectively triage patient care according to severity of condition [1.5] ■
- Evaluate patient status to determine and triage urgent problems [1.1; 1.5, 7.2] ■ ■
- Update client on the urgency of the patient's status and immediate management plans [5.1; 5.2] ■
- As necessary, initiate emergency management to support vital functions such as: [2.1] ■
  - Provide oxygen
  - Secure an airway and effective ventilation
  - Establish effective circulation
  - Provide effective pain relief and sedation for safe patient handling
  - Correct life-threatening alterations (e.g. hypoglycemia, hypothermia)
  - Control hemorrhage
  - Stabilize fractures
- Identify potential underlying etiologies for the urgent or emergent patient status and determine initial management plan [1.2; 1.3] ■
- Discuss patient status and initial management plan (including euthanasia when warranted) with client and identify client expectations [1.3; 1.4; 5.1; 5.2; 7.1] ■ ■ ■
- Optimize patient care by engaging team members, determining when to function as a leader or team member and working within personal limitations [1.7; 6.1; 6.2] ■ ■
- Document initial patient assessment, necessary interventions, possible diagnoses and management plan, and client communication in the medical record [5.3] ■



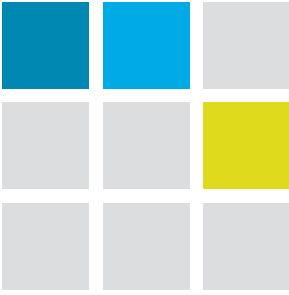


# EPA 5

## Formulate relevant questions and retrieve evidence to advance care

<b>DESCRIPTION OF ACTIVITY</b>	Identify questions and information resources. Critique the quality of the evidence and assess the applicability to the clinical situation.
<b>COMMENTARY</b>	The use of evidence-based practices and self-awareness are essential to identify and remedy/correct knowledge gaps. Life-long learning is an essential professional practice to promote quality patient and population care.
<b>MOST RELEVANT DOMAINS</b>	<b>1: Clinical Reasoning &amp; Decision-making</b> ■ <b>7: Professionalism &amp; Professional Identity</b> ■ <b>9: Scholarship</b> ■
<b>ELEMENTS WITHIN ACTIVITY</b>	<ul style="list-style-type: none"> <li>• Formulate focused pertinent questions based on situation evaluation [9.2] ■</li> <li>• Appraise sources of information to evaluate the quality of the content [9.1] ■</li> <li>• Assess applicability and generalizability of published studies to specific clinical situations [1.6; 9.1, 9.2] ■ ■</li> <li>• Identify resources and use information technology to assess accurate and reliable online medical information and retrieve animal/herd information [7.4; 9.1] ■ ■</li> <li>• Evaluate animal/herd response to interventions and use available evidence to adjust care plan [1.3] ■</li> </ul>





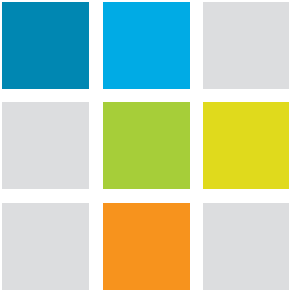
# EPA 6

## Perform a common surgical procedure on a stable patient, including pre-operative and post-operative management

<b>DESCRIPTION OF ACTIVITY</b>	Perform a surgical procedure, including pre-operative preparation of the patient and the surgeon and post-operative care.
<b>COMMENTARY</b>	Attention to patient preparation to minimize contamination, knowledge of the procedure and regional anatomy, manual dexterity to competently and efficiently complete the procedure, reflection and response to changes, and post-operative care.
<b>MOST RELEVANT DOMAINS</b>	<ol style="list-style-type: none"> <li>1: Clinical Reasoning &amp; Decision-making ■</li> <li>2: Individual Care &amp; Management ■</li> <li>6: Collaboration ■</li> </ol>
<b>ELEMENTS WITHIN ACTIVITY</b>	<ul style="list-style-type: none"> <li>• Formulate surgical plan [2.1] ■</li> <li>• Direct the veterinary team to assist in procedure [6.2] ■</li> <li>• Prepare self and surgical site to perform procedure [2.1] ■</li> <li>• Perform surgical procedure [2.1] ■</li> <li>• Apply principles of tissue handling, hemostasis, asepsis and surgical skills [2.1] ■</li> <li>• Recognize own limitations and ask for assistance when required [1.7] ■</li> <li>• Respond to changes in patient status [1.3; 1.5] ■</li> <li>• Formulate analgesic and post-operative care plan [1.3; 2.1] ■ ■</li> </ul>







# EPA 7

## Perform general anesthesia and recovery of a stable patient including monitoring and support

<p><b>DESCRIPTION OF ACTIVITY</b></p>	<p>Induce, maintain and recover a stable anesthetic patient (ASA 1 or 2), including monitoring vital functions and providing supportive care. Evaluate patient status, and determine a suitable anesthetic and analgesic protocol.</p>
<p><b>COMMENTARY</b></p>	<p>Apply knowledge of anatomy, physiology, pharmacology and the procedure as well as psychomotor skills to execute the protocol safely. Recognize and manage complications.</p>
<p><b>MOST RELEVANT DOMAINS</b></p>	<ul style="list-style-type: none"> <li>1: Clinical Reasoning &amp; Decision-making ■</li> <li>2: Individual Care &amp; Management ■</li> <li>5: Communication ■</li> <li>6: Collaboration ■</li> <li>8: Practice &amp; Financial Management ■</li> </ul>



# 7

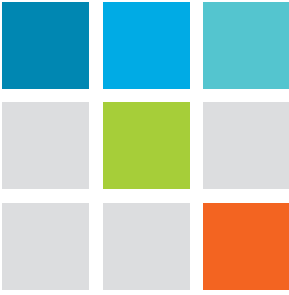
## Perform general anesthesia and recovery of a stable patient including monitoring and support



### ELEMENTS WITHIN ACTIVITY

- Evaluate patient based on history, physical examination, results of diagnostic tests and procedure for suitability for anesthesia (ASA status 1 or 2 – a normal, healthy patient or a patient with mild systemic disease that does not result in functional limitations) [1.1; 1.3] ■
- Formulate a general anesthetic and analgesic protocol including premedication, induction, maintenance and recovery. Select drugs and equipment [1.3] ■
- Share plan with team members and answer questions [6.1] ■
- Execute anesthesia and recovery safely [2.1]. ■  
This includes:
  - Select and prepare anesthetic, support and monitoring equipment
  - Prepare patient for anesthesia
  - Administer premedication to patient
  - Induce anesthesia and establish airway
  - Maintain anesthesia
  - Monitor vital signs including blood pressure and respond to common complications associated either with anesthesia or the procedure
  - Recover patient from anesthesia, including assessment of pain and administration of analgesic drugs if necessary
- Collaborate with others to update plan as needed [6.1] ■
- Follow legal requirements for use of controlled substances [8.2] ■
- Maintain an anesthetic record including drugs, doses, route and time of administration, vital signs, important anesthetic and procedure events and complications [5.3] ■





# EPA 8

## Formulate recommendations for preventive healthcare

<b>DESCRIPTION OF ACTIVITY</b>	Create a preventive healthcare plan, considering the animal/herd needs, the client’s capabilities, and the care setting, to optimize health and welfare, and to prevent spread of disease.
<b>COMMENTARY</b>	Prevention of disease is a core veterinary activity that protects the health of animals and the public.
<b>MOST RELEVANT DOMAINS</b>	<b>2: Individual Care &amp; Management</b> ■ <b>3: Animal Population Care &amp; Management</b> ■ <b>5: Communication</b> ■
<b>SECONDARY DOMAINS</b>	<b>1: Clinical Reasoning &amp; Decision-making</b> ■ <b>9: Scholarship</b> ■
<b>ELEMENTS WITHIN ACTIVITY</b>	<ul style="list-style-type: none"> <li>• Evaluate individual animal or herd needs, considering age, health status, exposure risk [1.1, 2.2, 3.1] ■ ■ ■</li> <li>• Make recommendations regarding disease screening [1.1, 2.2; 3.1, 5.1] ■ ■ ■ ■ ■</li> <li>• Educate clients and stakeholders on disease prevention measures [2.2; 3.1, 3.3, 5.1, 5.2, 9.3] ■ ■ ■ ■ ■ ■</li> <li>• Perform preventive healthcare measures [2.1] ■</li> <li>• Document recommendations and procedures in the record [5.3] ■</li> </ul>





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