

Section 1

Emergency Medicine Overview

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Goals in Veterinary Emergency Medicine

Dustin Schmid, DVM¹ and Bob Murtaugh, DVM, MS, DACVECC, DACVIM²

¹VCA All Care Animal Referral Center, California, CA, USA

²Pathway Vet Alliance, Austin, TX, USA

The 40-Year Evolution of Goals in Veterinary Emergency Medicine

The Patient

Progress in meeting the needs of the veterinary patient in an emergent care scenario has been exponential when we compare the last four decades.

In the late 1970s and early 1980s, with the advent of the first independently owned and staffed after-hours facilities, the level of patient care was enhanced greatly simply by the dedicated overnight presence of doctors and technicians performing triage and hands-on monitoring on behalf of the local practices. Pain management rose to the level of recognition and was ministered to with repeated doses of butorphanol. Sophisticated point-of-care testing involved the human eyeballing of azostix and ketodiasrips. A single-channel paper recorder for ECG tracing and evaluation represented state-of-the-art vital sign monitoring. The creation of radiographs required a hazardous materials license and diagnostic ultrasound had just been “discovered.” Ventilators came from the mothballed basements of hospitals and were (for) the Birds. Transfusion medicine involved the science of grabbing the nearest hospital cat walking by, type B ... say what? Titrating fluid therapy to the needs of the patient depended on applying the computer-generated algorithm of being able to count drops and multiply by 4 – “Say, anybody here remember how many drops per milliliter with a microdrip administration set?” And no ACVECC veterinary specialists or AVECCT VTs to be found ... just a gleam in their mother’s (Becky Kirby) and father’s (Wayne Wingfield) eye, respectively.

Fast-forward to our current 21st-century world of dedicated 24/7 ER facilities staffed by seasoned emergency doctors working side by side with board-certified veterinary emergency and critical care specialists and veterinary technician specialists! Point-of-care testing can provide virtually instantaneous assessment of essential coagulation functions and serial measurements of critical parameters

including ionized calcium and lactate using microliter instead of milliliter samples. Syringe pumps are loaded with acronymic cocktails of analgesics such as MLK (morphine/lidocaine/ketamine) and patients are maintained on transdermal patches of fentanyl for longer term continuous pain management. Lipid emulsion infusions are utilized in the treatment of many acute toxicities and drug overdoses. Commercial veterinary blood banks provide immediate access to a variety of blood components, allowing tailored approaches for the patient requiring transfusion therapy. A-Fast and T-Fast ultrasound studies are performed routinely as triage tools in the busy emergency room. Transcutaneous monitoring of oxygen saturation and indirect blood pressure measurement have become required assessment tools in the triage of critically injured and ill patients presented for evaluation and treatment. Telemetry monitoring of heart rate and rhythm makes for more comfortable patients and increased efficiency of staff in monitoring multiple patients simultaneously. Constant-rate infusions of norepinephrine and vasopressin are used to stabilize patients following resuscitation from cardiac arrest and the effectiveness of cardiopulmonary resuscitation (CPR) is gauged by measurement of end-tidal CO₂ instead of fumbling to palpate the presence of femoral pulses. The practice of and approach to CPR as well as its instruction have been standardized for small animal veterinary patients through the RECOVER initiative. There is a multicenter trauma registry and project under way to codify our best practices for managing the injured patient. And the evolution continues ...

The Client and the Team

Just as the goals and capabilities for care of the patient have been sharpened over time in the veterinary emergency room, the expectations of the clients attached to those patients have also come into greater focus. Gone are the times when clients were simply happy to have you open for business and available for them in the after-hours

when their family veterinarian had gone home for the day. The care of the traumatized client has become increasingly important as a critical goal in the busy emergency center, especially as the costs of the sophisticated care have increased dramatically. Clients are often confronted with life and death choices for their beloved pets that involve the potential expenditure of hundreds if not a few thousand dollars over a matter of mere hours in situations of grave uncertainty with regard to prognosis.

The proper handling of these situations by the veterinary emergency team with appropriate empathy and communication skill often determines the satisfaction of the client experience to a greater extent than does the outcome associated with the medical management of the patient. The veterinarians and staff delivering services in the emergent situation need to be properly trained and engaged to ensure that the expectations of clients are properly ascertained and managed with no medical or financial surprises. Clients need to see, through behind-the-scenes tours and detailed communication, the sophistication and value of the care being provided to their pets. To maximize the client experience, veterinary emergency healthcare providers need to attend to details such as minimizing client wait times, being careful not to predetermine client choices (“x-raying the wallet”), communicating frequently and fluently in situations of great angst when patient dynamics are labile, delivering bad news in understandable terms and with empathy, and ensuring that the euthanasia experience, when necessary, is handled with great compassion and patience.

The excellence required in the delivery of patient care and the client experience in the realm of veterinary emergency medicine in the 21st century puts significant strain on veterinary healthcare personnel. The constant medical, psychological, and interpersonal stressors of the daily grind in the ER necessitate recognition and proactive action by hospital leaders. These leaders need to adopt a nurturing approach toward the team on several levels, including implementation of proven processes for all to follow that ensure efficiency, quality of care, teamwork, and excellence in client service. Ongoing training to ensure development of communication skills, combating of compassion fatigue and opportunities for advancement of team members are crucial to the successful delivery of today’s veterinary emergency care.

Principles of Primary Survey, Resuscitation, Secondary Survey and Definitive or Refined Diagnostics and Treatment of Veterinary Emergency Patients

From primary care clinics to large multidisciplinary referral practices, no veterinary hospital is immune to the need

for providing emergency veterinary care. The diagnosis and treatment of unforeseen illness or injury may occur after giving a routine vaccine or during an anesthetic procedure or a client may present with an acutely ill or injured pet. Each practice has different abilities (staffing, equipment, experience, etc.) to handle emergencies and the veterinary practice should outline its abilities as an emergency hospital to its clients and the public.

Organization and preparation are paramount in providing prompt and appropriate emergency care regardless of clinical setting. Every hospital should have established guidelines and trained personnel for telephone and in-hospital triage. Contact with the client often occurs prior to the patient arriving at the hospital and it is important to determine the nature and urgency of the pet’s problem and provide appropriate advice. It is also important to realize that most clients do not have the knowledge or training to accurately assess or describe a pet’s condition and all patients with potential emergency conditions should be evaluated by a veterinarian. Patients with traumatic injuries, seizures, difficulty breathing, or inability to rise must be seen by a veterinarian without hesitation.

In-hospital triage is used to identify and prioritize a patient’s need for immediate care. The ABCDEs are a reasonable systematic approach to this primary survey. This approach evaluates a patient’s airway, breathing, circulation, (dysfunction of the) central nervous system and (rapid whole-body) examination to identify patients that require life-saving emergent treatment. Following emergent stabilization, a complete physical examination (secondary survey) is then performed by the veterinarian (see Chapter 3).

Every practice should have rapid access to the basic supplies needed to support patient airway, breathing, and circulation. Emergency patients commonly need oxygen supplementation that can be delivered by several means: rigid mask, commercially available oxygen hoods, plastic wrap-covered Elizabethan collars, or nasal catheter/prongs. A laryngoscope with multiple blade sizes and multiple sized endotracheal tubes along with bulb syringes or a medical vacuum for airway suctioning should be available to establish and maintain a patent airway. Lidocaine instilled into a cat’s larynx will aid in preventing laryngospasm should intubation be required in that species. A stylet can be used to help with difficult intubations. Temporary tracheostomy packs should also be available in case intubation is not possible. The ability to provide positive pressure ventilation via bag valve devices, anesthesia circuits and/or mechanical ventilator should also be available for apneic or hypoventilatory patients. Pleural space disease often compromises a patient’s ability to oxygenate and ventilate effectively and

rapid identification and evacuation of the pleural space are required in these patients. Equipment for thoracocentesis should be readily available in prearranged kits including butterfly needles, extension tubing, syringes, and three-way stopcocks as these pleural conditions are life threatening.

The ability to gain rapid peripheral intravenous (IV) access is a paramount requirement in patients presenting to the ER. Intravenous access is required to maintain or re-establish effective circulating volume, safely and effectively administer medications and in some cases to rapidly transfuse blood products. Gaining peripheral venous access may be difficult in some patients (e.g. neonates, severely hypovolemic pets) and other means of venous access may be necessary such as intraosseous or jugular catheterization via cut-down procedure.

The primary patient care-related goal in the emergent setting is to promptly identify life-threatening conditions such as shock so timely, life-saving decisions on patient care can be made. It is important to serially monitor and record patient vitals and keep in mind your endpoints of resuscitation to help guide treatment. Additionally, eliminating ongoing active hemorrhage or seizures should be

among the first goals in emergency treatment. Secondary goals, that follow quickly, in concert with circulatory stabilization, include optimizing oxygenation, ventilation, electrolyte and acid–base status, pain management, and developing an appropriate definitive diagnostic and treatment plan.

It is important to note that in some instances, the primary goal may not be to normalize vital circulatory parameters, for example hypotensive resuscitation strategies in hemorrhagic shock due to internal bleeding. In humans, hypotensive resuscitation strategies reduce coagulopathies and the transfusion requirement in trauma patients with hemorrhagic shock [1]. Commonly used hemodynamic targets used during resuscitation include heart rate, blood pressure, pulse quality, mucous membrane color, and central venous pressure (CVP). Calculating shock index (HR/SBP) may also be a helpful triage tool in determining if patients are in shock [2]. Global markers of oxygenation should be used during resuscitation and include lactate, base deficit, central venous oxygen saturation ($S_{cv}O_2$) or mixed venous saturation (S_vO_2). Specific goals for initial therapy have been outlined for several conditions, most notably severe sepsis and septic shock with the Surviving Sepsis campaign [3].

References

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