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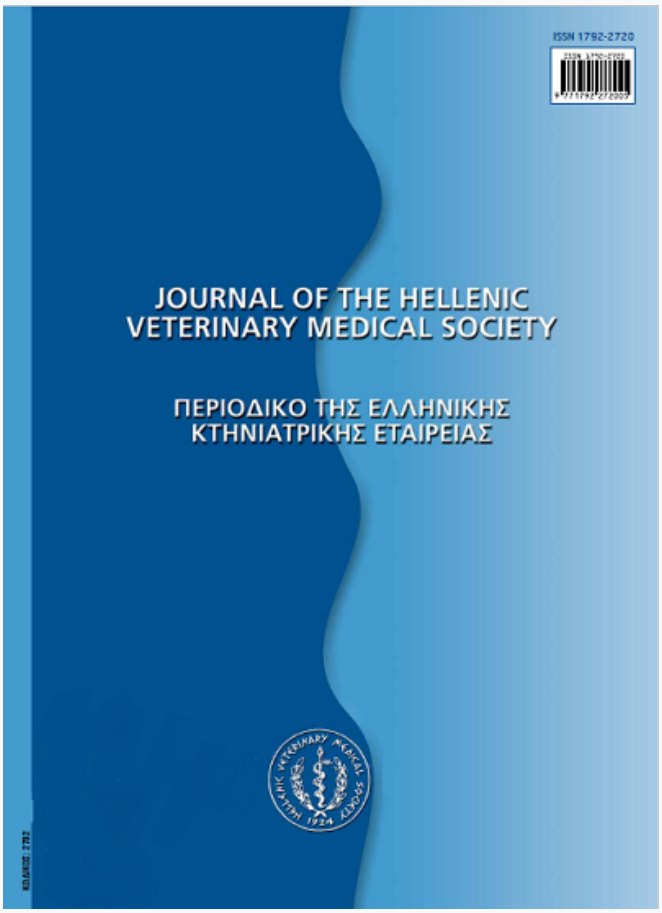

The Intensive Care Unit in Veterinary Clinical Practice. Organization and Management

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Review article
Ανασκόπηση

The Intensive Care Unit in Veterinary Clinical Practice. Organization and Management.

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Η Μονάδα Εντατικής Θεραπείας στην κτηνιατρική κλινική πράξη. Οργάνωση και διαχείριση.

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ABSTRACT. The primary idea for intensive care unit stemmed from the appreciation that patients are better served and have better survival rates when treated in a separated and specialized area of the hospital. In Europe, the number of small animal ICUs is increasing, however, most of them are located in Universities due to their high cost and the numerous and specialized personnel required. In humans, all ICUs share the below-mentioned commonalities. They all have designated and adequate spaces, specialized personnel and appropriated nurse to patient ratio and resources to provide continuous care and monitoring. In particular, personnel should be trained to provide intensive medical care to patients with life threatening conditions. In humans, most ICUs run as a close-unit model. In a close-unit model, the intensivist is the primary physician responsible for the full-time ICU care. Modern small animal ICUs usually follow the same model or are embedded in the Anaesthesia Unit. In humans' ICUs, the criteria of an incoming patient meet the following guideline: "A patient is admitted to the ICU only to be benefited of its services and discharged when these services are no longer needed". Particularly, patients entering an ICU are usually patients in need of intensive care or intensive monitoring and patients with life-threatening conditions with few chances of rehabilitation. Critical care patients are a very heterogeneous population, however, they all share the need for high level of care. Conditions that usually result in admission to an ICU vary and include cardiogenic, hypovolemic or septic shock, respiratory failure, cardiovascular abnormalities, metabolic disorders, neurological disfunctions and trauma. Moreover, emergency surgical patients or patients undergoing elective major surgeries, such as chest or abdominal procedures, usually require post-operative hospitalization in the ICU. The main case load in Veterinary ICUs refers to septic or traumatic shock, systemic inflammatory response syndrome and acute respiratory distress syndrome, severe metabolic disorders, such as diabetic keto-acidosis, intoxications and trauma. The main disadvantage of a Veterinary ICU operation is the owner's ability to pay for the cost of treatment. Poor prognosis for recovery in combination with the long duration of hospitalization usually result in euthanasia. Veterinary interest on Emergency and Critical Care has grown considerably over the last 15 years, making this field one of the most rapidly developing specialties in veterinary medicine today. As dogs and cats become an integral part of our society, the demands on applying a standard of care approaching that of human medicine are increasing. Providing that long-term prognosis is good, animals stand to benefit from the development of Emergency and Critical Care field.

Keywords: Intensive Care Unit, organization, management

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ΠΕΡΙΛΗΨΗ. Η αρχική ιδέα για τη δημιουργία της Μονάδας Εντατικής Θεραπείας (ΜΕΘ) προήλθε από την εκτίμηση ότι οι ασθενείς σε κρίσιμη κατάσταση έχουν καλύτερη αντιμετώπιση και καλύτερα ποσοστά επιβίωσης όταν νοσηλεύονται χωριστά από τους υπόλοιπους ασθενείς, σε ξεχωριστό και ειδικά διαμορφωμένο χώρο του νοσοκομείου. Η διαμόρφωση της ΜΕΘ περιλαμβάνει καθορισμένο χώρο, ειδικά διαμορφωμένο και εξειδικευμένο προσωπικό και εξοπλισμό. Ειδικότερα, το προσωπικό αποτελείται από ειδικευμένους κτηνιάτρους, ικανούς να παρέχουν άμεση και εξειδικευμένη ιατρική βοήθεια σε ασθενείς που βρίσκονται σε κρίσιμη κατάσταση ή απειλείται άμεσα η ζωή τους. Στις ΜΕΘ, στον άνθρωπο έχει επικρατήσει το κλειστό μοντέλο ΜΕΘ, όπου η λειτουργία της Μονάδας βασίζεται στον Εντατικολόγο και την ομάδα αυτού. Το ίδιο μοντέλο επικρατεί πλέον και στις σύγχρονες ΜΕΘ στην Κτηνιατρική, όπου η λειτουργία της Μονάδας ανήκει στον Εντατικολόγο ή είναι συνδυασμένη με τη μονάδα Αναισθησιολογίας. Στον άνθρωπο, τα κριτήρια εισαγωγής ενός ασθενή στην ΜΕΘ ακολουθούν την παρακάτω οδηγία: «Στην ΜΕΘ εισάγεται ο ασθενής που θα ωφεληθεί από τις υπηρεσίες της και εξέρχεται όταν οι υπηρεσίες αυτές δεν είναι πλέον χρήσιμες». Έτσι οι ασθενείς που εισάγονται στη ΜΕΘ χωρίζονται σε τρεις κατηγορίες/προτεραιότητες. Στην πρώτη ανήκουν εκείνοι που χρειάζονται εντατική θεραπεία, στη δεύτερη εκείνοι που χρειάζονται εντατική παρακολούθηση και στην τρίτη οι ασθενείς που η ζωή τους είναι σε κίνδυνο, αλλά έχουν λίγες πιθανότητες αποκατάστασης. Η βασική διαφορά που παρατηρείται στους ασθενείς των ΜΕΘ είναι η ετερογένεια των καταστάσεων που συνοδεύουν αυτούς τους ασθενείς. Στον άνθρωπο, οι πιο συχνές καταστάσεις που απαντώνται στη ΜΕΘ είναι το shock (καρδιογενές, σηπτικό, υπογκαιμικό), οι αναπνευστικές, καρδιαγγειακές, νευρολογικές ή μεταβολικές διαταραχές και τα τραύματα. Συχνά στη ΜΕΘ νοσηλεύονται και ασθενείς μετά από σοβαρές και εκτεταμένες χειρουργικές επεμβάσεις για τις πρώτες μέρες τις αποθεραπείας τους. Τα συχνότερα περιστατικά που συναντώνται στις ΜΕΘ στην Κτηνιατρική αφορούν στο σηπτικό shock ή στο σύνδρομο της σηπτικής φλεγμονώδους αντίδρασης, στο σύνδρομο της οξείας αναπνευστικής δυσχέρειας ή σε σοβαρές μεταβολικές διαταραχές, όπως ο κετοξικός σακχαρώδης διαβήτης, ενώ συχνή είναι και η μετεγχειρητική νοσηλεία ζώων μετά από ενδοθωρακικές ή σοβαρές ενδοκοιλιακές επεμβάσεις. Το βασικό μειονέκτημα στις ΜΕΘ στην Κτηνιατρική έγκειται στη μεγάλη οικονομική επιφόρτιση του ιδιοκτήτη. Ο μεγάλος χρόνος αποθεραπείας, σε συνδυασμό με τις μειωμένες πιθανότητες επιβίωσης που παρατηρούνται σε πολλές από τις παραπάνω παθολογικές καταστάσεις, το κόστος της νοσηλείας στη ΜΕΘ πολλές φορές καθιστά απαγορευτικούς τους θεραπευτικούς χειρισμούς. Στην Κτηνιατρική, η πρόοδος και η εξέλιξη της λειτουργίας των ΜΕΘ έχει κάνει σημαντικά βήματα τα τελευταία 15 χρόνια. Καθώς ο σκύλος και η γάτα αποκτούν, όλο και περισσότερο, οντότητα μέσα στην οικογένεια, τόσο αυξάνουν και οι απαιτήσεις, καθιστώντας επιβεβλημένη τη γνώση, την ενημέρωση και την εξέλιξη στον τομέα της Εντατικής Θεραπείας.

Λέξεις ευρετηρίασης: Μονάδα Εντατικής Θεραπείας, οργάνωση, διαχείριση

INTRODUCTION

The origin of intensive care units (ICU) stemmed from an early appreciation that critically ill patients are better served when grouped together in a designated area of a hospital (Gutsche and Kohl 2007). Dr. Walter Edward Dandy was a pioneer in the advances in operations for brain diseases and he is the one who created the first ICU in the world, a three-bed ICU in John Hopkins University School of Medicine, in Boston, in 1926 (Long 1989).

Dr. Peter Safar was the first intensivist doctor in the USA. He started as an anaesthesiologist and, in 1950, he created and praised the "Urgency and Emergency" room set up, now known as the ICU. It was at that time that the ABC (Airway, Breathing and Circulation) protocols were formed and artificial ventilation, as well as cardiopulmonary resuscitation, became popular (Safar and Escarraga 1958).

Bjorn Aage Ibsen (1915-2007), trained in anaesthesiology in Boston, became involved in the 1952 poliomyelitis outbreak in Denmark. He first realized that mortality was mainly due to ventilatory failure, so he changed management directly, instituting protracted positive pressure ventilation by means of intubation and tracheostomy and enlisting 200 medical students to manually pump oxygen and air into the patient's lungs. He jointly authored the first known account of ICU management principles (Berthelsen 2003).

The interest of veterinarians on Emergency and Critical Care has grown considerably over the last years, making this field one of the most dynamic and rapidly developing specialties in veterinary medicine today. However, it is still a relatively new area compared to other specialties in veterinary medicine, although the initial interest dates back to the 1950's (Corley and Mathews 2003).

In Europe, the number of small animal ICUs is increasing, but most of them are located in Universities due to their high cost and numerous staff required. The majority of emergency and critical care specialists work with small animals. Nonetheless, there are an increasing number of veterinarians who work with large

animals, almost exclusively with horses. Equine critical care began in the early 1980's as collaboration between Newmarket, England and the University of Florida (Corley and Mathews 2003).

The Veterinary Critical Care Society was established in 1978, while Veterinary Anaesthesia Society joined it 5 years later. The Veterinary Emergency and Critical Care Society was formed in 1984 and in 2002, The European Veterinary Emergency and Critical Care Society was founded (Corley and Mathews 2003).

Space and equipment

In humans, current ICUs have all five commonalities: a designated space, specialized monitoring and therapeutic capabilities, resources to provide continuous care, appropriate nurse to patient ratio and specialized personnel (Gutsche and Kohl 2007). An ICU should be a separated Unit within the Hospital with easy access to the patient's reception area, operating theatres and radiographic imaging area (Fragio 2002). A pre-defined area of the hospital allows specialized practitioners to have ready access to critically ill patients. That area must include adequate space for staff to work in comfort, while maintaining visual contact with the patient (Fragio 2002). Moreover, there should be sufficient space for individual patients who may require significant intervention and monitoring to aid their recovery (Gutsche and Kohl 2007). ICU cages should be conveniently designed and placed to enable the management and handling of the hospitalized animals (Fragio 2002).

Intensive care unit equipment includes patient monitoring, life-support and emergency resuscitation devices and diagnostic devices. An ICU should be fully equipped and ready to provide care to patients with different conditions or it may be designed and equipped to provide specialized care to patients with specific conditions, such as injuries, critical or life-threatening diseases or patients undergoing a major surgical procedure. The type and quantity of equipment vary according to the type and size of ICU and must be appropriate for the workload of the Unit. Variable and basic equipment should include ventilators, suction apparatus, airway access, vascular access and chest drainage equipment, infusion pumps and bedside monitors (Anonymous 2010b, Anonymous 2010c).

A bedside monitor is a display of major body functions on a device. The monitor is typically used when certain functions need to be measured, such as heart rate, respiratory rate, blood pressure and temperature. In addition, special functions, such as capnography, spirometry, pulse oximetry, invasive arterial pressures and central venous pressure are, also, used in certain situations (Fragio 2002, Goy-Thollot 2002).

Critically ill patients frequently have severe cardiovascular abnormalities. The arterial line provides a way to constantly measure a patient's blood pressure and may be essential to the stabilization of the patient. Arterial lines may be useful in patients with very high or low blood pressures. The arterial line, also, provides access for frequent blood sampling. Blood can be withdrawn from the patient through the arterial line tubing without having to puncture the animal for each blood draw (Anonymous 2010b). The need of invasive and non-invasive techniques for hemodynamic monitoring in ICU patients has also been increased. Using functional hemodynamic monitoring to define the responsiveness in the optimization of blood flow has been shown to improve outcomes in these patients (Vincent 2006).

Basic laboratory capabilities should be considered for any Unit which does not rely on centralized services. Laboratory equipment should include a blood gas and electrolyte analyzer, a biochemistry analyzer, a QBC, a microscope and a centrifugal machine (Goy-Thollot 2002).

One of the most important aspects of ICU equipment is oxygen supplementation. Each Unit should be equipped with oxygen arrivals or different oxygen sources sufficiently covering the case load. Several techniques are available to improve oxygenation in severely hypoxemic patients. Acute hypoxemic respiratory failure patients may require endotracheal intubation and mechanical ventilation (Patroniti 2011). Considerable changes have been made in the development of modern, portable ventilators, while performance characteristics, such as valve resistance, flow delivery and monitoring, have, also, been improved (Vincent et al. 2006).

Personnel

An ICU should be a specially staffed and self-contained section of the Hospital, prepared to provide intensive medical care to patients with life-threatening or potentially life-threatening conditions. An ICU provides special expertise and facilities for the support

of vital function and utilizes the skills of medical, nursing and other staff experienced in the management of these conditions (Fragio 2002). The intensive care success is mostly a team effort, with the team being any specialist in the hospital who has knowledge of aspects of the case (ICU clinical staff) and the nursing staff who actually carries out most of the patient care. In ICUs established at University Hospitals, students, also, have an important role helping with the management of patients.

In human ICUs, the intensivist is the primary care physician of the ICU. In addition to acting as a physician, intensivists are commonly the administrators of an ICUs (Gutsche and Kohl 2007). Based on that, most human ICUs run as a closed-unit model. A closed ICU is one in which patients are transferred to the care of an intensivist who is primarily responsible for full-time ICU care. The intensivist makes all final decisions about the care of the patients, including who is admitted and discharged, which physicians to consult and all other aspects of care (Gutsche and Kohl 2007). In ICUs where the staff is not efficient or not sufficient, units run as an open or semi-closed models. In these models, the patient is admitted to the ICU by one of the primary physicians who continues to direct the care of the patient with or without the intensivist's consultation.

However, in 1977, Safar and Grenvik first postulated that an intensivist-led ICU would translate into better outcomes. Since then, several studies that have been conducted have come to the same result. In 1984, Li et al. compared outcomes in a ten-bed community ICU before and after hiring full-time intensivists. They compared outcomes while controlling for factors that predicted death, severity of illness and co-morbidities. Patients cared for by designated intensivists were more likely to survive their ICU stay when compared with patients in the ICU cared for by their primary care physicians.

In another study, outcomes of septic patients in an ICU compared before and after the introduction of intensivists resulted in the fact that mortality was significantly lower in patients cared for by intensivists (Reynolds et al. 1988).

Modern small animal ICUs usually follow the closed-model unit or are embedded with the Anaesthesia Unit. In a closed veterinary ICU model, decisions regarding triage and therapy become the responsibility of the ICU service. They provide all services, all orders and all management of the case (Wilkins 2007).

Running an ICU usually takes at least two to five veterinarians and at least four assistances and nurses/technicians (Vigano 2002). ICUs stated in Universities, also, have teaching programs. Students, interns and residents participate in the daily management and care of the patients. Students and interns usually rotate during the University years (Goy-Thollot 2002).

Critical care training is designed to engage a resident in a large body of advanced knowledge in clinical practice, research and administrative duties. On completion of a fellowship, a physician should be able to rapidly indentify, assess and resuscitate a critically ill patient. This includes treatment of cardiogenic, neurogenic and hypovolemic shock using some of the most modern approaches (Gutsche and Kohl 2007). Rapid advances in critical care medicine obligate the intensivist to assimilate new findings in medical literature. Thus, Critical Care training is a continuous education with round-the-clock developments.

Veterinary critical care science progressed as veterinarians realized that applying a standard of care approaching that of human medicine can result in survival of animals with conditions previously thought to be fatal. Due to many similarities in critical care conditions of animal species and humans, veterinary intensivists often refer to the human research literature. The use of World Wide Web forces intensivists to a continual search for new developments as society demands a "cure" (Corley and Mathews 2003).

Critical care patients

ICU patients are a very heterogeneous population, but they all share the need for a higher level of care than that of most patients in the hospitals (Gutsche and Kohl 2007). The conditions that result in admission to a veterinary ICU are varied and often include emergency or critical neurological, medical, respiratory, septic, surgical, traumatic, toxicological, neonatal, obstetrical, oncologic and ophthalmologic conditions (Corley and Mathews 2003).

In human ICUs, the criteria of an incoming patient meet the following guideline: "A patient is admitted to the ICU only to be benefited of its services and discharged when these services are no longer needed".

Although every ICU has its own needs and rules, there are some basic guidelines concerning the patients admitted and discharged. Patients are categorized in 3 priorities. The first one refers to patients in need of intensive cure, the second one to those in need of constant monitoring and the third one to those in life-threatening conditions with few chances of rehabilitation (Giala 1998). On the other hand, a patient is discharged when there is no need for intensive therapy or when therapy has failed to provide cure and there is no possibility of recovering (Giala 1998).

The most common conditions admitted in a veterinary ICU are acute renal failure (ARF), anaemia, bleeding disorders, hypovolemic, cardiogenic, distributive and septic shock, intoxications, metabolic disorders, neurological disfunction, post-surgical care, respiratory failure and trauma. Regardless of the primary problem, multiple organ disfunction (MODS) or failure are either present or a potential concern in those that are not appropriately managed. Therefore, while treating the primary problem, management and prevention of MODS is an important aspect of critical care (Corley and Mathews 2003).

Infections are a common cause of admission to the Intensive Care Unit. Uncontrolled inflammation associated with an infection is called sepsis. When the infection is overwhelming, it usually results in septic shock and multiple organ disfunction with a very guarded prognosis (Anonymous 2010a). The systemic inflammatory response syndrome (SIRS) occurs when there is release of inflammatory mediators into the systemic circulation. SIRS occurs when a local site of inflammation is severe enough to allow overflow of mediators into the circulation instead of restricting them only to the region of injured tissue. Systemic circulation of inflammatory mediators results in numerous global abnormalities that, if severe enough, can have life-threatening consequences (Hopper 2008b). Patients require intravenous antibiotics and treatment of the underlying cause, potentially surgical, in addition to supportive care including fluid therapy, pain relief and vasoconstrictive therapy to support their cardiovascular system (Anonymous 2010a).

Respiratory failure is defined as ineffective gas exchange in the lungs by the respiratory system. This can be caused by the inability to deliver adequate amount of air to the alveoli or problems with gas exchange across the alveoli-pulmonary blood vessels (Powell 2002). Acute lung injury and Acute Respiratory Distress Syndrome (ARDS) are the most common conditions leading to respiratory failure among patients in ICU. Treatment of respiratory failure may require oxygen therapy or mechanical ventilation and treatment of the underlying disease. Mechanical ventilation allows treatment of the underlying disease to take over and provides time for the lungs to recover. The inflammation that results in acute lung injury and ARDS may origin in the lung due to a direct pulmonary insult or may be part of a generalized inflammatory response. In veterinary medicine, ARDS frequently occurs as a sequel to sepsis or systemic inflammatory response syndrome (SIRS) (Corley and Mathews 2003).

Cardiogenic shock is a common cause of hospitalization in Intensive Care Units. Severe heart failure can lead to cardiogenic shock and cardiac arrest. Typically, patients are admitted with pleural or abdominal effusion, pulmonary edema and life-threatening arrhythmias. Patients with severe heart failure are frequently unstable and require intensive supportive treatment including oxygen supplementation, round-the-clock drug therapy and a minimal stress environment (Cote 2001).

Acute renal failure (ARF) is often defined as a sudden inability of the kidneys to regulate water and solute balance. ARF may be more broadly defined as rapid deterioration of renal function resulting in the accumulation of nitrogenous wastes (Labato 2001). Patients can develop kidney failure as a result of many causes including infections, toxins, drug reactions, low blood pressure, blood clot formation, blockage of parts of the urinary tract and body-wide disease processes. Treatment of acute renal failure aims to deal with the underlying cause. In addition, patients will need intensive supportive therapy to correct electrolyte imbalances, manage fluid requirements and improve urine output. In severe cases, patients may require peritoneal dialysis to stabilize renal function (Corley and Mathews 2003).

Severe anaemia can be attributed to multiple reasons, but it is commonly caused by acute haemorrhage, haemolysis or bone marrow disorders. Treatment of anaemia involves investigation and therapy of the underlying disease process. While investigation and treatment is undertaken, patients must be supported with a transfusion of blood products. Blood banking

(storage of blood products) is likely to occur only at larger centers. In some countries, commercial blood banks are available from which veterinarians may obtain blood products when necessary (Anonymous (a) 2010).

Coagulopathies or bleeding disorders can be inherited or acquired. Bleeding disorders are due to failure of formation of a platelet plug due to inadequate platelet numbers or platelet disfunction or due to the failure of the clotting factor protein cascade to form a stable blood clot. A common condition is disseminated intravascular coagulation (DIC), which usually takes place secondary to sepsis. Treatment of bleeding disorders requires identification of the underlying cause, specific therapy and replacement of the required blood component by transfusion of plasma or platelets (Anonymous 2010a).

Severe metabolic disorders can be difficult to manage in animals and often these patients will require some time in the Intensive Care Unit, where they can be closely monitored and where their medical care can be fine-tuned. The most common metabolic conditions are diabetic keto-acidosis (DKA) and hepatic encephalopathy. Patients with DKA require intensive insulin therapy, close monitoring of their fluid balance, electrolyte concentrations and glucose levels and investigation and treatment of any underlying disease processes. Patients with severe liver disease may develop neurological complications, such as severe mental depression or seizures. Treatment is aimed at managing the underlying liver condition to provide time for the liver to regenerate and limiting the development of neurological side effects with drug therapy. These patients require close monitoring for deterioration of their condition and to ensure that seizure activity is identified and treated rapidly (Anonymous 2010a).

Animals are frequently involved in various kinds of accidents. Trauma patients frequently have extensive injuries and disfunction of major body systems (cardiovascular, respiratory and neurological). They usually require attention and expertise of multiple personnel-emergency and critical care clinicians, neurologists, surgeons and anaesthetists in order to have the best chance of survival and rehabilitation. They often have a long stay in the hospital and are frequently admitted in the Intensive Care Unit (Anonymous 2010a).

Traumatic brain injury is a common concern in the small animal emergency patient. Appropriate, effective management of these patients can have a dramatic impact on outcome. Traumatic brain injury causes primary structural damage as a result of contusion, laceration, compression and haemorrhage. The clinician cannot alter the extent of the primary injury, but instead he/she must focus on preventing or minimizing the occurrence of secondary brain injuries (Hopper 2008a).

Epilepsy indicates recurrence of seizures of primary brain origin. The epilepsy is symptomatic when the seizures are the result of one or more identifiable structural brain lesions. Status epilepticus is present when an animal experiences repetitive seizures with no recovery time between seizures or has been seizing for more than 30 min. The frequency of seizure activity in a given period of time correlates with the intensity of management, quantity of drugs needed and time to achieve control and subsequent recovery. It is crucial for generalized seizures to be controlled rapidly (Mathews 2006). Patients with severe neurological disfunction may require intensive care due to their inability to protect their airway (risk for aspiration pneumonia) and frequently require drug administration and close monitoring (Anonymous 2010a).

Due to the curiosity and dietary indiscretion, toxicological emergencies are not uncommon (Corley and Mathews 2003). Making a definitive diagnosis of intoxication can be very difficult. Typically, the history of potential exposure is vague, many intoxication syndromes appear similar and definitive tests for toxins do not exist. That makes management of intoxication challenging. A few antidotes exist, such as N-acetylcysteine for acetaminophen, ethanol or fomepizole for ethylene glycol or dimercaprol for lead. However, in most cases, therapy for intoxication follows three principles: gastrointestinal or topical decontamination, administration of supportive care and close monitoring for complications (Anonymous 2010a).

Surgical patients may have undergone planned elective surgery and their stay in the ICU postoperatively is, also, planned to ensure a safe and speedy recovery from major surgery. On the other hand, emergency surgical patients may require ICU care following surgery, since these animals often have ongoing medical conditions or remain unstable after surgery. Common examples include chest or abdomi-

nal surgery and bowel resection associated with septic peritonitis (Anonymous 2010a).

Finally, one of the most important aspects of patients hospitalized in an ICU is pain management. Pain is critical in all patients and, although sometimes pain assessment is difficult, the clinician has to be very observant with respect to behavioural changes associated with pain. As the mechanisms of transduction, transmission, spinal modulation and perception of pain are similar to all animal species, many pharmacologic agents and modalities used to manage pain in humans are, also, used in animals (Corley and Mathews 2003).

Cost of treatment and owners

For many individuals, the crisis resulting from pet loss has been found to be extremely intense. Unfortunately, the family pet has to rely on the owner's ability to pay for medical care. Poor prognosis for recovery and inability to pay for medical care are the main reasons for euthanasia. Although pet insurance is relatively uncommon in the United States, it is widespread in the United Kingdom. In some referral hospitals, 80% of the pets are insured, often up to £4,000 per illness. This means that critical care can be provided without a serious burden to the owner (Corley and Mathews 2003).

CONCLUSION

Cats and dogs are an integral part of our society. The evidence for the human animal bond and increased health in families with pets supports the importance of animals in the family. Several years ago, it was reported that 40% of the American households had a dog and many "non-dog" households had a cat. Dogs, cats and horses are the main species receiving critical care. However, in certain circumstances, zoo animals, exotic pets and farm animals may, also, benefit (Corley and Mathews 2003).

A well-organized and equipped ICU is able to cope with severe and life threatening conditions and accomplishes successful rehabilitation. All published data support the contention that trained intensivists are best suited to care for patients in intensive care environment. Progress in intensive care medicine has been considerable over the last fifteen years, accomplished usually by a succession of small steps rather than by any dramatic changes. Intensive care medicine has become a recognizable identity, with a unique knowledge base and sophisticated skill set, which requires considerable health care resources to be delivered optimally (Vincent 2006).

Veterinary patients experience similar perturbation of their health to that of human patients. When the long-term prognosis is good and provided that suffering can be minimized, animals stand to benefit greatly from advances in the field of emergency and critical care.

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