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CONFERINȚA DE URGENȚE — VINERI, 10 MAI

08:30 - 09:00	Înregistrarea participanților / *Registration*
09:00 - 09:45	Terapia de substituție renală și tehnici de purificare a sângelui la pacienții cu stare critică: introducere și aplicații clinice *Renal Replacement Therapy and Blood Purification Techniques in Critically Ill Patients: Introduction and Practical Applications*
09:45 - 10:30	Gestionarea injuriei renale acute prin terapia de substituție renală *Managing Acute Kidney Injury Using Renal Replacement Therapy*
10:30 - 11:00	Pauză de cafea / *Coffee Break* → *VETS Experience Room, sala Timișoara*
11:00 - 11:45	Rolul tehnicilor de purificare a sângelui și al terapiei de substituție renală în toxicoze/ intoxicații acute *The Role of Blood Purification Techniques and Renal Replacement Therapy in Acute Poisonings/Intoxications*
11:45 - 12:30	Managementul supraîncărcării de volum (balanța de fluid / supraîncărcarea cu fluide) prin terapia de substituție renală / *Management of Volume Overload (Fluid Balance/ Fluid Overload) through Renal Replacement Therapy*
12:30 - 13:30	Prânz / *Lunch*
13:30 - 14:30	Purificarea extracorporeală a sângelui în sepsis: o intervenție salvatoare *Extracorporeal Blood Purification in Sepsis: A Lifesaving Intervention*
14:30 - 15:30	Schimbul plasmatic terapeutic (plasmafereză): o soluție salvatoare în gestionarea anemiei hemolitice mediate imun (IMHA) *Therapeutic Plasma Exchange: A Lifeline in the Management of Immune-Mediated Hemolytic Anemia (IMHA)*
15:30 - 16:00	Pauză de cafea / *Coffee Break* → *VETS Experience Room, sala Timișoara*
16:00 - 17:30	Rentabilitatea: înțelegerea finanțelor veterinare, stabilirea prețului timpului profesional, strategii de facturare și proceduri de stabilire a prețurilor / *Profitability: Understanding Vet Finance, Pricing Professional Time, Invoicing Strategies and Pricing Procedures*
16:00 - 17:30 (VIP PANEL)	Schimbul plasmatic terapeutic pentru tratamentul tulburărilor neurologice mediate imun: miastenia gravis și poliradiculonevrita acută *Therapeutic Plasma Exchange for the Treatment of Immune - Mediated Neurological Disorders: Myasthenia Graves and Acute Polyradiculoneuritis*
19:30	Cină festivă / *Gala Dinner*

Speaker: Alessio Vigani, DVM, Dipl. ACVAA, ACVECC, ECVECC

Dr. Alessio Vigani, specialist în medicină veterinară, este un pionier în îngrijirea de urgență și terapia extracorporeală pentru animalele mici. Ca Director al Departamentului de Urgențe și Terapie Intensivă pentru animale mici la Spitalul Veterinar al Universității din Zurich, el este recunoscut pentru excelența sa și contribuțiile sale semnificative în domeniu. Absolvent al Universității din Milano și diplomat în anestezie și analgezie veterinară, Dr. Vigani și-a împărtășit cunoștințele în numeroase publicații și prezentări, influențând practica veterinară și formând viitoarele generații de specialiști. De asemenea, este diplomat al Colegiului American de Urgențe și Terapie Intensivă (ACVECC) și al Colegiului European de Urgențe și Terapie Intensivă (ECVECC), subliniindu-și angajamentul față de standardele cele mai înalte în practica veterinară.

Moderator: Cosmin Mureșan, DVM, MVSc, PhD

Dr. Cosmin Mureșan este șef de lucrări la Disciplina de Chirurgie, Anestezie și Terapie Intensivă a Facultății de Medicină Veterinară USAMV Cluj-Napoca. Doctor în Științe Medicale Veterinare, teza sa de doctorat a fost axată pe "Hemodinamica în sincopa cardiacă resuscitată sub neuroprotecție prin hipotermie terapeutică și memantină la porcine". Cu o vastă experiență profesională, a participat la stagii de pregătire în diverse universități europene, inclusiv la Royal Veterinary College - UK, Universitatea Berna - Elveția și Universitatea de Medicină Veterinară Viena - Austria. Este membru fondator și președinte al Societății Române de Urgențe și Terapie Intensivă Veterinară, precum și secretar al Societății Europene de Urgențe și Terapie Intensivă Veterinară.

Renal Replacement Therapy and Blood Purification Techniques in Critically Ill Patients: Introduction and Practical Applications

Introduction

In critically ill patients, maintaining proper renal function is crucial for overall health and survival. However, in cases where the kidneys fail to adequately perform their functions, renal replacement therapy (RRT) and blood purification techniques become essential interventions. RRT encompasses various methods aimed at replacing renal function by removing waste products, balancing electrolytes, and managing fluid status. Blood purification techniques, a subset of RRT, focus on removing toxins and inflammatory mediators from the bloodstream.

Principles of Renal Replacement Therapy (RRT)

Renal replacement therapy aims to mimic the physiological functions of the kidneys by removing metabolic waste products and maintaining fluid and electrolyte balance. The principles underlying RRT include diffusion, convection, adsorption, and membrane permeability.

Diffusion involves the movement of solutes across a semipermeable membrane from an area of higher concentration to a lower concentration. In RRT, this principle is utilized in hemodialysis and hemofiltration to remove uremic toxins and electrolytes from the bloodstream.

Convection relies on fluid movement across a semipermeable membrane, dragging solutes along with it. Hemofiltration and hemodiafiltration utilize convection to achieve higher clearance rates compared to diffusion alone, making them effective in removing middle molecular weight solutes and cytokines.

Adsorption involves the binding of solutes to a surface. Techniques such as hemoperfusion utilize adsorption columns to remove toxins that are not effectively cleared by diffusion or convection alone, such as protein-bound toxins and endotoxins.

Membrane permeability refers to the selective passage of solutes and fluids across the membrane based on size and charge. High-flux membranes used in hemodialysis allow for better clearance of larger molecules, including inflammatory mediators, compared to low-flux membranes.

Practical Applications of Renal Replacement Therapy

In critically ill patients, RRT is often initiated in the setting of acute kidney injury (AKI) or as part of the management of fluid overload and electrolyte disturbances. Modalities of RRT commonly used in the intensive care unit (ICU) include intermittent hemodialysis (IHD), continuous renal replacement therapy (CRRT), and hybrid therapies such as sustained low-efficiency dialysis (SLED).

Intermittent hemodialysis is characterized by short sessions of dialysis, typically lasting 3-4 hours, performed 3 times per week. It is effective in removing uremic toxins and correcting electrolyte imbalances but may lead to hemodynamic instability due to rapid fluid shifts.

Continuous renal replacement therapy involves slow and continuous removal of solutes and fluids over 24 hours. It is the preferred strategy for renal replacement in human ICUs.

Sustained low-efficiency dialysis combines aspects of both IHD and CRRT, offering longer and slower dialysis sessions than IHD but with less continuous clearance than CRRT. It is a flexible modality suitable for hemodynamically stable patients with AKI.

The choice of RRT modality depends on various factors, including the patient's hemodynamic status, severity of AKI, underlying comorbidities, and institutional resources. Individualized treatment plans should be tailored to each patient's specific needs to optimize outcomes.

Blood Purification Techniques

Blood purification techniques aim to remove circulating toxins and inflammatory mediators directly from the bloodstream, mitigating the systemic inflammatory response and improving organ function. These techniques include therapeutic plasma exchange (TPE), hemoperfusion, and high-volume hemofiltration.

Therapeutic plasma exchange involves separating plasma from whole blood, removing toxic substances or pathogenic antibodies, and replacing it with a suitable replacement fluid. It is utilized in the treatment of various autoimmune diseases, toxic ingestions, and certain types of sepsis.

Hemoperfusion utilizes adsorption columns containing adsorbent materials such as activated charcoal or resins to remove specific toxins from the bloodstream. It is effective in removing protein-bound toxins, such as bilirubin and certain drugs, in patients with liver failure or drug overdose.

High-volume hemofiltration involves the rapid removal of large volumes of plasma water using high-flux membranes, resulting in the clearance of inflammatory mediators and cytokines. It is utilized to manage septic shock and other conditions associated with systemic inflammation.

Practical Applications of Blood Purification Techniques

In critically ill patients, blood purification techniques are employed as adjunctive therapies to conventional RRT in conditions characterized by systemic inflammation, toxin overload, or immune dysregulation. TPE is used in the treatment of autoimmune diseases such as Guillain-Barré syndrome, thrombotic thrombocytopenic purpura, and myasthenia gravis, where the removal of pathogenic antibodies is beneficial.

Hemoperfusion is indicated in cases of drug overdose, especially in the setting of liver failure, where conventional RRT alone may be insufficient to remove protein-bound toxins. It is also utilized to manage sepsis and septic shock to remove endotoxins and cytokines contributing to the inflammatory response.

High-volume hemofiltration is increasingly utilized in critically ill patients with septic shock or acute respiratory distress syndrome (ARDS) to modulate the systemic inflammatory response and improve hemodynamic stability. Removing inflammatory mediators and excess fluid helps alleviate organ dysfunction and improve outcomes in these patient.

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Managing Acute Kidney Injury Using Renal Replacement Therapy

Acute kidney injury (AKI) is a sudden and often reversible decline in renal function, marked by the inability of the kidneys to adequately filter waste products from the blood. It is a critical condition with potentially life-threatening consequences if not managed promptly and effectively. Renal replacement therapy (RRT) serves as a cornerstone in the management of AKI, offering a vital means to support renal function and maintain fluid and electrolyte balance. This essay delves into the principles, modalities, and considerations in managing AKI through RRT.

RRT encompasses various techniques aimed at replacing renal function in patients with AKI. The selection of RRT modality depends on factors such as the severity of AKI, hemodynamic stability, comorbidities, and resource availability. Hemodialysis (HD), peritoneal dialysis (PD), and continuous renal replacement therapy (CRRT) are the primary modalities utilized in clinical practice.

Hemodialysis involves the extracorporeal removal of toxins and excess fluids by circulating the patient's blood through a dialyzer. It is effective in rapidly removing uremic toxins and correcting electrolyte imbalances. However, HD requires vascular access and may pose challenges in hemodynamically unstable patients.

Peritoneal dialysis utilizes the peritoneal membrane as a semipermeable membrane for solute and fluid exchange. It offers advantages such as simplicity, lower hemodynamic instability, and the ability to be performed in resource-limited settings. Nonetheless, PD may be less efficient in solute clearance compared to HD and may not be suitable for patients with abdominal surgeries or peritoneal adhesions.

Continuous renal replacement therapy involves the slow and continuous removal of solutes and fluids over an extended period, typically 24 hours. It is commonly employed in human critically ill patients in intensive care units, allowing for the gradual correction of fluid and electrolyte imbalances.

The choice between intermittent and continuous RRT depends on the clinical context, patient stability, and institutional capabilities. Intermittent therapies like HD are generally more efficient in solute clearance but may induce hemodynamic instability, whereas continuous therapies like CRRT offer better hemodynamic tolerance but may be less efficient in solute clearance.

Apart from modality selection, several factors influence the management of AKI using RRT. Adequate vascular access is crucial for the delivery of RRT, with options including central venous catheters, arteriovenous fistulas, and temporary vascular catheters. Vascular access complications, such as infection and thrombosis, must be promptly identified and managed to ensure uninterrupted RRT delivery.

Fluid management is another essential aspect of AKI management, with RRT serving as a tool for fluid removal or replacement. Fluid removal should be carefully titrated to prevent hemodynamic instability, while fluid replacement is necessary to maintain intravascular volume and prevent hypotension.

Electrolyte abnormalities commonly accompany AKI and require close monitoring and correction during RRT. Potassium, sodium, calcium, and phosphate levels should be monitored regularly, with adjustments made to the dialysate composition or supplementation as needed.

In conclusion, renal replacement therapy plays a pivotal role in the management of acute kidney injury by providing support for renal function and fluid and electrolyte balance. The selection of RRT modality and optimal management strategies depend on individual patient factors, clinical context, and institutional resources. A multidisciplinary approach involving nephrologists, intensivists, and nursing staff is essential to ensure timely initiation and effective delivery of RRT in patients with AKI, thereby improving outcomes and reducing mortality associated with this critical condition.

The Role of Blood Purification Techniques and Renal Replacement Therapy in Acute Poisonings/Intoxications

Acute poisonings or intoxications represent a significant medical challenge, often requiring swift intervention to prevent life-threatening consequences. These incidents can result from exposure to various toxic substances, including drugs, chemicals, or environmental hazards. In cases where the toxic agent overwhelms the body's natural detoxification mechanisms, blood purification techniques and renal replacement therapy (RRT) emerge as crucial interventions to remove the toxic substance and restore physiological balance.

Blood purification techniques encompass a range of methods aimed at removing toxins from the bloodstream. These techniques include hemodialysis, hemofiltration, hemoperfusion, and plasmapheresis. Hemodialysis, the most commonly employed method, involves circulating the patient's blood through a dialysis machine to remove toxins and waste products. Hemofiltration, another technique, employs a similar principle but relies on convective transport to eliminate larger molecules, making it particularly useful for removing substances with high molecular weights. Hemoperfusion involves passing blood through an adsorbent material to trap and remove toxins selectively. Plasmapheresis involves separating plasma from blood, removing toxic components, and returning the purified plasma to the patient.

In acute poisonings, these blood purification techniques offer several advantages. They provide rapid and efficient removal of toxic substances from the bloodstream, preventing further tissue damage and mitigating the severity of poisoning. Moreover, they can be tailored to the specific characteristics of the toxic agent, ensuring effective elimination while minimizing adverse effects.

In cases of drug overdose or poisoning with nephrotoxic substances, RRT helps remove the toxic metabolites and maintain electrolyte and acid-base balance, thereby preventing further renal damage. Additionally, RRT facilitates the elimination of water-soluble toxins that are poorly removed by other means, enhancing the overall clearance of toxicants from the body.

The choice of blood purification technique or RRT modality depends on various factors, including the nature of the toxic agent, its pharmacokinetic properties, the patient's hemodynamic status, and the severity of the poisoning. In some cases, a combination of techniques may be employed to optimize toxin removal and support organ function.

Despite their efficacy, blood purification techniques and RRT are not without limitations and challenges. Accessing the bloodstream for extracorporeal therapy carries risks of vascular complications, bleeding, infection, and hemodynamic instability. Moreover, these interventions require specialized equipment, trained personnel, and close monitoring, adding logistical complexity to the management of poisoned patients, particularly in resource-limited settings.

Furthermore, the effectiveness of blood purification techniques and RRT in acute poisonings may vary depending on factors such as the time elapsed since exposure, the dose and toxicity of the substance, and the presence of coexisting medical conditions. Early initiation of therapy is critical to maximizing its benefits and improving patient outcomes.

In conclusion, blood purification techniques and renal replacement therapy play indispensable roles in the management of acute poisonings and intoxications, offering rapid and targeted removal of toxic substances, supporting organ function, and improving patient survival. However, their use should be guided by careful consideration of the clinical context and individual patient factors, with close monitoring and multidisciplinary collaboration to optimize outcomes and minimize complications.

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Management of Volume Overload (Fluid Balance/ Fluid Overload) through Renal Replacement Therapy

Introduction:

Fluid overload, also known as volume overload, is a common clinical problem characterized by an excessive accumulation of fluid in the extracellular space of the body. This condition often occurs in patients with renal failure, heart failure, or liver failure, and it can lead to significant morbidity and mortality if not effectively managed. Renal replacement therapy (RRT) plays a crucial role in the management of volume overload by facilitating the removal of excess fluid and restoring fluid balance. This essay explores the principles and techniques of RRT in managing volume overload, highlighting its efficacy and clinical implications.

Principles of Renal Replacement Therapy:

Renal replacement therapy encompasses various modalities, including hemodialysis, peritoneal dialysis, and continuous renal replacement therapy (CRRT). These modalities aim to mimic the kidney's physiological function by removing waste products and excess fluid from the bloodstream. In the context of volume overload, the primary goal of RRT is to achieve euvolemia by removing excess fluid while maintaining electrolyte balance and hemodynamic stability.

Hemodialysis:

Hemodialysis is the most commonly used modality for RRT in patients with volume overload. During hemodialysis, blood is circulated outside the body through a dialyzer, where it undergoes filtration to remove waste products and excess fluid. By adjusting the ultrafiltration rate, clinicians can control the amount of fluid removed, thereby achieving the desired volume reduction. Hemodialysis sessions are typically conducted thrice weekly in chronic settings, with each session lasting for several hours.

Peritoneal Dialysis:

Peritoneal dialysis involves the instillation of dialysis solution into the peritoneal cavity, where it exchanges waste products and excess fluid with the bloodstream across the peritoneal membrane. This modality offers continuous removal of fluid and solutes, making it suitable for patients with unstable hemodynamics or limited vascular access. Peritoneal dialysis can be performed as continuous ambulatory peritoneal dialysis (CAPD) or automated peritoneal dialysis (APD), providing flexibility in treatment delivery.

Continuous Renal Replacement Therapy (CRRT):

CRRT is a preferred modality for hemodynamically unstable patients requiring hemodynamic support and fluid removal. Unlike conventional hemodialysis, which is intermittent, CRRT provides continuous removal of fluid and solutes over an extended period, typically 24 hours a day. This gradual approach minimizes hemodynamic fluctuations and allows for more precise fluid management, making it suitable for critically ill patients in the intensive care unit (ICU).

Efficacy and Clinical Implications:

The efficacy of RRT in managing volume overload has been well-established in clinical practice. By removing excess fluid, RRT helps alleviate symptoms of volume overload, such as dyspnea, peripheral edema, and pulmonary congestion, thereby improving patient comfort and quality of life. Moreover, achieving euvolemia through RRT can mitigate the risk of complications associated with volume overload, including hypertension, congestive heart failure, and pulmonary edema.

Furthermore, timely initiation of RRT in patients with volume overload has been shown to improve clinical outcomes and reduce mortality rates. Early intervention allows for prompt correction of fluid imbalance, prevents the progression of organ dysfunction, and enhances the response to other therapeutic interventions. Therefore, RRT plays a pivotal role in the comprehensive management of volume overload in diverse clinical settings.

Conclusion:

Renal replacement therapy is a cornerstone in the management of volume overload, offering effective removal of excess fluid and restoration of fluid balance in patients with renal failure, heart failure, or liver failure. Through modalities such as hemodialysis, peritoneal dialysis, and continuous renal replacement therapy, RRT provides clinicians with versatile tools to tailor treatment strategies according to individual patient needs. By achieving euvolemia and mitigating the complications of volume overload, RRT contributes to improved patient outcomes and enhanced quality of care in clinical practice.

Extracorporeal Blood Purification in Sepsis: A Lifesaving Intervention

Sepsis remains a leading cause of morbidity and mortality worldwide, presenting a significant challenge to healthcare systems. Despite advancements in medical care, the management of sepsis continues to be complex and often inadequate, leading to high mortality rates. In recent years, extracorporeal blood purification has emerged as a promising therapeutic modality in the treatment of sepsis. This essay explores the principles, modalities, and clinical implications of extracorporeal blood purification in sepsis.

Sepsis is a dysregulated host response to infection characterized by systemic inflammation, tissue damage, and organ dysfunction. The conventional treatment of sepsis involves antibiotics, fluid resuscitation, vasopressors, and supportive care. However, these interventions may not effectively mitigate the underlying inflammatory cascade and organ dysfunction, particularly in severe cases. Extracorporeal blood purification offers a novel approach by directly targeting the inflammatory mediators and toxins responsible for the pathophysiology of sepsis.

The principle of extracorporeal blood purification revolves around the removal of pro-inflammatory cytokines, bacterial toxins, and other harmful molecules from the bloodstream. This is achieved through various techniques, including hemodialysis, hemofiltration, hemoperfusion, and plasma exchange. Hemodialysis involves the diffusion of solutes across a semipermeable membrane, while hemofiltration utilizes convective clearance to remove larger molecules. Hemoperfusion employs adsorbent materials to selectively capture toxins, whereas plasma exchange replaces the patient's plasma with a substitute solution, effectively removing circulating inflammatory mediators.

One of the primary benefits of extracorporeal blood purification is its ability to rapidly reduce the levels of circulating inflammatory mediators, thus attenuating the systemic inflammatory response. By alleviating cytokine storm and endotoxinemia, extracorporeal blood purification can potentially prevent further organ damage and improve outcomes in septic patients. Additionally, extracorporeal techniques offer the advantage of modulating immune dysregulation without compromising the antimicrobial effects of antibiotics, unlike traditional pharmacological therapies.

Several clinical studies have evaluated the efficacy of extracorporeal blood purification in sepsis, yielding promising results. Meta-analyses and randomized controlled trials have demonstrated improvements in hemodynamic stability, organ function, and mortality rates among septic patients treated with extracorporeal therapies. Furthermore, extracorporeal blood purification has shown potential benefits in reducing the duration of mechanical ventilation, ICU length of stay, and healthcare costs associated with sepsis management.

Despite its therapeutic potential, extracorporeal blood purification is not without limitations and challenges. Technical complexities, including vascular access issues, circuit clotting, and hemodynamic instability, may hinder the widespread adoption of these techniques. Moreover, the optimal timing, duration, and modality of extracorporeal blood purification in sepsis remain subjects of debate, requiring further research and clinical validation.

In conclusion, extracorporeal blood purification represents a promising adjunctive therapy in the management of sepsis, offering a targeted approach to attenuate the inflammatory response and improve patient outcomes. While challenges persist, ongoing research and technological advancements hold the potential to enhance the efficacy and accessibility of extracorporeal therapies in septic patients. As we continue to unravel the complexities of sepsis pathophysiology, extracorporeal blood purification stands as a beacon of hope in the fight against this deadly syndrome, offering new avenues for intervention and improved patient care.

Therapeutic Plasma Exchange: A Lifeline in the Management of Immune-Mediated Hemolytic Anemia (IMHA)

Introduction:

Immune-mediated hemolytic anemia (IMHA) is a complex and potentially life-threatening condition characterized by the destruction of red blood cells (RBCs) by the body's own immune system. While traditional treatments such as corticosteroids and immunosuppressive drugs have been the mainstay of therapy, therapeutic plasma exchange (TPE) has emerged as a promising adjunctive therapy in managing IMHA. This essay explores the rationale, mechanism, efficacy, and future prospects of TPE in the treatment of IMHA.

Rationale for Therapeutic Plasma Exchange:

The rationale behind TPE lies in its ability to remove autoantibodies, immune complexes, and other pathogenic factors from circulation. In IMHA, autoantibodies target antigens on the surface of RBCs, leading to their premature destruction by the reticuloendothelial system. By eliminating these autoantibodies and inflammatory mediators from the plasma, TPE interrupts the autoimmune cascade and mitigates hemolysis.

Mechanism of Therapeutic Plasma Exchange:

TPE involves the extracorporeal removal of patient's plasma, which is then replaced with donor plasma or plasma substitutes. This process is typically performed using apheresis machines, which separate plasma from cellular components of blood. By cycling the patient's blood through the apheresis machine, TPE effectively reduces the concentration of pathogenic factors in the plasma, thereby attenuating hemolysis and improving overall clinical outcomes.

Efficacy of Therapeutic Plasma Exchange in IMHA:

Clinical studies and case reports have demonstrated the efficacy of TPE as an adjunctive therapy in IMHA. TPE has been shown to rapidly reduce autoantibody titers, decrease hemolysis, improve hematologic parameters, and promote clinical remission in refractory cases. Moreover, TPE has been associated with fewer adverse effects compared to high-dose corticosteroids or cytotoxic agents, making it a safer alternative for patients with IMHA.

Future Prospects and Challenges:

Despite its promising efficacy, several challenges remain in the widespread adoption of TPE for IMHA. These include the high cost of equipment and consumables, limited availability of trained personnel, and variability in treatment protocols. Furthermore, the optimal timing, frequency, and duration of TPE sessions in IMHA are yet to be standardized, warranting further research and clinical trials. Nonetheless, advancements in apheresis technology and growing experience with TPE are likely to address these challenges and expand its utility in the management of IMHA.

Conclusion:

Therapeutic plasma exchange represents a valuable therapeutic modality in the management of immune-mediated hemolytic anemia. By removing pathogenic factors from the circulation, TPE effectively interrupts the autoimmune cascade and ameliorates hemolysis in patients with IMHA. While further research is needed to optimize treatment protocols and address logistical challenges, TPE holds immense promise as an adjunctive therapy in the multidisciplinary approach to IMHA.

Therapeutic Plasma Exchange for the Treatment of Immune-Mediated Neurological Disorders: Myasthenia Graves and Acute Polyradiculoneuritis

Introduction:

In the realm of medical therapeutics, therapeutic plasma exchange (TPE) stands as a remarkable intervention for treating various immune-mediated neurological disorders. Two prominent conditions that benefit from TPE are Myasthenia Gravis (MG) and Acute Polyradiculoneuritis (APN). This essay delves into the efficacy and mechanisms of TPE in managing these challenging neurological disorders.

Myasthenia Gravis:

Myasthenia Gravis is a chronic autoimmune disorder characterized by muscle weakness and fatigue due to antibodies targeting acetylcholine receptors at neuromuscular junctions. TPE serves as a vital adjunct therapy by removing pathogenic autoantibodies from the plasma, mitigating disease severity, and improving neuromuscular function. By effectively reducing autoantibody levels, TPE provides symptomatic relief and facilitates better response to immunosuppressive treatments.

The rationale behind TPE lies in its ability to selectively remove circulating autoantibodies and immune complexes from the bloodstream. During TPE, plasma is separated from blood cells, and the plasma containing pathogenic factors is replaced with a suitable replacement fluid, such as albumin or fresh frozen plasma. This process results in the elimination of harmful antibodies and inflammatory mediators, thereby attenuating the autoimmune attack on neuromuscular junctions.

Acute Polyradiculoneuritis:

Acute Polyradiculoneuritis, also known as Guillain-Barré Syndrome (GBS) in humans, is an acute immune-mediated neuropathy characterized by progressive weakness, sensory disturbances, and potentially life-threatening respiratory failure. TPE has emerged as a cornerstone therapy for GBS, offering rapid removal of pathogenic antibodies and cytokines, leading to accelerated recovery and reduced disease duration.

In GBS, the immune system mistakenly targets peripheral nerves, leading to demyelination and axonal damage. TPE acts by eliminating circulating autoantibodies and inflammatory cytokines responsible for nerve damage, thereby halting disease progression and promoting nerve regeneration. Additionally, TPE enhances the efficacy of other treatments, such as intravenous immunoglobulin (IVIG), by reducing the antibody burden and enhancing the clearance of toxic factors.

Conclusion:

In conclusion, therapeutic plasma exchange represents a valuable therapeutic modality for immune-mediated neurological disorders, including Myasthenia Gravis and Acute Polyradiculoneuritis. By selectively removing pathogenic autoantibodies and inflammatory mediators, TPE alleviates symptoms, improves neurological function, and accelerates recovery. Furthermore, TPE synergizes with other immunomodulatory treatments, offering a comprehensive approach to disease management. As our understanding of the immunopathogenesis of these disorders evolves, TPE continues to play a pivotal role in optimizing patient outcomes and enhancing quality of life.

Therapeutic plasma exchange for the treatment of immune-mediated neurological disorders: Myasthenia Graves and Acute Polyradiculoneuritis

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CONFERINȚA DE DERMATOLOGIE — VINERI, 10 MAI

08:30 - 09:00	Înregistrarea participanților / *Registration*
09:00 - 10:00	Abilități de citologie pentru cazurile dermatologice - Sfaturi și trucuri pentru a deveni un profesionist / *Cytology Skills for Skin Cases- Tips and Tricks to Become a Pro*
10:00 - 11:00	Valorificarea și utilizarea personalului tău pentru analize dermatologice eficiente *Leveraging and Utilizing Your Staff for Efficient Dermatologic Workups*
11:00 - 11:30	Pauză de cafea / *Coffee Break* → *VETS Experience Room, sala Timișoara*
11:30 - 12:30	Dincolo de straturile profunde ale pielii: utilizarea histopatologiei ca parte a activității în cazurile dermatologice *Beyond Skin Deep: Utilizing Histopathology as Part of Your Dermatologic Workup*
12:30 - 13:30	Prânz / *Lunch*
13:30 - 14:30	Otita în stadiu terminal: când tratăm, când trimitem la un specialist *End-Stage Otitis: When to Treat, When to Refer*
14:30 - 15:30	Dincolo de leziuni: terapia de reparare a barierei epidermale în dermatita atopică *Beyond the Bubbles: Barrier Repair Therapy in Atopic Dermatitis*
15:30 - 16:00	Pauză de cafea / *Coffee Break* → *VETS Experience Room, sala Timișoara*
16:00 - 17:30	Rentabilitatea: înțelegerea finanțelor veterinare, stabilirea prețului timpului profesional, strategii de facturare și proceduri de stabilire a prețurilor / *Profitability: Understanding Vet Finance, Pricing Professional Time, Invoicing Strategies and Pricing Procedures*
16:00 - 17:30 (VIP PANEL)	Dileme dermatologice: boli mediate imun / *Dermatologic Conundrums: Immune-Mediated Diseases* Dileme dermatologice: cazuri clinice dificile la feline / *Dermatologic Conundrums: Challenging Feline Cases*
19:30	Cină festivă / *Gala Dinner*

Joya Griffin, DVM, Dipl. ACVD

Dr. Joya Griffin, originară din Ohio, a absolvit Cornell University College of Veterinary Medicine, iar în 2010, a devenit Diplomat al Colegiului American de Dermatologie Veterinară (ACVD) și s-a alăturat Animal Dermatology Group. Activitatea ei se concentrează în special pe bolile fungice și imun-mediate ale pielii, dar și pe dermatologia felină. Dr. Joya este vedeta emisiunii "Pop Goes the Vet with Dr. Joya" de pe National Geographic WILD, unde prezintă cazuri dificile din dermatologia veterinară. De asemenea, este implicată în diverse activități de mentorat și predare, fiind recunoscută și apreciată pentru contribuțiile sale în domeniul sănătății animale.

Ana Maria Boncea, DVM, Dipl. ECVD

Dr. Ana Boncea este unul dintre primii medici specialiști în dermatologie veterinară din România care a obținut titlul de Diplomat ECVD. În anul 2011, a absolvit Universitatea de Medicină Veterinară București, iar în 2021 a devenit specialist european în dermatologie veterinară cu ajutorul mentorilor săi, Dr. Patrick Bourdeau Dip.ECVD și Dr. Vincent Bruet Dip. ECVD, de la Universitatea Oniris din Nantes, Franța. Tot în 2021, și-a deschis propriul cabinet de specialitate în dermatologie veterinară, Art Vet Derm, în București. Este, de asemenea, co-fondator și actualul Președinte al Societății Române de Dermatologie Veterinară (SRDV) și co-fondator și secretar al Societății Române de Oncologie Veterinară (RSVO).

Cytology Skills for Skin Cases - Tips and Tricks to Become a Pro

Learn How to Easily Obtain Appropriate Samples for Common Cases

- Learn how to differentiate between infectious, immune-mediated, and neoplastic conditions;
- Learn when additional diagnostics are needed and what treatment is indicated.

Cytology is the most frequently utilized tool in veterinary dermatology. It is easily performed, inexpensive, and, once mastered, an effective and fast way to an in-house diagnosis. The biggest challenge to proper diagnosis is carving out the time and gaining the comfort level to recognize what we are looking for and what we are seeing through our microscopes.

Surface cytology should be performed on any inflammatory dermatoses that include surface changes such as pustules, papules, epidermal collarettes, and crusts. Moist dermatitis or annular hypotrichotic lesions should also be sampled, stained, and examined under the microscope. If an intact pustule is present, the pustule can be ruptured using a sterile needle to sample the purulent material. In more crusted lesions, the edge of the crust or epidermal collarette should be lifted, and the exudative material underlying the crust can be collected using an impression technique. In intertriginous areas or the clawfold, clear acetate tape can be used to obtain samples and is especially useful when yeast is suspected.

When Malassezia is suspected, cytology is a useful tool. One should consider cytology when lesions consist of greasy or waxy skin that is malodorous or lichenified, hyperpigmented, or if scales are present. Cases of Malassezia pododermatitis often have brown discoloration of the surface of the claws, aka "banding," and material can be found underneath the paronychia at the claw base. Samples can be taken using a

direct impression smear, the wooden end of a cotton-tipped applicator or toothpick, or using acetate tape preparations. One study showed increased numbers of yeast and cocci found using the toothpick technique. Because Malassezia is a normal inhabitant of the skin, rare numbers of yeast found on the skin can be considered normal, especially in intertriginous areas. Consensus on abnormal numbers of yeast varies but, in general, consists of 1 or more yeast per OIF in 10 fields sampled in a non-intertriginous area.

Dermatophytosis can occasionally be diagnosed on a direct impression smear by identifying encapsulated fungal spores. In cases where this is not evident, fungal culture is recommended, and if done in-house, a cytologic examination of the thallus or fungal growth is necessary to identify the species of dermatophyte. In some cases, trichography is a helpful diagnostic tool, and examining plucked hairs at the periphery of a lesion will show abnormal architecture of individual hairs, arthrocondia, or fungal hyphae. Trichograms are easily performed by plucking hairs from the periphery of a lesion and examining under mineral oil and can identify ringworm in 40-70% of cases. Cytology is also useful in less common presentations like nodular or plaque-like lesions and can be done after fine needle aspirate of the lesion to determine if it is inflammatory or neoplastic. Neoplastic conditions will show anisocytosis, anisokaryosis, prominent or multiple nucleoli, multiple nuclei and abnormal mitotic figures, and variation in the nucleus-to-cytoplasmic ratio. Epitheliotropic lymphoma can mimic other inflammatory dermatoses and often presents a diagnostic challenge.

When suspecting mites, the cytology of exudative material, crusts, and scale are examined after performing deep and superficial skin scrapes. Trichography is a useful tool in areas difficult to scrape like the paws or face, however, false negative results can occur. Demodicosis can also be found using acetate tape preparations in difficult to scrape areas after squeezing the tissue.

All cases with otic exudate should have cytology performed to determine the best topical therapy or if culture is indicated. Inflammatory cells, rods, or cocci are not found in normal ears. Malassezia in very small numbers can be normal, however, treatment is recommended if the patient is showing clinical signs of otitis, such as pruritus, erythema, and malodor.

Digital submission of cytology can add in diagnosing and serve as an education tool when becoming more comfortable in reading in-house samples of dermatology cases (Zoetis Vetscan Imagyst®, Idexx inVue DX).

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Leveraging and Utilizing Your Staff for Efficient Dermatologic Workups

Dermatologic cases require a thorough and specific derm-related history that helps the clinician prioritize diagnostics and formulate a treatment plan. When and how symptoms started and what treatments have worked or have failed require specific questioning that allows a mental decision tree to be made that will prioritize the most likely diseases and what rule-outs are necessary. This degree of history-taking can be daunting and virtually impossible in a busy practice unless intentional time is set aside. Carving out extra time is often challenging. Utilizing your staff to help set the framework for your skin cases is key in diagnosing and treating these dermatologic cases.

Our goal as clinicians should be to improve the customer experience, which in turn will be associated with increased medication adherence and patient outcomes. Ultimately, improved customer satisfaction increases client loyalty. A 2020 study published in Veterinary Record examined the impact of consultation length on client satisfaction and found that increased appointment time did not increase client satisfaction but instead increased veterinarian satisfaction. Client satisfaction is correlated with the perception of sufficient consultation time rather than absolute consultation length.

Clients don't actually want more time with us, but they do want quality of the vet-client-patient interaction. Client satisfaction was measured in several categories and found to be increased by attending to clients close to their scheduled appointment time and when the veterinarian was on time. If a veterinarian was running behind, this lowered client satisfaction and also veterinarian satisfaction. The veterinarian's desire for increased consultation length is likely tied to the desire to have sufficient time to complete administrative tasks and stay on time, and provide adequate, quality time with each client and patient.

Taking a look at dermatology in human medicine, a 2017 article in Future Hospital Journal explored the most appropriate time for dermatology consults. It found consultation length was dependent on the clinician's skill level, if the patient was presenting for an initial consultation or a follow-up exam, and the specific disease being treated. Analysis revealed patients presenting with general dermatological conditions should be allocated 25 minutes per consultant-led consultation, while follow-up cases can be allocated 15 minutes per consultation. This data could be used to create a framework for appropriate appointment times in veterinary medicine, though I believe additional time is necessary to allow for in-house diagnostics that are often done at the time of the visit. Additional time is also needed to properly explain recommended treatment plans and managing expectations associated with chronic dermatologic conditions.

So how do improve client satisfaction, without actually adding more time for dermatology cases? Utilizing our veterinary staff to improve the client experience and increase our efficiency is a must. Empowering your staff to set the groundwork for these dermatologic cases is important and establishes a relationship and rapport between them and the client/pet.

When an initial case is scheduled, a dermatologic history form is sent to be completed before the exam. A veterinary technician then reviews the form and takes a short survey of the patient upon intake going over the history form prepared by the pet parent. The technician focuses on current treatments and itch level, food and dietary supplements being given, and any systemic signs of illness, including stool quality and frequency, as well as vomiting. From this initial framework, the clinician can start the exam and client consultation with a priority list of questions in mind to focus on. Sending the veterinary technician first allows them to establish a relationship with the pet parent and provides the clinician any additional time to finish the prior case or complete administrative work. The client feels attended to and taken care of.

Important Questions to Ask Include

- Age onset?
- How did lesions or symptoms start? Spontaneous lesions or did lesions occur after pruritus?
- Seasonality?
- Other pets affected? Humans?

- Previous treatments and their success or lack thereof?
- Ectoparasite control and if given consistently as labelled?
- Current treatments, supplements, and diet?
- Vomiting, diarrhea, stool quality, and frequency?

A nose to tail exam is performed after obtaining a thorough history. Discussing what you are looking for while performing the exam along with the normal and abnormal findings is called the "Talking Physical exam" or TPE. Performing the exam while verbally communicating the findings engages the client in their pets' veterinary care and their understanding of the importance of their pet's physical exam. Lesions type and distribution (whether solitary, grouped, multifocal, or generalized) can help formulate a list of differentials, and then prioritize the diagnostics, and formulate a treatment plan.

Staff members can collect and prepare diagnostic samples such as skin cytology, skin scrapes, and trichograms or process the samples the clinician has collected for review. Many dermatologic services train veterinary technicians to interpret cytology with the clinician reviewing the samples secondarily or specifically for challenging cases. Veterinary technicians can also collect skin cultures and perform therapeutic treatments such as Phovia, bandage changes, basic ear flush, and administration of long-acting otic topicals, anal sac expression, and nail dremmels.

Staff should serve as first-line communicators. They serve as your amanuensis and connect with the client on intake through the initial history gathering. During the appointment, they are the liaison between the clinician and the pet parent, making sure the client understands the diagnostics and treatments the veterinarian is recommending. Upon discharge, the staff member reiterates the treatment plan and fields any additional questions the client may have. The veterinary technicians contribute to the shared decision-making during the appointment. A study by Janke et al. found that clients are more involved in decision making when both the veterinary technician and the veterinarian communicate. Enhanced client engagement is key to improving client compliance and patient outcomes.

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Beyond Skin Deep: Utilizing Histopathology as Part of Your Dermatologic Workup

Of course, cytology, skin scrapes, and trichography are first-line diagnostics in veterinary dermatology. These tests should be performed before resorting to the collection of skin biopsy specimens.

Skin biopsy can be one of the most powerful tools in solving and managing skin disease in veterinary medicine. Biopsy results can often help guide clinical therapy, redirect clinical work-up, and help establish a diagnosis in conjunction with clinical history and lesion characteristics. However, it is important to recognize that dermatohistopathology is not an exact science. There are a finite number of reaction patterns that are observed in the skin both clinically and histopathologically. Pustules and epidermal collarettes are common features of Staphylococcal folliculitis; however, this clinical reaction pattern can also be observed in autoimmune skin disorders such as pemphigus foliaceous. Histopathology can be especially useful in making a distinction between these two conditions. However, it is important that steps are taken prior to collecting those samples to get the best possible diagnosis. If possible, secondary infections should always be addressed and corticosteroids should be withdrawn prior to collecting samples.

In many cases, more than one histopathologic reaction pattern is observed. The reaction pattern may or may not involve inflammation and the type of inflammatory cells (eosinophils, neutrophils, macrophages, lymphocytes, plasma cells) are also an important piece of the puzzle in making a diagnosis. Unlike most tumor biopsies, skin punch biopsy specimens of widespread skin disease are far less likely to yield a simple, straightforward diagnosis. In most instances, the clinician should expect a morphologic diagnosis and a list of differential diagnoses. This list can often be significantly narrowed by a skilled dermatopathologist and information provided by the clinician which should include pertinent medical history and a thorough description of the lesions.

Not all pathologists are created equal. Although most diagnostic pathologists are general pathologists, they increasingly specialize in certain organ systems. For the best results, I encourage you to send your skin disease biopsy specimens to someone who specializes in dermatopathology. Dermatopathologists are usually anatomic pathologists with an interest and some level of expertise in skin disease. A smaller number of dermatopathologists are board-certified in dermatology only and a few are double-boarded in anatomic pathology and clinical dermatology.

Clear communication between clinician and dermatopathologist is of utmost importance in reaching the most accurate diagnosis. Some clinicians are under the false assumption that too much clinical information could bias the pathologist. Although there may be an argument for this in some areas of medicine, in dermatology, a certain amount of patient information is necessary for an accurate diagnosis. This includes signalment, history, lesion description and lesion distribution. For example, if the pathologist sees a small number of acantholytic keratinocytes but also sees evidence of bacterial folliculitis and hidradenitis, they may suggest the mild degree of acantholysis is just due to infection. However, if the lesion distribution includes pustules and crusts on the pinna, the pathologist may be more inclined to suggest that pemphigus foliaceous with a secondary bacterial infection is possible because bacterial folliculitis is not common on the pinnae. Digital images are a great way to show clinical lesions and can be very helpful to the dermatopathologist when narrowing down differential diagnoses. Ask your dermatopathologist how to send clinical images along with your submission. Most laboratories will provide you with an email address or other simple ways to send color images digitally.

Clinical description of lesions is of utmost importance. If there are aggregates of eosinophils in the epidermis, ectoparasitism may be considered; however, if the patient is not pruritic, then ectoparasitism would be considered less likely. Recent and current treatments are also important information to disclose. Corticosteroids (topical, oral, injectable, etc.) will reduce the number of inflammatory cells in the skin, and they have a significant dampening response on eosinophils. If this information is withheld from the pathologist in a significantly pruritic dog with ventral truncal and pinnal pruritus, a diagnosis of Sarcoptes scabiei may be missed.

It is also important to remember that skin lesions have "lives." They may be in an acute, active or chronic phase. Only the most active lesions may contain the diagnostic clues to make an accurate diagnosis. Therefore, in cases of widespread or generalized skin disease, it is imperative to take multiple biopsy samples, ideally three to five 6 mm punch biopsy samples. See below for more details on skin biopsy collection.

Skin Biopsy Sample Collection: When, Where, and How

When to biopsy skin:

1. When lesions are acute and severe.
2. When therapy is associated with significant side effects.
3. When neoplasia is suspected (nodule, chronic non-healing ulcerative lesion).
4. When skin lesions are unusual.
5. When lesions develop while on a course of therapy.
6. When lesions fail to respond to an apparently appropriate course of therapy.

Where to take the biopsy specimens:

1. Primary lesions of all types should be sampled first (papular, pustular, nodules, erythema) as they represent the principle pathologic process.
2. As a rule, biopsy "all" suspect lesions, particularly when the primary lesions are not easily identifiable. Collect secondary lesions if they represent a significant portion of the disorder (crusts, scale, collarettes, etc.). If crusting is a significant part of the process, collect additional crusts and submit them. Crusts can be useful especially in conditions such as pemphigus foliaceous and dermatophytosis.
3. For depigmenting lesions, collect gray areas or the margin between pigment and non-pigment.
4. For ulcerative lesions, collect the sample on the margin of intact skin extending into the ulcer.
5. For alopecic/hypotrichotic disorders, collect samples from areas that are most alopecic, partially hairless, and normal and label them separately.
6. Remember that the normal microscopic anatomy of the skin may vary between body locations. For example, skin from the ventrum usually has fewer adnexal units and, therefore, fewer hair follicles and smaller sebaceous glands. Thus, if an atrophic condition is suspected, such as an endocrinopathy, the ventral abdomen is NOT the ideal site for biopsy.
7. Consider complete excision for a solitary nodule.

How to Take Skin Biopsy Specimens

Biopsy techniques.

1. Biopsy technique.
    a. NEVER scrub the skin surface as this could remove important diagnostic information. This is NOT a sterile procedure!
    b. Trim hair with scissors or clippers with a #40 blade. Trim above areas where there is abundant scaling and crusting.
    c. Local anesthetic: SQ bleb of 0.5 to 1cc of 2% lidocaine/site. Inject the lidocaine into the subcutis (not the dermis) under or around the biopsy site. (Note: DO NOT use more than 0.5cc total in animals UNDER 10LBS). General anesthesia may be necessary when taking biopsies from mucocutaneous junctions, nasal planum, paw pad, and pinna.
    d. Position the punch biopsy instrument over the center of a lesion (preferably) at a site where only abnormal tissue is sampled.

e. Rotate the punch in one direction only until it sinks into the SQ fat.
f. Support the plug of tissue from its underside (i.e., do not crush) and cut free with iris scissors. Blot on a gauze to remove excess blood.
g. Time from removal of the biopsy sample to formalin immersion should be as short as possible (seconds not minutes). **Place in formalin immediately.**
h. Close with one cruciate or two simple interrupted sutures.
i. Elliptical and wedge biopsies should be used for larger lesions (nodules, neoplasms) and/or deep (panniculitis) and/or very fragile (big pustules, bullae, vesicles) lesions.
j. Placing the biopsy on a piece of tongue depressor or cardboard to minimize curling during fixation is optimal for thin biopsy specimens (not necessary for full thickness punch biopsies). Allow tissue to dry on the tongue depressor for 30-60 seconds before placing it in formalin. NEVER attach the tissue with needles or sutures; this will cause significant artifact. *Keep in mind that the pathologist will transect the specimen through its long axis, symmetrically and perpendicularly to the skin surface. Therefore, never take a round punch biopsy specimen when trying to demonstrate the margin of normal and abnormal. Wedge or elliptical samples should be taken in those cases.

2. General concepts
   a. Use a 6- or 8-mm punch biopsy for most cases. Smaller diameter punches (4mm) should only be used when a larger biopsy is technically difficult or could result in visible scarring (pinna, paw pad, near mucocutaneous junction).
   b. Secondary bacterial infections are very common, and histopathologic reactions obscure the pattern of other diseases. Therefore, antibiotics may be necessary for 2 to 3 weeks prior to biopsy.
   c. The effects of glucocorticoids can markedly modify reaction patterns and should be stopped for 2-3 weeks prior to biopsy (longer for injectable steroids – 6 weeks!)
3. Fixative:
   a. Use 10% neutral buffered formalin at a ratio of 1:10, tissue to formalin. If freezing temperatures occur in your area during winter months, add 1 part 70% ethyl alcohol to 9 parts formalin to prevent tissues from freezing while in transit. Freezing causes tissue artifacts that may hinder the interpretation of the lesions by the pathologist.
   b. Results from "alternative" (formalin-free) fixatives are not as good as fixing tissue in formalin.
   c. Formalin is a proven irritant, a proven sensitizer for delayed hypersensitivity responses, and a known carcinogen. It should be handled with caution. If your container leaks in the mail, the post office may send the sample back to you.
   d. Michele's media was once used as a fixative to evaluate for the deposition of immunoglobulins in the skin. Now, equivalent results can be obtained with formalin-fixed tissues.
4. Sample submissions:
   a. Include in your submission: a brief but complete history, signalment, description of lesions (using proper terminology regarding primary and secondary lesions), location of lesions, presence or absence of pruritus, duration of lesions, pertinent medical history including other diagnostic tests and their results, response to various treatments, current medications the patient is taking, and your list of differential diagnoses. DO NOT photocopy and send the patient's medical file.
   b. A lesion map and photographs of the patient ARE VERY HELPFUL!
5. Skin biopsy DON'Ts:
   a. Don't take a punch biopsy within the center of an ulcer.
   b. Avoid using a punch biopsy on large pustules or blisters (bullae) as rotation can shear the roof of the lesion. An excisional biopsy should be used here.

c. A punch biopsy should not be used to sample neoplastic or inflammatory diseases in the subcutaneous fat (biopsy punches often do not penetrate to a sufficient depth to obtain an adequate sample.
d. Don't scrub the biopsy site – you may remove important information in the crust.
e. Don't use dull or previously used punch biopsy instruments. Don't rock the punch biopsy back and forth.
f. Don't squeeze the biopsy with forceps.
g. Don't use cautery on small samples such as punch biopsies.
h. Avoid using small (<4mm) punch biopsy instruments.
i. Don't send only 1 specimen!

***Remember: the more the merrier and go big or go home! If it's worth taking a biopsy, it's worth taking several sizeable pieces in order to give the dermatopathologist the most information in order to gain a proper diagnosis.**

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End-Stage Otitis: When to Treat, When to Refer

Otitis externa comprises a significant percentage of cases seen every day in clinical practice. These cases, if recurrent, are often challenging and represent conditions that need to be addressed. Upon initial presentation, a thorough history and exam, including palpating the ears and performing an otoscopy to visualize the tympanic membrane if possible. All cases with otic exudate should have cytology performed to determine the best topical therapy. Inflammatory cells, rods and cocci are not found in normal ears. Malassezia in small numbers can be normal; however, treatment is recommended if the patient is showing clinical signs of otitis, such as pruritus, erythema, and malodor. Re-examining each case of otitis is of equal importance to ensure the infection and inflammation have resolved.

Otitis is virtually nonexistent in normal ears. Identifying otitis can be challenging and not apparent with the first incidence of ear disease. The patient may have predisposing factors such as pendulous pinnae, breed-related conformational abnormalities, ceruminal gland hyperplasia, or even excessive hair within the ear canals. This anatomical variability may not cause an issue in every animal, however, in animals where secondary otitis externa occurs, resolving the infection completely can be difficult until the predisposing factors are addressed and remediated. Obstructive ear disease, polyps, and tumors can also lead to otitis externa and will lead to recurrence and treatment failures. Primary causes lead to disease in normal ears and include allergic disease, foreign bodies, endocrine and seborrheic disorders, and immune-mediated diseases. These types of conditions can be overlooked as contributing to ear disease. Allergic disease, in particular, is hard to grasp as a cause of recurrent otitis for many pet parents.

The biggest challenge to managing recurrent otitis comes when anatomical changes effect the ear canal. Stenosis, ceruminal hyperplasia, and fibrosis make curing otitis difficult until these perpetuating factors are managed. Otitis media is present in 50-80% of cases with severe horizontal canal stenosis and in cases of suppurative otitis externa. Systemic antimicrobial therapy, along with glucocorticoids and/or cyclosporine, are necessary in these cases. Culture of the middle ear is useful when resistance is suspected but is most easily performed with video otoscopy. Referral should be considered for cases of severe or refractory otitis to best manage the primary and perpetuating cause of otitis. Chronic fibrosis can lead to end-stage ear disease and mineralization of the horizontal and vertical ear canals. Surgical intervention with TECA-BO is necessary in these cases.

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Beyond the Bubbles: Barrier Repair Therapy in Atopic Dermatitis

Topical therapy is an important tool in the multimodal approach to treating atopic dermatitis. Recent research shows that restoring the skin's barrier function is key to AD treatment. With increasing concerns for antimicrobial resistance, topical therapy is utilized to reduce the need for systemic antimicrobials. Routine bathing is also helpful in removing allergens from the skin's surface, thus reducing subsequent inflammation and irritation. Thirdly, topical therapy restores moisture to the skin, improving transepidermal water loss and restoring the skin's barrier function.

The development of AD involves an interplay between genetic and environmental factors. It requires sensitization to environmental allergens through the skin, the recruitment and activation of cutaneous inflammatory cells, and degranulation of mast cells after allergen crosslinking to the Fc receptor on mast cells. Upon activation, numerous type 2 and pro-inflammatory cytokines and chemokines are released. Skin barrier defects, whether inherent or acquired or a combination thereof, and the negative effect of T helper 2 cytokines on the skin barrier function further exacerbate the severity of the inflammation and allow increased allergen penetration through the skin.

Ceramides are lipid molecules in the skin comprised of fatty acids and sphingosines. Ceramide deficiency has been found in AD in humans and causes increased transepidermal water loss. A similar ceramide and lipid deficiency has been found in lesional and non-lesional skin in a canine atopic dermatitis model. These deficiencies were shown to be more severe in lesional skin. It is, however, difficult to interpret and determine whether the deficiency is primary and causing the atopic disease or if it is secondary to the inflammation caused by the atopy. This is where topical therapy has its benefits. Many topical therapies of lipid emulsions are being tried to improve clinical signs by restoring the skin barrier.

Topical therapy is important for every atopic patient. Bathing removes allergen exposure from the skin and reduces overgrowth of bacteria and yeast on the skin's surface. Restoring the skin barrier function is an important adjunctive therapy in canine atopy. In general, topical moisturizers that contain fatty acids, lipids, and ceramides are helpful. The use of topical essential fatty acids can increase or restore the lipid abnormalities in the epidermis. Dermoscent® essential 6 spot-on is antimicrobial and restores the lipid composition of the skin promoting ceramide synthesis. It has been shown to reduce pruritus and lesion scores in mild to moderately affected atopic dogs. The Atopivet® line contains Biosfeen®, a sphingomyelin-rich sphingolipid, and Dermial®, a glycosaminoglycan, which help maintain a healthy skin barrier and hydrate and renew the skin. They come in an easy-to-apply mousse, topical spot-on, and collar.

Moisturizers physically restore water to the skin, which decreases transepidermal water loss through oils or hygroscopic agents that attract water to the surface of the skin. Improving the skin's hydration in turn reduces pruritus. Moisturizing therapy has been found to reduce allergic flares and the need for chronic topical calcineurin-inhibitors and steroids in humans. Targeted therapy containing ceramides, natural moisturizers, and pseudoceramide products, along with emollients in the form of creams and ointments, restore lipids and water to the stratum corneum has been the focus of barrier restoration.

Bathing weekly with Allermyl® shampoo, which contains ceramides and lipids specifically has been shown to reduce lesions scores and pruritus in 3-4 weeks. One study showed the daily application of a moisturizing cream containing ceramides, cholesterol, and fatty acids, along with a weekly moisturizing shampoo, significantly decreased clinical signs, pruritus, and TEWL. Douxo Calm® mousse which contains ophytrium, a purified natural plant extract derivative of ceramides, has also been shown to decrease inflammation but not TEWL in one study in a canine atopic model. In patients with secondary infection, shampoos, sprays, or mousses that contain azoles or chlorhexidine are helpful.

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CONFERINȚA MEDICINĂ FELINĂ — SÂMBĂTĂ, 11 MAI

08:30 - 09:00	Înregistrarea participanților / *Registration*
09:00 - 09:45	Managementul și reducerea stresului la pisicile internate *Management and Stress Reduction in the Hospitalised Cat*
09:45 - 10:30	Gestionarea problemelor comune de comportament la feline *Managing Common Feline Behaviour Problems*
10:30 - 11:00	Pauză de cafea / *Coffee Break* → *VETS Experience Room, sala Timișoara*
11:00 - 11:45	Actualizări despre diagnosticul și managementul cistitei idiopatice feline *Current Thoughts on the Diagnosis and Management of Feline Idiopathic Cystitis*
11:45 - 12:30	Utilizări și abuzuri ale terapiei cu feromoni la pisici *Uses and Abuses of Pheromone Therapy in Cats*
12:30 - 13:30	*Prânz / Lunch*
13:30 - 14:30	Ce este nou în medicina felină – cele mai bune materiale ale editorilor din Journal of Feline Medicine and Surgery *What's New in Feline Medicine – Editors Top Picks from The Journal of Feline Medicine and Surgery*
14:30 – 15:30	Bolile cronice ale tractului respirator superior la pisici *Feline Chronic Upper Respiratory Tract Diseases*
15:30 - 16:00	Pauză de cafea / *Coffee Break* → *VETS Experience Room, sala Timișoara*
16:00 - 17:30	1. Sisteme: eficientizarea afacerii, mobilizarea personalului, complianța proprietarilor 2. Eşti pregătit să-ți vinzi clinica? Actualizări din UK *1. Systems: Improving Business Efficiency, Leveraging Staff, Client Compliance* *2. Are You Ready to Sell Your Practice? Lessons From the UK*
16:00 - 17:30 (VIP PANEL)	Asistență medicală preventivă la pisici – ce, de ce și când? *Preventive Healthcare in Cats – What, Why and When?*

Speaker: SARAH ENDERSBY, DVM, BVetMed (Hons) MRCVS

Dr. Sarah Endersby a absolvit Royal Veterinary College din Londra și a lucrat în clinici mixte și pentru animale de companie. În 2010, s-a alăturat echipei Ceva Animal Health UK ca și consultant veterinar, oferind consultanță pe teme precum comportamentul animalelor de companie mici, cardiologia și hipertensiunea. Mai târziu, a lucrat pentru International Society of Feline Medicine, gestionând programul Cat Friendly Clinic și educând profesioniștii veterinari despre gestionarea stresului felin în timpul vizitelor din clinicile veterinare. În 2020, s-a întors la Ceva Animal Health și este în prezent Manager Tehnic Global pentru bunăstarea animalelor de companie.

Speaker: ANDREW H SPARKES, DVM, BVetMed, PhD, Dipl. ECVIM MANZCVS MRCVS

Dr. Andrew Sparkes a absolvit Royal Veterinary College din Londra în 1983. După patru ani în practica generală, s-a alăturat Universității din Bristol ca rezident în Medicina Felină, unde a obținut și titlul de doctor în același domeniu, devenind ulterior Diplomat ECVIM. În 2000, a început colaborarea cu Animal Health Trust din Marea Britanie, iar în 2008 a devenit Head of the Division of Small Animal Studies. Andrew a ocupat poziția de Director Veterinar al International Cat Care și International Society of Feline Medicine (ISFM), iar din 2019, el este consultant veterinar independent la Simply Feline Veterinary Consultancy.

Moderator: Tache Epure, DVM, Președinte SRMF

Dr. Tache Epure, președinte și membru fondator al Societății Române de Medicină Felină, înființată în 2012, a absolvit Facultatea de Medicină Veterinară din București. De la începutul carierei, s-a specializat în medicina felină, concentrându-se exclusiv asupra îngrijirii animalelor de companie în cadrul centrului My Cats.

Management and Stress Reduction in the Hospitalised Cat

Many parts of a hospital stay can result in negative experiences for cats - time spent hospitalised in the clinic, away from the cat's familiar environment, an unfamiliar routine, and caregivers whilst being restrained and experiencing pain or discomfort – all of which can be very stressful for them. Steps to take account of an individual cat's needs, as well as their species-specific behaviour, can make their time spent hospitalised more comfortable for them.

Spending time in the cat ward can trigger protective emotions and associated physiological stress, which can result in patient distress, difficulties with handling during their stay and prolonged recovery. There is also the risk of injury to the veterinary healthcare team. Therefore, it is important to take steps to minimise

feline distress during their stay. The recent ISFM/AAFP Cat-Friendly Veterinary Environment Guidelines[1] contain a wealth of information on how to adjust a clinic environment to make it more suited to feline patients.

Perceived safety for cats comes from a behavioural need for familiarity, control, predictability, and avoidance/displacement of all possible threats. (Taylor et al.). If we consider some of a cat's natural behaviour, we can see where there may be some conflicts when we hospitalise a cat:

- Cats are more likely to be vigilant in the unfamiliar environment of the cat ward[2].
- Cats mark their familiar territory with facial rubbing[3] and will mark and patrol their territory to minimise the need to interact with other cats.
- In unfamiliar environments or situations, cats use strategies to increase the distance between them and a stressor, or for self-protection. The first strategy a cat will use is often to run away.
- Choice or a sense of control is important to the cat.
- Food is usually consumed in an area the cat views as being safe (within their core territory).
- Cats sleep in areas they feel safest, often in elevated positions.
- Toileting occurs at the edge of a cat's territory on rakeable surfaces, where faeces can be buried and hidden.

We can also consider how best to support a cat by considering its senses. They are designed to detect prey and potential threat, and a cat uses them to continually monitor the environment for anything that is beneficial (e.g. prey/food) or detrimental (e.g. another unfamiliar cat) around them. We should try and minimise negative stimuli and promote positive stimuli during the time a cat is hospitalised to try and reduce negative associations with being at the clinic, as a cat will draw on previous experiences in future visits.

Cats are more likely to tolerate the approach of an unfamiliar person if they are housed in a quiet, predictable environment[4], so this is a primary goal for the cat ward. Therefore, there should be minimal disturbances of the ward (e.g. consider people's voices, equipment, and other patients), and it helps if the ward is situated away from other noisier areas of the clinic. The use of music within the ward can be soothing as well as help mask other noises occurring[5]. It is also important to be able to control the lightning in the room, to allow periods of rest for the in-patients. It is also useful to have a space that can be used by patients that find the cat ward difficult to be in (e.g. an office or a consulting room that can be repurposed for a period of time).

The cages themselves should be positioned to avoid visual contact between the patients. If this is not possible, screens, curtains, or a means to cover part of the front of the cage should be used. Higher level cages are better for cats naturally but do consider the ease of access for staff members. They should be of sufficient size to allow the provision of hide and perch options within the cage, especially for patients hospitalised over 24 hours. Flexibility of cage size can be incorporated with portholes between cages, allowing the use of a 'double' sized cage for longer stay patients. The material used for the cage and cage door construction are also important to consider from a comfort point of view – warm, non-reflective, and quiet – but also need to be easy to clean and disinfect between patients.

The resources provided in the cage should be separated as much as possible (e.g. litter tray, food and water stations). Hiding is a key provision, as hiding is an important means of coping for cats[6]. There is a variety of ways to provide this, using specifically created items, a step stool or even a cardboard box. If there are no options for providing a hiding option within the cage, using a cage front cover can work. However, rather than cover the whole front of the cage, leave a portion uncovered – this not only gives the cat choice but allows observation with minimal disturbance of the cat.

The stress of hospitalisation can impact food intake[7], so steps should be taken to minimise stress as well as maximise the likelihood that the cat will want to eat. Food preferences should be understood before the cat is admitted – both for the food they eat as well as the means of feeding used. A pre-hospitalisation form can be useful to gather this information (as well as other preferences the cat has, e.g. their interaction/petting

preferences, their temperament, litter preferences, and toys they enjoy). Assisted feeding interventions should be considered without delay for in-patients consuming less than the resting energy requirement for 3 days or more (remember to include any period of inappetence before hospitalisation)8. Syringe feeding is not recommended.

Chemical communication should also be considered. When cleaning cages, a full clean of the cage is generally not required, and this would remove any familiarity with the space the cat has developed. Instead, spot cleaning and bedding swapping are useful ways to keep the cage clean and comfortable for the patient but maintain some reassuring marks and scents. Using feline facial pheromone within the ward has also been shown to be beneficial9.

Any interactions with the feline in-patient should consider their species-specific behaviour, as well as the individual's preferences10. Assessment of an in-patient's emotional state should be performed and recorded on their in-patient record in a similar way to recording pain assessments. It is also useful to record any adjustments made and the response, e.g. the addition of a cover to the front of the cage, how a cat responded to a short period of head grooming or the addition of a puzzle feeder for a cat showing signs of frustration.

It is helpful to schedule interactions and procedures to minimise the need to disturb the cat, as well as rationalising assessments (e.g. is it necessary to take the temperature of this patient twice a day). If possible, use a cat-only, quiet area for these interactions; try and avoid using a space within the ward that the other in-patients are able to view. Throughout, cat-friendly techniques should be employed, and the use of positive emotional triggers, such as food treats or grooming.

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Managing Common Feline Behaviour Problems

Cats are more and more viewed as a member of the family - in the recent CATS Report from the UK 92% considering their cat as a family member[1]. Problem behaviours can negatively impact the human-animal bond, but also have a negative effect on the animal's welfare. Unfortunately, problem behaviours are one of the most common reasons reported for relinquishment of cats[2].

Veterinary healthcare professionals can play an important role in recognising common issues. During the session on preventative healthcare we will discuss how education and preventative behavioural advice can help cat caregivers to prevent problems developing.

When assessing any behavioural problem, the close interlink between physical, emotional and cognitive health should always be considered. As such, behavioural problems should not be assessed in isolation (and vice versa for physical problems). Pain, for example, should be assessed for cats showing a change in their behavioural responses.

There have been a variety of factors that have been found to be associated with feline problem behaviours, such as age[3], neutering status[4], opportunities for play[5] or access to outside[6], socialisation (inadequately socialised kittens have a higher probability of being fearful[7]) and living with other cats[8,9]. The co-occurrence of multiple problem behaviours occurs, e.g. fearful cats are more likely to be aggressive and overgroom than less fearful cats[2].

Common behavioural problem reported include[1, 9, 10, 11]

- Scratching of household objects
- Unacceptable urination or defaecation
- Urine spraying
- Anxiety/fear
- Nocturnal activity
- Aggression (towards cats or people)
- Behavioural problems related to old age, such as increased vocalisation
- Overgrooming

It is important to be aware that many problem behaviours reported by cat caregivers may be normal for cats as a species, but the problem is their impact on the caregiver. Therefore, reported problem behaviour may be the manifestation of a normal behaviour, a normal behaviour that occurs in response to stress or an abnormal behaviour.

A general behaviour questionnaire can be useful to gather the information required to understand the home environment and the cat's lifestyle and help pinpoint any predisposing factors. If the cat lives with other cats, it is also useful to understand the medical history of all of the cats, as this may reveal potential stressors. As caregivers may not readily mention behaviour issues during routine examinations, questions about the cat's behaviour should be part of the history-taking process.

Urine Spraying

Urine spraying is used as a form of territorial marking by both male and female cats. Small amounts of urine are deposited, usually on a vertical surface. Although urine spraying often has an emotional motivation, reflecting a cat's insecurity in an area, medical conditions resulting in local pain can result in a cat using the posture used for spraying when urinating (and spraying is a normal behaviour for intact cat for sexual as well as social communication). Commonly sprayed areas include prominent objects in a room, as well as boundaries/entry/exits to a room. Stress triggers should be identified and managed where possible. Sprayed areas need to be cleaned and once dried, feline facial pheromone can be sprayed on the affected area.

Unacceptable Urination

Periuria (urination in unwanted places) can have behavioural motivations, such as social or environmental stressors, aversion to litter tray (or the substrate used) or a lack of indoor toileting facilities. There are also

several medical reasons that should be considered and ruled out, e.g. feline lower urinary tract disease, CKD, urinary incontinence or arthritis. A general approach to cases with a behavioural motivation includes identifying stressors and removing/managing them, ensuring there are enough appropriate resources for each cat, cleaning areas that have been soiled thoroughly. It should be noted that punishing a cat for demonstrating unwanted behaviour is not helpful and can introduce an extra stressor into the situation (which could reinforce any underlying anxiety). Time should be taken to discuss litter tray characteristics and locations, the substrate used, as well as cleaning routine with the caregiver to ensure the toileting opportunities provided for the cat are optimal.

Scratching of Household Objects

Scratching is a normal behaviour for cats, and they should be provided with suitable outlets for this in the home. Scratching is important for claw maintenance and has a role in stretching, but it also provides a way to communicate (leaving visual and pheromonal marks). Scratching will often occur on prominent surfaces of the cat's thoroughfares. Areas that are being scratched should be covered (after cleaning), and an appropriate object should be placed in the area so the cat has an outlet for their scratching. Appropriate scratching objects depend on an individual cat's preferences.

Conflict Between Cats

Once cats reach social maturity, cats may separate, and different groups of bonded can be formed within a multicat household. Scent is utilised as a way to communicate without physical contact, but when disputes happen, passive (e.g. staring or blocking access to a resource) or active aggression can occur. Without effective appeasement signalling, the situation can escalate rather than improve over time. Understanding the relationships between cats living in the household can help along with a review of the provision and location of resources within the home (to facilitate access by all cats without unwanted interactions), including the safe access of hiding places. Caregivers should also be helped to understand the differences between play fighting and 'real' fighting, as well as signs of affiliation between cats). When fighting is occurring frequently, the cats should be separated, and reintroduction attempted gradually. Caregivers should also understand that punishment does not help (and can help to escalate the situation).

Aggression Towards People

Injuries inflicted by cats can be serious, particularly in elderly or immunocompromised individuals. Medical attention should be advised for any bites or serious scratches that people experience. There can be many reasons for aggressive behaviour directed towards people, including mis-directed predatory behaviour, play aggression, frustration or fear related behaviour or as a result of pain or discomfort the cat is experiencing. It is often a complex situation, and referral to a behaviourist is advisable. Any advice given needs to be in the context of ensuring personal safety of the individuals involved, e.g. helping caregivers read a cat's body language to allow them warning of when to give their cat space.

Anxiety/Fear

Individual temperament (genetics and experience) as well as socialisation as a kitten, previous experiences and age can influence fear and anxiety in cats. Choice and a sense of control are important for cats, as well as predictability of their routine. Assessing the home environment for the provision of resources, as well as any changes can facilitate pinpointing how to help the cat cope better. Generally, it is important to make sure cats have access to hiding places, elevated places and are left undisturbed in these areas.

Overgrooming

Grooming is a normal feline behaviour. Overgrooming is the increased frequency or intensity of grooming that results in hair loss or injury to the skin in the area. Regular regurgitation of hairballs can be an alert that overgrooming is happening if the caregiver is not aware. The majority of overgrooming cases have a medical cause (e.g. pruritus or underlying pain); however, stress can be a trigger. Therefore, a full behavioural assessment should happen alongside a clinical examination. Identify potential stressors and assess the provision and access to resources in the home.

Supportive Tools

Alongside the identification of underlying triggers and appropriate management with a behavioural modification plan including environmental changes, there are various products that can help to decrease a cat's anxiety.

Feline Pheromones

The F_3 fraction of the feline facial pheromone is available in a diffuser and spray format (FELIWAY Classic, Ceva Animal Health), which is useful to promote safety and security in the home, during transportation or when moving to a different environment. It has been shown to alleviate stress-induced behaviours and calm cats[12].

Nutraceuticals and Diets

Alpha-casozepine is a peptide derived from cow's milk and can be found in foods (e.g. Royal Canin CALM diet, with tryptophan) or supplements (e.g. Zylkene, Vetoquinol) to reduce fear or anxiety related problems in cats. There have been studies showing a benefit for cats exhibiting anxiety in socially stressful situations[13] and events (such as veterinary visits[14]).

L-theanine can be found in green tea extract and has been shown to improve the undesirable manifestations of stress in cats[15].

Psychotrophic Medication

Psychotrophic agents are indicated when problem behaviours are not managed with environmental and behavioural modification alone. Medications can be utilised to reduce fear, anxiety, arousal or vigilance, inhibit aggression or reduce impulsivity. Selective serotonin reuptake inhibitors (SSRIs) and tricyclic antidepressants (TCAs) are the major drug classes to consider, but others, such as benzodiazepines, monoamine oxidase inhibitors, or neuropeptides, may be indicated depending on the emotional motivation for the problem behaviour. Before deciding which medication to use, an accurate diagnosis and understanding of the underlying emotional motivations is required[16].

Preventative Behaviour

A better understanding of cats' needs and potential behaviour problems exhibited by indoor cats and cats living in multicat households means that behaviour issues are an increasing problem.

Cat caregivers can have misconceptions about the needs of cats, and routine examinations are an ideal time to make sure they understand some of the unique needs of cats as well as ways to meet these in the home environment. Assessment of a cat's physical and social environmental needs should be a part of every cat's routine healthcare examinations and can make a huge contribution to the general wellbeing of cats. Not only does this benefit cats, but it can be a great way to demonstrate a clinic's general cat friendliness and expertise.

There are a variety of ways to approach this:

- General cat information on the clinic website
- Regular social media posts and blog articles on the clinic's website discussing different aspects of cat wellbeing
- A behaviour pre-visit questionnaire, which a client can complete at home (or in the waiting room) to allow identification of areas where support can be provided
- Kitten (or new client) education meetings.

Understanding the home environment can be helpful when investigating behaviour issues cat caregivers report but can also be a great way to make changes to prevent issues developing, e.g. understanding how resources are distributed around the home.

Points to consider include (from the number of points to consider, it is easy to see why questionnaires can be a great way to document this information):

- Are there suitable feeding and water stations for the cat(s) in the home, that are in suitable locations? Do they meet the needs of the individual?

- Are there suitable resting places for the cat to hide and feel safe that they have ready access to?
- Are there times during the day that the cat can exhibit play behaviour?
- Are there suitable litter trays in the home, in appropriate places, that are managed optimally?
- Does the cat have adequate time to interact with the caregiver and in a way that they are comfortable with?
- Are there suitable scratching opportunities within the home, in appropriate places?
- Is there an opportunity for a cat to utilise 3D space in the home?
- Is there more than one cat in the household? How do the cats interact with each other (e.g. identifying signs of affiliation and conflict between individual cats)?

Discussions with the Caregiver Will Vary Depending on the Life Stage of the Cat

- Breeders should consider the early development of their kittens. Genetics have a strong influence, but learning and physical/social environment are critical for development. The early socialisation period is around 2-8 weeks of age, and during this time, kittens will learn responses that influence their behaviour throughout their life. The fear response starts around 6 weeks of age. Discussing ways to carefully expose the kittens to various people, being handled in a positive way and various sounds that are part of everyday life can be beneficial.
- Kittens (up to 6 months of age) – there are many topics to cover, so kitten information meetings can be a great way to discuss with a number of new kitten caregivers at once and can be a lovely opportunity for these new caregivers to share their experiences, creating a bond between the clinic and these clients. If this is not possible, consider ways to gradually approach this to avoid overwhelming the new caregiver or for them missing important pieces of information, utilising veterinary healthcare team members effectively (e.g. nurse appointments or calls to new caregivers). Advice regarding handling, normal feline behaviour, resource management, as well as ways to facilitate travel to the veterinary clinic and other healthcare training should be included.
- Junior cats (7 months to 2 years) – interactions between cats may change in this period, and caregivers can be supported with information regarding multicat households. Cats may be less boisterous, but play continues to be important throughout a cat's life, so ways to facilitate play should be discussed. It is also useful to check that resources in the home are appropriate for adult-sized cats (e.g. litter tray and scratching posts). Healthcare training should continue.
- Adult cats – monitor for any changes in behaviour (e.g. changes in interactions with people, interest in play, use of elevated places).
- Senior and super senior cats (over 11 years old) – caregivers should be made aware that behavioural changes in older cats may not just be 'old age' changes and cats should be assessed for any underlying medical issues. The environment may need changes to support sensory changes or medical issues (e.g. OA), e.g. steps to and down from elevated positions, warmed bedding, lower side to litter tray.

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Additional reading – the behaviour special issue of the Journal of Feline Medicine and Surgery has excellent information for common behaviour problems:

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2. Heath S (2019) Common Feline Problem Behaviours: Unacceptable indoor elimination. Journal Feline medicine and Surgery 21:199-208

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Current Thoughts on the Diagnosis and Management of Feline Idiopathic Cystitis

Feline idiopathic cystitis (FIC) is a common, worldwide disease affecting domestic cats of unknown aeti-ology. Despite numerous studies, our understanding of FIC remains poor and knowledge of effective therapeutic interventions is limited.

Epidemiology of Feline Lower Urinary Tract Disease

Feline lower urinary tract disease (FLUTD) has been reported to account for around 2-5% of feline cases seen in primary care practice.[1–4] Clinical signs (typically involving one or more of pollakiuria, periuria, dysuria, haematuria, stranguria) are non-specific, and the most common identifiable causes include urolithiasis, bacterial cystitis, urethral plugs, urethral strictures, trauma and neoplasia. When investigations (urinalysis, urine culture, and diagnostic imaging) fail to identify a specific underlying cause, FIC is diagnosed as a disease of exclusion. In most studies, FIC is the single most common diagnosis made in cats presenting with signs of FLUTD and generally comprises around 55-65% of cases.[1,4–6]

Risk Factors for the Development of Feline Idiopathic Cystitis

FIC is seen most commonly in young to middle-aged adult cats with a mean age of around 5-6 years old, although cases have been reported from a wide range of ages.[1,4,7,8] No specific breed predisposition has been identified, but several studies have found a higher proportion of male cats affected, and FIC may also be a common underlying cause of urethral obstruction in male cats, potentially including at least some cats with urethral plugs.[8–10] Further, the feeding of dry cat food has been suggested as a predisposition in some studies.[1,4]

Some case-control studies have specifically looked at different risk factors for the development of FIC. Obesity has been the most consistent risk factor identified in these studies. Other factors have been less consistently observed and vary between studies but have included potential stressors such as the cat being nervous, conflict with other cats, having less space, a lack of vantage points in the house, being in a multi-cat household, and less outdoor access.[1,4,6,7,11–13]

Pathogenesis of Feline Idiopathic Cystitis

Whether FIC represents a single disease or a syndrome with multiple causes remains to be determined. Although many studies have investigated potential causes of FIC, these have often been conducted on limited numbers of cats and sometimes on cats with severe persistent or recurrent disease that may not be typical of all cats with FIC.

A number of local bladder abnormalities have been identified in affected cats[1,8,9] including a compromised epithelial barrier, increased bladder wall permeability and reduced concentrations of urinary glycosaminoglycans (GAGs), although it is unclear if this finding is unique to FIC among cases of FLUTD. The compromised integrity of the bladder wall may contribute to inflammation of the bladder and leakage of serum proteins that may, in turn, contribute to urethral plug formation in male cats. Neurogenic inflammation may also be a part of the pathogenesis with evidence of sympathetic activation, increased C-fibre neurone sensitivity and increased expression of substance P and substance P receptors. While attempts to find underlying infectious aetiologies have been largely unrewarding, further studies are needed to investigate the potential role of viruses such as caliciviruses or feline morbillivirus.[14,15]

Along with bladder changes, systemic neurohormonal changes have also been found in cats with FIC. These have included small adrenal glands and increased sympathetic stimulation but suppressed adrenocortical responses suggesting an uncoupling of the sympathetic and hypothalamic-pituitary-adrenal axis in response to stress.[1,4,8] Epidemiological studies of risk factors also provide some evidence to support the common suggestion that FIC is related to stress, but the lack of consistency in identifying specific environmental stressors (e.g. multi-cat households, inter-cat conflict) as risk factors raises some questions. It has been proposed that early life experiences may be involved in modifying stress responses and pre-disposing to FIC, and perhaps other stress-related disease manifestations, including gastrointestinal, respiratory, dermatological and behavioural signs.[1,4,8] However, further work is needed to investigate these hypotheses. Collectively, current data suggest that the pathogenesis of FIC is complex, with both local bladder abnormalities and/or neurohormonal changes in at least a proportion of affected cats, with the potential at least that environmental stress may be involved in some. Current studies provide some intriguing insights, but we remain a long way from a unifying and proven concept of the pathogenesis of this complex disease.

Clinical Approach to Investigation

FIC is diagnosed by excluding other recognised causes of FLUTD. Although FIC is the most common cause of signs of LUTD in cats, where clinical signs are persistent or recurrent, other recognised causes of disease should be ruled out as far as possible, involving urinalysis (including sediment analysis and bacterial culture) and diagnostic imaging. These investigations will allow a specific diagnosis of the most recognised causes of FLUTD, but bladder biopsy may also be required in some cases. If investigations fail to reveal a specific underlying cause, FIC is the presumed diagnosis.

Managing Feline Idiopathic Cystitis

Because the aetiopathogenesis of FIC remains poorly understood, management of the disease is challenging, and few interventions have any proven efficacy. Clinical signs in FIC often recur (with a variable frequency), but signs in each episode tend to spontaneously resolve within a few (typically 2-7) days.[1, 16, 17] This makes a short-term assessment of therapy challenging and can lead to the false assumption that an intervention has had an effect rather than disease resolution being spontaneous. Further, as the frequency of recurrent episodes tends to reduce over time, this can complicate long-term studies of the disease.

Drug Therapy

To date, no drugs (including prednisolone, antibacterials, meloxicam, propantheline, amitriptyline, and glycosaminoglycan replacers) have been demonstrated to be effective in controlled clinical trials of the management of FIC.[4, 8, 18, 19] In one uncontrolled long-term study of cats with severe recurrent FIC, amitriptyline appeared potentially beneficial[20], but further controlled studies are needed. Despite a lack of proven efficacy of pharmacotherapy in cats with FIC, the condition is assumed to be painful and thus short-term analgesic therapy (e.g., with an opioid) is an important welfare consideration.[8]

Environment and Stress Management

Environmental management to reduce putative stressors is widely recommended for cats with FIC[1, 4, 8], based partly on evidence that stress may play a role in the pathogenesis of the disease. Clinical observations and the results of an uncontrolled trial of cats with severe recurrent FIC21 suggest that multimodal environmental modification (MEMO) may be beneficial. Interestingly, there is evidence such environmental modification may also affect the severity of other co-morbidities in affected cats21, but again, in the absence of good controlled studies, caution is still needed over any assumptions of the efficacy of such interventions.

An individualised approach to try to identify stressors (such as conflict between cats, lack of environmental interest or enrichment, lack of resting/hiding places) is important to try to identify specific potential causes of environmental stress. Good, effective communication with the owner is needed, and also to reassure them about the nature of the disease. The aim of MEMO is to create a more reassuring and safe environment for the cat, to reduce sources of stress, and, through this, to hopefully reduce pain levels, reduce the frequency of recurrent episodes, and improve the cat's welfare (Table 1).

Table 1: Overview of commonly recommended MEMO interventions[8, 21]

- Provide safe and appropriate places for all cats to hide and rest (including provision of vantage points)
- Provide opportunities to play (with toys and with people) and to engage in predatory behaviour (eg, toys, hiding food etc.)
- Make sure each cat in a multi-cat household can separate themselves (have multiple, separate resting and hiding places)
- Make sure each cat in a multi-cat household has separate access to key resources (food and water bowls, litter trays, scratching posts, toys etc.)
- Ensure frequent and positive owner-cat social and play interactions
- Offer cats choices to express their preferences over resources, interaction and play
- Avoiding situations and circumstances that cause fear or anxiety for the cat
- Use appropriate synthetic environmental pheromone products

Dietary Management

The only published controlled studies to date that have demonstrated a significant effect of an intervention in cats with FIC have been dietary trials.[22–24] Frustratingly though, it remains unclear what specific aspects of dietary intervention may be of benefit to these cats. In one non-randomised study, cats with FIC were followed over a 12-month period and fed either dry or canned versions of a therapeutic urinary diet.[23] Significantly fewer cats fed the wet diet had recurring clinical signs, and the urine specific gravity was significantly lower in the cats fed canned food (1.039 v 1.051). These results have been widely interpreted to suggest an increased water intake and a reduced urine specific gravity are beneficial in cats with FIC, and along with MEMO, this has become a standard recommendation.[1, 4, 18, 19] At least one paper has recommended aiming for a urine specific gravity of <1.040 in affected cats.[18]

In two more recent studies[22, 24], including one that was a prospective randomised controlled study, the feeding of a therapeutic urinary diet was found to result in significantly fewer episodes of recurrent disease compared to a composite diet designed to mimic a typical supermarket diet[22], or other commercial diets.[24] In one of the studies, there was also a trend towards reduced recurrence in cats fed the wet form of the therapeutic diet.[24] Frustratingly, it is impossible to determine what aspects of the diet may have contributed to the improvement seen, but it would seem prudent to recommend the feeding of a high-quality complete and balanced diet to cats with FIC where possible and a therapeutic diet for lower urinary tract disease might have additional benefits. The latter may be particularly true for male cats affected by FIC where diets designed to reduce the risks of urolithiasis may also help to reduce the risk of urethral obstruction (where struvite crystals are a common component of a urethral plug). In addition to specific dietary modifications, if the cat is overweight, appropriate measures should be taken to reduce and normalise body weight.

Some commercial diets incorporate nutrients that are purported to modify stress responses in cats (e.g., α-casozepine and/or l-tryptophan), or these can be administered as nutraceuticals; however, there is no published data to demonstrate the efficacy of these products in managing FIC.

Increasing Water Intake

While feeding wet rather than dry foods helps to increase water intake, increase the volume and frequency of urination and reduce urine concentration, even when transitioned gradually, not all cats adapt to a wet diet. The use of water fountains or water bowls with moving water has not been found to increase water intake in cats, although they may be preferred by some individuals[25–27], whereas controlled studies have shown that dry urinary therapeutic diets with a moderately increased salt content may successfully increase water intake and urine output[18, 19], as can the offering of a nutrient-enriched water source in addition to a water bowl.[28, 29]

Summary

Our current understanding of FIC remains relatively poor. Based on available published data and clinical experience, both of which may be flawed, the current emphasis in long-term management is on reducing stress through MEMO, increasing water intake and feeding a high-quality, complete and balanced diet. Analgesic therapy in acute flare-ups of disease should be considered a standard of care. Finally, in severe refractory cases, there is some rationale in using long-term amitriptyline therapy based on the results of a single uncontrolled study.

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Uses and Abuses of Pheromone Therapy in Cats

Fear is a normal emotional response to a potential threat (or a perceived threat). A threat can be anything that is unfamiliar to a cat, such as a trip to the veterinary clinic, but also a change in the home, unfamiliar people visiting or an interaction they are not comfortable with. Stress can be a normal result of fear – short term and long term stress can negatively impact feline welfare.

Caregivers may not realise what a cat needs in order to recognise their home as safe. A cat will be unable to relax in a space that they don't believe as safe due to experiencing frequent stress and elevated arousal levels[1]. This can result in a change in normal behaviours (e.g. eating less or grooming more) as well as unacceptable behaviours for a caregiver within the home (e.g. urine spraying or scratch marking), which in turn negatively impacts the human-cat relationship.

Feline Pheromones

Pheromones are naturally produced substances that influence behaviour and play an important role in intraspecific communication. Pheromones can convey a variety of types of communication, such as sexual receptivity and emotional arousal state of an individual as well as being used for territorial marking and individual recognition.

The response to pheromones is unconditional and species specific; the animal will recognise the pheromone without prior learning. Pheromones are detected by specialised receptors in the vomeronasal organ (VNO) located between the nose and the mouth2. The detection of a pheromone mediates effects in the limbic system via the accessory olfactory bulb, which occurs without involving any conscious pathways1.

When a cat rubs its head against a surface it leaves a chemical signal (feline facial pheromones) behind on the surface. Five feline facial pheromones (F1-F5) have been identified in cats. The F3 fraction has been identified as a message left in the environment to mark out familiar boundaries, passageways and objects and its presence increases the cat's sense of security and emotional stability[3]. The absence of these familiar marks is believed to lead to an increase in anxiety[1].

The F3 fraction of the feline facial pheromone (FFP) is available as FELIWAY® Classic (Ceva Animal Health) and studies have shown that its presence in a cat's environment conveys a message of comfort, helping to stop unwanted stress-related behaviours (such as urine spraying, scratching)[3-6] and to help cats cope with stressful situations such as car travel[7,8], veterinary clinic visits9,10 and household changes[11]; thus enhancing a cat's emotional wellbeing.

Pheromonatherapy

By using synthetic analogues of pheromones (pheromonatherapy) that convey a message of security and reassurance, the capacity of an animal to relax in an environment is enhanced12. This unconscious response means that animals can be helped to adopt their coping behaviours when experiencing exposure to stimuli which have the capacity to result in their distress. Pheromonatherapy is useful for cat caregivers as it requires minimal human intervention for effect, and once applied, recognition of the pheromone by the cat is spontaneous. Applications for the use of FFP in a cat's home environment include urine spraying and scratch marking. Clinicians may also find that their rapid recognition and response is helpful when managing clinical behaviour problems, as they begin to calm the cat while other management modalities are applied. Cat caregivers benefit from practical advice about how to use the diffuser or spray appropriately, such as leaving the diffuser plugged in for 24 hours a day or leaving 15 minutes after spraying an object before a cat has access to it.

The species-specific response to a pheromone occurs without the pheromone being systemically absorbed (pheromones leave the VNO in the nasal mucus). This means that there are no issues with toxicity, and pheromonatherapy can be used for any age of the pet and alongside any medications or diet that the cat requires[1].

Veterinary Visits

A visit to the veterinary clinic will also pose an emotional challenge for cats. A visit involves a whole raft of novel experiences (sights, sounds, smells, people, handling), whilst their sense of control is hugely impacted (e.g. being restrained in a cat carrier)[9]. It should also be remembered that the cat's reassuring scent and pheromone marks have also been left behind. The odours from unfamiliar and distressed cats are likely to also convey messages of panic and fear to other cats.

However, pheromonatherapy can be throughout the clinic in order to increase the cat's feeling of security, thus improving their welfare (and increasing the opportunity for the healthcare team to work effectively and safely with their feline patients). A constant supply of reassuring messages from diffusers placed throughout the building can be helpful. Alternatively, FFP can also be applied to bedding, blankets or covers using the spray formulation[13] (note, it is important to ensure a 15 minute window between spraying an item and a cat coming in contact with it to allow the smell from the alcohol carrier to evaporate). The use of FFP in the veterinary clinic is advocated in the 2022 ISFM/AAFP Cat Friendly Veterinary Environment Guidelines[14].

Travel To and From the Clinic

We need to consider that a veterinary visit for a cat (and their caregiver) begins before they leave for the clinic. The application of FFP spray to the cat carrier prior to the journey has been shown to reduce anxiety during car travel. In one study of 58 cats, FFP was sprayed into a cat carrier (8 sprays) 1⁄2 hour before car travel ranging from 100 to 500 km7. Compared to the placebo group, those cats exposed to FFP showed a significant reduction in both somatic signs (vomiting, urination and defecation) as well as behavioural signs of anxiety (vocalisation, agitation, salivation). Another study of 67 cats utilised a low-stress transport protocol (or not) for travel to the clinic prior to hospitalisation and neutering procedure[8]. The low-stress protocol included applying FFP spray to the cat carrier 30 minutes before travel. Those cats that arrived after the low-stress protocol was used took less time to reach sedation and needed a lower dose of propofol for induction than those that did not.

In the Waiting Room

The waiting room (and reception area) are important to set the tone for the veterinary visit, and adjustments to create a positive experience are advised to support cats and their caregivers. Measures to mitigate stress, as recommended in the Guidelines[14] include:

- Playing calming music
- Removing ringing phones/doorbells from sounding in the area
- Using FFP in the area
- Providing covers for caregivers to place over their carrier to facilitate hiding and decrease visual and auditory stimuli

In the Consulting Room

When in the consulting room, a cat continues to experience many novel stimuli, but also faces interaction with an unfamiliar person, and will be handled and possibly undergo procedures in this space (e.g. venepuncture). In such a situation, the preferred coping strategy for many cats is to escape, but as this is not possible for them, they will utilise other strategies. This could include hiding or, perching or defensive aggressive behaviours. Cat-friendly techniques and environment will optimise the ability of the clinician to obtain the clinical information they require whilst providing the cat choice.

A placebo-controlled study of 87 cats investigated whether applying FFP spray to the examination table reduced stress for cats being examined9. The results demonstrated that the use of FFP spray led to a significant difference in the cats' usual behaviour at a veterinary clinic as reported by the caregivers, and the cats were easier to handle when compared to previous veterinary visits. Cats exposed to FFP spray also showed significantly lower cat stress scores than those exposed to the placebo spray.

As examination tables can be cold and slippery, the recent Guidelines[14] recommend using a soft towel, blanket or mat on the table. Towels have the added benefit of being helpful to facilitate either hiding for the cat, or to loosely restrain them if required. Each towel/blanket/mat could be sprayed with FELIWAY® spray prior to a consulting block in order to provide pheromone support for each feline patient. Alternatively, a FFP diffuser can be plugged into the room.

In the Hospitalisation Ward

Cats in the hospitalisation ward are generally unwell and in pain, and at the same time are confined in a smaller space to that they are used to and in an unfamiliar area, with unfamiliar people caring for them and an unfamiliar routine[14]. It is, therefore, easy to understand how this can be very stressful for cats, and they can show signs of fear, anxiety or frustration. Consideration for a cat's sense of security is critical – creating a quiet, predictable environment is advisable, as well as providing options to help a cat feel more secure.

A study of 20 cats discovered that cats which had a towel with FELIWAY® spray applied in their hospitalisation cage showed a significant increase in grooming and interest in food during the first 2 hours in the cage than those that had a control sprayed towel with them10.

Provision of a place to hide and perch within the hospitalisation cage is also important to help cats cope and can reduce stress during their confinement. A second part of the previous study showed that adding a cat carrier into the hospitalisation cage, as well as a FELIWAY® sprayed towel, resulted in increased food intake over 24 hours compared to those which had no carrier and just the FFP sprayed towel.

Returning Home

Mariti et al. (2016)15 reported 58.5% of caregivers saw their cat showing signs of distress after returning home. Being away from home for over 24 hours means that the cat has not been able to mark their home territory as usual, topping up the areas they place FFP. Cats will also smell differently; they may move in an altered way and can be less tolerant of interaction as they recover from a stay in the hospital. This can affect their relationship with any other cats in the home. International Cat Care's leaflet16 to guide cat carers when visiting the vet suggests using a FFP diffuser in the area where the cats spend most of their time to support their adjustment to being back at home.

Cats' Needs at Home

Environmental needs are often not addressed by a caregiver until a cat is displaying overt signs that they are distressed. These signs can be misunderstood and described as 'bad' or 'aggressive', but in fact, they are just ways a cat can display that they are not comfortable. Proactively anticipating the requirements a cat has for its environment helps to avoid or mitigate the environmental stressors that trigger unwanted behaviours such as urine spraying or scratching[17]. The veterinary healthcare team can help cat caregivers by assessing the needs of patients and helping their humans develop ways to provide these in their homes. The AAFP and ISFM Feline Environmental Needs Guidelines[18] are a great resource for gaining ideas for ways to meet these needs.

One of the pillars discussed in the Guidelines is Pillar 5 – Provide an environment that respects the importance of the cat's sense of smell. The use of FFP is advised to reduce anxiety, increase grooming, interest in food and appropriate use of the litter tray. The Guidelines also suggest using FFP on new objects before presenting them to a cat (such as a new sofa).

The unwanted problem of urine spraying in the home was where the journey in developing evidence supporting the efficacy of FELIWAY® Classic started over 25 years ago. Initially, the use of compresses that had been rubbed against the cat's cheek were placed in areas where urine marking might arise, and the cats stopped spraying these areas19. There have been subsequent studies using the synthetic analogue of FFP as FELIWAY® Classic, either in a diffuser or spray format. One study (using the spray) with 36 cats reported a significant reduction in urine spraying after 4 weeks of use, with 77% of cats completely stopping or spraying less20. In another study of 22 cats, where a diffuser was used, a reduction in urine spraying occurred for 90% of cats in the group exposed to FFP, whereas only 58% of cats had improved in the control group after 4 weeks of use[21].

When a cat is feeling insecure, the frequency and intensity of scratching by cats increases as it functions as a marking response. A placebo-controlled study of 1060 cats reported that the use of a FFP diffuser significantly reduced both the intensity and frequency of unwanted scratching at D28, with a significant reduction in the intensity of the scratching starting at D76.

New objects and routines are often reported to be a challenge for cats. A study of 68 cats demonstrated that FFP helped cats cope with a complete change of their territory – on travelling to a holiday home[11]. The study tested FFP and placebo sprays and found that cats with FFP sprayed on objects in the new environment were quicker to start eating and were more likely to return to the holiday home after being let outside.

Conclusion

Pheromonatherapy is an important tool for diminishing stress in cats and for managing unwanted stress-related signs. The ease of use, safety, and spontaneous recognition of pheromones by the intended species make the use of FFP within veterinary clinics a useful tool to support a cat friendly approach and improve cat welfare during a visit. Cat caregivers can also easily use FFP at home, to help provide reassurance and security to their cats and help them to relax as they face stressful situations that living with humans naturally happen.

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What's New in Feline Medicine – Editors Top Picks from the Journal of Feline Medicine and Surgery

Surgical findings and outcomes after unilateral adrenalectomy for primary hyperaldosteronism in cats: a multi-institutional retrospective study Del Magno S, Foglia A, Rossanese M, et al.. Journal of Feline Medicine and Surgery. 2023;25(1). doi:10.1177/1098612X221135124

Case series summary

Twenty-nine cats from different institutions with confirmed or highly suspected primary hyperaldosteronism treated by unilateral adrenalectomy were retrospectively included in this study. The most frequent clinical signs were lethargy (n = 20; 69%) and neck ventroflexion (n = 17; 59%). Hypokalaemia was present in all cats, creatinine kinase was elevated in 15 and hyperaldosteronism was documented in 24. Hypertension was frequently encountered (n = 24; 89%). Preoperative treatment included potassium supplementation (n = 19; 66%), spironolactone (n = 16; 55%) and amlodipine (n = 11; 38%). There were 13 adrenal masses on the right side, 15 on the left and, in one cat, no side was reported. The median adrenal mass size was 2 × 1.5 cm (range 1–4.6 × 0.4–3.8); vascular invasion was present in five cats, involving the caudal vena cava in four cats and the renal vein in one. Median duration of surgery was 57 mins. One major intraoperative complication (3%) was reported and consisted of haemorrhage during the removal of a neoplastic thrombus from the caudal vena cava. In 4/29 cats (14%), minor postoperative complications occurred and were treated medically. One fatal complication (3%) was observed, likely due to disseminated intravascular coagulation. The median duration of hospitalisation was 4 days; 97% of cats survived to discharge. The potassium level normalised in 24 cats within 3 months of surgery; hypertension resolved in 21/23 cats. Follow-up was available for 25 cats with a median survival of 1082 days. Death in the long-term follow-up was mainly related to worsening of comorbidities.

Ultrasonographic monitoring of feline epaxial muscle height as part of an annual wellness examination to assess for the development of sarcopenia. Lutchman A, Shanker N, Comerford E, et al. Journal of Feline Medicine and Surgery. 2023;25(1). doi:10.1177/1098612X221140081

Objectives - The aim of this study was to determine if epaxial muscle height (EMH) could be reliably incorporated into annual routine wellness screenings, and also determine its relationship to age, body condition score (BCS), subjective muscle assessment (SMA), breed and sex in mature cats.

Methods - EMH was determined independently by three observers from ultrasonographic examinations – collected by an additional trained individual – of cats enrolled at the Feline Healthy Ageing Clinic, University of Liverpool, UK. Age, body weight, BCS and SMA data were also collected.

Results - A total of 92 cats were included, 35 of which had repeat ultrasonographic examinations 12 months apart. Enrolled cats were a median age of 8 years and 9 months at the time of the first measurement. Variation in the quality of ultrasonographic images collected did not affect muscle depth measurements (P = 0.974). Further, there was good intra- and inter-observer repeatability for all observations (intraclass correlation range 0.97–0.99). There was a moderate positive association between EMH and body weight (r = 0.49, P <0.001) but no association with age (r = –0.05, P = 0.680). There were also positive associations in EMH among cats with different BCSs (P = 0.001) and SMAs (thoracic spine, P = 0.021; lumbar spine, P = 0.014), but breed (P = 0.429) and sex (P = 0.187) had no effect. Finally, there was no change in EMH measurements in the paired samples (P = 0.145) or correlation between percentage weight and EMH change over 12 months.

Conclusions and relevance - The accuracy of EMH measurement using ultrasonographic imaging is good, irrespective of observer experience and provided that the ultrasonographer has some training. This suggests that ultrasonographic measurement of EMH could have a major practical impact as a non-invasive determination of muscle mass in pet cat populations. Further research is required to assess longitudinal changes in muscle mass over time in senior pet cats.

Can cat caregivers reliably assess acute pain in cats using the Feline Grimace Scale? A large bi-lingual global survey. Monteiro BP, Lee NH, Steagall PV. Journal of Feline Medicine and Surgery. 2023;25(1). doi:10.1177/1098612X221145499

Objectives - This study aimed to investigate if cat caregivers could reliably assess acute pain using the Feline Grimace Scale (FGS), and if participant demographics could affect scores.

Methods - An online survey in English and Spanish was advertised by International Cat Care and other platforms (March–May 2021) using convenience sampling. Eligible participants were caregivers >18 years old and non-veterinary health professionals. Participants and a group of eight veterinarians scored 10 images of cats with different levels of pain. Data were analysed using linear models and intraclass correlation coefficient (ICC; $\alpha < 0.05$). Interpretation of the ICC was <0.2 = poor; 0.21–0.4 = reasonable; 0.41–0.60 = moderate; 0.61–0.80 = good; and 0.81–1.0 = very good.

Results - A total of 3039 responses were received with 1262 completed answers from 66 countries (86%, 11.1% and 2.9% identified as female, male or other, respectively). Scores for each action unit (AU; ear position, orbital tightening, muzzle tension, whiskers change and head position) and their sum (FGS score) were not significantly different between caregivers and veterinarians, except for muzzle (caregivers 0.9 ± 0.0; veterinarians 0.7 ± 0.1; P = 0.035). The ICC single (caregivers) was 0.65, 0.69, 0.58, 0.37, 0.38 and 0.65, respectively, for AU ears, eyes, muzzle, whiskers, head and sum of scores. Demographic variables did not affect FGS scores.

Conclusions and relevance - Total FGS scores had good reliability when used by cat caregivers, regardless of demographic variables, showing the potential applicability of the instrument to improve feline pain management and welfare worldwide.

Inter-observer reliability of three feline pain scales used in clinical practice. Adami C, Filipas M, John C, Skews K, Dobson E. Journal of Feline Medicine and Surgery. 2023;25(9). doi:10.1177/1098612X231194423

Objectives - The present study aimed to evaluate the inter-observer reliability of three feline pain scales commonly used in clinical practice.

Methods - Twenty cats undergoing elective neutering surgery were assessed both pre- and postoperatively by three independent assessors (a board-certified anaesthetist, a veterinary anaesthesia nurse and a final-year veterinary student) using three different pain scales: the Glasgow Feline Composite Measure Pain Scale (CMPS–Feline), the Colorado State University Feline Acute Pain Scale (CSU–FAPS) and the Feline Grimace Scale (FGS). Reliability statistics were used to evaluate the level of agreement between assessors.

Results - Twenty-seven groups of paired observations were evaluated, of which 16 (59%) showed fair agreement, eight (30%) showed none to slight agreement, and the remaining three (11%) showed moderate agreement based on Cohen's weighted kappa statistics. Based on Cronbach's alpha statistics, 12 (44%) of the 27 groups of observations showed moderate reliability, 12 (44%) showed poor reliability, and the remaining three (11%) showed good reliability. No scale was superior to the others in terms of inter-rater reliability (P = 0.179); however, the pair composed of the final-year veterinary student and anaesthesia nurse showed better agreement than the two other pairs of assessors, both of which included the board-certified anaesthetist (P = 0.015).

Conclusions and relevance - Despite the usefulness of behavioural pain scales as clinical tools, their users should bear in mind their limitations, particularly the intrinsic subjectivity and potential variability of outcome between assessors with different backgrounds and level of expertise.

Construct validity, responsiveness and reliability of the Feline Grimace Scale in kittens. Cheng AJ, Malo A, Garbin M, Monteiro BP, Steagall PV. Journal of Feline Medicine and Surgery. 2023;25(12). doi:10.1177/1098612X231211765

Objectives - The aim of the present study was to investigate the construct validity, responsiveness and reliability of the Feline Grimace Scale (FGS) in kittens.

Methods - A total of 36 healthy female kittens (aged 10 weeks to 6 months) were included in a prospective, randomised, blinded study. Video recordings of all kittens were made before and 1 and 2 h after ovariohysterectomy using an opioid-free injectable anaesthetic protocol with or without multimodal analgesia. Additional recordings were taken before and 1 h after administration of rescue analgesia (buprenorphine 0.02 mg/kg IM) to painful kittens. Screenshots of facial images were collected from the video recordings for FGS scoring. Four observers blinded to treatment groups and time points scored 111 randomised images twice with a 5-week interval using the FGS. Five action units (AUs) were scored (ear position, orbital tightening, muzzle tension, whiskers position and head position; 0–2 each). Construct validity, responsiveness, and inter- and intra-rater reliability were evaluated using linear models with Benjamini–Hochberg correction, Wilcoxon signed-rank test and single intraclass correlation coefficients (ICCsingle), respectively ($P < 0.05$).

Results - FGS total ratio scores were higher at 1 and 2 h after ovariohysterectomy (median [interquartile range, IQR]: 0.30 [0.20–0.40] and 0.30 [0.20–0.40], respectively) than at baseline (median [IQR]: 0.10 [0.00–0.30]) ($P < 0.001$). FGS total ratio scores were lower after the administration of rescue analgesia (median [IQR] before and after rescue analgesia) 0.40 [0.20–0.50] and 0.20 [0.10–0.38], respectively ($P < 0.001$). Inter-rater ICCsingle was 0.68 for the FGS total ratio scores and 0.35–0.70 for all AUs considered individually. Intra-rater ICCsingle was 0.77–0.91 for the FGS total ratio scores and 0.55–1.00 for all AUs considered individually.

Conclusions and relevance - The FGS is a valid and responsive acute pain-scoring instrument with moderate inter-rater reliability and good to excellent intra-rater reliability in kittens.

■ Do owner-reported changes in mobility reflect measures of activity, pain and degenerative joint disease in cats? Maniaki E, Murrell J, Langley-Hobbs SJ, Blackwell EJ. Journal of Feline Medicine and Surgery. 2023;25(6). doi:10.1177/1098612X231178765

Objectives - The aim of this blinded, nested case-control study was to compare cats with and without early owner-reported mobility changes using subjective and objective outcome measures (owner-completed questionnaires, orthopaedic examination).

Methods - A total of 57 cats with and without early owner-reported signs of impaired mobility were allocated to the case ($n = 30$) and control ($n = 27$) groups, respectively. Participating owners completed one inclusion and two pre-visit questionnaires (Feline Musculoskeletal Pain Index, VetMetrica). Cats were then visited in their own homes, where they underwent an orthopaedic examination, an assessment of their body condition score and temperament, and the placement of an accelerometer on their collar for 2 weeks.

Results - There was no significant difference between groups for age category, breed, sex, temperament and body condition score. Case cats scored significantly lower for the Feline Musculoskeletal Pain Index ($P = 0.003$) and the VetMetrica domain of Comfort ($P = 0.002$), but not Vitality ($P = 0.009$) or Emotional Wellbeing ($P = 0.018$). Total pain ($P < 0.0001$), crepitus ($P = 0.002$) and thickening ($P = 0.003$) scores were higher in case cats, as was the presence of bilateral disease ($P = 0.005$, odds ratio 14) and the number of bilaterally affected joints ($P = 0.001$).

Conclusions and relevance - Both the Feline Musculoskeletal Pain Index and orthopaedic examination were able to differentiate cats with early owner-reported signs of impaired mobility from healthy cats. VetMetrica Comfort domain scores indicated a compromised quality of life for cats with early owner-reported signs of impaired mobility compared with healthy cats. Being able to recognise signs of mobility impairment earlier would allow interventions aimed at slowing disease progression, thereby improving feline health and welfare.

■ Commonly diagnosed disorders in domestic cats in the UK and their associations with sex and age. O'Neill DG, Gunn-Moore D, Sorrell S, et al. Journal of Feline Medicine and Surgery. 2023;25(2). doi:10.1177/1098612X231155016

Objectives - The objectives of this study were to generate a robust evidence base on the prevalence of common disorders in cats and develop a deeper understanding of disorder associations with sex and age

that could offer important opportunities for targeted veterinary care to improve feline health and welfare.

Methods - A random sample of 18,249 cats was obtained from 1,255,130 cats under primary care dur-ing 2019 within VetCompass, an epidemiological research programme based on anonymised primary care veterinary clinical records. All disorders recorded during 2019 were extracted and reported, and associations with sex and age were examined.

Results - The most prevalent disorders were periodontal disease (n = 2780 [15.2%], 95% confidence interval [CI] 14.72–15.76), obesity (n = 2114 [11.6%], 95% CI 11.12–12.06) and dental disease (n = 1502 [8.2%], 95% CI 7.84–8.64). Compared with male cats, females had an increased prevalence of poor quality of life, postoperative complications and hyperthyroidism, among others. Male cats had a higher prevalence of periodontal disease, road traffic accident (RTA) and obesity. Younger cats (<8 years) had an increased prevalence of cat bite abscess, flea infestation and RTA, while older cats (⍰8 years) had increased prevalence of lameness, cystitis and dental disease, among others.

Conclusions and relevance - These findings suggest that the veterinary profession needs to engage more effectively in informing owners on common preventable disorders (ie, obesity and dental disease). This new information can contribute to more targeted health surveillance and more effective veterinary interventions to promote improved health and welfare in pet cats. Large-scale collection and analysis of anonymised veterinary clinical records offer an important clinical resource for research.

■ Manifestations of hypertensive encephalopathy in cats. Moretto L, Beckmann K, Günther C, et al. Journal of Feline Medicine and Surgery. 2023;25(2). doi:10.1177/1098612X231153357

Objectives - Hypertensive encephalopathy in cats is an important entity but is underestimated in clinical practice. This could be explained, in part, by non-specific clinical signs. The objective of this study was to characterise the clinical manifestations of hypertensive encephalopathy in cats.

Methods - Cats with systemic hypertension (SHT) recognised by routine screening, associated with underlying predisposing disease or a clinical presentation suggestive of SHT (neurological or non-neurological), were prospectively enrolled over a 2-year period. Confirmation of SHT was based on at least two sets of measurements of systolic blood pressure >160 mmHg by Doppler sphygmomanometry.

Results - Fifty-six hypertensive cats with a median age of 16.5 years were identified; 31 had neurological signs. In 16/31 cats, neurological abnormalities were the primary complaint. The other 15 cats were first presented to the medicine or ophthalmology service, and neurological disease was recognised based on the cat's history. The most common neurological signs were ataxia, various manifestations of seizures and altered behaviour. Individual cats also showed paresis, pleurothotonus, cervical ventroflexion, stupor and facial nerve paralysis. In 28/30 cats, retinal lesions were detected. Of these 28 cats, six presented with a primary complaint of visual deficits, and neurological signs were not the primary complaint; nine presented with non-specific medical issues, without suspicion of SHT-induced organ dam-age; in 13 cats, neurological issues were the primary complaint, and fundic abnormalities were detected subsequently.

Conclusions and relevance - SHT is common in older cats and the brain is an important target organ; however, neurological deficits are commonly ignored in cats with SHT. Gait abnormalities, (partial) seizures and even mild behavioural changes should prompt clinicians to consider the presence of SHT. A fundic examination in cats with suspected hypertensive encephalopathy is a sensitive test to support the diagnosis.

■ Does preappointment gabapentin affect neurological examination findings? A prospective, randomised and blinded study in healthy cats. de Azevedo AF, Veronezi TM, Zardo IL, et al. Journal of Feline Medicine and Surgery. 2023;25(2). doi:10.1177/1098612X221149384

Objectives - The aim of this study was to evaluate the influence of a preappointment oral dose of gabapentin on the neurological examination of cats.

Methods - A prospective, randomised and blinded clinical trial was conducted in 35 client-owned healthy cats. Cats were scheduled for two appointments and randomly assigned to receive either a placebo or a

100 mg gabapentin capsule prior to the second veterinary visit. A neurological examination was performed during each visit, and the results were compared between groups. Normal/abnormal response rates for each test were based on the number of cats that allowed the test to be performed.

Results - Gabapentin was administered to 17 cats. Gait and postural reactions were significantly affected in the gabapentin group. Comparing the gabapentin with the placebo groups, proprioceptive ataxia was identified in 4/17 (23.5%) vs 0/18 cats (P = 0.0288); paw placement deficits were seen in 10/11 (90.9%) vs 1/4 (25%) cats; table tactile placement deficits were identified in 13/17 (76.5%) vs 0/18 cats (P <0.0001); hopping deficits were seen in 5/17 (29.4%) vs 0/16 cats (P = 0.0185); and abnormalities on wheelbarrowing and extensor postural thrust were reported in 5/17 (29.4%) vs 0/18 cats (P = 0.0129). These results had no correlation with age or dose/kg received. No significant difference was noted in the assessment of level and content of consciousness, posture, cranial nerves and spinal nerves. No significant differences were noted in test compliance or examination duration.

Conclusions and relevance - Gabapentin significantly altered gait analyses and postural reactions in this group of healthy cats. The administration of gabapentin could lead to false–positive results and, pos-sibly, an incorrect identification of neurological lesions. In contrast, gabapentin did not impair the as-sessment of cranial nerves and spinal reflexes, which can be assessed in patients receiving the drug.

■ Periodontal disease in cats under primary veterinary care in the UK: frequency and risk factors. O'Neill DG, Blenkarn A, Brodbelt DC, Church DB, Freeman A. Journal of Feline Medicine and Surgery. 2023;25(3). doi:10.1177/1098612X231158154

Objectives - Periodontal disease is a multifactorial inflammatory disease that can have major welfare implications in cats. This study aimed to report the frequency and demographic risk factors of periodontal disease and to explore associations with common comorbid disorders in cats in the UK.

Methods - The study included a random sample of 18,249 cats obtained from 1,255,130 cats under primary care during 2019 from clinics participating in the VetCompass programme. All disorders record-ed during 2019 were extracted and reported. Risk factor and comorbid disorder analysis used multivari-able logistic regression modelling.

Results - Periodontal disease had a 1-year period prevalence of 15.2% (95% confidence interval [CI] 14.72–15.76). Breeds with the highest prevalence included Siamese (18.7%, 95% CI 12.24–26.72) and Maine Coon (16.7%, 95% CI 11.37–23.18). The median age of cats with periodontal disease (9.47 years, interquartile range [IQR] 5.96–12.97) was higher than for cats without periodontal disease (4.94 years, IQR 1.95–9.51; P <0.001). Increasing adult body weight, increasing age and sex–neuter status were significantly associated with rising odds of periodontal disease. Cats with periodontal disease had a higher median count of comorbid disorders per individual cat (3, IQR 2–4, range 1–14) than cats without periodontal disease (1, IQR 0–2, range 0–15; P <0.001). Cats with periodontal disease had 1.79 times the odds (95% CI 1.62–1.99, P <0.001) of diagnosis with at least one comorbid disorder disease than cats without periodontal disease.

Conclusions and relevance - Periodontal disease is the most common specific diagnosis in cats and is confirmed as a leading health issue in cats. Ageing is identified as the strongest predictor of periodontal disease risk in cats, suggesting the potential for increasing health gains from emphasis on dental care and health in cats as they age. The study offers evidence on a close link between periodontal disease and reduced overall health in cats.

■ Prevalence of persistent hypertension and situational hypertension in a population of elderly cats in The Netherlands. Knies M, Kooistra HS, Teske E. Journal of Feline Medicine and Surgery. 2023;25(6). doi:10.1177/1098612X231172629

Objectives - Systemic arterial hypertension is increasingly recognised and can have serious adverse consequences in cats. Unfortunately, the act of measuring blood pressure itself may cause an increase in blood pressure, known as situational hypertension. It is currently unknown how often this phenomenon occurs. The aim of this study was to evaluate the prevalence of persistent hypertension and situational hypertension in an elderly population of cats in a first-opinion clinic and to assess which factors were associated with systolic hypertension.

Methods - In this prospective study, systolic blood pressure was measured in 185 cats aged 10 years using the Doppler sphygmomanometry method according to the recommendations of the American College of Veterinary Internal Medicine consensus statement. Age, sex, body weight, body condition score, position during blood pressure measurement and apparent stress level were assessed. If a systolic blood pressure >160 mmHg was found, measurements were repeated to evaluate if persistent hypertension or situational hypertension was present. The first set of blood pressure measurements was used for all the statistical analyses.

Results - The median systolic blood pressure for this population was 140 mmHg. The prevalence of persistent hypertension was at least 14.6%, and situational hypertension at least 5.4%. Factors significantly associated with hypertension were age, higher apparent stress levels and a sitting position during measurement. Sex, body weight or body condition score did not significantly influence systolic blood pressure.

Conclusions and relevance - Both persistent hypertension and situational hypertension are common in elderly cats. There are no reliable parameters to distinguish between the two, underlining the im-portance of a standard protocol and repeating measurements during a follow-up visit when hypertension is found. Age, demeanour and body position during blood pressure measurement influenced blood pressure in this population of elderly cats.

■ Retrospective study of canine blood xenotransfusion compared with type-matched feline blood allotransfusion to cats: indications, effectiveness, limitations and adverse effects. Elkin M, Amichay-Menashe N, Segev G, et al. Journal of Feline Medicine and Surgery. 2023;25(7). doi:10.1177/1098612X231183930

Objectives - Xenotransfusion is the transfusion of blood from one species to another. With varying availability of allogenic feline blood (AFB) and in emergency conditions, circumstances occur when ca-nine blood is transfused to cats. This study aimed to characterise the indications, effectiveness, limitations, and acute and late transfusion-related adverse effects of canine blood xenotransfusion compared with matched AFB to anaemic cats, and their survival and longer-term outcome.

Methods - This retrospective study (2013–2020) examined cats receiving canine blood xenotransfusions or AFB.

Results - The study included 311 cats (xenotransfusion [X-group], n = 105; allotransfusion [A-group], n = 206). Xenotransfusion was more frequent among cats sustaining haemorrhage than in those with haemolysis (P <0.01) or hypoproliferative anaemia (P <0.001). Financial constraints were the most common reason to elect xenotransfusion (49%). The post-transfusion mean packed cell volume was higher (P <0.001) in the X-group (22%) compared with the A-group (18%) and also higher (P <0.001) at 48–96 h post-transfusion (23% vs 18%, respectively). Transfusion-related adverse effects (TRAEs) were more frequent (P = 0.001) in the X-group (37.1%) compared with the A-group (19.4%), as were delayed haemolytic transfusion reactions (85% vs 42.5%, respectively; P <0.001). Acute transfusion reactions (ATRs) were more frequent (P <0.001) in the A-group (60%) compared with the X-group (20%). TRAEs were unassoci-ated with survival to discharge. The survival to discharge rate of the X-group (55%) was lower (P = 0.007) than in the A-group (73%), while post-discharge survival rates to 30 days of cats surviving to discharge were 90% and 88%, respectively (P = 0.85).

Conclusions and relevance - Canine blood xenotransfusions to cats might save lives in emergency conditions when AFB is unavailable or blood typing is infeasible. The survival to discharge rate of the X-group was lower than that of the A-group. The longer-term survival rate of cats administered xenotransfusions and surviving to discharge from the hospital was good.

■ Long-term follow-up of cats in complete remission after treatment of feline infectious peritonitis with oral GS-441524. Zwicklbauer K, Krentz D, Bergmann M, et al. Journal of Feline Medicine and Surgery. 2023;25(8). doi:10.1177/1098612X231183250

Objectives - Feline infectious peritonitis (FIP), a common disease in cats caused by feline coronavirus (FCoV), is usually fatal once clinical signs appear. Successful treatment of FIP with oral GS-441524 for 84 days was demonstrated recently by this research group. The aim of this study was to evaluate the long-term outcome in these cats.

Methods - A total of 18 successfully treated cats were followed for up to 1 year after treatment initiation (9 months after completion of the antiviral treatment). Follow-up examinations were performed at 12-week intervals, including physical examination, haematology, serum biochemistry, abdominal and tho-racic ultrasound, FCoV ribonucleic acid (RNA) loads in blood and faeces by reverse transciptase-quantitative PCR and anti-FCoV antibody titres by indirect immunofluorescence assay.

Results - Follow-up data were available from 18 cats in week 24, from 15 cats in week 36 and from 14 cats in week 48 (after the start of treatment), respectively. Laboratory parameters remained stable after the end of the treatment, with undetectable blood viral loads (in all but one cat on one occasion). Recurrence of faecal FCoV shedding was detected in five cats. In four cats, an intermediate short-term rise in anti-FCoV antibody titres was detected. In total, 12 cats showed abdominal lymphadenomegaly during the follow-up period; four of them continuously during the treatment and follow-up period. Two cats developed mild neurological signs, compatible with feline hyperaesthesia syndrome, in weeks 36 and 48, respectively; however, FCoV RNA remained undetectable in blood and faeces, and no increase in anti-FCoV antibody titres was observed in these two cats, and the signs resolved.

Conclusions and relevance - Treatment with GS-441524 proved to be effective against FIP in both the short term as well as the long term, with no confirmed relapse during the 1-year follow-up period. Whether delayed neurological signs could be a long-term adverse effect of the treatment or associated with a ' long FIP syndrome' needs to be further evaluated.

■ Retrospective study and outcome of 307 cats with feline infectious peritonitis treated with legally sourced veterinary compounded preparations of remdesivir and GS-441524 (2020–2022). Taylor SS, Coggins S, Barker EN, et al. Journal of Feline Medicine and Surgery. 2023;25(9). doi:10.1177/1098612X231194460

Objectives - Feline infectious peritonitis (FIP) is a serious disease that arises due to feline coronavirus infection. The nucleoside analogues remdesivir and GS-441524 can be effective in its treatment, but most studies have used unregulated products of unknown composition. The aim of the present study was to describe the treatment of FIP using legally sourced veterinary-prescribed regulated veterinary compounded products containing known amounts of remdesivir (injectable) or GS-441524 (oral tablets).

Methods - Cats were recruited via email advice services, product sales contacts and study publicity. Cats were excluded if they were deemed unlikely to have FIP, were not treated exclusively with the veterinary compounded products, or if there was a lack of cat and/or treatment (including response) data. Ex-tensive cat and treatment data were collected.

Results - Among the 307 cats recruited, the predominant type of FIP was most commonly abdominal effusive (49.5%) and then neurological (14.3%). Three treatment protocols were used; remdesivir alone (33.9%), remdesivir followed by GS-441524 (55.7%) and GS-441524 alone (10.4%). The median (range) initial treatment period duration and longest follow-up time point after starting treatment were 84 (1–330) days and 248 (1–814) days, respectively. The most common side effect was injection pain (in 47.8% of those given subcutaneous remdesivir). Of the 307 cats, 33 (10.8%) relapsed, 15 (45.5%) during and 18 (54.5%) after the initial treatment period. At the longest follow-up time point after completion of the initial treatment period, 84.4% of cats were alive. The cats achieving a complete response within 30 days of starting treatment were significantly more likely to be alive at the end of the initial treatment period than those cats that did not.

Conclusions and relevance - Legally sourced remdesivir and GS-441524 products, either alone or used sequentially, were very effective in the treatment of FIP in this group of cats. Variable protocols precluded statistical comparison of treatment regimens.

■ Effect of audible static on blood pressure measurement by Doppler ultrasonic sphygmomanometry in cats. Uematsu S, Summers S, Keys D, Quimby J. Journal of Feline Medicine and Surgery. 2023;25(9). doi:10.1177/1098612X231197084

Objectives - The aim of the present study was to determine whether the use of headphones to eliminate audible static during Doppler ultrasonic sphygmomanometry affects blood pressure (BP) measurement in

conscious young adult (aged 1–6 years) and mature adult/senior (aged ≥7 years) cats.

Methods - A randomised crossover study was conducted. Healthy client-owned cats (>1 year) were enrolled. Blood pressure measurements were obtained twice, 14 days apart, with or without the use of headphones worn by a veterinarian. A fear, anxiety and stress (FAS) score (0 = relaxed; 4 = severe signs) was recorded. A linear mixed-effects model was used to compare the effect of wearing headphones on BP measurement.

Results - In total, 18 young adult and 14 mature adult and senior cats with a median age of 5 years (range 1–14 years) were enrolled. Of the cats, 47% (15/32) had an average BP measurement that was at least 10 mmHg higher when not using headphones compared with using headphones, of which a major-ity (11/15, 73%) were young adult cats. The average BP measurement was not different when using headphones compared with when not using headphones (mean difference −7 mmHg; 95% confidence interval −14 to 0.6; P = 0.07). When compared within age groups, the average BP measurement taken when using headphones (125 ± 15 mmHg) was lower compared with the measurement taken when not using headphones (137 ± 17 mmHg) in young adult cats (P = 0.02).

Conclusions and relevance - The reduction in the average BP measurement with the use of headphones suggests this method may be helpful in reducing situational hypertension, particularly in young adult cats. Our findings also highlight the importance of consistent use of headphones when comparing serial measurements in a cat.

■ Cat-Friendly Practice improves feline visits, resulting in increased laboratory testing and increased diagnosis of certain common feline conditions. St Denis K, Saffire A, Michael H, Drake C, Burton W. Journal of Feline Medicine and Surgery. 2023;25(11). doi:10.1177/1098612X231204199

Objectives - Cat-Friendly Practices (CFPs) were compared with non-CFP control practices to determine whether CFPs had an increased proportion of clinical visits, number of visits per cat per year and inclusion of diagnostic testing. To measure diagnostic testing behavior, the numbers and types of tests analyzed and clinically relevant findings were compared.

Methods - In a retrospective analysis comparing CFPs and non-CFPs, clinic financial data and associated diagnostic tests from a commercial laboratory for 2018 and 2021 were analysed. Data were stratified based on visit type and included revenue per visit type, revenue per patient, the number of visits per year and the proportion of visits that included diagnostic testing. Analyses of clinical findings for June 2021 to June 2022 examined clinical findings associated with biochemistry, complete blood count, urinalysis and thyroid testing categories at diagnostic patient visits, the proportion of clinical visits in which each finding was observed, the volume of testing categories as a proportion of clinical visits, and the proportion of diagnostic visits with one, two, three or four testing categories.

Results - The average revenue per feline visit and visits that included diagnostic testing were higher at CFPs. There was no difference in the proportion of wellness visits; however, CFPs had higher mean visits per year per patient. CFPs performed diagnostic testing at 12% more clinical visits, and had higher annual revenue per feline patient for all visits and for visits including diagnostic testing. CFPs had higher odds of patients having >1 visit that included bloodwork or urinalysis. They were more likely to include all four testing categories and less likely to include only one category at a diagnostic visit. CFPs identified a higher number of cats with clinical findings.

Conclusions and relevance - CFPs exhibited unique diagnostic testing behavior by performing more diagnostic tests more frequently and identifying a higher number of cats with abnormal findings.

■ Incidence of feline idiopathic cystitis and urethral obstruction during COVID-19 human movement restrictions in Queensland, Australia. Jackson KA, Collins KE, Kim TY, Donaldson RE. Journal of Feline Medicine and Surgery. 2023;25(12). doi:10.1177/1098612X231214931

Objectives - Feline idiopathic cystitis (FIC) and urethral obstruction (UO) are commonly linked to increased stress. The influence of human movement restrictions on their incidence remains undetermined. FIC with

or without UO is associated with environmental stress factors. The severe acute respiratory syndrome coronavirus 2 (COVID-19) pandemic restricted human movement and working behaviours. It is unknown if these restrictions increased the risk of FIC or UO in cats.

Methods - Total cat emergency accessions and transfers between 8 February 2019 and 8 February 2021 at two private hospitals were retrospectively reviewed. Cats were included in the FIC group if they presented with lower urinary tract signs and supporting urinalysis, and were included in the UO group if they presented with UO. Cats with current urinary tract infection or previous FIC or UO were excluded. Groups were considered 'pre-COVID-19' between February 2019 and 2020 and 'COVID-19' between February 2020 and 2021. Cases of FIC and UO were compared between COVID-19 and pre-COVID-19 using Fisher's exact test and relative risk (RR) calculations.

Results - The pre-COVID-19 incidence of FIC was 4.3% (63/1477, 95% confidence interval [CI] 0.0332–0.053), non-obstructive FIC was 1.4% (20/1477, 95% CI 0.008–0.020) and UO was 2.9% (43/1477, 95% CI 0.020–0.038). One cat was excluded as obstruction occurred during hospitalisation. The COVID-19 incidence of FIC was 5.4% (113/2081, 95% CI 0.044–0.64), non-obstructive FIC was 2.1% (70/2081, 95% CI 0.014–0.027) and UO was 3.4% (70/2081, 95% CI 0.026–0.042). The risk of non-obstructive FIC (P = 0.122; RR 0.652, 95% CI 0.387–1.096), UO (P = 0.382; RR 0.839, 95% CI 0.577–1.22) or either (P = 0.098; RR 0.773, 95% CI 0.572–1.044) was not significantly higher in the COVID-19 period than the pre-COVID-19 period.

Conclusions and relevance - No clear association between COVID-19 movement restrictions and the incidence of UO or non-obstructive FIC was found within this retrospective population.

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Feline Chronic Upper Respiratory Tract Diseases

Acute Rhinitis and Upper Respiratory Infections

Worldwide, the most common infectious causes of acute upper respiratory tract disease in cats are feline calicivirus (FCV), feline herpesvirus-1 (FHV-1), *Chlamydia felis, Mycoplasma felis*, and *Bordetella bronchiseptica*.[1–8] These agents can cause an overlapping spectrum of clinical signs, including conjunctivitis, rhinitis, and tracheobronchitis, with viral agents generally being most common.[1–8]

Results of diagnostic testing (for example syndromic respiratory polymerase chain reaction - PCR - panels for the above organisms) have to be interpreted carefully as all the organisms can be identified in healthy as well as diseased cats[9], but the presence of typical clinical signs in combination with a positive test result is usually sufficient for a presumptive diagnosis.

Doxycycline is regarded as the usual treatment of choice for *Chlamydia felis*, *Mycoplasma felis*, and *Bordetella bronchiseptica* infections and is a suitable empirical choice of antimicrobial, being recommended by both European and International guidelines.[9–11] With the more common FCV or FHV-1 infections, supportive therapy is indicated (fluid therapy, steam inhalation or nebulisation, cleaning of nares, nutritional support) along with the potential use of antiviral agents such as famciclovir and/or interferons.9,10 Many cats may have mixed infections with these agents while in others, acute viral upper respiratory disease may lead to secondary opportunistic bacterial infection with organisms that are part of the normal respiratory flora. Where opportunistic bacterial infection is evident during acute disease (purulent or mucopurulent discharge), doxycycline is again a suitable empirical antimicrobial choice.[9–11] The use of other agents, such as synthetic penicillins or fluoroquinolones, should be reserved for cases where doxycycline cannot be used or is ineffective, and they should be used based on culture and sensitivity testing.[10] Antimicrobial therapy is generally restricted to 7-10 days, although with *Chlamydia felis*, a four-week course is recommended.[9,10]

Feline Chronic Idiopathic Rhinosinusitis

Although diagnosis and management of acute upper respiratory tract infections is usually relatively straightforward, chronic disease can be more problematic. A wide variety of diseases can cause chronic upper respiratory signs and nasal discharge[9,12,13], but in the majority of studies, feline chronic idiopathic rhinosinusitis (FCIR) and neoplasia have been the two most common diseases diagnosed in cats with signs of chronic nasal disease.[14–20]

FCIR is a relatively common reason for presentation of cats in veterinary practice, often with subsequent antimicrobial therapy being prescribed. However, many aspects of the condition remain poorly understood, including optimal management strategies.

Clinical signs

Signs of FICR typically occur in adult cats but can develop in cats of virtually any age, with no recognised sex or breed predisposition.[14,16,21] Clinical signs include chronic sneezing, serous to mucopurulent nasal discharge (which can be unilateral, although bilateral is more common), stertorous breathing, reduced nasal airflow, occasionally open mouth breathing, and rarely epistaxis.[14,22,23] Inspiratory dyspnoea may be present depending on the degree of nasal congestion and obstruction, and appetite is commonly decreased due to the combined effects of a loss of smell and the presence of dyspnoea.[23]

Clinical signs are often present for months to years, may vary in severity and may show temporary improvement with antimicrobial therapy.[9,23,24] In some cats with FICR, a history of a prior episode of acute upper respiratory tract disease is evident, often assumed to be FHV-1, but this is not always found.[9,23,24]

Aetiopathogenesis

The underlying cause of FICR remains uncertain, and indeed it is a condition that might have multiple underlying aetiologies. The history of a prior episode of acute upper respiratory infection in some affected cats suggests that FICR might sometimes be a chronic sequela to this.[9,24] One small study failed to identify a higher prevalence of FHV-1 in cats with FICR compared with controls[25], but prior (rather than active) FHV-1 infection

could still be implicated. Natural infection with FHV-1 appears to frequently induce severe generalised rhinitis, mucosal ulceration, bony remodelling of turbinates (resorption and sometimes proliferation), and fibroplasia.[8] These findings are also consistent with experimental studies that demonstrated FHV-1 infection in cats results in virus replication in both the nasal epithelium and in the turbinate bones, with epithelial ulceration and squamous metaplasia along with necrosis and resorption of turbinate bones.[26,27] Clearly, in at least some cats, acute infection with FHV-1 will lead to permanent changes to the nasal turbinates and epithelium, and it has been suggested this may result in an increased susceptibility to chronic opportunistic bacterial infection.[9,24]

However, a clear history of acute upper respiratory infection is lacking in many cats that develop FICR, and although that does not preclude prior FHV-1 infection, it is likely that other immunopathological processes may be involved in some cats.[9,24] Interestingly, there is evidence that cats which develop FICR at a younger age (less than two years old) may develop more severe disease than when it develops in older cats.[28] However, further research is required to define the role of FHV-1 in cats with FICR and to investigate other underlying causes, such as immune responses to allergens, other infectious agents, and toxic or irritating environmental factors (dust or particulate matter).

Diagnosis and Differential Diagnoses

It is important to differentiate FICR from other causes of chronic nasal disease, especially as the diagnosis of FICR is largely one of exclusion.[9,24] Other differential diagnoses include neoplasia, nasal or nasopharyngeal polyps, foreign bodies, dental disease, fungal infections, allergic rhinitis and nasopharyngeal stenosis.9,12,13 Cats with nasal neoplasia tend to be older and show a shorter history of clinical signs than cats with inflammatory rhinitis[16,17,19,20], but differentiation of disease based on history, presenting signs, and even diagnostic imaging findings can be problematic.[15,16,19–21]

Investigation of cats with chronic nasal disease thus requires the integration of the history and clinical examination with further investigations, potentially including diagnostic imaging, normograde and retrograde rhinoscopy, cytology of nasal flushings or brushings, histopathology of biopsies, culture or PCR testing, and other laboratory investigations.[12,29,30]

If investigations have failed to obtain a specific underlying diagnosis in cats with chronic nasal disease, ultimately collection of nasal biopsies (ideally guided by rhinoscopic findings) are valuable, and help to distinguish between FICR and neoplasia.[17] Histopathology of biopsy samples has been shown to be more reliable than brush cytology[14,31], and with inflammatory disease, the biopsies are usually classified according to the major inflammatory cell infiltrate. Occasional cases are found where eosinophils predominate[15,20], which could potentially reflect an underlying allergic rhinitis, but in most cases, it is either neutrophilic or lymphocytic-plasmacytic infiltrates that dominate, and in many cases, a mix of the two.[14,20,21] Whether differences in the histopathological findings and predominant inflammatory infiltrate represent differences in underlying aetiology or simply differences in sampling sites and/or the degree of secondary infection present is unknown.[24]

Bacterial culture of nasal biopsies or nasal swabs is sometimes performed in the investigation of chronic rhinitis. Bacteria are cultured more frequently from cats with FICR than healthy cats25, but although many may be potentially pathogenic, the significance of any individual bacteria isolated is often uncertain. Commonly reported bacteria isolated on culture are shown in Table 114–[16,18,25,28,32,33] and, in addition, isolation of Mycoplasma spp. has often been reported. Case reports exist of cats where specific pathogens have been identified which were thought to have had an important role in FICR including Haemophilus spp.[34], Nocardia spp.[35], E. coli and Actinomyces spp.[36], Corynebacterium ulcerans[37], and a mucoid variant of Pseudomonas aeruginosa.[38]

Although a range of potentially pathogenic aerobic and anaerobic bacteria can be cultured from cases of FICR, and they are more readily cultured from diseased than healthy cats, culture results still have to be interpreted carefully and, at least in most cases, the bacterial involvement is likely to be secondary (as a result of disturbances to the normal mucosal integrity in the nasal cavity) rather than a primary cause.[22,24]

Table 1: Bacteria commonly isolated in cases of FICR[14–16,18,25,28,32,33]

	Aerobic	Anaerobic
Gram positive	*Staphylococcus spp.* *Streptococcus spp.* *Streptococcus virridans* *Corynebacterium ulcerans* *Bacillus spp.*	*Actinomyces spp.* *Peptostreptococcus spp.*
Gram negative	*Pseudomonas aeruginosa* *Escherichia coli* *Pasteurella multocida* *Serratia spp.* *Klebsiella spp.* *Proteus spp.* *Bordetella bronchiseptica* *Acinetobacter spp.* *Enterobacter spp.*	*Bacteroides spp.* *Fusobacterium spp.*

The nasal cavity and sinuses are not sterile but inhabited by a well-adapted variety of mucosal inhabitants, many of them not detectable by traditional cultivation methods.39,40 Although little research has been done on the upper respiratory microbiome in cats, age and environment appear to play an important role40, and one recent study found no major differences in the microbiome diversity between cats with FICR and control cats from the same environments, but differences in certain lineages were evident.39

Because of the presence of the physiological microbiome in the nasal cavity, and because of the difficulty in interpreting culture results, routine sampling for bacterial culture is not indicated in all cats with FICR, but may be helpful in cats that show intractable disease or those that do not respond to conventional therapy.

Therapeutic Options

The management of FICR is problematic, partly as a result of the current poor understanding of the underlying pathogenesis of the disease but also because structural changes to the turbinates and epithelium appear to be common and are likely to be irreversible. Therapy is, therefore, generally aimed at controlling clinical signs rather than curing the disease.[24] However, there is also a lack of good prospective studies evaluating different therapeutic approaches, so a good evidence base for therapeutic recommendations is generally lacking, and more research in this area is needed.

Several approaches are worthy of consideration, and generally, a combination of different options is likely to produce the best results[24], and it is also important to ensure good hydration and nutrition are maintained in affected cats:

Nasal flushing[22,24]

Periodic flushing of the nasal cavities under general anaesthesia appears helpful, especially in cats that develop severe nasal congestion with viscous mucopurulent discharge. This may both relieve nasal obstruction and also permit more effective sinus drainage, and if it is found to be beneficial can be repeated as required.

Use of nebulisers, steam inhalation or saline nasal drops[12,22,24]

The use of nebulisers (typically using saline) or steam inhalation after nasal flushing to try to reduce the viscosity of nasal secretions and maintain ciliary action. Although there are no studies to confirm efficacy, using a nebuliser for 15 minutes two or three times daily is recommended. An alternative approach might be to apply saline drops to the nose several times daily, which may be tolerated by some cats.

Mucolytics and decongestants[24]

Topical nasal decongestants such as ephedrine, oxymetazoline, and phenylepherine are only valuable in acute nasal congestion as their prolonged use is associated with rebound congestion and should therefore be avoid in cats with FCIR.

Bromhexine is a veterinary-licensed mucolytic, but its effect on the nasal epithelium and efficacy as part of a multimodal approach to managing FICR is unknown.

Antiviral agents[12,22,24]

Famciclovir has proven efficacy against FHV-1, and interferons have been used in the management of acute respiratory viral infections in cats. However, their value in cases of FICR has not been established, and unless there is evidence of an active infection with FHV-1 or FCV, their use is unlikely to be of any benefit.[12,24]

Glucocorticoids[9,12,12,24]

Glucocorticoids are used frequently in the clinical management of FICR16, but there is a lack of studies documenting their effectiveness. Their anti-inflammatory effect may be clinically valuable in some cases of FICR[12,24], perhaps especially where lymphoplasmacytic inflammation is documented.[13] It has also been suggested that higher immunosuppressive doses may be valuable in some cases.[9,22] However, their use could also be detrimental in the face of viral or secondary bacterial involvement[22,24], so some caution and careful monitoring is required. If therapy is tried, using inhaled glucocorticoids or nasal drops may be preferable to systemic therapy.[9]

Non-steroidal anti-inflammatory drugs[13,22–24]

There have been reports of the successful use of non-steroidal anti-inflammatory drugs to help manage FICR inflammation[13,22,24], and they may also be helpful in managing pain and discomfort. Trial therapy may be warranted in appropriate cases, but this is another area where good prospective studies would be highly valuable to inform future therapeutic approaches.

Other medical therapies[9,12,22,24]

Other drug therapies that have been suggested for use in cats with FICR include anti-histamine therapy (especially where an allergic component is suspected), ciclosporin, leukotriene inhibitors and intranasal maropitant. However, studies demonstrating the efficacy of these approaches are lacking.

Surgery[12,13,22,24]

In some cats with severe disease, surgical debridement of the nasal cavity and frontal sinuses has been described. Although this can be helpful in some cats, it is not routinely undertaken and is not without potential complications.

Antimicrobial therapy[9,12,22,24]

Antimicrobial therapy is probably the single most common treatment approach to cats with FICR[16,32] and at least anecdotally, many cats will experience temporary improvement in their disease as a result. However, relapses and recurrent episodes of disease are normally encountered.

It is recommended that empirical antimicrobial therapy should use first-line agents with good penetration of bone and cartilage and that cover both aerobic and anaerobic bacteria.10 European and International guidelines suggest that doxycycline is an excellent first choice, with amoxicillin, amoxicillin-clavulanate, and clindamycin being alternatives.[10,11,41]

The optimum treatment duration with antimicrobials is unknown, and prolonged courses (6-8 weeks or more) have been recommended[12,22], at least partly on the basis that bacterial osteomyelitis affecting the turbinate bones is likely to be present in many cases.[13] However, whether such prolonged courses are necessary or desirable, especially as prolonged antimicrobial use may select for more resistant organisms such as Pseudomonas spp.[24], is not known as no detailed or comparative studies have been performed.[11] More judicious use of shorter courses of antimicrobials (maintained while clinical improvement is still occurring) combined with other control measures (nutrition, hydration, nasal flushing, the use of nebulisers, steam or

nasal saline drops, and the use of anti-inflammatory agents) may therefore be preferable.[11]

If clinical response is inadequate, then culture and sensitivity testing of appropriate material is recommended.10 Although limited data is available, it appears that the culture of nasal flushings may be better than the culture of biopsy material[33], and this may be used to identify the bacteria involved and select appropriate therapy. As anaerobic bacteria may be involved, it is important to submit material for culture in an appropriate transport medium if immediate culture is not being performed.

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ALTIUS

Preventive Healthcare for Cats - What, Why and When?

Cats have become the most popular household pet in many countries, and most owners consider their cats to be equivalent to family members. Despite their popularity and the affection held for cats, they still receive far less veterinary care than dogs, and preventive care is especially lacking. Data suggests that dogs are generally taken to the veterinarian more than twice as often as cats, and up to 50% or more of cats may not receive an annual examination.

The Benefits of Feline Preventive Care

Cats especially need good preventive healthcare because they hide signs of pain and disease, a protective mechanism assumed to be a result of predator avoidance and survival in the wild. While most cat owners are willing to seek more veterinary preventive healthcare when they understand its importance, achieving optimum care requires engagement both from the veterinary healthcare team as well as the owner.

- **The three key elements of a preventive healthcare program are:**
    - Prevention of disease
    - Early detection and management of disease
    - Monitoring and management of existing disease
- **Barriers to feline preventive care**

Two of the biggest hurdles to cats receiving adequate veterinary care are that:

- Firstly, veterinary visits for cats and cat owners are often highly stressful, and this is a major barrier to owners being willing to take cats back to the clinic unless urgent veterinary attention is needed. Clinics need to address this by creating more feline-friendly environments and communicating well with owners. This approach is exemplified by the ISFM Cat-Friendly Clinic programme (www.catfriendlyclinic.org).
- Secondly, many owners are unaware of the medical needs of their cat and the importance of feline preventive care. Adult cats frequently have diseases that are overlooked, such as obesity, dental disease, and behavior problems. Lack of care impacts both quality of life, morbidity and longevity.

- **Studies from the UK and elsewhere suggest that:**
    - Preventive healthcare consultations make up more than 1/3 of small animal consultations
    - Owners often perceive no clear recommendation from the clinic regarding preventive healthcare consultations
    - The typical length of a preventive healthcare consultation is just 10-15 minutes
    - Standardised 'checklists' for preventive healthcare consultations are almost never used
    - Owners often perceive that the preventive healthcare consultation is focussed on vaccination
    - Owners are rarely given any information on what to expect in a preventive healthcare consultation
    - Owners often feel the consultation is too rushed

Even when problems are identified during preventive healthcare consultations, or where gaps in preventive measures are identified (e.g., inadequate parasite control) there are often unclear or inadequate veterinary recommendations to owners, and follow-up visits are rarely used.

- **The opportunities**

From published data it is clear that in general, preventive healthcare consultations are not perceived as a priority in veterinary clinics and there is an urgent need for both owners and veterinarians to engage better in preventive healthcare.

There is a huge opportunity to improve feline preventive care and to increase both the number of feline patients and the frequency of feline veterinary visits to clinics. Partly, at least, because cats are 'masters of disguise' and

hide signs of disease, many studies have also identified that large number of otherwise unidentified diseases that can be found in cats during routine preventive healthcare visits, especially in middle-age cats and older.

With younger cats, the focus of preventive healthcare visits is likely to be aimed more at true prevention of disease, establishing good life-long patterns for vaccination and parasite control, and considering issues such as identification (microchipping), lifestyle and environment, nutrition, preventing problem behaviours developing and financial planning for future veterinary and healthcare costs. As cats get older, additional investigations become more important, such as blood pressure assessment, regular dental assessment, reviewing weight and body condition scores, and undertaking urine and/or blood tests to screen for diseases such as CKD. In cats with existing diseases or in elderly cats, evaluating pain and quality of life is also an important consideration that should not be overlooked.

Excellent communication between the veterinarian, the whole veterinary team, and the owner is an essential part of preventive healthcare. The ability to interact well with the cat, and the ability to engage effectively with the owner about the needs of the cat drives the owner's perceptions of the value and quality of services provided and enhances long-term compliance. Importantly, though, good preventive healthcare consultations should incorporate the concept of 'concordance', where empathetic communication with the owner is central, and the owner is involved and plays a critical part in deciding what is undertaken – agreeing together with the veterinarian what needs to be addressed and how that will be approached. It is highly valuable to have a 'gold standard' checklist for preventive healthcare measures driven by the life-stage of the cat, but this then needs to be adapted during discussions with the owner to fit their needs and desires. If done properly, this will lead to much better long-term outcomes.

- **Taking a new approach**

Seizing the opportunity that preventive healthcare examinations offer and providing proper life-long care for our feline patients requires a different approach to what has traditionally occurred in veterinary practice.

Crucially, we cannot expect owners to value preventive healthcare consultations unless we truly value them and invest in them as well. If we see a 'routine vaccination' visit as a way to make up time during a busy consultation period, the battle has already been lost! We need to see these appointments as vital for maintaining the health and welfare of the cats committed to our care.

- **Three aspects are going to be crucially important in transforming the approach to preventive healthcare:**
    - Motivation – this needs to be a conscious decision across the whole clinic and involving all the staff, recognising the importance of preventive healthcare and being determined to do things differently and to provide true quality of care. Owners need to be motivated too, but that will never happen unless the veterinary team are motivated, and pass on their enthusiasm to the owner. Preventive healthcare consultations are pivotal in maintaining and promoting the optimal lifelong health and welfare of our feline patients.
    - Engagement – we need to find ways to ensure we are engaging and communicating well with owners. Crucially, this means we need to find and use resources beyond verbal communication during a consultation to provide information for owners. Typically, owners will only remember around 40% of what has been communicated verbally during a consultation and, in fact, will only be able to recall around 20% accurately. There are many different important messages that we may be trying to communicate during a preventive healthcare consultation, and some may be complex. To ensure adequate engagement, we need to make sure we are communicating well but looking beyond just verbal communication
    - Resources – resources (e.g., printed and online resources) are invaluable in re-enforcing verbal messages during a consultation and in providing owners with additional information about specific aspects of what has been discussed. However, resources for preventive healthcare need to be wider than that, too. Owners should know (or at least have a good idea) what will be discussed during a preventive healthcare consultation so that they can come prepared. Using questionnaires or question-prompt sheets (including, where appropriate, things like an Environmental questionnaire,

a Mobility questionnaire, a Quality of Life questionnaire, etc.) can be invaluable along with a simple 'checklist' of items that need to be covered during the consultation. Encouraging owners to write down any questions they want to ask in advance of the consultation can help ensure important concerns are not overlooked or missed, and providing follow-up opportunities for the owner with a nurse, technician, or receptionist can also be valuable. Good resources to help with all these various aspects are important, both for the veterinary team and also for the owners. Engaging resources are available from International Cat Care through their Cat Care for Life programme (www.catcare4life.org) and also through other schemes such as Cat Healthy in Canada (www.cathealthy.ca).

Developing a true partnership of care with cat owners is an important goal of preventive healthcare. This can be achieved and can pave the way to working together as a team, providing cats with life-long quality health care, but it requires a new approach and recognition of the value of this important aspect of daily veterinary care.

Hypertension – an example

An example of the value of a structured approach to preventive healthcare is the problem of feline hypertension. This is now a well-recognised disease in cats, with most cases being secondary to another underlying disorder (e.g., CKD, hyperthyroidism, hyperaldosteronism, etc.). Although many cases of hypertension are secondary, the clinical manifestations of hypertension may be the first recognised clinical signs (e.g., ocular damage), and the damage caused by hypertension may be irreversible.

It is recognised that the risk of hypertension in cats markedly increases after 6-7 years of age and that in cats older than 6-9 years of age, approximately 10% or more will be suffering from hypertension. If this can be diagnosed at an early stage, it may be possible to intervene with effective antihypertensive therapy (e.g., daily amlodipine, Amodip) and prevent any significant signs of disease developing (or prevent worsening of existing disease). This can have a profound effect on the quality of life for the cat and even longevity.

However, in order to achieve these benefits, we need to be engaging with preventive healthcare and undertaking routine blood pressure measurements in all at risk cats (those over 6-7 years of age). Further, it is highly desirable to start this in younger cats (say from 3-4 years of age) to establish a baseline blood pressure for the individual cat and to monitor changes over time. This is likely to provide much better information about disease in an individual cat than looking at population-derived reference values.

Hypertension is a common feline disease, but one that still goes undiagnosed in many cases until significant damage has occurred. It is an excellent example of the value of good preventive healthcare, not only because of the treatable nature of the disease and the positive impact treatment has, but also because most owners are themselves aware of high blood pressure and the damage it can do in humans – owners are often therefore fascinated to learn that the same thing happens in cats, and this can be an excellent foundation for engaging owners in the preventive healthcare process.

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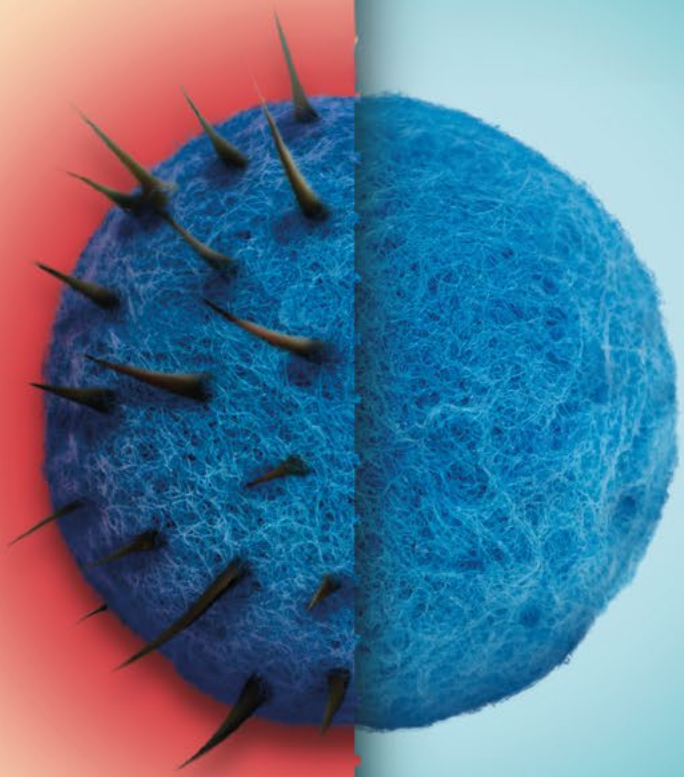

PRRREIA CONTROLULUI!

KRKA

CONFERINȚA DE CHIRURGIE — SÂMBĂTĂ, 11 MAI

08:30 - 09:00	Înregistrarea participanților / *Registration*
09:00 - 09:45	Triajul și managementul plăgilor deschise (inclusiv alegerea pansamentelor) *Triage and Open Wound Management (Including Choice of Dressings)*
09:45 - 10:30	Cum să închid acea plagă – principii de reconstrucție a plăgilor – Partea 1 *How to Close That Hole - Principles of Wound Reconstruction - Part 1*
10:30 - 11:00	Pauză de cafea / *Coffee Break* → *VETS Experience Room, sala Timișoara*
11:00 - 11:45	Cum să închid acea plagă – principii de reconstrucție a plăgilor – Partea 2 *How to Close That Hole - Principles of Wound Reconstruction - Part 2*
11:45 - 12:30	Grefele de piele libere / *Free Skin Grafts*
12:30 - 13:30	Prânz / *Lunch*
13:30 - 14:30	Lambouri simple / *Simple Flaps*
14:30 - 15:30	Gestionarea plăgilor penetrante ale cavităților corpului *Managing Penetrating Body Cavity Wounds*
15:30 - 16:00	Pauză de cafea / *Coffee Break* → *VETS Experience Room, sala Timișoara*
16:00 - 17:30	1. Sisteme: eficientizarea afacerii, mobilizarea personalului, complianța proprietarilor 2. Eşti pregătit să-ți vinzi clinica? Actualizări din UK *1. Systems: Improving Business Efficiency, Leveraging Staff, Client Compliance* *2. Are You Ready to Sell Your Practice? Lessons From the UK*
16:00 - 17:30 (VIP PANEL)	Reconstrucția plăgilor dificile, folosind lambouri axiale și alte tehnici avansate *Reconstruction of Challenging Wounds Using Axial Pattern Flaps and Other Advanced Techniques*

Speaker: John Williams, DVM, MA VetMB LLB CertVR CertMedLaw, Dipl. ECVS, FRCVS

Dr. John Williams a absolvit Universitatea Cambridge în 1984 și a obținut titlul de FRCVS în 1993. Este specialist recunoscut de către RCVS în Chirurgia Animalelor Mici începând cu 1995 și Diplomat ECVS din 1997. Dr. John este fondatorul unei clinici de referință în Cheshire, pe care a condus-o timp de peste 12 ani. În 2016, s-a alăturat echipei Vets Now în calitate de chirurg clinician la Spitalul de Referință din Manchester și în calitate de Director Național al Secției de Chirurgie. A fost numit National Surgical Lead al Diviziei de Referință din UK în cadrul IVC Evidensia în octombrie 2021.

Moderator: László Dáné, DVM, MCSc

Dr. László Dáné este un membru activ al comunității de medici veterinari din România, cu o contribuție importantă în promovarea științei medicale veterinare moderne și în aplicarea clinică rațională a substanțelor active inovatoare în diferite domenii ale medicinei veterinare, inclusiv profilaxia și managementul bolilor infectioase, parazitologie, dermatologie, managementul durerii, medicina internă și diagnosticul de laborator clinic. Absolvent al Facultății de Medicină Veterinară din Cluj-Napoca, promoția 2006, deține un masterat specializat în Diagnosticul Morfopatologic și de Laborator. În prezent, ocupă funcția de director tehnic în cadrul Departamentului de Animale de Companie din compania ALTIUS.

Triage and Open Wound Management (Including Choice of Dressings)

8 Steps of Wound Care	
1. Assess the patient	Emergency triage, stabilise the entire patient.
2. Assess the wound	Determine whether open/closed management, degree of contamination, etc.
3. Assess Owner Compliance	Finances, time frame, Owner commitment, etc.
4. Develop Wound Management Plan	How to address the wound- primary closure, delayed primary closure, second intention, etc.
5. Develop Pain Management	Rescue Analgesia, ongoing analgesia necessary?
6. Develop Nutrition plan	Healing requires energy, evaluate calorific requirements.
7. Develop monitoring plan	Wound reassessment, ongoing management, dressing changes,
8. Back-up Plan	Have several options, the right way to manage a wound at the beginning might not be the appropriate later in the process.

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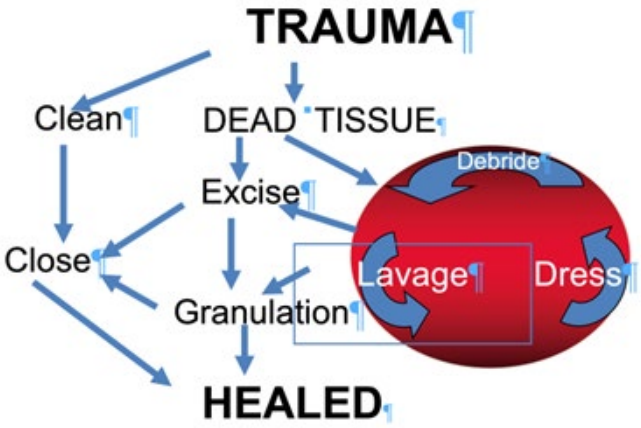
Wound reassessment, ongoing management, dressing changes



Principles of Wound Reconstruction - Part 1

Wound closure and reconstruction should aim to return the patient to normal function as soon as possible. To achieve this aim the key question in decision making is when and how should a particular wound be closed. To answer this question, the veterinary surgeon must take into account a number of factors, such as the overall condition of the patient, how was the wound caused and the degree of trauma at the site of the wound. Failure to take such factors into account may lead to not only local wound complications and dehiscence, but with severe trauma the consequences to the patient could be catastrophic.

Evaluating the Local Wound

The likelihood of success in deciding when to close a traumatic wound depends on a number of factors:

- the degree and type of bacterial contamination,
- the degree of contamination with foreign material
- the degree of tissue ischaemia,
- time from trauma to presentation,
- the type of wound,
- and the amount of local tissue loss.

There are no absolute rules as to the timing of traumatic wound closure, as each wound is different. However it is important to remember that contaminated wounds should not be closed primarily and in such situations appropriate open wound management should be used. If the veterinary surgeon has any doubt as to the degree of contamination, it is safer to deal with the wound as an open wound.

Contaminated wounds should never be closed primarily!

- Timing of wound closure

The four options for closing a wound are:

- Primary closure
- 2 Delayed primary closure (closed after 48 - 72 hours, before granulation tissue develops)
- Secondary closure (closed after granulation tissue develops, 5 - 7 days)
- Second intention healing (contraction and epithelialisation)

Principles of Wound Reconstruction - Part 2

Overview of Planning Wound Reconstruction:

- Note wound size, location
- Identify vital local structures e.g. blood vessels and nerves
- Assess where loose skin is available for reconstruction.
- Skin may not be available on one or more sides of the wound e.g. adjacent to openings such as the anus, in areas where skin is tightly adherent to underlying muscle such as the proximal thigh, where the use of tissue will distort adjacent structures such as the eyelids, prepuce or anus
- Confirm that the donor site can be closed or, if it cannot, that healing by second intention is a viable option
- Choose the simplest effective technique available (Figure 3.21)
- Have several options available for wound closure in case the chosen technique will not close the wound or if more than one reconstruction technique needs to be used
- Use a surgical marking pen to outline any flaps to be used
- Ensure that whatever techniques are considered wide clipping of hair from the area is required. This may involve clipping the whole flank and going beyond the midline both ventrally and dorsally.
- Once in the operating theatre, patients should be positioned in such a way as to maximise the amount of free skin available to the surgeon.

Free Skin Grafts

Free skin grafts are most commonly indicated in the reconstruction of full thickness skin defects involving the distal limb of the dog or cat.

Granulation tissue is in an ideal recipient tissue for grafted skin because it contains an abundant supply of vascular capillaries in a matrix of collagen. It normally appears in the wound within 3-6 days of the original injury and its presence is indicative that any septic process is controlled.

Full thickness grafts can be collected in the form of:

- small islands known as 'pinch', 'seed' or 'punch' grafts,
- thin 'strips'.
- sheets of skin

Grafts should be collected under aseptic conditions, and the underlying panniculus muscle and hypodermal adipose tissue should be carefully removed to allow vascular access to the viable cells of the dermis. The free skin graft should be as thin as possible but still allowing enough dermis so that the hair follicles are preserved. Grafts collected as sheets can be further prepared at this stage by "meshing", which allows lateral expansion of the graft. Once prepared grafts should be rolled in saline soaked swabs to prevent desiccation until required. Movement of the graft will interfere with attachment and is essential that it is held in place with a suitable dressing that must include a non adherent layer and adequate padding. E.g. a modified Robert-Jones Dressing

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Simple Flaps

Flaps are areas of skin that remain attached to their underlying blood supply. The dimensions of a flap are critical in ensuring flap survival and depend to a large extent on the blood supply. There is no direct relationship between flap dimensions and flap survival.

1. Create flaps that are just large enough to cover the wound and avoid flaps that are very long
2. Maximise the width of the base of the flap as much as possible. A 2:1 flap length:base width ratio is a good starting guideline.

Flap donor sites must have ample loose skin so that it may be readily moved to the recipient bed. The defect at the donor site is usually closed primarily, though in some circumstances, it may be allowed to heal by secondary intention. The elevation of local flaps can be done in several ways. The preferred technique is to sharply incise skin with a scalpel blade. Once the skin has been incised, elevation of the flap proceeds by undermining deep to the subdermal plexus. Once the flap has been elevated, careful handling is essential.

With any defect there is always a choice of harvest sites for local flap creation. Selection of flap type will be based upon several factors but in all cases the simplest flap type that is likely to be successful should be chosen. Flaps can be created by advancing skin in a straight direction (advancement flap), a rotational pattern (rotation flap) or skin can be transposed into position by pivoting it 30-120° from its base (transposition flap).

The creation of simple flaps is technically undemanding, usually economic and very rewarding in their clinical outcome.

Managing Penetrating Body Cavity Wounds

The prognosis for dogs and cats with penetrating body cavity wounds is largely dictated by the severity of any concurrent injuries. Bite wounds are the most common cause of penetrating body wall injury in dogs and cats. Though other injuries are seen, such as gunshot wounds, stick injuries, knife wounds, etc. It is important to remember that the external wound is often the "tip of the iceberg" as there is potential for severe underlying tissue and organ injury.

All cases where there is abdominal or thoracic penetrating trauma should undergo surgical exploration due to the high probability of there being internal organ trauma.

Initial analgesia is essential in all cases. As noted above, the issue with bite wounds is that the external wound is the 'tip of the iceberg'; wound lavage with Hartmann's' solution should be carried out with the patient anaesthetised once it has been stabilised. Surgical exploration is then carried out as it has been associated with more likely survival to discharge. The use of antibiotics in these cases has been debated; their use is currently seen as improving outcome. It is known that in most dog bite wounds, there are at least 5 different bacteria types per wound (usually 3 aerobes and 2 anaerobes). Co-amoxiclav is the recognised empirical antibiotic of choice for bite wounds. Thoracic and abdominal radiographs are useful in these cases as is thoracic point of care ultrasound (but not abdominal ultrasound), however if there is suspicion of body cavity penetration it is best to explore surgically.

Survival is reported at 80 – 90 % with body cavity wounds in general but is only 38% if the wound is due to a high velocity bullet.

Advanced Reconstruction Techniques

Veterinary reconstructive surgery has advanced dramatically over the past 30 years allowing of wounds to be repaired where this was previously not an option. Reconstructive surgeons use the concept of a "reconstructive ladder"—the more difficult and challenging the wound, the higher up the ladder the surgeon has to climb! Simple wounds can be closed by primary apposition, but others may require complex reconstruction.

Axial Pattern Flaps

Axial pattern flaps (APFs) are one of the most useful means of reconstructing many difficult wounds. They are ideal for the one-stage reconstruction of wounds, have a predictable blood supply, and, importantly, provide durable, full thickness skin. They can be raised from the trunk, neck and proximal limbs, where there is enough loose skin to allow primary closure of the donor site. Functional results are good; though there is usually near-normal hair growth and minimal visible scar tissue, the hair growth is in a different direction and may be of altered length and texture to the surrounding area.

APFs have major advantage over subdermal plexus flaps in that a large size of flap can be raised (APFs have 50% greater survival area than subdermal plexus flaps of the same size. Increasing axial pattern flap width increases the chances of incorporating the direct cutaneous vessels in the flap. Axial pattern flaps can be placed over poorly vascularised tissue, e.g. bones, nerves and irradiated tissue, and there is greater tolerance to movement such that immobilisation of the surgical site post-operatively is not required.

The axial pattern flaps and their direct cutaneous vessels that have been described in small animals have predictable locations relative to palpable anatomical landmarks allowing the flap to be created without direct visualisation of the blood vessels.

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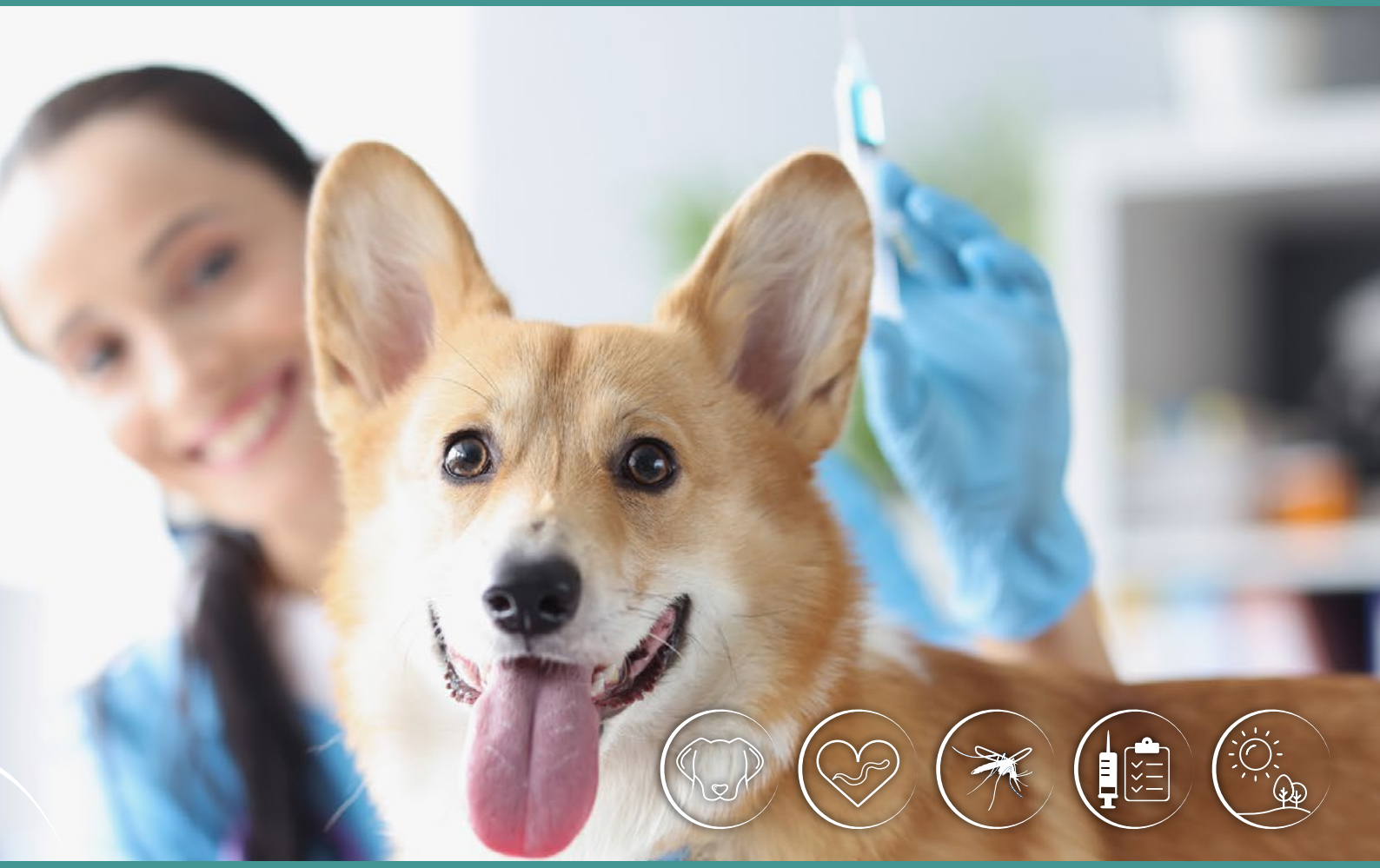

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Shaping the future of animal health

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Special Guest: Alan Robinson, B.V.SC., MRCVS DMS

Dr. Alan Robinson este un chirurg veterinar cu o experiență de peste 20 de ani, un consultant de succes pentru peste 1200 de clinici la nivel mondial și director al Vet Dynamics. Misiunea sa este de a reînflăcăra scopul, pasiunea, oamenii și performanța în practicile veterinare independente. Compania sa, Vet Dynamics, colaborează cu clinici independente pentru a oferi suport personalizat și resurse pentru performanța clinicii, inteligența în afaceri, leadership, cultură și angajamentul echipei.

Profitability: Understanding Vet Finance, Pricing Professional Time, Invoicing Strategies and Pricing Procedures

Veterinary practice is a reactive business. Practices tend to wait and see what happens to them (e.g. legislation, internet, competition, etc.) then react positively or negatively to the consequences. As a result, life in practice can be chaotic, reactive and stressful – many vets working far too hard for too many hours for too little return.

The principle cause of this is vets' failure to charge profitably for their professional time. Reacting to a broad, ill defined, demanding and fickle client base whose demands and motivation are only occasionally aligned with the vets desire to practice high quality medicine and surgery and run a proactive and profitable business means the vet owner is constantly working reactively and inefficiently.

Often they don't know what their professional time is worth except in terms of the consultation or surgical fee and these are often determined by what other practices charge rather than based on the needs of the practice costs, investments and profitability.

Then vets often 'give away' time (the free consult) to appease the client, discount professional time (the repeat consult) to appease themselves and miss real opportunities to sell their professional time through 'being too busy' or fear of 'selling'- resulting in failure to offer full compliance veterinary services to the client and fulfilling the clients' and patients' needs. These activities have serious financial, clinical, and customer service implications on the clients, the practice and the staff.

This talk will show how practice owners can determine a realistic veterinary professional fee based on their financial needs and then demonstrate the consequences of giving away or discounting their professional time and missed opportunities for practicing good veterinary medicine for the benefit of the client, the patient and the practice.

Determining Your Professional Rate per Hour

Clinical Services are essentially selling your professional time in 10 or 15 minute increments called consultations or surgical time. Two problems are prevalent in the majority of veterinary practices. In the current competitive (UK) environment for preventative products and services and drug sales (deregulation, retail and internet), veterinary income will increasingly be reliant on your income from your veterinary professional time.

In small animal practice it has been calculated that the number of chargeable vet hours (consulting and surgical time) averages around 30 hours per week i.e. 180 x 15 minute units per week. This tends to be fairly consistent in most practices, therefore it is important that the practice can determine and maintains its veterinary professional fee rate.

Let's take an example of a 4 vet practice averaging 30 chargeable hours per week for 50 working weeks a year per vet and turning over £800,000 (ex VAT) with 10% net profit.

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This practice has 6000 chargeable vet hours and 24,000 chargeable 15 minute units per year in which to make £570,196 to cover fixed costs and make a modest profit. Averaging this out and excluding drugs means the practice is currently working at a professional fee rate of £95 per hour or £23.76 per 15 minutes of professional time. If it wants to grow turnover or genrtate more profit it needs to increase this rate per hour.

If we now look at the actual consultation charges and band them in price bands to show the level of discounting inherent in their pricing structure, we get the following.

The 'espoused consultation rate (primary Consultation) is £30.37 or £121 per hour. However most practices allow official discounting of this rate by having reduced rate (discounted) subsequent consultations (consult 2 and 3) as well as giving away a large number for Free of Charge consultations that are not adequately included in other charging and the ability for vets to undercharge if they so wish.

The effect of these reduced charge and FOC consultations is to dramatically lower the professional rate per hour – in this case down to £97 per hour – about equal to the achieved rate of £95 per hour andv well below the top rate of £121 per hour to achieve optimal income and profit.

Having studied this ratio in many UK practices, it has consistently shown that your average consultation fee virtually determines your veterinary income rate per hour and, therefore, your income and profitability

In this case the Average Income per 15 minutes = £23.76 = £95 per hour and the AVERAGE Consultation Rate = £24.31 = £97 per hour

Therefore we can make some assumptions regarding practice charging:

- The lower your Primary Consultation rate the lower the Average Rate per Hour
- The lower your Repeat Consultation rate the lower the Average Rate per Hour
- The More Repeat Consultations at a lower rate the lower the Average Rate per Hour
- FOC consultations dramatically lower the Average Rate per Hour

Charging appropriately for your Professional Time

In order to maintain your required income rate per hour, you need to consider the consequence of reduced charges and FOC consultations, which determine your overall income generation capacity.

Recommendation 1: Calculate Your MINIMUM Consultation Charge

In this case, for the 1st or 2nd or any subsequent consultation, the minimum consultation charge needs to be at least £30.00 + VAT per 15 minutes. The (minimum) Consultation 2 charge needs to be increased to at least £30.00 + VAT

- Primary Consult = £30.00 + VAT
- All Vet Subsequent Consult = £30.00 + VAT
- Get rid or delegate residual discounted Cons 3 & Cons 4
- Have separate prices for Clip nails Vet + Clip Nails Nurse
- Nurse Consult = ½ Vet Consult = £17.00
- Add value to Repeat consultations
- Recommendation 2: Reduce the number of Free of Charge Consultations – mostly Post-op Consultations
- Create Post-op Care packages I - V
- Include Post-op in the Surgical Fee estimates
- Decide how many post-ops to include and charge for the rest
- Have a Nurse Consultation fee (1/2 Vet fee)
- Use nurses for all PHC and pre and post-op procedures.
- Up to 25% of consulting case load can be done by trained nurses.
- Include Post–op and suture removal time in the Surgical Fee

Systems: Improving Business Efficiency, Leveraging Staff, Client Compliance

Managing client compliance is the secret to a high performing and profitable practice. High compliance means that you create more work and sales from far less clients. The secret to improving client compliance is to remove the real and perceived barriers to high client compliance.

What are the clinical opportunities in each consultation to practice good medicine?

- Another subsequent consultation
- Diagnostics - Lab work, X-ray, Ultrasound
- Anaesthetics & Surgery
- Fluid therapy
- Hospitalisation
- Euthanasia

To optimise the opportunities from each consultation, we need to measure and monitor performance per practice and per vet, set accurate pricing including professional time and have systems to manage the outcomes of any consultation.

The Consultation

The veterinary consultation is often inefficient, rushed and not focued on the four outcomes necessary for good veterinary business. Typically, the vets are already busy and running late, so they rush people in , Jump into the clinical exam, trying to diagnose as soon as possible, instigate treatment and diagnostic procedures then move on to NEXT consultation...

Consultations need to achieve an awful lot. In a 10 minute consultation, they typically get 3 minutes to get a client in the room, get the pet out of the basket or onto the table and start the examination. At the end of the consultation they typically have 3 minutes to put the cat back in the basket, explain the treatment to client while moving them back out the door. This leaves ONLY 4 minutes to do all the important clinical work, communication, compliance and compassion necessary in a good consultation! Does it add value from the client's experience?

What Are the Missed Opportunities?

1. Discounting Professional Time - selling yourself at too low a rate and not charging for everything you do – giving it away
2. Not listening to the client's concerns
3. Failure to recommend treatment - not doing the work presented
4. Failure to practice good protocols and not following up case work appropriately

Every clinical consultation has 4 clear outcomes and processes to achieve - the '4 C's' of Consultation.

1. **The Clinical** care of the sick animal – this is the vet's responsibility to diagnose and recommend the most appropriate treatment
2. **The Cost** Incurred by the recommended treatment is the client's problem – not yours. You need to charge correctly you could elevate this (bad) or offer a solution like Carefree Credit. You could help by providing an earlier estimate, help them process. If they cannot afford you may have to adjust your clinical input!
3. **Compliance** needs certain things done at a certain time for the pet's benefit – medication, bandage change, etc. This is a shared responsibility and you need to negotiate between you. 'I'll do this and you'll do that' This takes time and careful communication
4. **Compassion** is the emotional content of the consultation for the pet, the client and the vet. This is a shared responsibility, and clear boundaries on both sides are required, particularly in difficult cases and end-of-life decisions!

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All this involves communication! In a rushed 10 minute consultation, this will not happen even with 15 minutes will struggle! These 4 outcomes require some framework to be successful.

Clinical Outcomes

The client consultation process, whether it's a one-off visit or a series of discussions over treatment – is the core to the relationship with your clients and their pet's. The relationship between owner and their pet cannot be underrated.

However, there is an estimated 55% compliance gap between what is presented in a consultation room and what is treated. This poor clinical compliance from a veterinary perception is due to:

- Cost – the vet deciding that the client will not or cannot pay for the recommended treatment because the treatment is too expensive, therefore not making the appropriate recommendation in the first place.
- Communication and client education – even when the vet does make a recommendation, it is unclear and ambiguous, provides too much information in a short time causing confusion and uncertainty, usually giving too many options without a definitive recommendation or lacks conviction as the most appropriate action or not explaining the benefit of the recommended treatment.
- Perceived value – the client not seeing the value in regards to the treatment process or prognosis of the case
- Client time and convenience – having to come back or scheduling at a time inconvenient to the client
- Process error at the clinic – failure in processing the payment, scheduling treatments or booking follow-up appointments

Because of this lack of effective recommendation from the vet, the client didn't know what to do or was confused about the options available. Here are some tips to improve communication

Ask Open Questions (requesting further information) rather than Closed Questions (Yes/No binary answers) to gain clarity about the client's understanding of the condition and the recommended treatment.

Differentiate the 'disease' - the pathology in the patient- from the 'illness' - the emotional perceptions about the condition in the clients mind. There is a fundamental difference – the animal has a pathological condition (disease) that can be treated, however the client has a sick animal causing anxiety (illness).

Be very clear about the need or benefit as to why the procedure is necessary. Vets want a diagnosis, but clients want a prognosis — explaining what is the outcome rather than what is the clinical label of the problem.

Need or benefit not explained – told but not explained the need or the benefit – for example – the benefits of the Urine Test – does it help the diagnosis or the prognosis, or both – if it does not add to the prognosis, may not be worth doing.

Following Protocols - One vet says one thing another says something different, criticising other vets opinions or is booking in for a different procedure.

Lack of reinforcement by the veterinary team – following systems and protocols to get to a resolution by agreeing on consistent practice protocols – a follow-up system for the outcomes of any consultation.

For any consultation there are only 4 possible outcomes that require backup systems. The 4 main results are:

1. The pet is healthy and the client is educated → return to the preventative healthcare system
2. The pet requires long term medication → chronic medication programme
3. The pet requires admission for sedation or anaesthetic → admission, discharge and hospitalisation process
4. The pet requires euthanasia → euthanasia and bereavement process

There are two sorts of vets - those who have systems and those who don't.

Client Experience Compassion at a Price

Veterinary compassion costs time, energy & money. We need to practice compassion as professionals… we charge to provide compassion. Compassion comes at a cost ….and therefore has value! Vets can show compassion in four key ways when interacting with the pet and the client.

- Alleviate and avoid causing any more perceived pain in the pet through handling and examining.
- Offer a prognosis rather than a diagnosis – what is the likely outcome for the pet
- Explain the treatment process and show understanding of the compliance difficulties the client may have.
- Agree on a clear, fair and unambiguous price for the treatment as far as you can.

> There are two types of vet. One that needs to make the 'RIGHT' diagnosis and one that sees a clinical and emotional 'challenge' that needs resolution

- Financial compliance to maintain a profitable and sustainable business.

Financial resolution occurs when the vet team's bills and banks' 5 times the cost of their employment therefore, all procedures need to be

- Priced accurately and clearly
- Recommended to and agreed by the client
- Paid for proximally and easily
- Processed and banked on the appropriate system

Team Harmony

Successful practices focus on maintaining high levels of trust & flow in their teams Do not disrupt the rest of the team just because you can't be bothered to do your job properly. Therefore, all team members need to:

- Show consideration for others - do NOT make their job harder!
- Compliance – follow agreed practice protocols and procedures
- Communicate with each other
- Completion - finish your job to the required standard

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Are You Ready to Sell Your Practice? Lessons From the UK

If you are considering selling your practice to a Corporate buyer, there are several factors to consider. Here are some key points to keep in mind:

Reasons for Selling

People sell their practices for various reasons, including retirement, dissatisfaction with the pressures of running a practice, difficulty in finding and retaining professional staff, financial non-viability of the practice, desire for a career change, illness/divorce, or the opportunity to obtain money while it is available.

Potential Buyers

There are several potential buyers for your practice, including:

- A current vet member of the staff
- A private buyer vet looking to buy a practice with limited funds
- A local practice with cash funds wishing to expand its area
- An aggregator looking for a practice to re-sell
- A corporation willing to pay the top price for a practice in a particular location with a high level of maintainable profits.

Types of Buyers

It's important to understand the difference between a financial buyer, an aggregator, and a strategic buyer:

- A financial buyer is interested in buying your future stream of cash, focusing on profit and cash-flow reliability.
- An aggregator buys your practice at one price to bundle it up with other practices and sell it at a higher price.
- A strategic buyer values your business based on what it is worth in their hands, considering assets, skills, and client transfer to sell more of their products and services.

UK Corporates

There are 6 large corporate with a significant presence in the UK veterinary industry. For example, IVC Evidentia see over 3 million patients annually, 7,500 employees, 2,800 veterinarians, and are present in 13 countries. They focus on helping clinics develop and improve profitability, reduce administrative costs, and provide optimal care for patients.

What are buyers looking for? When valuing your practice, buyers consider various factors, including turnover/revenue, profit (EBITDA), location, specialist clinical expertise, referrals, cremation & OOH services, management structure, clarity of finances, quality of premises, and growth potential.

Valuation Multiples

The value of your practice can be determined using different valuation multiples. Some common ones include:

- Commercial Value: Goodwill (3-4 x Profit) + stock + equipment
- Corporate Value/Enterprise Value: Goodwill (5-10 x EBITDA) includes stock + equipment
- Corporate Entry Value: Goodwill (8-15 x EBITDA)
- Corporate Exit Value: Goodwill (15-25 x EBITDA)

Factors affecting the decision to sell: Whether you decide to sell or not depends on various factors, such as the turnover, net maintainable profit, location, clinical services offered, management structure, and the condition of your premises.

Team and clients: If you sell your practice, it's important to consider the impact on your team and clients. Buyers should provide support and ensure that your team is looked after. The transition should be handled carefully to maintain client relationships.

Property considerations: Depending on whether your practice is leased or owned, different arrangements can be made. If it's a leased property, the lease can be taken over by the corporate. If you own the property, you can choose to retain it and lease it back to the corporate or sell it to a third party and lease it back.

Business support: When selling to a corporate, there will be changes in certain aspects of your practice, such as the practice management system, bank account and credit card provider, wholesaler and buying group, and preferred pharmaceutical list. However, there are things that the corporate will not change, such as team members and contracts, pay scales (initially), clinical decisions, referrals and OOH services (initially), and labs and services (initially). The corporate will also provide various forms of support, including an area business manager, business planning and development, back-office support (finance, accounting, H.R., marketing), graduate training, leadership training and CPD, and career progression.

Brokers and deal-making: If you decide to sell your practice, it's advisable to work with an experienced broker who can help ensure a smooth and successful transaction. Some key factors to consider when working with a broker include consistent or growing turnover and profitability, knowledge of the market and achievable prices, a non-dependent management structure, a pleasing appearance and quality presentation, professional and easy negotiations, and transparency and honesty.

Other options: If you prefer not to sell your practice to a corporate, there are other options to consider. These may include taking your time to make a decision, exploring alternative buyers or partnerships, or considering other business models.

The future of the veterinary industry: The future of the veterinary industry is likely to see a mix of corporate practices, independent chains, large practices employing multiple vets in a specific area, medium independent practices with a smaller number of vets, and start-ups with one or two vets.

In conclusion, selling your practice is a significant decision that requires careful consideration of various factors. Understanding the potential buyers, valuation factors, and the impact on your team and clients is crucial in making an informed decision. Working with experienced professionals, such as brokers, can also help facilitate a successful sale.

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